UNIVERSITY OF NAIROBI

SCHOOL OF COMPUTING AND INFORMATICS

Application of the Balanced Scorecard Framework in Performance Measurement of E-Government Services: Case of Kenya Revenue Authority

By

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DECLARATION

This project is my original work and to the best of my knowledge this research work has not been submitted for any other award in any University

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(P54/64501/2013)

This project report has been submitted in partial fulfillment of the requirement of the Master of Science Degree in Information Technology Management of the University of Nairobi with my approval as the University supervisor

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DEDICATION

To my beloved husband, Eliakim Okundi, and my gracious sons, Eugene Nathan & Ethan Nevan: You have brought immeasurable joy to my life and enabled me develop patience to view each opportunity in life positively.

To my sisters, Eunice, Christine & Margaret and brother, Samson: Keep on keeping on.

ACKNOWLEDGEMENT

ABSTRACT

Performance measurement is a prerequisite to e-Government efforts to audit services and assure citizens of the accountability of the government. This research sought to apply the Balanced Scorecard concept as a consistent tool in measuring and evaluating performance of an e-Government application by taking the case of Kenya Revenue Authority (KRA). An analysis was made on how this organization is developing performance measurement data, including customer satisfaction measures. A systematic study of the existing performance measurement tools was carried out in establishing the basis for conceptualizing the Information Systems Balanced Scorecard (IS-BSC framework). The researcher investigated various dimensions of e-Government services and proposed a performance measurement tool that will assess the quality and trust dimensions of the e-Government services from management's perspective. The proposed tool was validated by using the *i-Tax* service of KRA. The author then lists the indicators and metrics that can be used to measure the performance of e-Government services. This research suggests an adoption of an IS-BSC which measures and evaluates e-Government services from the following perspectives: business value, user orientation, internal process, and future readiness. The research concludes with recommendations to help the Kenyan government develop its own performance measurement mechanism to assess the impact of investing in e-Government. The findings of this study would be beneficial to various functional ministries adopting e-Government initiatives (G2G, G2C and G2B) as they would gain an understanding about the mixed method of using metrics in IT governance balanced scorecard. This will enhance strategic management of e-Government services. Similarly, the discussions and findings of the study would be important to conceptual development by other researchers and academicians while conducting future related studies. The results would be applied to draw an Information Systems Balanced Score Card as a tool for Strategic Management of e-Government services at KRA and evaluate its effects on performance.

Keywords: Balanced Scorecard, Performance Measurement; e-Government, e-Government Service; IS Strategic Management; Kenya Revenue Authority

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LIST OF ABBREVIATIONS

BSC - Balanced Scorecard

CCK - Communications Commission of Kenya

DMSM - DeLone and McLean Information Systems Success Model

E-Govt - Electronic Government

E-GSPTA - E-Government service performance and trust assessment framework

ICT - Information and Communication Technology

IFMS - Integrated Financial Management System

IRR - Internal Rate of Return

IS - Information Systems Balanced Scorecard

IT - Information Technology

KENET - Kenya Education Network

KNEC - Kenya National Examination Council

KPI - Key Performance Indicators

NHIF - National Hospital Insurance Fund

NPV - Net Present Value

ROI - Return On Investment

SERVQUAL - Service Quality

SMS - Short Message Service

SPSS - Statistical Package for Social Sciences

Definition of terms

Business / IS strategic risk: the degree of risk in terms of how well the company and the IS department, respectively, succeed in achieving their strategic objectives.

Definitional uncertainty: the degree of risk in terms of how clearly the functional requirements and specifications have been agreed upon. Value linking incorporates the benefits and costs in other functional areas.

Operational risk or **business organization risk,** and **IS service delivery risk** reflect the degree of risk in terms of how well the company and the IS department, respectively, will be able to adapt to the changes invoked by the project.

Strategic IS architecture assesses the degree to which the project fits into the IS plan.

Technical uncertainty relates to the risk associated with dependence on immature, 'bleeding edge' technologies.

Value acceleration is the interest savings that can be achieved by repaying an outstanding loan with the accelerated recovery of accounts receivable.

Value restructuring: the efficiency and effectiveness of employees: Does the new system free up more time for employees to execute their own jobs?

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1.0 INTRODUCTION

1.1: Background

Measurement is a prerequisite to management. Performance measurement is important to assess e-Government efforts. A government needs to track what is working and what is not and assure citizens that the government's time and funds are being spent well. E-Government is increasingly being emphasized as a way for governments to strengthen good governance. If implemented strategically, it can not only improve efficiency, accountability and transparency of government processes, but it can also be a tool to empower citizens by enabling them to participate in the decision-making processes of governments.

Public sector performance measures are quantitative ways of determining the resources that go into providing services (input measures), the immediate results of those services (output measures), and the longer-term results of providing those services (outcome measures). Performance measurement can be defined as measurement on a regular basis of the results (outcomes) and efficiency of services or programs. There is an emphasis on performance measures today as a way of providing accountability and the means to a results-oriented management strategy.

E-Government is viewed as a tool that can transform the way in which activities are carried out as well as the way interaction takes place, methods of public education and services are delivered, knowledge is acquired and utilized, policy is developed and implemented, citizens participate in governance, and public administration on reform and good governance goals are met (Waema, 2007).

The significance of aligning the usability of websites with government service delivery strategies is widely recognized, but the lack of appropriate methodologies prevents government units and their constituents from integrating website projects with e-Government service delivery performance. Excessive reliance on financial accounting has led to performance measurements being inadequate and misleading. A Balanced Scorecard theory is a consistent performance measurement tool for the use of IT (Lawson-Body, Mukankusi & Miller, 2008).

1.1.1: Balanced Score Card

The Balanced Scorecard was developed by Dr. Robert Kaplan of Harvard Business School and David Norton as a performance measurement framework that added strategic non-financial performance measures to the traditional financial metrics to give managers and executives a more balanced view of organizational performance. It has evolved from its early use as a simple performance measurement framework to a full strategic planning and management system. The new balanced scorecard transforms an organization`s strategic plan from an attractive but passive document into the marching orders for the organization on a daily basis. It provides a framework that not only provides performance measurements but helps planners identify what should be done, measured and executed. The aim of the Balanced Scorecard is to direct, help manage and change in support of the long-term strategy in order to manage performance. The scorecard reflects what the company and the strategies are all about. It acts as a catalyst for bringing in the 'change' element within the organization.

1.1.2: E-Government Services in Kenya

E-Government involves using ICTs to transform both back-end and front-end governments processes and provide services, information and knowledge to all government customers. These include: the public, businesses, government employees and other government agencies. E-Government uses a range of information technologies, such as the Wide Area Networks, Internet, and Mobile Computing, to transform government operations in order to improve effectiveness, efficiency, service delivery and to promote democracy.

The achievement of e-Government in Kenya has been one of the main priorities of the Government of Kenya towards the realization of national development goals and objectives for Wealth and Employment Creation, as stipulated in the Kenya Vision 2030. The primary vision of e-Government is to transform a government's value to its citizens, by digitizing government operations so that they are accessible and interactive, thus translating into real-time service delivery. e-Government can be segmented into primary delivery models; the relationship between government and citizens (G2C), electronic interactions between government parastatals and private businesses (G2B), relationship between governmental organizations (G2G), and the relationship between government and its employees (G2E).

1.2: Problem Statement

To date, sub-Saharan Africa has barely registered on the e-Government radar screen. Relevant e-Government studies have been conducted, especially by large consulting firms, by international organizations, and also by some universities. These studies provide little information about the state of e-Government implementation in developing countries in general, and often show considerable methodical shortcomings. E-Government is reduced to the extent to which public service processes are conducted online. Actual usage levels or the impact of electronic services are hardly measured. Organizational changes relevant to e-Government, such as the re-organization of procedures and processes, are barely addressed as a central theme, or are only illustrated using randomly selected best practice cases. Estimating the extent of e-Government implementation is difficult, as only a few benchmarks exist and these are exclusively focused on internet services. In considering the present level of development of e-Government in developing economies, the question as to which frameworks influence the spread and implementation of e-Government becomes even more relevant, meaning that existing administrative preconditions and environmental factors play an important role (UNDESA, 2005; Schuppan, 2009).

The government of Kenya, in the recent past has been making significant attempts to automate services to its citizen. The success of e-Government initiatives is contingent upon citizens' willingness to adopt Mobile computing technologies and Web-enabled services. But the lack of appropriate methodologies prevents government units and their constituents from integrating website projects with e-Government service delivery performance. The strategic implementation remains challenging due to the non-existence of strategic e-Government models. Excessive reliance on financial accounting has made performance measurements inadequate and misleading. Strategic performance measures need to be developed to provide accountability for e-Government efforts (Lawson, Mukankusi & Miller, 2008).

Nevertheless, the issue of applying an IS-BSC concept as a consistent tool in measuring and evaluating performance of IT applications and services remains unresolved at Kenya Revenue Authority.

1.3: Objectives of the Study

1. To investigate the level (i.e. Corporate or Departmental level) applied by KRA in measuring and evaluating e-Government services.
2. To establish the objectives of performance measurement of e-Government services at KRA.
3. To establish the tools and methodologies used to evaluate e-Government services by KRA.
4. To analyze the challenges to evaluation of the e-Government services by KRA.
5. To elaborate a model based on the IS-BSC concept towards performance measurement of e-Government initiatives by KRA.

1.4: Research Questions

In order to achieve the study's objectives, the study answered the following questions:

1. At which level was KRA measuring and evaluating e-Government services?
2. What were KRA's objectives of measurement and evaluation of e-Government services?
3. What tools and methodologies were used to evaluate e-Government services by KRA?
4. What were the challenges to evaluation of the e-Government services by KRA?
5. How can the IS-BSC concept be applied to measure the performance of e-Government services by KRA?

1.5: Value of the Study

The study provided information that would be useful to Governments in the region in designing and implementation Balanced scorecard as a performance measurement tool (Nzuve & Nyaega, 2012). The findings of this study would be beneficial to various ministries adopting the e-Government services, citizen and business functions. These stakeholders would gain more knowledge and understanding about the mixed method of using metrics in IT governance balanced scorecard and importance-performance analysis in order to identify the current situation of IT governance and controls in their organizations. Similarly, the discussions and findings of the study will be a useful guide by other researchers and academicians while conducting future related studies. The theories and concepts advanced in this study would be instrumental in enhancing their background knowledge regarding performance measurement of e-Government services and how it can be managed through BSC. Further, they would use the study as one of their referencing points.

2.0 LITERATURE REVIEW

2.1 E-Government

E-Government is regarded as a way of providing government services electronically, usually by relying on the Internet infrastructure to reduce the physical character of customer transactions or by a reliance on Internet-based applications to enhance efficiency. It is the provision of government services using ICT in order to improve effectiveness, efficiency, and service delivery and to promote democracy. E-Government occurs in a turbulent social-political environment. It should be addressed from a technological perspective, and also from social, political, and cultural perspectives. Governments need to understand what motivates the public to use e-Government services, so as to be able to take strategic actions to increase the e-Government up-take (Al-Hujra, et. Al. 2012).
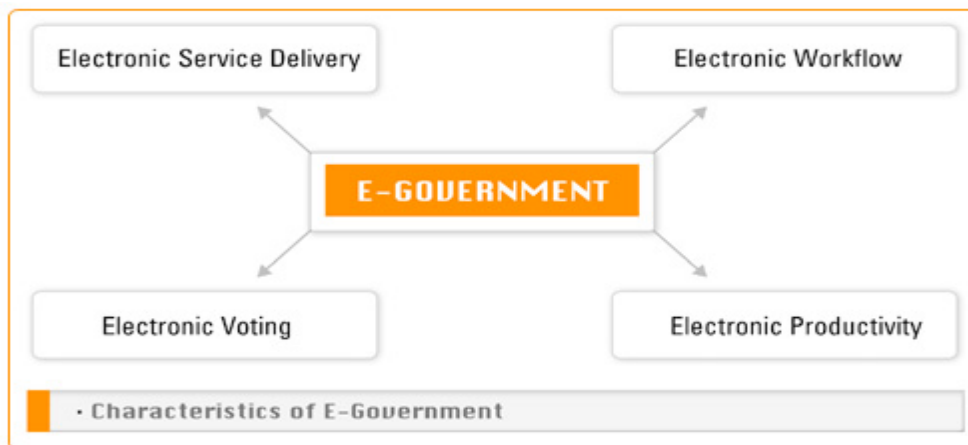
Figure 2.1: Characteristics of e-Government (Source: Gartner, 2000; UNESCO, 2005)

2.1.1 Stakeholders of E-Government
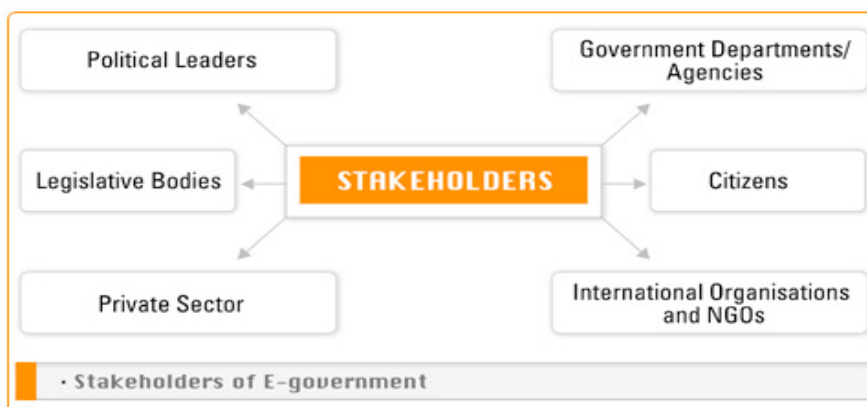
Figure 2.2: Stakeholders of e-Government (Source: Gartner, 2000; UNESCO, 2005)

2.1.2 Maturity Phases of E-government

E-Government Applications and Projects generally pass through various stages such as publishing of information on the web to carrying out transactions and even complete process reengineering so as to bring in the true value and benefits of the efforts to the citizens. A four-phase e-government model could serve as a reference for governments to position where a project fits in the overall evolution of an e-Government strategy. This model does not imply that all governments have to go through all of these phases. They are not dependent on each other, nor is there a need for one phase to be completed before another can begin. In each of the four phases, the delivery of online services and use of ICTs in government operations serve one or more of the aspects of e-Government: democracy, government, business.
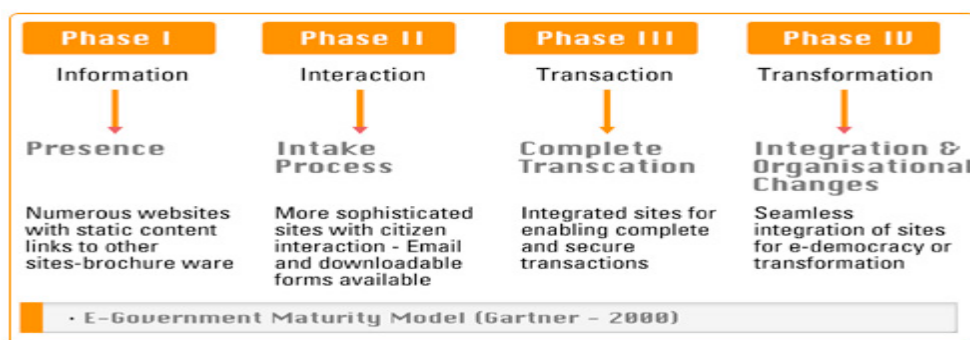
Figure 2.3: E-Government Maturity Model (Gartner, 2000; UNESCO, 2005)

2.1.3 Key Focus Areas of e-Government

Key focus areas of IT Governance can be summarized as delivering value to the business driven by strategic alignment, Mitigating Risks driven by embedding accountability into the enterprise.
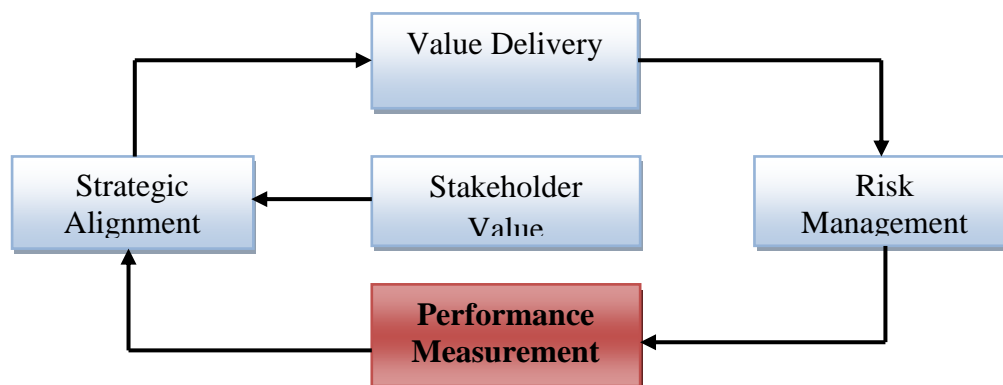
Figure 2.4: Four Focus Areas of E-Government (Source: Research Data)

Strategic Alignment: Bringing ICT investments in harmony with the strategic business objectives. ICT to business alignment encompasses both: Strategic integration between the future ICT organization and the future institutions organization; Alignment of ICT operations with the current operations. **Value Delivery:** Bringing ICT investments in harmony with the

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strategic business objectives. Business has expectations relative to the ICT product, relative to the ICT process. Value of ICT is measured differently, according to the management level. Measuring the impact of an ICT investment is much easier at the bottom of the hierarchy than at the top. **Risk Management:** Ascertaining that there is transparency about the significant risks to the organization and clarifying the risk-taking or risk-avoidance policies of the enterprise. Being aware that the final responsibility for risk management remains with the board so, when delegating to executive management, make sure the constraints of that delegation are communicated and clearly understood. **Performance Measurement:** How is the organization performing to meet the goals of governance in the organization? Use of tools can be adopted, such as BSC, to ascertain how business goals are achieved, Balanced Business Scorecard. Use of an IT balanced scorecard is one of the most effective means to help the board and management achieve IT and business alignment. (Waema, 2007)

2.2 E-Government Services in Kenya

The launch of e-Government services in Kenya is one of the main priorities of the Government of Kenya. This is aimed towards the realization of national development goals and objectives for Wealth and Employment Creation, as outlined in the Kenya Vision 2030. Governments and business success in the past was largely based on the efficient allocation of financial and physical capital in order to achieve economies of scale and scope. Focus, today is on the ability to mobilize and exploit less tangible intellectual assets. Information age governments must focus on technology improved processes, such as e-Government services in order to efficiently produce and deliver their products and services (Republic of Kenya, 2004).

