

Application of IS-Balanced Scorecard in Performance Measurement of e-Government Services in Kenya

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Abstract This research applied the Balanced Scorecard concept to audit performance of e-Government services at Kenya Revenue Authority. An analysis was made on how KRA developed performance measurement data. A systematic study of the existing performance tools was carried out in establishing the basis for conceptualizing the Information Systems Balanced Scorecard. Various dimensions of e-Government services were measured and a tool was proposed that would assess the quality dimensions of the e-Government services from a management perspective. The proposed tool was validated using i-Tax service of KRA. We list the indicators and metrics to 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 four perspectives: business value, user orientation, internal process and future readiness. The research concludes with recommendations to help governments develop a performance measurement mechanism to assess the impact of investing in e-Government. Considering that performance measurement is a prerequisite to e-Government efforts to audit services and assure citizen of government's accountability, the findings will be beneficial to ministries adopting e-Government initiatives as they will gain an understanding about the mixed method of using metrics in IT governance balanced scorecard.

Keywords: performance measurement, e-Government, e-Government Services, IS-Balanced Scorecard, IS Strategic Management

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1. 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.

The Balanced Scorecard (BSC) was developed 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 [1]. The aim of the BSC 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. It has evolved from its early use to a full strategic planning and management system. It provides a framework that helps strategic planners identify what should be done, measured and executed.

The Government of Kenya has 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 [2]. This achievement has enabled realization of national development goals and objectives for Wealth and Employment Creation [3]. Since its establishment in 2004, the e-Government initiative is viewed as a tool that can transform the way interactions take 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. Its primary vision 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 corporations and private

businesses (G2B), relationship between governmental organizations (G2G), and the relationship between government and its employees (G2E) [4].

Kenya Revenue Authority (KRA) was established by an Act of Parliament in 1995 and is charged with the responsibility of collecting revenue on behalf of the Government of Kenya. KRA is the largest revenue earning setup of the Government of Kenya. Its functions are qualification of tax liability and collection of tax [5]. 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. 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 [6,7,8,9].

1.2. Problem Statement

In sub-Saharan Africa, 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 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 exclusively focused on internet services. 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 more relevant [10,11]. The Government of Kenya has been making significant attempts to automate services to its citizen. Lack of an evaluation culture and appropriate methodologies has prevented government units and their constituents from integrating website projects with e-Government service delivery performance. 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 must be developed to provide accountability for e-Government efforts [12].

1.3. Objectives of the Study

The objectives of the study were:

1. To investigate the 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 in Kenya
4. To analyze the challenges in the evaluation of the e-Government services in Kenya
5. To elaborate a model based on the IS-BSC concept towards performance measurement of e-Government services in Kenya

2. Literature Review

E-Government (Figure 1) should be addressed from technological, social, political, and cultural perspectives [13]. The key stakeholders are show in Figure 2.

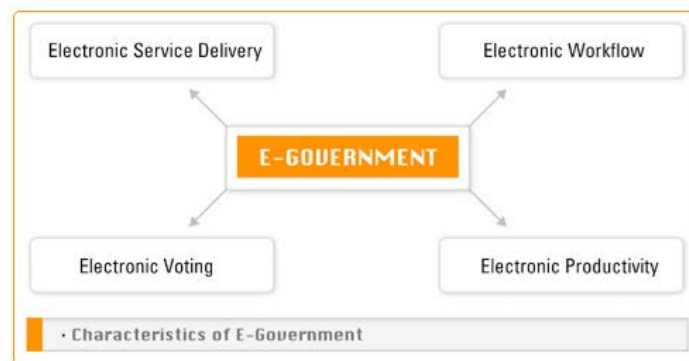


Figure 1. Characteristics of e-Government [14]

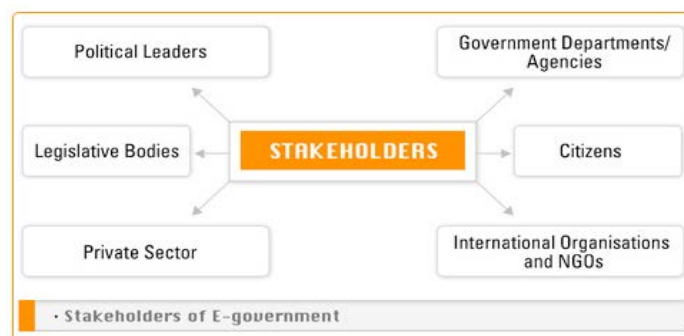


Figure 2. Stakeholders of e-Government [14]

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. Strategic Alignment enables bringing ICT investments in harmony with the strategic business objectives. Value Delivery enables bringing ICT investments in harmony with the strategic business objectives. Risk Management concerns ascertaining that there is transparency about the significant

risks to the organization and clarifying the risk-taking or risk-avoidance policies of the enterprise. Performance Measurement shows how the organization is 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. Use of an IT balanced scorecard is an effective means to help the board and management achieve IT and business alignment [4].

