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Data management in the Gauteng Department of Social Development

Zikho Twantwa
WITS Graduate School of Governance

Thesis presented in partial fulfilment for the degree of Master of Management (in the field of Public Sector Monitoring and Evaluation) to the Faculty of Commerce, Law, and Management, University of the Witwatersrand

March 2016

DECLARATION

I declare that this thesis/dissertation titled 'Data management in the Gauteng department of Social Development' is my own, unaided work. I have acknowledged and referenced all sources that I have used and quoted. I hereby submit it in partial fulfilment of the requirements of the degree of Master of Management (Public sector monitoring and evaluation) in the University of the Witwatersrand, Johannesburg. I have not submitted this report before for any other degree or examination to any other institution.

Zikho Twantwa

Johannesburg, March 2016

ABSTRACT

Data management in the public sector has become a primary driver for decision-making and planning, however, there is a limited research on data management within South African public sectors with the exception of the health sector, which has widely studied the existing data management systems as case studies of health management information systems (HMIS). Using Theory of Change to determine the intended results of data management in the Gauteng department of Social Development, the study aimed to examine data management in the Gauteng department of Social Development and the use and application of data in evidence-based planning and decision-making in programmes of the department.

A qualitative research strategy with a case study design was employed. Data for the study was collected from ten participants of the Strategic Planning, Monitoring and Evaluation unit using open-ended interview schedule, from three executive management managers using closed-ended questionnaires, and from documentary analysis in the Gauteng department of Social Development. The collected data was analysed using thematic analysis and content analysis. The study found that the Gauteng department of Social Development has moderate data management systems in place, as some of the key attributes of data management were not explored and exploited to the fullest by the department. In addition, the research findings revealed that there is poor use of data in decision-making and planning. This study contributes significant new knowledge to the existing body of monitoring and evaluation literature and public administration in South Africa.

Key words: Data Management, Evidence-based Decision-Making, Evidence-Based Planning, Monitoring and Evaluation

Author: Zikho Twantwa
Thesis title: Data management in the Gauteng department of Social Development

Johannesburg, March 2016

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Ndiliqhawe lamaqhawe for finishing this degree still sane.

A luta continua, vitória é certa!

1 INTRODUCTION TO THE RESEARCH

1.1 Background

Monitoring and Evaluation (M&E) field has been growing since its introduction in South Africa to its current status where each government department is obliged to practice it guided by the Government-wide Monitoring and Evaluation Framework of 2007. Over the same period of the introduction of M&E, there has been a heightened awareness of the importance of data in public sectors and more specifically a focus on the management and use of that data for evidence-based decision-making and planning. This report sets out to trace how data management in the Gauteng department of Social Development (GDSD) is influencing evidence-based decision-making and planning.

This research report is divided into six chapters, chapter one presents the background and introduction of the study. This chapter further locates the study within a broader context in section 1.1.1 and 1.1.2. Section 1.2.1 articulates the research problem statement and consequently the purpose of this study in section 1.2.2 as well as the research questions in section 1.2.3. Chapter two of this report is the literature review on data management. Section 2.1.1 of this chapter narrates the history of South African public sectors and consequently section 2.1.2 presents background information of the context of the study, which is the department of Social Development.

Thus, section 2.2.2 narrates data management in the department of Social Development and 2.3 provide a review of literature of past and current studies relevant to this study. Then chapter three of this report describes in detail the research methods, techniques, and procedures that will be employed in this study. While, chapter four presents the findings of the study and chapter five discusses the results of the study. This report ends with chapter six, where the summary of this report is provided on section 6.1, followed by a conclusion of the study in section 6.2 and the reports ends with section 6.3 where the recommendations of this study are provided.

1.1.1 Policy implementation in South African public sectors

In 1994, South Africa experienced its first democratic elections, which were characterised by peaceful transition and ushered in a new era of accountability in policy systems (Rossouw & Wiseman, 2004). During this transition phase, in policy context, the democratic government went through major transformation with many policies being reviewed between the years of 1995 and 1996 (Brynard, 2006). Then in 1996, the Constitution of the Republic of South Africa (1996) was developed and it provided a completely reconstructed governance system at national, provincial and local level (Engela and Ajam, 2010; Nowak & Ricci, 2006).

Following on this broad, was an emphasis on public service delivery that took place between the years of 1997 and 2003 with renewed focus on implementation (Brynard, 2006). The Constitution of the Republic of South Africa (1996) placed the responsibility for implementation of public policies in the provincial level of government (Engela and Ajam, 2010; Nowak & Ricci, 2006). In the context of the three spheres of government and evolving decentralism, the on-going challenges experienced by the government has been defining responsibilities and coordinating actions between spheres of government (Schneider & Stein, 2001). Consequently, the three spheres of government continue to experience challenges with a growing gap between policy intentions and implementation —this is not unique to one department but common with other government departments (Rossouw & Wiseman, 2004; Schneider & Stein, 2001; Walker & Gilson, 2004).

Furthermore, there is a possibility that resources required to implement the policy may be under the control of another sphere, which may have much status and authority as compared to the sphere of government trying to implement the policy (Crosby, 1996). It is necessary to note that some provincial spheres of government may resent the national sphere of government interference, while others shift the responsibility to the national sphere of government (Schneider & Stein, 2001). In addition, the provinces of the country are not all well developed, some are still suffering from weak municipal structures with no line authority and this impose additional task for policy implementation (Robichau & Lynn, 2009). Correspondingly, the lack of or poor implementation processes in the South African public sector has undermined the effectiveness of policies (Rossouw & Wiseman, 2004).

Based on the literature reviewed, one can deduce that South African public sector has clear and sound policies on paper but in practice they are conflated and complex, which leads to poor policy implementation.

1.1.2 Gauteng Department of Social Development

In order to reflect on key questions around data management the study will focus on the Gauteng department of Social Development. Within the GDSD, there is a unit for Strategic Planning, Monitoring and Evaluation whose purpose is to coordinate the development and implementation of effective strategic planning, performance monitoring & evaluation and reporting processes. Strategic Planning, Monitoring & Evaluation will be the unit of analysis for this study as it is responsible for managing the department's performance data on predetermined objectives.

However, it is important to give a brief description of the National department of Social Development as a custodian of the GDSD. According to the Social Development, monitoring and evaluation policy (2014), the National Department of Social Development (NDSD) addresses social development issues in the South African context. It does so through a partnership involving nine Provincial Departments of Social Development, two implementing agencies, non-governmental organisations and the private sector. It is further stated that the provincial departments of Social Development are tasked with the implementation of social development policies, services and programmes (Social development, data warehouse strategy, 2015). Thus, the GDSD is the unit of analysis for this study as it is responsible for the implementation of data management processes.

GDSD comprises of five regional offices, namely, Johannesburg, Westrand, Sedibeng, Tshwane and Ekurhuleni (Gauteng Department of Social Development, Annual Performance Plan 2014/2015), which the Strategic Planning, monitoring and evaluation unit collects from the department's programmes data monthly, quarterly and annually. The GDSD also has thirteen institutions across the Province that provides state services in three categories namely; Child & Youth Care Centres, Care for people with Disabilities & Frail Care Centres and Substance Abuse Treatment Centres (Gauteng Department of Social Development, Annual Performance Plan 2014/2015).

The GDSD is mandated to monitor and evaluate its programmes in line with the Gauteng Department of Social Development, Annual Performance Plan 2015/2016.

1.1.3 Social Development data management

Each year, government commits significant resources to support a wide range of social development interventions that are designed to improve the social and economic conditions of the citizens of South Africa (Social Development, M&E policy, 2014). The Strategic Planning, Monitoring & Evaluation unit, which is a custodian of monitoring & evaluation, monitors these interventions in the GDSD (Social Development, M&E policy, 2014). This is the unit responsible for data management in the GDSD. To strengthen the systems for monitoring and reporting by the Strategic Planning, Monitoring & Evaluation unit, the GDSD developed a policy framework on managing performance information (Gauteng Social Development, Policy Framework on Managing Performance Information, 2013).

This framework seeks to enforce the culture of performance information management within the departmental performance management and accountability framework (Gauteng Social Development, Policy Framework on Managing Performance Information, 2013). It further sets out minimum expectations and standards to be upheld in the process of collecting, verifying, validating, reporting and archiving performance information (Gauteng Social Development, Policy Framework on Managing Performance Information, 2013). The policy procedures provides a process of identifying, collecting, collating, verifying, storing of performance information and provides a process of documenting a portfolio of evidence (PoE) that is reliable, relevant, valid and can clearly substantiate the output information (Gauteng Social Development, Policy Framework on Managing Performance Information, 2013).

In addition, the implementation of this policy by the Strategic Planning, Monitoring & Evaluation unit will play a role in strengthening the GDSD's accountability regarding the reporting of reliable, useful and credible information. The GDSD central records of performance information guidelines recognises the critical role played by data management through stating that the maintenance of performance data is not only important in promoting access to complete and credible information but also to the achievement of informed decision-making and planning (Gauteng department of Social Development, Central Records of Performance Guidelines, 2013).

Furthermore, the North West Province's policy on data flow and information management emphasises the importance of a Social Welfare information management system as a tool for facilitating management, decision-making, planning, resource allocation and monitoring and evaluation (Department of Social Development, North West province, 2013). This section described the department of Social Development; it has indicated the context within which social development operates, and described the mandate and management configuration that is in place to give effect to policy.

1.2 Research Conceptualisation

This study examined data management in the Gauteng department of Social Development. It is then necessary to narrate the research problem and purpose of this study to understand the aim of the study and the importance of data management in the Gauteng department of Social Development. Section 1.2.1 presents the research problem, while section 1.2.2 presents the purpose of this study. With 1.2.3 providing the broad research questions that, this study will address, whilst section 1.2.4 provides the hypothesis of the study.

1.2.1 The research problem statement

In the South African social sector context, availability and use of quality data play a fundamental role in providing evidence based continuing service delivery (Gauteng department of Social Development, Policy Framework on Management of Performance Information, 2013). Existence of good data management assists in collection, analysis, and maintenance of quality, reliable and usable information (Gauteng department of Social Development, Policy Framework on Management of Performance Information, 2013). Data management is not only important in promoting access to complete and credible information; it is critical for informed decision-making and planning (Lipchak, 2002).

The Gauteng Department of Social Development, institutionalised evidence based reporting over the past decade in response to the demand for reliable information about outputs, outcomes and impacts of social development programmes and policies (Gauteng department of Social Development, Policy Framework on Management of Performance Information, 2013).

However, the Gauteng Department of Social Development in its Guidelines for Central records Management of Performance Information (2013) has stated that despite the existence of the registry in most of its regional offices, there is no uniform and safekeeping of verified and accepted evidence files. Therefore, an evaluation study is necessary to examine the department's data management and to establish its methods in assisting the department to achieve its intended goals. The results of this study will identify the tools that the department needs to strengthen their data management to assist in planning and evidence decision-making processes.

1.2.2 The research purpose statement

The purpose of this study is to examine data management in the Gauteng Department of Social Development and the use and application of data in evidence-based planning and decision-making in programmes of the Gauteng department of Social Development. Further, to strengthen the Gauteng department of Social Development data management processes. To get this purpose, we will interrogate the theory of change to determine the intended results of a data management in the Gauteng department of Social Development. Then, we will propose a research strategy, a research design, research procedure and methods appropriate to evaluate data management. Consequently, we will collect and analyse data to examine if the data management implemented in the GDSD is in line with the department's theory of change. Lastly, we will make recommendations on how to improve and strengthen data management in the GDSD, so to assist in planning and evidence decision-making processes.

1.2.3 The research questions

The following are the broad research questions that this study attempts to address:

1. How is data collected, collated, analysed, stored and reported in GDSD?
2. What influences the decisions GDSD makes and the services it provides?
3. What are major outcomes of a data management in GDSD?

1.3 Delimitations of the research

Data management systems vary by Province-to-Province in the department of Social Development, however, this study's interest is in the implementation of data management in the Gauteng province department of Social Development. This is because the researcher is currently working for the Gauteng province department of Social Development and would like to contribute towards improving the department's data management. Further, this study's focus is on the examination of data management in the GDSD, to see whether the system is achieving its goals, which are the use of data in evidence-based planning and decision-making in programmes of the department. Thus, this study does not include studying the possible effects on policy-making and organisational performance, which are also part of data management.

1.4 Justification of the research

This study attempts to shed light on use of data in decision-making and planning in South African public sectors by examining data management in the Gauteng department of Social Development. Data management in this study are defined as the collection, collation, storage, processing or analysis, dissemination and efficient use of information (Carney, Çetintemel, Cherniack, Convey, Lee, Seidman, & Zdonik, 2002). This study examines the implimentation of data management in the Gauteng Department of Social Development and the use and application of data in evidence-based planning and decision-making in programmes of the department.

The fundamental question posed by this study is whether data management influences the decisions that the Gauteng department of Social Development makes and the services it provides. For the past decade, technologies to improve data management have been introduced and personnel specialising on this field employed in South African public sectors. However, there seem to be limited studies assessing the effectiveness of these systems in the country even though data management is an area that needs to be further explored and exploited for its full benefits to be reaped. Therefore, this study seeks to examine whether the objectives of data management interventions in the Gauteng department of Social Development, as a public sector entity are achieved and if not, the reasons for failing to achieve them.

This study serves to establish whether the GDSD's data management is implemented according to the department's theory of change. Further, this study will contribute towards the field of public administration and monitoring and evaluation.

1.5 Preface to the research report

To this end, the report has six chapters. Following this introductory chapter, Chapter 2 provides a literature review covering the problem, the past studies, the explanatory framework and the conceptual framework. Chapter 3 discusses the research strategy, design, procedures, reliability and validity measures as well as limitations. Chapter 4 and Chapter 5 presents and discusses the findings, respectively, to interrogating our research questions while Chapter 6 summarises and concludes the research.

2 LITERATURE REVIEW

The purpose of this chapter is to critically appraise the literature relating to data management and monitoring and evaluation as it applies to South African public sectors. The chapter focuses in the following areas: first, it delineates the programmes provided by the department of Social Development in relation to how data in those programmes have been handled by South African public sectors. Second, this is followed by a brief history of data management narrowing it down to the context of the study, Gauteng department of Social Development. The past and current studies relating to data management by public sectors globally, in Africa and locally are narrated. The purpose and mandate of data management interventions are addressed, by locating this study within implementation broad field of study and its components and attributes discussed. The chapter then identifies the theory of change as the most relevant explanatory or theoretical framework for this study. Finally, a road map of how this research intends to assess data management in the GDSD is provided. This chapter serves the purpose of contextualising data management in the Gauteng Department of Social Development, which builds upon the research methods that will be used to carry out the study.

2.1 The Gauteng Department of Social Development and its programmes

This section describes the intervention in detail. Section 2.1.1 provides history of the South African public sectors, while section 2.1.2 provides background and description of the department of Social Development.

2.1.1 History of the South African Public Sectors

South Africa subsists within a global context characterised by international commitments and pressures for public service excellence. Governments worldwide are experiencing high demands for accountable and performing public service. This has necessitated governments to pay more attention on data that track progress of programmes and improve public service performance (Hussein, 2012).

The democratic government of South Africa, in its attempt to reform the public service embarked on a civil service performance management system and budget reforms with an emphasis on service delivery (Brynard, 2006). It then adopted the government-wide monitoring and evaluation (GWM&E) system in 2007, which is a system that contributes towards the improvement of performance, governance and effectiveness of the public service (Presidency, 2007). Following the theory of Kusek & Rist (2004) that a country can strengthen performance in public service by developing monitoring and evaluation systems, South Africa established a Ministry for Performance, Monitoring and Evaluation in order to implement the GWM&E system and improve the performance of public service (Chabane, 2009). The purpose of monitoring and evaluation (M&E) is to produce reliable and timely information and use it to evaluate policy, set priorities, plan, and monitor the effectiveness and impacts of interventions (Görgens-Albino & Kusek, 2009).

Despite this, programme managers continue to be faced with many challenges, technical, resource related, when planning, designing and implementing monitoring, and evaluation activities (Hussein, 2012). Programmes rendered by the department of Social Development are not an exception. In this study context, monitoring is defined as a routine and continuous tracking of performance against planned activities (Kusek & Rist, 2004). Hussein (2012) further explains that specified indicators are used to collect and analyse data. Hussein (2012) continues to state that effective monitoring system will provide programme managers with timely information on progress- or lack of - towards achieving results, which are expressed in terms of outputs, outcomes and goals.

Kusek and Rist (2004, p.12) move on to define evaluation as a "systematic and objective assessment" of a programme. Evaluations may rely on data generated through monitoring activities and can use existing data to conduct new in-depth analysis (Hussein, 2012). In South Africa, the government is dominant and plays a key role in service delivery. In such situations, systems to prevent the abuse of power by the State are necessary. Hence, it is necessary to examine how the Gauteng department of Social Development is managing its data for evidence-based decision making and planning.

2.1.2 Background and description of the department of Social Development

Laws of parliament and other policy directives govern the National Department of Social Development (NDSD). Some of those laws come from the Constitution of the country such as the mandate of the department, which is "to provide sector-wide national leadership in social development" (DSD Strategic Plan 2010-2015, p. 9). The Department of Social Development's nature of policies is meant to stimulate economic growth for the benefit of poor people and they seek to reduce inequality and poverty amongst South Africans. This makes the department to be one of the few government sectors that have a direct or indirect impact upon lives of all South Africans. Department of Social Development's function is linked to that of NEPAD and African Union, National Development Plan (NDP) (2030), Southern African Development Community (SADC) and other initiatives, and to organisations that focus on the development of communities (Naidoo, 2011).

The White Paper for Social Welfare (1997) and the White Paper on Population Policy (1998) are one of the few policies and laws that the department of Social Development derives its mandate from (DSD Strategic Plan 2010-2015). Based on these policies, the Department develops and implements programmes for social protection and development of poor, vulnerable, and marginalised people (DSD Strategic Plan 2010-2015). The Constitution of the Republic of South Africa (1996) as the supreme law of the country guides the work of the department, notably section 28 (1) enshrines the rights of children with regard to appropriate care, basic nutrition, shelter, health care and social services, and detention. Whilst, Section 27 (1) (c) provides for the right to access to appropriate social assistance for those unable to support themselves and their dependents (Department of Social Development, Strategic Plan 2010-2015).

There are also laws that are directly or indirectly approving the existence of the data flow and information management policy. Some of them are the Statistics Act No. 6 of 1996, Protected Disclosures Act, 26 of 2000, the National Treasury's Framework for Managing Programme Performance Information 2007, the Public Finance Management Act of 1999 (Act No 1 of 1999 as amended by Act 29 of 1999), Public Audit Act, 25 of 2004.

In addition to these laws of parliament statutory regulatory framework governing information management, the following management standards support the mandate of sound information standards in the National Department of Social Development, departmental Monitoring and Evaluation Framework, government Wide Monitoring and Evaluation framework, Treasury regulations, South African Statistics Quality Assurance Framework and Batho-Pele Principles. The Gauteng Department of Social Development (GDSD) is chosen as a unit of analysis for this study because of its clearly defined data management processes and M&E functions.

The Gauteng department of Social Development has five regions namely, Johannesburg, Westrand, Sedibeng, Tshwane and Ekurhuleni (Gauteng Department of Social Development, Annual Performance Plan 2014/2015). The province also has three kinds of institutions, namely, Child & Youth Care Centers, Care for people with Disabilities & Frail Care Centers and Substance Abuse Treatment Centers (Gauteng Department of Social Development, Annual Performance Plan 2014/2015). It is also important to highlight the GDSD's objectives, vision and mission.

According to the Gauteng Department of Social Development, Annual Performance Plan 2014/2015, the main objective of the Gauteng Department of Social Development is to play a leading role in social empowerment, social integration and social protection of poor and vulnerable individuals, families and communities of Gauteng. The vision and mission of the GDSD is articulated in the annual performance plan 2013/2014, a document that provides the performance overview of the GDSD, wherein the priorities of the Gauteng province are articulated, together with achievements, goals and challenges encountered by the GDSD. The vision of the GDSD is "a caring and self-reliant Society" and the mission is "to transform our society by building conscious and capable citizens through the provision of integrated social development services" (Gauteng Department of Social Development, Annual Performance Plan 2014/2015, p. 13).

2.2 Data management in the Gauteng department of Social Development

This section gives a detail description of data management. Section 2.2.1 postulates a narration of data management globally, whilst section 2.2.2 postulates the data management policies guiding the department of Social Development in South Africa, then 2.2.3 postulates the implementation of the data management policy in the Gauteng department of Social Development.

2.2.1 History and description of Data management

In recent years, data management and reporting has become an important issue, not only because of its significance for promotion of public sector high standards, but also because of the impact, it has on government budget issues (Gore, 1993; Victora, Habicht & Bryce, 2004). Data management is not new to government, its origins can be traced back to the information society, which goes back as far as the early 1980s through the establishment of progressively influential and inexpensive systems used through computers with data-processing powers that continued to increase every 18 months (Cloete, 2009).

Data management environment is defined as a "collection of processes and systems that follow a multi-stage architecture" (Even and Shankaranarayana, 2009, p. 128). This system made it probable and easy for organisations to collect, store, assess and process comprehensive information (Cloete, 2009). These new developments in data management resulted in approaches that are more rigorous to research, also equipped public sector managers to make better-informed decisions, and have brought about radical approach in the policy analysis sphere, which is known currently as the evidence-based policy analysis (Cloete, 2009 and Wastiau-Schluter, 2000).

In the UK, data management systems originated from the medical sector in the early 1990s, when they were promoting the use of evidence-based in medicine (Sutcliffe & Court, 2005; Walshe & Rundall, 2001). They state that data management became popular and gained political recognition under the Blair administration in 1997. Since the inception of evidence-based management, public sector managers view data as an important driver of the organisation's performance, and some expend considerable energy developing strategies to improve management of data (Pipino and Wang, 2002).

Evidence based management is a tool utilised by social service managers to clarify how information is utilised for strategic decisions employed to improve problem solving (Briggs and McBeath, 2009). Hoffer (2004, p. 601-604) defines data as "stored representations of objects and events that have meaning and importance in the user's environment" and information as "data that have been processed in such a way as to increase the knowledge of the person who uses the data".

This study argues that effective decision-making depends on the use of data, including systems that manage that data. Likewise, the choices made during the collection and use of information will determine the effectiveness in detecting complications, defining priorities, identifying of inventive solutions, and allocating resources for improved social development outcomes (Stansfield, Walsh, Prata, & Evans, 2006). Nonetheless, having data or information alone does not transform outcomes. Data, which are simple measures of characteristics of people and things, have little inherent meaning or value (Kanter & Summers, 1994). Analysis of the data enables the identification of patterns, thereby creating information (Hussein, 2012).

The primary aim of M&E system in South African public service is for the provision of information for decision-making (The Public Service Commission, 2012). They further state that the country's public service data collected for M&E purposes is often wide-ranged and fragmented. The Public Service (2012) then advise that for the public sector to understand the complexities and diversity of the M&E data, there is a need to interpret data into useful strategic management information, and also that it is necessary to integrate the data into a system, hence, the development of data management systems in South African public service.

