THE ROLE OF INFORMATION MANAGEMENT IN THE DEPARTMENT OF HEALTH, WITH PARTICULAR REFERENCE TO eTHEKWINI EMERGENCY MEDICAL RESCUE SERVICES IN KWAZULU-NATAL

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DECLARATION

I, Kumarasen Thumbiran, declare that:

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(ii) This dissertation has not been submitted for any degree or examination at any other university.

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DEDICATION

I dedicate this dissertation to my sons Yougasen and Yashodan. I hope this dissertation inspires them to make a difference.

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Abstract

The KwaZulu-Natal Department of Health highlighted in the 2005-2009/2010 Strategic Plan many challenges. One of the major challenges was an inadequate management information system at Emergency Medical Rescue Services (EMRS). It was further stated that decision-making becomes risky in the absence of reliable and accurate information. EMRS provides an ambulance service to the citizens of KwaZulu-Natal. This research will focus on EMRS in eThekwini District. In order to provide the best possible service to the citizens there has to be effective information management.

The questionnaire survey used in this research project attempted to reach a broad cross-section of the various groups of people (management, operations and administrative staff) who take part in information work, and hence develop a broad sense of their perceptions and beliefs about how information is managed and used at eThekwini EMRS.

The answering of questions varied between the groups. This showed that managers, operational staff and administrative staff have different perceptions on information management.

Some of the recommendations included: EMRS has to adopt information as a strategic resource; information must be used in addressing problem areas; staff must have access to information that EMRS gathers; and further research has to be conducted at EMRS to address the challenges the organisation faces.

CHAPTER ONE
INTRODUCTION AND OVERVIEW

1.1 Introduction

This research is an evaluation of information management and information use behaviours in a health care organisation. The capacity to gather, share and process information is important to the operations of any organisation. Information management is thus critical for service delivery of effective and efficient health, and the attainment of optimal health status for all persons.

According to Bergeron, Choo and Detlor (in Choo *et al*, 2006: 492), information behaviours occur at the junction of three sets of influences, namely, information management, information culture, and information use. According to Choo *et al* (2006: 492), information management can be defined as the official approach made by an organisation to maximise the availability of functional resources to resolve individual and organisational information challenges. Information culture denotes the socially transmitted pattern of behaviours and principles about the importance and use of information in an organisation. Information use relates to how people choose and apply information as they execute their duties, make sense of their worlds and act out their organisational and certified roles (Choo *et al*, 2006: 492).

1.2 Problem statement

The KwaZulu-Natal Department of Health (KZN DOH) 2005-2009/2010 Strategic Plan identified many challenges in the roll-out of its services. One of the major challenges noted was an inadequate management information system as a constraining factor, in that decision-making becomes risky in the absence of reliable and accurate information (Strategic Plan, 2005: 101). The need for accurate, reliable, timely and useful information was recognised as a pre-

requisite for evidence-based planning and effective local management of Emergency Medical Rescue Services (EMRS).

1.3 Rationale

In light of the foregoing problem, this study is important because a well-organised and competent EMRS is critical for the realisation of a vision of optimal health status for all citizens in the province of KwaZulu-Natal, in tandem with the guiding principles of the Millennium Development Goals (MDGs). It is established that an effective information management system is a fundamental pillar of efficient organisational service delivery and output. It is thus integral to the achievement of excellence in performance, that we explore and ascertain how information management is utilised at eThekwini EMRS as a strategic resource for the improvement of response times across the District and Province. This research is located in areas where services were non-existent and/or out of reach.

1.4 Research questions

The key research questions in this study are delineated as follows:

- What are the information management policies and strategies being adopted by EMRS?

- What information behaviours and values underpin information practices at EMRS?

- How do employees perceive the outcomes of information use in their work situation?

- What consequences do information behaviours and values have on the use of information and its outcomes?

