

The Role of Management Information Systems in Measuring Organisational Performance in the KwaZulu-Natal Department of Arts & Culture

by

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Declaration

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ABSTRACT

Government departments collect process and use information for planning and reporting to comply with diverse legislation at operational and strategic level. Information systems play an important role in the collection and processing of information, making it possible to process large quantities of information, and synchronise and share it. Management information systems are used to process information both at strategic and operational level to monitor activities, assess and plan new services, and monitor trends which enable senior managers to effectively manage the strategic direction of an organisation. Management information systems play an important role in measuring organisational performance.

The purpose of the study was to describe the role of management information systems (MIS) in measuring organisational performance in the KwaZulu-Natal Department of Arts & Culture. A case study approach was used to investigate the research problem. Managers of the core programmes of the department were included in the study. Face-to-face interviews and self-administered questionnaires were used to collect data.

The study concluded that the role of MIS in measuring organisational performance was limited in the department. The department did not have an integrated PMIS (performance management information system) or adequate capacity to develop and manage such a system. The study recommends that the department should formalise its performance measurement framework and build capacity to fully implement a PMIS. Further studies should include participants who are not in management and should examine the records management systems in greater detail.

OPSOMMING

Staatsdepartemente versamel, verwerk en gebruik inligting vir beplanning en verslagdoening om aan 'n verskeidenheid wetsvereistes op bedryfs- en strategiese vlak te voldoen. Inligtingstelsels speel 'n belangrike rol in die versameling en verwerking van inligting en maak dit moontlik om groot hoeveelhede inligting te verwerk, te sinchroniseer en te deel. Bestuursinligtingstelsels word gebruik om inligting op sowel strategiese as bedryfsvlak te verwerk ten einde werksaamhede te monitor, nuwe dienste te beoordeel en te beplan, en tendense dop te hou wat senior bestuurders in staat stel om die strategiese rigting van 'n organisasie doeltreffend te bestuur. Bestuursinligtingstelsels vervul ook 'n belangrike funksie in die meting van organisatoriese prestasie.

Die doel van hierdie studie was om die rol van bestuursinligtingstelsels (BIS) in die meting van organisatoriese prestasie in die KwaZulu-Natalse Departement van Kuns en Kultuur te beskryf. 'n Gevallestudiebenadering is gevolg om die navorsingsprobleem te ondersoek. Bestuurders van die kernprogramme van die departement is by die studie ingesluit. Persoonlike onderhouds- en selfvoltooiingsvraelyste is gebruik om data in te samel.

Die studie kom tot die gevolgtrekking dat die rol van BIS in die meting van organisatoriese prestasie in die departement beperk is. Die departement beskik nie oor 'n geïntegreerde prestasiebestuursinligtingstelsel (PBIS) óf voldoende vermoë om so 'n stelsel te ontwikkel en te bestuur nie. Die studie beveel aan dat die departement sy prestasiebestuursraamwerk formaliseer en vermoë bou om 'n PBIS volledig in werking te stel. Verdere studies behoort ook deelnemers in te sluit wat nie bestuurslede is nie, en kan die rekordbestuurstelsels in meer besonderhede ondersoek.

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LIST OF ACRONYMS AND ABBREVIATIONS

BAS	Basic Accounting System
BIS	Business Intelligence System
CGICT Technology	Corporate Governance of Information and Communication
DAC	Department of Arts & Culture
DHIS	District Health Information System
DoBE	Department of Basic Education
DoH	Department of Health
DPSA	Department of Public Service and Administration
DSS	Decision support systems
DST	Department of Science and Technology
EMIS	Education Management Information System
ERP	Enterprise Resource Planning Systems
ESS	Executive Support Systems
FMPPI	Framework for Managing Programme Performance Information
GITOC	Government Information Technology Officers Council
GWEA	Government-Wide Enterprise Architecture
GWM&E	Government-Wide Monitoring and Evaluation Framework
ICT	Information and Communication Technology

IT	Information Technology
KMS	Knowledge Management Systems
KZN DAC	KwaZulu-Natal Department of Arts & Culture
M&E	Monitoring and Evaluation
MEC	Member of Executive Council
MIOS	Minimum Interoperability Standards
MIS	Management Information System
NAAIRS	National Automated Archival Information Retrieval System
NARSSA	National Archives and Records Services of South Africa
WPTPS	White Paper on the Transformation of the Public Service
PERSAL	Personnel and Salary Information System
PI	Performance Information
PMIS	Performance Management Information System
PRC	Presidential Review Commission
QPR	Quarterly Performance Report
RSA	Republic of South Africa
SASQAF	South African Statistical Quality Assessment Framework
SITA	State Information Technology Agency
SLIMS	SITA Library and Information Management System
STATSSA	Statistics South Africa
TPS	Transaction Processing Systems

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CHAPTER 1: INTRODUCTION AND PROBLEM STATEMENT

1.1 Introduction

Public service reforms have effected changes in the public sector from being input- and resource-focused administration to output- and result-based public service (Cloete, 2003:10). This requires accurate and precise measurement of policy outputs and outcomes using technology to collect, analyse and assess data to make value judgements on whether the services that government provide are adding value to people's lives.

Government departments collect process and utilise information for planning and reporting purposes to comply with various legislative requirements and to measure the performance of government in meeting service delivery challenges. Collection and utilisation of information take place at operational and strategic levels. At operational level, management information systems are used to monitor results, control activities, and assess and plan new services, while at strategic level they are used to summarise trends and processes that enable senior management to effectively manage the strategic direction of an organisation (Cloete, 2003:29).

An information system is a set of interrelated elements that collect, manipulate, store and disseminate data and information and which has a feedback mechanism (Stair & Reynolds, 2012:10). Stair and Reynolds (2012:5) define data as raw facts, while information is defined as a collection of data that is organised and processed in a meaningful manner that adds value to the user. Converting raw data into information involves a process which results from performing logically related tasks to produce an outcome (Stair & Reynolds, 2012:6).

The study aims to describe the role of management information systems in measuring organisational performance in the KwaZulu-Natal Department of Arts & Culture (KZN DAC). The concept of a management information system and the measurement of

organisational performance using management information systems is discussed in greater detail in Chapter 2.

This chapter includes background information about the study, the purpose of the study, its research aims and objectives, the research design and methodology, and a chapter outline of the study.

1.2 Background

The new public service era is characterised by reorganisation of the public sector, where government is more responsive to the needs of the citizens and where efficiency and effectiveness of government become an important criterion of public service delivery (Lips, 1998:329; Hazlett & Hill, 2003:446; Cordella & Bonina, 2012: 512). Cordella and Bonina (2012:513) outline a shift from the traditional New Public Management (NPM) to a transformational public management approach which is more result driven and more focused on integrated service delivery. This requires integration at different levels for coordinated policy development and service delivery across organisations (Cordella & Bonina, 2012:514).

Integrated policy management and service delivery within an organisation require information sharing and data integration. According to Vayghan et al., (2007:671), integration of data from multiple domains to support critical business functions is important. Bidlack and Wellman (2010:66) argue that integration of data across business units has the potential of breaking data silos and aggregation of data from different sources. Vayghan et al. (2007:671) further argue that a synchronised data and information management strategy at organisational level is essential for an organisational-wide approach to data and information management. Information and communication technology (ICT) has become central in enabling this integration and coordination. Optimal use of ICT makes it possible to analyse large volumes of data. Technology and information systems enable integration of data and information and sharing of business processes and systems among government departments to eliminate silos (Culbertson, 2004:60). The use of ICT for data integration and sharing makes it possible for an

organisation to realise the value of information in supporting its functions and decision making.

The value of information lies on how information helps an organisation achieve its goals efficiently and effectively. Stair and Reynolds (2012:7) contend that information has value if it is accessible, accurate, complete, relevant, reliable, timely, secure, simple, economical and verifiable. Information also has value if it assists the organisation to develop new services, and helps the organisation to budget better and save costs (Stair & Reynolds, 2012:8). Management information systems that transform data into valuable information are required to measure organisational performance.

In order to describe management information systems used in the department to measure organisational performance, it is important to provide a brief description of the department and its functions. The main functions of the department include collection and preservation, and the provision of information services through libraries, museum and archive services, as well as the development and promotion of arts and culture in the province. The department contributes towards the broad government outcomes and provincial strategies such as the provincial growth strategy. The department has two core chief directorates which are Cultural Affairs, which comprises the Language Services, Arts Development and Culture directorates, and the Library, Archives and Museum Services chief directorates. These sub-programmes provide services to the same population in the province and they have the same service delivery stakeholders.

Each of these sub-programmes collects utilises and analyses information for planning, decision making and reporting on performance at provincial, and to their respective sectors, at national level. The sub-programmes of the department all have their own management information systems, which are either manual and/or electronic.

The department has the ICT infrastructure, comprising transversal electronic management information systems which are fully operational such as PERSAL, BAS, and the SITA Library and Information Management System (SLIMS). There are other systems that

have not yet been fully developed, such as the electronic procurement system. At the time of the study, none of the department's systems was fully integrated. As a result, it is difficult to share information between sub-programmes for better coordination in policy development and integrated service delivery. The researcher observed problems in accessing reliable information for planning or reporting in the department. The quality and reliability of information used for planning and reporting purposes are sometimes questionable. This can be a challenge for the department to use information effectively to measure its performance.

The challenge of availability of MIS in the department is not unique; the Presidential Review Commission (PRC) report states that despite huge investment of public funds on ICT, little benefit has been obtained from the investment (Presidential Review Commission, 1998). For example, in the financial year 2008/9 national and provincial government departments spent R12,9 billion on ICT and the annual growth rate on expenditure on ICT is at 21% (RSA, DPSA, 2011). According to the PRC report, the South African public sector is lagging behind its counterparts on information management, information systems and technology (Presidential Review Commission, 1998). The report further states that the current information systems and technology applications in the public sector cannot meet the country's service delivery needs. According to the report, transactional information systems have been in use for a number of years and management information systems to support strategic management and policy management are emerging.

The PRC report points out that there is a problem of duplication of data collection and data warehousing activities in the public sector (Presidential Review Commission, 1998). Some of the problems resulting from a lack of a government-wide information management, information systems and technology strategy include the use of incompatible platforms; information is not shared or re-used in an organised manner, and duplication of functions and systems between line functions (Presidential Review Commission, 1998). The report also highlights the inadequacy of existing management

information systems for measuring and management of organisational performance. The PRC report also highlights the lack of a pool of skilled information management resources.

The South African government has put a number of policies and legal frameworks in place to address some of these challenges. These include Department of Public Service and Administration (DPSA) Corporate Governance of ICT (Information and Communication Technology) Policy Framework, Treasury policies on programme performance information, and the Department of Monitoring and Evaluation policies on managing organisational performance.

The basic ICT infrastructure and information systems are available in the country and in the department. Policy framework is available to enable the implementation of information systems that can be used to measure organisational performance. To obtain the full benefit from the available ICT infrastructure and information systems, it is important to establish how they support government departments to measure and manage organisational performance towards a transformational public service that is results focused. This can be done by first determining ICT skills, technology, and management information systems currently available in the department: how they are used to manage information, and how they can be used to improve the measurement of organisational performance.

1.3 Purpose of the study

Developing an e-government strategy requires that the department ask the following questions: where are we now, where do we want to get to, and how do we get there? (Heeks, 2006:45). The study focuses on the first question in terms of the current status of management information systems in the department.

The purpose of the study is to describe the current state of management information systems in place in the department and establish their ability to enhance organisational performance. The study explores and describes management information systems

currently in place in the department and how they are used to measure organisational performance.

The study aims to answer the question by exploring and describing the technology resources, information that the existing information system delivers, information processes undertaken, human resources involved, information skills, IT skills and system development skills currently available in the department.

1.4 Potential value of the study

Public service reforms from the new public management to result-based management and evidence-based policy management require continuous collection, analysis and assessment of information for decision making (Cloete, 2003:10). The new result-based management approach places an emphasis on monitoring and evaluation to measure organisational performance. In South Africa, the field of monitoring and evaluation is emerging and more research is required. According to Marchand and Raymond (2008:664), there is a paucity of research that has attempted to establish a link between information systems and performance management. Further research is required on using management information systems to measure organisational performance in South Africa. Therefore the study has the potential to contribute to the existing body of knowledge.

According to the South African government evaluation policy framework, it is required that all government programmes should be evaluated every five years (RSA, Department of Monitoring and Evaluation, 2011:12). Government departments need to comply with this requirement, and managing information effectively allows departments to conduct these evaluations. Management of information enables the department to comply with the Framework on Programme Performance Information requirements.

Government departments report the same information to different stakeholders and this can be streamlined and information shared to reduce duplication (RSA, Department of Monitoring and Evaluation, 2007:27). Management of information to enable the department to measure its performance has become very important.

The study intends to make a contribution towards addressing the challenges of managing information and management information systems used to measure organisational performance in the public sector.

1.5 Research aim and objectives

The aim of the study is to determine the role of management information systems in the measurement of organisational performance in the KwaZulu-Natal Department of Arts & Culture. The research problem that the study addresses is:

What role do management information systems play in the measurement of organisational performance in the KwaZulu-Natal Department of Arts & Culture?

The key research objectives are:

- To determine how the performance of the organisation is currently measured;
- To describe the manner in which performance information is managed in the department;
- To describe the information technology and management information systems currently used to manage information in the department;
- To describe the ICT skills available in the department; and
- To determine how management information systems are used to measure organisational performance in the department.

The secondary objectives of the study are:

- To describe the South African public sector framework governing ICT and organisational performance measurement;
- To explore management information systems used to measure organisational performance in the public sector;

- To discuss the barriers and success factors to implementation and the use of management information systems to measure organisational performance.
- To explore different approaches used to evaluate management information systems for measuring organisational performance; and
- To make recommendations for a model that can be used to improve the measurement of organisational performance by using management information systems in the department.

1.6 Scope and limitations of the study

1.6.1 Scope of the study

The study is limited to a single case of one government department, which is manageable within the limited time and resources available to complete the project. The study focuses only on the use of management information systems to measure organisational performance within the KwaZulu-Natal Department of Arts & Culture. It only covers the core sub-programmes of the department, namely, Cultural Affairs, Library, Archives and Museum Services sub-programmes because these are the main operational core business units of the department.

1.6.2 Limitation of the study

The study conducted is a case study focused on the Department of Arts & Culture in KwaZulu-Natal. The results of the study may not be generalised to all government, owing to the unique nature of each government department. The results of the study may be applied to Department of Arts and Culture in different provinces and to some extent in the National Department of Arts and Culture.

1.7 Research design and methodology

This is a descriptive study which delineates management information systems in the department and their ability to enhance organisational performance. An empirical study approach was used to collect primary data from the officials of the department. Secondary

data was collected from documents such as reports and plans of the department. The literature review and documents constitute the non-empirical element of the study.

A case-study research design was used to study various sub-programmes of the department. A case-study research approach allows for the researcher to study the character of an organisation (Babbie & Mouton, 2001:87). The units of analysis are various sub-programmes of the department. A non-probability sampling technique was applied to purposefully select officials able to make a meaningful contribution to the study based on their experience and roles in relation to the study. The study covers the core service delivery sub-programmes of the department, namely, Library, Archives and Museum Services, and Cultural Affairs sub-programmes. The study includes officials from the Corporate Strategy sub-programme responsible for coordinating planning and reporting information. The ICT component responsible for ICT strategies was also included in the study. Regional office officials were included as they are responsible for implementation and monitoring of programmes and projects of the department. Senior managers and middle managers were included because of their role in the collection of performance information as outlined in the Framework for Programme Performance Management, as well as officials responsible for the capture of information and implementation of programmes in the department (RSA, National Treasury, 2007:14).

Semi-structured questionnaires were used to collect data. Face-to-face interviews were conducted where feasible; however telephonic interviews were used for interviews with officials not geographically located in the same town as the researcher. Interviews are preferable to self-administered questionnaires to minimise a low response rate. The researcher performed content analysis by studying reports and planning documents submitted by various sub-programmes of the department. The content analysis data analysis method was used to analyse data.

1.8 Outline of chapters

The outline of the thesis follows Mouton's (2001:122-125) structure of a thesis.

Chapter 1 covers the introduction, background, purpose, and potential value of the study which provides a context for the study. The scope and limitations, and research aim and objectives are also included to indicate what the study will focus on and what will be excluded in the study. This chapter also covers the research design and methodology which explains how the study will be conducted.

Chapter 2 provides a theoretical framework for the study. The chapter covers literature consulted on management information systems in relation to organisational performance in the public sector. It starts with definitions of key concepts relevant to the study, namely, ICT, management information systems, organisational performance, and performance measurement. The chapter describes South African policies governing ICT and performance management. It discusses how ICT, e-government systems and management information systems are used to improve measurement of organisational performance. The benefits and limitations of using ICT and management information systems to measure organisational performance are discussed in this chapter. The section also explores various approaches to evaluating the use of management information systems to measure organisational performance.

Chapter 3 discusses frameworks used to measure organisational performance and management information systems. The South African Treasury Framework for Managing Programme Performance Information (FMPPPI) is discussed in detail.

Chapter 4 constitutes the case study chapter which describes the department within the national and provincial government context – its legislative mandate, vision and mission; organisational structure; services it renders; and how it monitors its performance.

Chapter 5 covers the methods used for data collection and analysis of data from both primary and secondary sources.

In Chapter 6, research results are presented and discussed. The section examines the existing ICT resources, management information systems, measurement of performance, and management of performance information within the department.

A summary of the study, recommendations and concluding remarks are presented in Chapter 7.

1.9 Summary

In result-based public management, management of performance information has become very important for an organisation to keep track of progress towards the achievement of its objectives and for good governance. The South African public sector has made a huge investment in ICT and there are policies to support the use of ICT. There are numerous transactional management information systems across the public sector. Policies and legal frameworks are in place to enable government departments to gain the full benefits of using ICT and management information systems to meet their objectives and measure organisational performance.

Management information systems can be used to collect, assess and analyse information that is critical for an organisation to measure its performance. The study investigates how management information systems are used to measure organisational performance in the KwaZulu-Natal Department of Arts & Culture.

The background to the study was presented in this chapter to provide a context for the study. The purpose and objectives of the study were stated to clarify what the study intends to achieve as well as its scope and limitations. The methodology used was also discussed in this chapter. An outline of chapters included in this thesis was provided in this chapter. The next chapter, Chapter 2, discusses literature consulted to explain concepts on management information systems in relation to measuring organisational performance.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The previous chapter provided an overview of the study; this chapter covers the theoretical framework to address the research problem of determining the role of management information systems in the measurement of organisational performance. Key concepts relevant to the study are defined, and these are ICT, management information systems, e-government, organisational performance and performance measurement. The framework includes an exploration of management information systems used in the public sector to measure organisational performance; the benefits and limitations of using management information systems to measure organisational performance; and different approaches employed to evaluate management information systems used to measure organisational performance. The chapter also covers the South African public sector policies governing ICT and organisational performance measurement.

2.2 Definition of key concepts

2.2.1 Performance

Performance in the public sector is expressed in terms of economy, effectiveness, efficiency and appropriateness (Pauw et al., 2009:202). Economy is the measure of the relationship between quantity and quality of resource inputs and its related costs. Pauw et al. (2009:202) define efficiency as the relationship between resource inputs and outputs, whereas effectiveness is measured by the extent to which planned outputs are met.

Orelli et al. (2010:458) cite Bovaird's (1996) description of performance as "set of information about achievement of varying significance to different stakeholders". The authors argue that performance is multidimensional. They classify performance according to the following types: inputs, process, outputs and outcomes. Performance may be defined at different levels in government systems, namely at organisational level, political level, or at individual employee level (Orelli et al., 2010:459). In this study, performance is defined at organisational level.

2.2.2 Performance measurement

Organisational performance needs to be measured. Various definitions of performance measurement are explored.

Hatry (1999:3), cited by Orelli et al. (2010:458) defines performance measurement as the regular measurement of outcomes and efficiency of services or programmes. According to Radnor (2008:95), performance measurement is the evaluation of quantity or quality of inputs, outputs, outcomes or level of activity.

Marr (2009:138) defines performance measurement as the assignment of values representing properties in an objective, uniform and rigorous manner. According to Marr (2009:139), the things that are measured come in different dimensions and generally the dimension that is easy to measure is the one that gets measured. Performance measurement can only indicate the level of performance because it does not capture all dimensions of performance, and as a result, performance indicators do not comprehensively measure performance (Marr, 2009:141). Marr (2009:151) suggests that instead of performance measurement, performance assessment be used because it has a broader meaning than expressing performance in numeric values. He defines performance assessment as the systematic collection of information to enable the organisation to evaluate performance and learn. The broader definition of performance measurement suggested by Marr (2009:151) is used in the study.

The United Nations Development Programme's (2002:64) and Marr's (2009:151) definition of performance measurement is the systematic analysis of performance against goals, taking into consideration reasons behind performance and the influencing factors.

2.2.3 Performance measurement systems

There are numerous actors involved in defining performance measurement systems in the public sector and they include government departments, legislatures, audit and regulatory bodies, and citizens (Orelli et al., 2010:460).

The definition of performance measurement systems by Neely et al. (2002:xiii) encompasses performance measurement supporting infrastructure, namely, data acquisition, data collation, data sorting, data analysis and data interpretation. According to the authors, if any of the data-processing activities are not performed, the performance measurement process is incomplete (Neely et al., 2002:xiii). In the study, the term ‘performance measurement system’ as defined by Neely et al. is used.

2.2.4 ICT

Information technology and ICT are used interchangeably in the study. Information technology refers to computer-based information systems and underlying technologies used in organisations to transmit information (Mitchinson & Ratner, 2004:89; Laudon & Laudon, 2006:4). Cloete (2003:27) defines information technology as electronic, computerised aids that facilitate compilation and systematisation of data into information. Computerised aids comprise computer hardware, software and telecommunication networks. According to Mitchinson and Ratner (2004:89), ICT tools also include cellular phones and database application systems. Information technology systems are considered tools that aid an organisation in achieving its purpose and should be aligned with its strategic objectives (Rocheleau, 2006:31). Bharadwaj (2000:172) classifies ICT resources into tangible and intangible resources. Tangible ICT resources include ICT infrastructure and ICT human resources, while intangible assets are knowledge assets, customer orientation and synergy (Bharadwaj, 2000:172). ICT infrastructure constitutes the computer hardware and communication technologies that enable shared information delivery, namely platforms and the kinds of information that can be shared (Bharadway, 2000:172). In the public sector, ICT also refers to e-government.