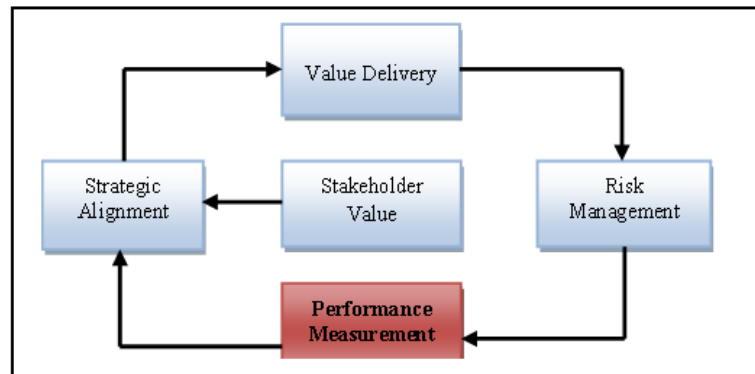


Figure 3. Four Focus Areas of E-Government

2.1. Objectives of Performance Measurement of e-Government Services

A private university in Indonesia applied the IT Balanced Scorecard framework into the performance of the higher education information system [17]. The framework consisted of four perspectives: Corporate Contribution, User Orientation, Operational Excellence, and Future Orientation. The findings affirmed the positive effects of BSC into the performance of higher education. Performance evaluation of e-Government services using BSC, emphasized on a balance between quantitative and qualitative measures in evaluating the success in IT project investments [18]. The development of ICTs had enabled e-Government to continue playing important role in administration and public service in China [19]. Developing e-Government had become the important means to enhance government management, service competence and civil satisfaction. The findings prove that BSC could not only reflect the output and outcome, but also influenced policy making, hence a better future of e-Government.

The Balanced Scorecard was used to manage the current situation and future improvement for IT governance and controls in Thailand [20]. A global IT governance perspective was drawn and a performance analysis applied to the metrics of IT governance balanced scorecard with collected survey data from IT executives. The resultant was a method for applying IT governance balanced scorecard metrics and importance-performance analysis to contribute IT governance strategy.

To understand the impact of business cases on IT investment decisions, municipal e-Government projects indicated that more initial costs were identified in technological investments, hence informed investment decisions would aid in conserving resources for the organization [21]. Evaluating the impact of e-Government entailed a complex process of performance assessment which took into account the perspective of citizens [22].

2.2. Tools and Methodologies Used to Evaluate e-Government Services

DeLone and McLean Information Systems Success Model had one operationalization, the SERVQUAL instrument, limited to service quality, which had been shown to be a functional tool for measuring service quality in IS [23]. The ISO/IEC 38500 standard depicted that IT governance frameworks contributed to implementation of the key principles of the good corporate governance, particularly, in the public sector, especially the transparency and accountability goals for IT assets [24].

The effectiveness and efficiency of e-Government services are critical issues which 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 [25]. Critical success factors would increase the contribution of IT towards achieving organization objectives; hence, the use of IT in public sector had become necessary for sustaining and extending public service delivery [26].

2.3. 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 [27]. A BSC approach was developed to measuring a set of criteria from four different points of view [28,29].

3. Research Methodology

3.1. 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. The research explored the tools used and challenges experienced in measuring performance of e-Government services, and explored if an IS Balanced scorecard would be the foundation for a strategic management of e-Government services in KRA. The study also tested 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.

3.2. Data Source & Collection

The study gathered primary and secondary data which were quantitative and qualitative in nature. Primary data was collected from respondents using questionnaires. The questionnaire sampled stakeholders including executive and technical employees of e-Government, within the ICT department of KRA.

The first category of the respondents was the Deputy Commissioner of ICT Services at KRA, being the top officer dealing directly with e-Governance infrastructure and architecture. Other respondents of this study were drawn from the ICT department executive, officers and technical staff. The data collected gave the inside of G2G and G2E communication. Secondary data was gathered from records existing in the archives of the ICT department of KRA: Revenue Administration Reforms in Kenya -Experience and Lessons; the Corporate Strategic Plan 2012 – 2015; and the KRA i-Tax portal. Data collection took place in October 2014.