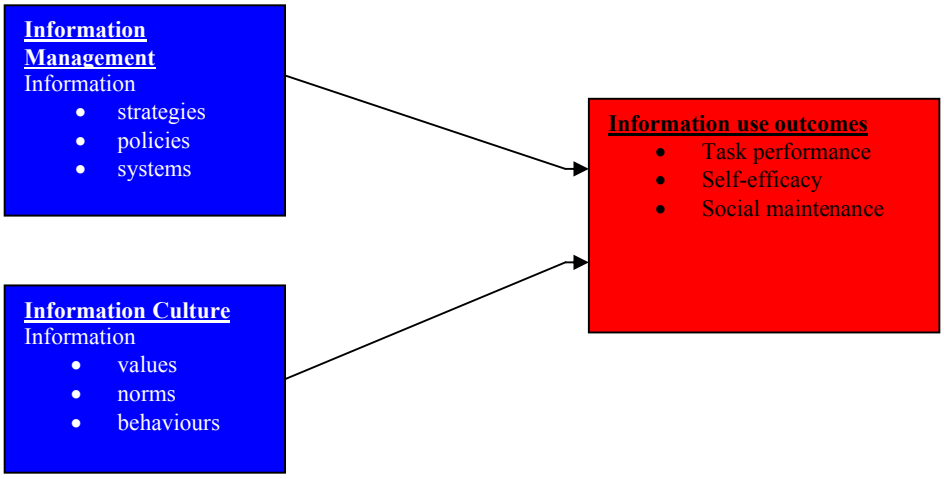
1.5 Literature review

In this study, the theoretical position is to consider organisations as information use environments (Taylor in Choo *et al*, 2006: 492). This approach focuses on the user, the uses of information, and the context within which users make choices about what information is valuable to them. Taylor (2006: 492) further maintains that these choices are based "not only on subject matter, but on other elements of the context within which a user lives and works". He (2006: 492) defines the information use environment as consisting of those fundamentals that "affect the flow and use of information messages into, within and out of any definable entity, and determine the criteria by which the value of information messages will be judged".

Within an organisation, the elements of the information use environment would comprise defined sets of people such as professionals and managers, who are working on and resolving issues and/or challenges considered to be critical and typical, within contexts that contain how the structure, style, culture, history and knowledge of the organisation influence attitudes towards information and information behaviors of employees. This research will focus on information management policies and strategies, information behaviours and values, and information use outcomes.

EMRS does have strategies, policies and systems to collect information. The methods used are discussed in detail in Chapter Three. The information culture at EMRS tries to identify ways of using this information to achieve its goals. This information is analysed and used to assist the department in meeting its objectives. The illustration below outlines the main theoretical elements of this research, and highlights the causal associations that are implicit in the literature review on information management and information culture.

Figure 1.1 Conceptual framework: Information management, information culture, and information use.



Choo *et al* (2006: 496)

1.6 Information management

According to Wilson (in Choo *et al*, 2006: 492), information management may be defined as the application of management principles to the acquisition, organisation, control, distribution, and application of information, and is ultimately concerned with the significance, quality and use of information to improve organisational performance. Davenport (in Choo *et al*, 2006: 492) employs the concept of information ecology to examine the significant properties of an effective and healthy organisational information environment. The information environment consists of six components: information strategy, information politics, information behavior and culture, information staff, information processes, and information architecture.

The subsequent discussion focuses on the key determinants of information management which are located within the identified concepts:

- Information strategy – addresses the question of "What do we want to do with information in this organisation?" It clarifies the intended link between

information management and the capability of the organisation to realise its mission and goals. An organisation's information strategy is often highlighted in a set of basic principles.

- Information politics – arises from the distribution of the power that information confers and the governance modes for its management and use. Five political models are identified, ranging from "feudalism," where business units define their own information needs and report limited information back to the organisation, to "federalism," where there is agreement and co-operation among organisational units on the use of information.

The key determinants of information management are located within the following concepts:

- Information behaviour – There are three significant types of information behaviours, concerned with the following focus:
    - Sharing information (making information accessible to others);
    - Managing information overload (making information appealing so that the correct people recognise and use the accurate information); and
    - Dealing with numerous meanings (creating a general understanding of concepts and terms used in an organisation).

- Information staff – includes information material and information technology specialists, who plan, develop, train and coordinate the formation and use of information.

- Information processes – describe how information work gets accomplished through shaping information needs, capturing information, distributing information, and using information.

- Information architecture – provides a map to the structure and location of information within the organisation. It can either be descriptive, such as a map of the present information environment, or prescriptive, as in a model of the information environment (Davenport in Choo *et al*, 2006: 493).