2.2.5 E-government

Heeks (2006:3) and Rocheleau (2006:128) define e-government as the use of information technology by public sector organisations. According to Cloete (2012:135), e-government is the use of technologies such as computers, the internet, mobile and broadcasting technologies for government operations. An e-government system is an

information system that comprises information, technology and processes (Heeks, 2006:55). The World Bank website (2011) defines e-government as the use of information technology by government agencies to enhance service delivery to citizens, facilitate government interaction with business, empower citizens, and improve government efficiency. One of the commonly used definitions of e-government is the United Nations' definition which defines e-government as the utilisation of the internet and the World Wide Web for delivering government services (Hu et al., 2009:971). In the exploratory study conducted by Hu et al. (2009:971), a number of widely used definitions of e-government were examined, and they concluded that the most widely used definition of e-government gives primacy to providing information or services to the citizens, rather than to government activities such as management.

According to Rocheleau (2006:129), e-government has the following aspects: e-service, e-management, e-democracy, and e-commerce. E-government includes office automation, internal management information systems, and client-facing websites used in public sector organisations (Heeks, 2006:4). Cloete (2012:129) outlines the components of e-government and its developmental stages. The main components of e-government are the back-office management and front-office interactions. Back-office management allows for electronic administration to facilitate government to government interaction, and it makes front-office interactions between government and business and between government and citizens possible. The developmental stages are provision of online information, dynamic online interaction in accessing services, transaction completion phase, and transformation consolidation phase. The e-management and back-office management components of e-government are the most applicable aspects to the study, and refer to the use of ICT to improve the management of government.

Weerakkody et al. (2011:321) discuss transformational government which has evolved from e-government. The authors define transformational government as the ICT-enabled and organisation-led transformation of government operations, internal and external

processes, and structures for government to be more efficient, transparent, and accountable and to be more citizen centric.

2.2.6 Information systems

Information systems refer to systems providing technology-based information and communication services in an organisation (Davis, 2000:62). An information system is defined as a set of interrelated elements that collect, manipulate, store and disseminate data and information with a feedback mechanism (Stair & Reynolds, 2012:10). An information system can be manual or electronic. An electronic management system consists of hardware, software, databases, telecommunications, people and procedures that are configured to collect, manipulate, store and process data into usable information (Stair & Reynolds, 2012:12).

An information system utilises computer and communications hardware and software, manual procedures, and internal and external repositories of data (Davis, 2000:67). Stair and Reynolds (2012:5) define data as raw facts, and information as a collection of data that is organised and processed in a meaningful manner that adds value to the user. Converting raw data into information involves a process which results from performing logically related tasks to produce an outcome (Stair & Reynolds, 2012:6). The authors further define a system as a set of elements that interact to achieve a certain goal.

According to Davis (2000:67), information systems consist of the information technology infrastructure, application systems, and personnel that use information technology to deliver information and communications services for transaction processing, operations, administration and management of an organisation. According to Gu and Jung (2013:88), an information system infrastructure consists of system applications, data, servers and the network. Gu and Jung (2013:88) argue that information system resources are a combination of attributes which comprise an organisation's knowledge and expertise; internal and external relationships between the ICT component with business units and external stakeholders; technical skills; and infrastructure.

Davis (2000:62) maintains that information systems encompass information technology systems and applications for transactions and operations, support of administrative and management functions, organisational communications and coordination, and are important for adding value to products and services.

Cloete (2003:28-29) notes the following information systems used to support management activities. They are transaction processing systems (TPS), management information systems (MIS), decision support systems (DSS), executive support systems (ESS), knowledge management systems (KMS), and enterprise resource planning systems (ERP). Management information systems are the main focus of the study and are discussed further in the next section.

Transactional processing systems are basic business systems used at operational level to perform and record daily routine transactions (Laudon & Laudon, 2006:43). They include resource facilities and office automation tools such as word processing, databases, spreadsheets, presentation aids, email, the internet, intranets (Cloete, 2003:29). According to Laudon and Laudon (2006:43), they combine a number of different data elements to generate reports used by management to monitor internal operations.

Management information systems refer to information systems servicing the management function. They provide managers with online reports on the organisation's current and historical performance (Laudon & Laudon, 2006:44). They furnish information for managers to perform the functions of planning, controlling and decision making. They are based on transaction-processing systems and they are used to summarise results of transaction processing into reports used to monitor, control and assess activities, and for planning (Cloete, 2003:29).

Executive information systems are more advanced strategic management information systems used by senior management to monitor the strategic direction of an organisation (Cloete, 2003:29). According to Laudon and Laudon (2006:47), they are designed to

summarise information from the TPS and MIS and to incorporate data about external events. They filter, compress and track critical data for senior managers.

According to Cloete (2003:29), decision support systems are specialised analytical planning support systems used to improve the quality and outcomes of managerial decisions. They facilitate analyses and assessments of and linkages to policy development and analyses in terms of resources, objectives, alternatives, costs, benefits, risks, priorities, processes, outputs and outcomes. They are used to make decisions that are unique, rapidly changing, and not easily specified in advance (Laudon & Laudon, 2006:45).

Other systems include customer relations management systems, supply chain management systems, knowledge management systems, finance and accounting systems, and human resources systems (Cloete, 2003:31; Laudon & Laudon, 2006:45). Integration of these systems for operational processes to enhance and improve the performance of an organisation is very important. Cloete (2003:31) highlights a significant increase in reliance on electronic management information systems to monitor, coordinate, implement and assess the effectiveness of policy implementation programmes. Management information systems are the main focus of this study.

In the next section key concepts are discussed in greater detail.

2.3 Aspects of organisational performance

Performance, performance measurement, and performance measurement systems were defined briefly in Section 2.2. In this section, the concepts and their various aspects are discussed in greater detail, including the purpose of measuring performance, how to measure it, collecting performance information, reporting on performance, and utilisation of performance information.

2.3.1 Purpose of measuring performance

Performance in organisations is measured to be accountable to stakeholders and improve the performance of an organisation (Denhardt & Aristigueta, 2008:107; Marr, 2009:137).

Performance measurement helps public organisations to make better informed decisions and to be more accountable to citizens (Marr, 2009:7). It provides an indication of whether an organisation is responsive to the values of its stakeholders (Rocheleau, 2006:335).

Organisations use performance measurement as an accountability tool for external reporting and compliance with regulations (Marr, 2009:137). According to Kettl and Kelman (2007:40) and Marr (2009:137), governments have limited themselves to measuring and reporting on performance for compliance purposes, and only a few go beyond performance measurement for compliance with performance management. As an accountability tool, performance measurement has a punitive connotation, whereas as a performance management tool it can improve performance instead of just complying with accountability (Kettl & Kelman, 2007:41).

According to Marr (2009:137), performance measurement can be used as a performance improvement tool which provides feedback about the organisation over time or in comparison with other organisations. Morra Imas and Rist (2009:107) contend that information on how well a particular project performs provides useful information for resource mobilisation.

Radnor (2008:96) posits that performance measurement should not be limited to tracking quantitative achievements but it should be about performance culture that is concerned with strengthening organisational performance. Performance management involves application of this information to learn and improve performance. According to Kettl and Kelman (2007:27), measuring performance has the potential of improving the results of government programmes and it can also create an information-driven language to break down the silos that often separate different unit managing government programmes.

For an organisation to collect appropriate information that is useful to account to its stakeholders and improve its performance, it is essential to set the right performance

objectives, indicators and targets. The next section discusses performance objectives, indicators and targets.

2.3.2 Setting performance objectives, indicators and targets

According to Marr (2009:1), performance management involves identification of what really matters to the organisation to create value and collection of the right information to determine whether the organisation is performing according to its plans. Performance measurement requires clearly defined performance indicators that enable the organisation to collect relevant data (Marr, 2009:151) and to measure inputs, outputs, outcomes and impact of organisational activities (Mackay, 2007:7).

Marr (2009:4) maintains strategy formulation is an important prerequisite for performance measurement. It involves assessment of key stakeholders and clarification of objectives. Clarification of objectives encompasses precise definition of outputs and outcomes to be measured, and identifying the means to achieve the objectives (Marr, 2009:4). Kusek and Rist (2004:57) argue that it is important to first determine outcomes before setting indicators, because outcomes determine benefits. Indicators, targets and baseline information for the performance measurement framework are derived from the outcomes (Kusek & Rist, 2004:57). Baseline information indicates the status before the intervention, while targets are what the intervention aims to achieve (United Nations Development Programme, 2002:66).

The selected performance indicators should be monitored appropriately to ensure quality performance. Performance indicators provide information about the quality of performance (Simonova, 2012:134). According to Kusek and Rist (2004:24), performance indicators can provide continuous feedback and a wealth of performance information. Mackay (2007:7) holds that performance indicators can be used to identify problems, thus allowing corrective action to be taken. They can be used to flag the need for a follow-up review or evaluation of an issue (Mackay, 2007:7). The next section discusses collection of performance information used to measure performance against the performance targets.

2.3.3 Collection of performance information

Performance information can be in the form of primary and secondary data. Primary data collected by an organisation includes administrative, budget, or personnel data; surveys; interviews; and direct observation. Secondary data is collected by external organisations such as oversight bodies, and gathered for purposes other than those of the organisation concerned (Kusek & Rist, 2004:85).

Marr (2009) distinguishes between quantifiable and non-quantifiable performance information. Performance measurement for reporting and compliance requires objective measurement which is quantifiable (Marr, 2009:141). Measurement of performance for learning and performance improvement takes into account other forms of evidence such as written descriptions and observations in addition to quantifiable information (Marr, 2009:152). Performance measurement for learning and improvement is about collecting information that enables everyone in the organisation to evaluate performance in order to gain insight.

Performance management is more than collecting and reporting data; it identifies what is meaningful with data (Kettl & Kelman, 2007:40; Marr, 2009:3). Marr (2009:3) argues that the significance of data results from a clear strategy which helps an organisation to focus on collecting relevant and meaningful information based on the strategic priorities. According to Kusek and Rist (2004:83), performance information is a management tool. It is important to collect information that will be used for decision making and to improve the performance of an organisation. Kusek and Rist (2004:85) maintain that data collection methods depend on a given organisation's resource availability, access, needs and time constraints, among other factors. They also depend on the needs of the user of the information.

According to Kusek and Rist (2004:83), performance indicators selected, and the data collection strategies used to track those indicators, should be informed by the realities of the data systems currently in place in an organisation. Data produced and existing capacity expand the breadth and depth of data collection, and analysis needs to be taken into consideration (Kusek & Rist, 2004:83). Kusek and Rist (2004:83) argue that every performance indicator has its own miniature system; when building an information system for an indicator it is important to take into consideration the potential sources of information that can supply the relevant data to measure the indicator.

Meier and O'Toole (2012:430) caution that performance information on indicators is subject to questionable reliability and the validity of performance measures. Perceptual measures of performance by the management or administrators to ascertain levels of organisational performance and to collect information about management practices are subject to bias and measurement errors (Meier and O'Toole, 2012:431). According to Vieira Da Cunha (2013:726), leaders of an organisation rely on information systems, rather than on their interactions with managers to provide the performance data they use to form interpretations of their organisational performance.

2.3.4 Reporting on performance

Once performance information is collected, it is used to report to stakeholders and for learning. Performance information can be reported on various measures with data collected over a specific period, thus comparing performance with goals, previous performance, and according to different jurisdictions (Scatteman, 2010:433).

Performance information is presented in different formats and at various levels to cater for different stakeholders. According to Mimba (2007:195), different stakeholders have diverse interests and influence; each stakeholder demands performance information. Supply of performance information depends on the power and influence that a group of stakeholders has over a public sector organisation (Mimba et al., 2007:195).

According to Scatteman (2010:439), information systems make it possible to cater for multiple stakeholders by allowing them to customise reports based on their information needs. Data presented online should be presented in such a way that stakeholders are able to select what they need (Scatteman, 2010:439). Performance information should be available in real time for decision making, it should be linked to performance goals, and it should be accurate (Scatteman, 2010:439). Real-time performance information increases usefulness of information in decision making and it must be communicated in a way where users can select the information they need (Scatteman, 2010:439). ICT and information systems make it possible to customise information in different formats to meet the needs of the producers and consumers of information (Kusek & Rist, 2004:48; Scatteman, 2010:439). The manner in which performance information is reported and presented can contribute to its utilisation.

2.3.5 Utilisation of performance information

Moynihan and Pandey (2010:850) argue that the use of performance information is the best indicator of whether performance management is worth the effort. The value of monitoring and evaluation lies in the utilisation of performance information (Mackay, 2007:9). According to Görgens and Kusek (2009:415), the heart of monitoring and evaluation is in using the information generated from the system for decision making about strategies, programme plans, resource allocation and implementation of programmes. Successful implementation of a performance management system depends less on selection of the right performance measures, and more on the way measures are implemented and used by people in an organisation (Nudurupati & Bititci, 2005:153).

Performance information can be used to provide evidence to support policy decisions, allocation of resources and planning (Mackay, 2007:9). It can be used for policy analysis and management; for management of government programmes, projects and activities; and to enhance transparency and accountability (Mackay, 2007:10). Performance information is also used to account to stakeholders to improve the perception of government (Denhardt & Aristigueta, 2008:107).

Providing performance information is not sufficient to improve organisational performance; it is the utilisation of performance information that improves organisational performance (Nudurupati & Bititci, 2005:154). Utilisation of performance information depends on the nature and strength of demand for information by stakeholders (Mackay, 2007:51). Mackay (2007:55) maintains that it is important to establish the extent of utilisation of performance information and the way in which this information is used to raise awareness among stakeholders.

Public and civil society organisations use performance information to hold the government accountable. Performance information is also used internally to improve performance and for decision making. It is also used between different levels of government for better policy planning and by the higher level sphere of government for oversight purposes.

According to Mimba et al. (2007:199), in developing countries stakeholder demand for performance information is low because of high levels of corruption. There is little performance measurement; performance information is produced for compliance but rarely utilised. Mimba et al. (2007:200) argue that external pressure has both direct and indirect effects on demand for performance information. The direct effect is that external stakeholders demand performance information to assess an organisation's performance and to hold it accountable for this performance; the indirect effect is that external stakeholders require the organisation to improve its performance, which may motivate internal stakeholders to demand performance information for internal management. Citizens and voters may demand information about organisations' performance achievement to make more informed decisions about the political party they vote for (Mimba et al., 2007:200). Rocheleau (2006:337) contends that by making performance information accessible to the public and civil society, government becomes more accountable and transparent.

Mimba et al. (2007:199) maintain that performance information is used if its producers adapt it to the demand for performance information and if the intended users use the information correctly. Mimba et al. (2007:193) use demand for and supply of performance information approach as a measurement of organisational performance in the public sector. The authors define supply of performance information as the production of performance information through selection of areas to be measured, developing performance indicators, collecting and analysing data, and reporting on performance information. Demand for performance information is described as the actual and desired utilisation of performance information by stakeholders of an organisation (Mimba et al., 2007: 193). Internal stakeholders include management and policy makers in an organisation who use information for decision and policy making. External stakeholders are citizens, civil society and managers from higher level of government within the public sector who use performance information to hold government accountable.

The extent to which performance information is utilised depends on willingness, ability, ways in which decisions are made, the nature of information, its presentation, organisational culture, and the nature of decisions made in an organisation (Görgens & Kusek, 2009:415).

According to Cavalluzzo and Ittner (2003:4), organisational factors such as top management commitment to the use of performance information, the extent of decision-making authority delegated to users of performance information, and training in performance-measurement techniques have significant positive influences on measurement system development and the use of performance information. Senior managers have an important role to play in influencing behaviour in an organisation (Cavalluzzo & Ittner, 2003:4; Nudurupati & Bititci, 2005:154). Nudurupati and Bititci (2005:154) contend that if senior managers are involved in formulating performance measures and using performance information, they can influence the lower-level staff to start using performance information. Information should be shared between and across levels within an organisation (Kusek & Rist, 2004:48). The authors argue that there

should be a free flow of information to ensure coordination and linkages in the policies, projects and programmes of government.

Scatteman (2010:437) argues that one of the challenges in the utilisation of performance information is that performance reports are posted at the end of a fiscal year; as a result, performance information in those reports becomes more archival than useful. Scatteman (2010:436) suggests four stages of reporting performance information to overcome this challenge, namely, posting of performance reports, and publishing performance data, real-time data and data evaluation in real time. These stages mirror e-government states which are informatisation, partial delivery, portal, and interactive democracy stages (Scatteman, 2010:436).

Availability of performance information online increases accessibility and it has a better chance of being utilised. The ability to download performance information in different and user-friendly formats, as well as the quality of the data, influences the utilisation of performance information (Rocheleau, 2006:338). Rocheleau (2006:340) asserts that the value of electronic performance information lies in the quality of data. The next section covers the use of management information systems to measure organisational performance.

2.4 Aspects of management information systems for measuring performance

The research objective addressed in this section is to identify management information systems used for the measurement of organisational performance in the public sector. The section discusses different aspects of management information systems (MIS), MIS used to measure performance, barriers to the use of MIS, and key success factors for implementing PMIS.

2.4.1 Management information systems

Information systems facilitate access to information in a more efficient and accurate manner. Management information systems allow for cross-referencing between different data sets. An effective and efficient management information system enables integration

of data from different sources. This makes it possible to access large quantities of information quickly, as well as improving the quality, timeliness and consistency of information (Görgens & Kusek, 2009:325).

Vayghan et al. (2007:671) maintain that integration of data from multiple domains is valuable in supporting critical organisational functions and decision making. According to Bidlack and Wellman (2010:66), data integration breaks data silos and aggregation of data from different sources. A synchronised data and information management strategy at organisational level is essential for an organisation-wide approach to data and information management (Vayghan et al., 2007:671).

The benefits of management information systems in measuring organisational performance include availability of information in different formats to facilitate analysis in a variety of ways (Görgens & Kusek, 2009:325). Vieira da Cunha (2013:725) maintains that information systems are an independent check on managers' contributions to their organisation.

2.4.2 Information systems and performance measurement

Information systems play an important role in organisational performance (Rocheleau, 2006:336). Information systems are used to collect and analyse data used to measure organisational performance. They allow for tracking of numerous performance indicators and allow the public to access performance information using the internet (Rocheleau, 2006:336).

Management information systems play an important role in managing performance information. Examples of data processed by information systems for measuring organisational performance include budget data, output data, outcome or impact data, performance audits, financial audits, project and programme completion reports, and donor data information (Kusek & Rist, 2004:48). According to Mackay (2007:58), financial data on programme spending constitutes a fundamental type of information;

quality and ready availability must be ensured. This information is supplied by financial management information systems.

According to Nudurupati and Bititci (2005:153), implementation of performance measures requires policies, procedures and systems for creation of data, as well as for data collection, data analysis, and conversion of data into useful information. This should be presented in user-friendly formats such as charts and summary reports, and communicated to the right people on time to support decision making. According to Nudurupati and Bititci (2005:153), data collection, analysis and reporting should be automated as much as possible to save time and effort, and for consistency. ICT is one of the critical factors that make it possible to collect, analyse and convert data into useful information.

Orelli et al. (2010:460) note that there are three dimensions which are important when discussing IT and performance. The first dimension is the nature of the accountability relationship when developing an information system, for example, legal, bureaucratic, political or professional. The second dimension is the level of government and stakeholders involved, for example, national and local government, or local government and citizens. The third dimension is the type of performance for which the system is designed, for example, an information system for internal managers, or citizen access or other government departments. Each of these dimensions has different sets of data and information expected from the system (Orelli et al., 2010: 460).

According to Simonova (2012:136), an information system solution should take indicators into consideration. This included identification of data content for each business activity that is to be supported by the information system. The author recommends that when identifying data content, input from people responsible for activities, inter alia, process managers and quality managers, should be taken into consideration. Identification of data content informs requirements for the information system development to ensure that the information system is designed to support work

activities and provide data required to measure the quality of performance of work activities (Simonova, 2012:134).

Organisations can build their own performance measurement systems using existing tools such as Microsoft Excel, Access and web-based platforms, or an organisation can purchase off-the-shelf platforms such as enterprise resource planning (ERP) systems, business intelligence systems (BIS) or dedicated performance management software (Nudurupati & Bititci, 2005:153).

2.4.3 Integration of performance information using MIS

According to Vayghan et al. (2007:671), integration of data from multiple domains to support critical business functions is important. Bidlack and Wellman (2010:66) refer to this as breaking the data silos and aggregation of data from different sources. Vayghan et al. (2007:671) argue that a synchronised data and information management strategy at organisational level is essential for an organisation-wide approach to data and information management. Mayer-Schönberg and Lazer (2007:282) recommend that an organisation should invest in compatible information systems and standardisation to support data integration.

According to Greitens and Roberson (2010:447), the challenge of integration of disparate performance data lies in different performance mandates which may have their own specific data types. To overcome this challenge, the authors suggest that data from different mandates be categorised according to quantitative and qualitative data. Quantitative data, which is either in the form of inputs, outputs or efficiency measures from different units, must be measured in the same way (Greitens & Roberson, 2010:449). According to the authors, quantitative data often plays a predominant role in performance measurement, while qualitative information provides an explanation of outcomes achieved. Information systems make it possible to manipulate quantitative data easily, and owing to the textual nature of qualitative data, it is not easily automatically manipulated.

Technical integration is also important for performance integration to occur and this can be done by establishing an information system for each performance mandate or a new database that can collect performance data from an existing information system for integration (Greitens & Roberson, 2010:450).

2.4.4 Barriers to implementation of performance measurement information systems

It is important to consider barriers to and success factors in implementation of a performance measurement MIS. Success factors are discussed in the next section. De Waal and Counet (2009:368-371) list a number of barriers to implementation of performance measurement system. Among those listed, only the ones that are significant for this study are highlighted. Lack of management commitment is one of the main barriers to implementation of a performance management system because it has implications for the allocation of resources and prioritisation of the implementation. Insufficient commitment from middle management and staff affects implementation and the use of the system. This is related to a lack of clear goals and an understanding of the system. There might further be a lack of knowledge and skills to implement the system, while a performance-management culture might be lacking within an organisation. In an organisation where performance information is not used for daily management to analyse and improve performance, there is no motivation to use the system. If the current ICT in the organisation cannot support the performance management system adequately, collecting, processing and reporting performance data become a challenge. Difficulty in obtaining performance data and calculating performance indicators makes it difficult to implement the system.