3.3. Sampling Technique

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 judgmental sampling method due to the nature of the study which was descriptive in nature. The targeted sample was 50 respondents and the response rate was 96%. A sample of 30% of the population from the ICT

department was selected, where a representative sample is 10% to 30% of the population [30]. The following formula was used to determine the minimum sample size:

$$n = \frac{Z\alpha^2 p(1-p)}{d^2} \quad [31]$$

Where, $Z\alpha$ is the standard normal deviate at the required confidence level; n , the sample size; d , the level of statistical significance set; p , the proportion in the target population estimated to have characteristics being measured. $Z\alpha$ represents that value, such that the probability of a standard normal variable exceeding it is $(1 - \alpha)/2$. 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%, $Z\alpha$ is 1.96. Since, there is no estimate available of the proportion in the target population; the 30% was used [30]. Since larger sample sizes give more reliable results, the researcher targeted to have 50 valid responses, thereby a sample size of 100 was picked. 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 [32]. The selected population was issued with questionnaires whose findings were mapped to the IS-BSC towards measuring the performance of e-Government services at KRA.

3.4. Data Analysis

Data from the study was analyzed using both qualitative and quantitative techniques. Primary data collected was coded and analyzed using SPSS version 20 to determine descriptive statistics as percentages and frequencies. Data was analyzed to test e-Government effectiveness from IS-Balanced Scorecard's four dimensions: User Orientation, Business Value, Internal Process and Future Readiness. The findings were presented using tables and charts. A global IT governance perspective was drawn from the literature review and a performance analysis applied to the metrics of IT governance BSC with collected data from IT executives and staff. 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.

4. Results and Discussion

This section presents the findings of the study and their interpretation. 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. 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 from the study was performed using Chronbach's alpha. The results are presented in Table 1. 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 1. Chronbach's alpha on data collected

Reliability Statistics		
Cronbac'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. The Kaiser Meyer-Olkin (KMO) is a measure of sampling adequacy and varies between 0 and 1.

The four perspectives of the IS-BSC were subjected to PCA with varimax rotation. An inspection of the

correlation matrix revealed the presence of many coefficients of 0.3 and above. 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 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

The screen plot (Figure 4) was used to assist to refine the test items. The number of components was determined from the shape of the screen plot. An inspection of the screen plot revealed a clear break after the third component; hence it was decided to retain three components for further investigation.

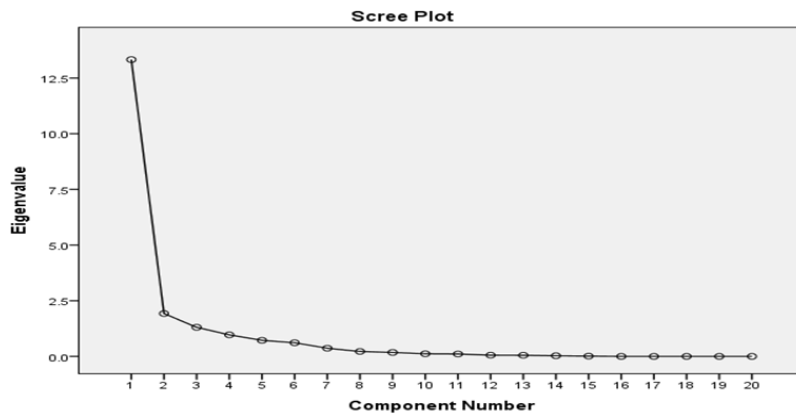


Figure 4. Screen Plot for Determining the Number of Factors

Table 3. 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 & develop	.474	.749	
Good relationship with end users	.484	.743	
Sell IS products to third party		.664	.634
Acquiring & testing new hardware & 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. Rotation converged in 16 iterations

Varimax rotation was performed to aid in interpretation of the components. The rotated solution presented in Table 3 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.

Descriptive analysis was done on staff designation, specialization areas, roles of personnel involved in implementing performance measures at KRA and duration of employment. The findings were relevant in determining the relevance of achieving the study's objectives.

4.3. Levels of Measuring and Evaluating e-Government Services

KRA as a National Revenue collection body in Kenya had seen different levels for evaluation of its e-Government services. At Corporate level, 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.

At 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. 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. Monitoring and evaluation mechanism which operated at the project level of abstraction would be addressed by designing and incorporating project-specific indicators during evaluation.