Recent research in management suggests new ways of looking at information management (Choo *et al*, 2006: 493). One perspective examines an organisation as owning a stock of intellectual capital that it uses to generate economic value. This intellectual capital includes the expertise and knowledge of individuals, the routines and processes that define the typical way of doing things inside the organisation, as well as knowledge of client needs and supplier strengths. According to Roos *et al* (in Choo *et al*, 2006: 493), intellectual capital conceptually consists of human capital and structural capital, where human capital is derived from the capability, skills and experience of employees, and structural capital comes from the actions, routines, and associations the organisation has developed over time. From an information viewpoint, developing structural capital requires policies and processes to be designed that permit the organisation to be efficient in creating, storing, accessing, and using information. Developing human capital includes refining information skills and providing information that enables knowledgeable employees to discover each other and to share their expertise.

An additional perspective in information management contrasts the differences between tacit and explicit data. For example, Hansen *et al* (in Choo, 2006: 493) studied information management practices at management consulting organisations, health care providers, and computer manufacturers. It was established that two different information management strategies are in place:

one based on codification, and the other on personalisation. The codification strategy focuses on the re-use of explicit information. Data is codified, stored and circulated through the use of information technology, electronic document systems, and formal procedures. The personalisation strategy focuses on the sharing of tacit information. Information is shared through person-to-person contact that takes place in mentoring, conversations and social networks.

1.7 Information culture

Choo and Widen-Wulff & Ginman (in Choo *et al,* 2006: 493) argue that information culture is part of the organisation's values, norms, and practices with regard to the management and use of information. These are highlighted in detail hereunder.

- Values are sincerely held beliefs concerning the goals and uniqueness of the organisation, and how it should proceed to attain those goals. These values are often difficult to articulate and pose challenges to change. They present the answers to questions such as "What does the organisation perceive to be the role and contribution of information to organisational effectiveness?" and "What values underlie the organisational style of managing its creation and use of information?"

- Norms are derived from values, but have a more direct influence on information behaviours. These are rules or generally accepted standards that define what is normal or to be anticipated in the organisation. Norms or rules may be informal or formal. Informal norms and attitudes manipulate the creation, flow, and use of information in individuals and groups. Formal rules, routines and policies may be present to plan, guide, and control information as an organisational asset.

- Behaviours are recurring patterns of action that involve organisational roles, structures, and forms of exchanges. They illustrate how people find, organise, use and share information as part of their normal work patterns. Certain organisational practices or policies may act as impediments (or incentives) to the effective use of information. The link between norms and information behavior is made apparent in the analysis of the social and cultural context of information seeking developed by Chatman (in Choo *et al*, 2006: 494).

Highlighting studies of the information behaviours of the working poor, elderly women, prison inmates, and others, Chatman further creates a theory of normative behaviour to understand information behaviours. The author (in Choo *et al*, 2006: 494) maintains that "normative behaviour is that behaviour which is viewed by inhabitants of a social world as most suitable for that particular context. Essentially driven by traditions and norms, normative behaviour provides an expected, routine, and manageable approach to daily reality. Aspects of interest consist of areas which serve to legitimise and authenticate values which embody social existence".

Although Chatman's analysis is framed in terms of the particular social worlds of the study participants, the arguments are generalisable to the social worlds that are constituted by organisational units. In addition, the author's hypothesis is built on four concepts: social norms, worldview, social types, and information behavior. Social norms generate principles to judge 'rightness or wrongness' in social appearances. Norms offer people a way to measure what is 'normal' in a precise circumstance and at an exact time. They direct the way to satisfactory standards and codes of behavior. Worldview is a combined opinion by members of a social world concerning those things which are considered important and unimportant. Worldview provides a combined approach to evaluate the significance of information. Societal types are "the unconditional definitions given to members of a social world" (2006: 494). They classify people and as a result,

allow “members of a small world have reasonable clues to the ways in which to behave, communicate, and share information” (2006: 494).