Sector departments collect a range of performance information; however, the quality of data is often poor. The main reason for that is the burden of data collection falls on overworked officials at the facility level, who must provide the data for other officials in district offices and the capital, but who rarely receive any feedback on how the data is actually used (Mackay, 2007:58). Mackay (2009:58) suggests that an audit of data systems and a diagnosis of data capacities are needed to address poor data quality. There

is also an issue of honesty and objectivity, for example, where performance information is used for accountability purposes. This requires independent data audits (Mackay 2007: 58).

Barriers to restructuring information flows and integration of information within an organisation include position bias, sub-unit goal optimisation, and focus on goals that are related to managers' positions instead of focusing on the organisational goals (Fountain, 2007:67). The author suggests that a participatory strategic planning process reduces the strength of position bias and enhances collaboration and integration.

According to Ciuchi, Picu and Todoran (2011:72), in the information field there is too much technological emphasis on data storage. This compromises processing of data into useful information for decision making. As a result, decision makers spend long periods of time browsing among multiple data sources of organisations to seek and collect relevant information, instead of analysing such data (Ciuchi et al., 2011:72). Some of the difficulties experienced by decision makers in accessing information include delays in obtaining data, information presented in inappropriate formats, and information that is rarely consistent and is subject to constant change (Ciuchi, et al., 2011:72). Other challenges include difficulty in selecting and interpreting appropriate performance metrics in hard-to-measure activities. Data limitations, such as the inability of existing information systems to provide necessary data in a valid, reliable, timely, and cost-effective manner, are further impediments to the use of performance information for accountability and performance evaluation (Cavalluzzo & Ittner, 2004:4).

In the South African context, the Presidential Review Commission report (PRC, 1998:6.1.3) highlights the following challenges to implementation of performance information systems: incompatible and different information systems used by different departments, duplication of data collection, and data warehousing. The report also states that senior executives are aware of the importance of management information systems, but the challenge lies in the implementation of such systems, owing to their limited understanding of the value of management information systems.

Bourne (2005:103) mentions the following as the main barriers to the use of information systems to measure organisational performance: the effort required to access information, the ease of data accessibility through IT systems, and the consequences of measurement. According to Mimba et al. (2007:196), limited institutional capacity is characterised by weak regulatory practice, low levels of public accountability, administrative inefficiency, limited human resources, lack of facilities, and insufficient funding. Because of limited institutional capacity, an organisation may have long bureaucratic procedures, lack of transparency on delivery of services, and little information available to stakeholders (Mimba et al., 2007:196).

According to Fountain (2007:64), the main challenge for government to productive information flow is not technology, but change management. Complex political, social and cultural relationships within an organisation are regarded as the main barriers to restructuring and integrating information flow within an organisation (Fountain, 2007:64). Culbertson (2004:61) identifies the following cultural and structural barriers to implementation of e-government, which include a silo-based vertical structure which constricts the horizontal inter-departmental work necessary to make ICT work effectively within the department; the lack of a budget required to develop and implement ICT solutions across the department; a fear of ICT from frontline and middle management and suspicion of ICT from senior management; the risk-averse nature of government; and the fear that government will not be able to cope with an increased demand for information and expectations of a quick response as a result of the availability of ICT.

Dada (2006:2) states that a number of studies show that it is information systems in general that fail rather than e-government applications in developing countries. According to Dada (2006:4), it is important to establish the service and information needs of the community that an organisation is serving to minimise hard-soft gaps which contribute to the failure of e-government. Hard-soft gaps are defined as differences between technology and the reality of the social context within an organisation; these

include people, culture and politics (Dada, 2006:4). Cloete (2003:31) contends that expansion of information technology tools is growing too rapidly for the government to keep up and as a result these aids have not yet been integrated into public management processes. The next section discusses factors pertinent to the successful implementation of performance measurement MIS.

2.4.5 Key success factor implementation of performance measurement information systems

Success of a performance management system depends on utilisation of information, sustainability and good quality performance information (Mackay, 2007:23). According to Kusek and Rist (2004:21), designing and building a reporting system that can produce trustworthy, timely, and relevant information on the performance of government projects, programmes, and policies require experience, skill, and institutional capacity. Institutional capacity for a results-based reporting system includes the ability to successfully construct indicators, and the means to collect, aggregate, analyse, and report on the performance data in relation to the indicators and their baselines (Kusek & Rist, 2004:21). It also includes managers with the skill and ability to utilise performance information.

For Nudurupati and Bititci (2005:160), some of the key success factors in implementing an IT-based performance management system include commitment of senior management; selection of few performance measures; integration of data collection and analysis into the business as part of the everyday job; automation of data collection, analysis and communication as much as possible; maintenance of data accuracy; facilitation of cross-functional teams for continuous improvement programmes; and empowerment of people to make fact-based and information-driven decisions. Appropriate IT support is also essential to ensure access and continuous support after implementation by the external service provider (Nudurupati & Bititci, 2005:161).

It is also important to build confidence and demonstrate the benefits of an IT-based performance management system (Nudurupati & Bititci, 2005:154). Steward (2004: 113)

highlights the importance of leadership in successful implementation of management information systems for electronic service delivery by ensuring that there are adequate processes that promote accountability; adequate human resource planning; a strong ICT infrastructure; strong information management policies; and strong security and privacy policies.

According to Cavalluzzo and Ittner (2004:8), compatibility of the new system with existing systems, system complexity, and the system's relative improvement over existing systems in terms of accuracy and timeliness, are further important factors. Cavalluzzo and Ittner (2004:8) aver that organisations with higher-quality information systems can implement new measurement systems more easily than organisations with less sophisticated information systems, since measurement costs are lower, leading to a positive relation between current information system capabilities and implementation success.

Senior management plays an important role in creating a suitable environment for change and raising awareness of the potential contribution of the system to meeting organisational objectives (Cavalluzzo & Ittner, 2004:9). Most of these problems relate to the ability of existing information systems to provide required data in a reliable, timely, and cost-effective manner (Cavalluzzo & Ittner, 2004:9).

Organisational issues include the ability of existing information systems to provide required data and the extent to which organisations can define and develop appropriate performance measures; management commitment, decision-making authority, training, and legislative mandates are critical success factors for the implementation and use of performance measurement systems (Cavalluzzo & Ittner, 2004:7). The next section discusses South African policies that have been put in place to facilitate the implementation of performance measurement systems.

2.5 Management information systems and organisational performance policy frameworks

In this section, the South African government policies governing ICT and performance measurement are described. Policy in the public sector is a formally articulated goal that the legislators intend to achieve in order to improve or resolve a perceived problem within a society (De Coning & Wissink, 2011:7). The study focuses on policies relating to management information systems, ICT and organisational performance in the South African public sector. The Presidential Review Commission (PRC) report of 1998 laid the foundation for policy formulation in South Africa.

2.5.1 ICT policies

The State Information Technology Agency (SITA) Act, No. 88 of 1998, includes the ICT policies developed after the PRC report. The SITA Act was promulgated to rationalise procurement of ICT services and provide support to government departments (Cloete, 2012:131). This was followed by the e-government policy which was published in 2001. The aim of the policy is to transform the interaction between government departments and between government and citizens, and to improve productivity and efficiency in the public sector (Cloete, 2012:131).

A number of policies which support e-government were developed and implemented after the SITA Act. They include the Minimum Interoperability Standards (MIOS); Minimum Information Security Standards Policy; Government-Wide Enterprise Architecture (GWEA) Framework; Free Open-Source Software Policy; and Electronic Communications Act, No. 36 of 2005. The Framework for Governance of ICT in the Public Service was approved in 2012. GWEA and MIOS policies are discussed in the next section because of their relevance to the study.

The GWEA framework was developed by the Government Information Technology Officers Council (GITOC) as a minimum standard to be used by all government departments and agencies to address inconsistencies and misalignment of ICT plans (GITOC, 2010:7). It also aims to reduce duplication, economies of scale and enable

integrated services (GITOC, 2010:9). It is a generic enterprise architecture plan which provides guidance to government departments on developing their enterprise architecture plans (GITOC, 2010:9). The purpose of an enterprise architecture plan is to create an enabling and efficient ICT environment for a department to achieve its objectives. An enterprise architecture plan assists with the development of existing information systems and acquisition of new ones to optimise business value (GITOC, 2010:7).

The framework outlines different phases in enterprise architecture, namely, the design and development phase and production and operation phase (GITOC, 2010:13). The design phase focuses on technical and management processes relating to project management, solution architecture, technical design, solution development, sourcing, procurement, and integration of systems components. The operation phase focuses on business integration and ICT operations to improve performance and service delivery.

The Minimum Interoperability Standards (MIOS) for information systems in government were issued in 2011. The Public Service Regulations states that, if interoperability of information systems in government is not properly managed, government departments may invest in non-compatible information systems that impede effective service delivery (RSA, DPSA, 2001:63).

The scope of the MIOS covers information access and data exchange between government and itself, government and its citizens, government and its employees, and government and external entities (GITOC, 2011:5). The interoperability standards cover data format standards to enable exchange of data between government information systems, and technical standards to interconnect, interoperate, access and exchange data among components of government ICT (GITOC, 2011:9).

The Corporate Governance of Information and Communication Technology (CICTG) Policy Framework raises the importance of senior political and managerial leadership of a department in accounting for the information plan and alignment of ICT services within the department's strategic plan (RSA, DPSA, 2013b:iv).

2.5.2 Performance measurement policies

Section 92, Section 114 and Section 195 of the Constitution provide the basis for performance measurement in the South African public sector. The White Paper on the Transformation of the Public Service (WPTPS) Section 1.2.3 (RSA, DPSA, 1997) provides for organisational performance measurement. It states that national and provincial departments should identify service standards; define outputs, targets, and performance indicators to be measured against comparable international standards; monitor and evaluate mechanisms and structures designed to measure progress; and introduce corrective action where appropriate (RSA, DPSA, 1997). Section 1.2.7 of the WPTPS states that the public sector requires new management tools which include transparency on the results achieved.

In 2005, the South African Office of the President, working together with the National Treasury, Department of Public Service and Administration, and Statistics South Africa (STATSSA), initiated the development of a framework to manage performance and measurement of service delivery (Rabie, 2010:141). The Cabinet approved an implementation plan to develop a monitoring and evaluation system to include functions such as monitoring, evaluation, early warning, data verification, data collection, analysis, and reporting (Engela & Ajam, 2010:2). The Government-Wide Monitoring and Evaluation (GWM&E) Policy is the first policy developed after the approval of the monitoring and evaluation system implementation plan.

The policy framework for the GWM&E system adopted in 2007 outlines system goals, and provides descriptions of the various component parts of the system, the roles of departments and civil servants as implementing agents of monitoring and evaluation (M&E), and the institutional arrangements and legal mandates underpinning these roles and responsibilities. National Treasury (RSA, National Treasury 2007:5) supports the Framework for Managing Programme Performance Information and the South African Statistical Quality Assurance Framework (SASQAF).

The GWM&E mandates the accounting officer of a department to develop a monitoring and evaluation system (RSA, Presidency, 2007:8). The main aim of the GWM&E framework is to provide an integrated framework for monitoring and evaluation principles, practices and standards to be used throughout the public sector. Although the framework does not aim for a single public service ICT-based information system, it aims to shape the context under which the electronic management information system can be developed and it emphasises system integration and inter-operability. The framework provides for a high-level system which draws from the component systems to produce useful performance information (RSA, Presidency, 2007:9). One of the goals of the GWM&E system is to improve the quality of performance information and analysis at programme level (RSA, Presidency, 2007:11). The three components of the GWM&E system are evaluation, performance information, and social, economic and demographic statistics.

The Programme Performance Information Framework provides for the collection of performance information by government departments. Social, economic and demographic information is collected by Statistics South Africa through census and other surveys. The South African Statistical Quality Assurance Framework (SASQAF) provides guidelines for information collected from surveys conducted by departments and other government agencies to be accepted as official statistics. The third component is the evaluation framework.

The Framework for Managing Programme Performance Information (FMPPPI) published by the National Treasury, states that performance information enables government departments to strive towards result-driven management which allows them to conduct risk assessments, test the markets, benchmark and plan better (RSA, National Treasury, 2007:1). The purpose of the framework is to outline the concepts used in designing and implementing a management system for collecting, analysing and managing performance management (RSA, National Treasury, 2007:1). There are gaps in collecting and analysing information using the existing information systems for government-wide

monitoring and evaluation. The framework needs to be used in conjunction with the Government-Wide Monitoring and Evaluation Framework which has three components: programme performance information; social, economical and demographic statistical information; and evaluation (RSA, National Treasury, 2007:2). The framework (RSA, National Treasury, 2007:2) describes performance information as the non-financial information used to report on performance of government services and activities. During the planning and budgeting phase, information from previous performance is used in policy formulation for baseline information required for planning and budgeting purposes (RSA, National Treasury, 2007:3).

The FMPPI outlines responsibilities, structure and systems that need to be in place for effective management of performance information systems. The executive authority, namely the minister or the Member of Executive (MEC) of a department, must ensure that the department has effective performance management information systems (RSA, National Treasury, 2007:13). The head of department is accountable to ensure that the department establishes and maintains a performance management system. It is the responsibility of a chief information officer to assist the head of department in ensuring that the department has an effective and efficient information system. Line managers and officials in government departments must capture and collate performance data and line managers must put systems and processes in place to support effective performance management information systems within their components (RSA, National Treasury, 2007:13).

According to the FMPPI (RSA, National Treasury, 2007:13), performance management information systems should be integrated with other management systems and processes in the department. According to the FMPPI (RSA, National Treasury, 2007:13), the accounting officer should ensure that the department has documentation in place addressing:

- Integrated structures and systems within existing management processes and systems;

- Definitions of technical standards for all information collected;
- Processes for identifying, collecting, collating, verifying and storing information;
- Utilisation of information in managing results;
- Publication of performance information; and
- Appropriate capacity to manage performance information.

The framework also requires that the department should have: appropriate systems to collect, collate, verify and store information; consultation processes to ensure that information needs of different users are taken into consideration when specifying a range of information collection; processes for ensuring that information is appropriately used for planning, budgeting, and management within the department; and processes to set performance standards and targets at the beginning of each service delivery cycle (RSA, National Treasury, 2007:13).

The accounting officer must ensure that there is adequate capacity in managing programme performance information within the department and the line functions (RSA, National Treasury, 2007:14). The FPPIM also recommends that departments should have a dedicated component or official responsible for collecting, collating and verifying performance data.

The information collected for reporting to Parliament and other structures is generally published and accessible for oversight. The FPPIM raises the challenge of what other information should be made available in the public domain in a more detailed format for members of the public to have free and easy access, besides that published by the National Treasury, the Reserve Bank and STATSSA (RSA, National Treasury, 2007:16). Performance information is reported in Parliament and accessible to the public through documentation such as annual reports (RSA, National Treasury, 2007:5).

In 2011, the National Treasury published the *Performance Information Handbook* which provides approaches to and tools for managing programme performance information.

This handbook can be used to develop performance information plans and improve performance information systems. The performance information system should include the framework, structures, processes and rules governing the collection, verification, storage, and use of data to produce the required performance information; to target, calculate, interpret, analyse and use the PI in departmental decision making; to report on the PI; and to review the PI Framework (RSA, National Treasury, 2011:1).

SASQAF provides for certification of data collected by the three spheres of government and other agencies from surveys, registers and administration as official statistics. The main aim of the policy is to provide a structure for assessment of statistics products. According to this policy, prior to assessment of data, the following criteria should be met. The institution collecting data should be a member of the National Statistics System, data collected should meet the needs of the users, and data collection should be done as part of a sustainable series. The assessment criteria include the following quality dimensions: relevance, accuracy, timeliness, accessibility, interpretability, coherence, methodological soundness, and integrity. Each of these dimensions has a number of indicators that are used to measure the quality of statistics. Once the statistics are assessed they can be classified as quality, acceptable, questionable or poor statistics. Only quality statistics can be certified as official statistics.

In 2011 the National Evaluation Framework was adopted by Parliament. According to the framework, all major programmes must be evaluated periodically (RSA, DPME, 2011:iii). One of the purposes of evaluating government programmes is to generate knowledge about what works and what does not work in terms of government interventions, projects, programmes and policies, and to enable government to build on evidence-based future policies (RSA, DPME, 2011:3). Both monitoring and evaluation involve continuous collection and analysis of data to decide whether government programmes are effective or not. The quality of data collected is essential in deciding the credibility of an evaluation (RSA, DPME, and 2011:16).

All government departments in South Africa are required to implement the performance measurement policies discussed above. The use of ICT and management information systems makes it possible to collect and process performance information. The implementation of a management information system to measure organisational performance has to be done within the ICT policy framework.

2.6 Examples of MIS used to measure organisational performance in the South African public sector

This section explores management information systems used to measure organisational performance in the South African public sector. The Department of Science and Technology, Department of Health, and Department of Basic Education information systems were selected as South African examples.

In 1996 the South African **Department of Health** (DoH) rolled out the District Health Information System (DHIS) which is used to collect and analyse information for monitoring performance and planning (Garrib et al., 2008:549). According to the study conducted by Garrib et al. (2008:551) on the use of the DHIS in South Africa, the system is used to collect data performance information for reporting information. Data is manually collected in health facilities using standardised tools and it is captured electronically at district level to generate reports. Garrib et al. (2008:551) found that information generated from these reports was rarely used in planning and the clinics studied were not aware of their own performance in relation to national performance targets.

In 2012 the DoH started a process of implementing the National Health Information Repository and Data Warehouse (NHIRDW) which integrates data from various specialist information systems. The NHIRDW integrates routinely collected information on health and diseases, other information collected by national and provincial departments, research conducted on health issues, and socio-economic and statistical information collected by other departments. Data quality and ownership of information

remains a challenge and the system aims to address these challenges for better monitoring and evaluation of health outcomes.

According to the DoH eHealth strategy (RSA, DoH, 2012:13), provincial and district offices are at different maturity levels in terms of information management for measuring organisational performance. Some district offices are still using paper-based systems to manually collect performance information; some are optimising the paper-based system to simplify indicators and minimise duplication; and most provincial departments are migrating to electronic management information systems. The eHealth strategy aims to address these disparities towards a fully integrated management information system.

The **Department of Basic Education** (DoBE) uses the Education Management Information System (EMIS) to collect, verify, analyse and manage information in the schooling sector. The system is used to generate information and statistics for planning, policy making and decision making. The department also relies on annual school and household surveys, which produce different information. According to the DoBE Annual Performance Plan of Financial Year 2013/14 (RSA, DoBE, 2012:11), the department plans to work with STATSSA to improve quality of information to support teaching and learning outcomes. The department plans to improve the use of information for organisational performance planning, monitoring and evaluation.

The Department of Science and Technology (DST) and its entities are in a process of replacing manual systems with a web-based performance management information system that has capabilities for real-time monitoring and evaluation (Khulisa Management Services, 2013). The system can facilitate strategic planning, operational planning, and performance reporting linked to common objectives, outcomes and performance indicators. The system allows for storage of source documentation and it generates automated quarterly and annual reports.

According to Ogawa and Ratombo (2013), the system allows for capturing of data at various organisational levels. Reports generated by the system can be extracted in Word,

Excel and PDF format and online dashboards are used to display overall organisational performance.

2.7 Development of a management information system to measure organisational performance

In order to develop and recommend a model for the department to improve the measurement of organisational performance by using management information systems, it is important to start with a diagnosis of the current situation. Improving performance management systems starts with the diagnosis of the current situation within an organisation. According to Mackay (2007:69), diagnosis includes establishing what systems exist within an organisation; system management and the responsible people; the incentives to use monitoring and evaluation in the public sector environment; current main uses of performance information; types of monitoring and evaluation used in an organisation; people responsible for collecting performance information; and overall strengths and weaknesses of monitoring and evaluation systems. According to Streib and Willoughby (2010:177), measuring information management capacity of government includes information produced, its accessibility, and the level of integration of information into planning, budgeting, management and evaluation decisions. The same principle applies to developing a strategy to improve an e-government system. According to Heeks (2006:48), to develop an e-government strategy it is important to start with an information system audit. The information system audit should take into consideration the system issues, the main issues facing the current system, stakeholders, and the context of an organisation.

Diagnosis of existing systems involves identification of barriers to successful implementation and strategies to resolve those barriers. Strategies need to be put in place to address barriers such as lack of demand and ownership of performance information; lack of a culture of evidence-based decision making and accountability; lack of evaluation, accounting, or auditing skills; or poor quality and credibility of financial and

other performance information (Mackay, 2007:70). Prybutok et al. (2008:150) contend that during the design stage of a management information system, it is important to consult external and internal users to determine user requirements to ensure system quality in terms of reliability, usability and relevance.

An information management strategy of a department needs to take into consideration the organisational structure, culture, data architecture, business processes, data governance and skills of staff using and managing data (Vayghan et al., 2007:672). A performance management information system should be aligned with the organisation's strategies, vision and objectives; and it should help the organisation meet its needs (Heeks, 2006:50). An e-government architecture, which is a plan for an e-government system, is developed taking into consideration business processes, applications, data management, organisation-wide data structure, and ICT (Heeks, 2006:55).

Steward (2004:109) suggests that creating a culture of sharing and shared responsibility is one of the first considerations in the adoption of information management practices such as integration of data and its utilisation in decision making. Coordination, integration, resource and power sharing are essential in creating an environment where information is utilised to improve quality of services (Steward, 2004:112). According to Fountain (2007:80), coordination and integration within an organisation can be enhanced by developing communication and coordination structures that regulate the flow of information. Governance structures play an important role in promoting collaboration and integration where goals of different units are not aligned (Fountain, 2007:85). Governance structures help to resolve conflicts and provide political support (Fountain, 2007:85).

According to Vayghan et al. (2007:627), information security policies need to be in place to prevent unauthorised access, manipulation of data, identity theft and fraud. Implementation of the security and privacy policies need to be monitored as part of data and information management.

Once a detailed diagnosis of the current situation in terms of how the organisation measures its performance and manages its performance information has been made, and how available ICT, ICT skills and MIS are used to measure organisational performance, recommendations can be made on improvement of the existing system.