Furthermore, performance managers can be able to assess performance of programmes systematically using regular record keeping and analysis (Mithas, Ramasubbu & Sambamurthy, 2011). Also with data, strengths and weaknesses of the implementation activities are identified early and corrective action taken if necessary, without waiting for the completion of the programme (Hussein, 2012).

In this way, data management as part of monitoring systems provides constant feedback on programme implementation, enhances the on-going learning experience of programme implementers, improves subsequent planning processes and guides implementation towards achievement of desired goals (Hussein, 2012). With the increasing demands for a government that is accountable and complexity of trials in public sectors, there is a corresponding need to be vigilant about data quality, data management and data use (Dishank, Mira & Dikshit, 2013).

This study sets out to trace how data collected, collated, analysed, stored and reported by the GDSD has influenced decision-making, including planning in the programmes of the department. Even though the studies reviewed did not talk about data management in the department of Social Development, one can extrapolate that data management is essential to public sectors to produce useable information that can be used for evidence-based decision-making and planning. This study assumes that organisational performance depends, in part at least, on effective decision-making based on good data management. The issues of data use, which this study probes, is aligned to questions about data management in the public service and the role played by public service managers in ensuring that informed decisions are made.

2.2.2 Data management in the National department of Social Development

This section adopted the Social Development, North West province data flow and information management policy. Throughout this section, an inference to this policy is conducted to give a description of Social Development data management status quo. Like its counterparts throughout the country, the National Department of Social Development is faced with internal and external demands for better reforms in public management. With the new discourse of results-based management in South African public sectors, it has made it necessary for NDSD to begin to measure outcomes and adopt evidence-based policy making (Department of Social Development, Annual Report 2011/12). In response to this, NDSD established monitoring and evaluation systems to monitor its national social service programmes (The Public Service Commission, 2007).

It is also mentioned that the core foundation of monitoring and evaluation is that services can be continually improved through informed decision-making and social learning, leading to social and economic progress (A Monitoring and Evaluation Policy for Social Sector, 2005). To strengthen the department's M&E system, a data and information management policy to provide guidance on how data flow and information managed in the social welfare sector was developed (Department of Social Development, North West province, 2013).

This policy seeks to describe the department's information management, purpose, data collection tools and their revision, data flow and timeliness, reporting and feedback functions of the system (Department of Social Development, North West province, 2013). Kawonga, Blaauw & Fonn (2012) add that a data management policy includes the systematically collection and analysis of data including input, process, outcome and satisfaction data, to help improve the department's programmes and organisational performance. The purpose of this policy is to provide a framework within which data and information will be managed in the department (Department of Social Development, North West province, 2013).

Furthermore, the policy describes the manner in which data will be collected, collated, captured and analysed by provincial departments (Department of Social Development, North West province, 2013). Moreover, the method to be followed for feedback purposes at different levels, and also the data flow and roles of each person in the information management cycle is highlighted in this policy document. This policy is geared towards collection of quality, consistent, complete, credible and reliable data. It also promotes the use of data in guiding operational and strategic decision-making in the department (Department of Social Development, North West province, 2013).

It then recognises the importance of managing data or information in support of continuous use of information as a strategic choice that the department employs in managing its activities (Department of Social Development, North West province, 2013). Data collection, data management, data analysis and data use all play crucial roles in effective implementation of programmes and organisational performance at large (Kawonga et al., 2012).

GDSD needs data to assess the effectiveness of their programmes, to guide policy decisions, and to shape implementation processes (Mao, Wu, Poundstone, Wang, Qin, Ma, & Ma, 2010). An effective data management recognises that raw data on its own does not ensure its use (Wang, 1998). Rather, once it is collected, it must be packaged according to the understanding of the problem and be analysed in a manner that will yield useable information (Mao et al., 2010).

Limitations that hamper the production of quality and timeliness data to improve regular tracking of progress made have been identified to be the cause of poor data management in developing countries (Chan, Kazatchkine, Lob-Levyt, Obaid, Schweizer, Sidibe & Yamada, 2010). Finally, tracking progress towards the implementation and achievements of Millennium Development Goals for social development requires the provincial departments of Social Development such as GDSD to measure their key indicators and produce evidence-based strategic plans to achieve and document that progress (Stansfield, Walsh, Prata, & Evans, 2006). Effective responses to programmes that are struggling to pull through depend on timely information.

2.2.3 Gauteng Department of Social Development and data management

The DSD provincial departments including the Gauteng Department of Social Development established directorates specifically championing the implementation of M&E system and equipped to use information generated through M&E system to monitor the department's programme. Implicit to the GWM&E policy is that data is an important source of information to guide improvement at all levels of social development programmes and to hold managers and officials accountable (Marsh, Pane & Hamilton, 2006). The establishment of the Strategic Planning, Monitoring and Evaluation unit in GDSD has increased the collection of data by the five regional offices. The resources for data management activities such as acquisition, processing, storage, and delivery as well as investments in related technologies are also increasing with the increasing data volumes (Marsh et al., 2006). Yet, with the GDSD with its data and information management policy, there are still many unanswered questions concerning the use and interpretation of data to inform decision-making and programme outcomes (Marsh et al., 2006).

The GDSD data and information management policy is developed to guide data flow and Social Welfare Information Management in the department (Gauteng department of Social Development, Policy Framework on Management of Performance Information, 2013). In the data and information management policy for DSD, data is defined as a source of all unanalysed information that documents resources and activities associated with the business of the organisation for example, human resource data, service oriented data, programme and project data (Department of Social Development, North West province, 2013).

The policy document further defines data management as a logical process of capturing and storing information with protocols, systems and procedures, whilst information is regarded as an integral part of management aimed at improving the Social Welfare and quality of life for all citizens in the province (Department of Social Development, North West province, 2013). This policy emphasises the importance of the Social Welfare information management system as a tool for facilitating management decision-making, planning, resource allocation and monitoring and evaluation (Department of Social Development, North West province, 2013). Through this policy, the DSD recognises the strategic role that data and information play in the day-to-day administration, strategic management of the department and the oversight that should be provided by the Legislature and Parliament (Department of Social Development, North West province, 2013).

This policy document also outlines the flow of data in the Gauteng Department of Social Development. It clearly shows the steps to be followed by the department from the collection of its data to the submission of data to the National Department of Social Development. Provincial departments like the GDSD, Strategic Planning, Monitoring and Evaluation unit is expected to compile, verify and sign-off the department's reports from its five regional offices to the head of the department (Gauteng department of Social Development, Policy Framework on Management of Performance Information, 2013). This process continues internally in the department with the chief directors submitting the files of their directorates to the Strategic Planning, Monitoring and Evaluation unit for compilation and development of a provincial, report (Gauteng department of Social Development, Policy Framework on Management of Performance Information, 2013).

When all the reports are received from the five regional offices and the department's chief directorates a development process together with a review and implementation of data sharing mechanism begins (Gauteng department of Social Development, Policy Framework on Management of Performance Information, 2013). These reports compiled by the GDSD's Strategic planning, Monitoring and Evaluation unit are developed for various stakeholders such as the National department of Social Development and provincial Treasury as required by the PFMA (Gauteng department of Social Development, Policy Framework on Management of Performance Information, 2013). It is further stated that a failure to comply with the data and information management policy in the department of social development will lead to disciplinary actions against any employee contravening with it (Department of Social Development, North West province, 2013).

2.3 Methods, data, findings, and conclusions studies and evaluations of corrective policies

The practise of using data management for evidence-based decision making and planning in South African public sectors is new and is growing with the demand for accountable government. Due to this, limited studies have focused on data management in South African public sectors particularly in the Department of Social Development. Therefore, in this section studies conducted somewhere else and in another field be private or public have been reviewed.

2.3.1 Past and Current studies discussing the implementation of data management

Pappaioanou, Malison, Wilkins, Otto, Goodman, Churchill & ... Thacker, S. B. (2003) observed the manner in which public health care professionals use data for decision-making in Bolivia, Cameroon, Mexico, and the Philippines. The majority of this study consists of the manner in which the public health care professionals view data. In this article, Pappaioanou et al. (2003) highlight the fact that many public health professionals are still making decisions based on their intuitions and politics relations rather than rational thinking and informed decision-making.

The other direction that they took in this study is that of examining the types of trainings that the public health professionals undergo through as it influences the manner they view and use data when making public health decisions. They state that many public health professionals are trained on scientific methods and rationally based problem solving, due to that, they tend to lack management-related skills, which would assist them in ensuring that data is used effectively for decision-making (Pappaioanou et al., 2003).

In this study, health problems from each participating country were identified through assessments and development of problem-driven implementation plans for solutions also took place. An audit skill of the health professionals was also needed for assessment of data based problem solving. Results of this study showed that the Data Decision-Making (DDM) strategy improved evidence-based public health.

Odhiambo-Otieno (2005) conducted an evaluation study to examine the existing District Health Management Information Systems (DHMIS). This study discussed the important issues that affect the usability of DHMIS to support District Health System (DHS), as well as the DHMIS's ability to meet the user's needs. In addition, this study discussed the issues and challenges of implementing appropriate and coordinated DHMIS in environments that depend on external support.

The study applied a qualitative method with quantitative features to collect data using questionnaires, focus group discussions and review of relevant literature, reports and operational manuals of the studied DHMISs. The study found that strategic personnel at the DHS level were not involved in the development and implementation of the systems. Odhiambo-Otieno (2005) also found that the DHMISs were fragmented that the system itself was not computerised. In addition, key resources for DHMIS operation were inadequate. He further found that the institution studied did not have basic DHMIS equipment for information processing.

In Virginia Commonwealth University (VCU), in a study conducted about how data management is practised, Swartz (2007) talks about the use and misuse of information by organisations worldwide. In this study it is revealed that most organisations, be it public or private, data are not managed well.

This is despite the knowledge that good data is important for organisation's performance. This study was conducted between year 2000 and 2007 to 175 public and private sectors that practise data management and the majority of those organisations scored below average on the management of data, with less than 10 percent using their data management systems effectively, whilst more than 90 percent ineffectively using their data management systems (Swartz, 2007). He also states that the intelligence of an organisation, relationship and management of customers and the data warehouse itself depend on data and good data management practices. He claims that downfalls of projects, departments including the entire organisations have been the results of bad, incomplete, or imprecise information.

Swartz (2007) in this report mentioned an estimate made by Gartner (2003) that more than 25 percent of important data in organisations is incomplete or inaccurate, and he goes on to argue that 53 percent of the surveyed organisations experienced challenges and suffered losses due to poor quality of data. He also found out that many organisations see data management as a maintenance cost than a system that is there to assist them. Finally, the VCU study aimed at finding out why data management practise in many organisations was below expectations.

For this study, the findings suggest that there is a need for more formal feedback loop to improve data management practise. In the end, Swartz (2007) promotes a high understanding of data management processes by each and every person in an organisation especially the executives and puts an emphasis on the importance of data management systems that are effective and their role in an organisation. He claims that without this understanding, organisations stand no chance in achieving their goals.

In a study conducted by Wilkins, Nsubuga, Mendlein, Mercer, & Pappaioanou (2008) in a health department, a claim that a use of timely and high-quality information by ministries of health can result into effective and efficient identification and redress of health problems is made. They further highlight that a development of Data for Decision Making (DDM) project in year 1990 to enhance and promote the use of data in the process of making decisions was established by the US Centers for Disease Control and Prevention (CDC) together with the US Agency for International Development (USAID).

In this qualitative study, Wilkins et al. (2008) applied the DDM surveillance to six systems in five of the participating countries interviewing them using informal conversation or an interview guide approach. These were staff members at health ministry at all government levels. They also examined attributes of accuracy, flexibility, timeliness, simplicity and acceptability. Finally, Wilkins et al. (2008) identified the problems facing decision makers and preventing them from accessing information. In their assessments, they noted more than eight problem areas that are stumbling blocks for decision makers to access the information. The most common problem in all the participating countries is reported to be the design of the information system followed by the staff training on data management and use of data from the information system.

In the end, recommendations were made to the participating countries that an improvement of the information availability to the public health decision makers is vital and that it will happen when thorough evaluations on their existing systems are conducted, designed evaluations to assess specific causes of these deficiencies are needed, evaluation results to be linked to interventions to improve systems and lastly sustained attention to improve surveillance systems are needed.

Ben-Arieh (2008) conducted a qualitative study to understand how the information collected using social indicators has influenced decision-making in a social welfare sector. This study employed a case study method on two projects and data from the two projects goals and objectives was used. Ben-Arieh (2008) then conducted in-depth interviews to the staff from the two projects, the decision makers and policy makers. One of the key findings mentioned in this article is that the data collected by the projects had some form of an influence even though mostly data presented to the users was dated. He mentions that by using a case study method, they were limited from generalising the findings of the study and also that the study was conducted by institutes who were part of the studied phenomenon and that could have created some biasness in answering the questions even towards the usage of this study's findings.

This study conducted by Mate, Bennett, Mphatswe, Barker, & Rollins (2009) in 2007 between January and December assessed the completeness and accuracy of data for prevention of mother-to-child transmission of HIV (PMTCT) submitted to health information system in three Kwa Zulu Natal districts. They mention that an obtainment of accurate and complete data remains a challenge in the country even though efforts to reach the target are implemented daily.

They have adopted quantitative methods of research using survey design, randomly selecting sites and using the registers to gather data from 316 clinics and hospitals in the three studied districts. The study identified that only 50. 3 percent data elements were accurately reported and that HIV testing of the babies born of a positive mother was inaccurate at 5.3 percent. This study concluded that the data in the researched clinics was incomplete and not accurate to trace progress of the performance and outcomes of the PMTCT care.

Chan, Kazatchkine, Lob-Levyt, Obaid, Schweizer, Sidibe, M. ... & Yamada (2010) observes the recent increased demand on statistics that tracks health progress and performance the call for accountability by health departments at a country and global level. They note that the demand for use of results-based financing mechanisms also creates a need for reliable and timely data for decision-making. In addition, Chan et al. (2010) mentions that there is also an increase on data by countries in the health sector strategic plans. However, there seem to be challenges in responding to this demand due to the availability of data, its quality and use. They further explain that developing countries suffers from poor infrastructures, which affects the production of data.

The majority of Chan et al. (2010, p. 3) article consists of suggestions for how healthcare providers can improve "data availability, quality and use". They claim that strengthening of country capacity in data collection, processing, using and analysing is fundamental. Chan et al. (2010) also identify gaps that are in the health information system resulting to the poor monitoring of MDGs and its goals. They state that the health ministry lacks sound information to monitor and track trends in mortality and morbidity. They also claim that countries can benefit from having better access to data and statistics, as this will foster collaboration amongst each other and will results to use of existing data.

They continue to emphasise the importance of collaboration for data use to be effective. They even mention that there is a need for an enhancement of professionals and institutions for data management at country levels and that development partners as an integral part of these programmes must continue to support them. They also mention the role played by the information technology in data management as they are changing the manner of which data was collected, transmitted, stored, analysed, disseminated and even shared. Chan et al. (2010) state that monitoring and evaluation systems in health work with different types of data, which are derived from multiple sources.

This study was conducted to eight agencies working in global health. These agencies agreed on the importance of strengthening the five key data sources namely, "capacity for analysis, synthesis, validation, and use of health data in countries" Chan et al. (2010, p. 3).

Munge and colleagues (2014) conducted a situation analysis of information management (IM) in selected Kenyan government departments. The study was framed by the country's vision 2030, which had been adopted in 2003. Immediately after the adoption of this strategic plan, concerns about the country's economic performance rose (Munge et al., 2014). The authors noted that this made information management one of the critical components for effective management and service delivery in Kenya. The authors conclude that information became "an essential of effective management and service delivery in all organisations, in both the private and the public sectors".

Their findings of this study were that information collected by the Kenyan government ministries is poorly managed and that the IM infrastructure is inadequate. They demonstrated the evidence for this claim by referring to the Sessional Paper No.1 of 1994 on recovery and Sustainable development to the year 2010 and many other failed initiatives. Munge and colleagues (2014) reiterated that the success of the Kenya Vision 2030 depends on the management of the information. In this article, Munge et al. (2014) focused on three objectives namely,

- To what extent to which IM is implemented in Government ministries in order to support the realisation of the Kenya Vision 2030,
- Investigate the issues that the ministries face with respect to their ability to effectively manage information within the Vision 2030 framework
- Suggest measures that can be taken to ensure that IM is successfully integrated in Government ministries in support of the Kenya Vision 2030 implementation.

Munge and colleagues (2014) used a qualitative research method with in-depth interviews of 60 respondents taken form six line ministries to gather data for this study. They also used document analysis together with literature analysis to build an understanding of the extent to which IM has been implemented in Kenyan government ministries.

In this article, Ngoepe & Ngulube (2014) mention that AGSA places a high premium on proper records management as the first of six good practice indicators for government departments to achieve positive audit results. Thus whilst researchers and organisations around the globe recognises the importance of good record keeping, AGSA notes that record management is often not regarded as essential for good governance in the public sector of South Africa (Ngoepe & Ngulube, 2014). Furthermore, in this article, it is stated that public sector managers do not rank record keeping and management highly.

Instead, they see is it as an abundant chore with which they should not be concerned about (Ngoepe & Ngulube, 2014). This has resulted into poor management of the records. They also note that in South African public sector, records are only managed on the last phase when they are to be metamorphosed into archives. Data collection tools employed on this study was a combination of self-administered questionnaires then interviews were used to supplement the data collected form those interviews.

The unit of analysis for this study was the governmental bodies, which consisted of the three spheres of government, namely, national, provincial and regional or local municipalities. From the 171 of questionnaires distributed, only 55% responded. Finally, record keeping or management was identified as one of the contributing factors to poor audit results. It was also found that public sector managers were still not taking record keeping or management serious. Though the main focus of this study is records management, it affects and talks to data management in public sector.

In this article, Pirog (2014) begins by acknowledging that there are many forces at play for policy analysis and development but that data types available to researchers determines the important changes needed to shape the field of policy analysis over the next decade. He argues that, this is because, research designs and approaches are codependent with data, and that changes in the types of data available to public policy and management researchers will transform the field.

He then defines data as key inputs to the development of public policy and research management. He also mentions that data today is of much better quality than in the past. He further differentiates data into different types, selecting administrative data as an old practice in government sectors that in fact policy analysts and research managers have used them for years. Hence, using data should not require much from public policy analysts and research designs.

However, data management systems should assist researchers to have more access to a comprehensive data on citizens and should be able to improve public policies and research management. He makes a rational claim that efforts to records in government sectors and agencies are taking place at all government spheres. However, most governmental information systems are designed for the operation of programmes not for research purposes. As such, how the data are stored can be inconsistent with data storage for research purposes. Nonetheless, government sectors are continuing making efforts to merge data across their spheres, at both the federal and state levels.

Pirog (2014) states that it may be easy to access datasets for policy analysis but changes in some of the datasets are needed and it will allow new and important avenues of inquiry. He then supports this with an example of a human genome, which was declared complete 10 years ago but now due to rapid improvement of data numerous collaborative groups have amassed genetic data on tens of thousands of individuals. Pirog (2014) differentiates data into two, geospatial data and big data. He states that geospatial data is a data about spatial relationships between places.

He mentions that policy analysts are becoming more aware that spatial relationships between places matter and play an important role on policy outcomes. He notes that geospatial data is also not new but also gaining more popularity with time. He then moves to big data, stating that, it is labeled in many ways including data analytics, business intelligence or predictive analytics. He claims that data is not only characterised by volume but also by its velocity. In the end, new data management and access are here to transform the conduct of policy and management research (Pirog, 2014).

Chen, Hailey, Wang & Yu (2014) conducted a research study to explore data quality methods in Public Health Management Information Systems in year 2014. One of the key objectives for their study was to assess data quality and assess the performance of the Public Health Management Information Systems.

In this study, Chen et al. (2014) used quantitative methods in the form of descriptive surveys and data audits. Their study's findings were that quality of data use and data collection processes have not been given adequate attention in the public health field.

Based on the reviewed articles, one can deduce that public sectors are fragmented with inaccurate and unclear data, which is also not managed well and used for its purposes.

Moreover, it is clear that most departments are collecting data for storage not for informing decision-making, policy-making nor organisational performance. Furthermore, data management in these articles is presented to be ineffective and inefficient, as the data users themselves are not well informed on their purpose and function.

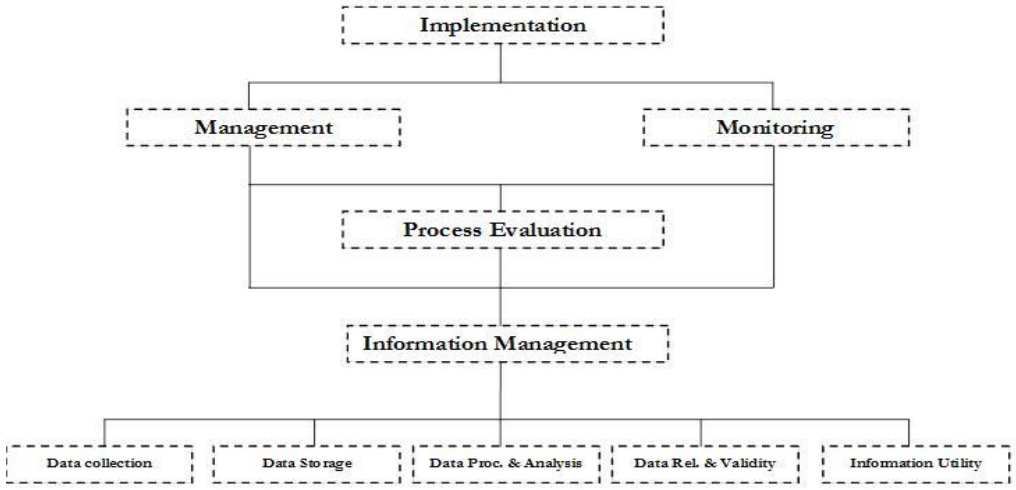
2.4 An introduction to data management studies

The field of study commissioned for this research is implementation as it pertains to data management. Public managers in democratic governments such as South Africa need to adhere to certain democratic norms and standards that seek to improve service delivery by ensuring that evidence-based decision-making is conducted (Naidoo, 2011). The specific manner in which the implementation and data management relationship plays out is described in section 2.4.1, which specifically describes the configuration of management and monitoring as components of the field of study. This is followed by section 2.4.2 narrating the purpose of the field of study, with 2.4.3 discussing the major components of the field of study, whilst section 2.4.4 presents the processes in this field of study. We then present section 2.4.5, which discusses the established facts on this field of study and conclude this chapter with section 2.4.6 demonstrating the key issues and debates on this field of study.

2.4.1 Implementation

This section appraises implementation, in terms of its classification and nature, which illustrates the dynamic nature of the discipline. Further attention is paid on the area of definition to determine how implementation influences the effectiveness of data management in a public service. This set the basis for the assessment of data management in the Gauteng department of Social Development. The diagram below depicts the implementation process for data management.