Marchand (in Choo *et al*, 2006: 494) surveyed more than a thousand senior managers from almost as many companies operating in 22 countries and 25 industries in an effort to answer the question: “How does the interaction of people, information and technology affect business performance?” The outcome of the study revealed that three ‘information capabilities’ join together to describe an organisation’s information orientation that predicts business performance. The study concluded that an organisation needed to be strong in all three capabilities in order to realise better business performance. The three information capabilities are as follows:

- Information technology practices – the ability to effectively manage IT applications and infrastructure to assist operations, business processes, innovation and managerial decision making;

- Information management practices – the ability to manage information effectively over the life cycle of information use, including sensing, collecting, organising, processing and maintaining information, and

- Information behaviors and values – the ability to inspire and promote behaviors and values in employees for effective use of information.

Marchand (in Choo *et al*, 2001: 494) identifies six information behaviours and values: information integrity, formality, control, sharing, transparency and proactiveness. As part of the conceptual framework, this study will employ the six information behaviors and values to analyse information culture in an organisation. Information integrity is defined as the use of information in a trustful and principled manner at the individual and organisational level. It defines the limitations beyond which managers and people cannot go in a company. It implies that there are means of using information that are not suitable and others

that will be allowed. Information formality is the readiness to use with confidence institutionalised information above informal sources. Information control is the extent to which information about performance is constantly offered to people to manage and monitor their performance.

Managers utilise information to observe and manage operational actions and decisions to attain planned strategy and improve business performance. Information transparency can be described as openness in reporting and the presentation of information on errors, failures, and mistakes. It allows organisational members to learn from failures, errors and mistakes. Information sharing is the keenness to present others with information in a suitable and joint fashion. This aspect appears to be well recognised by senior managers, mainly because it relates to internal information sharing. Pro-activeness is the key to obtaining and applying new information in order to react rapidly to business change and to encourage innovation in products and services.

1.8 Information use

According to Case (in Choo *et al*, 2006: 495), information behaviour can be defined as the sum of actions through which information becomes valuable. The usefulness or value of information is based not only on subject matter or how well the information substance matches a query or subject, but also on the requirements, norms and potential that occurs from the user's work and organisational contexts. Information use occurs when the individual selects and processes information which leads to a change in the individual's ability to create logic or to take action. The information that is finally utilised is a very small division of the entire corpus of information that is encountered. The result of information use is an adjustment in the individual's state of knowledge or ability to act. Thus, information use usually involves the selection and processing of information in order to reply to a question, unravel a problem, take a decision, negotiate a position, or make sense of a circumstance (Choo *et al*, 2006: 495).

Taylor (in Choo *et al*, 2006: 495), draws on eight classes of information uses based on the information requirement perceived by users in specific situations, as follows:

1.8.1 Enlightment refers to information that is utilised to develop a context or to make sense of a situation by answering questions such as: “Are there comparable situations? What are they? What is our history and experience?”

1.8.2 Problem understanding refers to information that is used in a more precise way than enlightenment. It is used to develop an improved understanding of a particular problem.

1.8.3 Instrumental refers to information that is used so that the individual is aware of what to do and how to carry out something.

1.8.4 Factual refers to information that is used to establish the facts of an occurrence or event, to illustrate actuality.

1.8.5 Confirmational refers to information that is used to confirm another piece of information.

1.8.6 Projective refers to information that is used to forecast what is possible to occur in the future.

1.8.7 Motivational refers to information that is used to start or maintain individual involvement, in order to remain moving along on a particular course of action.

1.8.8 Personal or political refers to information that is used to develop relations and improve status, reputation, and individual fulfillment.

EMRS is faced with many service delivery challenges. One major challenge is the inability to get an ambulance to a sick or injured person quickly. Problem understanding is information used in a particular way to develop an improved understanding of this predicament.

Focusing on the outcomes of information use, these relationships can be grouped into three broad categories relating to:

- Task performance – enlightenment (making sense of a circumstance); problem understanding; instrumental understanding (knowing what to do).

- Self-efficacy – motivational (sustaining individual participation); individual (enhancing status, reputation and personal accomplishment). Self-efficacy can be defined as the view or judgment of one's capacity to carry out a certain action successfully or to manage one's situation.

- Social maintenance – individual or political (using information to build up relationships, to "get connected to others").

It can be concluded from the uses listed above that information can provide strategic uses to an organisation. Having all the information at your disposal is good but the key is to be able to analyse this information and use it to improve service delivery. This is clearly the challenge for EMRS.