2.8 Summary

Measurement of organisational performance involves collection and analysis of performance data which is processed into useful information used for decision making and policy management. Information systems play an important role in management of performance information used to measure organisational performance. Management information systems are used to capture, process, analyse and disseminate performance information to the users. Management information systems facilitate easy access to information and enable manipulation of information into more user-friendly formats for different types of users. This chapter also discussed challenges and success factors to be considered when developing and implementing a management information system to measure organisational performance. Chapter 3 discusses performance measurement, management information systems, and performance measurement information system frameworks that can be used to describe the role of MIS in measuring organisational performance in the department.

CHAPTER 3: FRAMEWORK FOR MEASURING ORGANISATIONAL PERFORMANCE AND MANAGEMENT INFORMATION SYSTEMS

3.1 Introduction

In Chapter 2, the key concepts of the study were defined and discussed in detail. The chapter also briefly discussed relevant policies governing ICT and performance measurement. In this chapter, frameworks describing performance measurement and management information systems are discussed. A framework is used to model a system and to clarify boundaries and relationships between dimensions (Rouse & Putterill, 2003:792).

The key performance measurement frameworks discussed in this section are: the balanced score card framework by Kaplan and Norton (1992); Otley (1999); Ferreira and Otley (2009) and Broadbent and Laughlin (2009). The 2013 information system framework of Petter et al. (2013) is discussed together with Marchand and Raymond's (2008) performance measurement information system framework. The South African National Treasury Framework for Managing Programme Performance Information is discussed in detail in relation to the above frameworks.

3.1.1 Performance measurement frameworks

The frameworks discussed in this section relate to the following research objectives:

- To determine how performance is currently measured in the organisation;
- To determine the manner in which performance information is managed; and
- To determine how MIS are used to measure organisational performance.

The frameworks are discussed in historical order, starting with Kaplan and Norton, which is the oldest of the frameworks selected for discussion in the study.

3.1.2 Kaplan and Norton's balanced scorecard framework

Kaplan and Norton (1992:71) developed a balanced scorecard framework, which takes into account financial and operational measures as the drivers of organisational performance. The framework requires that organisational performance is measured according to customer, financial, innovation and learning, and internal business perspectives (Kaplan & Norton, 1992:72). These perspectives are measured together. According to Rouse and Putterill (2003:793), the balanced scorecard is stakeholder oriented. An organisation measures itself according to how its customers view its services. To ensure customer satisfaction, an organisation improves its business processes through innovation and learning (Kaplan & Norton, 1992:74). According to the authors (1992:77), the financial perspective concerns creating value for stakeholders. Improving internal business processes is about ensuring customer satisfaction and efficiency.

Marchand and Raymond (2008:663) suggest that the impact of the balanced scorecard on organisational performance is still a debatable question. Broadbent and Laughlin (2009:283) view Kaplan and Norton's framework as a narrow definition of a performance management system. Rouse and Putterill (2003:793), further indicate the following shortcomings of Kaplan and Norton's balanced score card framework: these include absence of the competitive dimension; failure to recognise important aspects such as human resources and performance of suppliers; and not specifying dimensions of performance that determine success. Kennerly and Neely's framework is discussed in the next section.

3.1.3 Kennerly and Neely's framework

In 2000, Kennerly and Neely proposed an alternative model based on five performance perspective prisms. These are stakeholder satisfaction, strategies, processes, capabilities, and stakeholder contribution (Neely et al., 2002:xi). According to the authors, organisations can no longer solely focus on satisfying their stakeholders. They need to ensure that their strategies, processes and capabilities are aligned and integrated for an organisation to add value to services provided to its stakeholders. Capabilities refer to

people, technology, practices and infrastructure required to support the processes (Neely et al., 2002:13). Thirdly, the relationship between an organisation and its stakeholders is reciprocal. Stakeholders not only make demands on an organisation; they are expected to contribute to the organisation as well (Neely et al., 2002:14).

Neely et al. (2002:32) hold that there are four important processes that support development and implementation of a performance measurement system. These include designing the measures by selecting what gets measured and defining the metrics for measurement. The second step is to prepare for the implementation of a performance measurement system, which includes planning how to access data, configure data manipulation and disseminate data. The third step constitutes applying the system and managing measures (Neely et al., 2002:32).

3.1.4 Otley's framework

Otley's framework proposes important questions that can be used as research tools (Otley, 1999:365). The framework highlights five issues to be considered when describing and developing a performance management system (Ferreira & Otley, 2009:264). The first question that the framework asks relates to the identification of key organisational objectives, processes and the methods to measure them. Secondly, the framework identifies strategies and plans that an organisation has adopted and implementation of those strategies (Otley, 1999:365). The third issue involves the process of formulating performance targets. The framework also considers the system of rewarding performance. Lastly, the framework considers the types of information flow required to monitor performance and support learning.

According to Ferreira and Otley (2009:265), Otley's framework has its strengths and weaknesses. The main strengths of the framework are: the framework provides a systematic structure for analysing performance measurement and it facilitates the process of dealing with large amounts of data in case-based research. The authors reveal the following shortcomings of the framework: it does not consider the role of vision and mission in performance management, and it does not emphasise the way in which

accounting and control information is used in the organisation (Ferreira & Otley, 2009:265).

3.1.5 Simons' framework

Simons' (1994) levers of control, a tool for implementation and control of business strategies, are also discussed by Ferreira and Otley (2009:265). Simons (1994:170) defines management control systems as formal and information-based routines and procedures used by management to control the activities of an organisation. The system is based on four types of controls. The first is a belief system, which is a formal system used to communicate values and purpose that the top management wants to enforce (Simons, 1994:170). The second type of control is the boundary system which includes rules that must be respected. The third system is the diagnostic control which includes a formal feedback system used to monitor outcomes. The fourth control system is the interactive control system which enables top management to interact with the subordinates (Simons, 1994:171).

According to Ferreira and Otley (2009:265), Simons' framework addresses the following elements of performance management: core values, identification of risks, critical performance variables, and strategic uncertainties. The framework is focused on top management control and it does not work where there is less formal control.

3.1.6 Franco-Santos et al. framework

Franco-Santos et al. (2007:787) enumerate the features, roles and processes of a performance management system. The authors define features as elements which form a performance management system; roles of a performance management system as functions of a performance management system; and processes as a series of activities which are combined to make up a performance management system.

According to Franco-Santos et al. (2007:796), features of a performance management system consist of performance measures and supporting infrastructure. Support infrastructure comprises methods and procedures of acquiring, recording, collating, analysing, interpreting and disseminating performance data, as well as the human

resources which are required to measure performance (Franco-Santos et al., 2007:796). The authors maintain that the supporting infrastructure can be in the form of an explicit system or processes implemented to facilitate the operation of an organisational performance management system.

Franco-Santos et al. (2007:796) classify roles of performance management into five categories. These categories are performance measurement, strategy management, communication, influencing behaviour, and organisational learning and improvement (Franco-Santos et al., 2007:797).

Franco-Santos et al. (2007:797) highlight three processes of an organisational performance management system. These are: provision of information, measure design and selection, and data capture. The authors note that if any of these processes are not in place, an organisation does not have a performance management system (Franco-Santos et al., 2007:798).

3.1.7 Ferreira and Otley framework

Ferreira and Otley (2009:266) propose a performance management system that combines Otley's and Simon's frameworks. The framework is broader than a management control tool, as it integrates others dimensions of management. Ferreira and Otley's (2009) performance management framework can be used as a research tool to describe the structure and operation of a performance management system.

Ferreira and Otley's framework lists twelve questions that should be asked when describing and developing a performance management system (Ferreira & Otley, 2009:267). According to Broadbent and Lauhglin (2009:285), the first eight questions of Ferreira and Otley's framework address functional issues related to achievement of results and management of the means to achieve those results. The last four questions address the underlying issues that influence performance measurement.

Ferreira and Otley's framework poses questions about the vision and mission of an organisation and how these are communicated to convey the purpose and objectives of an

organisation. The framework is used to identify key success factors. It examines the organisational structure and how it influences the strategic management process. It describes the key performance measures; the level of performance the organisation needs to achieve its key performance measures; the process followed to evaluate performance; and the rewards for achieving performance or penalties for failure to perform. The framework also considers information flow, including systems and networks in place to support the operation of a performance management system.

In Ferreira and Otley's framework, information flows, systems and networks are the most relevant issues that the framework addresses for the purpose of this study. According to Ferreira and Otley (2009:273), information flows, systems and networks enable and bind the whole performance management system. The authors distinguish between feedback information that is used to correct or adapt the implementation of programmes and feed-forward information used to learn and generate new ideas and strategies. Both feedback and feed-forward information flows are essential for the performance management system to work.

Systems are used to organise accounting and control information in a performance management system. Systems include information systems and information technology infrastructure (Ferreira & Otley, 2009:274). A system should be able to provide reliable financial and non-financial performance information. The authors note that the following factors should be considered concerning the information flow: information scope, information aggregation, timeliness, integration between subunits, relevance, selectivity, and orientation.

3.1.8 Broadbent and Laughlin framework

Broadbent and Laughlin propose alternative models of rationality used to address underlying complexities in understanding the contextual issues of performance management in Ferreira and Otley's (2009) framework. Broadbent and Laughlin's framework provides a language for analysing a performance management system (2009:284).

Broadbent and Laughlin's framework focuses on the underlying issues of Ferreira and Otley's framework, covered in the last four questions (Broadbent & Laughlin, 2009:286). These are information flow, types of information and control mechanisms, changes in the organisation as a result of the performance management system, and the links between components of performance management systems (Ferreira & Otley, 2009:267).

Broadbent and Laughlin (2009:286) propose models of rationality that can be used to understand the underlying issues and influence the design of a performance management system in Ferreira and Otley's framework. The authors argue that there are two dominant types of rationality and these are instrumental and communicative rationality. Communicative rationality allows for participation in the choice of performance indicators and performance measures (Broadbent & Laughlin, 2009:287). According to the instrumental rationality, performance indicators are derived from formal rationality where performance measures are derived before the performance indicators.

3.2 Framework for performance management information systems (PMIS)

This section discusses the frameworks that can be used to respond to the following research objectives:

- To describe information technology and management information systems currently used to manage information in the department;
- To describe ICT skills available in the department; and
- To determine how MIS are used to measure organisational performance.

In order to describe information systems, technology and ICT skills in an organisation, Heeks (2006:48) suggests an information system audit. According to Heeks (2006:48), an information system audit includes a description of all types of information systems and an inventory of IT infrastructure in an organisation. An audit should consider the information system perspective in terms of information delivered by the IS, information processes, and IT skills. It should also consider challenges with existing systems and

emerging trends (Heeks, 2006:48). Internal and external stakeholder issues and contextual issues such as IT trends, standards, policies and guidelines impacting on the information system are also considered (Heeks, 2006:49). The frameworks that have been identified to address the research objectives of the study are aligned with Heeks' information system audit.

The study focuses on models relating to system use because the aim of the study is to describe the role of management information systems in measuring organisational performance. Petter et al. (2013) information system success model; Marchand and Raymond's (2008) PMIS classification scheme framework and Melville et al. (2004) model for evaluation are discussed in the next section.

The study focuses on Melville et al. (2004) IT business value model, the information system success model of Petter et al. (2013), and Marchand and Raymond's (2008) model because of their relevance to the research objectives of the study. PMIS development models are also considered in the study because the secondary objective of the study is to develop and recommend a PMIS for the Department of Arts & Culture. Evaluation models are not considered in the study since evaluation of information systems falls beyond the scope of the study.

3.2.1 Melville et al. framework

This framework is used to describe information technology, management information systems and ICT skills available in the department. Melville et al. (2004:293) propose an integrative resource-based model of IT business value which comprises focal firm, competitive environment and macro-environmental domains. The authors support the argument that information technology contributes to business value and they further argue that the extent and dimensions of IT value depend on internal and external factors (Melville et al., 2004:284). Internal factors include IT types, organisational structure, and management practices, while external factors are the macro-environment and competitive environment. The competitive environment and macro-environment domains of the

framework of Melville et al. are not discussed in the study. The study focuses on focal firm domain only, because it is limited to internal factors of an organisation.

The focal firm domain is the internal environment of an organisation. According to Melville et al. (2004:293) the focal firm domain refers to deployment of IT and other resources to achieve IT business value within an organisation. The focal firm domain includes IT and other complementary resources, business processes, business process performance, and organisational performance (Melville et al., 2004:293).

According to Melville et al. (2004:294), information technology resources consist of IT infrastructure and human capital. IT infrastructure includes shared technology and services within an organisation, specific business applications, and hardware and software (Melville et al., 2004:294; Heeks, 2006:48). Human capital refers to an organisation's expertise and knowledge. Expertise includes IT skills such as application development, integration and system maintenance, managerial expertise required to mobilise resources, and project management (Melville et al., 2004:294).

Complementary organisational resources include non-IT physical and non-IT human and capital resources, structure, policies, rules, workplace practices, and culture. Business processes refer to activities where inputs are converted into outputs (Melville et al., 2004:296). IT makes it possible to improve business processes by synthesising and integrating activities across the organisation for better performance. The next section discusses the management information systems framework.

3.2.2 Petter et al. framework

DeLone and McLean's 1992 information success model is based on six interdependent variables, which are information quality, system quality, system use, user satisfaction, individual impact, and organisation impact (Petter et al., 2013:10). Petter et al. (2013:10) later added service quality of the information technology department of an organisation as the seventh dimension used to measure information system success.

The determinants of information system success are summarised by Petter et al. (2013:16); they are tasks, characteristics of users, projects, and social and organisational determinants. The task determinant relates to work activity supported by an information system. For the purpose of the study, work activity constitutes measuring organisational performance. The determinant focuses on the fit between the task and the information system; the importance of the task within the business process; the level of clarity of the task supported by information system; and task interdependence.

The user variable relates to the individual user's attitude towards technology and change. This includes expectations, experience, role in the organisation, education, age, and tenure in the organisation (Petter et al., 2013:16). Social determinants refer to the social network's influence on an individual, for example, the user's perception of how others view him or her owing to the use of information systems. The project determinant relates to the process of identifying, developing and implementing an information system. The organisational determinant of information system success is the most relevant variable for this study. The variable relates to all-encompassing organisational procedures and the environment with regard to management support, management processes, organisational competence, IT infrastructure, IT investment, IT governance and organisational size (Petter et al., 2013:18).

3.2.3 Marchand and Raymond's framework

This framework focuses on performance measurement information systems. Marchand and Raymond (2008) provide a PMIS classification scheme which is useful to structure the study of PMIS artefacts. The classification scheme has three criteria, which are alignment and scope, management support sophistication and IT sophistication. The first criterion discussed in Marchand and Raymond (2008:675), is the alignment and scope of a performance management information system. The criterion refers to the quality, completeness, relevance and usefulness of information to measure organisational performance. Information provided by the performance management information system needs to be aligned with the organisational performance logic, namely, alignment of the

PMIS with the organisation's definition of performance and the management priorities of the organisation; and alignment with the organisational structure and processes.

The authors (2008:675) further argue that a PMIS can be evaluated based on the extent of its coverage of the various dimensions of performance, by its capacity to measure in a prospective as well as in a retrospective manner, by the decision-making levels covered, including both strategic and operational management levels, and by its architectural coverage, operational processes, managerial processes and projects.

Management support sophistication criterion of describing a PMIS refers to the capacity of a PMIS to provide support on performance-related management processes (Marchand & Raymond, 2008:675). The criterion includes the PMIS's performance measurement and management capacity and its user friendliness in respect of level of outputs. Performance measurement capacity refers to the PMIS's ability to evaluate, calculate, and relativise. Its performance management capabilities include explanations of trends, diagnosis, interpretation, simulation, recommendations and benchmarking. User friendliness of information outputs of a PMIS can be described in terms of format of information, for example, graphics and colour. It can also be described in terms of types of units of measures, such as monetary or physical units.

IT sophistication is the third criterion discussed in Marchand and Raymond's framework (2008:675). IT sophistication is based on the PMIS's capacity to provide reliable, concise, timely, and synchronous information. IT sophistication also evaluates the capacity of PMIS to integrate and synchronise information from different systems or sources of information within an organisation and in external organisations. The extent to which the system is accessible in terms of points of access, interactivity, personalisation, and secured access, and the extent to which performance information is collected and diffused within an organisation, is evaluated (Marchand & Raymond, 2008:676).

3.3 South African performance information framework

This is the main framework of the study and it is a South African government framework introduced by the National Treasury. The study addresses the following research objectives:

- To determine how performance is currently measured in the organisation;
- To determine the manner in which performance information is managed; and
- To determine how MIS are used to measure organisational performance.

The South African Framework for Managing Programme Performance Information (FMPPI) was introduced in 2007. The FMPPI is accompanied by the *Performance Information Handbook* (RSA, National Treasury, 2011), which was published in 2011 to provide tools and guidelines for the implementation of the FMPPI. The aims of the FMPPI are to clarify definitions and standards for performance information; improve integrated structures, systems and processes required to manage performance information; define roles and responsibilities in managing performance information; and promote accountability and transparency (RSA, National Treasury, 2007:1).

The performance information system includes the performance information framework, structures, processes and rules (RSA, National Treasury, 2011:1). According to the *Treasury Handbook* (RSA, National Treasury, 2011:1), the performance framework comprises the structures and methodology for selection, description and management of quality, as well as credible performance indicators and devolvement of performance information management to the appropriate structures in the organisation.

The performance information plan includes a description of an organisation's current performance information system and strategies to improve indicators used, sources of data used to construct indicators, storage and accessibility of performance information data, and the use of performance information in decision making.

The performance information manual provides guidelines to officials in the organisation on roles and responsibilities of management and the use of performance information

(RSA, National Treasury, 2011:1). These are discussed in the next subsections, which also include capacity to manage PI, collection and storage, utilisation, integration and assessment, and development of PMIS.

3.3.1 Roles and responsibilities

Chapter 5 of the framework (RSA, National Treasury, 2007:13) covers roles and responsibilities for managing performance information. The framework outlines responsibilities as follows:

- The executive authority, the Member of Executive Council (MEC) in the case of the provincial government department, should ensure that the institution he/she is responsible for sets up appropriate performance information systems to fulfil reporting responsibilities;
- The accounting officer, the head of department, is accountable for establishing and maintaining the systems to manage performance information;
- Line managers are responsible for establishing and maintaining performance information processes and systems within their area of responsibility; and
- Officials are responsible for capturing, collating and checking performance information in relation to their activities.

According to the framework, a process needs to be in place to ensure that the responsibility of managing performance information is included in the individual performance agreements of managers and officials (RSA, National Treasury, 2007:14).

3.3.2 Capacity

According to the framework, an organisation should have the capacity to manage performance information. Chapter 5 of the handbook provides guidelines on how capacity should be assessed and strengthened. The capacity assessment checklist includes general administrative capacity requirements; human resource requirements to develop the PI framework; human resource requirements to assess and improve PI data; human resource and systems requirements to ensure effective use of PI; specialist skills; and skills to

manage PI capacity development (RSA, National Treasury, 2011:48). In this study, human resource requirements to develop a PI framework and skills to manage capacity development will not be discussed.

General capacity requirements for developing and implementing a PI plan in an organisation include the following:

- Administrative time to review and understand *Performance Information Handbook* requirements;
- Knowledge of legislation and regulations relevant to PI management;
- Computer skills to use and develop performance reporting formats;
- Conducive organisational structure and appropriate processes to support implementation of the framework; and
- Manual or electronic information system to collect, store and retrieve PI (RSA, National Treasury, 2011:48).

The requirements to assess and improve PI data are:

- Organisational knowledge to identify PI source datasets;
- Organisational knowledge, skills and time to undertake data assessment, record audits and identify data sets;
- Administrative time, research skills and organisational knowledge to design and manage processes to verify performance information;
- Skills to design and maintain a PI collection and storage system;
- Knowledge of electronic PI systems;
- Organisational knowledge to design systems to use PI and design PI reporting formats; and
- User capacity to understand the nature of PI and to utilise PI effectively in decision making.

The framework states that there should be a consultation process to ensure that information needs of different users are taken into consideration when specifying a range of information to be collected (RSA, National Treasury, 2007:13). There should also be a process of ensuring that performance information is used in planning, budgeting and management within an organisation.

In terms of capacity to manage performance information, the accounting officer of an organisation should ensure that there is adequate capacity to manage performance information, including overall design and management of performance indicators, collection of performance information, and collation and verification of performance information (RSA, National Treasury, 2007:14).

3.3.3 Collection, storage and use of PI

Performance information records include records generated in the implementation of programmes which are used as evidence for verifying sources of data. These records include manual and electronic records (RSA, National Treasury, 2011:26). Collection of performance information needs to be conducted in a manner that ensures quality, authenticity, reliability, integrity and usefulness of information. According to the handbook, performance indicators are informed by the different types of data such as administrative records, surveys conducted by the public sector, and national statistics (RSA, National Treasury, 2011:26).

The handbook (RSA, National Treasury, 2011:55) provides a data-quality matrix which asks the following questions in relation to the relevant data set and performance indicator:

- Who collects data?
- How is data collected?
- Where is it stored?
- How is it stored?
- What are the main internal controls to ensure data accuracy and reliability?
- What evidence should be kept?

- How is data risk assessed?

The handbook provides tools and a step-by-step guide on how data sets can be assessed in line with the SAQAF and the National Archives and Records Services of South Africa (NARSSA). These tools assist in assessing quality, identifying risks that may impact the quality of information, such as weaknesses in data collection and storage; and provide an internal audit and corrective action plan with regard to collection of performance information (RSA, National Treasury, 2011:27).

The *Performance Information Handbook* (RSA, National Treasury, 2011:33) provides questions that need to be asked to assess different types of performance information in terms of accuracy, timeliness, interoperability, accessibility, coherence and integrity. The handbook provides guidelines to verify performance information source data and to mitigate the risk where rules to ensure authenticity, reliability and integrity of records and systems are not followed to extract data from the primary source (RSA, National Treasury, 2011:34). The handbook recommends that internal audit plans should be in place and should include the review of internal control of records management and performance information. Collection and storage of performance information should routinely include basic accuracy, validity and completeness checks, as well as verification of performance information records.

3.3.4 Utilisation of PI

Performance information is generated and used from policy development, planning, budgeting, implementation and reporting on policies (RSA, National Treasury, 2007:4). Performance information provides baseline information used in policy development and in planning and budgeting. During implementation, it is used to monitor progress and performance against plans. Performance information can be used for comparison to measure change, and detect trends and deviations from the desired effects of the policy (RSA, National Treasury, 2011:39). It can also be used for benchmarking, scoring and rating performance of an organisation.