The Government of Kenya established the e-Government Programme in June 2004. It has since then committed itself towards achieving an effective and operational e-Government to facilitate better and efficient delivery of information and services to the citizens, promote productivity among public servants, encourage participation of citizens in Government and empower all Kenyans. The overall goal of e-Government, as stated in the policy document (Republic of Kenya, 2004) was to make the government more results oriented, efficient, and citizen centered. E-government is supposed to facilitate citizens in order to access government services and information as efficiently and as effectively as possible through the use of Internet and other channels of communication.

The e-Government project sought to achieve the following objectives: improve collaboration between government agencies through reduction in the duplication of efforts and through the enhancement of efficiency and effectiveness of resource utilization; improve Kenya's competitiveness by providing timely information and delivery of government services; reduce transaction costs for the government, citizens, and the private sector through the provision of products and services electronically; and provide a forum for citizens' participation in government activities (Republic of Kenya, 2004).

The Kenya Vision 2030 identified ICT as a key pillar to growth and prosperity. E-Government saves citizen's travel time to Government offices and allows round-the-clock access to services. Currently, the major online e-Government services in Kenya are categorized into three. These services are either offered for citizens (G2C), for businesses (G2B) or to the government (G2G) (Republic of Kenya, 2004).

2.3 E-Government Services at Kenya Revenue Authority

The Kenya Revenue Authority (KRA) was established by an Act of Parliament, Chapter 469 of the laws of Kenya, which became effective on July 1, 1995. The Authority is charged with the responsibility of collecting revenue on behalf of the Government of Kenya.

The functions of the Authority are: To assess, collect and account for all revenues in accordance with specific laws set out in the first part of the First Schedule and the revenue provisions of the second part of the First Schedule (which contains written laws relating to revenue); To advise on matters relating to the administration of, and collection of revenue under the written laws or the specified provisions of the written laws; and to perform such other functions in relation to revenue as the Minister for Finance may direct.

KRA is the largest revenue earning setup of the Government of Kenya. Its functions are qualification of tax liability and collection of tax. Commercial Tax Information System has been implemented by the Directorate to augment revenue and minimize evasion of tax. It covers functional areas of registration of dealers, monitoring the payments by dealers which trade in high volumes, monitoring imports, along with other utility reports. The objectives of e-Government application were to ensure transparency in the system; to get data, dealer-wise, commodity-wise, office-wise, transporter-wise for efficient functioning; to reduce evasion of tax in the state; to create a central data model, which could feed all check-posts in the state; to ensure checks and validations, which assumed critical status as goods. The institution needed

a solution which would be robust, secure and scalable. When dealing with state finance, the system should ensure transparency, efficiency and security. Oracle was selected as a platform for automating Directorate's functions. Oracle platform also provided the technology features which were required to implement VAT policy.

2.4: Performance Measurement of E-Government Services

Performance measurement began in the 1930s as part of systems analysis and has grown in importance in recent years as part of the overall emphasis on accountability and government achievements. Ideally, performance measurement is tied into an organization's strategic planning process as a way of measuring the implementation of goals and objectives derived from an organization's mission and strategic value statements and SWOT (strength, weaknesses, opportunities, and threats) analysis. It can also be implemented directly as part of the budgeting process in performance budgets and sometimes is implemented by itself.

Types of performance measures for traditional public sector services included the following: Inputs or the resources used to produce services; Outputs or the products and services actually produced; Activity or process measures which measured the Performance measurement in the public sector is topical both for practitioners and academics. There have been several efforts to build a theory of performance measurement in the public sector based on actual practice. (Bouckaert & Halligan, 2008; Halligan & Bouckaert, 2011; Van Dooren et al., 2010)

activities used to produce outputs; Efficiency and productivity measures (unit-cost ratios); Service quality measures; Outcomes (intermediate and end), which were the desired results of providing the service. To be effective, performance measures should be tangible, specific, numeric measures. Ideally, they should indicate the time period being measured. Multiple measures are more useful than single measures, although the advantages must be balanced against the creation of an overly cumbersome and burdensome system. Measures also need to be selected with the help of stakeholder input and support so that they can be effectively implemented (Hatry, et. al., 2004).
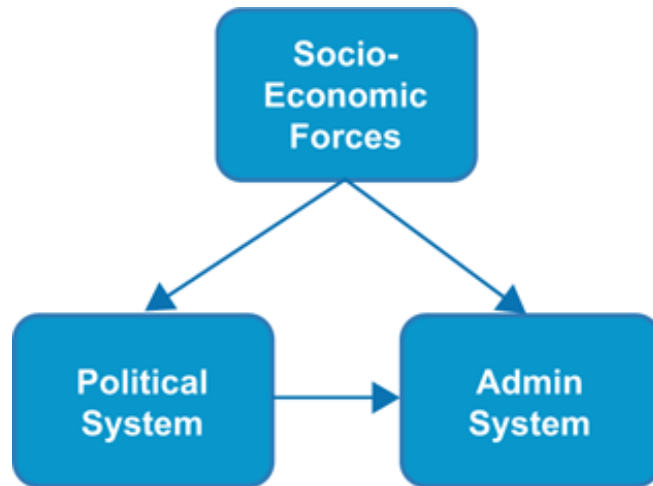
Figure 2.5: Key elements of context affecting performance management in the public sector (Source: Bouckaert & Halligan, 2008)
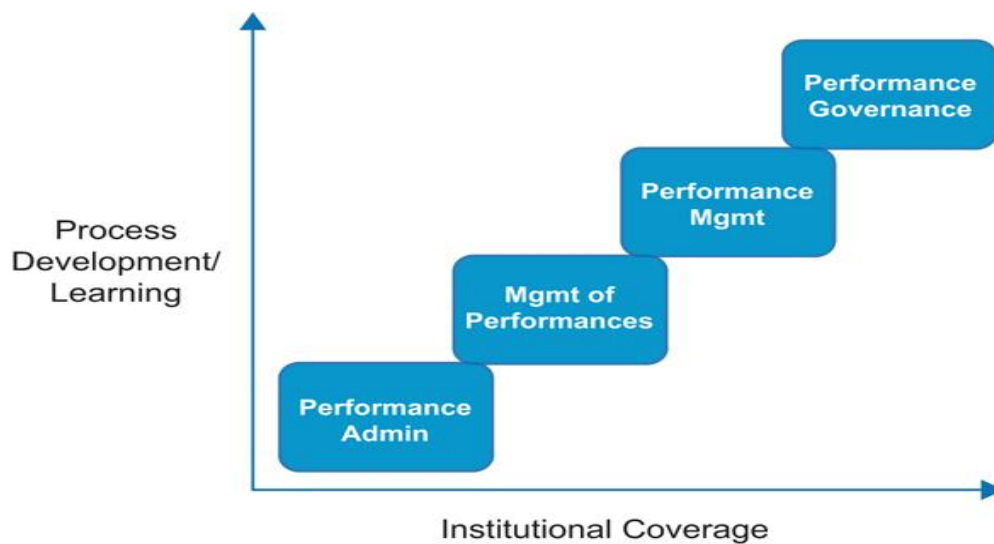
Figure 2.6: Public sector performance management ideal types (Source: Bouckaert & Halligan, 2008)

2.5 Levels of performance measurement of e-Government services

KRA as a National Revenue collection body in Kenya has seen different levels for measurement and evaluation of its e-Government services, key among them being: at corporate level, at Departmental level and at project level.
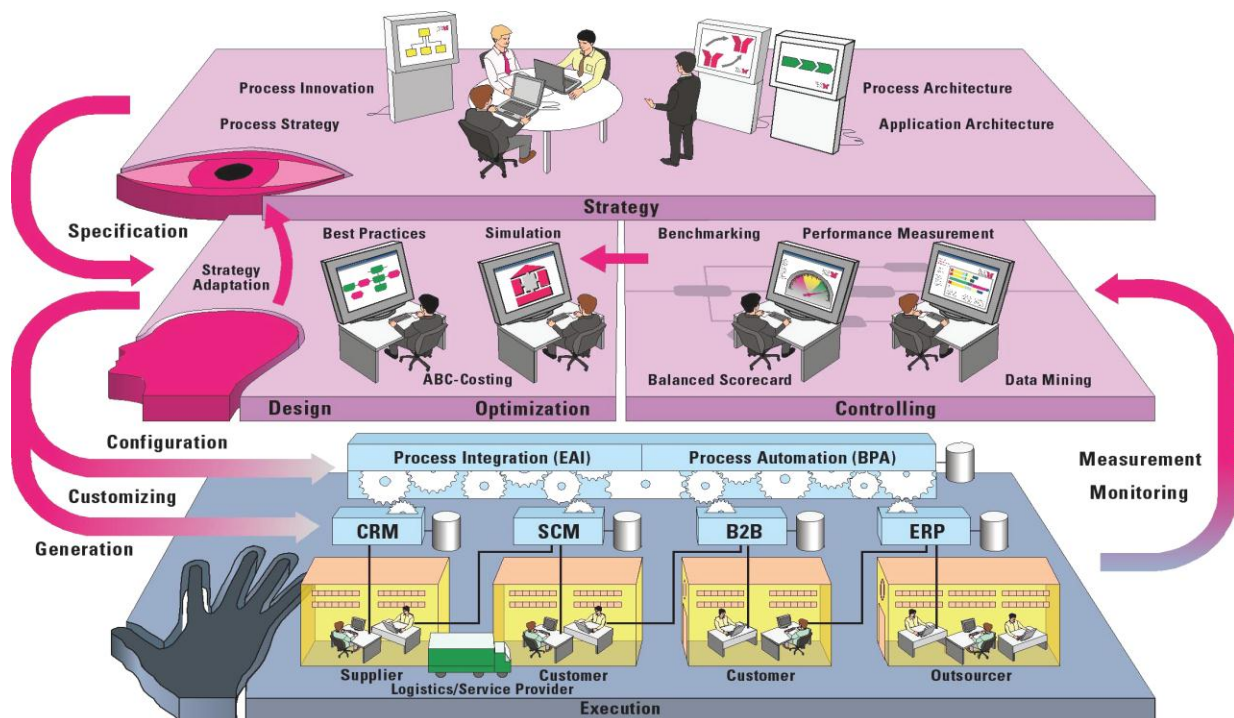
Figure 2.7: Levels of performance measurement of e-Gov services (source: Scheer, et. al., 2002; Seel, C. & Thomas, O., 2012)

2.6 Objectives of performance measurement of e-Government services

The development of ICTs had enabled e-Government to continue playing important role in administration and public service. Developing e-Government had become the important means to enhance government management, service competence and civil satisfaction. Government performance management development could not break away from this environment either. E-Government performance evaluation needed more attention in order to provide effective data for further improvement and institutional change. The findings prove that BSC model provided a new perspective of evaluating China's e-Government performance. The BSC could not only reflect the output and outcome, but also influenced policy making. Therefore, an integrated performance evaluation system would be the first step for better future of e-Government and a better government (Ying, 2010).

To understand the impact of business cases on IT investment decisions, an analysis was made on municipal e-Government projects. A theoretical model subjected to empirical validation through content analysis of IT business cases developed for municipal e-Government projects was constructed. This was to postulate the impact of IT business case elements on the initial cost estimates of technological investments. The findings indicated that more initial costs were identified in technological investments, hence informed investment decisions would aid in conserving resources for the organization (Berghout & Tan, 2013).

2.7 Tools and methodologies used to evaluate e-Government services

The DeLone and McLean Information Systems Success Model (DMSM) had a basic model consisting of six categories of IS success: Systems quality, Information quality, Use, User satisfaction, Individual impact and Organizational impact. One operationalization of the DMSM was the SERVQUAL instrument, which had been shown to be a functional tool for measuring service quality in IS. SERVQUAL is limited to service quality ((DeLone & McLean, 2003)

Evaluation and optimization of e-Government services is imperative for governments. The capacity of e-Government services to transform public administrations assisted the interactions of governments with citizens, businesses and other government agencies. A study applied an understanding of citizen-centric e-Government evaluation and unified existing key performance indicators (KPIs). A reference process model of a novel evaluation approach was developed, which used the unified KPIs to facilitate the creation of a know-how repository. In the findings, a reference process model was constructed based on the empirical research and was expected to accelerate the citizen-oriented evaluation of e-Government and promote impact-oriented indicators (Tsohou et al., 2013).

Electronic Commerce as a social and business networking medium had impelled governments towards enabling e-Government programs to transform the future of the delivery of public services. Evaluating the impact of e-Government entailed a complex process of performance assessment which took into account the perspective of citizens. This process was supported by a framework with two theoretical views: the structurationist's view of technology and the social shaping of technology. The result was an empirical study based on an in-depth analysis of interviews with relevant social groups regarding their perceptions of the technological artifacts of e-Government (Barbosa et al., 2013).

There was pressure on governments around the world to serve citizens and businesses electronically. This was caused by factors such as globalization, the increased usage of the Internet by citizens and Knowledge management approach to citizen relationship management in e-Government context. The pressure has led to adopting policies that would reduce bureaucracy and be agile to changes in structure. Governments are pressured to have a single view of citizens through Citizen Relationship Management. Based on this, a

conceptual framework was built on prior literature in knowledge management. The framework constituted knowledge characteristics, knowledge management strategy, knowledge management processes and knowledge management technological infrastructure in managing citizen relationship (Norshidah et al., 2013).

An empirical investigation on the framework of e-Government services capability indicated that enhancement of the effectiveness and efficiency of e-Government services was critical. This ensured the increasing public demands for services were met, by improving the government's services capability. A study employed capability management perspectives to develop theoretical linkages and path relationships among the components of framework. Comprehensive validation was further conducted through path analysis using structural equation modeling methods based on the data collected from provinces in Mainland China. The results provided government policy makers and information technology managers' insight into enhancing the framework through the improvement of the components' performance (Guangwei et al., 2014).

The ISO/IEC 38500 standard depicted that IT governance frameworks contributed to the implementation of the key principles of the good corporate governance, particularly, in the public sector. A study was done involving links matching the proposals of good governance principles with the behavioral goals of an IT governance framework implementation. The results confirmed that an IT governance framework in a public entity mutually reinforced the key principles of good governance, especially the transparency and accountability goals for the IT assets (Juiz et al., 2014).

A study introduced an e-Government evaluation model based on neural network. Computational experiments were performed on randomly generated instances. The index system used considered factors, such as capital investment, website construction and application effect. The experiments showed that the proposed model could be applied to solve large number of evaluation objects and proved to be superior with other similar models (Hengyi et al., 2013).

The effectiveness and efficiency of e-Government services are critical issues. Such issues have to be stimulated by successful practices in the areas of service quality, capability-based theories, and IT-related capability management. A framework was examined from

dimensions of content service capability, service delivery capability, and on-demand capability, using data derived from local governments. A structural analysis illustrated that the practical management applications of the framework could facilitate the improvement of e-Government services (Hu, 2013).

The use of IT in public sector had become necessary for sustaining and extending public service delivery. A journal on Critical Success Framework for implementing effective IT Governance in Tanzanian Public Sector Organizations outlined that over-relying on IT had given rise to focus on effective IT governance. The research focused on organizational case study, in developing a CSFs framework based on design science research, with guidelines for implementing effective IT governance. The findings proved that success factors would increase the contribution of IT towards achieving organization objectives (Nfuka & Rusu, 2013).

2.8 Challenges to evaluation of the e-Government services

Success and failure of e-Government depend on the size of gap that exists between actual outcomes and the initial targets set for any e-Government project. Jordan was developing strategies in order to bridge this gap in order to enhance the services of e-Government by investigating the application of quality approaches on the impact e-Government. The study explored e-services programme embraced by public sector organizations. The aim was to serve several customer sectors; citizens, businesses, and the government. The investigation evaluated quality of e-service standards including the acceptance criteria of Websites' usability as a factor for customer satisfaction. This study identified areas of customer satisfaction levels that could be enhanced for improving quality e-services delivery (Venkatraman & Alazab, 2014)

2.9 Balanced Scorecard

The Balanced Scorecard is a strategic planning and management system. It is used to align business activities to the vision and strategy of the organization, improve internal and external communication and monitor organizational performance against strategic goals. It is a performance measurement tool that considers not only financial measures but also customer satisfaction, business process and learning measures. The BSC had been adopted as a valuable tool by thousands of organizations throughout the world due to providing a means to have a more complete picture of the organization. Some reports estimated that 40 percent of

the Fortune top 1,000 companies would, by the end of 2007, had used some form of the BSC (Thompson & Mathys, 2013).

With growing interest in improving performance management in organizations, the Balanced Scorecard could be a valuable tool that met the need for improvement and change especially for companies venturing into very competitive or monopolistic market. It was a customer based planning and process improvement system with its primary focus on driving an organization`s change process by identifying and evaluating pertinent performance measures. It was an integral part of the mission identification, strategy formulation and process execution, with an emphasis on translating strategy into a linked set of financial and non-financial measures (Chan, 2004).

Performance measurement systems created value when carefully matched with the firm`s unique competitive strategy and operational goals. Developing such a system needed a clear understanding of a firm`s competitive strategy, operational goals, a definitive statement of the employee competencies and behavior required to achieve the firm`s objectives. Measures that were organizationally significant and drove business performance could be relevant to the objectives and accountabilities of the individuals concerned. Effective performance was measured not merely by delivery of results in one area but by delivering satisfactory performance across all measures. An essential aspect of the BSC was the articulation of linkage between performance measures and strategy objectives. Once linkage was understood, strategic objectives could be further translated into actionable measures to help organizations improve performance (Banker et al., 2004).

2.7.1   The Four Perspectives of BSC

The Balanced Scorecard has emerged as a decision support tool at the strategic management level. This tool is a comprehensive framework which considers the following perspectives and tries to get answers to the following questions: Financial Perspective - How do we look at shareholders? Customer Perspective - How should we appear to our customers? Internal Business Processes Perspective - What must we excel at? Learning and Growth Perspective - Can we continue to improve and create value? The BSC tool has considered not only the financial results to be important, but also those factors which actually drive an organization towards future successes as mentioned earlier.