4.4. 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 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. Objectives of performance measurement

At National Level
<ol style="list-style-type: none"> 1. To establish a real political administration 2. To adopt a unified strategic plan common to all ministerial departments 3. To establish organizational structures with the co-operation of all ministerial departments 4. To ensure strategic target compliance 5. To create productive and healthy competition among government departments 6. To align government departments around standards and better practices 7. To ensure transparency and accountability 8. To recognize the best achievers 9. To measure effectiveness and to a certain extent efficiency 10. To evaluate the contribution of e-Government to achieving public sector reform objectives 11. To monitor overall compliance of initiatives with national strategy 12. To allow for realignment of initiatives with overarching plan if necessary 13. To ensure a whole-of-government approach to e-Government by strengthening the co-ordination of initiatives at the national level
At Corporate Level
<ol style="list-style-type: none"> 1. To reform the public sector 2. To simplify administrative procedures 3. To ensure compliance with strategy 4. To monitor overall progress against targets 5. To ensure transparency, accountability and awareness 6. To take corrective actions
At Department/Project Level
<ol style="list-style-type: none"> 1. To ensure project status tracking 2. To ensure project deliverables 3. To ensure project timelines compliance 4. To assess and monitor costs, benefits, and risks of project implementation 5. To measure efficiency and effectiveness of implemented projects 6. To identify good practices and promote knowledge sharing among institutions 7. To provide data/information to decision makers 8. To justify investments and determine resource allocation for new projects

At the National level, the Kenyan e-Government services needed to implement a unified and centralized agency level performance measurement system. At the 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. At the 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.

4.5. Tools and Methodologies Used to Evaluate e-Government Services

Evaluation methods must be selected to match the resources available for evaluation, the magnitude of an initiative, and individual departmental circumstances. The study found that a range of evaluation methods and tools for e-Government were available to KRA (Figure 5 and Figure 6). However, e-Government stakeholders had not developed significant strategies to use these methods especially more sophisticated user-engaging tools.

The results showed that KRA had 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. Service level agreements were in place to ensure high quality standards for services to citizens and businesses.

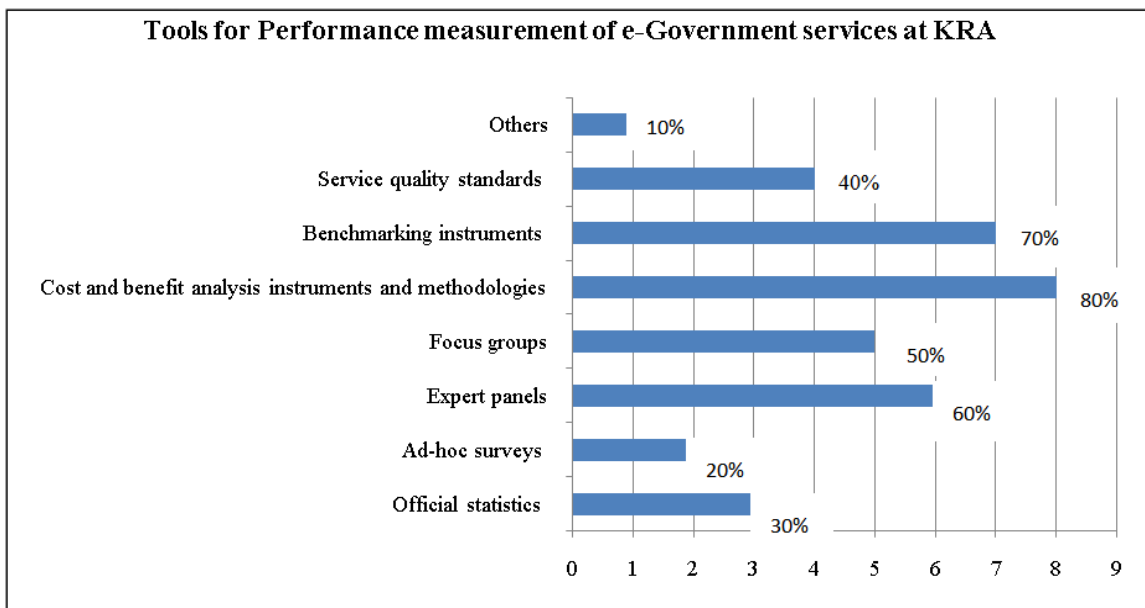


Figure 5. Results for Tools applied on performance measurement of e-Government services at KRA