Figure 1- Implementation process



Source: Constructed from literature review of Monitoring and Evaluation

2.4.1.1 The operational definition of Implementation

This review begins with a detail description of the field of implementation, as this study seeks to understand the implementation processes for the employment of data management in the Gauteng provincial government of Social Development. It is worth to note that the philosophy of implementation has evolved since the period of Pressman and Wildavsky in 1973, which was about the top-down approach suggesting that a policy failure was results of the underlying theory rather than the execution of the policy as stated by (Hill & Hupe, 2002) in their book.

The evolution of implementation mirrors the manner in which the public service perceives the importance of service delivery and public administration. Burke, Morris & McGarrigle (2012) state that the field of implementation is broad and that it spans to each sector, therefore, they refer to implementation as the delivery process of any plan or action. While Hill & Hupe (2002) understand implementation through the eyes of Pressman and Wildavsky, that implementation is a process that carries out, accomplish, fulfil, produce, and complete. This definition embodies the role of public servants in the government bureaucracy to give efficient and equitable service to the people. Burke et al. (2012) further state that implementation relates to policy, which is the process of involving a series of government activities to achieve the goals and objectives of their departments.

In their book, Hill & Hupe (2002) continue to explain implementation by using Mazmanian and Sabatier (1983) definition that it is the method of carrying out policy decisions, which are incorporated in a statute but which can also take the form of important executive orders. They emphasise that for implementation to take place, there must be something out there otherwise there would be nothing to move towards in the process of implementation. Therefore, implementation is the process that acts as an intermediary between policy decision represented by the allocation of resources to a solution and results to be obtained (Tödtling-Schonhofer, Colgan, Martinos & Sanches, 2003).

They further explain that implementation take place in a cyclic manner, which begins with problem identification and the formulation of possible solutions; followed by the selection of a solution by allocating financial resources to the implementation, then ends with results evaluation. Thus, implementation is that part of the cycle where inputs are converted into outputs (Tödtling-Schonhofer et al*.,* 2003). In the context of this study, implementation is understood as a complex policy cycle where policy theories are put into practise through the involvement of many actors within the department.

This section has shown the evolution of implementation, and described it using different views from different authors. It also demonstrated that for data management to be effective, a proper implementation process would have to be followed by the Gauteng department of Social Development, from data flow and management policy formulation to its implementation. Furthermore, implementation heavily depends on the policy formulation, introduction of the policy and presentation of the policy to the policy users or implementers. It does however, remain an important feature and tool for the effectiveness of data management. The next section narrates the purpose of implementation.

2.4.2 Purpose of Implementation

In this part of the section, the purpose of implementation in a public service is analysed. This analysis is necessary, to understand its rationale, in terms of data management context. Butler & Allen (2008) note that policy implementation has recently been revisited as an important issue in public service.

DeGroff & Cargo (2009) expands this statement by stating that implementation is one of most important stages in the policy process. They further state that implementation is the unique transformation phase of a policy idea into an action. This is the process where the proposed programme interventions are put in place. The purpose of implementation is articulated in its definition, as a set of activities formulated to put into practise the policy or programme interventions (Durlak, 2011). Based on the reviewed literature, one can draw that success of programmes depends on implementation process.

Further, Durlak (2011) reckons that when implementation is neglected, programmes tend to fail to reach the intended outcomes. Moreover, implementation is characterised by action, this is where practical work take place (DeGroff & Cargo, 2009). Durlak (2011) also emphasises the importance of implementation forb obtainment of intended outcomes. It is further stated that the purpose of implementation is to transform ideas expressed as policy by the national sphere of government into action (DeGroff & Cargo, 2009). These actions transformed from the policy are normally aimed at improving the status quo of the organisation, in the case of data management; it is formulated to improve the quality of services delivered and organisation performance through informing managers in decision-making.

This section has presented the purpose of implementation related to data management, by describing the implementation purpose, in attempting to demonstrate its importance. Implementation purpose indicates that data management is a tool, which is only effective if implemented in a method, which increases its use. The method in which the implementation of data management is embraced by the Gauteng department of Social Development will be demonstrated when the study has been conducted. The next section discusses the major components in the study of implementation.

2.4.3 Major Components of Implementation

There is a spectrum of views on what implementation components should be and what they should achieve. Based on this study's context, in this section two components of implementation have been identified to be management and monitoring. A brief description on these components is conducted with the aim to illustrate their relation to data management and its utilisation.

2.4.3.1 Management

Management is one of the essential components for effective implementation of any project, programme or intervention. On this paragraph, a short description of what management is and its role is presented. Management involves the designing of strategic plans, setting of objectives, deployment of resources whether human or financial to contribute to the success and achievement of the intended results (Abbah, Okeke, ul Haq, Jindong, Hussain, Anjum, ... & Narendra, 2014). This implies that managers need to have certain skills to perform this activity. Shenhar & Renier (1996) further define management as an act of arts because of its personal activity and a science because of the knowledge accumulation meant to develop managers.

As such, management process includes the storing and recording of information for further use in an organisation (Abbah et al., 2014). In this context, management is an activity, which is conducted during the planning phase of an implementation to the implementation itself and even after the implementation has been conducted.

2.4.3.2 Monitoring

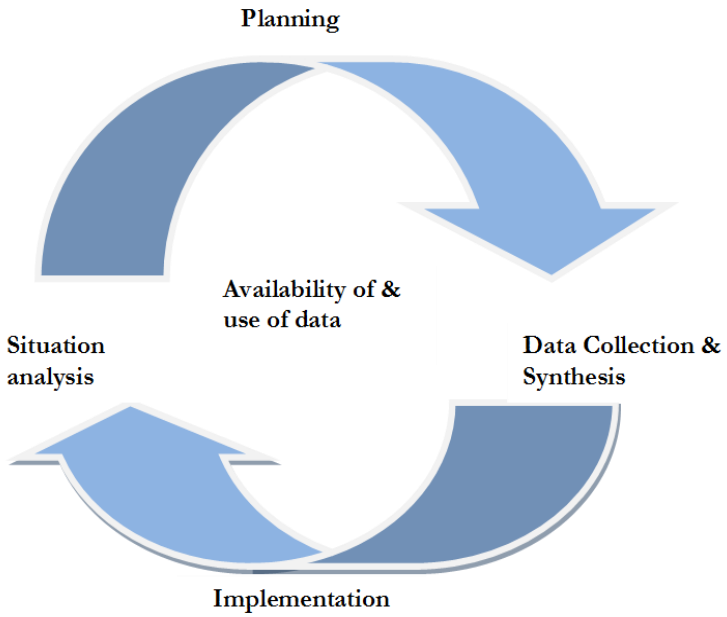
According to Kusek and Rist (2004, p. 12) monitoring is a "continuous function that uses the systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing development intervention with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds".

One of the monitoring system's functions is to provide the project management with necessary continuous information throughout the implementation of the project for effective decision-making (IFAD, 2008). In this manner, data management as part of monitoring system provides constant feedback on programme implementation, and also enhances the ongoing learning experiences of the programme implementers while improving the planning process through the guidance of the implementation process towards the achievement of the desired goals.

In a programme or project, resources, implementation, short-term and long-term results are monitored whereas in an organisation be private or public the performance of that organisation is monitored at large with individual performance and possible risks in that organisation monitored also (Kusek and Rist, 2004).

Below, illustrated in a diagram is a monitoring process as adapted from the Wits School of Governance, Monitoring Systems class (2014).

Figure 2- Monitoring Process



Source: Wits School of Governance Monitoring Systems Class (2014)

Based on the two described implementation components, one is of the opinion that data management in the Gauteng department of Social Development will be better understood and their effectiveness well interrogated if implementation process is examined. The assertion advanced is that data management play a role in supporting evidence-based decision-making in South African public service, as it advances the ideals of organisational performance.

This is because monitoring, management, at both strategic and operational level require and demand transparency, accountability, and improvement, which resonates with evidence-based decision-making. Data management play a critical role supporting performance management at various levels, in that it contributes to a thinking that is results oriented and provides methodological options to support performance management. On the next section, the type of an evaluation method to be used on this study is discussed.

2.4.3.3 Process Evaluation

The study seeks to know how the intervention, which is the implementation of data management, is being employed or run effectively by the Gauteng department of Social Development to achieve its intended goals. This evaluation study is interested in the implementation of data management holistically, from the way it was designed, implemented, managed towards the achievement of the desired results: output, outcome and impact. To achieve this, the study assessed the three different types of evaluation, namely, formative, process and summative evaluation for a best selection of evaluation method.

Based on the fact that this study is based on the implementation of data management intervention, the best evaluation method for this study is assumed to be process evaluation, as this type of an evaluation will be able to assess the implementation of the intervention from start (input level, activity level) to finish (output level, outcome level and impact level). Moreover, data management is one of complex interventions that the public service is faced with consisting of multiple behavioural, technological, and organisational components and that needs an evaluation process that will be there to assess the intervention throughout its implementation phase.

Process evaluations have therefore become an important focus of data management. Organisation for Economic Cooperation and Development's Development Assistance Committee (OECD DAC) defines evaluation as a systematic and objective assessment of an on-going or completed project, programme or policy, its design, implementation and results. In addition, process evaluation is one of evaluation types, which is a measure of the activities performed by the programme and looks at the beneficiaries of that programme (World Health Organisation, 2000). WHO (2000) continue to note that process evaluations are aimed at improving ones organisation or programme through understating it fully. They further explain that process evaluation assist one to identify active participants and examine whether the programme is meeting its intended goals during its implementation phases.

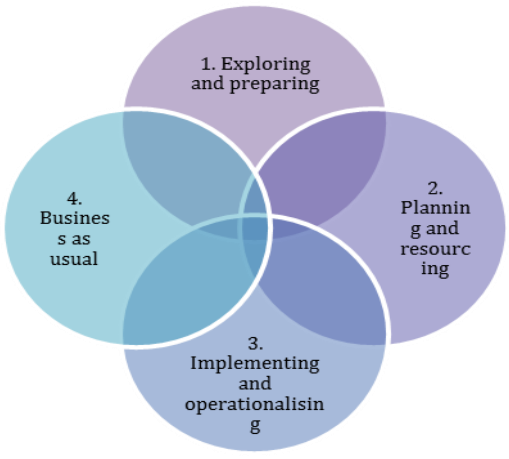
2.4.3.4 Process of Implementation

Butler & Allen (2008) in their article state that it is worth to note that the process of implementation has not been given sufficient attention rather more attention has been given to the study of variables. Based on that information, to demonstrate the implementation process in this study, work done by the Centre for Effective Services (CES), which is about implementation phases is followed (Casey, 2014).

As highlighted in section 2.4.1.1, implementation refers to any innovation, in the context of this study, it relates to policy, which involves a series of activities undertaken by government and its institutions (Burke et al., 2012). They further locate implementation within a policy cycle that involves the design, delivery and review of policies, which can cause some challenges in the implementation process. Moreover, implementation is a process that takes time and occurs in incremental stages, each requiring different conditions and activities (Burke et al., 2012).

It is argued by Burke et al. (2012) that implementation process is supplemented by distinct stages of development and particular activities. They also point out that there are four stages of implementation, namely, exploratory, planning and innovation, with innovation stage fully embedded in the system and forms stage four. Noting the importance of each stage in the implementation process and that they cannot be skipped for effective implementation (Burke et al., 2012). The four stages, as described by Burke et al. (2012), are illustrated and explained below.

Figure 3-Stages of implementation



Source: Burke et al. (2012)

Stage 1 - Exploring and Preparing

Government departments such as Social Development on this stage plan and decide on what innovation to implement, for example, data management (Burke et al., 2012). Focus is more on the needs and readiness assessment for the innovation (Burke et al., 2012). This is the stage at which government departments, national sphere in South African context develop policies (Burke et al., 2012). In theory, this is the phase where steps to foster a supportive climate for the implementation of programmes should take place (Burke et al., 2012). Directorates or departments to lead these initiatives are also identified on this stage. This stage only ends when an adoption of a particular innovation has been made (Burke et al., 2012).

Stage 2 - Planning and Resourcing

Immediately after the first stage, a clear plan on how the innovation will be implemented is drawn outlining the term needed to guide and lead the process (Burke et al., 2012). The implementation plan has its own delivery models that need to be clarified such as outlining the inputs, outputs and outcomes (Burke et al., 2012).

Stage 3 - Implementing and Operationalising

This is the stage where the innovation comes into effect. As mentioned in the articles by Burke et al. (2012, p. 21) below are the activities that take place during this stage:

- Providing on-going coaching and assistance to staff
- Monitoring on-going implementation
- Changing systems / culture, as necessary
- Explaining and communicating why the innovation is necessary and what it will look like when implemented.

Stage 4 - Business as usual

This is the final stage where the innovation is already mainstreamed and operational (Burke et al., 2012). During this stage, the innovation has also become embedded and outcomes are ready to be evaluated (Burke et al., 2012). An on-going monitoring process takes place in this stage to ensure that the innovation is achieving its intended goals and maintained throughout the system (Burke et al., 2012).

2.4.4 Established facts about Implementation

As the field of implementation continues to grow and develop over several decades, it is therefore necessary to take notice of what has happened and what has been achieved. If not, facts gained will become increasingly distorted and inaccessible. In this section, we look at established facts in the implementation field. Elmore (1979), Ingram & Schneider (1990) and Sinclair (2001) state that Pressman and Wildavsky coined the term implementation in 1973 when they conducted a study on Economic Development Administration (EDA) programmes in Oakland, California. Alexander (1985) and Pulzl & Treib (2006) expand by stating that implementation existed and has been practiced by many organisations before it gained its popularity in 1973 when Pressman and Wildavsky wrote a book titled "implementation".

Then, Linder & Peter (1987) further clarify that the term implementation became a social science concept after Pressman and Wildavsky's book came out. They further note that the term implementation has been used to describe policy decisions and processes. Linder & Peter (1987) mention that there is a strong belief that if implementation is successfully conducted, success of achieving policy intended goals is inevitable. They further note that implementation theorists are divided into three distinct groups, with the first classical generation believing that "nothing works". The second generation of scholars challenged the basic assumptions of the previous contingent; and to that extent construed of implementation primarily as a complex political process, which often yielded failure than success (Pulzl & Treib, 2006). The third group, according to Brynard (2006) consists of theorists whose interest is on development prospects and to that extent focuses more on how implementation works in general.

Not only that, it has also been discovered that implementation scholars regularly pay a greater attention on five policy issues, namely, health, social, educational, environmental and economic issues (Saetren, 2005). Due to implementation's foundation, which is a case study that has resulted into the implementation theory presenting challenges when it comes to translating it into useful guidance for policymakers (Elmore, 1979). This is also observed through Pressman and Wildavsky's implementation facts as they are based on the EDA study, which discovered that implementation, should never be separated from policy (Pressman & Wildavsky, 1984).

On the reviewed literature, it has emerged that Pressman and Wildavsky are the pioneers of the implementation field. Even though Pressman and Wildavsky's study is 42 years old, their theories on policy implementation are still relevant to this day and will be used throughout the study. The next section will present key issues and debates in the field of implementation.

2.4.5 Key Issues and debates in implementation

Section 2.4.1.1 highlighted the fact that implementation is key to policy success; it is therefore necessary to assess the key issues and debates in implementation process. In this section, an attempt to describe key issues in implementation is conducted using studies from around the globe and the African continent. In the literature reviewed, policy implementation is said to be one of the major problems facing developing countries like South Africa.

As defined in the previous sections, implementation refers to the activities that are carried out in attempt to achieve the intended goals of a policy and that implementation problems commence when those intended results are not achieved (Makinde, 2005). He further states that the key issues affecting success of policy implementation are poor or lack of communication between policymakers and policy implementers. In addition, the lack of resources be it personnel or material to carry out the implementation process, as well as dispositions or attitudes amongst the implementers or managers, and bureaucratic structure (Makinde, 2005). He then mentions that these four factors operate simultaneously and if one is missing, the success in implementing that policy is non-existing.

According to Weaver (2009) sources of implementation, problems are interpretation issues, which are leaving key elements of the policy unspecified, this leads to time loss as implementers argue about the ambiguity of the policy objectives. Weaver (2009) further move to what he calls organisational mission issues, which is lack of recognising of the organisation's mission as well capacity of potential implementing organisations. In his report, Weaver (2009) advances that political interference plays a role in implementation issues due to politicians who intervene in the process solely for electoral reasons. On this political aspect, Piotrowski, Zhang, Lin & Yu (2009) support Weaver (2009) that policy implementation's success depends on political will of that country and government.

The description of implementation issues in this section show that implementation process if done well offers a potentially powerful tool to ensure that public service make informed decisions and that government policies live up to their promise.

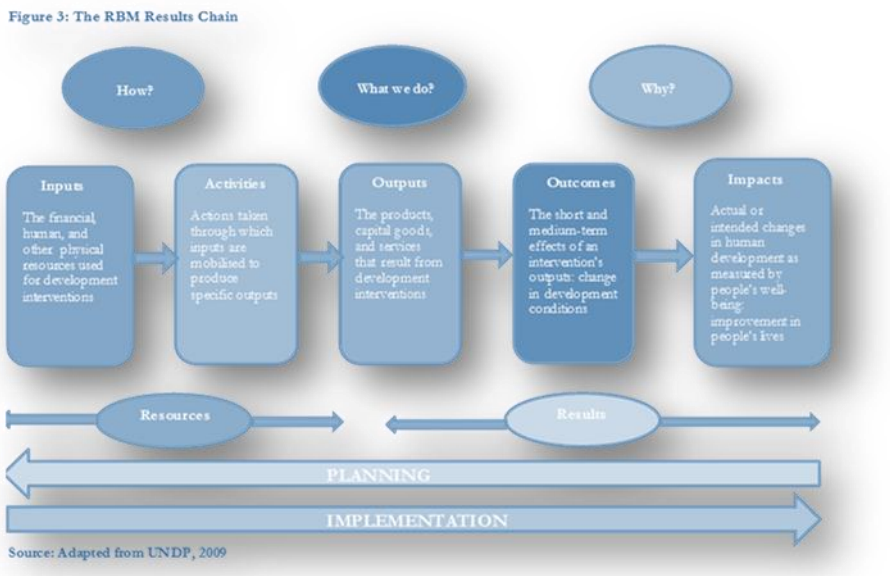
2.5 Key attributes of an implementation exercise

For us to understand the attributes of this study, it is important to appreciate the field of study as identified to be implementation in section 2.4.1. There are several definitions of implementation as demonstrated on the previous section but for this study, it will be defined as a process that carries out, accomplish, fulfil, produce, and complete as defined by Pressman and Wildavsky in Hill & Hupe (2002). Underlying this description is that implementation depends on something in order to take place or otherwise there will be nothing to implement —that 'something' in this study is data management.

It has also been stated in the previous sections that implementation has two major components namely, management and monitoring, with management being the process of designing strategic plans, setting of objectives for the programme also the deployment of resources towards the achievement of the intended results (Abbah et al., 2014). Whilst, monitoring being defined as the routine tracking and reporting of priority information about a project or programme (OECD, 2002). This study is applicable to both management and monitoring implementation components. Management and monitoring concepts were unpacked on the previous section, now; we establish how each element of management and monitoring reinforce each other.

Management and Monitoring share common attributes, which are the logic model with monitoring function being a tool and strategy for attainment of information on how the data management is being implemented. While, management is a normative concept on how information management should be managed throughout the logic model. Information management is defined by Drucker (2001) and Saint-Onge (2002) as an organised data that is endowed with relevance and purpose and that this is an interpreted data. Information management has main attributes which are measures that one must consider when conducting an implementation study and these will be demonstrated through the results chain. First, this section describes the aspects of a results chain then the study's attributes will be presented in a diagram format.

Figure-4 below illustrates five key monitoring and evaluation attributes that are important to implementation studies —data management.



Source: Adapted from the UNDP (2009)

2.5.1 The inputs

Diallo, Gupta & Dal Poz (2003) and the World Bank (2005) define inputs, as resources be it financial, human, capital stocks, consumables, information and knowledge that are used for the production of outputs. NORAD (1999) further states that inputs are goods and services that are needed for the performance of activities. In the South African context, the National Treasury (2007) defines inputs as what is used to perform the work in the production, delivery of outputs and that can be personnel, finances, buildings, and equipment asserts.

While, in the context of this study, inputs would be the personnel, financial resources used and equipment asserts employment in the implementation of data management. It is also important to note the sources of data inputs, which is the routine monitoring process conducted on a continuous basis as the intervention is being implemented (Görgens-Albino & Kusek, 2009). The nature of data used for inputs is the routine financial monitoring data, which monitors the financial expenditure for the implementation of the activities of the intervention.

Through standard operating procedures data collection on inputs will be conducted in this study. It will also be tartan if the GDSD has a system to collect data on their inputs in place.

2.5.2 The activities

Activities are what we do; they are the processes and actions that employ inputs for the production of desired outcomes (National Treasury, 2007; the Presidency, 2007). The United Nations Development Group (2011) further notes that action words or verbs are used for activities to indicate what will be done in the intervention such that activities are actions taken or worked performed using the inputs to produce specific outputs. Activities are a tool that provides direction on how deliverables of an intervention will be conducted (Couillard, Garon & Riznic, 2009). On this study, the manner in which data is collected, collated, stored, processed and analysed will be assessed, as it is an activity conducted by the GDSD.

2.5.3 The outputs

Outputs are the results of an implementation, which takes place during the activity phase using the inputs invested in a project for the achievement of the desired results (NORAD, 1999). Outputs are the results that are articulated as objectives of a programme, which managers of that programme should work towards or achieve. Managers can be held accountable for not achieving or producing the outputs as they clearly define the management's role and responsibilities (World Bank, 2005; Görgens-Albino & Kusek (2009). It is also important to note that outputs are short-term results and it is what the intervention staff should do and achieve as they are in their control (Görgens-Albino & Kusek, 2009).

They further explain that outputs are a product of an implementation effort through an intervention process. The National Treasury (2007) considers outputs to be what an intervention produces or delivers. For this study, outputs would be an easy access to data, and that data would be interpreted to useable information. Outputs are also said to be tangible and easily measured as they are the immediate product of the intended results. Global Fund (2011) has indicated that data for outputs can be collected on the annual programme review, but the data source for the intervention coverage is the survey, which data was reported to be collected on the interval of two to five years depending on the survey.

2.5.4 The outcomes

Outcomes are medium-term results, which are results of specific outputs of an intervention, thus they are what one intended to achieve (the National Treasury, 2007). Kusek and Rist (2004) add that in an intervention, managers work towards the achievement of outcomes. National Treasury (2007) further advocate for the clear linkage between outcomes and the strategic goal of an organisation as well as the objectives set by the organisation. Moreover, National Treasury (2007) advise that outcomes as intermediate must be realised in five to ten years and are usually not directly measured but reported on. Outcomes role is to show whether the intervention is successful or not. In the context of the study, outcomes would be an increased data sharing amongst directorates, data completeness and regular use of information in decision-making.

This section presented the specific attributes that need to be explored to gather the necessary data that will answer this study's research questions. Conversely, to demonstrate these attributes, a use of results chain is fundamental, as this is an evaluation study. Results chain is defined as a depiction of the causal logic, causal chain, or logical relationships between inputs, activities, outputs, outcomes, and impacts of a given policy, programme, or initiative (the World Bank, 2012). The analysis of attributes of this study is presented in the table below.