The framework tries to bring a balance and linkage between the Financial and the Non-Financial indicators, Tangible and the Intangible measures, Internal and the External aspects and Leading and the Lagging indicators.
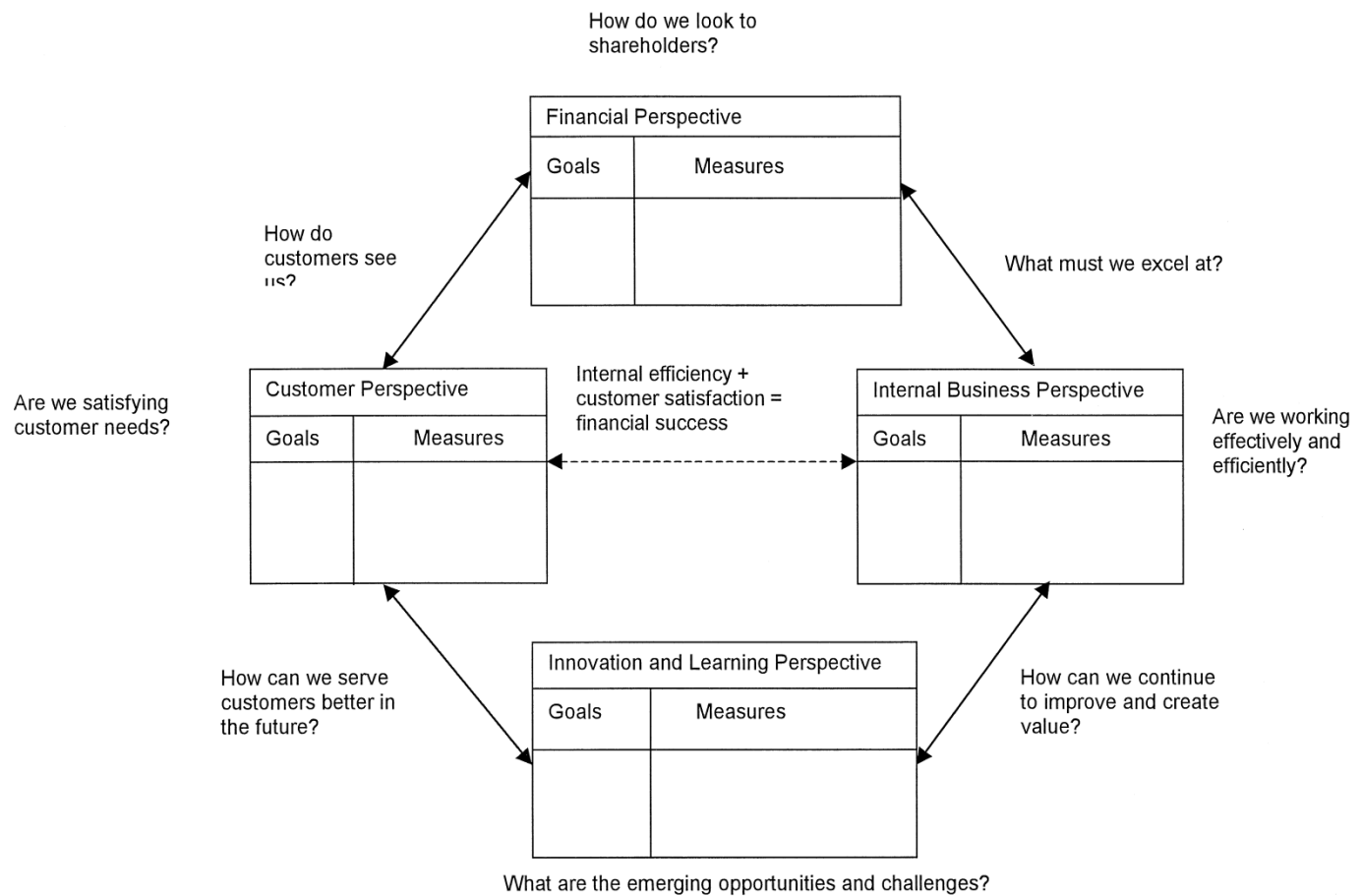
Figure 2.8: Relationships between the four perspectives in the Balanced scorecard (Kaplan & Norton, 2008)

The BSC helps managers evaluate IT investments and performance of an IS organization, in a holistic manner. This research builds upon this suggestion by elaborating a framework for evaluating IT based on the BSC concept. The research also explores on how the BSC can serve as a decision support tool for e-Government services stakeholders, how it may be applied to assess the contribution of specific e-Government projects, and also to evaluate the performance and guide the activities of functional areas within the e-Government services setup. (Lawson, Mukankusi & Miller, 2008)

2.7.2: Cause and Effect Relationship of the BSC

The four perspectives are highly interlinked. There is a logical connection between them: If an organization focuses on the learning and the growth aspect, it is definitely going to lead to

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better business processes. This in turn would be followed by increased customer value by producing better products which ultimately gives rise to improved financial performance (Sinha, 2006).
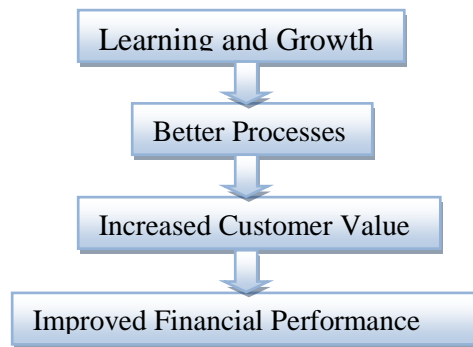
Figure 2.9: Cause and Effect relationships among the four perspectives (Sinha, 2006)

2.8: IS - BSC as a tool for Performance Measurement

IS-BSC methodology was selected because it ensures the appropriate logical model that translates the strategy into operational terms. It also provides the appropriate interface for different types of users: from the highest strategic level to the very operational level in every single administration included in the process. The successful functioning of e-Government is possible only through mutual collaboration of administration, citizens and businesses on all stages of its realization – from definition of vision and priorities to conceptualization and implementation of particular services. It is recognized that an IS-BSC-based framework can make the e-Government implementation process transparent and can provide detailed information for efficient participation of citizens and businesses in the e-Government by publishing the key indicators on the web (Gueorguiev, 2005).
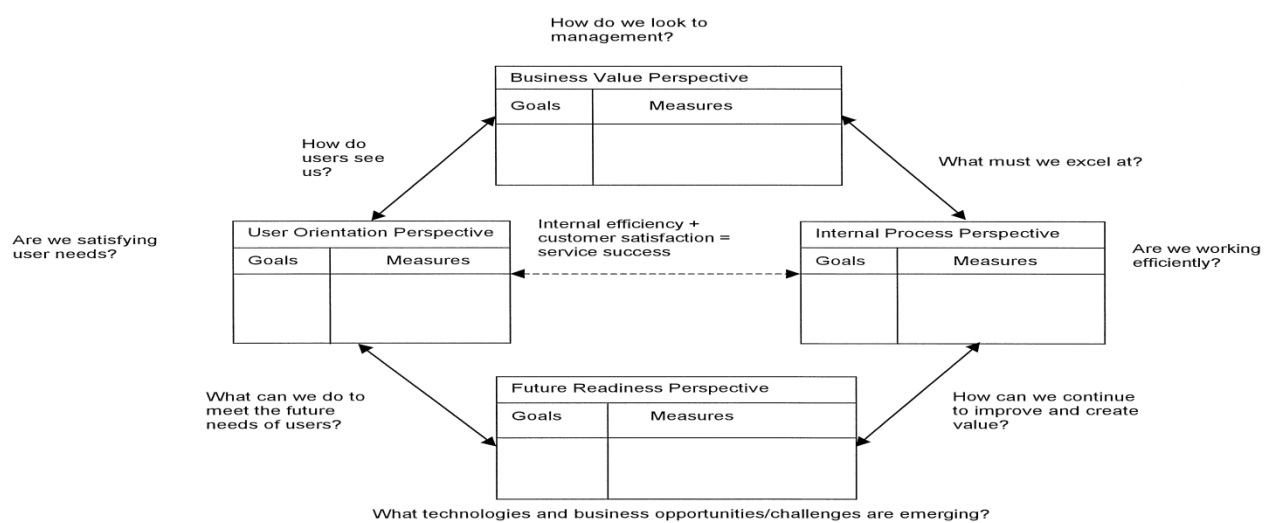
Figure 2.10: Relationships between the four perspectives in the IS-BSC (Kaplan & Norton, 2008)
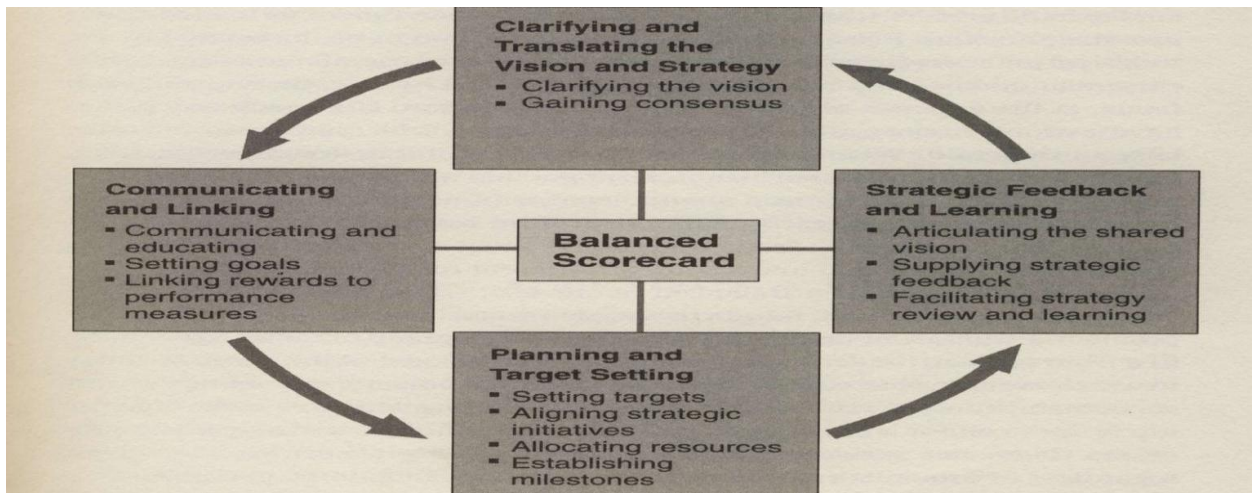
Figure 2.11: The IS-BSC as a Strategic Framework for Action (Kaplan & Norton, 2008)

2.8.1: Business Value perspective of the IS- BSC

This perspective describes the tangible outcomes of the strategy in traditional financial terms, such as return on investment (ROI), shareholder value, profitability, revenue growth, and lower unit costs.

2.8.2: User Orientation perspective of the IS- BSC

This perspective defines the drivers of revenue growth. It includes generic customer outcomes, such as satisfaction, acquisition, retention, and growth, as well as the differentiating value proposition the organization intends to offer to generate sales and loyalty from targeted customers. This perspective has four categories of criteria: Performance issues, decision quality, personal impact and organizational impact.

2.8.3: Internal Processes perspective of the IS- BSC

This perspective identifies the operating, customer management, innovation, regulatory and social process objectives for creating and delivering the customer value proposition and improving the quality and productivity of operating processes.

2.8.4: Future Readiness perspective of the IS- BSC

This perspective identifies the intangible assets that are most important to the strategy. The objectives in this perspective identify which jobs (the human capital), which systems (the information capital), and what kind of climate (the organization capital) are required to support the value creating internal processes.

A private university in Indonesia applied the IT Balanced Scorecard framework into the performance of the higher education information system. The framework consisted of four perspectives: Corporate Contribution, User Orientation, Operational Excellence, and Future Orientation. Questionnaires and structured interviews were addressed to members of the faculties and staff of the university. The data obtained was statistically analyzed to test for reliability and validity. The findings affirmed the positive effects of BSC into the performance of higher education (Afriliana & Gaol, 2013).

The performance evaluation of e-Government services using balanced scorecard, emphasized on a balance between quantitative and qualitative measures. The use of Balanced Scorecard to evaluate and estimate the performance of information and communication technologies in delivering valuable e-government services was via the internet. Hypotheses of e-Government effectiveness using Balanced Scorecard technique were tested by incorporating qualitative measures within a quantitative research methodology. Data was collected by means of a survey questionnaire. The survey revolved around stakeholders such as customers, employees of e-government, and employees from the IT sector. The hypothesis was tested in measuring e-Government effectiveness from Balanced Scorecard's four dimensions: customer perspective, financial perspective, internal business process perspective, and innovation and learning perspective. The results showed that the Balanced Scorecard factors would fit well with monitoring and measuring the performance of e-government in Jordan, and also in evaluating the success in IT project investments. The findings would benefit future studies in applying Balanced Scorecard for performance evaluation of various IT projects that gain huge investments from governments and organizations (Salah, et al., 2013).

The Balanced scorecard was used to manage the current situation and future improvement for IT governance and controls in a developing country, Thailand. A global IT governance perspective was drawn from the literature review and a performance analysis applied to the metrics of IT governance balanced scorecard with collected survey data from IT executives. The study specified the critical points and directions of IT governance for Thai universities. The analysis covered global and regional viewpoints. The results were a method for applying IT governance balanced scorecard metrics and importance-performance analysis to contribute IT governance strategy (Jairak & Praneetpolgrang, 2013).

A Balanced Scorecard approach was developed to measuring a set of criteria from four different points of view. These points of views were business value, user orientation, internal process and future readiness (Martinsons et al., 1999). Each perspective contained a set of criteria. For example the future readiness perspective contain criteria like age distribution of IS staff, and expertise with specific emerging technologies (Palmius, 2007).

2.9 Conceptual Framework

User orientation perspective
- Establish a good image and reputation with end-users
- Exploit IT opportunities
- Establish good relationships with the user community
- Control IS costs
- Satisfy end-user requirements
- Be perceived as the preferred supplier of IS services

Business value perspective
- Establish a good image & reputation with management
- Ensure that IS projects provide business value
- Control IS costs
- Sell appropriate IS services to third parties

Internal processes perspective
- Anticipate requests from end-users and management
- Be efficient in planning and developing IT applications
- Be efficient in operating and maintaining IT apps
- Be efficient in acquiring and testing new h/w and s/w
- Provide cost-effective training that satisfies end-users
- Effectively manage IS-related problems that arise

Future readiness perspective
- Anticipate and prepare for IS-related problems that could arise
- Continuously upgrade IS skills through training & devp
- Regularly upgrade IT applications portfolio
- Regularly upgrade hardware and software
- Conduct cost-effective research into emerging technologies and their suitability for the business

E- GOVERNMENT SERVICES AT KRA

(Goals)

- Corporate Level
- Department Level
- Project Level

E- GOVERNMENT SERVICE PERFORMANCE MEASUREMENT

(Metrics)

- End-users' view
- Management's view
- Operations-based view
- Innovation & learning view

Independent Variables　　　**Moderating Variables**　　　**Dependent Variables**

Figure 2.12: Conceptual framework

3.0 RESEARCH METHODOLOGY

This section covers the methodology in the choice of research model and design, target population; it also outlines the tool and procedure that was followed in data collection procedure. The data analysis and presentation of the study findings are described.

3.1: Research Model and Hypotheses

In the research model shown in Figure 3.1, the dependent variable was drawn from e-Government service performance. The independent variables were drawn from the website-supported four interrelated Balanced Scorecard perspectives. Because these four interrelated perspectives are supported by the KRA e-Government services on a G2C basis in order to serve citizen, they have been adapted as follows: website-supported future readiness perspective (this perspective is based upon performance indicators of how the KRA website is used to innovate and learn); website-supported internal process perspective (this perspective demonstrates how the KRA website is used to identify performance indicators via their internal capabilities); website-supported user orientation perspective (this perspective shows how the KRA website is used to identify outcome measures of their works in order to create value for current and future citizen); and website-supported business value perspective (this perspective indicates how the KRA website is used to take into account outcome measures of their past performance.)
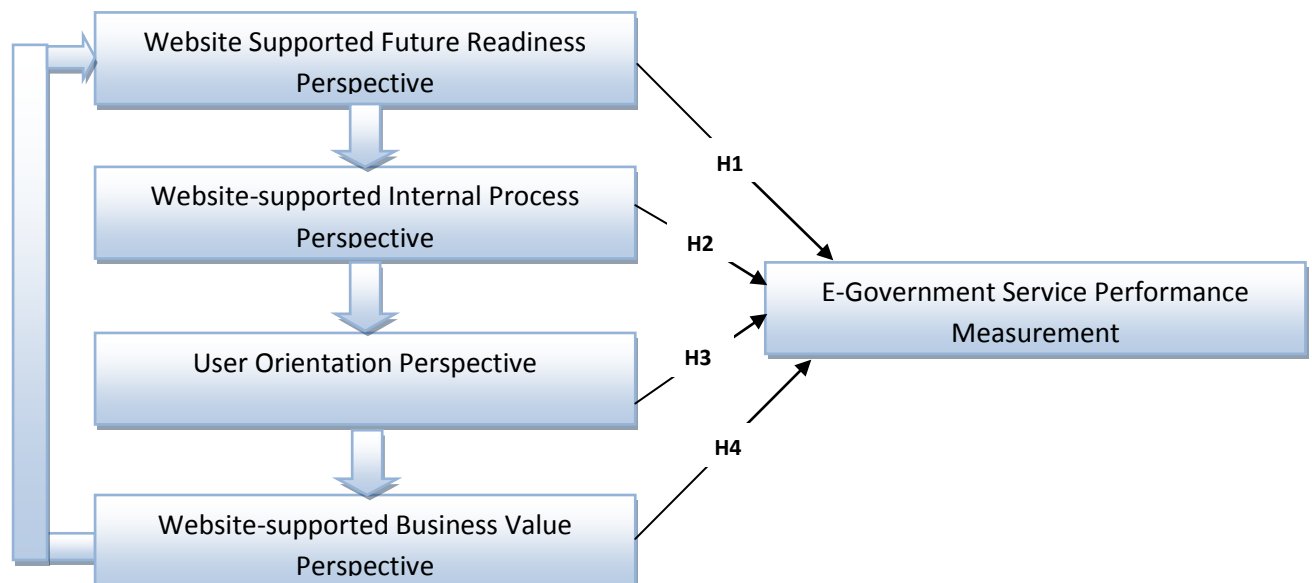
Figure 3.1: Research Model (Adapted from the Balanced Scorecard Framework of Huang and Hu, 2004)

This research model enabled the researcher to test the following hypotheses:

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Hypothesis 1: The website-supported future readiness perspective will have a positive effect on e-Government service delivery performance at KRA.