3.3.5 Systems integration

According to the Framework for Managing Programme Performance Information, systems should be integrated within existing management processes and systems (RSA, National Treasury, 2007:13). An organisation should have documentation in place addressing integration of performance information structures and systems within existing management processes and systems. This should include definitions and technical standards of all information collected; processes for identifying, collecting, collating, verifying and storing information; use of information in managing results; and publication of performance information.

Performance information integration also refers to combining financial and non-financial information, and combining more than one indicator to obtain useful information for decision making (RSA, National Treasury, 2011:42).

3.3.6 Assessment and development of PMIS

Section 3.5 and Section 3.6 of the handbook provides guidelines for assessment and development of a system for storing performance information systems. A performance information system should have rules and systems for calculating PI data to ensure consistency. It should have rules defining the format of PI data. It should have records management rules with regard to location of data, for example, office, electronic system, hard drive, or directory. It should keep an audit trail in respect of creation of or corrections and adjustments to PI. The system should specify who controls the master performance information files (RSA, National Treasury, 2011:37).

The following considerations are recommended for developing an electronic record and performance management information system:

- Evaluate current record management practices to address any problems relating to business process design and compliance processes;
- Evaluate record creation, collection and storage practices to ensure that they can be applied to electronic records;

- Consider paper-based systems that will need to be migrated to the new electronic system;
- Evaluate human skills available to collect and record performance information on the electronic system and
- Clarify roles and responsibilities of different actors in the new system.

The electronic performance information systems should aim to improve records management practices and culture (RSA, National Treasury, 2011:37-38).

Rouse and Putterill (2003:794) contend it is impossible to devise a single framework for measuring organisational performance because of the complexity of organisations. Organisational complexity, according to the authors, stems from highly integrated business, large amounts of data collected and used, complex processes, and competitive business environments.

3.4 Summary

The chapter discussed different performance management and information systems frameworks that can be used to study the role of information systems to measure organisational performance.

In order to determine how performance is currently measured in the organisation, performance measurement frameworks were used as discussed in Section 3.2. The framework of Franco-Santos et al. defines features of a performance measurement system. The Ferreira and Otley framework is used to describe the structure and operation of a performance management system. The frameworks discussed in Section 3.2 are also used to describe the manner in which performance information is managed in the KwaZulu-Natal Department Arts & Culture, together with the South African performance information framework.

Frameworks for management information systems were used to describe the information technology and management information systems currently used to manage information

in the department and the ICT skills available in the department. The frameworks of Ferreira and Otley, Melville et al., Petter et al., and Marchand and Raymond are used to describe management information systems used to measure organisational performance.

The South African National Treasury Framework for Managing Programme Performance Information provides a guideline for South African government institutions on how they should manage performance information. This was discussed in detail in this chapter as a South African framework in relation to the study. In Chapter 5, frameworks discussed in this chapter are applied in developing data-gathering tools. Chapter 4 presents the case study of the KwaZulu-Natal Department of Arts & Culture.

CHAPTER 4: KWAZULU-NATAL DEPARTMENT OF ARTS & CULTURE: CASE STUDY

4.1 Introduction

In this section, the KwaZulu-Natal Department of Arts & Culture is discussed in detail in relation to its mandate, vision and mission, services rendered, and how it monitors its performance. Special attention is paid to its core programmes, the ICT Unit, and Corporate Strategy Directorate, because they are the units of analysis discussed further in Chapter 5. A section on how the department monitors its services is included because it relates to the main theme of the study as discussed in Chapter 2 and Chapter 3. This section also covers the relationship with the national Department of Arts & Culture and the department within the provincial government context.

4.2 A brief overview of the KwaZulu-Natal provincial demographic profile and provincial administration

In terms of population size, KwaZulu-Natal is the second largest province in South Africa after Gauteng (RSA, Statistics South Africa, 2013:2). The KwaZulu-Natal provincial government provides services to a population of 10 267 300 people (KZN Provincial Planning Commission, 2011:9). Fifty-four percent (54%) of the population live in rural areas and 77% of the population in the province speak Zulu. Eleven percent (11%) of the population have never received any education.

Thirty-seven percent (37%) of the population are young people aged 15–34. The province has the highest population of youth aged 15–34, compared with other provinces in the country. Twenty-two percent (22%) of South African youth are located in KwaZulu-Natal province. Forty-nine percent (49%) of the youth are unemployed. The demographic information on the province gives an indication that like in the rest of the country, the province has high levels of unemployment, poverty and inequality.

Taking the above demographic information into consideration, the Provincial Planning Commission (KZN Provincial Planning Commission, 2011:12) identified the following

strategic goals that the provincial government departments must work towards addressing: job creation; human resource development; human and community development; strategic infrastructure; responses to climate change, governance and policy; and special equality.

All provincial government departments are required to develop and facilitate the implementation of plans that are in line with the above strategic goals to develop all areas of KwaZulu-Natal (KZN Provincial Planning Commission, 2011:38). The provincial government departments work in collaboration with other spheres of government such as local municipalities, traditional authorities, and national government departments and other organs of state (KZN Provincial Planning Commission, 2011:38). The provincial government administration of KwaZulu-Natal has 16 departments and Arts & Culture is one of those departments. Provincial government departments are grouped into four Cabinet coordination clusters. The Department of Arts & Culture is part of the Social Protection, Human and Community Development cluster (KZN Provincial Planning Commission, 2011:39).

4.3 Arts and culture in South Africa

It was mentioned above that provincial departments work in collaboration with the national departments amongst other stakeholders. The national Department of Arts & Culture is briefly discussed in this section as the main stakeholder and partner of the KwaZulu-Natal Department of Arts & Culture. The national Department of Arts & Culture has identified South Africa's diverse arts and culture as one of the main drivers of economic growth and job creation (RSA, GCIS, 2014:61). This section only covers the role of government as the custodian of the arts and culture heritage in South Africa and the relationship between the national and the provincial department.

4.3.1 National Department of Arts & Culture

The national Department of Arts & Culture is the custodian of the diverse South African artistic, linguistic and cultural heritage (RSA, GCIS, 2012:72). The national department works in partnership with provincial departments and other organs of state to address

inadequacies in policy and regulations in the sector, strengthen governance, and increase investment in the sector (RSA, GCIS, 2014:61).

The key projects and initiatives of the department which contribute towards job creation and economic growth, and promote social cohesion and nation building, include the Mzansi Golden Economy strategy, Investing in Culture Programme, Arts & Culture festivals; Moshito Music Conference and Exhibition, theatre, visual arts, and literature (RSA, GCIS, 2014:67). The national department works in collaboration with provincial departments to implement these programmes.

The national Department of Arts & Culture (DAC) funds and supports various arts and culture structures located in provinces in the country. The arts and culture institutions supported include the National Heritage Council, South African Heritage Resources, South African Geographical Names Council, National Language Services, Pan South African Language Board, and various arts institutions such as Business and Arts South Africa, Arts and Culture Trust, and community arts centres and other cultural organisations (RSA, GCIS, 2014:64).

The department provides subsidies and support to national museums which are declared as national heritage institutions, for example, the Iziko Museum and Afrikaans Language Museum. The department is also responsible for the national archives located in Pretoria and the National Library of South Africa located in Pretoria and Cape Town. Provincial departments run their own provincial archives and museums that are not declared national heritage institutes, as well as public libraries, independently. Provincial departments receive grant funding from the national Department of Arts & Culture for recapitalisation of community libraries (RSA, GCIS, 2012:93).

4.3.2 The KwaZulu-Natal Department of Arts & Culture

The KZN DAC is one of the government departments within the KwaZulu-Natal provincial government administration and is part of the Social Protection, Human and Community Development Cabinet cluster. The department works in partnership with the

National Department of Arts & Culture and local municipalities. It receives a grant for recapitalisation of community libraries and works in partnership on a number of projects, but the department operates independently.

The department was promulgated in 2004 as the Department of Arts, Culture and Tourism. Prior to 2004, the following components of the department, Library Services, Archive Services, and Cultural Affairs resorted under the Department of Education. Museum Services fell under the Office of the Premier, but became part of the department in 2004. In 2009, the department became the Department of Arts & Culture. The tourism component was transferred to the Department of Economic Development, which became the Department of Economic Development and Tourism. The department is also referred to as the Department of Sport, Arts, Culture and Recreation in some documents, but these are two separate departments headed by one MEC. The Department of Arts & Culture and the Department of Sport and Recreation share an MEC but have separate heads of department, budgets, programmes and support staff. The Department of Sport and Recreation is not included in the study.

The head office of the department is based in Pietermaritzburg. The regional offices are located in the following areas: Western Region – Ladysmith, Eastern Region – Durban, Northern Region – uLundi, and Southern Region – Pietermaritzburg.

The KZN DAC is responsible for the development and preservation of the artistic and linguistic heritage of the province. The main functions of the department include the collection, preservation and provision of information services through libraries, museum and archive services, and the development and promotion of arts and culture in the province.

4.4 Legislative mandate of the department

The mandate of the department is derived from the Constitution of the Republic of South Africa, Act No. 108 of 1996. According to Section 6 and Section 30 of the Constitution, the department facilitates opportunities for the people of KwaZulu-Natal to exercise their

language and cultural rights through programmes and projects that it presents and supports. Schedule 5 of the Constitution of the Republic provides a mandate for the department to provide library and museum services. The table below summarises the legislative mandate of the department according to programmes of the department.

Table 1: Legislative mandate of the department (KZN DAC, 2014:20-21)

PROGRAMME	SUB-PROGRAMME	LEGISLATIVE MANDATE
Cultural Affairs	Arts and Culture	Culture Promotion Act (Act 35 of 1983) Cultural Affairs Act (Act 65 of 1989)
	Language Services	National Language Policy Framework, 2003 South African Geographical Names Council Act Pan South African Language Board (PanSALB Act) (Act 59 of 1995) KwaZulu-Natal Parliamentary Official Languages Act (Act 10 of 1998)
	Museum Services	Constitution of the Republic of South Africa (Act 108 of 1996) Schedule 5
Library and Archive Services	Library Services	Constitution of the Republic of South Africa (Act 108 of 1996) Schedule 5 KwaZulu Library Act (Act 18 of 1980) Natal Provincial Library Services Ordinance, 1952 (Ordinance No. 5 of 1952)
	Archive Services	National Archives and Record Services of South Africa Act, 1996 (Act 54 of 1996) KwaZulu-Natal Archives Act of 2011

4.5 Vision and mission of the department

The vision of the department is “Prosperity and Social Cohesion through Arts and Culture”. The mission is to provide integrated arts and culture services for the people of KwaZulu-Natal by developing and promoting arts and culture in the province and mainstreaming its role in social development; developing and promoting the previously marginalised languages and enhancing the linguistic diversity of the province; collecting, providing and preserving the archival, museum, library and other forms of information resources; and integrating and providing seamless art and culture services to the communities of the province.

The values of the department are professionalism, integrity, accountability, service excellence, team work, “pride in our work”, caring, empathy, honesty, fairness and transparency.

4.6 The organisational structure

The department is headed by the Member of Executive Council (MEC) who is a political head of the department. The head of department (HOD), also referred to as the accounting officer, is the administrative head of the department. The MEC and the HOD each has her executive support staff. The department has three programmes. These are Administration, Cultural Affairs, and Library and Archive Services. The Administration programme consists of support services components.

Support services components comprise the Chief Finance Office, Administrative Services, and Corporate Governance chief directorates. Under the Chief Finance Officer, there are the Supply Chain Management Directorate and Finance Directorates. Within Supply Chain Management resort Asset Management and Supply Chain Management sub-directorates with their various sub-components.

Administrative Services comprise the Human Resource Management and Development Directorate, as well as the Infrastructure Development, Communication, and IT Services Directorates. IT Services is discussed in more detail in Section 4.6.1.

Within the Corporate Governance chief directorate resort Legal Services, and Corporate Strategy. The Corporate Strategy Directorate is responsible for coordinating planning, monitoring and evaluation in the department. Corporate strategy is discussed further in Section 4.6.2 owing to its relevance to the study.

Cultural Affairs and Library and Archives programmes are the core programmes of the department. The two core chief directorates and their directorates are sets of self-contained units that are not directly dependent on each other. Within Cultural Affairs, there are Language Services, Museum Services, and Arts and Culture sub-programmes. The Library and Archive Services programme has Archive Services and Library Services

sub-programmes. The units of the core chief directorates are located at head office and in the four regions which report to head office. The four regional offices fall under the Regional Office Management Chief Directorate.

The Regional Office Management Chief Directorate is responsible for coordination of services of the department at local level. The four regional offices are each headed by a senior manager. Each region has officials at district and local municipal level. Each regional office has specialists in libraries, archives, language, arts and culture who coordinate activities within the region. At the time of the study, the department was reviewing its organisational structure and there were plans to move Archives and Library services from the regional office structure to head office.

In April 2013, the department had 458 employees of which 7 were executive managers, 18 were senior managers, and 112 were at middle management level. There were 85 employees professionally qualified at middle management. The executive management consists of 6 general managers who report to the HOD. The Cultural Affairs programme had 129 employees and the Library and Archive Services programme had 218 employees (KZN DAC, 2014:91).

The ICT Services and Corporate Strategy components are discussed in greater detail in the next sections because of their relevance to the study.

4.6.1 ICT Unit

The department has a centralised IT services component, but some of the ICT services are decentralised to a limited extent. For example, the Library Services component has its own ICT sub-unit which has its own ICT budget and runs its own systems, but operates within the ICT policies of the department and works in collaboration with the central ICT unit. Finance and Human Resource Management components have their own systems administrators supporting BAS and PERSAL. The two components rely on IT Services for technical support and their ICT budgets resort under IT Services.

The ICT corporate governance framework was approved in July 2013. The framework provides for the governance structure of ICT in the department as required by the DPSA. The framework includes corporate governance of the ICT charter, corporate governance of the ICT policy, and governance and management of the ICT implementation plan. The ICT framework for the department was developed in line with the guidelines provided by the DPSA frameworks discussed in Chapter 2, namely the CICTG policy framework.

The ICT governance structure of the department is illustrated in Figure 1 below. According to the governance structure of the department, the head of department chairs the strategic ICT committee responsible for the ICT strategic direction of the department. The ICT operational committee meet monthly and they are responsible for implementation of the ICT strategies.

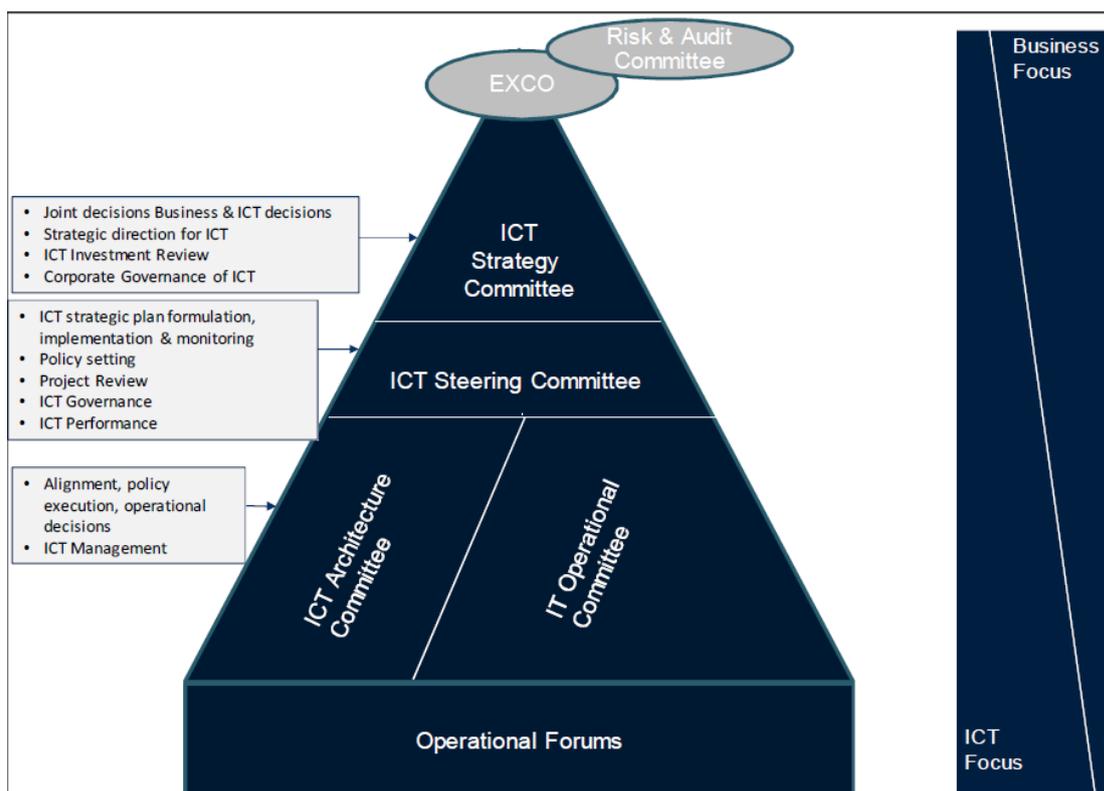


Figure 1 ICT Governance structure of the department (KZN DAC, 2013c:35)

The ICT unit is officially referred to as Information Technology Services and it is represented in the above governance structures. It currently falls within the Information

Technology and Communications Directorate. In the proposed structure which was under review at the time of the study, it falls within the Information and Technology Services and Facilities Management Directorate. The sub-directorate is headed by a Deputy Director: Information Technology Services. At the time of the study, the unit had two technicians and two interns. According to the proposed structure, the sub-directorate will have three new units, namely, Information and Business Solutions, ICT Operations Support, and Systems Development.

The Information Technology Business Solutions has Application Systems Architect and Business Analyst positions on the proposed structure. The ICT operations will have two IT officers and a service desk. The Systems Development Unit will have a network administrator, database architect and web designer. The proposed structure was not approved at the time of the study and filling of positions depends on availability of funds.

4.6.2 Corporate strategy

The directorate corporate strategy was briefly mentioned above and is discussed in more detail in this section. The sub-directorate has two units: a planning unit and a unit responsible for monitoring and evaluation. It is headed by a director; however the post was vacant at the time of the study and the Deputy Director was Acting Director. At the time of the study there was one assistant manager and an administration officer. According to the proposed structure, the department was planning to establish two sub-directorates. One will be responsible for Monitoring and Evaluation and the other one will be responsible for Research, Planning, Policy, and Intergovernmental Relations. The Corporate Strategy Directorate facilitates planning, and monitoring and evaluation in the department. Services rendered by different components are discussed in the next section

4.7 Services rendered by the department

The services rendered by the core programmes of the department, the Cultural Affairs programme and Library and Archive Services programme are discussed in this section.

4.7.1 Cultural Affairs

The purpose of the Cultural Affairs programme is to promote the development of arts and culture by providing for projects, initiatives and interventions through its arts and culture, museum, and language services sub-programmes.

The arts and culture sub-programme is responsible for promoting cultural diversity and advancement of artistic disciplines into viable industries (KZN DAC, 2014:46). The sub-programme provides capacity-building programmes such as training and workshops for artists in the province. It also provides financial and professional support to arts and culture institutions such as art centres and community organisations and institutions such as the Playhouse Company. These organisations provide opportunities and platforms for artists and performers to develop and display their artistic talent. The department also funds and coordinates multi-cultural events such as Freedom Day and *uMkhosi woMhlanga* (Reed Dance) celebrations.

The role of the language services sub-programme is to promote multilingualism and the development of historically marginalised languages. The sub-programme provides translation, editing and interpretation services, and promotes the development of languages. Translation, editing and interpretation services are provided to various government departments and other organs of state. Development of languages is promoted through literature development workshops provided to local reading and writing clubs. The sub-programme also runs annual writing competitions where successful entries are published.

The museum services sub-programme collects, preserves, restores and conserves tangible and intangible cultural artefacts in the province. The sub-programme provides professional and financial support to 42 museums in the province. Professional support includes training of curators. At the time of the study, they were in a process of digitising artefacts for easy access. The sub-programme also runs a number of outreach programmes to promote its services to communities in the province.

4.7.2 Library and Archive Services

The Library and Archive Services programme is the second core component programme of the department.

The library services sub-programme provides financial and professional support to 216 public libraries in the province. It provides funding to local municipalities for the salaries of library staff in public libraries. The sub-programme builds new libraries, provides ICT infrastructure, and furnishes library materials, including books, audio-visual materials, toys and games to all public libraries in the province. The sub-programme also provides professional support to public library staff such as training and workshops, promotion of libraries, monitoring of public libraries, and professional advice on library-related activities. There are five depot libraries located in Dundee (northern), Pietermaritzburg (Midlands), Pinetown (South Coast), Pinetown (North Coast) and Mbazwana (Zululand) which provide circulation of materials, professional guidance and support, and monitoring in public libraries located in these areas.

Archive Services is responsible for acquiring, preserving and managing public and private records. The sub-programme has three components which are Repository Services, Records Management Services, and Oral History. The repository services component is responsible for identifying records of archival value, preservation and management of these records, and ensuring access of information to the public. There are currently three archive repositories located in the Southern, Northern and Eastern regions. Records Management provides records administration support to government departments, municipalities and other organs of state. Records Management includes advice on the appropriate records classification system, training of records managers, and conducting records inspections to ensure compliance with records management policies. Oral History was established in 2012 and its purpose is to record historical events in the province.

4.8 Monitoring and evaluation in the KwaZulu-Natal Department of Arts & Culture

The programmes of the department discussed above need to be monitored and evaluated to ensure that they add value to the communities in the province. Monitoring of services refers to measurement of organisational performance as discussed in Chapter 2. Monitoring and evaluation of programmes of the department start with planning.

The department has annual planning sessions where performance indicators and performance targets are considered against the provincial and national government priorities such as the Provincial Growth and Development Strategy and the National Development Plan. The annual performance plan of the department consists of 11 sector-specific performance indicators that are applicable to all provincial departments in South Africa. The sector-specific indicators are determined by the national Department of Arts & Culture in consultation with provincial departments of Arts & Culture. Individual provincial departments also have performance indicators that are only applicable to their provinces. Components of the department are also required to develop operational plans which are more detailed activities and linked to the Provincial Growth and Development strategic objectives mentioned in Section 4.2.