Table 1: Examples of data management attributes

Data Type	**Attributes**
Input	Data resources: Funds, personnel, information utility
Activity	Data collection, data analysis & processing, data Reliability & validity
Output	Data reports, data sets
Outcome	Data use in decision making and planning

Now, that we know which attributes to use to gather data for this study, it is imperative to narrate the theoretical framework for this study.

2.6 The theory of change, results chain and framework

The research about examining data management in the Gauteng department of Social Development is based upon an important theory of monitoring and evaluation, which is theory of change. The theoretical framework is logically developed, described, and it is elaborating network of relationships among the attributes that are included in the previous section, which will further be discussed in the results chain section. These attributes are considered relevant to the given research topic, evaluating data management in the Gauteng department of Social Development. This section is mainly devoted on the examination of the prominent work in the field of monitoring and evaluation.

2.6.1 The theory of change

To understand how and why a certain intervention is working, there is a need to understand how the activities of that intervention are expected to lead to the desired results (Mayne & Johnson, 2015). They continue to state that this is supposed to be done both pathway or results chain from activates to outputs and to a sequence of outcomes to impacts and why the various links in the pathway are supposed to work (Mayne & Johnson, 2015). The reason for choosing ToC as a basis for evaluation of this study is that ToC does not only include information about whether an intervention is working or not, but also understands the reasons why it is not working, and that will assist the researcher in making recommendations for the GDSD. This section gives a brief background history of theory of change, followed by the description of theory of change, and then ends with the purpose of theory of change in a programme, project or organisation.

2.6.1.1 A brief history of theory of change

According to Funnell & Rogers (2011) and Vogel (2012), theory of change was coined in the 1960s as a long-standing aspect of programme theory. Funnell and Rogers (2011) further state that theory of change was established when programme theory approaches needed a more explicit focus on the theoretical underpinnings of programmes of how programme planners view the ties between inputs and outcomes, and how programmes are intended to work, to improve evaluations and programme performance.

The concepts and techniques that we now associate with theory of change began to emerge from the work of evaluators in the 1970s and 1980s (Vogel, 2012). Mackinnon & Amott (2006), claim that the term 'theory of change' came into use when the supported community initiatives were introduced in the early 1990s. Then, Steinn & Valters (2012) state that the idea of the theory of change approach seem to have first emerged in the United States also in the 1990s, in the context of improving evaluation theory and practice in the field of community. In its early conceptualisation in 1995, Weiss described a theory of change as a theory that explains how and why an initiative works (Steinn & Valters, 2012). Now that we know where theory of change is from, it is important to understand what it is and the next section will do just that.

2.6.1.2 Theory of change description

Vogel (2012) defines theory of change as a dynamic and critical thinking process, whilst, Mackinnon & Amott (2006) define it as a process of a planned social change, that moves from assumptions that guide its design to long-term goals that seeks to achieve. Whereas, Nan, Mulvihill & Salinas (2010) describe theory of change as just a simple powerful concepts that can improve design and monitoring and evaluation of programmes in conflict-afflicted environments.

On the other hand, Funnell & Rogers (2011), explain theory of change as a process that explains how an intervention, a project, a programme, a policy, or a strategy is understood to contribute to a chain of results that produce the intended or actual impacts. Furthermore, theories of change represent beliefs about what is needed by the target population and what strategies will enable them to meet those needs (Rogers, 2008). Moreover, Vogel (2012) state that theory of change is responsible for making programmes or organisation's initiatives clear through underpinning strategic plans. He then notes that stakeholders develop theory of change in a participatory manner following a systematically rigorous and specific structure that can meet a quality test.

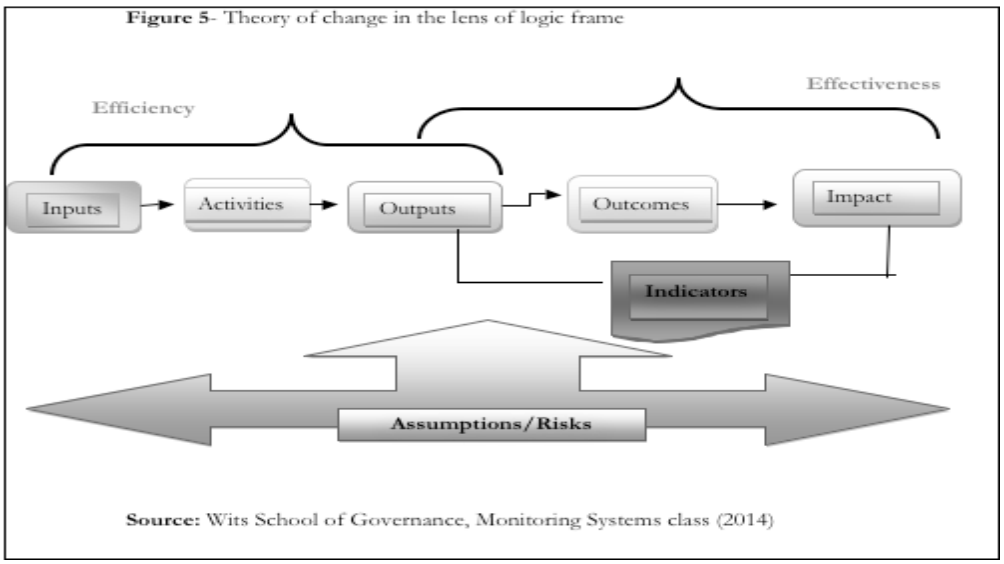
2.6.1.3 Purpose of theory of change

According to Vogel (2012), theory of change is used as an integrated project cycle for planning, monitoring and evaluation frameworks or applied at different points. He further notes that theory of change needs both logical thinking and deeper critical reflection.

Funnel & Rogers (2011) add that theory of change generates an understanding and gives clarity to different aspects of the project cycle and are proportionate to the scale of the initiative. These include the pre-planning stages of scoping and strategic analysis, design and planning, and throughout implementation (Vogel, 2012). Theory of change can be used to support different project cycle activities, such as implementation decision-making and adaptation; to clarify the drivers, internal and external, around an existing initiative; monitor progress and assess impact (Vogel, 2012).

Theory of change also promotes accountability and transparency in an organisation or programme as it serves as a way of explaining why a particular programme or project is funded (Mackinnon & Amott, 2006). It also assists organisations or programmes understand change, manage the change process, and assess the effects of their work (Mackinnon & Amott, 2006). As a planning tool, theory of change helps organisations ask the important questions about their work (Taplin, Clark, Collins & Colby, 2013). It also strengthens partnerships, support organisational development, and facilitate communication (Taplin et al., 2013). The diagram below is adapted from the Wits School of Governance, Monitoring Systems class (2014) and it illustrates the logic in the theory of change. It shows the description of sequence of events in an intervention or programme that are expected to lead to a particular desired outcome or impact.

Figure 5- Theory of change in the lens of logic frame



Source: Wits School of Governance, Monitoring Systems class (2014)

Theory of change or Logic Model

Theory of change has several names such as programme theory; programme logic, impact pathways or logic model and some people use the terms interchangeably (Mackinnon & Amott, 2006). However, a certain group of theorists such as Mackinnon & Amott (2006) emphasise the importance to maintain a distinction between the names as they do not exactly mean the same. In the context of this study, theory of change is the term of choice based on its description and characteristics and it will be followed throughout this study. The next section will narrate the results chain and framework for this study.

2.6.2 The results chain and framework

The preceding section was describing the theory of change for this study, it is then important to look at the results chain and framework for this study. It is also stated that it is difficult to know if programmes have succeeded or failed if the expected results are not clearly articulated (The World Bank, 2012). Hence, the importance of articulating and describing this study's results chain framework in this section. 2.6.2.1 of this section describes results chain with 2.6.2.2 describing the framework of this study.

2.6.2.1 Results chain

Results chain is described as a diagram that depicts the assumed causal linkage between an intervention and desired impacts through a series of expected intermediate results (Margoluis, Stem, Salafsky & Brown, 2009). Whilst, the World Bank (2012) uses the term results framework to refer to results chain and defines it as an explicit articulation of the different levels, or chains, of results, which are expected from a particular intervention —project, programme, or development strategy.

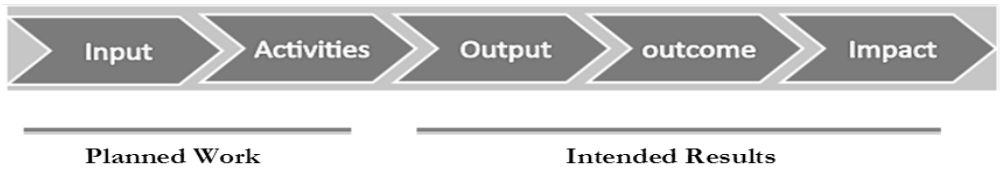
Some authors refer to results chain as a logic model, such as Rush & Ogborne (1991); they define it as a systematic and visual way of presenting and sharing understanding of the relationships among the resources operating a programme, the planned activities, and the anticipated changes or results. The result chain is a depiction of the causal logic, causal chain, or logical relationships between inputs, activities, outputs, outcomes, and impacts of a given policy, programme, or initiative. It describes how specific activities will lead to intended outputs, and where combined outputs may lead to outcomes, and combined outcomes may lead to impacts.

The World Bank (2012) notes that results frameworks are backbones of any monitoring framework. Thus, the success of a theory of change lies on results chain, theory of change needs to know how long it will take to comprehend an intervention and what it will take to do so (The World Bank, 2012). Based on the above description of results chain, one can see that this is also applicable in the implementation of data management as result chains helps to demonstrate from the initial phase, which are inputs to the last phase, which are impacts.

As a result, Margoluis, Stem, Swaminathan, Brown, Johnson, Placci & Tilders (2013) state that in data management, monitoring and evaluation has pioneered the development and use of results chains since its introduction and implementation. Furthermore, The World Bank (2012) notes that results chain demonstrate the causal links between the different levels of implementation. Then, they state that the results chain process begins with activities of the intervention, then lead to outputs, and ends with outcomes which are short-term goals.

The diagram below demonstrates results chain and outlines its logical sequence of actions, which will lead to the intended goals.

Figure 6- Results chain



Source: Rush & Ogborne (1991)

Description of the diagram

I. Planned Work

According to Rush & Ogborne (1991) planned work in the results chain refers to the resources needed for the implementation of the intervention, programme or project and also the intended activities. As mentioned on section 2.5.1 inputs includes finances and personnel, whereas, activities are about what the intervention or programme does with the inputs (finances), the processes to carry out and actions that are intentional parts of the intervention implementation (Rush & Ogborne, 1991).

II. Intended Results

This is the part where all the desired results for the intervention or programme come into existence in three stages of the results chain, which are outputs, outcomes, and impacts (Rush & Ogborne, 1991). They further describe outputs of the results chain as direct products of the intervention's activities and include targets of services that need to be delivered by the intervention. Additionally, Rush & Ogborne (1991) describe outcomes in the results chain as those specific changes in the beneficiaries of the intervention such as knowledge, behaviour and level of functioning. Then, end with a description of impact as that important part of the intended and sometimes unintended change that occurs in organisations or communities as results of the intervention activities. Now, that a theoretical description of a results chain has been given, it is therefore necessary to apply results chain in this study and the table below depicts the results chain for data management.

Table 2: Data management results chain

Implementation		Results		
Inputs	Activities	Output	Outcome	Impact
Data management inputs: Human resource Computers Finances	Data management activities: Data collection Data collation Data storage Data processing and analysis Information utility	Data management outputs: Reports Data sets	Data management outcome: Evidence-based decision-making Efficiency	Data management impact: Organisational performance

Source: Constructed from literature review of Monitoring and Evaluation framework

2.6.2.2 Framework

This section describes framework in a results chain perspective. The preceding chapter showed results chain framework in a graphic form and narrative of that graph will be given in this section. Results chain frameworks include critical assumptions that must hold for the development hypothesis to lead to achieving the relevant objective. They then, determine premises underlying the strategy and to see within the framework those intermediate results critical to achieving the objective.

Furthermore, the importance of identifying, monitoring and analysing external assumptions, as they may be the cause for the failure of the intervention even if it is implemented according to plan (The Logical Framework, 1999). Then, they mention that the interventions are actually seen as causal linked sequence of events, such as, inputs, activities, outputs, purpose (outcome) and goals (impacts). It is important to understand the concepts in the results chain framework as we did with the results chain. The previous section described results chain: input, activities, outputs, outcomes, impacts, and this paragraph will attempt to give a brief description of indicator, baseline and targets as part of the results chain framework.

Indicators are described as the quantitative or qualitative variables that provide a simple and reliable means to measure achievement, to reflect the changes connected to an intervention, or to help assess the performance of an organisation against the stated outcome (Kusek & Rist, 2004). In a results chain framework, a performance baseline represents information that provides data at the beginning of, or just prior to, the monitoring period of an intervention (Kusek & Rist, 2004).

They further state that to monitor future performance, baselines are used as starting point or guide. Kusek & Rist (2004) continued to note that baselines are the first critical measurement of the indicators in the results chain framework. This section theoretically described results chain framework and the following section will try and develop a theory of change together with a results chain framework for the Gauteng department of Social Development, data management intervention.

2.6.2.2 The theory of change, results chain and framework of data management policies

Section 2.6.1 explicitly gave a description of theory of change and this section will attempt to develop a theory of change for the Gauteng Department of Social Development, data management intervention. In addition, section 2.6.2.1 described results chain; this section will then develop a results chain framework for the Gauteng department of Social Development, data management intervention. The previous section also defined a theory of change as an outcome based approach, which applies critical thinking to the design, implementation and evaluation of initiatives and programmes intended to support change in their contexts (Vogel, 2012).

It is also important to note the good characteristics of a good theory of change as outlined by Connell & Kubisch (1998) that a good theory of change should:

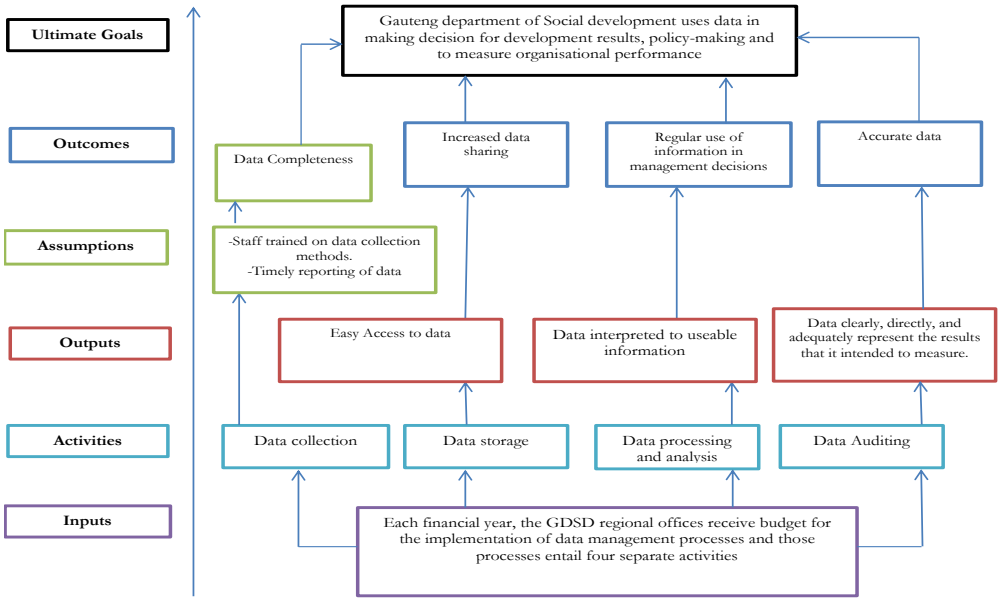
- Be plausible, meaning that there must be a logical link between evidence, activities and desired outcomes.
- Be doable- meaning that the intervention or programme should avail economic, technical, political, institutional, and human resources to carry out the initiative.
- Be testable- theory of change specific and complete enough for an evaluator to track its progress in credible and useful ways.

The designed theory of change for this study's intervention will embody the characteristics of a good theory of change as advised by Connell & Kubisch (1998) and this theory of change has been developed using the Gauteng department of Social Development's Guidelines for Central records Management of Performance Information (2013).

Based on the reviewed Gauteng department of Social Development's Guidelines for Central records Management of Performance Information (2013), the five Gauteng Social Development's regional offices receive budget each financial year to implement data management interventions. The collection, collation, verification and storing of this data is also taking place in the regional offices. That, this process is conducted with the intention that it will lead to easy access of data for those that work with data, that they will find the data in a usable and understandable format.

The GDSD invests a lot of money on the data management intervention because they believe that if carried out accordingly it will assist the department in having accurate data that will be used decision-making and planning, see diagram below.

Figure 6- Proposed Gauteng Department of Social Development Theory of change



Source: Constructed from literature review of the Gauteng department of Social Development's Guidelines for Central records Management of Performance Information (2013)

2.7 Evaluating data management in the Gauteng department of Social Development, a conceptual framework

There are many views on what makes a conceptual framework. It has also been noted that there is much confusion between a conceptual framework for theoretical framework and sometimes with literature review. Hence, the importance to state that conceptual framework is not a theoretical framework neither a literature review even though they are all related. An academic conceptual framework is actually a road map of the study.

Chapter 2 informs the conceptual framework used for this study, where a review of literature upon which this study is based took place. As indicated in Section 2.1, this study looks at the background history of South African public sectors, which is an adjunct to the implementation of programmes or interventions in the Gauteng department of Social Development. A literature on data management in the Gauteng department of Social Development and in other sectors is drawn on throughout in Section 2.2 to assess how it is currently implemented to achieve its intended goals.

Past and current studies in data management as they pertain to the field of M&E and the ethos of evidence based decision-making are reviewed and presented in Section 2.3. The specific manner in which data management plays out is described through locating the broad field of study, which is 'implementation'; this is discussed in Section 2.4. Section 2.5 appraises the key attributes of the field of study. Then, Section 2.6 is a summary of theories relevant to this study. The last section of this chapter is Section 2.7, which provides the road map of how this study intends to assess its main research question: "How is data collected, collated, analysed, stored and reported in GDSD?" below are summaries of each of these sections.

Below is the summary of chapter two mapping out all the steps taken in this chapter.

The Gauteng department of Social Development and its programmes

This section highlights the fact that South Africa as a country exists within a global context meaning that there are laws and principles that the country has to oblige to. This is important to this study, as data management are one of the tools developed to ensure that South Africa moves close into achieving those global expectations such as effective and accountable public service. The section further provides a description of the Gauteng department of Social Development as the study context. This helps this study to get a broader understanding of the context and to know how interventions are implanted there and which laws and legislations or policies are guiding that department and those interventions. This is conducted through the narration of the department's programmes.

Data management in the Gauteng department of Social Development

In this section, a detail description of data management with its background history is provided. Highlighting the facts that data management is significant in public sectors for the promotion evidence based decision-making and planning. Furthermore, this section emphasises the function of data management, which is the datum that it assists organisations to collect, store, assess and process comprehensive information. This section advances that data management became a big deal in public sectors ever since the introduction of evidence-based decision-making. It then describes the data flow and data management policy guiding the department of Social Development.

Highlighting the fact that South African government has invested a lot of money in the monitoring and evaluation field as more directorates and staff personnel were employed in the Gauteng department of Social Development to implement data management.

Methods, data, findings and conclusions studies and evaluations of data management

This is where past and current studies that embarked on a similar study as this one are summarised. Eleven studies were found on data management with five studies evaluating structural factors and processes in data management in public sectors in these countries: South Africa, Kenya and Global, whilst, four studies reported on interventions to improve data quality and management in South Africa, Virginia and the United States. Then, the other two studies looked at the manner in which the public health employees view data; those were conducted in Philippines and South Africa. Issues and challenges described in the reviewed studies included poor policy for data management, lack of resources to implement data management, poor management commitment, too much data collected, no feedback and poor collaboration between the data users, lack of training, and lack of skills.

An introduction to data management studies

This section identified implementation as the field of study for this research. It then described it aligning it to the study of interest, which is data management. From the description of implementation, it was gathered that this is a very complicated process as it is cyclic and each aspect depends on another, from policy planning and development to policy presentation and policy implementation. The section then focused on the purpose of implementation, which was identified as the obtainment of the intended results. The chapter further advanced to the major components of the field of study and these were identified to be management and monitoring. These two components were briefly described with monitoring defined as a continuous function that uses a systematic collection of data on specified indicators to provide management with the ongoing information, whereas, management was defined as the process that involves the designing of strategic plans, setting of objectives and deployment of resources for the achievement of the intended results. Established facts about the broad field of study were also highlighted in this section.

Key attributes of an implementation exercise

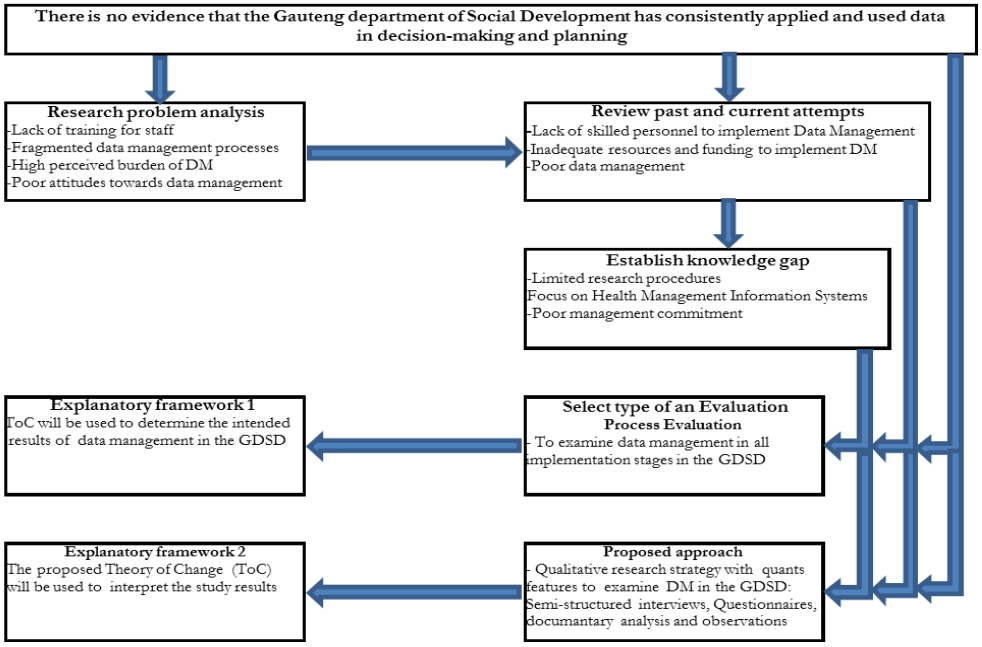
This section looked at the key attributes of the field of study and these were identified to be: inputs, activities, outputs, outcomes and impacts with a detailed explanation of where attributes of the study lie within this results chain. This was presented in a diagram format where attributes for data management were identified in each aspect of the result chain.