Hypothesis 2: The website-supported internal process perspective will have a positive effect on e-Government service delivery performance at KRA.

Hypothesis 3: The website-supported user orientation perspective will have a positive effect on e-Government service delivery performance at KRA.

Hypothesis 4: The website-supported business value perspective will have a positive effect on e-Government service delivery performance at KRA.

3.2 Research Design

The study used an organizational case study design. The research was meant to uncover the possible performance measurement levels and objectives being experienced on e-Government services at KRA. Therefore the researcher had to explore the tools used and challenges experienced in measuring performance of e-Government services. Further, the study also tested if an IS Balanced scorecard would be the foundation for a strategic management of e-Government services in KRA, provided that certain development guidelines were be followed, appropriate metrics identified, and key implementation obstacles overcome (Shaughnessy, Zechmeister & Jeanne, 2011).

This study also tested the hypotheses of e-Government effectiveness using IS Balanced scorecard technique by incorporating qualitative measures within a quantitative research methodology with data collected by means of a questionnaire. The questionnaire sampled stakeholders including executive and technical employees of e-Government, within the ICT department of KRA. The data was analyzed to test the hypothesis in measuring e-Government effectiveness from IS-Balanced Scorecard's four dimensions: User Orientation perspective, Business value perspective, Internal process perspective and Future readiness perspective.

3.3 Target Population

The first category of the respondents was the Deputy Commissioner of IT Services, being the top officer dealing directly with e-Governance infrastructure and architecture at KRA. Other respondents of this study were drawn from the ICT department executive, officers and technical staff. At the ICT departmental level, the data collected gave the inside Government-to- Government and Government-to-Employees Communication.

The study aimed at establishing whether KRA would adopt the IS-BSC Concept that would successfully lead to performance measurement of e-Government services in its quest to provide service to the stakeholders effectively and at lower cost.

3.4: Sampling Technique

The judgment sampling method proved to be effective because only limited number of people served as primary data sources. Advantages of this technique included low cost and less time needed to select perspective sampling group members compared to many other alternative methods. The sampling approach adopted for this study was aligned with purposeful sampling, based on the fact that literature reviewing had been done. Respondents were chosen based on their direct involvement in e-Government initiatives at KRA. The respondents of the study were randomly sampled from the target population of study by purposeful or judgmental sampling method due to the nature of the study which was descriptive in nature. Judgment sampling is a non-probability sampling method and it occurs when "elements selected for the sample are chosen by the judgment of the researcher. Researchers often believe that they can obtain a representative sample by using a sound judgment, which will result in saving time and money" (Black, 2010).

A sample of 30% of the population from the ICT department was selected. Where time and resources allow, a researcher should take as big a sample as possible, since this would ensure reliability of the results. A representative sample is 10% to 30% of the population. (Mugenda & Mugenda, 2003).

The researcher used the following formula to determine the minimum sample size:

$$n = \frac{Z\alpha^2\, p(1-p)}{d^2}$$, (Kothari, 2006)

Where,

Zα is the standard normal deviate at the required confidence level

n is the sample size

d is the level of statistical significance set

p is the proportion in the target population estimated to have characteristics being measured

Zα represents that value, such that the probability of a standard normal variable exceeding it is (1- α)/2. This value for a chosen α level can be obtained from the table, hence giving Z value for the standard normal distribution.

Using a confidence level of 95%, the Zα is 1.96. Since, there is no estimate available of the proportion in the target population; the 30% was used (Mugenda & Mugenda, 2003).

i.e. p=50%, d=0.05% since we desire accuracy at 0.03 level

then, the sample size, $n = \dfrac{1.96^2 \times 0.5(1-0.5)}{0.05^2}$

$n = 384$

From the above formula, the sample size to be used must be at least 384. However, since larger sample sizes give more reliable results, the researcher targeted to have 50 valid responses. To achieve this, the researcher picked a sample size of 100.

The sample was drawn from officers in charge of the ICT division who were purposively selected. The positions held within the ICT section were diverse therefore the properties of emergent concepts could be established (Matavire et al., 2010). The selected population was issued with questionnaires to gather the needed information. The questions were based on the IS-BSC tool for performance measurement. The findings from the study were mapped to the IS-BSC towards measuring the performance of e-Government services at KRA.

3.5 Data Collection Method

The study gathered primary and secondary data which were quantitative and qualitative in nature. Primary data was collected from respondents using questionnaires. The questionnaire consisted of structured questions that involved closed forms of questions. The questionnaires were dropped and picked by the researcher as a method of distributing them. The questionnaires were supervised by the researcher to verify that they were completely filled for data analysis. Secondary data, on the other hand, was gathered from records existing in the archives of the ICT department of KRA. These included documents such as on Revenue Administration Reforms in Kenya: Experience and Lessons, which gave light on previous frameworks adopted for performance measurement at KRA. Another was the Corporate Strategic Management plan 2011/2012 – 2014/2015.

The KRA iTax portal was also quite informative to the project. Data collection took place in October 2014. The researcher targeted a sample of 50 respondents who were members of staff, both executive and technical, employed to work in the ICT Department of KRA. Out of the 50 respondents, 48 filled and returned the questionnaires. This represented a 96.00%

response rate. Any response of 50% and above is adequate for analysis thus 96.00% was even better.

3.6 Data Analysis

The data from the study was analyzed using both qualitative and quantitative techniques. Quantitative data was analyzed using SPSS (Statistical Package for Social Sciences). Descriptive statistics such as percentages and frequencies were used to analyze the data. The findings were presented using tables and charts (Morse 2007). Primary data collected were coded and analyzed using SPSS, to determine descriptive statistics by way of percentages and frequency distributions. The analysis used descriptive statistics such as mean scores and standard deviations. The results were presented using tables, graphs, histograms and pie charts for ease of understanding.

A global IT governance perspective was drawn from the literature review and a performance analysis applied to the metrics of IT governance Balanced scorecard with collected data from IT executives and staff. The data obtained was statistically analyzed to test for reliability and validity. The data collected was analyzed by use of content analysis due to the fact that the data was qualitative in nature. Content analysis is a technique for making inferences by systematically and objectively identifying specified characteristics of messages and using the same to relate trends.

4.0 RESULTS AND DISCUSSION

This chapter presents the findings of the study and their interpretation. The results were presented using tables, graphs and pie charts for ease of understanding. Data collected from the study was analyzed using SPSS version 20. The analysis was categorized into four sections in line with the objectives. Participants were instructed to agree or disagree with each of these statements based on a five-point Likert-scale) where 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly agree).

4.1 Reliability

Reliability is an assessment of the degree of consistency between multiple measurements of a variable. It demonstrates to which extent the operations of a study, such as data collection procedures can be repeated with similar results. A measure is said to be reliable if a person's score on the same test given twice is similar. Reliability Analysis on the questionnaires using data collected form the study was performed using Chronbach's alpha. The results were presented in Table 4-1. From the table, the reliability analysis gave an alpha coefficient of 0.871, which exceeds 0.7, which is the lower limit of the acceptable reliability coefficient, thereby demonstrating reliability.

Table 4-1: Chronbach's alpha on data collected

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.826	.871	11

4.2 Factor Analysis

Factor Analysis is a statistical approach used to analyze the interrelationships among a large number of variables and to explain these variables in terms of their common underlying dimensions. Principal Components Analysis (PCA) method provides a unique solution so that the original data can be reconstructed from the results. It looks at the total variance among the variables, although it is unlikely that they will all meet the criteria for retention. In this research, PCA with verimax rotation was conducted using SPSS for windows version 20. The Kaiser Meyer-Olkin (KMO) is a measure of sampling adequacy. It varies between 0 and 1. A value of 0 indicates that the sum of partial correlations is large relative to the sum partial correlations, indicating diffusion in the pattern of correlations, thereby Factor Analysis is inappropriate. A value of close to 1 indicates that patterns of correlations are relatively

compact, hence distinct and reliable Factor Analysis. Values between 0.5-0.7 are mediocre, between 0.7-0.8 are good, between 0.8-0.9 are great, and values above 0.9 are superb.

The Four perspectives of the IS-BSC were subjected to PCA using SPSS version 20. An inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and above. The Kaiser Meyer-Olkin (KMO) value was 0.767, which is good. These values indicated that Factor Analysis could be used to validate the test items under the respective constructs.

Table 4-2: KMO Test on data collected

Component Transformation Matrix

Component	1	2	3
1	.593	.593	.544
2	-.762	.631	.143
3	-.258	-.499	.827

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.
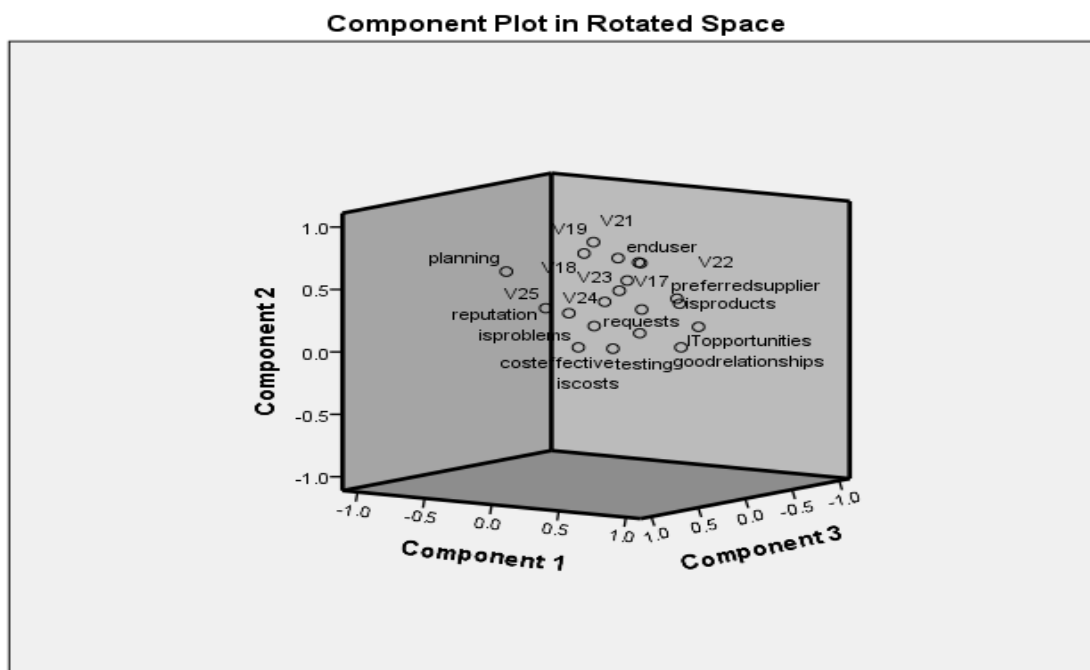
Figure 4.1: component plot in rotated space

The Eigenvalues associated with each of the four perspectives of the IS-BSC were presented in table 4-3. Before extraction, SPSS identified 20 components within the data set. Component 1 explains 66.642% of total variance. The column labeled, Extraction Sums of Squared Loadings has all factors with eigenvalues greater than 1 considered, leaving us with three factors. The eigenvalues associated with these values are again displayed.

These values are the same as those before extraction, except that the values for the discarded factors are ignored, hence the table is blank after the third factor. The last column labeled, Rotation Sums of Squared Loadings, has eigenvalues of the factors after rotation displayed on corresponding columns.

Table 4-3: Total Variance Explained on data collected

Total Variance Explained

Compo nent	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulativ e %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulativ e %
1	13.328	66.642	66.642	13.328	66.642	66.642	5.898	29.490	29.490
2	1.926	9.629	76.272	1.926	9.629	76.272	5.787	28.937	58.427
3	1.306	6.530	82.802	1.306	6.530	82.802	4.875	24.375	82.802
4	.968	4.838	87.640						
5	.721	3.607	91.247						
6	.613	3.066	94.314						
7	.367	1.836	96.149						
8	.221	1.106	97.255						
9	.177	.885	98.140						
10	.118	.592	98.733						
11	.108	.542	99.274						
12	.055	.274	99.549						
13	.049	.247	99.796						
14	.028	.140	99.937						
15	.012	.060	99.997						
16	.001	.003	100.000						
17	7.572E-016	3.786E-015	100.000						
18	3.151E-016	1.576E-015	100.000						
19	-2.659E-016	-1.330E-015	100.000						
20	-7.676E-016	-3.838E-015	100.000						
Extraction Method: Principal Component Analysis.									

The scree plot was used to assist to refine the test items. The number of components was determined from the shape of the scree plot. An inspection of the scree plot revealed a clear break after the third component; hence it was decided to retain three components for further investigation. Verimax rotation was performed to aid in interpretation of the components. The rotated solution presented in table 4-4 revealed all showing a number of strong loadings, and all variables loading significantly on one component. Most of the variables under the same

constructs loaded on a common component indicating that the test items had a high correlation which was important for variables under a common construct
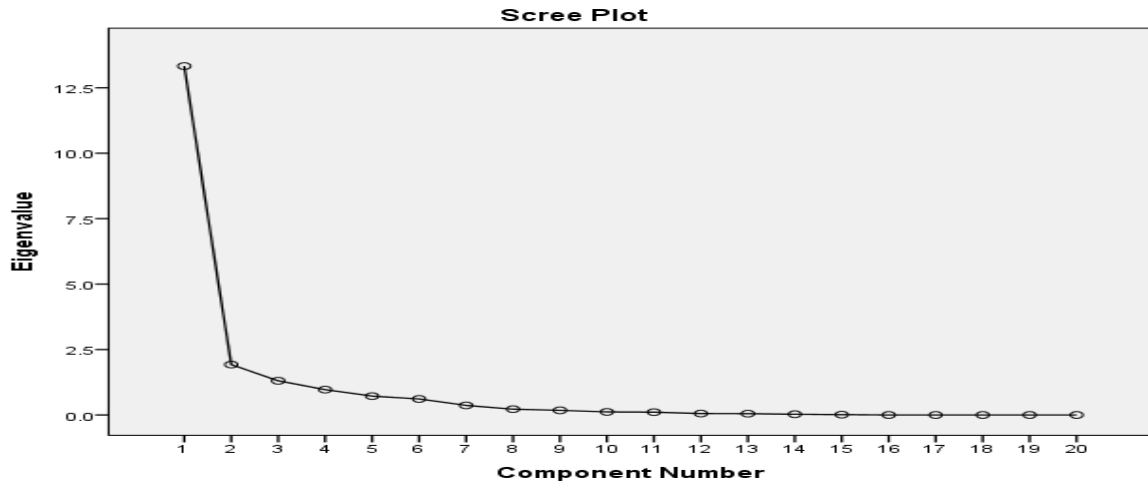
Fig. 4.2: Scree Plot for Determining the Number of Factors

Table 4-4: Rotated Component Matrix

Rotated Component Matrix[a]

	Component		
	1	2	3
Good image and reputation by end users	.871		
Exploit IT opportunities	.865		.332
IS projects provide business value	.795	.454	
Satisfy end user requirements	.744	.483	
Influence requests from end users	.718		.561
Control IS costs	.685	.432	.493
Manage IS related problems that arise		.891	
Cost effective training		.825	.435
Anticipate IS related problems that could arise	.405	.794	.345
Upgrade IS skills through training and development	.474	.749	
Good relationship with end users	.484	.743	
Sell IS products to third party		.664	.634
Acquiring and testing new hardware and software	.315	.572	
Upgrade IT applications portfolio	.540	.572	.525
Cost-effective research		.442	.825
Good image and reputation with management	.375		.724
Operating and maintaining IT applications	.487	.311	.716
Planning and developing IT applications	.616		.700
Upgrade hardware and software	.494	.492	.614
Perceived as preferred supplier		.362	.566

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 16 iterations.

4.3 Descriptive Analysis
4.3.1 Designation
Table 4-5 showed the positions the respondents were holding at KRA. From the findings 27.1% of the respondents indicated that they were working as ICT senior managers, 25.0% were supervisors, and 41.7% were working as Technical officers, while 6.3% indicated that they were working in as hardware engineers within the ICT department.

Table 4-5: Designation

Designation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Assistant Manager	13	27.1	27.1	27.1
	Hardware Engineer	3	6.3	6.3	33.3
	officer	20	41.7	41.7	75.0
	Supervisor	12	25.0	25.0	100.0
	Total	48	100.0	100.0	

4.3.2   Department of Employment
The researcher requested the respondents to indicate their area of specialization at KRA. The study found that 100.00% of the respondents were employed in the ICT department. This would enable ease in co-ordination in implementation of efficient and effective performance measurement of e-Government services.

Table 4-6: Department of Employment

Department

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	IT	48	100.0	100.0	100.0

4.3.3   Roles of Personnel in Implementing Performance Measures
Table 4-7, showed that majority of personnel who engage in performance measurement at KRA got involved with Performance planning phase. This indicated the urgency of responding to the stated research objectives.

Table 4-7: Roles of personnel in implementing performance measures

Role

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	2.1	2.1	2.1
	None	8	16.7	16.7	18.8
	Others	15	31.3	31.3	50.0
	Performance Evaluation	4	8.3	8.3	58.3
	Performance Planning	14	29.2	29.2	87.5
	Performance Reporting	6	12.5	12.5	100.0
	Total	48	100.0	100.0	

4.3.4 Years of Employment

Respondents were also asked to state the length of time they had worked in KRA. From the findings, 43.8% had worked for over 6 years. This showed that majority of the respondents had worked for over 6 years, hence understood the e-Government system well.

Table 4-8: Working Duration

Working Duration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 -4 years	9	18.8	18.8	18.8
	4 - 6 years	15	31.3	31.3	50.0
	Less than 2 years	3	6.3	6.3	56.3
	over 6 years	21	43.8	43.8	100.0
	Total	48	100.0	100.0	

4.4 Inferential Analysis

4.4.1 Construct Correlation of e-Government Services at KRA

Respondents were presented with a list of e-Government initiatives at KRA's i-Tax portal. The mean values indicated that, the respondents were aware of the e-Government services available online via i-Tax portal. There was a significant correlation between the 11 test items under the construct of e-Government services. The mean values indicated that respondents agreed with the convenience offered by adopting e-Government services, hence there was need to measure and evaluate the performance of these services.