These performance indicators are monitored on a monthly and quarterly basis using prescribed reporting templates. Reporting on the annual performance plan is done quarterly using a standardised National Treasury template. Monthly reports correspond with the operational plans and provide greater detail on activities performed. The annual report of the department is more detailed and it is done according to the National Treasury requirements.

The department is required to submit reports on the conditional grant funding received from the national Department of Arts & Culture for recapitalisation of community libraries. Monthly and quarterly reports are submitted on both financial and non-financial performance of the department to measure performance towards achievement of the grant

outputs and outcomes. The department is also required to submit annual evaluation reports towards achievement of grant outcomes.

Performance of the department is audited by the Auditor General. The audit also focuses on performance information in terms of reliability, verifiability and usability. This requires that components keep evidence that can be used to verify performance. Evidence on performance information includes attendance registers, visitors' registers, statistical reports extracted from management information systems, and information collected using questionnaires, for example, workshop evaluation questionnaires and monitoring tools. Photographs are also used as performance evidence, for example, to report on events and library building projects. Table 2 below provides an example of reporting tool used to collect statistical information by the Library Services component.

Table 1: An example of a statistical reporting template used in Library Services

Membership statistics	Juvenile	Youth	Adults	Total
Library membership				
Library usage statistics				
Library books				
Audio-visual materials				
Audio books				
DVDs and CDs				
Games				
Toys				
Internet café				

Table 2: Library Services reporting tool (Steenkamp, 2014)

In 2012/13, the department had 101 performance indicators (KZN Department of Arts & Culture, 2013a:165). Of the total number of 101 targets planned for the year, 31 targets

were not realised. This was mainly because indicators and targets were not suitably developed during the strategic planning process (KZN DAC, 2013a:165). In the financial year 2013/14, Cultural Affairs had 34 performance indicators, 6 were not achieved and 14 exceeded the performance targets. The Library and Archives programme had 12 performance indicators in the 2013/14 financial year; of the 26 indicators, 7 were not achieved and 9 exceeded the performance targets. The number of performance targets not achieved in 2013/14 was lower than in 2012/13, and as a result, the issue was raised by the Auditor General in 2012/13 with regard to development of performance indicators in 2013/14.

4.9 Management information systems used to measure performance

At the time of the study, Library Services was the only sub-programme that had electronic management information systems used to measure organisational performance. The sub-programme uses SLIMS (SITA Library and Information Management System) in its head office, depot libraries and 80% of its public libraries; the WebIT HeadCount system in 54 public libraries to monitor library use; and the K9 system to monitor internet use in 75 public libraries which have public access to the internet. SLIMS is used to managing ordering, cataloguing, distribution and circulation of library materials within the directorate and public libraries. The system is able to generate financial and non-financial performance information. Reports generated from the SLIMS systems are used for performance and financial audits. It is able to generate reports on expenditure on library materials, as well as funds collected by libraries for books damaged or lost by members of the public. Figure 2 and Figure 3 are examples of financial performance information available from SLIMS.

Production
Budgets short summary
Budget [b:kZN:98]

2014 Conditional grant - Balance 13.10.2014

	Entries	Commitments	Watch status
			commitments
Books	-6.090.444,79 ZAR	5.152.221,10 ZAR	0,00 ZAR
Toys	0,00 ZAR	0,00 ZAR	0,00 ZAR
AV CD	0,00 ZAR	0,00 ZAR	0,00 ZAR
AV DVD	0,00 ZAR	0,00 ZAR	0,00 ZAR
AV Audio Book	0,00 ZAR	0,00 ZAR	0,00 ZAR
CD Rom	0,00 ZAR	0,00 ZAR	0,00 ZAR
Computer Games	0,00 ZAR	0,00 ZAR	0,00 ZAR
Pamphlets	0,00 ZAR	0,00 ZAR	0,00 ZAR
Assignment	23.300.000,00 ZAR		
Total	17.209.555,21 ZAR	5.152.221,10 ZAR	0,00 ZAR
Balance			12.057.334,10 ZAR

Figure 2: SLIMS financial information (Odendaal, 2014)

Figure 3 is an example of non-financial performance information available on SLIMS used to report on a performance target: “Number of library materials procured”. SLIMS is also able to generate reports on use of library materials by different categories of library users. At the time of the study, the system was used in 113 public libraries, five regional offices and at head office.

Production
Monthly summary of orders received by budget and destination
[2305:2014/q2.2014/q1:kZN:re_bu:2014 books (Books) [b:kZN:95]]

2014 Second quarter, 2014 First quarter
Library KZN
Budget 2014 books (Books) [b:kZN:95]

Acquisitions: Monthly snapshot of received orders for each budget per destination

Destination	Number of orders
2014 Second quarter	2014 Second quarter
KCOA	970
KMID	654
KNOR	605
KREF	48
KSCO	929
KZUL	318
T*	3524

This table gives a summary per budget and destination of orders for monographs that were received this month.
Here an order means an order item, i.e. an order consisting of two groups with two items each is regarded as four orders.

- Destination : [E?scope:mode:attribute:destination]
- Number of orders : This figure shows the number of orders entered, received or invoiced in a certain month.

Figure 3: SLIMS non-financial performance information (Odendaal, 2014)

The Library Service directorate also has a head count system in 54 libraries which generates reports on the number of people who visit the libraries. This system is used to

measure use of libraries, because some library users prefer to use other facilities instead of borrowing library books which are recorded on the SLIMS system. In terms of use of internet cafes in 72 libraries, K9 software is used to generate reports on the use of the internet. These systems are not integrated; they produce reliable information used to measure performance of the sub-programme.

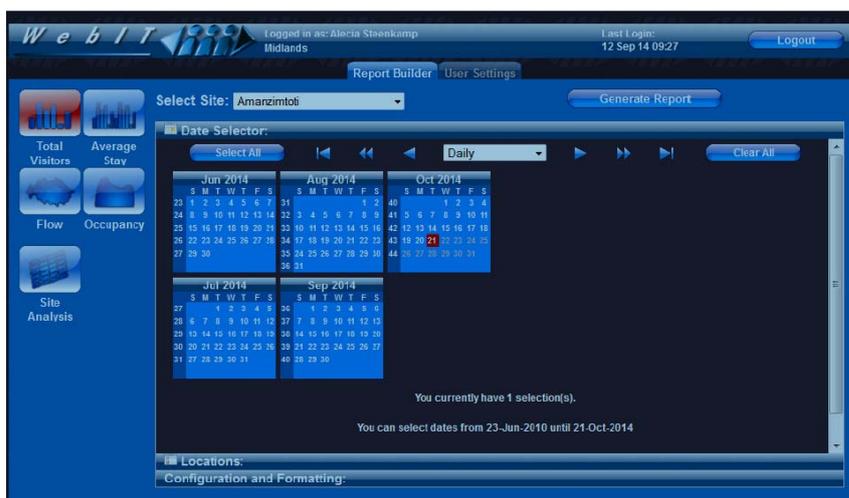


Figure 4: WebIT HeadCount system (Steenkamp, 2014)

In Figure 4 the WebIT HeadCount system is used to measure use of public libraries. The system produces useful information to measure the impact of introducing new services. For example, in Georgetown library, the use of the library was declining, but after introduction of free internet access the headcount system reported a significant increase in the use of that library.

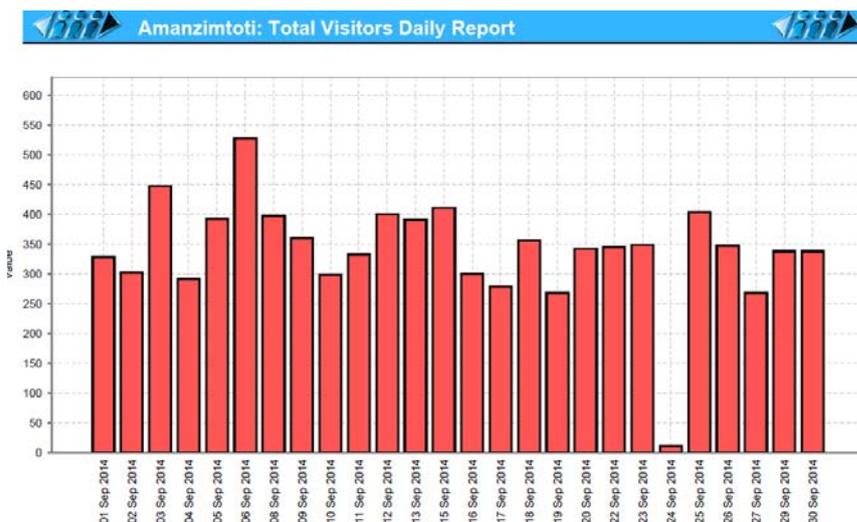


Figure 5: WebIT HeadCount report (Steenkamp, 2014)

The Archives and Oral history sub-programmes use the National Archives electronic system called NAAIRS (National Automated Archival Information Retrieval System). This is an information retrieval system which is maintained by the national Department of Arts & Culture. It comprises 14 databases of which two are KwaZulu-Natal provincial repository databases. Other databases such as the Oral History Sources database are used by oral history researchers.

Performance information obtained from the above systems is reported on standard templates to consolidate performance information for the department. All sub-programmes in the department use a standardised Microsoft Word template for monthly reporting and a Microsoft Excel template for quarterly reporting towards achievement of performance targets on the annual performance and operational plans discussed in Section 4.8 of Chapter 4.

In Figure 6 and Figure 7 below a quarterly performance report (QPR) template is used to report on sector-specific performance indicators. QPR is a National Treasury customised template used for reports by all departments and entities on sector-specific indicators. It is used to record both financial and non-financial information.



Figure 6: Excel template for quarterly reporting (Ngcobo, 2014)

Performance information captured on this report is validated and submitted to the National Treasury on a quarterly basis and consolidated for the whole country. Information submitted on these reports is audited to ensure that it is useful and reliable.

KWAZULU-NATAL QUARTERLY PERFORMANCE REPORTS: 2014/15 - 2nd Quarter Sector: Sport, Arts and Culture							
Programme / Subprogramme / Performance Measures	Target for 2014/15 as per Annual Performance Plan (APP)	1st Quarter Planned output as per APP	1st Quarter Preliminary output	1st Quarter Actual output - validated	2nd Quarter Planned output as per APP	2nd Quarter Preliminary output	2nd Quarter Actual output - validated
<div style="background-color: #cccccc; padding: 2px;">Report on Non Standardised items</div>							
Programme 2: Arts and Culture							
Number of structures supported	17	14	6		1		
Number of significant days hosted in the cultural calendar	9	3	2		3		
2.2 Museum and Heritage							
Number of people visiting the facilities	120 000	40 000	33 282		40 000		
Number of brochures and publications distributed	4	1	-		1		
2.3 Language Services							
Number of language coordinating structures supported	55	13	27		14		
3.2 Library Services							
Library materials procured	180 000	40 000	44 846	38 804	60 000	53 752	
Number of monitoring visits done	100	25	29	29	25	26	
3.3 Archives Services							
Number of Record Classification systems approved	14	3	2		4		
Number of governmental bodies inspected	100	24	34		26		
Number of records managers trained	14	-	-		-		
Number of awareness and promotional projects rolled out to communities	15	5	8		6		

Figure 7: Quarterly reporting template (Ngcobo, 2014)

Figure 7 is an example of performance information captured on the National Treasury quarterly reporting template. The template comes populated with performance indicators listed according to programmes and the performance targets taken from the annual performance plan of the department.

4.10 Summary

The KwaZulu-Natal Department of Arts & Culture is the custodian of provincial arts, and the province's cultural and linguistic heritage. The department operates and exists within both a provincial and national government, and it works in collaboration with local municipalities and other organs of state. It operates within legislative mandates, including the Constitution of the Republic of South Africa, and other legislation applicable to the sector. The vision and mission of the department was discussed in this chapter. Programmes of the department were outlined, with greater attention paid to the core programmes of the department and how it monitors their performance, as these were the focus of the study. The case study forms the basis for the data gathering and analysis covered in Chapter 5, and the discussion of results in Chapter 6.

CHAPTER 5: DATA GATHERING AND DATA ANALYSIS

5.1 Introduction

The purpose of the study is to describe the role of management information systems in measuring organisational performance in the Department of Arts & Culture in KwaZulu-Natal. This chapter discusses the research design and methodology used to conduct the study. It includes a description of the units of analysis, sampling techniques, data-collection method and data-collection tools. The formulation of the data-gathering tool was based on the frameworks discussed in Chapter 3. This section also covers the rationale for the research design used to conduct the study.

5.2 Research design

This is a descriptive study which describes the management information systems in the department and their ability to enhance organisational performance. A case study research design was used to investigate the role of management information systems in measuring organisational performance in the department. According to Babbie and Mouton (2001:87), a case study research approach allows the researcher to study the character of an organisation. Case studies provide an understanding of the status quo of a phenomenon by studying people's perceptions and experiences (Mabry, 2008:215).

5.3 Units of analysis

The primary unit of analysis was the KwaZulu-Natal Department of Arts & Culture. The study covered the core service delivery components of the department, namely, Library and Archive Services and Cultural Affairs components. The purpose of the Cultural Affairs programme is to provide for projects, initiatives and interventions in the arts, culture, museum and language services and to promote development of arts and culture in the province. The programme comprises the Arts and Culture sub-programme, Museum Services sub-programme, and Language Services sub-programme. The Library

and Archives programme has Archives Services and Library Services sub-programmes. The purpose of Library Services is to provide library and information services in the province through public libraries located in local municipalities. The Archive Services sub-programme aims to acquire, preserve and manage public and private records and to ensure access to the national archival heritage.

The study included officials from the Corporate Strategy component responsible for coordinating planning and reporting information for the department. The ICT component responsible for ICT strategies and ICT governance was also included in the study. Regional office officials were included as they are responsible for implementation and monitoring of programmes and projects of the department. Senior managers and middle managers were included because of their role in the collection and management of performance information as outlined in the Framework for Managing Programme Performance Information. Officials responsible for capturing information and for the implementation of programmes in the department were also included.

5.4 Sampling

In qualitative research, purposive sampling is used because of the limited number of cases (Welman et al., 2005:204). According to the authors, informants are selected based on their position and experience, or if they have more information than regular group members.

A non-probability sampling technique was used to purposefully select officials who could make a meaningful contribution to the study based on their experience and roles in relation to the study. The purposive sampling technique is based on the researcher's judgement in selecting cases with a specific purpose in mind (Neuman, 1997:206). In this study, purposive sampling was used to select managers in the core components of the department who are responsible for performance information.

The department has 18 directors of whom 6 are directors of the core service delivery sub-programmes and 4 are regional managers. Two of the 6 director positions in the core components were vacant at the time of the study. Eight directors are responsible for the support services and they were not included in the study. There are 5 general managers who are not directly involved in managing performance information, with the exception of the Corporate Strategy General Manager who oversees planning, monitoring and evaluation components of the department. Of the 24 senior managers, 10 directors and one general manager were included in the study. Of the 10 directors, 3 were acting directors who were permanently appointed as deputy managers.

There are 94 middle managers who play a supervisory role in their components; these include deputy managers and assistant managers. There are 24 deputy managers in the core components of the department. Deputy Managers are responsible for performance information in their sub-directorates; however in some components, assistant managers also capture performance information on the performance indicators that they are responsible for. Most components have one designated official responsible for coordinating and consolidating performance information for the entire component. The researcher approached the selected senior managers to respond to the study. All 10 senior managers referred the researcher to their deputy managers and assistant managers who are the designated officials responsible for collecting and managing performance information in their components.

Only 20 deputy managers, of whom 3 were acting senior managers at the time of the study, were included in the study. Six assistant managers responsible for performance information in the core service delivery components of the department were also included in the study. Deputy Managers responsible for ICT and for Monitoring and Evaluation were also included in the study.

5.5 Data collection

5.5.1 Data collection methods

According to Neuman (1997:29), data collection in a case study is more detailed, varied and extensive and it is qualitative. The case study approach uses mixed methods of data collection, which include observations, interviews, and review and analysis of documents (Mabry, 2008:218). Heeks (2006:172) also suggests the same methods of data gathering when conducting an analysis of current realities in an organisation.

A combination of empirical and non-empirical methods was used to collect data. An empirical study approach was used to collect primary data from the managers of the department. Secondary data was collected from documents such as annual reports and plans of the department. The literature review and documents form the non-empirical element of the study.

Secondary data

A theoretical framework was used as a guide in developing the appropriate questions that respond to the main research objectives. A literature review was conducted to collect the secondary data that form the basis of the study. Books and journal articles were consulted to define key concepts relevant to the study and to provide a framework for the study. These include sources on management information systems used in the public sector to measure organisational performance; the benefits and limitations of using management information systems to measure organisational performance; and different approaches used to evaluate management information systems used to measure organisational performance.

The key performance measurement frameworks discussed included the balanced score card framework by Kaplan and Norton (1992); Otley (1999); Kennerly and Neely (2000); Ferreira and Otley (2009) and Broadbent and Laughlin (2009). The information system framework of Petter et al. (2013) and Marchand and Raymond's (2008) performance measurement information system framework were also included. The South African

National Treasury Framework for Managing Programme Performance Information provided a framework for the questions included in data collection tools.

Secondary data was also drawn from studying documents such as the annual reports, ICT strategy, ICT governance framework documents, and Auditor General's reports on the department.

Primary data collection

The development of a data collection tool was guided by the Treasury Framework for Managing Programme Performance Information, the *Performance Information Handbook*, and the frameworks discussed in Chapter 3. The self-administered questionnaires were accompanied by a covering letter explaining the purpose of the study and instructions for the respondents. See Annexure A.

The self-administered questionnaires were distributed to 10 components to be completed by officials responsible for management of performance information. The same questionnaire was used in telephonic interviews of respondents who were not able to complete the self-administered questionnaires in writing.

A separate self-administered questionnaire was designed for the Monitoring and Evaluation unit. See Annexure B. A semi-structured interview was conducted with the ICT manager of the department – see Annexure C. Reflective notes were taken during the interview.

Since the researcher is an employee in the department, she personally collected the completed questionnaires from the respondents. Respondents based in the regional offices faxed or emailed the completed questionnaires.

5.5.2 Data analysis

Data analysis is a process of searching for patterns in data. It involves examining, sorting, evaluating, comparing and synthesising coded data (Neuman, 1997:427). A qualitative

data analysis method was applied to analyse data collected from documents, interviews and questionnaires.

The researcher performed content analysis by studying reports and planning documents submitted by various components of the department. Content analysis method was used to identify themes. Themes identified from collected data were allocated labels and grouped into categories using open coding. Themes were based on the research questions and concepts identified from the literature review. Microsoft Excel was used to analyse data.

5.6 Limitations of the study

According to Heeks (2006:173), when a researcher is an insider in an organisation, he or she tends to present a picture of what ought to be taking place instead of what is really happening in an organisation. The researcher in this case study was employed by the department. Heeks (2006:173) argues that this can be overcome by using different sources and several methods to collect data to ensure that the study uncovers the realities of an organisation. In this study, interviews, questionnaires and document analysis were used to collect data from various people in the organisation to present the picture of what is really happening in the department.

5.7 Summary

The South African National Treasury Framework for Managing Programme Performance Information provided the framework for the development of data- collection tools. This chapter defined the research design, study population, data collection methods and analysis. The research findings are presented and discussed in Chapter 6.

CHAPTER 6: PRESENTATION OF RESEARCH FINDINGS

6.1 Introduction

In Chapter 5, data-gathering and analysis methodology were discussed. Relevant documents, including annual reports, the Auditor General's report and strategy documents of the department used to collect data were discussed in Chapter 4. In this chapter, research results are presented and discussed by linking empirical and non-empirical data collected in relation to the case study of the department presented in Chapter 4 and the literature reviewed in Chapter 2 and Chapter 3.

In a results-based public service and evidence-based policy-making environment, management of information has become essential. The South African government has put policies in place to ensure that performance information is managed effectively. These policies are the Government-Wide Monitoring and Evaluation Framework, FMPPI, and the National Evaluation Framework. Implementation of these policies requires that there should be management information systems in place to manage performance information. A management information system should be able to generate management reports that can be used to perform management functions of planning and controlling (Cloete, 2003:29; Laudon & Laudon, 2006:44). The purpose of the study was to answer the research question of determining the role of management information systems in measuring organisational performance in the KwaZulu-Natal Department of Arts & Culture. Describing the current situation includes understanding what technologies, staffing arrangements, available skills, and management information systems are used in the department (Heeks, 2006:174).

In order to answer the research questions, data was collected using self-administered questionnaires which were sent to key personnel including senior managers and middle managers in the core components of the department, namely Library Services, Archive

Services, Museum Services, Language Services, and Oral History. Officials from Cultural Affairs and Regional Office Management of the department were not available to be interviewed and did not respond to self-administered questionnaires. Research results are presented in the next section.

6.2 Presentation of research results

The National Treasury FMPPI is the main framework used to develop questions for the data-collection tools used in the study. Research results are presented according to different data-collection tools used to collect primary data from key personnel in the department. The Corporate Strategy manager, who is responsible for monitoring and evaluation, was not available to be interviewed. A self-administered questionnaire was sent to him and his response is presented in Section 6.2.1. The ICT manager of the department was interviewed and the results of the interview are presented in Section 6.2.2. Responses from the core components of the department are presented in Section 6.2.3.

6.2.1 Questionnaire for Monitoring and Evaluation Manager (Corporate Strategy)

Question 1: Does the department have a process in place to address integration of performance information structures and systems within the existing management process?

The department has a draft policy in place that outlines a process for integration of performance information structures and systems within the existing management structures. The policy outlines goals and target setting; collation of performance information; reporting systems; and gathering and safekeeping of portfolios of evidence. It defines roles and responsibilities within the department.

The accounting officer is responsible for overall performance in the department. Senior managers in different components of the department are responsible for performance in their components. All individual employees of the department sign performance agreements which are aligned with the performance plans of the department. In the

KwaZulu-Natal department of Arts & Culture, the head of department has established a unit responsible for performance measurement, to ensure that the department has annual planning sessions, performance reporting and performance review sessions.

Question 2: Is there a formal process for identifying, collecting, collating, verifying and storing performance information?

The department has a procedure manual in place for managing performance information; it is an annexure to the policy. All components are responsible for identifying, collecting and collating performance information used to measure performance. The procedure manual provides guidelines to the components on what should be used as a source of performance information and what should be kept as the portfolio of evidence. Components are required to keep a portfolio of evidence which is used as proof that they achieved their performance targets. These include, for example, administrative records such as attendance registers, photographs, and evaluation questionnaires. Performance information is verified and coordinated by the Corporate Strategy Unit into a quarterly performance reporting template which is submitted to the accounting officer for submission to Provincial Treasury and other organs of state.