The theory of change, results chain and framework

Theory of change and results chain framework description was presented in detail in this section with theory of change identified as the key theory for data management. It was then described that theory of change as a dynamic thinking process, while, results chain defined as a causal linkage between an intervention and desired goals, whilst, framework defined as a results chain perspective. This section through the diagram below shows the summary of how the research problem links in with the reviewed literature that traces the background history of public sectors in South Africa to implementation of interventions by the Gauteng Department of Social Development. It then presents the preliminary analysis in section 2.2 and past studies in section 2.3 that suggest that data management is fundamental to the delivery of quality services by public sectors. Also the weaknesses of these reviewed past studies will be shown in this section. Then 2.4 and 2.5 will present the approach to be taken by this study to address those weaknesses with section 2.6 presenting the explanatory framework.

The diagram below depicts the research problem, possible explanations and proposed methodology of pursuing this question.

Figure 7: A proposed conceptual framework for data management in the Gauteng department of Social Development



This section has presented the key arguments related to data management by describing each area, in order to show the commonalities and how they are mutually reinforcing. The conceptual framework indicates that data management is a tool, which is only effective if used in a manner, which increases their use. To achieve the use of data, it is required that the data collected, collated, analysed or interpreted is properly managed, and data management in this case becomes dependent upon decision-making structures in order for its outcomes to be applied and utilised to improve performance.

3 RESEARCH TECHNIQUES, PROCEDURE AND METHODS

This chapter explains the research strategy; design, procedure and methods used for this study and substantiate the chosen research methods by presenting reasonable and objective research processes necessary for answering the research questions. Research strategies available in social research studies will be mentioned before committing to one research strategy, supplemented with studies that have used the chosen research strategy in section 3.1. Thereafter, the research design that was used for this study complemented with studies that have used it will be outlined in section 3.2. Then, in section 3.3, research procedure and method used on this study will be discussed in detail. Followed by section 3.4 where the research reliability and validity measure have formed the basis for the authenticity of this study. This chapter ends with section 3.5 where the limitations faced by this study are outlined.

3.1 Research strategy

Bryman (2012) and Neuman (2011) define research strategy as a general orientation that gives direction to the conduct of research enabling the researcher to conduct research following a system of steps. It is further stated that research strategy has three types, namely, qualitative, quantitative and mixed methods (Bryman, 2012; Wagner et al., 2012; Neuman, 2011). The research questions of this study asks how data is collected, collated, analysed, stored and reported in the GDSD, what influences the decisions GDSD makes and the services it provides, and what are major outcomes of a data management system in GDSD. These questions require a qualitative understanding of how data management is implemented in the GDSD and how the data users perceive the role of data management in decision-making. Based on that, the study adopted a qualitative research strategy together with few quantitative features.

Bryman (2012) defines quantitative research strategy as systematic empirical studies, which involve quantifying through the assistance of mathematics and statistics. In contrast, qualitative research strategy is a study that "aims to provide an in-depth understanding of the world as seen through the eyes of the people being studied" (Wagner et al., 2012, p. 126).

Furthermore, qualitative strategy focuses on the description, interpretation, and explanation of situations, processes, and outcomes (Kaplan & Maxwell, 2005). It is further stated that a qualitative approach is useful when researchers are interested in looking beyond identified variables that are statistically linked with a desired effect to understand why a given intervention has a specific impact, how the impact occurs, and in what organisational context (Curry, Nembhard & Bradley, 2009).

When examining data management in the GDSD, contextual issues such as organisational, political, social and cultural norms were concerns surrounding data management. Heuschele (2014) further state that other contextual issues facing an evaluation of data management are the processes in developing data management, use (or lack of use) of and how all these are conceptualised and perceived by the participants in the setting where the study is being conducted. Therefore, a qualitative research strategy was found to be appropriate for this study to understand the perception of data management by its users, the context within which the system is implemented, and the processes by which outcomes are generated (Yin, 2011).

The reviewed past studies complementing the qualitative research strategy that this study committed to are further summarised in this section to justify the appropriateness of this research strategy for this study. Odhiambo-Otieno (2005) conducted an evaluation study to examine the existing District Health Management Information Systems (DHMIS) in the District Health Information Systems in Kenya. On this case study, he applied a qualitative method with quantitative features to collect data using questionnaires, focus group discussions and review of relevant literature, reports and operational manuals of the studied DHMISs.

This study was about the important issues that affect the usability of DHMIS to support District Health System (DHS), as well as the DHMIS's ability to meet the user's needs. While, in a study conducted by Wilkins, Nsubuga, Mendlein, Mercer, & Pappaioanou (2008) in a health department, a qualitative research strategy was also employed to research the claim made that a use of timely and high-quality information by ministries of health can result into effective and efficient identification and redress of health problems. This qualitative study by Wilkins et al. (2008) applied the DDM surveillance to six systems in five of the participating countries interviewing them using informal conversation or an interview guide approach.

Then, Ben-Arieh (2008) also conducted a qualitative study to understand how the information collected using social indicators has influenced decision-making in a social welfare sector. On this study, Ben-Arieh (2008) collected data using in-depth interviews to the staff from the two projects, the decision makers and policy makers. Given that, this study aims to explore the implementation of data management in the GDSD and how the data users perceive the role of data management in decision-making, a qualitative strategy will be suitable. On the studies conducted by Ben-Arieh (2008); Wilkins, Nsubuga, Mendlein, Mercer, & Pappaioanou (2008) and Odhiambo-Otieno (2005) an indication that this study will benefit from using qualitative strategy has been provided to be the ability to examine the implementation of data management through the eyes of the people who are knowledgeable of the studied phenomenon.

3.2 Research design

By research design, Bryman (2012), Wagner (2012) and Neuman (2011) refer to the entire research process, starting from conceptualising a research problem to developing research questions, on to collection of data to be used, analysis and interpretation of that data, up to the report writing process. According to Bryman (2012), there are five different types of research designs, namely, experimental design, cross-sectional or survey design, longitudinal design, case study and comparative design. Since this study was not exclusively based on the qualitative research strategy and that the unit of analysis has similarities with other units, a case study was found to be suitable (Bryman, 2012).

The GDSD has similarities with any South African public service department as it operates within a public legislative and regulatory framework. The case study of the GDSD was therefore, an appropriate unit of analysis for testing the assertion of the research that data management results to evidence based decision-making and planning.
Furthermore, case studies are mostly employed in development interventions and are useful for describing what the intervention looks like on the ground and why things happen as they do, and focuses on the effects of an intervention (Imas and Rist, 2009). The aim of a case study may be exploratory (to define questions or hypotheses), descriptive (to depict a phenomenon within its context), or explanatory (to identify cause-and-effect relationships) in nature (Curry et. al., 2009).

For this study, the aim of this case study was explanatory to explain the assertion that data management results to evidence based decision-making and planning. Babbie and Mouton (2006) further shows that case studies can inform best practice when it comes to issues relating to policy implementation and evaluation, human resource practices, management, organisational issues, organisational culture, processes of change and re-engineering.

Some of the reviewed past studies that have employed a qualitative research strategy with a case study design are now presented in this section. Odhiambo-Otieno (2005) conducted a case study of the District Health Information Systems in Kenya collecting data using questionnaires, focus group discussions and reviewing relevant literature of the studied district health management information systems (DHMIS). Consequently, Ben-Arieh (2008) conducted a case study on two projects collecting data through in-depth interviews. He mentions that by using a case study method, they were limited from generalising the findings of the study.

In addition, a study of a situation analysis of information management (IM) in selected government departments was conducted in Kenya by Munge, Rotich & Wamukoya in year 2014. Munge et al. (2014) used a qualitative research method with in-depth interviews of 60 respondents taken form six line ministries to gather data for this study. They also used document analysis together with literature analysis to build an understanding of the extent to which IM has been implemented in Government ministries. They analysed and interpreted the data collected following the qualitative methods.

Based on the three reviewed past studies, one is of the view that a case study design will be appropriate for this study as demonstrated by Ben-Arieh (2008) in the previous conducted study in the department of Health. In addition, a case study will be capable of assisting the researcher in getting the answers to the asked research questions to the specific chosen department.

3.3 Research procedure and methods

The main purpose of this section is to provide an overview of the research process that this study embarked on and discuss the major methods for measuring attributes and collecting data. First, we will present the data collection instrument that was used to gather information for this study, then we will look at the target population where the needed information was gathered from, followed by the ethical consideration as this is a scientific study and should be conducted in a correct and acceptable manner in which the participants will not feel exploited. Closely followed by the manner in which the data for this study was collected and stored, then, processing and analysis of that data will follow. A description of the interviewed participants to gather a detailed information about the studied phenomenon will be presented at the end of this section.

3.3.1 Data collection instrument

Concurrent with deciding on a research design, the researcher must investigate possible data collection approaches and instruments (Bickman & Rog, 2008). This process determines how you are going to go about gathering data or answers to research questions of your study. We begin this section with a description of data collection instrument for better understanding of the concept. We then list the types of data collection instruments available that the researcher had to consider during the planning phase before committing to one or two. It is important to identify sources of data to address the research questions and this will be considered in this section (Bickman & Rog, 2008).

Data collection instrument refers to the device used to collect information, such as a paper questionnaire or computer assisted interview and interview guide (Bryman, 2012, Wagner, Kawulich and Garner, 2012, Flick, 2014). According to Bickman & Rog (2008) there are seven types of data collection instruments namely, observational recording forms, tests, data extraction forms, structured interview guides, mail telephone guides, web-based surveys and audio computer-assisted self-interview. He further states that a questionnaire is a structured interview guide.

This study is qualitative in nature with quantitative features, therefore, a questionnaire (closed ended) and a standardised open-ended question forms for interviews were found to be suitable data collection instruments. Brown (2001) and Olsen & St George (2004) define a questionnaire as any written instrument with a series of questions or statements presented to participants to whom they are to react either by writing out their answers or selecting from among existing answers. Furthermore, a questionnaire can be defined as a set of systematically structured questions, which are used by a researcher to generate the needed answers for the research (Ghauri & Grønhaug, 2005).

Then, standardised open-ended question forms are defined as the most structured set of qualitative questions that include a set protocol of questions and probes (Patton, 2002). Furthermore, Bryman (2012) and Wagner et al. (2012) describe interview schedule in terms of the standardised open-ended question forms as a common data collection instrument in both qualitative and quantitative research, and it is aimed at soliciting accurate information from the interviewees.

Correspondingly, to the structured theme of standardised open-ended question forms, the researcher decided what was relevant to the study and asked questions based on that (Olsen & St George, 2004). They further highlight the importance of unambiguity and simplicity of the questions that should be asked or compose a questionnaire not forgetting their relevance to the research. The following section presents the target population and sample for this study.

3.3.2 Target population and sampling

The preceding section introduced the data collection instruments, it is therefore important to present the target population and sample that those data collection tools were used to collect the relevant data. This section introduces the target population and sampling for this study. First, it theoretically describes target population and sampling. Second, it narrates the target population and sampling for this study. Lastly, it demonstrates how the sampling method was conducted on this study. A group about whom one wants to study or draw conclusions from based on the study of interest is said to be a target population (Babbie, 2015). Additionally, Bryman (2012, p. 187) defines population as "the universe of units from which the sample is to be selected". Babbie (2015) further notes that it is near impossible to study all the members of the target population as well as it is impossible to observe all of them.

He then notes that this is when the concept of sample comes in, where a selection of a group from the target population is conducted. Furthermore, this method is done deliberately guided by the study itself on whom or what will be observed or studied (Babbie, 2015). Equally important is the sampling technique, as we know that this is a qualitative study, Curry et al. (2009) and Bryman (2012) state that in qualitative research, sampling is based on purposeful or theoretical sampling principles. Bryman (2012) further notes that purposeful sampling is a non-probability sampling technique, as the researcher does not sample the research participants randomly. The aim is to identify "information-rich" participants who have certain characteristics, detailed knowledge, or direct experience relevant to the phenomenon of interest and who can purposefully inform an understanding of the research problem in the study (Curry et al., 2009; Creswell, 2013).

In this research, qualitative research strategy was employed to understand the phenomenon being studied in-depth, hence the purposive sampling (Yin, 2011). The research employed a purposive sample in that the interviewed participants were known in advance, and their selection was based on their relevant knowledge and experience on the studied phenomenon (Creswell, 2013; Yin, 2011). Furthermore, the researcher works for the GDSD based at Johannesburg metro regional office; therefore, the researcher had the ability to identify a relevant sample to answer the research questions.

In addition, qualitative research does not require large sample size, as it does not generalise its findings (Creswell, 2013). Therefore, the purposive selected sample was made up of only thirteen participants (ten data management implementers and three executive managers, decision-makers). The below paragraphs details the criteria used to select the studied sample for this study.

Selection Criteria for Standardised open-ended interviews

In this study, the target population was made out of the Strategic Planning, Monitoring and Evaluation unit of the GDSD. By unit, we mean that the participants were made up of the Director, Deputy Director, three Assistant Directors and two senior administrators and three administrators of the Strategic Planning, Monitoring and Evaluation unit in the GDSD. The selection of interviewed participants was based on the following criteria:

- One of the GDSD Strategic Planning, Monitoring and Evaluation unit role is to implement and manage the organisation's performance data;
- They should have a minimum of 2 years working experience in the Strategic Planning, Monitoring and Evaluation unit; and
- They should have reasonable knowledge and experience of how the GDSD's data management system functions.

This means that the interviewed participants were able to offer credible information on the implementation processes and usefulness of data management in the GDSD.

Selection Criteria for administration of the questionnaires (quantitative)

For the quantitative questionnaires, the target population was made out of the executive management of the GDSD. By executive management, we mean that the participants were made up of the Head of the Department (HOD), two Deputy-Director General (DDG), and the Chief-Director of Strategic Planning, monitoring and evaluation unit.

The selection of the participants is based on the following criteria:

- One of the GDSD executive management's role is to make decisions based on the information that is fed into the data management systems;
- They should have a minimum of 2 years working experience in the decision-making position; and
- They should have reasonable knowledge and experience of how the GDSD's data management system functions.

This means that the interviewed participants were made up of sufficiently senior officials to offer credible insights into their perceptions and experiences of the data management in the GDSD.

Selection Criteria for reviewing documents

The sample of the documents analysed was based on the following selection criteria:

- It had to be documents that deal with data management or some aspects of a data management processes and evidence based decision-making;
- It had to be credible documents, written by credible organisations and institutions;

- They had to be easily accessible.

This selection criterion for reviewing documents ensured that only documents that were relevant, accessible and credible were selected and analysed.

3.3.3 Ethical considerations when collecting data

Ethical considerations when collecting data have become a cornerstone for conducting an effective and unbiased research. As such, in this section, a description of ethical considerations and their purpose in a research will be presented. Thereafter, an introduction through the use of a profile of me and interests in the research will be presented.

Babbie (2015) mentions the importance of knowing and understanding of the general agreements that are shared by researchers in regard to what is appropriate and inappropriate in the conduct of scientific research. Those general agreements that he is talking about are called ethical considerations. Bryman (2012) further states that ethics are there to provide protection to research participants but also for the protection of institutions such as Universities, so that researchers can be prevented from behaving in an unethical manner, which may harm or taint the image of the institutions. According to Wagner et al. (2012) there are four guidelines that are standard for institution's codes of ethics, namely, informed consent, deception, privacy and confidentiality.

The researcher is working for the Gauteng department of Social Development at a regional level as a HIV and AIDS programme coordinator. As such, a need to detach herself from the department was mandatory and had to make it clear to the GDSD through protocol of an introductory research letter that stated that the study conducted at the department was for academic purposes and that the department would be provided with a copy of the thesis upon completion. The research adhered to the ethical guidelines of the University of Witwatersrand. A letter of permission to conduct the study was obtained from the Head of the Department of the GDSD (see Appendices).

Correspondingly, informed consent was obtained from all participated GDSD employees before any commencement of data collection. The participants were also informed about the purpose of the study and the instruments to be used to gather data.

Issues of privacy and confidentiality were advocated through anonymity principle (Wagner et al., 2012). Deception was avoided on this study by being transparent to the participants. In addition, the participants were assured of protection through securing the data collected from them and not revealing their identity. Below is the preview of the researcher's profile, which was used to inform the participants about the purpose and interests of the study.

My name is Zikho Twantwa, a Master of Management (specialising in Monitoring and Evaluation) student from the University of Witwatersrand, School of Governance. I am conducting this research as a partial fulfilment for my degree and to also understand the efficacy of data management in public sectors. I conduct this research to assess data management in the Gauteng Department of Social Development. The study is not funded by anyone or any organisation; this is solely my research under the supervision of a lecturer at the Wits School of Governance. The research will bring no harm to any human being. However, data will be collected from Gauteng department of Social Development executive management and the Strategic planning, Monitoring and Evaluation staff members. The participant's names will remain anonymous as they are not requested on any part of the research. The researcher will seek consent to conduct the study as well as access to available data from the Gauteng department of Social Development head of the department and the chief director of the Strategic Planning, Monitoring and Evaluation unit. Data collected will remain confidential, it will be stored on a password computer.

3.3.4 Data collection and storage

Data collection is an important aspect for the success of any research. Bryman (2012) supports this statement by stating that data collection to many researchers represents the "key point" in a research. Hence, it is important to present this section of the study. First, a brief description of data collection will be given, followed by the description of storage of social research data. According to Creswell (2013, p. 145) data collection means "gaining permissions, conducting a good qualitative sampling strategy, developing means for recording information both digitally and on paper, storing data, and anticipating ethical issues that may arise".

The research strategy for this study is qualitative and this strategy relies on three basic data collection methods namely, interviews, observations and documentary analysis (Babbie, 2015; Creswell, 2013; Wagner et al., 2012).

In order to meet the aim of this study, the researcher used two elements from qualitative strategy namely, interviews and document analysis and one element from quantitative strategy namely, questionnaires (closed questions). These methods were able to provide the depth information that the researcher needed to meet the research problem.

3.3.4.1 Interviews

Semi-structured interview is a face-to-face communicative process through which the investigator extracts information from a person (Wagner, 2012). The interviewed participant, who acts and interprets his or her environment based on his or her experiences, will influence the extracted information (Holstein & Gubrium, 2004). Every interview conducted generates a subjective but informative product that is shaped by the participant's experiences (Given, 2008).

According to Johnson & Christensen (2008) and Patton (2002) there are three types of interviews namely, informal conversational, the interview guide and standardised open-ended interview. They further describe informal conversational interviews as the most and loosely structured interview, while in the interview guide approach the interviewer uses a plan defining the line of inquiry. Whilst, in the standardised open-ended interview the interviewer uses standardised interview protocol similar to that of a quantitative strategy but primarily using open-ended questions (Johnson & Christensen, 2008; Patton 2002). Because this research focused on individuals who have an experience on the phenomenon and the researcher is less experienced, a standardised open-ended interview method was found to be suitable for collection of data (Patton, 2002).

Standardised open-ended interviews

This interview technique consists of a set of open-ended questions carefully worded and arranged in advance (Johnson & Christensen, 2008). Patton (2002) describes that in standardised open-ended interviews a use of identical worded questions when interviewing participants is conducted so that responses are open-ended. Moreover, open-endedness allows the participants to contribute as much detailed information as they want and that this allows the researcher to ask probing questions as means of follow-up (Turner II, 2010).

This allowed the researcher to collect a comprehensive data that would attempt to address the research problem. In addition, Patton (2002) notes that standardised open-ended interviews are useful for reducing biasness in interviews especially when the interviewers are less experienced or knowledgeable, or when it is important to be able to compare the responses of different respondents and when you have limited time or money available to conduct the study.

In this study, the researcher conducted ten interviews with the GDSD Strategic Planning, Monitoring and Evaluation unit personnel to validate the information gathered through the documentary analysis. These interviews were conducted on a face-to-face basis taking thirty-five minutes to fifty minutes to complete. The interviews were audio-recorded with the permission of the participants to ensure accurate transcription.

During these interviews, the participants were assured of confidentiality and the purpose of the study was outlined. The interviews were conducted once with the said participants and the offices of the GDSD were used. The questions in the interview guide were prepared in advance to explore the current methods used by the Strategic Planning, Monitoring and Evaluation unit in implementing data management and their perceptions towards the manner in which data management is used for decision-making in the GDSD (see Appendix 3.1 B). Probing questions aimed at specific sections of the data management were posed to the participants.

At the end of the interview, participants were requested to add any information that they feel is of importance or to expand on their responses. The interviews took two days to be completed and the transcription process was conducted immediately after the interviews were completed, on the third day to be specific. In addition, transcripts were reviewed while listening to the audiotapes to ensure accuracy. Furthermore, preliminary analysis was conducted where gaps within the interviews were identified and that led to one transcription script sent back to the participant for further information.

Documentary analysis

Researchers may supplement interviewing with gathering and analysing documentary material generated such as laws, regulations, contracts, correspondence, memoranda and routine records on services and clients (Patton, 2002).

Furthermore, the quality of a case study is enhanced by the use of diverse data sources such as documentation, archival records, and interviews (Curry et al., 2009). Hence, it was important to review the GDSD documents in this case study. It is also important to note that these kinds of documents are a useful source of information on programme activities and processes, and they can generate ideas for questions that can be pursued through interviewing (Patton, 2002). In addition, programme documents can provide valuable information that may not be accessible by other means.

For this study, documentary analysis was conducted as a secondary data collection method to complement the interviews and to provide objective analysis. The documents from the Gauteng department of Social Development provided a department perspective on how data management should be implemented. The reviewing of documents was used to verify and substantiate results from the interviews during data analysis.

Questionnaire

The research strategy for this study is qualitative with features of a quantitative research strategy. In this section, the quantitative research strategy instrument used is presented to be a questionnaire. The researcher used this structured interviewing technique, asking closed-ended questions from the participants concerning their unique knowledge of the data management and how it feeds to evidence based decision-making in the GDSD.

These questionnaires were web-based for convenience and efficiency. An email with the structured questions was sent to the participants (Babbie, 2015). This questionnaire comprised of a five-point scale that included five options ranging from "strongly disagree" to "strongly agree". Each question comprised of five sub-questions where the executive management needed to make a tick nest to the preferred answer (see Appendix 3). The questionnaire was developed against research question 2, which asked, "What influences the decisions GDSD makes and the services it provides?"

Storage

Berg (2001) highlights the importance of a clear and functional storage and retrieval system to keep track of the reams of the collected data.

He further states that the storage must be accessible for effective use to assure systematic analysis and documentation of the data. Ritchie, Lewis, Nicholls & Ormiston (2013) add that in a qualitative case study, data collected must be properly organised for analysis and for the documenting process to ensure completeness and accuracy. In this way the study can in principle, be verified through replication (Berg, 2001).

For this study, data was stored into two sets for each of the data instruments used. This was conducted following Wagner et al. (2012) suggestion that data collected must be kept in its original form meaning that the transcripts and documents used to collect data were not altered. Transcripts obtained from interviews (open-ended questions) were 'downloaded' or backed up on a password-protected computer. Questionnaire responses were entered into an excel spreadsheet and stored on a password protected computer. Data was de-identified to protect participant's confidentiality. Forms used to collect data from documents were labelled, scanned and stored in a password computer and lockable file cabinet.