Table 4-9: e-Government services at KRA

Descriptive Statistics

	Mean	Std. Deviation	N
Taxpayer registration & PIN Application	1.81	1.331	48
File Tax Returns & Payments	1.65	.785	48
Tax Compliance Certificate	1.60	.984	48
Driver's Licence& Log Book search	1.83	.953	48
Import declaration(IDF) Application	1.54	.582	48
Manifest Lodgement	1.44	.580	48
PIN Checker	1.65	1.139	48
Goods declaration	1.54	.582	48
TCC Checker	1.94	1.390	48
WCO E-Learning	3.38	1.511	48
KRA FAQa	3.06	1.535	48

4.5   Levels of Measuring and Evaluating e-Government Services

KRA as a National Revenue collection body in Kenya had seen different levels for measurement and evaluation of its e-Government services, key among them being at the Corporate and Departmental levels.

4.5.1 Corporate Level

The finding was that KRA had defined a common approach to track progress of all components in the e-Government strategy. This monitoring and evaluation framework, applicable at all stages of strategy implementation, was envisaged to create an institutional mechanism for organization, formulation, activation, monitoring, reporting, controlling and disseminating results from monitoring and evaluation for all e-Government related projects.

4.5.2 Departmental Level

The evaluation of e-Government services would be done with respect to expected outcomes. KRA's e-Government strategy would have the outcomes derived from translating the departmental e-Government vision into measurable targets. Hence, it would be observed that there would be a need to measure the progress of e-Government at the departmental level. The e-Government strategy would begin with a vision statement with its elements translating into different customer-centric outcomes. For achieving these outcomes, there would need to be specific measurable targets/goals identified for each of the outcomes. To measure progress against these targets/goals, key indicators would need to be identified along with their measurement mechanisms.

4.5.3 Project Level

The researcher analyzed that, monitoring and evaluation mechanism operated at the project level of abstraction would be addressed by designing and incorporating project-specific indicators during evaluation.

4.6   Objectives of Performance Measurement of e-Government Services

A large majority of respondents to the questionnaires reported that e-Government goals and targets had been included in the KRA e-Government strategy and that some type of indicators had been developed to measure these objectives. This data could reflect the high priority placed on monitoring and evaluation activities in this organization.

However, the frameworks allowing actual implementation of measurement and evaluation e-Government services, presented a somewhat less clear picture. Only 25% respondents required monitoring and evaluation of e-Government projects. This indicated relatively less emphasis attributed to performance measurements initiatives at the organizational/departmental level. Disseminating the results of performance measurements could be of great value to e-Government decision makers, helping them plan, manage and improve e-Government performance. Only another 25% of respondents indicated that the results of their internal monitoring and evaluation were made available to interested parties. Table 4-10 summarized major objectives for e-Government identified in KRA through responses to the questionnaire.

Table 4-10: Objectives of performance measurement

At National Level
• **To establish** a real political administration.   • **To adopt a unified strategic plan common to all ministerial departments.**   • **To establish organizational structures with the co-operation of all ministerial departments.**   • **To e**nsure strategic target compliance.   • **To c**reate productive and healthy competition among government departments.   • **To a**lign government departments around standards and better practices.   • **To e**nsure transparency and accountability.   • **To r**ecognize the best achievers.   • **To m**easure effectiveness and to a certain extent efficiency.   • **To evaluate the contribution of e-G**overnment to achieving public sector reform objectives.   • **To m**onitor overall compliance of ini**tiatives with national strategy.**   • **To** allow for realignment of initiatives with overarching plan if necessary.   • **To e**nsure a whole-of-government approach to e-Government by strengthening the co-ordination of initiatives at the national level.
At Corporate Level
•   To reform the public sector.   •   To simplify administrative procedures   •   To ensure compliance with strategy.   •   To monitor overall progress against targets.   •   To ensure transparency, accountability and awareness.   •   To take corrective actions.
At Department/Project Level
• To ensure project status tracking.   • To ensure project deliverables.   • To ensure project timelines compliance.   • To assess and monitor costs, benefits, and risks of project implementation.   • To measure efficiency and effectiveness of implemented projects.   • To identify good practices and promote knowledge sharing among institutions.   • To provide data/information to decision makers.   • To justify investments and determine resource allocation for new projects.

4.6.1 National Level

The Kenyan e-Government services needed to implement a unified and centralized agency level performance measurement system.

4.6.2 Corporate Level

KRA needed a progress monitoring system and adopt its own measurement systems internally. The measurements should be conducted periodically depending on the indicator (e.g. monthly, quarterly, annually, etc.). The measurement results should be made available to e-Government stakeholders and related staff.

4.6.3 Departmental /Project level

The project-level measurement needed to be decentralized across various departments. The project-level results, as measured weekly or bi-weekly, needed to be made available to all the staff involved in e-Government services, including the Director.

4.7 Tools & Methodologies used to Evaluate e-Government Services

The study found that evaluation methods must be selected to match the resources available for evaluation, the magnitude of an initiative, and individual departmental circumstances. A range of evaluation methods and tools for e-Government were available to KRA. However, e-Government stakeholders had not developed significant strategies to use these methods especially more sophisticated user-engaging tools.

Table 4-11: Tools used to evaluate e-Government services

Tool	Use
a) Official statistics	The National Demographics Census
b) Ad-hoc surveys (e.g. on customer satisfaction)	Measurement of Customer Satisfaction Index.
c) Expert panels	Technical team as advisory for e-government.
d) Focus groups	Special groups have been formed within the e-government structure for various modules of implementation.
e) Cost and benefit analysis instruments and methodologies	
f) Benchmarking instruments	For evaluating various e-Government initiatives Periodic global benchmarking exercise envisaged as part of the e-government strategy.
g) Service quality standards	E-Government Strategy ensures service quality standards through the citizen charters incorporating the SLAs.
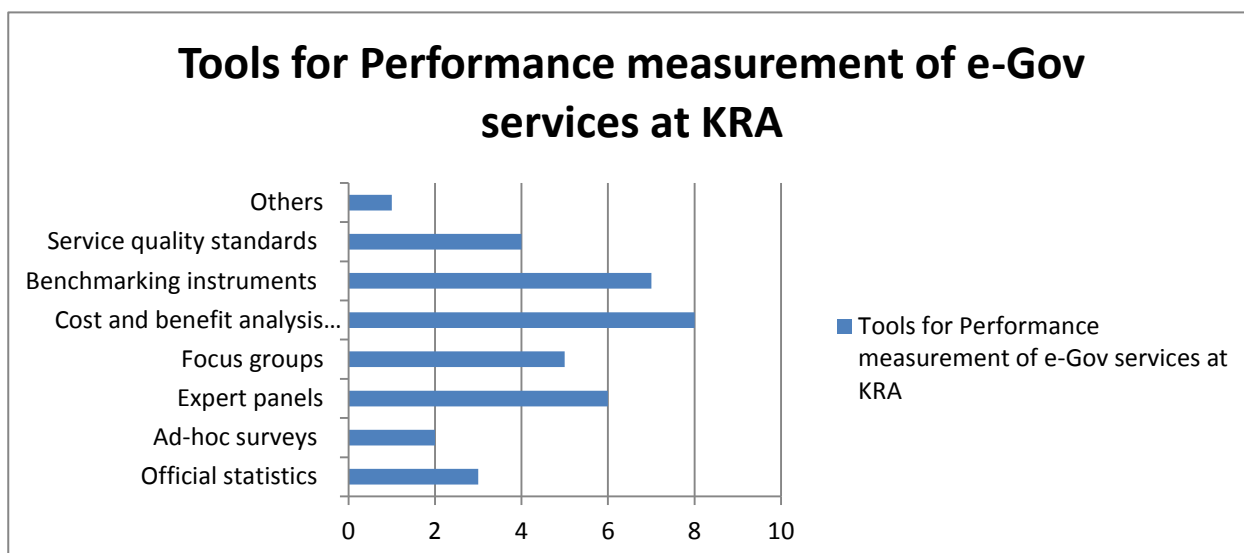
Figure 4.3: Tools for performance measurement

The questionnaire results showed that KRA have adopted Cost-Benefit Analysis as the most common tool for evaluation at 80%. This indicated that traditional methods were still in use which could not evaluate e-Government services comprehensively. Ad-hoc surveys and official statistics were the least common tools for e-Government evaluation at 20% and 30% respectively. These would be used for evaluating infrastructure capacities and the use of the Internet by target populations. A majority of respondents mentioned that they had used or were using benchmarking instruments; for example, to compare project results among departments based on established indicators. Periodic global benchmarking exercises were also carried out as part of the e-Government strategy. Half of respondents used service quality standards at 40%. KRA had identified two separate sets of quality standards applying to department Web sites, where standards were set in terms of usability, common look and feel, and content and on individual e-services accessed through these Web sites. Service level agreements (SLAs) were in place to ensure high quality standards for services to citizens and businesses.

Table 4-12: Methods used to evaluate e-Government services

Method	Description	Use
Transaction costs	Uses segmentation methods to calculate use and benefits to different user groups	Quick and easy way to estimate potential cost savings from the introduction of e-government
Net present value	A straightforward method that examines monetary values and measures tangible benefits	Relatively straightforward; use when cash flows are private and benefits tangible
Cost benefit analysis	A flexible method that measures tangible and intangible benefits and assesses these against net total cost	Good consideration of all benefits, but can be expensive and time consuming
Cost effectiveness	Focuses on achieving specific goals in relation to	Good for considering incremental

analysis	marginal costs	benefits against specific goals
Portfolio analysis	A complex method that quantifies aggregate risks relative to expected returns for a portfolio of initiatives	Good for consideration of risk, must use a consistent approach across a portfolio
Value assessment	A complex method that captures and measures benefits unaccounted for in traditional ROI calculations	Used by several governments to consider performance against all policy goals
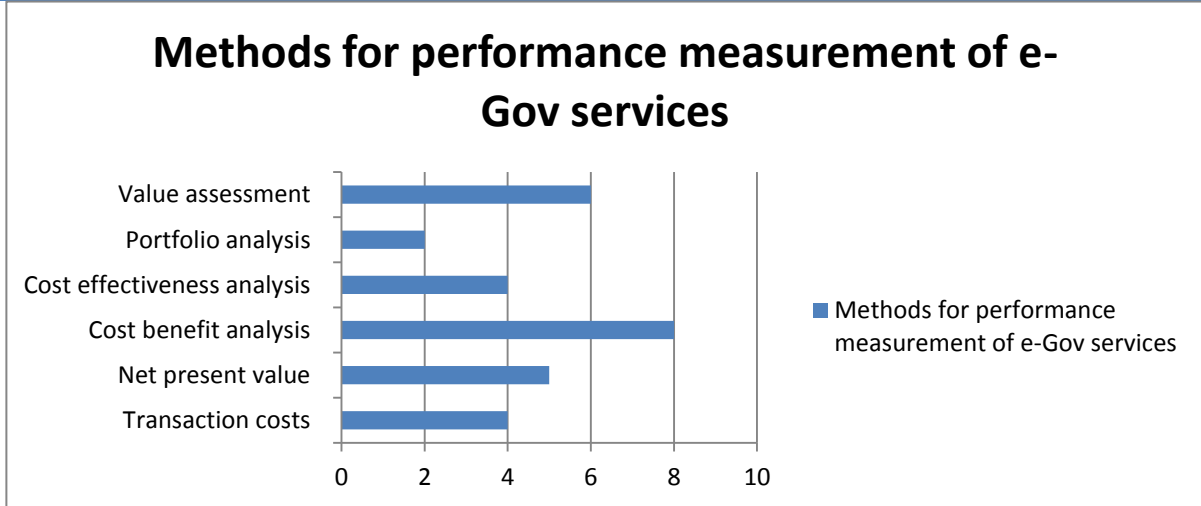
Figure 4.4: Methods for performance measurement

4.8   Challenges to Evaluation of the e-Government Services

The study found that monitoring and evaluation of government programmes was generally difficult, given the frequent lack of clarity of objectives owing to the different and often competing views held by different stakeholders. In addition, overlapping initiatives, policies and continuous fine-tuning of initiatives complicated the monitoring and evaluation efforts. The fact that e-Government was relatively new and that there were few advanced services meant fewer models and actual outcome experiences that could be used for benchmarking. These problems were magnified when attempting to monitor and evaluate e-Government programmes. ICT projects were hard to evaluate because of the pervasive nature of ICTs, the integration of ICT goals with policy goals and the organizational changes that necessarily accompanied e-Government initiatives. Effective evaluation required good metrics, regular monitoring and reporting, disciplined and professional use of robust evaluation frameworks and the use of long-term evaluation practices. These qualities depended on an organization's overall evaluation culture. Table 4-12 summarized some of the challenges to e-Government evaluation.

Challenges of e-Government evaluation at KRA
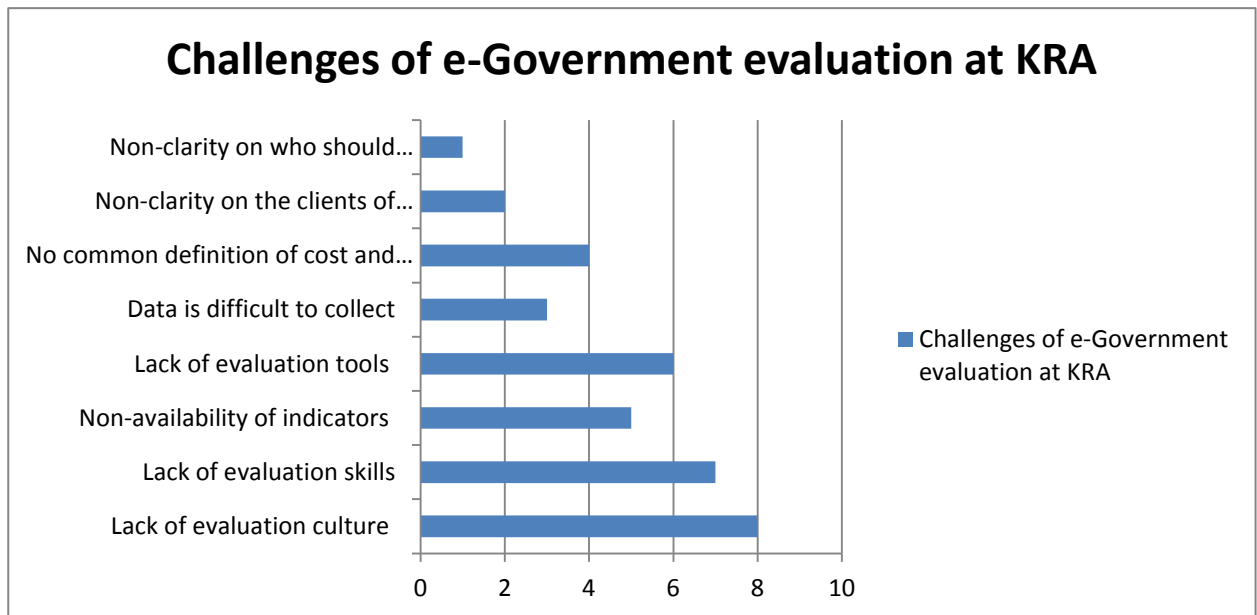
Figure 4.5: Challenges to evaluation of e-Government services (Source: Research data)

4.8.1 Lack of Evaluation Culture

A general lack of evaluation culture in government and disinclination to measure e-Government services seemed to pose a serious challenge to the diffusion of e-Government evaluation practice and represented the single most important obstacles to e-Government evaluation at KRA. Questionnaires indicated that the main challenge to e-Government evaluation activities was not lack of understanding of the reasons for and benefits of measuring e-Government, but a lack of widespread evaluation culture and experience in administrations. 80% of respondents provided a valid answer to the question concerning barriers to e-Government evaluation rated lack of evaluation culture as the first or second most important challenge to e-Government evaluation, while the relatively least importance was assigned to non-clarity of who should perform evaluation at 10% and non-clarity on the clients of evaluation at 20%.

The lack of e-Government evaluation culture could be partly explained by the relatively recent establishment of organizations to administer, manage, supervise and evaluate e-Government planning and implementation across the administration. In Kenya, e-Government initiatives were designed and implemented by individual e-Government programme units with very loose institutional links with other ministries and agencies. This could prevent development of a common culture and experience of implementation and evaluation across government.

4.8.2 Lack of Evaluation Skills

Respondents perceived the lack of specific evaluation skills as one of the most important challenges to e-Government evaluation. Specific training courses for managers and staff must focus on building evaluation skills, which would be diffused across administrative boundaries to establish and reinforce a proper evaluation and performance culture. KRA while redesigning or implementing its organizational framework supporting e-Government had increasingly realized the importance of setting up and activating mechanisms to monitor and evaluate e-Government progress.

4.8.3 Lack of Funds

Another hurdle could be the lack of funds specifically earmarked for evaluation activities. KRA was still focusing primarily on implementing e-Government infrastructure and services, devoting relatively less attention to measurement of outcomes. There might be a significant trade-off between implementation and evaluation, with KRA trying to balance the need to make tangible progress with the necessity of evaluating whether achievements are in line with budgets and objectives.

4.8.4 No Common Definition of Costs and Benefits

The lack of a clear definition of e-Government costs and benefits was rated at 40% as barrier to evaluation for KRA. Identification and measurement of the costs and benefits of e-Government was fundamental to developing business cases and justifying large investments. The lack of common understanding of costs and benefits of e-Government also impeded common measurement of progress and ability to benchmark and compare results across countries. KRA had produced a checklist of costs and benefits of e-Government that could be used to evaluate the economic case for e-Government projects.

4.8.5 Lack of Evaluation Tools

The survey results showed that the lack of evaluation tools was considered an important challenge by the majority of respondents to the questionnaire. However, when looking at the current use of frameworks, methods and tools to measure and evaluate e-government at KRA, the overall picture was more positive. Almost all respondents to this question stated that they would use at least one type of evaluation tool/method for project evaluation. The key issue was the lack of experience and familiarity in using evaluation methods and tools, rather than their limited availability.

4.9 Performance Indicators for E-Government services measurement

Based on the overall vision associated with the e-Government plan, the researcher worked out a list of indicators against which would measure the progress of e-Government initiatives at KRA. The performance indicators were identified as either quantitative or qualitative.