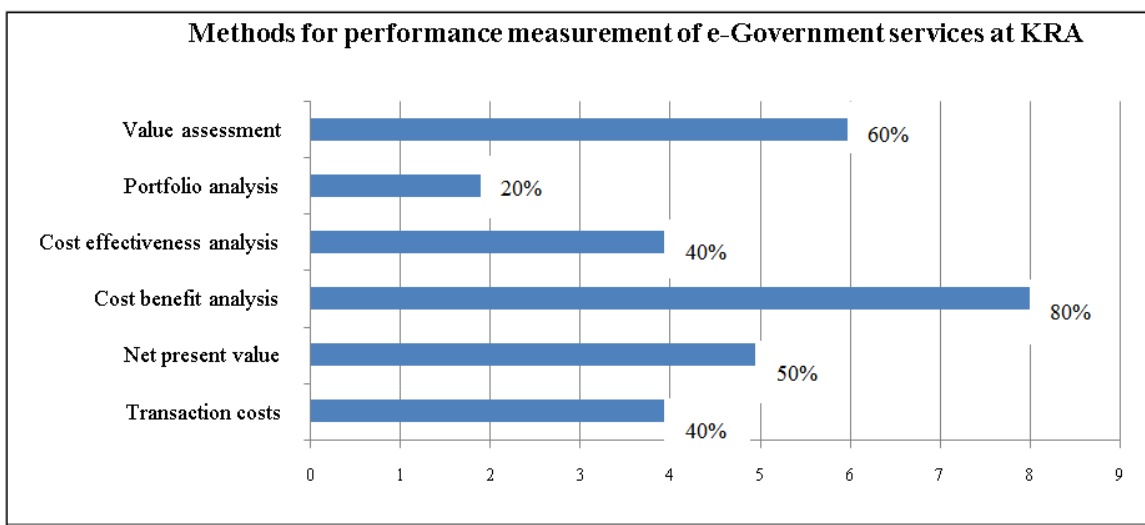


Figure 6. Results of Applied Methods of e-G government services measurement at KRA

4.6. 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 (Figure 7). 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.

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 80% of respondents provided a valid answer 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%. E-Government initiatives

were designed and implemented by individual e-Government programme units with very loose institutional links with other ministries. This could prevent

development of a common culture and experience of implementation and evaluation across government.

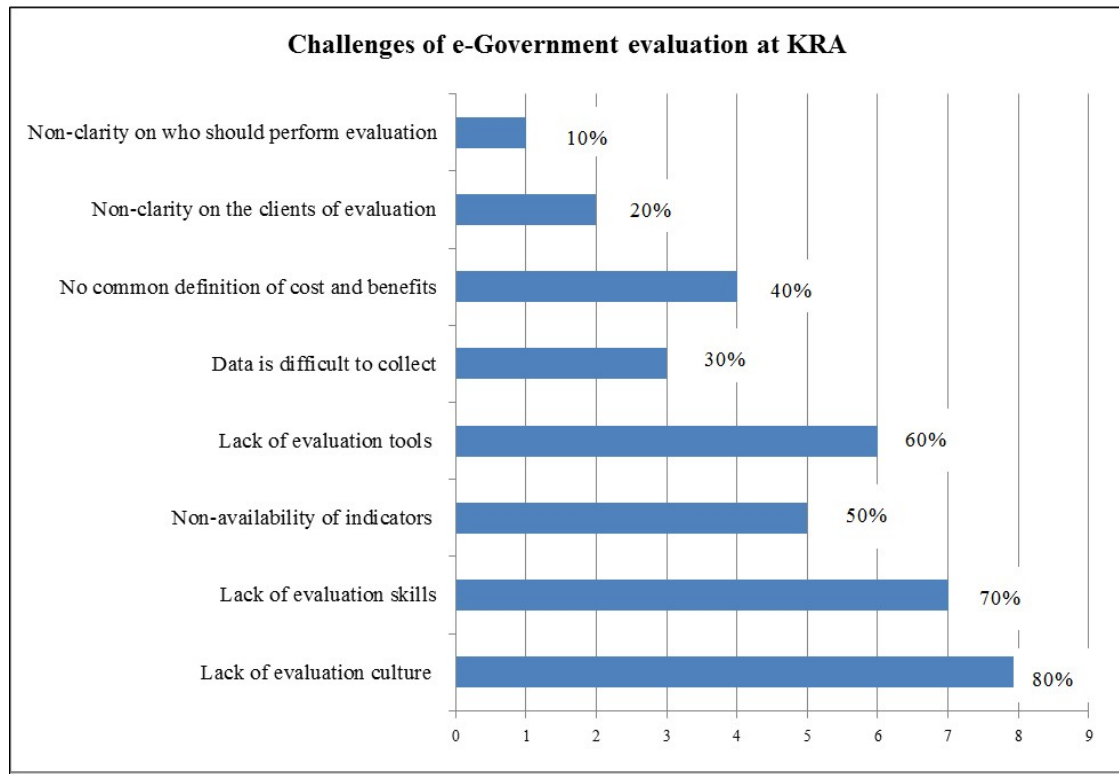


Figure 7. Challenges to evaluation of e-Government services

4.7. The IS - Balanced Scorecard (IS-BSC)

The Balanced Scorecard was 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 [33]. 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 were further translated into actionable measures to help organizations improve performance [34,35].

The BSC 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 [36]. 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 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 [37].

4.7.1. IS - BSC framework for Performance Measurement

The Information Systems-Balanced Scorecard (IS-BSC) methodology (Figure 8) 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 would be 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 [38].