3.3.5 Data processing and analysis

The preceding section looked at data collection and storage approaches, it is therefore essential to present methods of processing and analysing that data to see whether the study's expectations regarding data characteristics and quality have been met. In this section, techniques for processing and analysing qualitative and quantitative data will be described.

According to Creswell (2013) data analysis in a qualitative research is about the preparation and organisation of collected data and about reducing that data into themes through using coding process where condensing of codes take place and representation of the data in tables, figures and discussions. This study chose to use the word thematic analysis rather than coding based on the processes that it has used when analysing data such as fragmentation of data (Grbich, 2013).

The analysis of data on this study was informed by the three research questions:

- How is data collected, collated, analysed, stored and reported in the GDSD?

- What influences the decisions GDSD makes and the services it provides?
- What are major outcomes of a data management system in GDSD?

3.3.5.1 Qualitative Data Analysis

This study followed Grbich (2013) steps of qualitative data analysis and those steps are described below. Although these stages were consecutive, and each built on the preceding one, analysis was typically a recursive process, with movement back and forth between different phases.

First step: Transcription

The first step conducted after the collection of data was transcription. Grbich (2013) explains transcription as a process that involves getting a dialogue or narrative off the recorded devices into a written text. She further notes that this process is conducted so there is a clear researcher-defined column for notes. The participants' responses from the researcher's notes were read and the recorded information on the tape recorder listened to in order to transliterate the collected data from the interviews.

This study adopted verbatim transcription by transcribing word-for-word audiotaped data into a written text. This was achieved through listening to the audiotaped data for several times and by comparing the notes taken during the interviews to ensure that, no words were left out. The purpose of this exercise was to ensure that the transcripts provided an accurate reflection of the interviews. See Appendix 3.1 B for one of the transcripts produced from the interview audiotapes. In addition, this process helped the researcher to understand data management in the GDSD in the context of the data management implementers.

Second Step: Preliminary Analysis

The second step conducted was the preliminary analysis. This was conducted after the researcher was confident that the transcripts produced after the transcription step was conducted accurately represented the responses of the interviewed participants. Grbich (2013) explains this step as a process that involves checking and tracking data to see what is coming out of it, identifying areas that need a follow up and actively questioning where the information collected is leading the study.

A follow up to gather more information from one of the interviewed participants was done through an email, the transcription script produced was sent to him to re-answer particular questions where he was not clear on the tape recorder. Then, the researcher used the three research questions of the study to see what was coming out of the collected data by outlining the main story that the researcher would like to tell about each research question based on the transcribed information. This was conducted to see where the collected data was leading the study. This process assisted the researcher to screen the data collected and to see which data falls under the pre-determined themes.

Third Step: Thematic Analysis

A thematic analysis in the form of data fragmentation was adopted after the preliminary analysis of the collected data. This is a process conducted when data set is complete (Grbich, 2013). Wagner et al. (2012) further describe thematic analysis as a general approach to analysing qualitative data that involves identifying themes or patterns in the data. Grbich (2013) notes that thematic analysis should reveal deferent perspectives that can be written up, with metaphor or through conceptual linking. On this study, research themes were employed to categorise similar data and original texts were summarised and paraphrased (Flick, 2014).

For this study, a 'theoretical' thematic analysis was followed, as themes were predetermined prior to data collection using the developed data management theory of change for the GDSD based on the GDSD's policy framework on Managing Performance Information (2013). The transcribed data was tabled in an excel spreadsheet and a thematic label attached per column. Then, the researcher asked herself what she would like each theme to tell based on the information tabled per theme and a summary of the participant's responses and narration are presented on Chapter 4 of this study.

3.3.5.2 Quantitative Data Analysis

The questionnaire used for assessing the executive management perspective of data management was designed around research question 2: "what influences the decisions GDSD makes and the services it provides?" The reason for this is because the executive managers are the ones responsible for decision-making in the GDSD and they are not the implementers of data management. This means that their responses only answered two of the predetermined themes, which were themes concerned about data reporting and use, and data storage, as they would have to be able to access data in order to make decisions. To analyse this data from the closed questionnaires, the researcher followed the same procedure as the one used for qualitative data. Responses from the three participants were tabled in the excel spreadsheet according to the themes for analysis. The narratives from the semi-structured interviews (Strategic Planning, Monitoring and Evaluation unit) and questionnaires (executive managers) were conducted following the guidelines of a qualitative research, as this study is qualitative in nature (see Chapter 4).

3.3.5.3 Secondary Sources Analysis

A documentary analysis was conducted to assess the systems and structures in place to address data management, decision-decision-making and planning and how the department is intending to implement them. The key documents reviewed were:

- The GDSD policy framework on Managing Performance Information (2013),
- The Guidelines for Central Records Management of Performance Information (2013) were sourced.
- The Government-Wide Monitoring and Evaluation Framework (2007)

The data collected through documentary analysis was extracted using the predetermined themes. This data was found to be complementary of the information gathered from the interviews. Then, this data gathered from the documents were further tabled to the excel spreadsheet, per theme following the same steps conducted for the data gathered from the interviews. The data collected from the interviews were analysed against the documentary analysis data to determine if data management in the GDSD was implemented according to the department's data management policy framework and guidelines.

3.3.6 Description of the respondents

This section provides a description of the interviewed participants on this study. It further details their working experience on the field of interest and their working experience in the organisation studied, which is the Gauteng department of Social Development. This information is useful for understanding the context of the implementation of data management in that organisation. The description is presented in terms of the following variables: years of been working at GDSD, gender and education. In addition, this section also looks at the positions the participants are holding at work as this has an effect on understanding the study precisely.

Semi-structured interviews were conducted with ten staff members of the Strategic Planning, Monitoring and Evaluation unit. Those ten members were five females and five males, with only one female in the middle management position and the other four females were administrators. The participant's work experience ranged from two to seven years. These participants contributed differing amounts of information to the five themes that comprise the narrative. Some participants talked at length on one or two themes; some participants made nearly equal contributions across all five themes. Thus, all participants' voices and views are represented in the study.

Four questionnaires were sent out to the four executive members of the Gauteng department of Social Development, which comprise of the Head of the Department, two Deputy-Director Generals and a Chief Director of the Strategic Planning, Monitoring and Evaluation unit as they are the people responsible for decision-making in the department. Only three of those questionnaires were returned back with one answered by a deputy director as per the HOD's request. The three participant's work experience ranged from two to ten years with two males and one female.

3.4 Research reliability and validity measures

Reliability and validity are fundamental in a social research and very important to take into consideration when conducting a qualitative research as they assist in determining the objectivity of the research (Bryman, 2012). Seale (2004) and Wagner et al. (2012) note that reliability and validity are closely related but different measurement instruments that demonstrate the level of trustworthiness and credibility of a research. With, Bryman (2012) stating that reliability measures the degree to which a study can be replicated.

Wagner et al. (2012) further notes that reliability is the consistency of results when the study is conducted under the same conditions. Subsequently, to achieving high reliability in this study, this chapter describes in detail the process of gathering data as well as how the interviews were performed. Further, all interview questions for this study are distributed in Appendix 3.1. This detailed description increases the ability for other researchers to replicate this study under same conditions with comparable results. To continue ensuring reliability on this study, procedures conducted were documented and transcripts double-checked for mistakes. The researcher collected, analysed and interpreted data ensuring that what was recorded was exactly the same as what was expressed when the researcher conducted the study.

In addition, using a standardised open-ended interview schedule, closed-questions questionnaires and documentary analysis guides throughout the study ensured reliability of the study findings. Whilst, Delport (2005) describes validity as a degree to which a research measures what it is set out to measure. In addition, Bryman (2012) states that validity is seen as a process, which is concerned about the integrity of a study mainly the conclusions of that study.

For this study, internal consistency was given more attention, which is the process that measures the extent to which the individual items within a measuring instrument are measuring the same construct consistently (Wagner et al., 2012). Then, content validity refers to how accurately an assessment tool taps into the various aspects of the specific construct in question (Flick, 2014), of which the tools used on this study to collect data were first shared with the colleagues from the Master of Management (Monitoring and Evaluation) class for assessment and inputs.

Moreover, a combination of interviews (semi-structured interviews and structured interviews) and documentary analysis methods were used to strengthen reliability and validity in this study (Creswell, 2003; Neuman, 2006). Furthermore, each interview was auditory recorded and transcribed verbatim. The results will be presented in narratives with careful triangulation between the interview recordings, interview transcripts and field notes.

3.5 Research limitations

This section of the study is concerned about the limitations that the researcher encountered on the field when collecting data. A brief description of what limitations are will be presented. Then, a description of limitations that this study encountered will be provided.

Limitations are matters and occurrences that arise in a study, which are out of the researcher's control (Delva, Kirby, Knapper & Birtwhistle, 2002). They limit the extensity to which a study can go and sometimes affect the results and conclusions that can be drawn. It is important to highlight that the aim of this study is not to explain all key factors that determine data management in the Gauteng department of Social Development. The focus is placed on examining data management and the use and application of data in evidence-based planning and decision-making in the GDSD.

Therefore, this study does not exclusively explore the respective strengths of all factors that generate effective data management. What the study does do is to provide input into data management system that leads to evidence-based decision making and planning.

The study was limited to the following factors:

Limitations of Case Studies: The fact that this is a case study of Gauteng Social Development is a limitation on its own, as the findings of this study cannot be generalised to other South African public sectors. This is due to that case studies involve behaviour of the studied unit of analysis and may not reflect the behaviour of similar entities (Wiersma, 2000).

Limitations of Survey Instruments: Questionnaires were distributed with time constraints (two weeks to answer the questionnaires) to the four executive managers. This could have led to the poor response, which saw two of the four selected executive managers participating (Chief Director of Strategic Planning, Monitoring and Evaluation and one Deputy-Director General), with the HOD requesting one of her staff members to fill in the questionnaire on her behalf and one Deputy-Director General not participating at all.

Working at the GDSD: The researcher works for the Gauteng department of Social Development and this posed some limitations, as certain participants would say, "you know these processes or you know these things". In addition, some participants were sceptical of answering certain questions honestly, as they feared that the information shared might be shared with their management. The researcher had to remind the participants constantly that she was there as a student researcher not as an employee of the department and that anonymity and privacy principles will be employed throughout the study.

4 PRESENTATION OF FINDINGS

4.1 Introduction

As explained in chapter one, Monitoring and Evaluation brought about an awareness of the importance of data in public sectors and more specifically a focus on the management and use of that data for evidence-based decision-making and planning. Hence, the primary objective of this study was to examine the implementation of data management in the Gauteng department of Social Development. And, the second objective of this study was to assess if the Gauteng department of Social Development uses data in decision-making and planning in programmes of the department. Therefore, this chapter focuses on the presentation and narration of the study's findings. Section 4.2 provides the nature and extent of the fieldwork, whilst, section 4.3 presents the study's findings according to the study's five main themes and section 4.4 concludes the presentation of findings.

4.2 Nature and Extent of the Fieldwork

In this section, the presentation of findings will be provided. The research findings that the section presents are based on analysis of the following data sources —semi-structured interviews, questionnaires and documentary analysis. The empirical research findings are discussed as guided by the theoretical framework (see Section 2.6), the purpose of the study (see Section 1.2.2) and the research questions (see Section 1.2.3). For this study, data was collected from ten Strategic Planning, Monitoring and Evaluation unit personnel, three executive management and from analysis of GDSD data management documents using the three data collection techniques. On this Chapter, the participants of this study are identified by codes as this allows a logical presentation of data and anonymity.

The sample information and the portfolios of the interviewed participants and codes to be used when referring to the participants are depicted on the below table.

Table 3: Breakdown of the participants

1. Strategic Planning, Monitoring and Evaluation (semi-structured interviews)	**1A-S**	**1x Director: Monitoring and Evaluation** **3x Assistant Directors: Monitoring and Evaluation** **1x Assistant Director: Strategic Planning** **2x Senior Administrative Officer: Monitoring and Evaluation** **3x Administrative Officer: Monitoring and Evaluation**
2. Executive Management (questionnaires)	2A-E	1x Chief Director: Strategic Planning, Monitoring and Evaluation 1x Deputy-Director General 1x Deputy Director: Systems, Support Organisation

This breakdown of the participants is developed for quoting purposes, for example, to quote any of the participants in the Strategic Planning, Monitoring and Evaluation unit 1A-S will be used and for the executive management participants' 2A-E will be used. The participants are referred to by codes in order to ensure anonymity and confidentiality throughout the study.

4.2 Study Findings

Following the interviews, questionnaires and documentary analysis —data collected for the study was categorised into five themes that emerged from the data. Furthermore, this chapter has reported the themes as being separate, but there is a considerable overlap among them. These themes embodied major empirical findings of the research, and are discussed in detail in the following sections and some verbatim quotes extracted from the raw data were utilised to illustrate important findings.

4.2.1 Theme 1: Data Collection

This theme describes the method in which the GDSD uses to collect data. It further details the tools that they are using to collect data and the period of data collection. Nine of the interviewed participants reported that the department has specific period of collecting data, which are on a monthly and quarterly basis from its five regional offices, namely, Johannesburg metro, West Rand, Sedibeng, Ekurhuleni and Tshwane region.

They continued to state that the data that they collect from their regional offices originates from the Non-Profit making Organisations (NPOs) that are funded by the GDSD to render social development services to the community of Gauteng. The reviewed Gauteng Social Development Policy Framework on Managing Performance Information (2013) states that the department should have standardised processes for data collection, which includes data quality control measures during the data collection process. This was borne out of the ten interviewed participants with all of them stating that the GDSD has standardised templates that they use when collecting data from their business units, regional offices and institutions.

It also came through that the GDSDs business units, regional offices, and institutions when collecting data from the funded NPOs use these templates. In addition, these same templates were reported to be used by the funded NPOs when collating data to report to the GDSD. The participants further narrated that their standardised templates are guided by a Technical Indicator Description (TIDS), which clearly stipulates what each indicator on the standardised template should entail with one of the participants summing up the consensus by stating that:

> We have templates for collecting data. Those templates are guided by the Technical Indicator Description (TIDS), which basically tells you what an indicator entails and what type of evidence you should look at when collecting data (1A-S, interview, 2 February 2016).

Furthermore, the interviewed participants continued to note that the GDSD uses relevant templates, which are developed by the Strategic Planning, Monitoring and Evaluation unit to collect data from its five regional offices, business units and institutions. One of the interviewed participants clarified the templates as follows:

> Yes, according to us, we are using relevant templates because we are the ones who developed those templates, but the ones for Programme of Action (PoA) for the Premier's office were sent to us but the ones for Legislature were developed by us (1A-S, interview, 2 February 2016).

With one of the participants, further explaining the GDSD templates as follows:

> Yes, our templates are more of customised registers, what we are verifying that template must have indicator, description of evidence from the TIDS and must be exactly the way it is described on the TIDS tool. Like, the target, the region figure, or the institution or the M&E reported figure. Then, there will be a column for deviation using the M&E figure because that is what is verified and it is an agreement figure between the region and the M&E that is the figure that gets reported. So, that's how our templates for data collection and reporting are structured (1A-S, interview, 2 February 2016).

Moreover, other participants went further to explain that the data collection process is informed by the department's strategic plan and annual performance plan as these are tools that articulates what the department needs to do over a period of five years. Further, adding that the GDSD's business units, regional offices and the institutions have operational plans, which comes from the strategic plans to guide their day-to-day services including data collection from the NPOs.

During these interviews, in terms of the data collection templates, it came through that the Strategic Planning, Monitoring and Evaluation unit personnel are pleased with the templates that the department uses to collect data as most of them commended the uniformity during data collection, which comes with the use of standardised templates. In addition, the fact that they are the ones responsible for developing templates also contributes to their satisfactory with the standardised templates that the department uses.

4.2.2 Theme 2: Data Storage

This second theme sought to explore how GDSD maintains its data as a process of data management, which feeds into effective decision-making. The two reviewed documents revealed that the GDSD is expected to establish and formalise archiving procedures, which promote safekeeping of data (Gauteng Social Development Policy Framework on Managing Performance Information, 2013; Central Records of Performance Information Guidelines, 2013). These reviewed documents further detailed that the storage system that the GDSD needs to have must include procedures for storage and retrieval and disposal of documents by all officials (Gauteng Social Development Policy Framework on Managing Performance Information, 2013; Central Records of Performance Information Guidelines, 2013).

Further highlighting that through this storage system, the verified and accepted data records should be kept, maintained and protected until such time that the final audit by the office of the Auditor General (AG) is conducted on them for as long as they may still be required (Gauteng Social Development Policy Framework on Managing Performance Information, 2013; Central Records of Performance Information Guidelines, 2013). Correspondingly, all ten of the interviewed participants stated that the GDSD has a central records storage that is located in two regional offices, namely, Johannesburg metro region and Sedibeng region. They reported that these two regional offices store data in two different forms —the Johannesburg metro region office store data that has not been audited by the Auditor General (AG) and the Sedibeng regional office store data that is coming from the Johannesburg metro regional office after the Auditor General has audited it.

They narrated that the Johannesburg metro region office is used as a primary central storage and the Sedibeng office is used as a secondary central storage, highlighting that this is a temporary remedy of storage shortage. All of the interviewed participants further stated that data stored in the central records is mainly for auditing purposes, which are conducted by the Auditor General (AG) and the Gauteng Audit Services (GAS). One of the participants explained the central records management process as follows:

> Central records are part of maintaining data because what happens is, all information that gets verified from business units, institutions, regions it gets stored to the central records to prevent loss of information. Our central records management is guided by a policy that states that, in terms of the actual performance information nobody in the department or any other official will be allowed to access that information. It is strictly the Auditor General (AG) or the Gauteng Audit Services (GAS) who can access that information. It then says that any other person or official outside the AG and GAS will have to make a request in writing from the Chief Director up to the HOD and get an approval.

> So, it means even if the access is granted it will not to get copies but they will have to be accompanied to the central records by the M&E team and the central records management team and they will be then allowed to look at the information not to make copies but to just sit there in the central records look at specific information that they want to look at and after that the information gets locked again (1A-S, interview, 2 February 2016).

The interviewed participants continued to reiterate that GDSD data gets stored in the central records storage immediately after verification to prevent any tempering with the data. The above quote taken from one of the participants explained the central storage in terms of the processes one needs to follow when they want to access data. The below quote taken from one of the participants is breaking down the central storage process from the implementer's perspective, which are the Strategic Planning, Monitoring and Evaluation unit personnel:

> Then, the same data will be handed to the regional registry clerks who will move the data to the central records archives, which is at Johannesburg Metro Region, but the head office records will accept and sign to say this is the number of boxes and files that we have received and they will give us copies so that everybody has copies of what they have received. Once we have captured the evidence, the figures that we have received, we print that excel spreadsheet and sign off on it to say it was myself who was verifying and the person who was presenting the data before we go and do analysis reports. It is kept at the central records archives until the Auditor General comes. When the AG is done with that data, it then gets moved to our secondary central records archives, which is at Sedibeng region office because of space (1A-S, interview, 2 February 2016).

Two of the interviewed participants who participated in the questionnaire reported that the central records storage makes it easy for them as decision-makers of the department to access processed, analysed and interpreted data, as this data is managed by a personnel within the Strategic Planning through the use of Master data spreadsheet.

4.2.3 Theme 3: Data Processing and Analysis

The documentary analysis revealed the existence of data processing and analysis systems in the GDSD, further explaining the administrative data verification process in the department as a process that is conducted to test and prove reliability (validity, accuracy and completeness) and usefulness (presentation, measurability, relevance, timeliness and consistency) of the supporting source documents (Gauteng Social Development Policy Framework on Managing Performance Information, 2013; Central Records of Performance Information Guidelines, 2013). These reviewed documents continue to state that data in the GDSD is verified at all levels of data flow process (Gauteng Social Development Policy Framework on Managing Performance Information, 2013; Central Records of Performance Information Guidelines, 2013).

Nine of the interviewed participants mentioned that the department has a Performance Analysis Tool or a framework from the Treasury that guides them on how to process and analyse the department's data. Five of the participants reported that they process and analyse data on a monthly and quarterly basis using this Performance Analysis Tool, which entails three criteria that are to be followed when processing and analysing data, namely: **accuracy**, **completeness** and **validity**. These interviewed participants went further to describe these criteria; here quoted is one of the responses from one of the participants.

> On a monthly basis and quarterly basis, we do what we call performance analysis, so data is analysed on a monthly basis and quarterly basis. Our data is analysed by looking at three criteria, which are; **Accuracy:** we are saying what you are reporting as a reporting entity must be similar to what you have reported, for example, if you are saying you have seen two clients, in your report there must be two clients not less or more. **Completeness:** Remember the department is having stakeholders such as NPOs, so now, we are looking at the grid, and the grid is a sort of books that indicates to say, this is what is reported on this quarter. **Validity:** the document that you are giving us must be of valid, for example, you will give us a document with the name of the person you serviced without the signature it can't be valid without a signature. So, it means it must be having identity numbers for that document to be valid.

> We analyse data according to the **accuracy, completeness** and **validity** of the department. That data is analysed to inform the status of the programmes (1A-S, interview, 2 February 2016).

While one of the participants stated that the GDSD uses target measures for data analysis, whilst, the participant who is from the Strategic Planning unit reported that there is a specific analysis report that she is responsible for and that she analyses data using an excel spreadsheet producing charts and graphs showing areas of performance, under-performance even areas of over-performance and those that require an intervention. She further highlighted that the Performance Analysis Tool also guides this analysis report.

However, one of the interviewed participants was of the view that the GDSD uses a twofold method to analyse and process its data. This twofold method covered what has been mentioned by the other participants, which is the use of Performance Analysis Tool framework process (including completeness, validity and accuracy) and also added one of the above participant's views, which is that the department uses target measures to analyse and process its data, see the quote below:

> Then, we move from the paper, we capture to an excel spreadsheet. From the excel spreadsheet we have two types of analysis report, the normal one which looks at issues of completeness, validity and accuracy. Then, we have another report that we use to calculate the target versus the M&E figure meaning how far we are as the department. After we are done with the counting and verification on the regions, we come back to our office to do reports. We use spreadsheets to analyse our data where we capture the challenges that we came across on a particular indicator. We also have an analysis report that looks at issues of accuracy on what the regions gave us and what we got when we verified.

Eight of the interviewed participants seemed to have the same understanding of data processing and analysis in the GDSD, whilst, two of them seemed to be understanding data processing and analysis process differently.

Nonetheless, all the interviewed participants were in agreement that the department uses Performance Analysis Tool to analyse and process its data.