In an analysis of process models of team work, Kraut (in Choo *et al*, 2006: 496) acknowledges three similar categories of team work outcomes:

- Production outcomes are 'task outcomes' that highlight efficiency and effectiveness in task performance. Instead of production, teams are also required to support the requirements of individuals and to promote the ability to work jointly in a collaborative environment;
- Individual support: team members are content with their work and there is a sense of attainment, of making an impact; and
- Group preservation.

Information management, information culture and information use are the key components of strategic resource information. EMRS has to ensure that these components are used effectively and efficiently so that it benefits the citizens. Given this background, a discussion of the research design follows.

1.9 Research design

A case study approach was used involving multiple sources and techniques in the gathering data process. The research drew on findings from primary information and secondary sources. Secondary tools used to collect the data included a review of academic journals, library books and a review of policy documents from the Department of Health. The primary method of data collection included a questionnaire survey. The questionnaire survey reached a wide cross-section of the different groups of people (management, operations and administrative staff) who participate in information work, and hence developed a broad sense of their perceptions and beliefs on the management of information at eThekwini EMRS. The questionnaire contains three key sections on information management, information behaviors and values, and information use outcomes. A total population size of 649 was considered for the research study, and a sample of 110 was chosen to ensure the reliability of the study. The questions are adapted from items used in recent surveys on information and knowledge management carried out by the Organisation for Economic Cooperation and Development (2003), Statistics Canada (2001), and Marchand *et al* (2001). Data will be analysed using the Statistical Package for Social Scientists (SPSS) through a qualified statistician.

1.10 Ethical guidelines

Ethical clearance was obtained from the University of KwaZulu-Natal through the University ethical clearance policies and procedures for postgraduate studies. To protect the sovereignty of the respondents, the respondents were allowed to voluntarily participate in this study. The researcher did not influence any of the respondents to participate in the research. Respondents were requested to sign

an informed consent form and the information obtained was handled with confidentiality.

1.11 Conclusion

A summary of key aspects of the chapters is presented here:

Chapter One provides an introduction to the research. The problem statement, rationale and research questions are outlined. There is a brief discussion on the reasons for the research and overview of the important aspects of the research. The research is within the discipline of public administration. The contextulisation of information management within the discipline of public administration and the legal framework within which information management is used in the public sector is highlighted in Chapter Two. Chapter Three starts with a discussion on EMRS from its inception to where the institution is presently. Thereafter an overview of information management at EMRS is discussed. Finally, the relevant literature that will be used in the research is highlighted. A questionnaire survey was used to get the perspective of the staff at EMRS on information management. The results of the survey are highlighted in Chapter Four. Once the data were analysed in Chapter Four, the conclusion and recommendations were drawn up. A comprehensive discussion of the conclusion and recommendations is presented in Chapter Five.

CHAPTER TWO
INFORMATION MANAGEMENT WITHIN THE CONTEXT OF PUBLIC ADMINISTRATION

2.1 Introduction

In this chapter, the focus is on the role of information management within the context of public administration. The citizens of a democratic South Africa expect government to provide the necessary services that will improve the quality of lives. However, this is not always possible. The South African apartheid State's policy and legislative framework for Public Administration prior to 1994 was distinct and divided in terms of race and ethnic groups, resulting in a fragmented and complex service delivery. In essence, the legal and policy provisions for service delivery under the apartheid government were meant to create a system of "separate but equal" elements that catered for particular needs in parallel. Accordingly, what resulted were services that were fragmented, unco-ordinated and fundamentally inequitable. The birth of a new and democratic South Africa in 1994 was met by exuberance and happiness by the majority of South Africans, especially the black majority. One saw the emergence of a new and democratic South Africa as holding the promise of a new and better life for those who were denied political, social and economic rights for more than four centuries. A new South Africa meant the possibility of elimination of apartheid experienced before 1994. The expectations, which went beyond the exercise of a vote which citizens were denied since 1990, included freedom of expression, freedom of association, freedom of movement, equality before the law and elimination of racial discrimination (Nengwekhulu, 2009: 342).