Business Value 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. User Orientation 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. It has four categories of criteria: Performance issues, decision quality, personal impact and organizational impact. Internal Processes 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. Future Readiness Perspective identifies the intangible assets that are most important to the strategy. The objectives in this

perspective identify jobs (the human capital), systems (the information capital), and what kind of climate (the organization capital) are required to support the value creating internal processes.

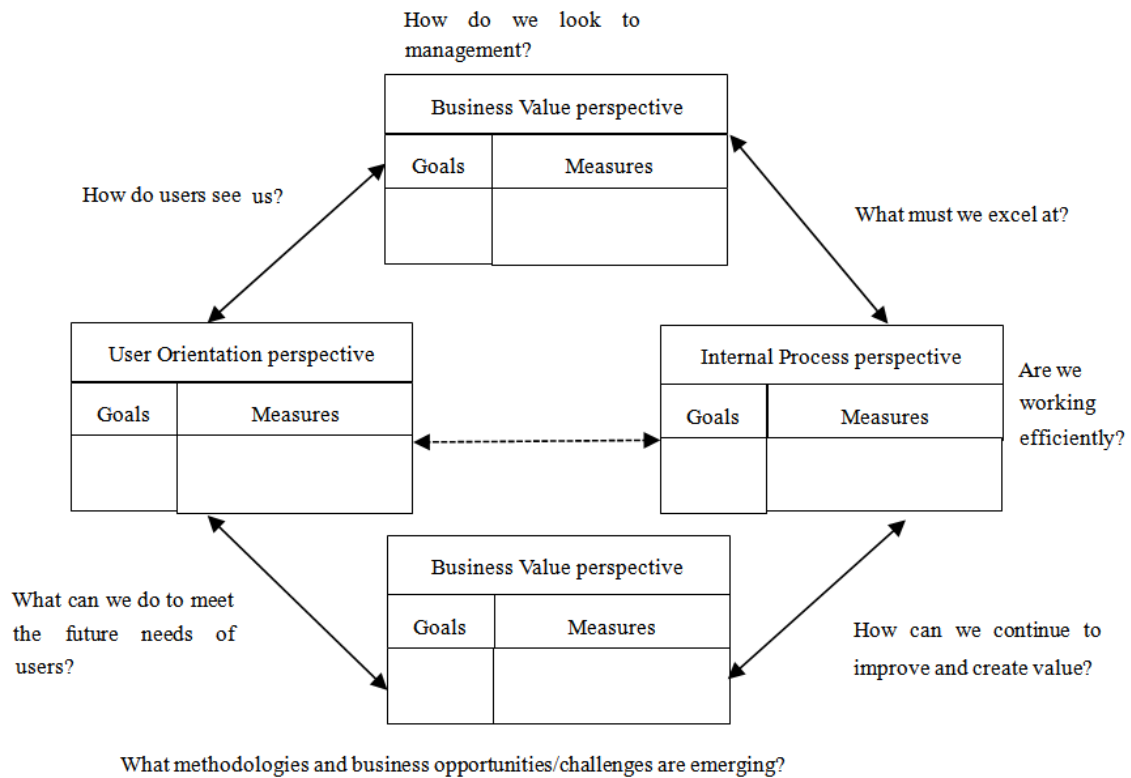


Figure 8. Relationships between the four perspectives in IS-BSC [35]

4.7.2. BSC Performance Measurement Indicators

A BSC approach was developed for measuring a set of criteria from four different points of view; business value, user orientation, internal process and future readiness. Each perspective contained a set of criteria. 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 IS-BSC includes three additional perspectives [27,28]. 60% of the respondents agreed that the objectives, targets and measures in IS-BSC corresponded with those at KRA. This implied a relationship between what IS-BSC sets out to measure and the actual activities that take place on the ground. 80% of the staff concurred that IS-BSC would meet the objectives of e-Government services.

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. Cost control would be evaluated in the short-term, where the traditional financial perspective would encompass the control of the IS budget as well as the benefits arising from the sale of IT-related products and services to third parties. Business value of IT Project 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. 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.

User Orientation Perspective: The end-user of an IS may be an internal customer that is utilizing an inter-organizational system. In contrast to the large potential market for the products and services of most companies, an IS department usually has limited opportunities to attract new customers, which may change in the expanding electronic marketplace. The satisfaction of existing customers will be 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. User satisfaction would play an important role in the overall evaluation of the IS department or function. The metrics for the user perspective focus on three areas: 1. Being the preferred supplier for applications and operations, 2. Establishing and maintaining relationships with the user community and 3. Satisfy end user needs.

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.