4.9.1 Construct Correlation on Quantitative Indicators for Performance Measurement

The mean values indicated that, the respondents strongly agreed that e-Government services were quite beneficial to all the e-Government stakeholders involved. There was a significant correlation of 0.765 between the 5 test items under the construct of quantitative indicators for performance measurement of e-Government services at KRA.

Table 4-13: Quantitative Performance indicator

Descriptive Statistics

	Mean	Std. Deviation	N
No. of department having a web presence	2.19	1.299	48
No. of citizen services available electronically	2.04	.824	48
No. of departments enabling online transactions	2.35	.863	48
No. of departments who have initiated backend automation	2.35	.934	48
No. of guidelines, technical standards, data standards issued	2.17	1.018	48

4.9.2 Construct Correlation on Qualitative Performance Indicators

These indicators adjudged the impact of the overall e-Government efforts on society in terms of economy, social development, effectiveness and efficiency of administration and governance.

4.9.2.1 Construct Correlation on Economic Impact Indicators

The mean values indicated that, the respondents strongly agreed with the indicators under construct Correlation on Economic impact. There was a significant correlation of 0.741 between the 7 test items.

Table 4-14: Economic impact indicators

Descriptive Statistics

	Mean	Std. Deviation	N
Economic growth of the nation	1.48	.505	48
Increase in employment opportunities	2.21	.713	48
Increase in overall business transactions	1.96	.544	48
Business generated through online measures and transactions	2.46	.944	48
Reductions in operating cost for delivering a service online	2.23	.660	48
Enhanced revenue collection for various types of taxes	1.42	.498	48
Increase in international trade and economic cooperation	2.21	.944	48

4.9.2.2 Construct Correlation on Social Development Impact Indicators

The mean values indicated that, the respondents strongly agreed with the indicators under construct Correlation on Social Development impact. There was a significant correlation of 0.843 between the 6 test items.

Table 4-15: Social Development impact indicators

Descriptive Statistics

	Mean	Std. Deviation	N
Poverty Reduction	2.42	1.302	48
Increase gender equality	2.98	1.194	48
Enhanced Public Safety and security	2.58	1.217	48
Better management of environment using information systems	2.56	1.335	48
Improved social welfare by effective dissemination of information	2.38	1.178	48
Higher literacy levels of the society	2.50	1.130	48

4.9.2.3 Construct Correlation on Governance Impact Indicators

The mean values indicated that, the respondents strongly agreed with the indicators under construct Correlation on Governance impact. There was a significant correlation 0.905 between the 8 test items.

Table 4-16: Governance impact

Descriptive Statistics

	Mean	Std. Deviation	N
Better co-ordination among govt departments	2.02	.934	48
Greater accountability in public administration	2.19	1.123	48
Better partnership between the govt and the private sector	2.31	.971	48
Improved accessibility by citizens and businesses	1.83	.724	48
Improved government-citizen relationship	2.13	.914	48
Enhanced public participation	2.42	1.108	48
Amendments in Legislative and Policy Framework with respect to use of ICT	2.67	1.018	48
Improved International Relations	2.75	1.194	48

4.9.3 Assessing the Usability of e-Government Portals

The KRA website formed the face of the entire effort in front of the stakeholders, hence there had to be convenience and ease of use as far as the user interface of the e-Government site was concerned. Performance evaluation would enable the assessment of these government websites, with most parameters used for assessing the usability and citizen centricity of a Government Portal broadly grouped under five categories; Accessibility, Navigation Architecture, Content, Design & Layout and Reliability.

Table 4-17: KRA Website Usability

Descriptive Statistics

	Mean	Std. Deviation	N
Accessibility	1.90	.515	48
Navigation Architecture	2.63	.761	48
Content	2.29	.683	48
Design and Layout	2.83	.883	48
Reliability	2.58	1.145	48

4.9.3.1 Accessibility

A portal being universally accessible would imply that a broad range of software, hardware and audiences, including physically challenged citizens could not only access the online content and services on the portal but were also able to actually make use of it. Developers needed to alter practices, policies and procedures that made it impossibly difficult for people with disabilities to access or use the web portal.

4.9.3.2 Navigation Architecture

This included all those features which made it convenient/inconvenient for a user to browse the contents on the Portal. The navigation architecture needed to be such that users spend minimal time and effort in locating and using the desired information and services online. Even if the web portal had valuable information for the citizen, it would not be of much use if that information was buried somewhere deep inside the piles of content and the visitor was not able to easily reach at it. Moreover, a certain consistency in the navigation pattern was important, particularly for huge portals with large number of modules and pages.

4.9.3.3 Content

The KRA's e-Government portal needed to be oriented towards its citizens. The content in the Portal had to be defined in the manner that the citizen wanted and the portal should act as a platform to provide the information and services, hitherto provided conventionally by the government, in a faster and convenient manner. Apart from the quality of the content, equal emphasis needed to be given to the way it is written and presented. The content aimed at the common public must be written plainly and in a language which people with diverse educational and knowledge backgrounds can easily understand. This category included all those parameters which influenced the extent to which citizen friendly, authentic, correct and most updated content was provided, in a suitable format, on the e-Government web portals.

4.9.3.4 Design and Layout

E-Government web portals should have citizen friendly design and layout so that people find it enjoyable and comfortable to access the desired information with minimum fuss. The color scheme of the portal and the positioning as well as consistency of the design elements has to be such that it allows for legibility and easy reading. The features included in this category affect the way graphics and design elements, as well as the layout of the portal appears.

4.9.3.5 Reliability

Government web sites must raise citizens' confidence by abiding by the law and explaining their terms and conditions clearly to the users. The issue assumes more importance when it comes to online transactions as well as making payments through the website. Well worded disclaimers, privacy policies, terms and conditions and copyright information enhance the credibility of the website and help in further building the users' trust. Another equally important aspect related to credibility is the site address or the URL (e.g. '.gov.ke').

4.9.3.6 Comprehensive Contact Information

This could be used by a citizen to approach the e-Government functionaries. A citizen centric website would not only have the email addresses of the various e-Government departments but also the postal addresses and the telephone/fax numbers so that a user with limited access to Internet may also be able to refer to the information from the site and then contact the concerned department.

4.10 IS-BSC Performance Measurement Indicators

A Balanced Scorecard approach was developed to measuring a set of criteria from four different points of view. These points of views were business value, user orientation, internal process and future readiness. Each perspective contained a set of criteria. For example the future readiness perspective contained criteria like age distribution of IS staff, and expertise with specific emerging technologies. Measuring and evaluating IS from multiple perspectives and in assorted ways is helpful to assess its efficiency, effectiveness and transformative potential, both at present and in the future. The balanced IS scorecard includes three additional perspectives that are detailed in the sections that follow. The perspectives of the proposed IS-BSC model and the indicators herein were borrowed from (Martinsons et al., 1999; Palmius, 2007).

60% of the respondents agreed that the objectives, targets and measures in the IS-Balanced scorecard corresponded with those handed down to them by their immediate supervisor. This implied that there was a relationship between what the IS-BSC sets out to measure and the actual activities that take place on the ground. In the same way, 80% of the staff interviewed concurred that the IS-BSC would assist them in meeting the objectives of e-Government services at KRA. It helped them focus on the critical activities that added value.

4.10.1 Business Value Perspective

It is useful to distinguish between two categories of IS performance evaluation: the short-term cost-benefit evaluation that is commonly applied to individual projects, and the longer-term perspective relevant to both IT applications and the IS department as a whole. Many of the business value measures fall into the latter category, as evident from Table 4-18.

Table 4-18: Performance Measurement Metrics on Business Value Perspective

Descriptive Statistics on Cost Control					
			Mean	Std. Dev.	N
Percentage over/under overall IS budget			2.35	.934	48
Allocation to different budget items			2.52	.945	48
IS budget as a % of revenue			2.40	1.005	48
IS expenses per employee			2.40	1.233	48
Descriptive Statistics on Sales to third parties					
	Variance	Minimum	Maximum	Mean	Std. Dev.	N
Revenue from IT related products and services	1.615	1	5	3.04	1.271	48
Valid N (list wise)						48

Descriptive Statistics on Business value of an IT Project			
	Mean	Std. Dev.	N
Financial Evaluation based on traditional measures	2.29	1.051	48
Business evaluation based on information economies	2.23	1.036	48
Strategic match with business contribution	2.23	.973	48
Descriptive Statistics on Risks			
	Mean	Std. Dev.	N
Business strategy risk	1.98	.699	48
IS strategy risk	2.23	.973	48
Definitional uncertainty	2.21	.824	48
Technological risk	2.23	.831	48
Development Risk	2.10	.778	48
Operational risk	2.02	.729	48
IS service delivery risk	1.85	.583	48
Descriptive Statistics on Business value of an IT department			
	Mean	Std. Dev.	N
% of resources devoted to strategic projects	2.08	1.048	48
% of time spent by IS manager in meeting Corporate executives	2.23	.973	48
Perceived relationship btw IS management and top management	1.94	1.019	48

4.10.1.1 Cost Control

This would be evaluated in the short-term. The traditional financial perspective encompasses the control of the IS budget as well as the benefits arising from the sale of IT-related products and services to third parties. The IS department or functional area needs to take on commercial activities. Popular financial metrics are the IS budget expressed as either a percentage of sales turnover or as a percentage of total expenses. Benchmarking to other companies in the industry or even other economies around the world may provide useful insights. However, differences that are identified should be interpreted with care, since they may be due to company-specific factors. **Sales to third parties** would be evaluated in the short-term.

4.10.1.2 Business Value of an IT Project

Value is a much broader concept than benefits, and IS projects can generate business value in many ways. The implementation of KRA's i-Tax system, a menu-driven customer database may reduce the amount of IS specialist support needed to execute an ad hoc query, and generate a modest amount of direct benefits. However, the real value of such a database will be reflected in marketing and sales performance. Salespeople would be expected to integrate the database into their activities, thereby improving the productivity of the sales process, and consequently raising revenue levels or profit margins. It is argued that IT is complementary with organizational characteristics and processes, and therefore IT investments will not produce significant improvements if they are undertaken in isolation.

4.10.1.3 Risks

IS benefits have traditionally been measured by quite simple financial measures like the return on investment and the payback period. However, these types of financial measures limit themselves to the financial benefits rather than the broader concept of business value. Information economics has sought to address this deficiency. The value of the information economics method lies with the fact that the scores are assigned by all parties involved. End-users score risks and values in the corporate domain, while IT specialists score IT related categories. This way, the business contribution of the project can be assessed jointly, and a consensus reached on the evaluation of a specific project. Most value and risk categories associated with information economics are quite unambiguous.

4.10.2 User Orientation Perspective

The end-user of an IS may be an internal customer or in another company that is utilizing an inter-organizational system. However, in contrast to the large potential market for the products and services of most companies, an IS department or function usually has limited opportunities to attract new customers, although the researcher acknowledges that this may change in the expanding electronic marketplace. The satisfaction of existing customers will be much more important than building up market share or acquiring new customers. It will be critical to monitor existing customer satisfaction on a frequent basis, especially if they can select among alternative suppliers of IS services. The researcher suggested that the metrics for the user perspective focuses on three areas as reflected on Table 4-19.

Table 4-19: Performance Measurement Metrics for User Orientation Perspective

Descriptive Statistics

	Mean	Std. Deviation	N
Being the preferred supplier for applications and operations	2.54	1.336	48
Establishing and maintaining relationships with the user community	2.19	.960	48
Satisfy end user needs	2.00	1.011	48

The percentage of IT applications that were managed and delivered by the IS department would depend heavily on the company-specific situation. When a company sets the ratio of internal vs. external development, it makes a strategic choice. During this process, decision makers are likely to employ heuristics such as wanting to develop and support strategic, highly competitive projects with in-house expertise while outsourcing routine and non-strategic projects.

IS specialists needed to establish and maintain relationships with the community of current and potential users in order to understand and anticipate their needs. Such a relationship would also be the basis for building up the credibility of the IS department and function and creating trust between developers and users.

User satisfaction would play an important role in the overall evaluation of the IS department or function. From the end-user's perspective, the value of IS would be based largely on the extent to which it helped them do their jobs more efficiently and effectively. For example, managers will rely on IS outputs to monitor and control both the internal and external business environment, and help them make better decisions. A broad cross-section of end-

users, and ideally every member of the user community, should be surveyed periodically using quantitative methods. In addition, semi-structured interviews are recommended in order to gain deeper insights. If the IS department loses an important customer, detailed follow-up efforts to ascertain the reasons behind this loss would be appropriate.

It is useful to distinguish between objective and subjective measures. BSC does not explicitly prescribe a set integration of objective and subjective measures, since management must decide what it wants to do with the information presented, for example when weighting different measures in a DSS. The indices resulting from surveys are subjective measures, as opposed to many of the other measures that are part of an IS-BSC. More objective measures may be obtained from systems usage data.

4.10.3 Internal Processes Perspective

Internal operations may be assessed by measuring and evaluating three of the basic processes performed by the IS department: 1. the planning and prioritization of IS projects; 2. the development of new IT applications; and 3. the operation and maintenance of current IT applications. Other processes may also be considered, such as hardware and software supply and support, problem management, user education, the management of IS personnel, and their usage of efficient communication channels. The IS department or function should aim to deliver high-quality services to its users at the lowest possible cost. This can only be achieved by managing its processes in a cost-efficient manner. These measures should not only be followed through time, but should also be compared to industry standards and averages. It is also important to use a standard set of metrics.

The measurement and evaluation of IS planning, development and maintenance activities should yield useful data about the productivity of different resources. Managers can be informed about the performance of specific people and technologies on specific projects and compare the productivity of internal staff with that of contractors. This will enable them to pinpoint problem areas more easily and produce better estimates of the time and resources needed to complete specific projects. Demand for services can be expanded in two alternative ways: by finding new customers for existing services or providing additional services to existing customers. By monitoring both the customer and internal process perspectives, IS managers will know what the demand is for different services and how efficiently they can provide those services. As a result, this will put them in a better position to decide what

services they will provide, and to whom, and what resources will be needed to meet particular levels of service demand.

Table 4-20: Performance Measurement Metrics for Internal Process Perspective

Percentage of resources devoted to planning and review of IS activities

		Frequency	Percent	Valid Percent	Cumulative Percent	Std dev.
Valid	1	11	22.9	22.9	22.9	
	2	31	64.6	64.6	87.5	.592
	3	6	12.5	12.5	100.0	
	Total	48	100.0	100.0		

Descriptive Statistics for Performance Measurement Metrics for Development

	Mean	Std. Deviation	N
% of resources devoted to applications development	2.00	.772	48
Time required to develop a standard sized new applications	2.13	.866	48
% of applications programming with re-used code	2.27	.962	48
Time spent to repair bugs and fine-tune applications	2.21	.874	48

Descriptive Statistics for Performance Measurement Metrics for Operations

	Mean	Std. Deviation	N
No. of end user queries handled	1.83	.519	48
Average time required to address an end user problem	1.71	.582	48

4.10.4 Future Readiness Perspective

In addition to managing current performance, there is also a need to measure and evaluate the readiness of the IS department or function for the future. The future readiness perspective is concerned with: 1. continually improving the skill set of IS specialists in order to prepare them for potential changes and challenges in the future; 2. regularly updating the applications portfolio; and 3. putting effort into researching emerging technologies and their potential value to the organization.

The findings on Table 4-21, reflected the need to continually enhance the skills of IS specialists. There was a need to periodically upgrade the applications portfolio in order to take advantage of technological advances. There was also a reflection of the need to gain a thorough understanding of emerging technologies as well as their specific suitability to the company's IS architecture.

Table 4-21: Performance Measurement Metrics for Future Readiness Perspective

Descriptive Statistics for IS specialist capabilities

	Mean	Std. Deviation	N
IS training and development budget as % of the overall budget	2.13	.761	48
Expertise with specific existing technologies	2.35	.863	48
Expertise with specific emerging technologies	2.58	.871	48
Age distribution of IS Staff	2.40	.707	48
Perceived satisfaction of IS employees	1.96	.683	48
Turnover/retention of IS employees	1.94	.836	48
Productivity of IS employees	1.92	.539	48

Descriptive Statistics for Applications portfolio

	Mean	Std. Deviation	N
Age distribution	2.40	.707	48
Platform distribution	2.23	.425	48
Technical performance of application portfolio	2.17	.377	48
User satisfaction with applications portfolio	1.81	.641	48

Descriptive Statistics for Research into emerging technologies

	Mean	Std. Deviation	N
IS research budget as a % of the overall IS budget	2.15	.850	48
Perceived satisfaction of top management	2.27	.736	48

The ability of IS to deliver quality services and to lead new technology assimilation efforts in the future will depend on the preparations that are made today and tomorrow. IS managers must assess future trends and anticipate them. Unanticipated circumstances can probably be dealt with through extensive external, often high-priced support. The preferred course of action is to train and develop internal people so that when specific expertise is needed, it can be found in-house.

Fig. 4.6 illustrates how innovation and learning efforts can raise competence levels that in turn will improve business performance in the future. Perhaps paradoxically, the current indicators of competence may be more difficult to measure than either the leading innovation or lagging performance indicators.

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┌─────────────────────────────────────────────────────┐
│                Innovation and Learning                │
│                                                       │
│                  (Leading Indicators)                 │
│                                                       │
│     •  Research on emerging technologies              │
│                                                       │
│     •  Planning for emerging business challenges      │
│                                                       │
│     •  Continuous Improvement of IS skill sets        │
│           (through training and development)          │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│                     Competence                        │
│                                                       │
│                  (Current Indicators)                 │
│                                                       │
│     •  Highly qualified and motivated IS people       │
│                                                       │
│   •  Good communications between IS and management    │
│                                                       │
│     •  Good communications between IS and end-users   │
└─────────────────────────────────────────────────────┘
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│                     Performance                       │
│                                                       │
│                  (Lagging indicators)                 │
│                                                       │
│     •  Efficiency of internal processes               │
│                                                       │
│            •  User satisfaction                       │
│                                                       │
│     •  Effectiveness in providing business value      │
│                                                       │
│     •  User and management perceptions of IS          │
└─────────────────────────────────────────────────────┘
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Figure 4.6: How innovation and learning lead to future performance improvements

4.11 Cause-and –Effect Relationship of e-Government Services at KRA

A strategy is a set of assumptions about cause-and-effect. If cause-and-effect relationships are not adequately reflected in the balanced scorecard, it will not translate and communicate the company's vision and strategy. These cause-and-effect relationships can involve several or all four of the perspectives in the BSC framework.