4.2.4 Theme 4: Data Quality Assurance

This theme narrates the manner in which data quality assurance is conducted in the GDSD as part of data management. The reviewed documents on this theme revealed that data quality assurance is the process of promoting the quality of data through a set of internal mechanisms and processes implemented, to ensure that data meets the dimensions of quality (Gauteng Social Development Policy Framework on Managing Performance Information, 2013). The table below shows the data quality control measures as per the reviewed document, which is the Gauteng Social Development Policy Framework on Managing Performance Information, 2013:

Control Measure	Description	Implementation
1. Stamping	This control entails stamping of source documents accepted as authentic after verification against validity, accuracy and completeness. The stamp means that figures reported against the service tracked by a specific indicator originate from the stamped source documents and is authentic. Stamping also means that stamped source documents have gone through the audit process. Source documents viewed to be inconsistent with the audit standard (invalid, inaccurate, incomplete) is stamped with a rejection stamp and is separated from the profile of evidence accepted as authentically supporting of performance.	During verification, accepted source documents are stamped with an acceptance stamp dated the date of verification and rejected source documents or data elements in a source documents stamped with a rejection stamp.
Checklist of NPOs	Through a customised template, regional offices are obligated to provide a list of all NPOs who are meant to perform services and report performance on services tracked by each indicator in the APP against the target set for the quarter reviewed. Regions are also obligated to provide a breakdown of individual NPO contribution against the quarterly target on each indicator. This enables the department to identify NPOs that are not complying with the performance and reporting standards in order to gauge the extent of the risk and conduct proper monitoring and follow-ups.	During verification, this checklist is audited and findings are noted and shared to the Region for it to follow-up with the defaulting NPOs. This forms the basis of the Directorate: M&E sampling method on NPOs that require urgent attention in terms of monitoring and capacity building.

Source: Gauteng Social Development Policy Framework on Managing Performance Information (2013)

Similarly, eight of the interviewed participants stated that the GDSD has a verification process that they conduct on a monthly and quarterly basis when collecting data, to quality assure data. To quote few of the participants, one of them indicated that:

> Data quality processes are done in phases by the department. First phase, data is from the NPOs, and then from the NPOs it goes to the regional offices. The regional offices do their own internal verification checking if the data submitted by the NPOs tally with the department's indicators. Then, from there as head office M&E, we come and do verification on the same data. Also, note that the NPOs do their own quality assurance before submitting to the regions. We also have our control measures as M&E head office where we stamp the evidence before capturing it to the excel spreadsheet using different stamps, such as, approved stamp used to prove that the data has been verified and accepted by the provincial.
>
> Then, we have an official that captures that data into a spreadsheet then forward that information to the Strategic Planning personnel at our head office. Yes, there are source documents available for verification and audit purposes. We have Technical Indicator Descriptions (TIDS) that tells us what evidence we should accept and then we have our own template, which have all the targets and the description of evidence. We also have a template from the AG's office that entails its own indicators that the AG would like to see during his or her own audit purposes to see what was targeted for in a quarter or that financial year (1A-S, interview, 3 February 2016).

The other participant has narrated data quality assurance in the GDSD as follows:

> During our verification sessions where we collect data, which are being reported, we actually look at the source documents that they submit to us. We check if everything is there like, is it completed in full, is it dated, is it signed, does it have all the requirements that the Technical Indicator Description System (TIDS) specify that for such and such indicator these are the things you should have. So, we do have stamps in place for quality assurance, if we find that everything is according to TIDS we put the approve stamp, then if the information is not approved we have decline stamps for duplicate we put duplicate stamp. We also have a decline stamps for data that is missing some information that is on the TIDS templates (1A-S, interview, 2 February 2016).

4.2.5 Theme 5: Data Reporting and Use

There was no much information found on data reporting and use from the reviewed Social Development documents. The reviewed document only highlights that the GDSD uses a manual performance data reporting system supported by computerised applications such as Microsoft Excel, Microsoft Word and Microsoft Email and minimum standards that are to be followed to minimise data quality risks, which have been covered in the previous paragraph (Gauteng Social Development Policy Framework on Managing Performance Information, 2013).

All ten of the interviewed participants indicated that data or information reporting in the department is done through the Strategic Planning, Monitoring and Evaluation unit as they are the ones responsible for data management in the GDSD. One of the participants went further to explain that the Strategic Planning, Monitoring and Evaluation unit verifies and consolidates that data into the provided templates for reporting purposes. The participant quoted below narrates the reporting process and offices that the GDSD report to and explaining the use of those reports by the decision-makers:

> That again, we use those figures that are captured for each region to feed into our departmental reports like the quarterly reports that I have mentioned. Most of reports originate from the Strategic Planning, Monitoring and Evaluation unit like the quarterly report, Programme of Action, monthly reports and then they are sent to the respective offices such as the HOD's office, Office of the premier and the Legislature. Sometimes, it might be for just their knowledge, sometimes it might be relevant to a particular situation, sometimes it might be in response to questions asked by the Legislature or the office of the Premier or National Department of Social Development, you know, they would ask for things like service based information say for example, how many people were serviced between a certain time period, how many NPOs are we having in a certain area and providing a certain type of services (1A-S, interview, 2 February 2016).

Another participant explained the data reporting and use process by the GDSD as follows:

> The data that is being reported is used for planning and we have different departments that work with us hand in hand such as the department of health, SASSA using our data to track beneficiaries of grants. The executive management does request data such as the GYD information to know how many beneficiaries were youth, disabled and their genders for their own planning. And the Strategic planning unit request information from the M&E unit to see where the department is and for their planning purposes. We do monthly, quarterly reports then from there we check using APP, which has our targets if we are on the right track, are we meeting our targets, if not, what needs to be done to meet those targets and for future planning. The programmes to us are submitting the data, when we do our verifications we check if the data is of good qualities and give feedback to them so that in future they can improve. So, I would say yes because that data also influence decision-making in the long run, as they use it as a baseline for future planning (1A-S, interview, 2 February 2016).

The last quoted participant is also in agreement with the rest of the interviewed participants by indicated that:

> Data is reported to the Premier's office, to Gauteng Audit Services (GAS), which is under Treasury and then we also report to Legislature and the Auditor General's office, and then National Department of Social Development. And as when there are ministerial or presidential queries, we also submit there. They request the spreadsheet and the analysis report. They request these reports for planning purposes and for reporting purposes, as they are the ones who report to Legislature (1A-S, interview, 2 February 2016).

The results from the questionnaire that was answered by the three executive managers indicated that there is a poor use of data in decision-making and planning in the GDSD with the participants stating that they sometimes employ data in their decision-making and planning.

4.3 Conclusion

The aim of this chapter was to present and narrate the findings of the study pertaining to data management in the Gauteng department of Social Development. This chapter presented the findings that were gathered through the semi-structured interviews, structured interviews and documentary analysis. These findings were presented through the use of five themes that emerged from the collected data. A discovery on these findings was made that the Gauteng department of Social Development data management has not translated into use of data in decision making and planning in programmes of the department. The following chapter will now provide a discussion of results of the study taking into account the reviewed literature in chapter two.

5 DISCUSSION OF RESULTS

The research sets out to examine data management in the Gauteng department of Social Development. Chapter 3 and 4 described the collected data, its analysis and results. This chapter answers this study's research questions and discusses results of the study. This chapter commences with the summary of findings on section 5.1, followed by the discussion of findings on section 5.2 and the conclusion of the chapter on section 5.3.

5.1 Summary of Findings

This study examined data management in the Gauteng department of Social Development. Data management in the GDSD was interrogated using the department's data management theory of change presented on section 2.6 and by focusing on the five themes, namely: data collection, data storage, data quality assurance, data processing and analysis, data reporting, and use. The key findings of the study are summarised below:

a) In terms of data collection, the department appears to have clear structured data collection tools with distinct indicator description measures. These data collection tools also appeared to be user-friendly and applicable.
b) Availability of data storage in the GDSD with clear guidelines on how to use and access the storage was also discovered.
c) In terms of data quality assurance, it came through that the GDSD has verification processes in place, which are conducted from NPO level to the Regional level and to the Provincial level.
d) When it came to data processing and analysis, it seemed that the GDSD data management implementers have conflicting ideas on how to carry out data analysis with the majority highlighting the use of Performance Analysis Tool and with few stating that this process is conducted in a twofold method, which includes the PAT and target measures.
e) In data reporting and use, it came clear that the GDSD has oversight bodies that they compile reports for using the data managed by the department. It also came out that the department does not always use data in their decision-making and planning processes.

5.2 Discussions of findings

In this section, the findings of the study are correlated with each of the three research questions presented in chapter one. After a brief of the questions, the results will be discussed including interpretations that attempt to provide logical explanations. This discussion and interpretation of findings is based on a monitoring and evaluation theory, which is theory of change. This theoretical framework for the study has been presented and discussed in detail in chapter two (see Section 2.6) of the report.

This section is divided into three sub-sections, the first sub-section aims to discuss findings based on the first research question —data collection, collation, analysis, storage and reporting in the Gauteng department of Social Development. The second sub-section is based on the second research question —data use and evidence based decision making in the Gauteng department of Social Development. The last sub-section is focused on the third research question —data management systems in the Gauteng department of Social Development. The discussion of findings is conducted by first highlighting the theoretical context of the study to bring a proper perspective to the analysis and interpretation of findings, closely followed by the findings and the implications.

5.2.1 Data collection, collation, analysis, storage and reporting in the GDSD

According to the Theory of Change (ToC), to understand how and why a certain intervention is working, there is a need to understand how the activities of that intervention are expected to lead to the desired results (Mayne & Johnson, 2015). Besides, Theory of Change (ToC) uses three components to describe an intervention: activities or inputs, the intended outcomes or outputs, and the mechanisms through which the intended outcomes are achieved (Rogers, 2008). Data collection, collation, analysis, storage and reporting are key activities of data management intervention in the Gauteng department of Social Development (GDSD policy framework on Management of Performance Information, 2013).

In addition, theory of change explains how an intervention is understood to contribute to a chain of results that produce the intended results (Funnell & Rogers, 2011). That chain of results are inputs, activities, outputs, outcomes and impacts. Hence, it was necessary for this study to assess the Gauteng department of Social Development activities for the implementation of data management intervention, to find out if the department's activities are implemented in a method that will lead to the assumed outputs and outcomes, as per the department's Theory of Change (GDSD policy framework on Management of Performance Information, 2013). Further, Theory of Change state that for activities of an intervention to be effective, they need to be systematically implemented throughout the intervention (Foundations of Success, 2007).

This section describes the manner in which data management activities are carried out in the GDSD in order to reach the department's data management ultimate goal, which is the use of data in evidence-based decision-making and planning. As detailed in chapter 4, the GDSD is expected by its policy framework on Managing Performance Information (2013) to have standardised templates to collect data from their business units, regional offices, and institutions. The research findings found out that indeed GDSD has data collection processes in place of which includes the said standardised templates. In addition, the research findings indicated that these standardised templates used for data collection in the GDSD are guided by a technical indicator description (TIDs), which serves as a measure for data quality assurance and data verification.

However, there is some overlap in the participants' understanding of the department's data processing and analysis and data quality assurance processes. This was picked up during the interviews where the Strategic Planning, Monitoring and Evaluation personnel presented conflicting ideas. The majority of the participants explained the data processing and analysis as a process that utilises Performance Analysis Tool, while, the minority of the participants stated that the department uses a twofold method to analyse data, which are target measures and the Performance Analysis Tool. Although, the findings of data management in the GDSD show a high practise in the activities of data management, this overlap of understanding in data processing and analysis and data quality assurance is concerning.

As per the Theory of Change, activities of an intervention should be sufficiently detailed in a manner that anyone can understand what they entail (Mackinnon & Amott, 2006). By looking at the findings of this study one conclude that this is not the case with the activities of data management in the GDSD with the personnel that is supposed to effectively implement them contradicting themselves. This could be results of lack of clear interpretation of the activities in the GDSD for the people who work with the data management or lack of refresher seminars to keep everyone on track.

Furthermore, Chen, Hailey, Wang, & Yu (2014) in their study about data quality assessment methods for public health information systems, emphasise the importance of high quality data as a prerequisite for better information and better decision-making. This study demonstrates the importance of data management activities for the department to be able to achieve the data management intervention intended goals. Moreover, Mate et al. (2009) previously reported that obtainment of accurate and complete data remains a challenge in South African health departments even though efforts to reach targets are implemented daily. This could be the case with the Gauteng department of Social Development, as the study's findings showed that the department implements data management activities daily.

As far as the data reporting is concerned, the GDSD is obliged to comply with the requirements imposed by each of the central Monitoring and Evaluation bodies that assume responsibility for the following areas of policy:

- Constitution of the Republic of South Africa No. 108 of 1986
- Public Financial Management Act 1999 (Act No 1 of 1999)
- Government-wide Monitoring and Evaluation Framework
- National Treasury's Framework for Managing Programme Performance information 2007
- Public Audit Act (Act No. 25 of 2004)
- Treasury Regulations

It is worth to note that each of these institutions work off a political mandate and have their own protocols for gathering and reporting on performance information. As per the research findings, there has been some indication that the GDSD has good reporting systems in place.

By way of example, reporting in the GDSD is exclusively done through the Strategic Planning, Monitoring and Evaluation unit. It came clear on the research findings that this unit is responsible for the compilation of reports such as the Programme of Action (PoA), monthly reports and quarterly reports that are meant for the office of the Head of the Department (HOD), the office of the Premier, the Legislature and the Treasury. The PoA is a practical way of demonstrating political commitment to bring about an accountable Public Service, when performance information is made available to the public (Naidoo, 2011).

Even though the need for government departments to demonstrate its commitment to accountability through reporting, administrative compliance in the GDSD should not be equated to resulting in effective data management, in that it shows a commitment to the prevailing policies. The discussion on data management in chapter two has indicated that data reporting are some, but not all, of the indicators of data management. There are others, such as use of data in evidence-based decision-making and planning, which point out that even if there is reporting of data by the department, this is but partial contribution on data management. It is possible for a department to perform well in terms of mandatory compliance, but still not meet the standards of effective data management, as compliance does not equate to data use for evidence-based decision-making and planning, which is broader than meeting administrative standards.

In terms of data storage, the research findings indicated that the GDSD has a functioning data storage where data is stored in two ways, the unaudited data is stored in the Johannesburg metro region office and the audited data is stored in the Sedibeng office. It further came out that the central archiving storage is guided by a policy, which stipulates how to access the storage or the data stored. This is an important activity as data storage affects the usability of data. However, the interviewed participants highlighted that the department has no electronic system to store big data; they still heavily rely on manual data storage. Manual big data storing could results into poor use of data, which affects the effectiveness of data management as it can take a lot of time for one to locate the specific data that they are looking for. Further, papers fade the ink out, which also results into loss of data.

Moreover, the research findings generally show a strong implementation of the data management activities with the interviewed participants arguing that the GDSDs data management works very well in areas of data collection, data collation, data auditing/verification, data analysis and reporting, and data storage. The findings of this study show data management activities in the GDSD are in line with the Government-wide Monitoring and Evaluation framework (2007) and the department's legislation and guidelines even though there are conflicting ideas on how the department conducts data processing and analysis and data quality assurance by the participants from the Strategic Planning, Monitoring and Evaluation.

In addition, the staff of the Strategic Planning, monitoring and evaluation unit are reported to be involved in the data management process from the development of indicators and measures of data collection and verification to the data analysis, processing, storage and reporting. As a final point, this is a good attribute as it helps them to be familiar and understand better the processes of data management as implementers in the GDSD.

5.2.2 Data use and Decision-making in the GDSD

Outcomes are driven by Theory of Change, which underpins data management intervention. In addition, Theory of Change is also known as a process of a planned social change that moves from assumptions that guide its design to long-term goals that seeks to achieve (Mackinnon & Amott, 2006). Those long-term goals are outcomes. The preceding section looked at the planned work part of a Theory of Change and this section continues from there by focusing on the intended results of data management in the Gauteng department of Social Development. Therefore, this section looks at the use of data in decision making and planning, whereas, the former section looked at the five activities of data management, where there was compulsion to respond to reporting obligations, this section focuses on the non-mandatory form of data management. The manner in which data produced is engaged with is considered in this section in order to answer the question of whether Gauteng department of Social Development does utilise its data in decision-making and planning.

In this study, data management intervention and use of data in decision-making and planning are defined as causal factors because the result of use of data in decision-making and planning is dependent on the application of data management. For instance, the findings of the study suggest that there is no clear understanding of how the department implements its data processing and analysis and data verification amongst the personnel responsible for data management implementation. This suggest that, use of data in decision-making and planning will be poor as the data produced by the department might not be usable. This is evident from the research findings with the decision makers citing that they 'sometimes' use data in decision-making and planning.

Moreover, in a results chain, outcomes depend on the method of which activities of an intervention are implemented. With the findings indicating weaknesses within the GDSD's data management activities, it is no surprise that there is poor use of data in decision-making. The World Bank (2012) further supports this notion by stating that, the success of a ToC lies on results chain, and this is the case with the GDSD data management intervention as the gaps in the implementation of the activities of the intervention have been detected.

In addition, in a study conducted by Pappaioanou et al. (2003), it has been showed that many public health professionals are still making decisions based on their intuitions and politics relations rather than rational thinking and informed decision-making in their observation study about which public health care professionals use data for decision-making in Bolivia, Cameroon, Mexico and Philippines. This could also be the case with the poor use of the available data by decision-makers in the GDSD, as they have also cited on research findings that they have access to data but they still do not often use it in their decision-making and planning processes.

It is also important to highlight the effects of having multiple decision-making structures that are ranked based as they have a significant role in issues of decision-making and planning. The research findings of the study indicated that the GDSD has different structures of decision-making where the chief-director of Strategic Planning and Monitoring and Evaluation, the two Deputy-Directors of the department and the Head of the Department are part.

The research findings on this research question further indicated that the Strategic Planning, Monitoring and Evaluation unit personnel seems to be of the view that the data they produce and manage on a monthly and quarterly basis are being used in the departments decision-making and planning. This could be the result of the fact that the reports that they produce on a monthly and quarterly basis gets submitted to the executive management even though they do not always get used in decision-making and planning. Also, this highlights issues of transparency and communication between the data management implementers and data management users.

5.2.3 Data management systems in the GDSD

Apart from the use of data in decision making and planning highlight above, this section looks at the major outcomes of data management systems in the GDSD. The main document used to assess the data management system in the GDSD is the department's Policy Framework on Managing Performance Information (2013), as it is a document responsible for the standardisation of practise of performance management and it further stipulates what and how the GDSD is expected to implement data management and what to be produced by the department's data management systems.

As detailed in chapter 4, the research findings from the ten interviewed Strategic Planning, Monitoring and Evaluation personnel demonstrate that the major outcomes of the GDSD's data management are usable information. However, this finding is contradictory, as the three interviewed executive managers of the GDSD have stated that they do not always use data in their decision-making and planning processes.

By the way, the GDSD's Policy Framework on Managing Performance Information (2013) states that the department of Monitoring and Evaluation as an oversight body for the implementation of monitoring and evaluation by government departments stated the accountability in departments will move from compliance with regulation to include accountability for service delivery outputs and outcomes. This seem to be not the case with the GDSD as outcomes for service delivery are still slacking behind, while, outcomes for compliance are thriving.

Furthermore, the research findings in this section indicate that the GDSD's data management system has managed to assist the department in obtaining clean audit reports from the Auditor General for the past three financial years. As discussed above, this is the proof that the department's data management system is a bit skewed, as it is exceling on the other hand, while, failing on the other. Receiving of clean audits in the GDSD shows that the department pays more attention on the administrative compliance over service delivery outcomes. In summary, the GDSD's data management systems are not reaching the set goals by the department, which are planning, budgeting, implementation, reporting, monitoring and evaluation (GDSD Policy Framework on Managing Performance Information, 2013).

5.3 Conclusions

This study has attempted to examine data management in the Gauteng department of Social Development. It has likewise described many of the most data management processes in the GDSD. Data management in the GDSD was examined under five criteria: data collection, data storage, data processing and analysis, data reporting and use, and data quality assurance. The results suggest that the theory of change has been applied either explicitly or implicitly in the GDSD as the activities implemented on the ground reflect the department's ToC. All five dimensions of data management: data collection, data storage, data processing and analysis, data reporting, use, and data quality assurance need to be systematically evaluated. Data use in decision-making at the GDSD has not received an adequate attention. This lack of recognition of data use in decision-making might reflect a lack of consensus on the results chain of the GDSD's data management theory of change.

One limitation of this study is that minutes of the decision-making and planning meetings were not assessed, however, the review of the GDSD's policy documents have played a significant role in informing the study about what is expected of the GDSD's data management system. Further, the review of similar studies such as those examining the effectiveness of health management information systems, that were originally performed to evaluate the use of health information in decision-making and planning have subsequently provided vital information on the study.

Although this study shows that, the GDSD's data management appears to be moderate not effective due to poor use of data in decision-making and, its contribution to the monitoring and evaluation field could be primary or secondary in nature. The initial evidence when combined with evidence from the reviewed studies, supports a primary effect, however, the study did not examine data management to its full capacity in the GDSD. Thus, the study cannot discount the possibility that there might be other factors influencing the poor use of data in evidence-based decision making and planning in the GDSD.

6 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

6.1 Summary

This section presents a summation of the key findings that emanated from the research. This presentation will be done by reflecting on the three research questions of the study. This study produced comprehensible data management chapters that interrogated the theory of change to get the intended results of data management in the GDSD. The purpose of the study was to examine data management in the GDSD and the use and application of data in evidence–based planning and decision-making in programmes.

The importance of this study has been contextualised and its relevance explained as a study that has a potential to contribute knowledge towards advancing public administration and monitoring and evaluation in the South African public sphere. Included in this summary are a review of the purpose of the study, a restatement of the research questions, the research methodology used, and a summary of the study results, conclusions and discussion. Recommendations for further research and possible studies conclude this chapter.

6.1.1 Purpose of the Study

The purpose of this study was to examine data management in the Gauteng department of Social Development and the use and application of data in evidence-based planning and decision-making in programmes of the Gauteng department of Social Development. In order to address this, three below research questions were posed and answered.

6.1.2 Restatement of Research Questions

The critical question asked is how is data collected, collated, analysed, stored and reported in the GDSD. In answering this question, the research has argued that for data management to be effective all data management dimensions, namely, collection, collation, storing, processing or analysis and reporting should be systematically implemented.

Because the study is using theory of change as a theoretical framework, it further means that not only the activities of data management were interrogated, but also the outputs and outcomes of a data management system in the GDSD. In light of the data management outcomes, the executive management of the GDSD were interviewed, and for the implementation of data management activities, the Strategic Planning, Monitoring and Evaluation personnel were interviewed. The common questions asked in each instance were whether the data management has contributed to evidence based planning and decision making in programmes of the GDSD. By examining how the GDSD uses its data in decision-making and planning, insights into data management outcomes in the GDSD were obtained.

Below is the restatement of the three research questions of the study.

The research questions of this study were:

- How is data collected, collated, analysed, stored and reported in the GDSD?
- What influences the decisions GDSD makes and the services it provides?
- What are major outcomes of a data management in the GDSD?

The research found that data management in the Gauteng department of Social Development was moderate, providing significant opportunities for growth and improvement especially in the use of data for decision-making and planning. The methodology used on this study is summarised below.

6.1.3 Research Methodology

The method used on this study was qualitative research strategy with features of a quantitative research strategy to collect data from the purposive selected Strategic Planning, Monitoring and Evaluation unit personnel and the executive management of the GDSD. This included a use of open-ended standardised questions, which were answered by ten participants from the Strategic Planning, Monitoring and Evaluation unit, four closed questionnaires answered by three of the department's executive management and documentary analysis of the GDSD policy, legislation and guidelines. Data collected from the survey participants represented their perceptions regarding data management in the GDSD.