Future Readiness Perspective: This is concerned with continually improving the skill set of IS specialists in order to prepare them for potential changes and challenges in the future; regularly updating the applications portfolio; and putting effort into researching emerging technologies and their potential value to the organization. The findings, 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 need to gain a thorough understanding of emerging technologies as well as their specific suitability to the company's IS architecture. 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.

4.8 Cause-and-Effect Relationship of e-Government Services at KRA

If cause-and-effect relationships are not adequately reflected in the BSC, it will not translate and communicate the company's vision and strategy. They can involve all four of the perspectives in the BSC framework as seen in, [Table 5](#).

Table 5. 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) Mission: Deliver value-adding services to end-users Key question: Are e-Gov. 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	Business value perspective (management's view) 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 good image and reputation with management Ensure the IT projects provide business value Control IT costs
Internal processes perspective (operations-based 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	Future readiness perspective (innovation and learning view) 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

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 IT itself.

Table 6. Metrics for the Four Perspectives of IS-BSC [39]

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

The current indicators of competence may be more difficult to measure than either the leading innovation or lagging performance indicators. [Figure 9](#) shows an illustration of how innovation and learning efforts can raise competence levels that in turn will improve business performance in the future.

5. Conclusions

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 understanding about the mixed method of using metrics in IT- governance-BSC in order to identify the current situation of IT governance and controls in their organizations. An IS-BSC can easily become part of the operational-level management system. In KRA, this was due largely to the absence of specific long-term objectives, particularly related to the future readiness perspective. KRA was able to identify a few cause-and-effect relationships and performance drivers during their development of an IS-BSC. 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.

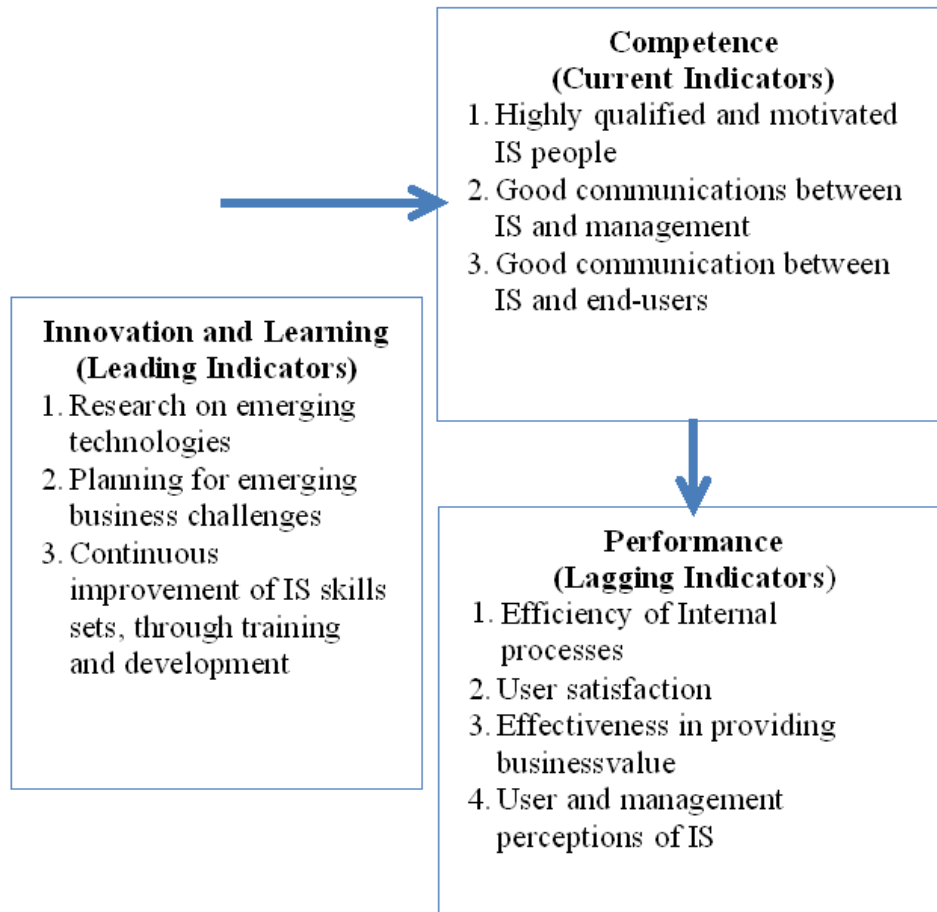


Figure 9. How innovation and learning lead to future performance improvements

It was observed that there was a lack of intra-organizational communication and this hindered sharing of information.