Table 4-22: The IS-BSC with key Questions and Relationships between the Four Perspectives

The four perspectives in an IS Balanced Scorecard	
User orientation perspective (end-user's view)	**Business value perspective (management's view)**
Mission: deliver value-adding services to end-users **Key question**: Are services provided by IT department fulfilling the user's needs? **Objectives**: Exploit IT opportunities Satisfy end-user requirement Establish and maintain a good reputation with end-users	**Mission:** Contribute to the value of the business **Key question:** Is the IT department accomplishing its goals and contributing value to the organization as a whole? **Objectives:** Establish and maintain a god image and reputation with management Ensure the IT projects provide business value Control IT costs
Internal processes perspective (operations-based view)	**Future readiness perspective (innovation and learning view)**
Mission: deliver IT services in an effective and efficient manner **Key question**: Does the IT department create, deliver and maintain its services in an efficient manner? **Objectives**: Provide cost-effective training that satisfies end-users Be efficient in planning and developing IT applications Be efficient in operating and maintaining IT applications Effectively manage IT-related problems that arise	**Mission:** Deliver continuous improvement and prepare for future challenges **Key question:** Is the IT department improving its services, and preparing for potential changes and challenges? **Objectives:** Regularly upgrade IT applications portfolio Regularly upgrade hardware and software Continuously upgrade IT skills through training and development Conduct cost-effective research into emerging technologies

For example, better staff skills (future readiness perspective), will reduce the frequency of bugs in an application (internal operations perspective). An application with fewer bugs will be more likely to meet end-user expectations (user orientation perspective). This in turn will enhance the support of core business processes (business value perspective).

The corporate contribution perspective evaluates the performance of the IT from the viewpoint of executive management. The customer orientation perspective evaluates the performance of IT from the viewpoint of internal business users. The operational excellence perspective provides the performance of the IT processes from the viewpoint of IT management. The future perspective shows the readiness for future challenges of the IT itself

Table 4-23: Metrics for the Four Perspectives of IS-BSC

Perspective	Goals	Metrics
Business Value	- Business/ IT alignment - Value delivery - Risk management - Intercompany synergy	- Operational budget approval - Business unit performance - Attainment of expense targets - Results of internal audits
User Orientation	- Competitive costs - Customer satisfaction - Operational performance - Development performance	- Attainment of unit cost target - Business unit survey ratings - Major project scores - Attainment of targeted levels
Internal Processes	- Process maturity - Development process - Operational process	- Level of IT processes - Function point measures - Change management effectiveness
Future Readiness	- Employee satisfaction - Human Resource Management - Knowledge management	- Satisfaction survey scores - Staff turnover - Implementation of learned lessons

(Source: Grembergen, et.al. 2003)

5.0 CONCLUSIONS AND RECOMMENDATIONS

From the analysis of the data collected, the following discussions, conclusions and recommendations were made. The conclusions and recommendations drawn were focused on addressing the objectives of this study.

5.1 Achievements

An IS-BSC can easily become part of the operational-level management system rather than serving as the foundation for a strategic management system. In the observed KRA case, this was due largely to the absence of specific long-term objectives, particularly related to the future readiness perspective. With a continuing emphasis on short-term goals, the performance objectives are unlikely to represent much of a change from the usual business. The strategic performance objectives in the organizations observed were sub-optimal and rather modest, or else peripheral to improvements in systems performance. As a result, the researcher believed that the effectiveness of a BSC for IS would be enhanced by including stretch goals that require significant improvements in key areas.

The observed company, KRA, was only able to identify a few cause-and-effect relationships and performance drivers during their development of a balanced IS scorecard. In one case, system availability, responsiveness to user requests, and timely delivery of new IT applications were agreed to be performance drivers for user satisfaction. However, the management team neglected to specify how the performance in these three areas would be improved. The researcher suggested that such improvements would be possible through different mechanisms, including the development of employee skills, the adoption of new development tools, and the employment of better project management methods. As a result, we propose that explicit cause-and-effect relationships be identified before a balanced IS scorecard is implemented.

It is critical not only to relate performance drivers to the performance measures in each key area, but also to consider how each of the performance drivers will significantly improve one or more key measures of performance. Individual performance objectives and appraisal criteria for the IS specialists were not linked directly to the balanced IS scorecard. As a result, the researcher wishes to stress the importance of broadly communicating both the purpose and content of the scorecard and firmly integrating it into the company's performance

management system. Scorecard templates and results that are communicated to employees using electronic mail or bulletin boards can motivate their efforts and reward them for meeting targets. The discussions and limited testing with staff members at KRA also suggest that graphical rather than tabular presentation formats be employed.

Different organizations will have different set of performance indicators and evaluation techniques for their e-Government plan. They shall be driven by the goals and targets set in their overall vision. The organizations should not view evaluation as a onetime activity and should regularly assess the e-Government initiatives to ensure the success of the Plan. Evaluation should not be viewed as a onetime exercise. It should be conducted periodically. Evaluation should not be conducted only at the end of the project, because the feedback received from evaluation at that stage becomes very difficult to incorporate or introduces cost and time overruns. Evaluation strategy as well as indicators should be a part of the overall plan of the project.

The researcher has also considered specific metrics for each of the perspectives. The four perspectives of the related metrics represent a template rather than a definitive strategic IS measurement and management system. Future research is recommended in order to determine whether the proposed perspectives and measures are a necessary and sufficient set. The framework represents a strategic IS management tool that can be used to monitor and guide specific projects as well as general performance improvement efforts. The case study reinforced a belief that while the specifics of an IS-BSC will differ from company to company, it is beneficial to build upon a standard framework, such as the one presented here, rather than starting from scratch. Additional case studies are likely to reveal other barriers, obstacles and errors that can hinder the success of IS-BSCs. The researcher would like to encourage further study in this area as well as reporting that not only focuses on implementation barriers, but also considers the ways and means that may be used to overcome them.

The study found that the level of utilization of external integrated ICTs, automation and digitization of internal processes and development of ICT skills were average. The objectives of e-Government had been appreciated much by the respondents. KRA had adopted fairly a good collection of e-Government services.

The study uncovered many challenges facing the evaluation of e-Government at KRA. There were outstanding challenges posed both by internal and external factors. The internal factors that challenge development and utilization of e-Government were noted as slowness in developing supportive infrastructure, limited utilization skills, complicated technologies and security. On the other hand external factors that pose challenges in developing and utilizing e-Government were noted as absence of demonstration and access models for the publics, the slow pace of modernization of the government organization, public infrastructure, policies and legislative frameworks that would stimulate taking advantage of the technologies, illiteracy levels, and lack of political will.

5.2 Limitations

The researcher, observed a surprising lack of intra-organizational communication as the balanced IS scorecard was being developed. For example, in a case, the draft version of the balanced IS scorecard was only circulated to two or three members of the top management team and the IS manager. The IS specialists were not told about the scorecard's content or rationale. Not surprisingly, they had little enthusiasm for a commitment to this IS-BSC concept.

The researcher was not able to undertake an extensive and exhaustive research limiting the researcher to a small sample with less research time. Most Respondents at KRA's ICT department had no exposure to performance measurement of e-Government services, given the subject target organization especially during data collection.

5.3 Conclusions

The proposed tool was tested to assess how well it served the requirements for Performance Measurement of e-Government services at KRA. This was done by developing a questionnaire based on the IS-BSC perspectives concept. The questionnaire contained a perception test item for each of the perspectives of the tool, and an open question on any other suggestions from the respondents. A total of 50 questionnaires were distributed at random to executive IT staff at KRA. There were 46 valid responses giving a response rate of 92%.

The conclusions that can be drawn from this study were that KRA has fairly adopted technology as a means of delivering its mandate and indeed there are demands to further build on the existing capacity. The researcher has proposed the application of the IS-BSC concept to business functions, departments and even individual projects. This study has considered the use of an IS-BSC concept to measure and evaluate IT application projects and the IS department or functional area as a whole. A concept initially proposed as a decision-making tool for senior business managers was examined in the IS management domain by proposing and detailing four IS evaluation perspectives: business value, user orientation, internal processes, and future readiness.

The balanced IS scorecard would allow managers to see the positive and negative impacts of IT applications and IS activities on the factors that are important to the organization as a whole. The value of the balanced IS scorecard rises if it is used to co-ordinate a wide range of IS management processes, such as individual and team goal-setting, performance appraisal and rewards for IS personnel, resource allocation, and feedback-based learning. The management of both IS people and projects are likely to benefit from a systematic framework based on goals and measures that are agreed upon in advance.

Monitoring and Evaluation for e-Government services could be carried out with two distinct dimensions, namely: Performance measurement of individual projects; and · Performance measurement of the overall e-Government plan. At the level of the individual project, monitoring exercise shall assess the Project in terms of its progress vis-a-vis the projected plan, and consumption of resources vis-a-vis milestones achieved etc. As part of the Project Plan, major deliverables/milestones of the project shall be defined on a timeline to make the future evaluation convenient and transparent. At the level of the overall e-Government plan, monitoring efforts shall focus on comparing the amount of resources allocated for the plan and the overall impact that e-Government efforts have made, whether qualitative or quantitative.

5.4 Future Work
The researcher had considered specific metrics for each of the perspectives. Future research is recommended in order to determine whether the proposed perspectives and measures are a necessary and sufficient set. The framework does represent a strategic IS management tool

that can be used to monitor and guide specific projects as well as general performance improvement efforts.

From the study, a number of issues were emerging that required addressing. Few of the metrics and measures considered here were new. However, with the IS - BSC, they were used and combined in a novel way. The primary IS goal was defined as the development and maintenance of information systems that supported corporate goals, and also distinguished between efficiency and effectiveness measures, 'doing things right' and 'doing the right things', respectively. Building upon this viewpoint, IS could be evaluated in terms of 1. The efficiency of the activities associated with IS development and operations; and 2. Its contribution to the effectiveness of those that use IS to improve personal productivity and strive to help attain corporate goals. The balanced IS scorecard integrated these two dimensions. Efficiency was most directly addressed by the internal processes perspective while effectiveness was addressed by the business value and user orientation perspectives. The future readiness perspective in the model added a dynamic and strategic dimension to earlier IS evaluation models by recognizing the importance of innovation and learning

KRA management should initiate a top bottom approach policy on matters to do with ICTs or e-Government. The respondents recommended that KRA's ICT executive management should give full support and commitment to assessment and implementation of e-Government initiatives.

The findings of this study would be beneficial to various ministries adopting the e-Government services (G2G), citizen (G2C) and business functions (G2B). These stakeholders would gain more knowledge and understanding about the mixed method of using metrics in IT governance balanced scorecard and importance-performance analysis in order to identify the current situation of IT governance and controls in their organizations.

REFERENCES

[1] Afriliana, N., & Gaol, F. L. (2014). Performance Measurement of Higher Education Information System Using IT Balanced Scorecard. In Intelligent Information and Database Systems (pp. 412-421). Springer International Publishing.

[2] Agweli, P. W. (2010). Strategies adopted by the Kenyan government in introducing e-governance (Unpublished MBA Research Project). University of Nairobi, Kenya.

[3] Al-Hujra, O., Al-dalahmeh, M., & Aloudat, A. (2012). The Role of National Culture on Citizen Adoption of e-Government Services: An Empirical Study. Electronic Journal of e-Government, 9(2): 93 – 106. Retrieved from www.ejeg.com

[4] Banker, R. D., Chang, H., Janakiraman, S. N., & Konstans, C. (2004b). A balanced scorecard analysis of performance metrics. European Journal of Operational Research, 154(2), 423-436.

[5] Banker, R.D., Chang, H., Pizzini, M.J. (2004a), "The balanced scorecard: judgmental effects of performance measures linked to strategy", The Accounting Review, Vol. 79 No.1, pp.1-23.

[6] Barbosa, P., Alexandre, F., & Eduardo, H. (2013). Rethinking E-Government Performance Assessment from A Citizen Perspective, 10(4): 1467-9299.

[7] Barua, A., Lee, S.C.H., & Whinston, A.B.,(1996). The calculus of reengineering, Information Systems Research. 7 (4): 409–428.

[8] Berghout, E., & Tan, C. W. (2013). Understanding the impact of business cases on IT investment decisions: An analysis of municipal e-government projects. Information & Management, 50(7), 489-506.

[9] Black, K. (2010). Business Statistics: Contemporary Decision Making. John Wiley & Sons, 225.

[10] Bouckaert, G., Halligan, J. (2008). Managing Performance: International Comparisons, Routledge, Abingdon.

[11] Chan, 2004

[12] DeLone, W. & McLean, E., (1992): Information Systems Success: The Quest for the Dependent Variable, Information Systems Research. 3(1).

[13] DeLone W, McLean E (2003): The DeLone and McLean Model of Information Systems Success: A Ten-year Update. Journal of Management Information Systems, 19(4).

[14] Gartner, (2000). E-Government.

[15] Grembergen, W., Saull, R. & Haes, S. D., (2003) Linking the IT Balanced Scorecard to the Business Objectives at a Major Canadian Financial Group. Journal of Information Technology Cases and Applications,

[16] Guangwei, H., Wenwen, P., Hui, L., Kyeong K., & Michael L. B. (2014). Study on the Framework of e-Government Services Capability: An Empirical Investigation. Retrieved from http://ssc.sagepub.com/content/early/2014/01/01/0894439313501614.abstract

[17] Gueorguiev, I. (2005), Balanced Scorecard Based Management Information System – A Potential for Public Monitoring and Good Governance Advancement. The Electronic Journal of e-Government, 3(1): 29-38. Retrieved from www.ejeg.com

[18] Hatry , H. P., Morley , E., Rossman, S. B. & Wholey, J. S. (2004). How Federal Programs Use Outcome Information: Opportunities for Federal Managers. 1(2)

[19] Halligan, J.,& Bouckaert, G. (2011), "Performance governance: from ideal type to practice?", paper presented at the Conference of the International Research Society for Public Management, Dublin, 11-13 April, .

[20] Hengyi, W., Baocheng, S., Li, Z., & Mingming, J. (2013). Research and application of E-government evaluation model based on BP neural network, 459 – 463.

[21]Hu, 2013

[22] Huang, D. C, & Hu, Q. (2004). Integrating web services with competitive strategies : The balanced Scorecard approach. Communications of the Association for Information Systems, 1(13), 57-80.

[23] IDG CONNECT (2014). e-Government Across Africa

[24]Jairak & Praneetpolgrang, 2013.

[25] Juiz, C., Guerrero, C. & Lera, I. (2014). Implementing Good Governance Principles for the Public Sector in Information Technology Governance Frameworks. Open Journal of Accounting, 3(1)

[26] Kaplan, R. S., & Norton, D. P., (2008). The balanced scorecard: measures that drive performance. Harvard Business Review Journal of Service Science, 1(1).

[27] Kaplan, R., & Norton, D. P., (1992). The balanced scorecard: measures that drive performance, Harvard Business Review 70(1). 71–79.

[28]Kenya revenue authority (2014). Performance Measurement |ACCA Qualification| students Kenya – Advisor.com.

[29]Kothari, 2006)

[30] Lee, R. C. (2013). A Strategic Thinking and Realization on Taiwan Emerging Industries Transformation. Modern Management, 3(2): 61 - 69. Retrieved from http://web.b.ebscohost.com/abstract?

[31] Lawson-Body, Mukankusi, L. & Miller,G. (2008). An Adaptation Of The Balanced Scorecard For E-Government Service Delivery: A Content Analysis. Journal of Service Science , 1(1)

[32] Matavire, R., Chigona, W., Roode, D, Sewchurran, E, Davids, Z, Mukudu, A., & Boamah-Abu, C. (2010). Challenges of eGovernment Project Implementation in a South African Context. The Electronic Journal Information Systems Evaluation, 13(2): 153 - 164. Retrieved from www.ejise.com

[33] Martinsons, M., Davison, R., & Tse, D., (1999). The balanced scorecard: a foundation for the strategic management of information systems. Decision Support Systems, (25): 71–88

[34] Morse, J. (2007). Sampling in Grounded Theory, In A. Bryant and K. C. Charmaz (Eds.), The SAGE Handbook of Grounded Theory, London: SAGE. 229-244.

[35] Mugenda & Mugenda, 2003

[36] Nfuka, N., & Rusu, L. (2013). Critical Success Framework for Implementing Effective IT Governance in Tanzanian Public Sector Organizations. Journal of Global Information Technology Management, 16(3): 53-77.

[37] Norshidah, M., Shahriza, N., Karim, A., Jalaldeen, M., & Razi, M. (2013). A Knowledge Management Approach To Citizen Relationship Management In E-Government Context. International Journal Of e-Business and e-Government Studies, 5(1). Retrieved from http://www.sobiad.org/eJOURNALS/journal_IJEBEG/arhieves/2013_1/Norshidah-Mohamed1.pdf

[38] Nunik, A., & Ford, L. (2013). Performance Measurement of Higher Education Information System Using IT Balanced Scorecard. Retrieved form http://link.springer.com/chapter/10.1007/978-3-319-05476-6_42

[39] Nzuve, S., & Nyaega, G. (2012). Application of Balanced Scorecard in Performance Measurement at Essar Telecom Kenya Limited (Unpublished MBA Research Project). University of Nairobi, Kenya.

[40] Palmius, J. (2007). Criteria for measuring and comparing information systems. Proceedings of the 30th Information Systems Research Seminar in Scandinavia IRIS, 4.

[41] Republic of Kenya, (2014). E-government strategy: The strategic framework, administrative structure, training Requirements and standardization framework. Nairobi: Government Printer.

[42] Salah, A., Moutaz, A., Sitalakshmi, V., Mamoun, A., & Ammar, A. (2013). Performance evaluation of e-government services using balanced scorecard: An empirical study in Jordan. Benchmarking: An International Journal, 20(4): 512 – 536. Retrieved from http://www.emeraldinsight.com/journals.htm?articleid=17091016&show=abstract

[43] Scheer, A.W., Abolhassan, F., Jost, W. & Kirchmer, M. (2002.): Business Process Excellence : ARIS in Practice. Berlin : Springer
[44] Schuppan, T. (2009). E-Government in developing countries: Experiences from sub-Saharan Africa. Government Information Quarterly, 26: 118–127.