A purposive sample was selected from the population of the GDSD executive members and the selected participants completed a survey questionnaire that addressed their perceptions regarding data management and evidence-based decision making and planning in the GDSD see (Appendix 3). During the week of February 1, 2016, these selected executive members of the GDSD were mailed questionnaires, accompanied by a cover letter (Appendices) and the recipients were requested to complete the questionnaire (Appendix 3) and to return it to the researcher as soon as possible. Then, the purposive selected sample to participate on the semi-structured interviews were interviewed on the week of February, 1, 2016 to February, 3, 2016 (see Appendix 3b). The interviews were to examine their perspectives and experiences as Gauteng department of Social Development implementers of data management.

Consequently, GDSD legislation and guidelines documents were reviewed during this period to get an understanding of how data management is supposed to be implemented in the GDSD. Validity and reliability were ensured through sharing the data collection tools first with colleagues in the Master of Management (PDM-ME) class, review of literature and the combination of interviews (semi-structured interviews and structured interviews) and documentary analysis methods.

6.1.4 Results

Demographic and personal data reported by those who responded to the survey were provided in section 4.1.1 and their portfolios tabled in table 2 of the same section. The semi-structured interviewed participants were made out of five males and five females with one female in the middle management level and the rest in the administration level. For the participants who participated in the questionnaires, two were males and one female and all three of them were in the senior management level.

Section two of the survey (closed questions) contained six questions that asked the selected executive management members to indicate their perceptions regarding data management in the Gauteng department of Social Development. All three of the interviewed participants indicated that data management in the GDSD were satisfactory. Section three of the survey contained six questions that focused on the experiences of the selected participants on the use of data for decision-making in the GDSD.

Again, all three of the interviewed participants indicated that usable data in the GDSD was easily accessible even though they are not always using it in their decision-making and planning processes.

For the semi-structured interviews, the open-ended standardised interview schedule composed of three sections, which were made out of the three research questions. The study set out to describe data management in the GDSD. The implementation of data management in the GDSD was interrogated as per the GDSD data management theory of change depicted in section 2.6, figure 6. In the GDSD, data management is the strongest when it comes to the implementation of activities and feeble when it comes to data management outcomes or goals, which are to make evidence-based decision-making and planning as per the ToC (see figure 6 in section 2.6). It is also clear that the guidelines and policy frameworks provided to the Strategic Planning, Monitoring and Evaluation unit, assist the department in implementing data management in the GDSD accordingly.

6.2 Conclusions

The study was set out to examine data management in the Gauteng department of Social Development and has distinguished the method in which data management is implemented in the GDSD, the processes and reasons behind the methods employed. The study has also sought to know whether data management can result in evidence-based decision-making and planning. The theoretical framework used on this study was Theory of Change. The main empirical findings are chapter specific and were summarised within the respective chapter (see Chapter 4). The findings in this study found data management in the GDSD to be in a moderate level and that the department is yet to realise the full potential of data management.

It is also important to highlight the positive perception demonstrated by the Strategic Planning, Monitoring and Evaluation unit personnel regarding the implementation of data management activities: data collection, data collation, data processing and analysis and data reporting and use. While, they acknowledged some unsatisfactory conditions the data management system faces such as the lack of an electronic system to maintain big data and limited human resources to conduct verification processes.

The Strategic Planning, Monitoring and Evaluation unit personnel together with the executive management reported that GDSD's data management are either better than adequate or adequate citing that the department's achievement of clean audit reports for the past three financial years to be the direct results of the department's data management system.

6.3 Recommendations

The findings of this study identified gaps in the current implementation of data management in the GDSD. Outcomes happen as a result of all the work that has been done. For use of data in decision-making and planning, the GDSD needs to ensure that all activities of data management are clear and understandable to the people responsible for data management implementation. Moreover, data management implementation in the GDSD needs to be service delivery outcome based (evidence-based planning and decision making), and not only be prioritised to administrative compliance (reporting to oversight bodies), this is even proposed by the GDSD's Policy on Management of Performance Information (2013). Furthermore, an evaluation study be it process, impact or summation, conducted by an internal and external personnel on the implementation of data management in the GDSD is needed.

This will help the department to see where its data management system is performing and where it is not performing, know the causes and how to fix them to improve the system. It is equally concerning that the interviewed participants of the GDSD see no need for improvements in the data management system. This could be results of not knowing or just be administrative compliance thinking. Either way, this view will prevent any chances of the system to be exploited to its potential best in the GDSD. In order to address the poor use of data in decision-making and planning by the executive management, it is recommended that the GDSD's encourages the use of the existing data by following these below steps:

- Change the type of data that the decision-makers interact with, from numbers to a much detailed information. The most user-friendly approach would be to provide both numbers and detailed data.
- Develop a policy that guides the executive managers on use of data in decision-making and planning in the department.

- Consider the establishment of a comprehensive indicator system for the decision-makers as part of the GDSD's strategic planning process. An indicator system would help to focus the attention of the decision-makers on key programme issues and encourage debate about appropriate goals for the department and the actions needed to achieve desired goals. And not only use data for compliance and mitigation purposes.

To generate achievable policy strategies and effective monitoring and evaluation systems with regards to data management, there is a need for more case studies in South African public sectors to allow further assessments of data management implementation. The study has offered an evaluative perspective on an important public sector policy intervention and only carries a fifty percent of the academic programme which led to the study to be conducted in a limited space of time. A direct consequence of this limited time, the study did not manage to explore the subject to its full potential. Due to that, exploring the following, future research studies can facilitate the attainment of this goal through:

- Conducting a mixed methods study with sufficient time to obtain the intensive information needed to improve the state of data management in South African public sectors.

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1. STUDY APPROVAL LETTER

91 Batho-Pele Building
Commissioner Street
Johannesburg Metro Region,
2001

01 October 2015

Head of the Department
Gauteng Social Development

Dear Mrs. R.W Tshabalala

RE: Permission to Conduct Research Study

This correspondence is intended to request permission from the Head of Department of the Gauteng Department of Social Development to conduct a research study at the department. I am currently working at the Johannesburg Metro Region office as a social worker, engaging in different developmental activities to improve the performance of Non-Profit Organisations, which are funded by the GDSD. I am studying towards a Master of Management (specialty Monitoring and Evaluation) degree at the University of Witwatersrand, Johannesburg, and one of the requirements is that I must complete a research full dissertation (thesis).

My research is entitled: **Evaluating the effectiveness of data management systems employed by the Gauteng department of Social Development.** The aim of the study is to assess whether the current data management systems implemented assists the department to achieve its intended goals. I am of the view that the proposed study's results may be beneficial to the GDSD. The study will be qualitative in nature with quantitative elements targeting the executive management of the department and the M&E personnel. I am planning to conduct interviews with the executive management of the department and administering questionnaires with the personnel in the M&E unit. The study will conform to all research ethical regulations.

For ethical purposes and to comply with the university's standard I need to obtain a formal permission from the GDSD.

Your approval to conduct this study will be greatly appreciated.

Sincerely,
Zikho Twantwa,
Student at Wits School of Governance (Wits University)
01/10/2015
Cell no: 0741771157
Email: 870683@students.wits.ac.za or zics0310@gmail.com

GAUTENG PROVINCE
SOCIAL DEVELOPMENT
REPUBLIC OF SOUTH AFRICA

Enquiries: Ms Keitumetse Komane
Tel: +27 (0)11 355 7892
File no: 2/9/26

Ms Zikho Twantwa

Dear Zikho Twantwa

RE: APPLICATION TO CONDUCT RESEARCH IN THE DEPARTMENT OF SOCIAL DEVELOPMENT

Thank you for your application to conduct research in the Gauteng Department of Social Development.

Your application on the research **"Data management in the Gauteng department of Social Development"** has been considered and approved for support by the Department as it was found beneficial to the Department's vision and mission. The approval is subject to the Departmental terms and conditions as endorsed by you on the 25/11/2015.

May I take this opportunity to wish you well in the journey that you are about to embark upon.

We are looking forward to a value adding research and a fruitful co-operation.

With thanks.

Ms. WR Tshabalala
Head of Department: Social Development
Date: 10/12/2015

Data management in the Gauteng Department of Social Development

Dear Gauteng DSD executive management,

Re: Data management in the Gauteng department of Social Development

I am a Masters Student from the University of Witwatersrand (Wits School of Governance). The purpose of this letter is to seek your participation in this survey.

I am conducting this research to assess data management in the Gauteng department of Social Development. Your participation in this survey is important and valuable as a person working with data or data management at the said department. There is no right or wrong answer, and what is required is for me to get a sense of how is data management employed in the GDSD from where you sit as a manager of the department that uses data for decision-making. The questionnaire requires in most instances a cross (x) in the boxes provided.

Kindly note that your responses will be treated with confidentiality and anonymous, as you are not required to disclose your name anywhere on the questionnaire. You may withdraw your participation at any time of this research, as it is voluntary.

It should not take you more than a few minutes to fill in this document. Kindly email back to me at: 870683@students.wits.ac.za. I would appreciate the responses by Monday, the 8th February 2016 at 16:00.

You may also call me should you require any clarity on the questions, at 074 1771 157.

Thank you for your cooperation.

……....
Yours truly,
Miss Zikho Twantwa

Appendix 1.1: Data Collection Instrument (closed-questionnaire)

Section 1

Demographics Information

The demographic details requested are for analytical purposes only and will not be used to identify any respondent. Your responses are anonymous. Please indicate the response category that best describes you.

1.1 Indicate your gender

- o Male
- o Female

1.2 Indicate your age

- o 19-24
- o 25-29
- o 30-34
- o 35-39
- o 40-45
- o Above 45

Background information

1.3 What is your post-level in the organisation? [ ]

1.4 Which management forums do you sit on?

Executive Management	
Planning, Monitoring & Evaluation Forum	
Other (specify)	

1.4 Number of years in the current position

> 2 yrs.	2 – 4 yrs.	5 -6 yrs.	7 – 8 yrs.	9 – 10 yrs.	> 10 yrs. (specify)

Section 2

In this section, I am asking you about your perceptions on data management in the Gauteng department of Social Development. Please provide your answers in the scale between strongly disagree and strongly agree, with the midpoint being neutral. Click on the box that best indicates your level of agreement.

2.1 What in your own opinion is data management?

2.2 The monthly data reports produced by data management processes help the Department to make evidence-based decisions

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

2.3 Data management in the department contributes to evidence-based decision-making

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

2.4 The department sees data management as being useful for decision-making purposes

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

2.5 Use of data management is only for keeping records and not for programme development or decision-making

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

2.6 The system used to store data is useful in that it makes it easy for us to access data

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

Section 3

In this section, I am assessing your experiences on the use of the data management of your department. Please provide your answers in the scale between strongly disagree and strongly agree, with the midpoint being neutral. Click on the box that best indicates your level of agreement.

3.1 Data within the Gauteng department of Social Development are easily accessible

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

3.2 Data management is sufficiently integrated into the institutional management arrangements of Gauteng department of Social Development to add value

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

3.3 Data management has not managed to add value to decision-making in the Gauteng department of Social Development

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

3.4 As a manager, I often use data in decision-making

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

3.5 During executive management meetings, data are presented and used to support decisions

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

3.6 The Gauteng department of Social Development takes data management seriously as an important tool for the organisation's success

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

Section 4

Training and Experience

In this section, I am assessing if you have received any training on how to use data management systems in Gauteng department of Social Development. Based on your experience answer YES or NO on the questions by clicking on the box that best indicates your experience.

4.1 Have you or your staff attended any training sessions or workshops on data management in the past 2 years?

- o Yes
- o No

I thank you for your valuable time and insights.

Miss Zikho Twantwa (Student researcher)

Any other comments you may have please include them here.

Appendix 2.1: (A): Questions to the Strategic Planning, Monitoring and Evaluation Staff in the Gauteng Department of Social Development (Open-ended interviews)

Purpose

The purpose of this letter is to seek your participation in this interview.

I am conducting this research to examine data management in the Gauteng department of Social Development. Your participation in this interview is important and valuable as a potential decision maker, as your views may inform decision-making processes of the GDSD.

Kindly note that your responses will be treated with confidentiality and anonymity, as you are not required to disclose your name anywhere on the interview schedule. You may withdraw your participation at any time of this interview, as it is completely voluntary. I also request your permission to record the interview as part of collecting information from you.

This interview is estimated to take about one and a half hour to complete.

If you have any queries or would like to be informed of the aggregated research findings please contact the researcher at 074 1771 157 or email at: 870683@students.wits.ac.za.

Thank you for your cooperation.

……....

Yours truly,

Zikho Twantwa

Demographics Information

The demographic details requested are for analytical purposes only and will not be used to identify any respondent. Your responses are anonymous. Please indicate the response category that best describes you.

1.1 Indicate your gender

- ○ Male
- ○ Female

1.2 Indicate your age

- ○ 19-24
- ○ 25-29
- ○ 30-34
- ○ 35-39
- ○ 40-45
- ○ Above 45

Background information

1.3 What is your post-level in the organisation? [ ]

1.4 Number of years in the current position

> 2 yrs.	2 – 4 yrs.	5 -6 yrs.	7 – 8 yrs.	9 – 10 yrs.	> 10 yrs. (specify)

Research question 1: How is data collected, collated, analysed, stored and reported in GDSD?

1. Are there data quality controls in place for when data from paper-based forms are entered into computer?

Probing question:

2. Are source documents and reporting tools available for data verification and audit purposes?

Probing question:

3. How is data maintained?

Probing question:

4. Is data reported through a single channel of Provincial reporting system?

Probing question:

5. Are relevant Provincial templates used for data collection and reporting?

Probing question:

Summary

Please provide strengths and weaknesses of data quality assurance processes and systems

Strengths	Weaknesses

What are your recommendations to strengthen data quality assurance processes and systems?

Recommendations

Research question 2: What influences the decisions GDSD makes and the services it provides?

1. Do the decision makers you work with ask for information?

Yes or No

Why and when do they want the information?

2. How is data analysed to inform decision-making?

Probing question:

3. Do strategies, programmes, or plans change as a result of the information collected through the M&E systems?

Probing question:

4. How has the data management system improved implementation activities?

Probing question:

Summary

Please provide strengths and weaknesses of linkages between the GDSD's reporting system and decision-making

Strengths	Weaknesses

What are your recommendations to strengthen linkage between the GDSD's reporting system and decision-making?

Recommendations

Research question 3: What are major outcomes of a data management system in GDSD?

1. **Is the data managed by the data management system useable?**

Probing question:

2. **Do you release reports based on the data managed by the data management system?**

Probing question:

3. **How often do you release reports?**

Probing question:

4. **How do you disseminate information?**

Probing question:

Summary

Please provide strengths and weaknesses of the data management system

Strengths	Weaknesses

What are your recommendations to strengthen the data management system?

Recommendations

Appendix 3.1: Transcription of interview 2

Face Sheet: Interview 2: Data identifiers

- Participant profile: age- 40-45 years
- Portfolio: Assistant Director in the Monitoring & Evaluation unit
- Years in this position: 7-8 years (7 years)
- Interview data: 02 February 2016
- Time: 08: 50am-09: 28am
- Place of interview: GDSDs offices, 3rd floor boardroom

Interview Segment
Research question 1: How is data collected, collated, analysed, stored and reported in GDSD? **1. Are there data quality controls in place for when data from paper-based forms are entered into computer?** Our data comes from the NPOs, NPOs deliver services, they report that then send data to the regional offices and then from the regional offices, M&E comes in to verify the data. And, then that data is then transferred to records management. Now, whether that data when it is received from the NPOs, whether it is stored electronically, I am not sure cause there is a systems called Supatsela but I am not exactly sure what Supatsela does but what I only know is that when it comes to performance information is generated by NPOs sent through to the regions, the regions do their own verifications the M&E comes in, we verify, then we produce reports but I am not sure if that information during that process it is then transferred to or it is converted to electronic data but I am not sure when is Supatsela comes in. So, I cannot really say if there are controls or there are no controls at this stage as I am not sure. **2. Are source documents and reporting tools available for data verification and audit purposes?** Yes, there are tools. Source documents are there because when we do our reporting as a department is based on what we call evidence-based reporting, so there is nothing that we report that is not supported by source documents. Whatever the department reports is supported by the source documents. Source documents are like registers, for example, we get registers that contain names of beneficiaries that have received services or programmes from the department. **3. How is data maintained?** Ok, what we do as the department is that, when we receive data either from our NPOs, the funded NPOs or from our service points, it goes to our regional offices and then from our regional offices that information gets transferred to records management and records management is responsible for looking after that information. So, I can say yes records management maintains data.

4. Is data reported through a single channel of Provincial reporting system?

The province has a reporting system for all government departments because all government departments they submit their reports, firstly to Legislature and they also submit their reports to the office of the premier. So, there is a reporting system for the province for all government departments. So, as the department when we produce our performance reports, we report to the Provincial Legislature and we also report to the Office of the Premier. And, we also report to other oversight bodies as well like our National Department of Social Development, we also report to Treasury as well and the office of the Auditor General. So, there is a reporting system in the province.

5. Are relevant Provincial templates used for data collection and reporting?

Yes, there are templates that we use when we collect data and when we report for an example as M&E when we collect data from our regional offices, our institutions, there is a template that we use to collect that data. And, when we report to the office of the Premier for example, there is a template that we use to report to the office of the Premier. And, it is possible that you can access those templates.

Strengths of data quality assurance
The strengths are that when we receive data either from our service points or NPOs where service delivery takes place that data gets verified at that stage by our regional offices. Once, it is verified by our regional offices, it's then verified again by M&E, so that data is verified twice, so that is the strength. The other strength is that our regional offices do visit our funded NPOs from time to time to monitor how service delivery actually takes place on the ground, so they do head counts so they also look at source documents at that level, so that is another strength.

Weakness of data quality assurance
The weakness is around time constraints because we are dealing with a lot of information. As the department we are servicing thousands and thousands of beneficiaries, now, when we look at the time when our NPOs and service points report and the time when the department is required to submit its performance reports to the office of the Premier and the Legislature, we do not have enough time. So, that is a serious challenge- Time Constraints. The other challenge of course would be maybe human resources, you know, having enough bodies to verify performance information. Those are the challenges that we have,

Recommendations
Well, my recommendations would be that we need much more time, but unfortunately I do not think we will ever have enough time,

Research question 2: What influences the decisions GDSD makes and the services it provides?

1. Do the decision makers you work with ask for information?
Actually, what happens is that when we are done with our verification process, when we produce our reports they do not even ask for information. We know that it is custom for us to report to them. We send our performance reports to them.

2. How is data analysed to inform decision-making?
On a monthly basis and quarterly basis, we do what we call performance analysis, so data is analysed on a monthly basis and quarterly basis. We produce analysis reports, and those analysis reports are presented at executive management meetings to inform decision-making.

3. Do strategies, programmes, or plans change as a result of the information collected through the M&E systems?
Yes, some programmes are changed; some programmes are improved due to the information that we provide to management. I don't have a specific example at the moment what I know is that our management does take M&E analysis reports seriously. You know, we can see even with our, the way we target, some targets get changed even the budget gets changed due to the information that we provide to the management.

4. How has data management improved implementation activities?
I wouldn't say that data management has improved, you know, implementation activities because we have never done an exercise as M&E, to find out if implementation has really improved on the ground. I think we can only find out if we do some evaluation projects to see if implementation has improved. What we only see is that, yes, the department improving in terms of achieving in terms of achieving its targets, yes, we are improving, but in terms of actual implementation on the ground, I am not sure if we are improving cause we have never done any research or study to find out if there is such improvements.

Strength of the system
The strength of the reporting system in the department is that our reporting systems is evidence based, we do not just thumb suck figures, it's based on what we see on source documents and over and above that we have obtained some good audit reports in the past, in the past three financial years to show that our reporting system is good.

Weaknesses
Weaknesses of course, as I have said before, at the moment we do not have enough time to compile our reports. The other thing is that we haven't started doing evaluation studies for us to see if indeed we are really making the difference on the ground. And, again, the other weakness is that our reporting system is still paper based. It's not yet, electronic, so that is the other weakness, so, everything is stuck on paper.

Recommendations
We need to look at our system and see how we can maybe shorten the processes if possible or if we cannot shorten the processes, we need maybe more human resources or we also need more time or we can also move to an electronic system so that it can make the process quick.

Research question 3: What are major outcomes of a data management in the GDSD?

1. Is the data managed by the data management system useable?
Yes, it is usable. The data is usable because once it is collected, yes, we are able to produce reports, yes, and anybody can use the data.

2. Do you release reports based on the data managed by the data management system?
Yes, the reports that we produce are based on the data that we have collected.

3. How often do you release reports?
We've got reports that we produce on a monthly basis, we've got reports that we produce on a quarterly basis and we've got reports that we produce on an annual basis. These reports are performance analysis reports and we've got other reports that are just quantitative, we call them annual performance reports.

4. How do you disseminate information?
Firstly, information once we have produced our reports, some of the reports are disseminated electronically, other reports are disseminated through meetings- departmental official meetings, management meetings. Yes, yes, emails. Some of these reports are sent through emails; over and above we disseminate the same reports through meetings.

Strengths
As I have said before, data management in the department is based on evidence. Secondly, we also make sure that the data that we have is kept safe by records management. Thirdly, the data that we have we also keep it electronically.

Weaknesses
But, in terms of the weaknesses is that our data; most of our data is on paper. So, we need to come up with a system that is electronic, so that we can keep all our data electronically.

Appendix 3.2: Profile of the researcher and declaration of research interest

My name is Zikho Twantwa, a Master of Management (specialising in monitoring and evaluation) student from the University of Witwatersrand, School of governance. I am conducting this research as a partial fulfilment for my degree and to also understand the efficacy of data management systems in public sectors.

I conduct this research to assess the data management in the Gauteng Department of Social Development. The study is not funded by anyone or any organisation; this is solely my research under the supervision of a lecturer at the University of Witwatersrand. The research will bring no harm to any human being. However, data will be collected from the Gauteng department of Social Development staff members. The participant's names will remain anonymous as it is not requested on the questionnaire. The researcher will seek consent to conduct the study as well as access to available data from the Gauteng department of Social Development head of the department and the chief director of monitoring and evaluation directorate or unit. Data collected will remain confidential, it will be password protected and stored on a password protected computer.

Appendix 3.3: Time management and budget if applicable

	2015					2016	
	Aug, 15	Sep, 15	Oct, 15	Nov, 15	Dec, 15	Jan, 15	Feb, 15
Finalise proposal							
Defend proposal							
Incorporate input from committee							
Secure interviews							
Collect data							
Process and analyse data							
Update Chapters 1, 2, and 3							
Draft Chapter 4							
Incorporate input from Supervisor							
Draft Chapter 5							
Incorporate input from Supervisor							
Draft Chapter 6							
Incorporate input from Supervisor							
Submit first draft research report to supervisor							
Incorporate input from Supervisor							
Submit second draft research report to supervisor							
Incorporate input from Supervisor							
Submit final report to Faculty							