KRA management should initiate a top-bottom approach policy on matters to do with e-Government. Most respondents recommended that KRA's ICT executive management should give full support and commitment to assessment and implementation of e-Government initiatives. Different organizations will have different set of performance indicators and evaluation techniques for their e-Government plan. They will be driven by the goals and targets set in their overall vision. 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 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 application of the IS-BSC concept to business functions, departments and individual projects 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. Its value would rise if 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. This research had considered specific metrics for each of the perspectives. Future research is required 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 organization to organization, it is beneficial to build upon a standard framework, rather than starting from scratch. Additional case studies are likely to reveal otherwise.

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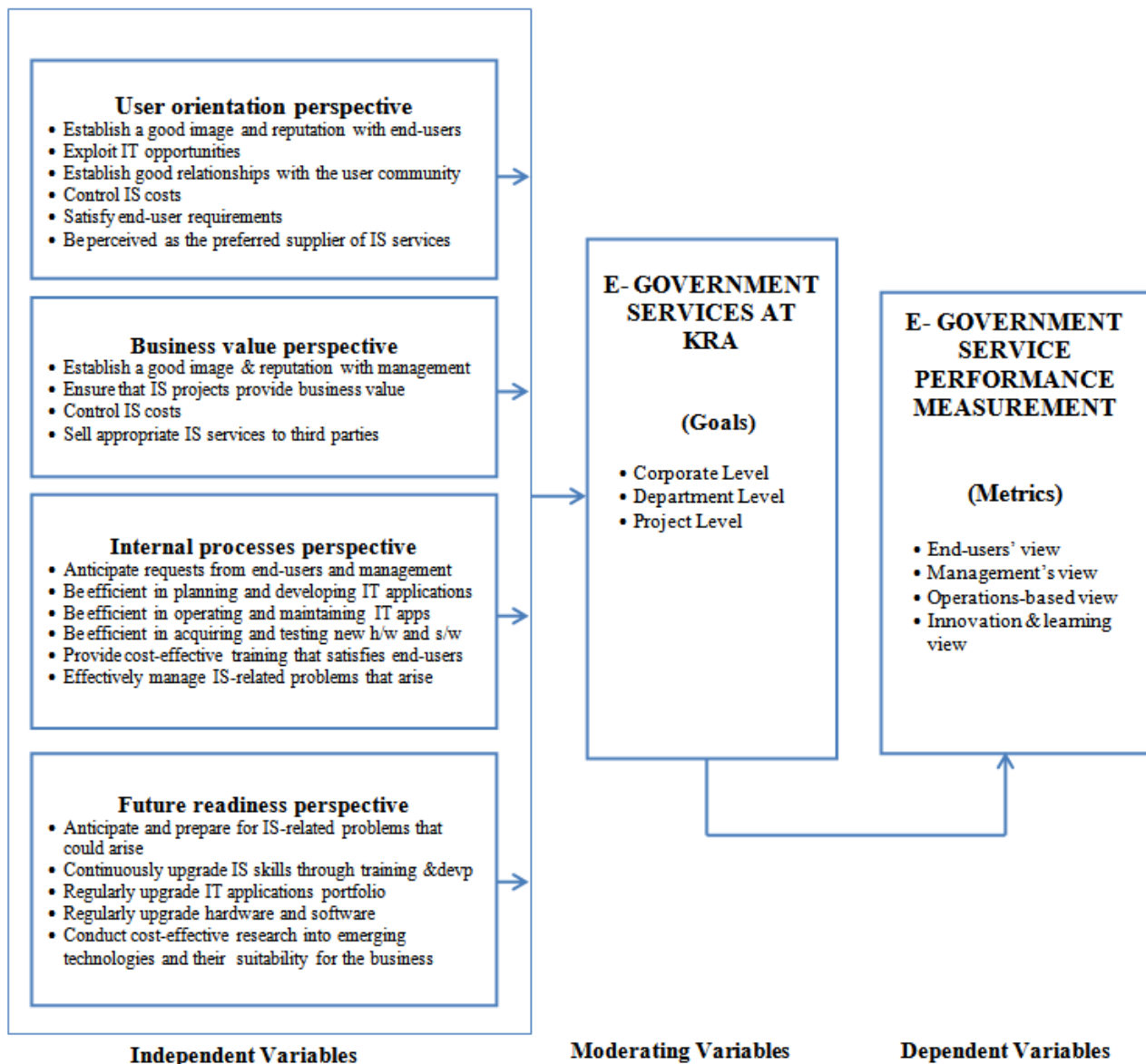
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Appendix 1

Conceptual Framework



Appendix 2

A. Step-by-step model for building a company-specific IS-Balanced scorecard

1. Create awareness for the concept of the balanced IS scorecard among top management and IS management.
2. Collect and analyse 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.

Steps to effectively implement the IS-BSC framework:

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. The metrics included in the IS-BSC should meet three criteria: quantifiable, easy to understand, and ones for which data can be collected and analysed in a cost-effective manner.

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

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.