[45] Seel, C. & Thomas, O. (2012). Process Performance Measurement for E-Government: A Case Scenario from the German Ministerial Administration. Systemics, Cybernetics and Informatics. 5 (3)
[46] Shaughnessy, J., Zechmeister, E., & Jeanne, Z. (2011). Research Methods in Psychology (ed. 9). New York, NY: McGraw Hill: 161-175.

[47] Sinha, A. (2006). Balanced Scorecard: A Strategic Management Tool. Vidyasagar University Journal of Commerce, 11.

[48] Thompson, K. R., & Mathys, N. J. (2013). It's time to add the employee dimension to the balanced scorecard. Organizational Dynamics, 42(2): 135-144.

[49] United Nations Development Programme (2009). E-governance and e-government. Regional Centre Bangkok. Retrieved from http://www.apdip.net/projects/e-government

[50] UNDESA. (2005). From E-government to E-inclusion. UN global E-government readiness report. New York: United Nations publication.

[51] UNESCO (2005). E-Government Toolkit for Developing Countries. 4(2)

[52] Van Dooren, W., Bouckaert, G., Halligan, J. (2010), Performance Management in the Public Sector, Routledge, Abingdon, .

[53] Venkatraman, S., & Alazab, M. (2014). Quality Approaches for Performance Measurement in Jordanian E-Government Services. IT in the Public Sphere: Applications in Administration, Government, Politics, and Planning (pp. 99-119)

[54] Vision 2030 Kenya - http://www.vision2030.go.ke/

[55] Waema T. M. (2007). A Conceptual Framework for Assessing the Effects of E-Government on Governance. Proceedings of The 1st International Conference in Computer Science and IT, Nairobi, 98-103.

[56] Yanfang, M. (2013). Use a Balanced Scorecard to Evaluate Business Processes of Sichuan Electric Power Company. Retrieved from http://link.springer.com/chapter/10.1007/978-3-642-40081-0_94

[57] Ying, J. (2010). The application of BSC in China's e-government performance evaluation. In Symposium on Reform and Transition in Public Administration Theory and Practice in Greater China (pp. 1-4). Brown University.

APPENDICES

APPENDIX 1: THE QUESTIONAIRE USED FOR THE MAIN CASE STUDY

<u>**Research Title:**</u> <u>**ADAPTATION OF THE BALANCED SCORECARD MODEL IN**</u>
<u>**PERFORMANCE MEASUREMENT OF E-GOVERNMENT SERVICES: CASE OF**</u>
<u>**KENYA REVENUE AUTHORITY**</u>

Instructions: Please tick [√] appropriately.

SECTION 1: Demographics

1. What is your designation at KRA?

   …………………………………………………………………………..………………

2. In which department are you stationed at KRA?
   - Information Technology (IT) [ ]
   - HR & Training   [ ]
   - Finance   [ ]
   - Marketing   [ ]
   - Other (please specify) ………………………………………………………….

3. What is your role in the implementation of e-Government services at KRA?
   - Performance Planning   [ ]
   - Performance Evaluation   [ ]
   - Performance Reporting   [ ]
   - Other (please specify) ………………………………………………………….

4. How long have you worked with this organization?
   - Less than 2 years   [ ]
   - 2 – 4 years   [ ]
   - 4 – 6 years   [ ]
   - Over 6 years   [ ]

SECTION 2: Measurement of E-Government Services

5. In this section, please **[√]** the appropriate e-Government Service that best reflects customer satisfaction in your organization. (scale: 1-Most Accessed; 5-Least Accessed)

e-Gov Service	1	2	3	4	5
Taxpayer Registration & PIN Application					
File Tax Returns & Payments					
Tax Compliance Certificate					
Driver's License & Log Book search					
Import declaration (IDF) Application					
Manifest Lodgement					
Goods declaration					
PIN Checker					
TCC Checker					
WCO E-Learning					
KRA FAQs					

6. Which are the key factors that affect the evaluation of e-Government services at KRA?

- People [ ]
- Processes [ ]
- Technology [ ]
- Other (specify)………………………………………………………………..

7. "E-Government services at KRA have had a positive impact and achieved the desired results," do you agree with this statement?

- I strongly agree [ ]
- I agree [ ]
- I am uncertain [ ]
- I disagree [ ]
- I strongly disagree [ ]

8. What support should the management adopt to improve e-Government services at KRA?
(Scale: 5-Strongly Agree; 4-Agree; 3-Uncertain; 2-Disagree; 1- Strongly Disagree)

	1	2	3	4	5
Staff training					
Financial investment					
Outsourcing					
Technological investment					
Re-structuring					
Citizen Mobilization					

9. How can you assess the Usability of KRA's online portal?
(Scale: 5-Strongly Agree; 4-Agree; 3-Uncertain; 2-Disagree; 1- Strongly Disagree)

	1	2	3	4	5
Accessibility: The e-Government portal and its contents are available to a wide range of users with varied levels of physical capabilities/skills and technologies.					
Navigation Architecture (ie. features which make it convenient/inconvenient for a user to browse the contents on the Portal): Users spend minimal time and effort in locating and using the desired information and services online.					
Content: Is written plainly and in a language which people with diverse educational and knowledge backgrounds can easily understand.					
Design and Layout: e-Government web portals have citizen friendly design and layout so that people find it enjoyable and comfortable to access the desired information with minimum fuss.					
Reliability (ie. the extent of trust, which a citizen can impose on the e-Government website with respect to security and legal requirements): e-Government web sites raise citizens' confidence by abiding by the law and explaining their terms and conditions clearly to the users.					

SECTION 3: Frameworks for Evaluating Performance of E-Gov. Services

10. Please rate the Quantitative performance indicator with regard to KRA's e-Government services? (Scale: 1- Very Valid; 2-Valid; 3-Uncertain; 4-Invalid; 5-Very Invalid)

Quantitative performance indicator	1	2	3	4	5
Number of departments having a web presence					
Number of citizen services available electronically					
Number of departments enabling online transactions					
Number of departments who have initiated backend automation					
Number of guidelines, technical standards, data standards issued for ICT implementation in the government					

11. Which **Economic impact** reflects your organization's performance?

(Scale: 5- I strongly agree; 4- I agree; 3- I am uncertain; 2- I disagree; 1- I strongly disagree)

Indicators	1	2	3	4	5
Economic growth of the nation					
Increase in employment opportunities					
Increase in overall business transactions					
Business generated through online measures and transactions					
Reduction in operating cost for delivering a service online					
Enhanced revenue collection from various types of taxes					
Increase in international trade & economic cooperation					

12. Which **Social Development impact** reflects your organization's performance?

(Scale: 5- I strongly agree; 4- I agree; 3- I am uncertain; 2- I disagree; 1- I strongly disagree)

Indicators	1	2	3	4	5
Poverty reduction					
Increased gender equality					
Enhanced public safety and security					
Better management of environment using information systems					
Improved social welfare by effective dissemination of information					
Higher literacy levels of the society					

13. Which **Governance impact** reflects your organization's performance?

(Scale: 5- I strongly agree; 4- I agree; 3- I am uncertain; 2- I disagree; 5- 1 strongly disagree)

Indicators	1	2	3	4	5
Better co-ordination among government departments					
Greater accountability in public administration					
Better partnership between the government and the private sector					
Improved accessibility by citizens and businesses					
Improved Government-Citizen relationship					
Enhanced public participation in the process of governance					
Amendments in Legislative and Policy Framework with respect to use of ICT					
Improved International Relations					

14. Using the above performance indicators, the process of evaluation could be worked out which could involve any one or more of the various methodologies. Indicate with a **[√]** as appropriate. (Scale: 1- Very Valid; 2-Valid; 3-Uncertain; 4-Invalid; 5-Very Invalid)

	1	2	3	4	5
Formal/informal interaction with all the stakeholders					
Web based surveys					
Structured/sponsored survey by professional agencies					
A third party survey carried out independent of the government influence					

SECTION 4a: IS-Balanced Scorecard for Performance Measurement

15. Has KRA applied the IS-BSC in performance measurement of its e-Government services?
    *Yes[ ] *No[ ]

16. In applying the four perspectives of Balanced IS Scorecard in performance measurement of its e-Government services, KRA can achieve the following objectives:
    (Scale: 5- I strongly agree; 4- I agree; 3- I am uncertain; 2- I disagree; 1- I strongly disagree)

Perspective	1	2	3	4	5
1) User orientation perspective (end-users' view)					
Establish and maintain a good image and reputation with end-users					
Exploit IT opportunities					
Establish good relationships with the user community Control IS costs					
Satisfy end-user requirements					
Be perceived as the preferred supplier of IS products and services					
2) Business value perspective (management's view)					
Establish & maintain a good image & reputation with management					
Ensure that IS projects provide business value					
Control IS costs					
Sell appropriate IS products and services to third parties					
3) Internal processes perspective (operations-based view)					
Anticipate and influence requests from end-users and management					
Be efficient in planning and developing IT applications					
Be efficient in operating and maintaining IT applications					
Be efficient in acquiring and testing new hardware and software					
Provide cost-effective training that satisfies end-users					
Effectively manage IS-related problems that arise					
4) Future readiness perspective (innovation and learning view)					
Anticipate and prepare for IS-related problems that could arise					
Continuously upgrade IS skills through training and development					
Regularly upgrade IT applications portfolio					
Regularly upgrade hardware and software					
Conduct cost-effective research into emerging technologies and their suitability for the business					

SECTION 4b: Measures for the 4 Perspectives of the Balanced IS Scorecard.

Please confirm with a **[√]**, the validity of the measures outlined below, while measuring and evaluating performance based on the 4 perspectives of Balanced IS Scorecard:

(Scale: 1- Very Valid; 2-Valid; 3-Uncertain; 4-Invalid; 5-Very Invalid)

17. Measures for the User orientation Perspective

User orientation Perspective	1	2	3	4	5
Being the preferred supplier for applications and operations					
Establishing and maintaining relationships with the user community					
Satisfying end-user needs.					

18. Measures for the Business Value Perspective

Business Value Perspective	1	2	3	4	5
1. Cost Control					
Percentage over/under overall IS budget					
Allocation to different budget items					
IS budget as a percentage of revenue					
IS expenses per employee					
2. Sales to third parties					
Revenue from IT-related products and services					
3. Business value of an IT Project					
Financial evaluation based on traditional measures e.g.ROI, payback period.					
Business evaluation based on information economics: Value linking; Value acceleration; Value restructuring; Technological innovation					
Strategic match with business contribution to: Product or service quality; Customer responsiveness ; Management information; Process flexibility					
4. Risks					
Business strategy risk: Unsuccessful business strategy					
IS strategy risk : Unsuccessful IS strategy					
Definitional uncertainty: Low degree of project specification					
Technological risk: 'Bleeding edge' hardware and software					
Developmental risk: Inability to put the pieces together					
Operational risk: Resistance to change & Human-computer interface difficulties					
IS service delivery risk					
5. Business Value of the IT department					
Percentage of resources devoted to strategic projects					
Percentage of time spent by IS manager in meeting Corporate executives					
Perceived relationship between IS management and top management					

19. Measures for the Internal Process perspective

Internal Process Perspective	1	2	3	4	5
1. **Planning**					
Percentage of resources devoted to planning and review of IS activities					

2. **Development**					
Percentage of resources devoted to applications development					
Time required to develop a standard-sized new application					
Percentage of applications programming with re-used code					
Time spent to repair bugs and fine-tune new applications					
3. **Operations**					
Number of end-user queries handled					
Average time required to address an end-user problem					

20. Measures for the Future Readiness perspective

Future readiness Perspective	**1**	**2**	**3**	**4**	**5**
1. **IS specialist capabilities**					
IS training and development budget as a percentage of the overall IS budget					
Expertise with specific existing technologies					
Expertise with specific emerging technologies					
Age distribution of IS staff					
Perceived satisfaction of IS employees					
Turnover/retention of IS employees					
Productivity of IS employees					
2. **Applications portfolio**					
Age distribution					
Platform distribution					
Technical performance of applications portfolio					
User satisfaction with applications portfolio					
3. **Research into emerging technologies**					
IS research budget as a percentage of the overall IS budget					
Perceived satisfaction of top management with the reporting on how specific emerging technologies may or may not be applicable to the company					

GENERAL QESTIONS:

✓ Are the services provided by the IS department fulfilling the needs of the user community/customers? YES [ ]   NO [ ]
✓ Is the IS department accomplishing its goals and contributing value to the organization as a whole?   YES [ ]   NO [ ]
✓ Does the IS department create, deliver and maintain its products and services in an efficient manner?   YES [ ]   NO [ ]
✓ Is the IS department improving its services, and preparing for potential changes and challenges?   YES [ ]   NO [ ]

Thank you for your time.

APPENDIX 2: QUESTIONAIRE ON PERFORMANCE MEASUREMENT

Question 1:

i. Have you undertaken or are you undertaking any activity focused on measuring and evaluating e-Government services in your organization? YES ☐ NO ☐

ii. If yes, please explain and state whether they were/are conducted at 1) Corporate level, 2) Departmental level (e.g. ICT, HR) or 3) Project level.

Question 2:

i. What are the main objectives of e-Government measurement and evaluation at Corporate or Departmental level?

ii. Are measurable e-Government targets and goals included in your Corporate or Departmental e-Government strategy? YES ☐ NO ☐

If yes, have indicators been developed to measure them?

Question 3:

i.   What is the purpose and objective of e-Government measurement and evaluation at Departmental/Project level (e.g. ex ante: to argue the case for new projects, or ex post: to assess efficiency and effectiveness)?

ii. Is e-Government measurement and evaluation mandatory for your organization?

iii. To whom the results of e-Government evaluation is made available (e.g. within the organization, to political decision makers, outside government)

Question 4: Have frameworks/methods/tools been developed and used to measure and evaluate e-Government services at Corporate or Departmental? If yes, please indicate which ones and provide a short description below:

a) Officials statistics (e.g. number of PCs at home)					
b) Ad-hoc surveys (e.g. on customer satisfaction)					
c) Expert panels / citizen panels					
d) Focus groups					
e) Cost and benefit analysis instruments and methodologies					
f) Benchmarking instruments					
g) Service quality standards					
h) Other, please specify					

Question 5: What are the main obstacles for e-Government evaluating in your Organization?
Please indicate them in ascending order (1: most important, 8: least important)

a) Lack of evaluation tools					
b) Lack of evaluation culture					
c) Lack of evaluation skills					
d) No common definition of cost and benefits					
e) Data are difficult to collect					
f) No indicators available					
g) Not clear who are the clients of evaluation					
h) Not clear who should perform evaluation					
i) Other, please specify					

Question 6: What kind of e-Government data that you are already collecting is available today in your Organization?

a) Data on readiness (e.g. statistics on digital divide, IT education of the population)					
b) Data on access (e.g. number of computer per households, broadband penetration)					
c) Data on inputs (e.g. cost of IT hardware)					
d) Data on processes (e.g. time saved by process automation)					
e) Data on outputs (e.g. number of services online)					
f) Data on outcome (e.g. level of satisfaction of e-government users)					
g) Other, please specify					

Please list below the data available for each category of data. Please also state whether this data is publicly available and where to find them.

Question 7:

i. What would you see as the main challenges in building common indicators in e-Government for the Organization?

ii. What next steps would need to be taken to make progress in this area?

APPENDIX 3:

A. Step-by-step model for building an IS-Balanced scorecard

In building a company-specific IS-BSC, the following steps are recommended:

1. Create awareness for the concept of the balanced IS scorecard among top management and IS management.
2. Collect and analyze data on the following items:
    a. Corporate strategy, business strategy, and IS strategy;
    b. Specific objectives and goals related to the corporate, business and IS strategy;
    c. Traditional. metrics already in use for IS performance measurement; and
    d. Potential metrics related to the four balanced IS scorecard perspectives;
3. Clearly define the company-specific objectives and goals of the IS department or functional area from each of the four perspectives;
4. Develop a preliminary IS-BSC based on the defined objectives and goals of the enterprise and the approach outlined in this study;
5. Receive comments and feedback on the IS-BSC from management, and revise it accordingly;
6. Achieve a consensus on the IS-BSC that will be used by the organization; and
7. Communicate both the scorecard and its underlying rationale to all stakeholders.

The following steps may be appropriate in order to implement effectively the balanced IS scorecard as a strategic management system:

1. Clarify and translate the vision and strategy into specific action programs;
2. Link strategic objectives to team and individual goals;
3. Link strategic objectives to resource allocation;
4. Review performance data on a periodic basis, and
5. Adjust the strategy as appropriate.

B. The principles for developing a balanced scorecard

It is essential to have a common understanding of the corporate-level strategy and the IS strategy, and have well-defined specific goals related to each before developing the IS-BSC. Such a scorecard need not dictate the relative emphasis that should be placed on the four perspectives, but will likely be useful to remind both business and IS managers that these different perspectives do exist.

The metrics included in the IS-BSC should meet three criteria. They should be quantifiable, easy to understand, and ones for which data can be collected and analyzed in a cost-effective manner. Attributes, such as the quality of decision-making, do not have metrics that can be measured directly in quantitative terms. Thereby, it will be important to relate these attributes to other ones that can be quantified, like the perceived effectiveness of a manager, as rated by others on a pre-determined scale.

C. Errors to be avoided while implementing the IS-BSC

The evidence from the validity test suggests that several common errors must be avoided when implementing this concept. Three of these errors are discussed below:

1. Failure to include specific long-term objectives;
2. Failure to relate key measures to performance drivers by means of cause-and-effect relationships;
3. Failure to communicate the contents of and rationale for the balanced IS scorecard.

D. Performance drivers of e-Government services

A well-built balanced scorecard will include an appropriate mix of outcome measures and performance drivers. Outcome measures like programmers' productivity (number of function points per person per month), without performance drivers like staff education (number of educational days per person), do not communicate how the outcomes are to be achieved. Furthermore, performance drivers without outcome measures may enable the achievement of short-term operational improvements, but will fail to reveal whether the operational improvements have been translated into enhanced financial performance. An IS services department may invest significantly in staff training in order to improve employee productivity. If, however, there is no outcome measure for employee productivity e.g., function points, if it will be difficult for IS management to determine whether its strategy has been effective. Outcome measures are more or less generic user satisfaction, productivity, employee satisfaction, but performance drivers are more company specific and will often be based on the particular strategy that is being pursued.