Question 3: How is the performance information disseminated within the department?

Performance information is disseminated through written reports using email; a messenger service is also used to send reports to the relevant components. The printed annual report is distributed to all components and each manager from middle management gets a printed copy of the annual report. The annual report is also available online from the website of the department. Performance information is also disseminated in other reports such as quarterly review reports which are presented internally in meetings. These reports are also circulated internally using email communication.

Question 4: How do you ensure that performance information is used in managing for results in the department?

Performance information is a standard item in the Executive Committee meetings. Managerial interventions are always available for performance-related issues when required. The department also has mid-term performance review sessions where different components present their performance reports and the reports are critiqued by the executive management committee; interventions are recommended when required.

Question 5: How is performance information disseminated externally? For example, is it published on the website, or printed in hard copy format?

Performance information of the department is published through the annual reports and other sector-specific reports. It is disseminated through written reports by email, postal services, and messenger services to the relevant stakeholders such as the National Treasury and oversight bodies. The annual report of the department is also published online. It can be retrieved online using search engines such as Google.

Question 6: Does the department have appropriate capacity to manage performance information?

The department has appropriate capacity to manage PI such as administration time and ICT infrastructure. The department also has appropriate structure and management to manage performance information. The department does not have adequate staff and information systems capacity to effectively manage performance information.

Question 7: Is there a process in place to ensure utilisation of PI?

Yes, during the planning process overall performance of the department is presented for discussion. It forms the baseline for future plans and setting realistic performance targets. It is also considered when reviewing strategic objectives and performance indicators for the annual performance plan and operational plan.

Question 8: Is there a consultation process taking into account performance information needs of different components?

Yes, different components have quarterly meeting with the Corporate Strategy Unit to discuss and validate performance information. In these meetings, PI needs-based issues are also discussed to assist the components to collect and report performance information that is reliable and useful.

Question 9: Is there a process in place to ensure utilisation of PI?

Yes, during the planning process overall performance of the department is presented for discussion. All planning is informed by performance information derived from reports of the preceding performance period.

Question 10: Does the department have a data policy in place that sets the key parameters for the PI administrative records?

The department has a data policy in place which addresses performance information administrative records. Performance information records are kept in the components and in the Corporate Strategy Unit. Staff in the Corporate Strategy Unit and all components controls access to performance information records. The records include both manual and electronic formats. In the case of records kept by the Corporate Strategy Unit, access to electronic information is controlled with a security pin code in order to protect it against unauthorised access, alteration and deletion. Only authorised staff have access to computer-stored data. Paper-based format information is kept in lockable filing cabinets which are only accessible to authorised staff in the component.

Question 11: Does the department have an appropriate management information system for measuring organisational performance (PMIS)?

The department does not have an appropriate management information system to measure organisational performance. The department has plans to develop a PMIS to be used to measure organisational performance, but it does not have appropriate capacity to develop such a system. Funds have not been budgeted to develop such a system.

6.2.2 Interview results: ICT manager

The interview questions for the ICT manager were based on a framework provided by Petter et al. (2013) and Heeks (2006), discussed in Chapter 3. The responses are presented below.

Question 1: What computer applications, hardware and software are in use in the department?

Most officials in the department have access to computers which are linked to different servers within the department and externally. For example, Library Services computers are linked to an internal server based in their head office and also to an external server located at SITA premises. The department is using the Windows 7 operating system for desktop computers and Microsoft Office 2010. Application systems used in the department include the PERSAL system used in the Human Resource Management and Development component, BAS system used in the Finance Section, and SLIMS used by Library Services. The systems used in the department are networked.

Question 3: Does your component have adequate capacity to implement ICT projects?

The department does not have adequate skilled personnel to implement ICT projects. The ICT component has a deputy director, two technicians and two interns. The department outsources implementation of ICT projects such as server administration. It does not have an adequate budget to implement ICT projects. For example, the unit had planned to conduct an ICT skills audit as part of the implementation of an ICT governance framework; owing to the unavailability of funds the audit was not conducted.

Question 4: Are there policies in place which capacitate the component to implement ICT projects?

The department has properly defined ICT policies in place. The ICT governance framework for the department, which is one of the key policies, was approved in July 2013. Implementation of the framework is a DPSA requirement and it places ICT on the

agenda at a political and strategic level in the department. The ICT governance framework has the potential to assist the component to mobilise financial resources to obtain funds required to build capacity needed to implement ICT projects that support the strategic direction of the department. One of the main priority tasks identified in the framework implementation plan is to develop an ICT project management strategy.

Question 5: Is the component receiving adequate support from the executive management of the department?

The component is receiving reasonable support from the executive management of the department, despite limited availability of funds.

Question 6: Based on the support calls logged by users in the department, is the staff of the department adequately trained to use ICT?

The majority of staff in the department are at the intermediate level of ICT literacy; the department has plans to improve their capacity. In 2013 all officials who use computers were sent for Microsoft Office 2010 training when it was introduced in the department.

Question 7: Does the department have the capacity to implement a management information system?

The ICT component does not have the human and financial capacity to develop a new system. It does not have project management and system architecture capacity to develop a new management information system.

6.2.3 Questionnaire results: Core sub-programmes of the department

The questions used for the managers of the core sub-programmes of the department were based on the National Treasury FMPPPI which is the main framework used in the study. Other frameworks discussed in Chapter 3, namely those of Ferreira and Otley (2009) and Marchand and Raymond (2008) were also used. The core sub-programme staff members of the department responded as follows to the questionnaires distributed to them.

Question 1: What type of information do you collect to measure performance?

One component did not respond to this question. Types of information collected by the respondents include entries of manuscripts; museum visitors' statistics; oral history recordings, transcripts, documents and images; reports on projects; correspondence; and agreements.

Question 2: Where is performance information collected?

All components which participated in the study responded that they collect performance information from service points such as public libraries, museums, reading and writing clubs, and archive repositories.

Question 3: What are your sources of performance information?

All components responded that they collect information from attendance registers used during workshops, meetings and training sessions to measure their performance indicators in terms of the number of people attending. Three components responded that they used questionnaires to evaluate their training sessions and workshops. Language Services also measures its performance based on the number of translations done and the number of manuscripts submitted by authors for publication. Archive Services collects performance information from administrative records such as recordings, transcripts, images, correspondence, attendance registers and agreements. Library Services also obtains performance information from library use statistics generated from the WebIT HeadCount system, K9 internet access management system, and SLIMS (Sita Library Information Management System). Library services also collect performance information on site during monitoring visits by using data-collection templates. PI is also collected by monitoring agreements and reports submitted by local municipalities and organisations on funding they received from the department.

Question 4: Who collects performance information?

In Oral History, Archives, and Language Services, performance information is collected by all officials. Library Services and Museum Services' performance information is collected by managers and section heads. Library Services also reported that they have a designated official responsible for collating and verifying performance information but all officials are responsible for capturing performance information on activities for which they are responsible. In Library Services, some performance information is captured by public library staff. The sub-programme reported that this information is not always reliable when manually captured by public library staff. The only reliable information on the use of libraries was obtained from the electronic management information systems.

Question 5: How often is performance information collected?

The Archive Service sub-programme collects performance information during the implementation of its activities and collates it monthly. The Language Services sub-programme also collects PI after every workshop. All other sub-programmes reported that they collect performance information monthly and report on performance monthly, quarterly and annually.

Question 6: How is performance information collected?

Library Services uses standard templates and questionnaires, and extracts performance information from automated information systems. Museum and Archive Services also use standard templates to collect performance information. The Oral History component uses questionnaires, interviews and an automated system to collect performance information. Museum Services also uses other reports to obtain performance information; however these were not specified in their response. None of the sub-programmes uses observations to collect information. Figure 8 summarises how different sub-programmes collect performance information.

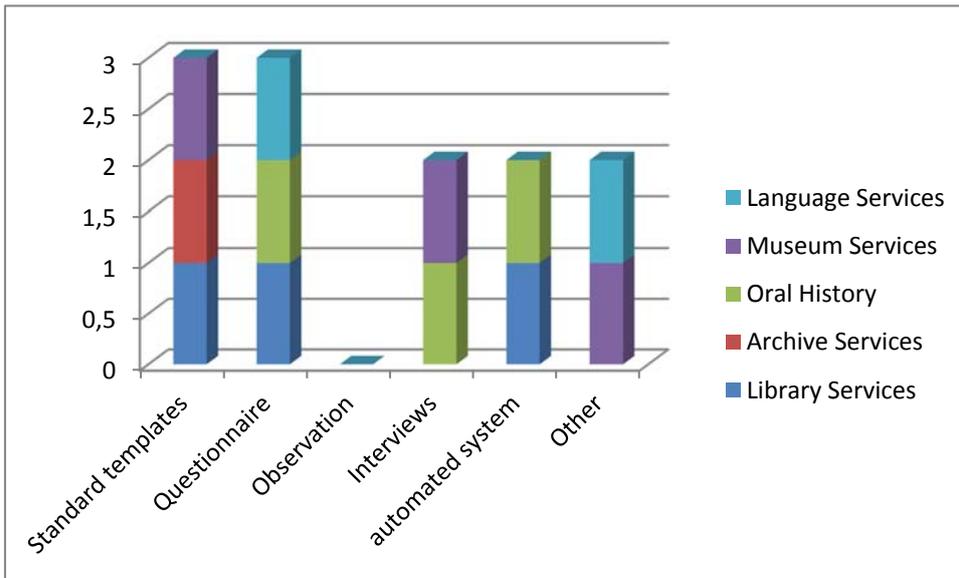


Figure 8: Performance information collection tools

Questions 7, 10 and 11: Utilisation of performance information

All sub-programmes responded that they use performance information to monitor progress towards achievement of performance targets and to evaluate current services and projects. Four sub-programmes use performance information to evaluate services and projects. Three sub-programmes also use performance information to monitor trends.

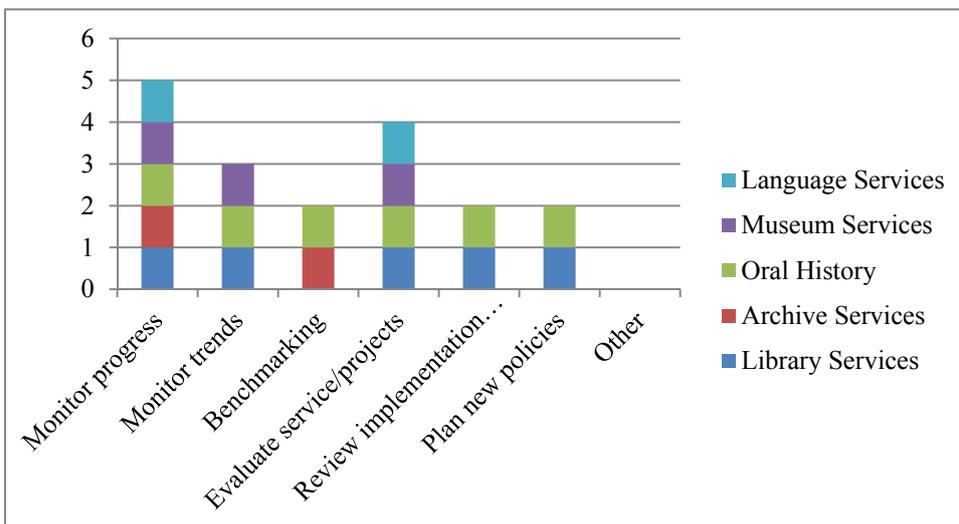


Figure 9: Utilisation of performance information

Figure 9 illustrates how sub-programmes of the department utilise performance information.

Four of the six sub-programmes use performance information more than once and for different reports or purposes. Two sub-programmes use the same performance information for reports internally and at the national Department of Arts & Culture sector forums. One sub-programme stated that they use the same performance information for management reports and to substantiate individual staff performance rewards.

Questions 8 and 9: Quality of performance information

Two of the six sub-programmes revealed that the performance information they collect does not always give relevant and meaningful reflection of events and transactions. Two sub-programmes stated that it did not accurately reflect events and transactions to which it relates. One sub-programme stated that data was not collected frequently enough to update indicators as required. All sub-programmes responded that performance information collected relates to the reporting period and it was meaningful.

Question 13: Management information systems used

Two sub-programmes responded that they use an electronic management information system. Both sub-programmes responded that they use electronic MIS to capture and process daily transactions and to generate management reports. Of those sub-programmes who reported the use of manual systems, two indicated that they used information generated from manual MIS to generate management reports.

In terms of quality of information generated from the management information system, one component responded the systems used generate accurate, relevant, timely, appropriate and complete information. One component responded that the MIS used generate accurate, relevant and appropriate information but the information is not always timely and complete. One of the two components using electronic MIS responded that their system always meets their information needs and the other component responded that the system sometimes meets their information needs.

6.3 Interpretation of results

In this section, research results presented in Section 6.2 are interpreted using the case study of the department, literature review in Chapter 2 and frameworks discussed in Chapter 3. The discussion of results presented in Section 6.2 is according to the key themes of the study, which are performance measurement, management of performance information, ICT, and management information systems used to measure organisational performance used in the department. These themes are aligned with the research objectives of the study.

6.3.1 Performance measurement in the department

The study revealed that the department has implemented a policy which provides a framework for performance measurement, and clarifies roles and responsibilities within the department. The FMPPI states that the accounting officer of the department is responsible for organisational performance and implementing systems to ensure that the department meets its objectives (RSA, National Treasury, 2007:13). Therefore this department meets the FMPPI requirement.

According to Denhardt and Aristigueta (2008:107), and Marr (2009:137), performance of an organisation is measured to account to stakeholders and to comply with regulations. In the department, organisational performance is measured to comply with the Public Finance Management Act (PFMA) and other National Treasury regulations, and to account to various stakeholders. The head of department accounts for performance of the department in various oversight forums, the Provincial Legislature, National Treasury, and the National Department of Arts & Culture on collaborative projects and projects that are funded by the national department.

Kettl and Kelman (2007:40) and Marr (2009:137) argue that government departments limit themselves to measuring and reporting on performance for compliance purposes only. According to the manager for the Monitoring and Evaluation Unit, the department does not only measure performance to comply with legislation and to account to

stakeholders; organisational performance is also a standing agenda item at the executive management meetings. There are mid-term performance reviews where performance is discussed and interventions recommended where required. The previous performance cycle also forms the basis for annual planning. The components of the department also confirmed that they use performance information to evaluate current services and projects. The department therefore goes beyond measuring and reporting on performance for compliance purposes.

The department has an annual performance plan in place which is prepared annually with input from all components and stakeholders. This is supported by Marr (2009:4), who argues that the involvement of key stakeholders and clarification of objectives are a prerequisite to planning. The annual performance plan takes into consideration policies, government priorities, outcomes and government plans such as the National Development Plan and provincial plans such as the Provincial Growth and Development Strategy (KZN DAC, 2014:7-8). The Provincial Growth and Development Strategy provide the basis for planning in the province because it determines priorities and the status in the province before the interventions. This is in line with the argument presented by Kusek and Rist (2004:57) on planning. The department bases its planning on government outcomes and priorities before setting performance indicators and targets.

Performance measures are collectively monitored and reported by the respective senior managers within the department. Görgens and Kusek (2009:415) contend that the heart of performance monitoring and evaluation lies in utilisation of performance information for planning, resource allocation and implementation of programmes. According to Mackay (2007:51), utilisation of performance information depends on the demand for performance information. The core components of the department which participated in the study used performance information for planning, and this was also confirmed by Ngcobo (2014), the manager responsible for monitoring and evaluation.

6.3.2 Management of performance information in the department

Management of performance information involves collection, collation, storage and utilisation of performance information. It involves developing an organisational framework which clarifies roles and responsibilities, structures and systems in managing performance (RSA, National Treasury, 2007:13).

According to the annual report of the department, the department has a planning and management of performance information draft framework in place (KZN DAC, 2013a:162). This was confirmed by Ngcobo (2014), who said that the department has a formal process of identifying, collecting, collating, verifying and storing performance information (Ngcobo, 2014).

According to the FMPPI, line managers must put systems and processes in place in their components to support effective management of performance information within their components. The framework states that officials within the components must capture and collate performance information (RSA, National Treasury, 2007:13). The research findings also confirm that line managers of the department have systems in place for collecting and managing performance information. Two sub-programmes have electronic MIS systems, while the other components have manual systems.

The components have designated officials who are responsible for collecting and collating performance information. In the Oral History, Museum, and Library Services components, performance information is collected by managers and supervisors. In Language and Archive Services, components' performance information is collected by all officials. Library Services has a designated official responsible for collating performance information. Senior managers of the components consolidate and analyse performance information and present it at an executive level.

The main sources of performance information in the department are the administrative records which include attendance registers, visitors' registers in the archive repositories, and documents translated. These are examples of primary performance information data

sources as discussed by Kusek and Rist (2004:58), who mention administrative records, surveys, interviews and direct observations. None of the sub-programmes used observations to collect performance information, and only two used interviews.

According to Mimba et. al. (2007:195), different stakeholders have diverse interests and each stakeholder demands that information is presented according to their preferences. The department customises performance information reports according to the information needs of the stakeholders. For example, the National Treasury requires information to be presented using a standardised template, while the Portfolio Committee requires Microsoft PowerPoint presentations. The department records non-financial data on the Quarterly Performance Report (QPR) template prescribed by the National Treasury. The QPR template is in Excel format and the report is accompanied by a Microsoft Word narrative report explaining deviations from the annual performance plan. Performance information of the department is presented to the Arts and Culture Portfolio Committee, the Cluster Audit and Risk Committee and the National Department of Arts & Culture during the period under review (KZN DAC, 2013a:162)

Collection of performance information needs to be conducted in a manner that ensures quality, authenticity, reliability, integrity and usefulness of information (RSA, National Treasury, 2011:26). The Auditor General performed a procedure to obtain evidence about the usefulness and reliability of performance information used to report on the performance of the department in 2012/13. The usefulness of performance information was measured against the National Treasury's annual report principles, its consistency with the planned objectives, and whether the performance indicators were measurable (KZN DAC, 2013a:165). The department had measurable performance indicators that are well defined, verifiable, specific, measurable and time bound, and meet the National Treasury FMPPI requirements. According to Marr (2009:151), clearly defined performance indicators enable the organisation to collect relevant performance information.

Meier (2012:430) argues that performance indicators are subject to questionable reliability and validity of performance measures. Therefore it is important that performance information is tested for validity and reliability by auditors. In the department, the Auditor General assessed the reliability of performance information on the basis on which it reflected valid, accurate and complete information (KZN DAC, 2013a:165). According to the Auditor General's report for the year 2012/13 on performance information, there were no material findings on reliability and usefulness of performance information of the department (KZN DAC, 2013a:165).

In the 2014, the Auditor General conducted a performance information audit, focusing on the usefulness and reliability of performance information in the Cultural Affairs and Library and Archive Services programmes. The Auditor General (RSA, Auditor General, 2014:8) found that some performance targets were not reliable when compared with the source of information provided by the department. According to this report (RSA, Auditor General, 2014:8), this was due to "lack of standard operating procedure for accurate recording of actual achievements and technical indicator descriptions for accurate measurement, recording and monitoring of completeness of source documentation in support of actual performance". In terms of validity and completeness of performance information, the Auditor General found that there was a lack of completeness of source documentation to support actual achievement, while validity of reported achievements were not reviewed against source documentation.

The audit report indicates that the department needs to improve the quality of its performance information. The sub-programmes also revealed that the performance information they collected does not always give a relevant and meaningful reflection of events and transactions. Two sub-programmes stated that it did not accurately reflect the events and transactions to which it relates. The Monitoring and Evaluation Unit meets with different sub-programmes on a quarterly basis to validate performance information and discuss challenges in relation to validity of performance information (Ngcobo, 2014).

The study shows that the quality of performance information used to measure organisational performance is not adequate.

According to the National Treasury *Performance Information Handbook* (RSA, National Treasury, 2011:55), the department should have a data policy in place that sets the key parameters in terms of where records are kept, who controls records, the format in which records are kept and measures to ensure data security. The department has a performance information data policy in place which is used to ensure that performance information is securely kept (Ngcobo, 2014). The unit keeps records on performance information and they are controlled by the components of the department and the performance management unit. Information is kept in paper and electronic format. Paper-based information is kept in lockable filing cabinets which are accessible only to the performance management unit. Access to electronic information is password controlled to ensure data security.

The FMPPI states that the a government department should have adequate capacity for managing programme performance information within the department and line functions, and a department should have a dedicated component or official responsible for collecting, collating and verifying performance information (RSA. National Treasury, 2007:14). The department has a dedicated unit responsible for coordinating, collating and verifying performance information. The line functions or sub-programmes also responded that all officials within the components captured performance information on activities they performed. In two components, they had dedicated officials responsible for collating and verifying performance information. According to Ngcobo (2014), the department has appropriate capacity to manage performance information in terms of administrative time, structure, ICT and staff capacity, but this is inadequate for the department to effectively manage performance information.

The heart of monitoring and evaluation lies in the use of performance information for decision making about strategies, programme plans, resource allocation and implementation of programmes (Mackay, 2007:9; Görgens & Kusek, 2009:415). According to Ngcobo (2014), performance information is disseminated within the department by sending reports via email to all programme managers of the department. Performance information is also published in the annual report which is available to both internal and external stakeholders, which include the general public, civil society and other government agencies.

In terms of internal use of performance information, the components which participated in the study were not fully utilising performance information for benchmarking, reviewing implementation plans, and policy making. The study did not establish the reasons for underutilisation of performance information and it did not reveal if performance information was used by lower-level staff or shared between different levels and across levels within the department as suggested by Kusek and Rist (2004:48).

Four sub-programmes responded that they use performance information for more than one report. The respondents were asked if they used performance information to report to different stakeholders: two sub-programmes responded that they used it for internal reporting and to report at national level. Only two sub-programmes reported that they used performance information once and for internal reports only. Of the two components who responded that they reported to national stakeholders, it emerged that the reports were part of compliance in respect of funding received from the national department. This is in agreement with the argument of Mimba et al. (2007:200) that external stakeholders demand performance information to assess the organisation's performance and to hold the organisation accountable. The department also used performance information to account to the Portfolio Committee, Provincial Legislature, and National Treasury. It also reported on its performance in various structures such as the Social Protection, Human and Community Development Cluster.

6.3.3 Information technology and management information systems used in the department

Understanding “Where are we now?” in terms of the information system includes a description of the information technology resources, information delivered by the information systems, information processes undertaken, and the human resources involved (Heeks, 2006:48). The study sought to answer this question in terms of information systems in use in the department.

ICT include computer hardware, software and telecommunication networks, while ICT tools include database application systems (Michinson & Ratner, 2004:89). According to Mqadi (2014), all offices in the department have computer hardware with Windows 7 and Microsoft Office 2010 and the department has a telecommunications infrastructure. Internet access is available to most staff of the department. In the case of public libraries, 90% had the ICT infrastructure at the time of the study (Odendaal, 2014). Museum service points, which include municipal and board of trustee museums, did not have networked computers at the time of the study.

Management information systems consist of ICT infrastructure, application systems, data, servers and the network (Davis, 2000:67; Gu & Jung, 2013:88). They are used to support administrative and management functions (Davis, 2000:62; Cloete, 2003:28). They are configured to collect, manipulate, store and process data into usable information (Stair & Reynolds, 2012:12).

Management information systems that fit the above description used by different components of the department are discussed in Chapter 4. These include transversal systems such as PERSAL (Personnel and Salary Information System), BAS (Basic Accounting System), Hardcat (asset management system), and the SITA Library and Information Management System (SLIMS). All transversal systems are networked. SLIMS is the only transversal management information system used by one of the core sub-programmes included in the study. Two of the six components which participated in

the study confirmed that they use management information systems described by Stair and Reynolds (2012:12); Davis (2000:62) and Cloete (2003:28).

Management information systems used in the department generate online reports on current and historical performance as described by Laudon and Laudon (2006:44). According to Cloete (2003:29), a management information system is transaction based, and one management information system used by one of the components, SLIMS, discussed in Chapter 4, and fits this description. This was also confirmed by one of the respondents. The SLIMS system and WebIT HeadCount systems produce management reports, and performance information used to measure performance of the component.

According to Gorla et al. (2010:215), quality of information generated by a management information system can be described in terms of content and format. The authors note that quality of information content can be measured in terms of relevance, accuracy and completeness of information, while the quality of information format is measured in terms of presentation of information. Of the two sub-programmes that responded they used electronic MIS, one indicated that the system they used provided accurate, relevant, timely, appropriate and complete information. The Oral History component noted that although the MIS they used provided accurate and appropriate information, it did not provide it timeously and the information was not always complete.

Three sub-programmes responded that the MIS sometimes meet their information needs and three said that the MIS always meet their needs. None of the sub-programmes responded that the MIS never meet their information needs.

The WebIT Headcount system (Figure 6 and Figure 7) is used in Library Services to monitor use of public libraries to allocate resources and plan new services. It helps to determine the busiest times in libraries. The system was introduced in libraries which were not lending sufficient numbers of books to justify the use of these libraries, even though the public were not borrowing books, but using other library services. The SLIMS

system was used to monitor the use of libraries in terms of the number of books borrowed by members of the community.

SLIMS is a transversal library and information management system used by provincial library services in South Africa. It fits the description of a transaction and management information system as described by Cloete (2003:29) and Laudon and Laudon (2006:43-44). The system is used for routine transactions of ordering, processing, dispatching and circulating library materials. It has capabilities to generate online management reports used by management to plan and monitor performance. Some of the reports used by management include expenditure reports, monitoring of staff performance and use of library materials. The system is discussed further in Section 6.3.4.

The NAAIRS system is available on the internet and is accessible to the public, but it is not a management information system as it does not provide management reports used to monitor, control and plan as described by Cloete (2003:29) and Laudon and Laudon (2006:44).

According to Mqadi (2014) and Odendaal (2014), none of the above systems are integrated. Therefore the department is not benefiting from integrated information that enables integration of data from different sources to break data silos between different components of the department (Culbertson, 2004:60; Bidlack & Wellman, 2010:66). The systems available in the department are not integrated and they do not fully combine financial and non-financial information. Therefore the management information systems do not meet the requirements of the FMPPI (RSA, National Treasury, 2011:13).

ICT capacity is essential for an organisation to effectively manage its MIS. Heeks (2006:101) mentions skills, knowledge and attitudes as the main domains of competencies required to develop and implement a management information system. ICT capacity, according to Gu and Jung (2013:88), includes a combination of attributes which are organisational knowledge and expertise, internal and external relationships between the ICT component with business units and external stakeholders, technical skills, and

available infrastructure. The department has a centralised ICT services component, but some of the ICT services are decentralised to a limited extent. According to Heeks (2006:100), this is a hybrid approach to location of ICT within the department. For example, the Library Services sub-programme has its own ICT sub-unit which has its own ICT budget and runs its own systems, but operates within the ICT policies of the department and works in collaboration with the central ICT unit.

All other components relied fully on the ICT component of the department. The Finance Section had a designated official responsible for first-line support for the BAS system and the Human Resource Management and Development component had a PERSAL controller providing first-line support to the component.

Among the ICT competencies and expertise required for developing and operating management information systems, Petter et al. (2013:24) and Gu and Jung (2013:88) include both technical and managerial skills. Managerial skills include planning and project management, and technical skills involve development and operating new technologies. In terms of ICT competencies and expertise, ICT capacity challenges in the department were identified in 2010. In 2013, the department had planned to conduct an ICT skills audit in the third quarter of the 2013/14 financial year, but this was not done, owing to lack of funds (Mqadi, 2014).

According to the KwaZulu-Natal Department of Arts & Culture, IT Strategy 2010– 2014 (2010:6), the capacity challenges identified include management, enterprise architecture, ICT governance and other ICT services such as service-level agreements, project management, application support, training and awareness. As a result, the department outsources the implementation of ICT projects. At the time of the study, the department outsourced to the SITA server administration, hosting and functional support for SLIMS and support for the Internet @your library project in public libraries.

According to Odendaal (2014), the Library Service ICT unit at the time of the study had a support contract with SITA. The contract included technical support for the Internet

@your library project in 75 public libraries. At the time of the study, the SITA support contract was coming to an end and department was preparing to advertise vacancies for four systems administrators to provide ICT support in head office and the four regions. The systems administrators would also provide support to public library ICT staff (cyber cadets) in 75 public libraries.

According to Heeks (2006:102), training of existing staff and recruitment of staff with the required skills can assist in addressing competency gaps in an organisation. At the time of the study, the department did not have funds to conduct an ICT skills audit and to appoint additional staff required in the ICT unit.

Corporate governance of ICT in the department

Despite inadequate funding for the ICT unit, the department had put in place a departmental ICT corporate governance structure to help raise the profile of the ICT unit in the department. According to the DPSA (2013b:iv), the framework raises the importance of senior political and managerial leadership in accounting for alignment of ICT services within the department.

According to Mqadi (2014), the department has the governance structure which raises the profile of the unit, but it does not have adequate funding to fill capacity gaps in systems development, project management and architecture to enable the department to develop and manage its own management information systems. Despite the capacity challenges discussed above, the department has some management information systems to measure organisational performance, which are discussed in the next section.

6.3.4 Management information systems used to measure organisational performance in the department

Library Services was the only sub-programme that used electronic management systems to measure its performance and which produced financial and non-financial data as described by Kusek and Rist (2004:48) and Mackay (2007:58). Library Services uses an electronic library management system called SLIMS (SITA Library and Information

Management System) as a management information system and the WebIT HeadCount system.

One of the respondents said the format used by the system only allowed for certain information and did not provide for inclusion of other important information. The department does not have an appropriate performance management information system for measuring organisational performance. According to Ngcobo (2014), the department has a plan to introduce such an electronic performance management information system. At the time of the study the department had not budgeted for such a system and the department did not have adequate capacity to implement a PMIS system.

6.4 Summary

Data obtained from both primary and secondary sources was presented and explained according to the main themes and framework used in the study.

In terms of management of performance information, all sub-programmes had designated officials responsible for collecting and collating performance information. The senior managers were responsible for reporting on performance of their sub-programmes on a monthly and quarterly basis using standardised templates and questionnaires. Performance information was used mainly for monitoring progress.

The department had ICT policies in place, but had limited ICT skills and financial resources to implement major ICT projects. Only one sub-programme had electronic management information systems that could be used to source performance information. The department used the National Treasury QPR system to report performance quarterly; however this system was found to be limited in terms of detail that can be reported. The department had limited capacity to develop an integrated performance measurement information system.

A summary of the study and recommendations are discussed in the next chapter.

CHAPTER 7: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

7.1 Summary of the study

In this section the key points discussed in each of the previous chapters are reviewed, including the literature review, theoretical frameworks, research methodology, and the key findings of the study.

7.1.1 Introduction

Result-based public service requires accurate and precise measurement of policy outputs and outcomes. The use of ICT enables the collection, analysis and assessment of data to make value judgements on services that the public sector provides. According to Cloete (2003:29), government departments collect process and utilise information for planning and reporting purposes at strategic and operational level. At an operational level, management information systems are used to monitor results, control activities, and plan new services; at strategic level, MIS provide information used to summarise trends to determine the strategic direction of an organisation. The availability of a management information system that can provide access to reliable and useful performance information is a challenge for many government departments.

The aim of the study was to determine the role of management information systems in measuring organisational performance in the KwaZulu-Natal Department of Arts & Culture.

7.1.2 Theoretical framework

The key concepts that provided the main focus of the study were performance measurement and management information systems used to measure organisational performance. These were defined and discussed in Chapter 2. The chapter also briefly discussed PMIS used by South African government departments at the time of the study and gave an overview of relevant policies governing ICT and performance measurement. Policy frameworks in relation to management information systems and performance

measurement were discussed in detail in Chapter 3, with more attention paid to the FMPPI.

Chapter 3 dealt with frameworks used to measure organisational performance, management information systems, and performance management information systems. Greater attention was paid to the South African National Treasury Framework for Managing Programme Performance Information. The framework is part of the Government-Wide Monitoring and Evaluation System and was the main framework used in the study. The framework was published in 2007 and the complementary implementation handbook was issued in 2011. The Auditor General started to audit government departments on the implementation of the framework in the financial year 2012/13. These frameworks provided the basis for the development of data-collection tools.

7.1.3 Case study of the department

The department was discussed in detail in Chapter 4, and this included the legislative mandate, its relationship with the national department and with other provincial government departments. The vision and mission, organisational structure, services rendered by the department, and how it monitors its performance were also discussed in Chapter 4.

7.1.4 Data gathering and analysis

Chapter 5 provides an overview of data gathering and analysis. The units of analysis were discussed, and include middle managers in the core components of the department. Purposive sampling was used to select participants who were responsible for performance information in the core components of the department. Secondary data was collected from various documents such as the annual reports of the department. Primary data was collected from the participants through the use of interviews and self-administered questionnaires. Content analysis methods and Microsoft Excel were used to analyse data collected from documents, interviews and questionnaires.

7.1.5 Research findings

Data collected from primary and secondary sources indicates how the department measures its performance and manages performance information. The study shows that the department has a draft framework in place which outlines how performance should be measured and performance information managed. The study also indicates that performance information is utilised to account to various oversight bodies; the participants in the study also confirmed that they were using performance information. All respondents used it to monitor progress and evaluate projects, but not all sub-programmes used performance information for benchmarking and planning. The study also revealed that the department had a sufficient ICT infrastructure, but it did not have adequate capacity to manage the implementation of a PMIS.

7.2 Summary of research findings

The aim of the study was to determine the role of management information systems in measuring organisational performance in the KwaZulu-Natal Department of Arts & Culture. The study aimed to describe management information systems in place in the department and how they were used to measure organisational performance.

7.2.1 Objective 1: Performance measurement in the department

The first objective of the study was to determine how performance of the organisation was measured. The department had a draft policy in place outlining roles and responsibilities for performance measurement. The core components of the departments understood their roles in measuring their performance. The department had a performance plan in place which was prepared in consultation with stakeholders and performance in the department was measured in accordance with the performance plan. The department measured performance to account to different oversight bodies and stakeholders.

7.2.2 Objective 2: Management of performance information in the department

The second objective of the study was to describe the manner in which performance information was managed in the department. The department had a draft framework in

place which was used to provide guidelines on how performance information was to be collected, collated, verified and stored. The managers in the core components which participated in the study had systems in place for collecting performance information. The main source of information in the department comprised administrative records and the department kept these records as evidence. The reliability and usefulness of performance information in the department was tested by the auditors. The study also found that the department did not have adequate capacity to effectively manage performance information. Performance information was disseminated within the department and externally. The study revealed that performance information was not fully utilised within the department.

7.2.3 Objective 4: Information technology and management information systems used in the department

The third objective was to describe the information technology and management information systems that were used to manage information in the department. The study found that all components in the department had computer hardware with Windows 7 and Microsoft Office 2010, and they were all networked. At the time of the study, the department had a number of management information systems which included transversal systems such as PERSAL; BAS and SLIMS. There were other systems which were used by one of the core components, including Microsoft Excel and WebIT. The systems were used to collect, store, and process data to generate management reports. The study found that although there were MIS in place in some of the core components which provided accurate, relevant, and appropriate information, the systems did not always provide timely and complete information.

7.2.4 Objective 3: ICT skills available in the department

The fourth objective of the study was to describe the ICT skills available in the department. Staff in the department had ICT skills to operate computers. At the time of the study, the department had not conducted an ICT skills audit. However, the department was aware that it did not have adequate ICT skills in the following areas: enterprise

architecture, project management, applications support, ICT training and awareness. The ICT unit did not have adequate personnel to implement ICT projects.

7.2.5 Objective 5: Management information systems are used to measure organisational performance

The fifth objective of the study was to determine how management information systems are used to measure organisational performance in the department. The department had various systems to measure organisational performance. One of the core components that participated in the study used two electronic MIS systems to measure organisational performance. The department did not have an integrated MIS used to measure organisational performance.

7.3 Recommendations

One of the secondary objectives of the study was to make recommendations for a model that could be used to improve the measurement of organisational performance by using management information systems in the department. Based on the research findings, it was ascertained that the department only had a draft framework in place outlining responsibilities for performance measurement and also providing guidelines on how performance information should be managed. For the department to fully implement this policy, it is recommended that the draft framework be approved and formally adopted. This will make it possible to sensitise the employees of the department to its existence and to enforce it.

For the department to successfully implement an electronic PMIS system, it is important to build ICT capacity in enterprise architecture, project management, applications support, ICT training and awareness. The study also found that the monitoring and evaluation unit did not have adequate capacity to manage organisational performance. The department should allocate adequate funding for capacity building in the components responsible for ICT and performance management.

Secondly, the study was limited only to managers responsible for the core components of the department. It did not extend to all staff of the department and therefore it could not establish whether performance information was fully utilised by all staff in the department. It is recommended that future studies include all staff in the department.

The National Treasury framework also recommend that for an organisation to develop a PMIS, it is important to evaluate the current records management practice, including paper-based systems, so that the recommended system can improve the existing system. Evaluating the existing records management system was not included in this study and therefore it is recommended that further studies include this.

7.4 Conclusion

The role of a management information system in measuring organisational performance in the department was found to be limited. The department has a draft policy in place which is used to measure organisational performance. The framework outlines roles and responsibilities, and how performance information should be managed. The department has officials responsible for collecting performance information and managers are responsible for reporting on performance. The study also found that performance information was not only utilised to comply with legislation, but it was also used for planning and decision making. The study revealed that the department had an adequate ICT infrastructure and the staff in the department had skills to use ICT. The department had only one component which used electronic management information systems that could be used to measure organisational performance. The study also concluded that there was no adequate capacity to develop an integrated PMIS that could be used to measure organisational performance. For the department to develop an integrated PMIS, it has to provide funding to build capacity to develop and implement an integrated PMIS.

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APPENDICES

APPENDIX A: APPROVAL TO CONDUCT THE STUDY

NOKUTHULA NDLOVU
PO BOX 533
PIETERMARITZBURG
3200

27 June 2014

THE HEAD OF DEPARTMENT
DEPARTMENT OF ARTS & CULTURE

**REQUEST FOR APPROVAL TO CONDUCT ACADEMIC RESEARCH AS PART OF A MASTERS
DEGREE IN PUBLIC ADMINISTRATION (STELLENBOSCH UNIVERSITY)**

I would like to request approval to conduct research on the department for the study entitled: **The role of information management systems in measuring organizational performance in the KwaZulu-Natal Department of Arts and Culture.**

The research is conducted as part of a fulfilling the requirements of a Masters Degree in Public Administration. The study has been approved by Stellenbosch University.

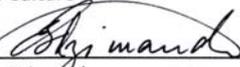
The purpose of the study is to determine the role of information management systems in the measurement of organizational performance in the KwaZulu-Natal Department of Arts and Culture. The study is motivated by challenges encountered in managing information used to measure organizational performance. The study will be conducted by circulating questionnaires to heads of components and officials who deal with performance information within the core components of the department. Officials working in the monitoring and evaluation unit and the head of IT component will be interviewed. Please see the questionnaire and interview questions attached here. Findings and recommendations of the study shall be made available to the department.

Yours sincerely



Miss Nokuthula Ndlovu

Approval granted/~~not granted~~ for the student to conduct the study in the Department of Arts and Culture

Signed 

Mrs E.S. Nzimande
Head of Department

Date 03/07/14

APPENDICE B: INTERVIEW QUESTIONNAIRE FOR ICT MANAGER

1. What computer applications, hardware and software are in use in the department?

2. Are they networked?

3. Does your component have adequate capacity to implement ICT projects, namely:

a. Skilled personnel?

b. Financial resources?

4. Are there policies in place which capacitate the component to implement ICT projects? Please explain.

5. Is the component receiving adequate support from the executive management of the department?

6. Based on the support calls logged by the users in the department, is the staff of the department adequately trained to use ICT?

7. Does the department have the capacity to implement a management information system?

APPENDIX C: QUESTIONNAIRE FOR THE MONITORING AND EVALUATION UNIT MANAGER

1. Does the department have a process in place to address integration of performance information structures and systems within the existing management process?

2. Is there a formal process for identifying, collecting, collating, verifying and storing performance information?

3. How is the performance information disseminated within the department?

4. How do you ensure that performance information is used in managing for results in the department?

5. How is performance information disseminated externally? For example, is it published on the website, or printed in hard copy format?

6. Does the Department have appropriate capacity to manage performance information? (Admin time; ICT, appropriate structure; Information System, Staff capacity)

7. Is there a consultation process taking into account performance information needs of different components?

8. Is there a process in place to ensure utilisation of performance information?

9. Does the department have a data policy in place that sets key parameters for the performance information administrative records?

10. Does the department have an appropriate information management system for measuring organisational performance (PMIS)? YES or NO. If you answered yes, please proceed to question 10a-g. If the answer is no, please proceed to question 11.

- a. Does it have capabilities to:

	Yes	No
Gathering of PI		
Storing PI		
Processing PI		
Disseminating PI		
Analyse PI		
Recommend corrective actions		

- b. Is it integrated with other MIS in the department? YES or No?

- c. Is the information provided by the PMIS aligned to the department's performance logic in terms of:

	Yes	No
Performance priorities		
Process architecture		
Organizational structure		

d. Does it have performance measurement capabilities to:

	Yes	No
Monitor trends		
Make comparison		
Evaluate performance		

e. Does it have any of the performance management capabilities:

	YES	No
Does it provide explanations		
Diagnosis		
Interpretation		

f. Does it provide user friendly information outputs? YES or NO

g. Is it accessible online? YES or NO

11. If the department does not have an appropriate PMIS in place,

a. Is there a plan to develop such a system? YES or NO

b. Is there a budget available to acquire the system? YES or NO

c. Does the department have appropriate capacity to develop and implement such a system? YES or NO

12. General comments:

APPENDIX D: QUESTIONNAIRE FOR HEADS OF COMPONENTS

Quest no.	
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QUESTIONNAIRE

Please complete the attached questionnaire and return back to Nokuthula Ndlovu. E-mail address: ndlovuno@plho.kzntl.gov.za or Call her to collect: 033-3413012 or 0832743943. Thank you

PART A: Performance measurement

1. What type of information do you collect to measure performance?

2. Where is performance information collected?

Service point, e.g. Art Centre, library, etc.	
Municipality	
District office	
Other, please specify	

3. What are your sources of performance information?

Administrative records, e.g. attendance register	
Financial records	
Surveys	
Statistics	
Other, Please specify:	

4. Who is responsible for collecting performance information in your component?

All officials	
Managers/supervisors	
Designated official	

5. How often is performance information collected?

6. How is performance information collected?

Using standard templates	
Questionnaire	
Observation	
Interviews	
Extracting information from an automated system	
Other, Please specify	

7. Do you collect performance information for any of the following (please select appropriate answer(s):

To monitor progress towards achievement of performance targets	
To monitor trends	
For benchmarking	
To evaluate current services/projects	
To review implementation process	
To plan new policies	
Other, please specify	

8. Does the performance information reflect accurately the events and transactions to which they relate?

9. Taking into account the timing of collection of performance information and the underlying events in the case of administrative records or the survey in the case of survey data,

9.4.1 Does the information relate to reporting period?

9.5 Is the information still meaningful with regards to the performance information reported period?

9.6 Is the data collected frequently enough to update the indicator as required?

9.7 Will the data be available at the same time for every reporting period?

10. Is the information used more than once for different reports or purposes? YES or NO

Please give examples

11. Is the performance information collected used to report to different stakeholders?

YES or NO

Please give examples

PART B: Management Information Systems

13.1 Does your component use any management information system (s):

Yes	No
-----	----

13.2 Is your information system electronic or manual?

13.3 Is it used for [Please select the appropriate answer(s) by marking with X]:

Capturing and processing daily transactions	
Generate management reports	
Generate information used for decision support	
Provide executive information	

13.4 Does the system provide (please tick the appropriate box):

Accurate information	
Relevant information	
Timely	
Appropriate	
Complete	

Comments: _____

13.5 Does the information system meet your information needs?

ALWAYS	SOMETIMES	NEVER
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Comments: _____

13.6 Does the information system provide information required to measure performance of your component? Yes or No

13.7 Does it have capabilities to:

Summarise data from the different sources	
Summarise data from same source over a certain period	
Present information in graphs	

13.8 Does it produce reports that are:

	Yes	No
Real time		
Customizable into different formats		

General comments:

THANK YOU FOR PARTICIPATING IN THE STUDY.