Since 1994, post-apartheid services emphasised five key principles: non-racialism, non-sexism, democracy, redress and a unitary system in creating good standards of living for South Africans. Firstly, the system had to be transformed to redress the inequalities in terms access, and participation. Secondly, the

public service had to be effective, efficient and ensure equity, with its limited resources. These services included health, education, transport, housing and social services. Most of the government's resources were utilised to serve the white minority population. The rest of the citizens received little of no services. This was due to apartheid which dehumanised everyone it touched (Cho & Dubash, 2005: 167).

While these freedoms are important, critical for citizens was the possibility embodied in the new dispensation: to eliminate poverty, provision of housing, better education for their children, better health services and general improvement in the quality of their lives. These may look like economic expectations, but for the majority of black South Africans who live below the poverty line, these fundamental expectations were not beyond the achievement of government, especially a black government which they rightly believed understands the plight of black people under colonialism and apartheid (Nengwekhulu, 2009: 342). The newly-elected democratic government had to now deliver on the expectations of the citizens. This meant that there had to be a paradigm shift by the public administrative system so that it could deliver services on an equal basis to all citizens of the country.

Global changes and the evolution of knowledge have influenced the agenda for managing and governing state departments around the world. State involvement in governance has influenced government department policies by making them adopt business-like practices to cope with competition in the global market place. The growing expectations of stakeholders such as the state, industry, and community, and rapid globalisation increase pressure on Government restructuring and influence the agenda for social, political, technological and economic developments (Schwella, 2005: 08). Health departments around the world are key players in the structuring of global relationships through knowledge production and exchange in the evolution of language and communications, and

the formation of people's attitudes and sensibilities as required by the global markets.

2.2 Comprehensive information management

Recently, the role of information and understanding for organisational performance has become clearer. In previous discussions, managerial importance was placed on observable work. Next, it included the role of information. Now, focus is shifting to include information. It has always been understood that "know-how" and expertise influence quality of work. However, the information focus has tended to be on the individual and not on systematic considerations of broader work processes or information mechanisms within organisations. There has been little focus on invisible work, particularly on how workers think and use information when performing tasks.

Public administration functions in the modern, democratic society are complex. Ideally, but unrealistically, civil servants should possess the best expertise and collaborate with experts with the most advanced state-of-the-art understanding. While at times being experts, they should also be leading facilitators and information moderators. However, communication difficulties in societal information may make it difficult to distinguish between:

- Having deep and special insights into how to proceed, and
- Involving public and special needs groups in a collaborative process.

Public administration must provide initiatives, leadership and co-ordination to implement the most effective approaches and to ensure that society as a whole is served appropriately. The success and viability of any society depend upon how well its public services are provided. Quality and effectiveness of public administration services are influenced by many factors. Organisational structures, responsibilities, capacities, information, civil servant personal

expertise, and otherwise available information technology (IT) are factors that affect the performance desired from the enterprise.

In modern society, applications of information management practices supported by Information Technology (IT)-based tools have become important. They are critical to pursuing societal goals with success. Public administration in most nations and regions has started to implement approaches to achieve well-defined objectives. This trend is accelerating as experience is gained and new insights into valuable applications of information management are shared. There is an emerging understanding that for information management to reach its potential, information management practices need to be broad and comprehensive – each agency, department, and individual needs to incorporate information management considerations into its daily work life, though it is important to start with small and target clear goals.

This chapter sets out to provide a conceptual definition of public administration and to locate the discussion within a contemporary focus on the field of study.

2.3 Definition of Public Administration

Fox & Meyer (1995: 105) define public administration as the executive arm of government; civil service; bureaucracy charged with the formulation (facilitation), implementation, evaluation and modification of government policy.

Fox, Schwella and Wissink (1991: 02) define public administration as follows:

- A system of structures and processes,
- Operating within a particular society or environment,
- With the objective of facilitating the formation of appropriate governmental policy, and
- Efficient execution of the formulated policy.

According to Kuye *et al* (2002: 13), public administration is the management of individual and group efforts for the sustenance of the activities of the state. Furthermore, public administration is concerned with handling public matters and the management of public institutions in such a way that resources are used efficiently to promote the general welfare of the public (Van Der Waldt & Du Toit, 1999: 13).

From the above definitions, it can be deduced that public administration is about implementing government policy to improve the welfare of the citizens of the state. A focus on the constitutional perspective has relevance for this research study.

2.4 Constitutional provisions for Public Administration

The Constitution of the Republic of South Africa Act 108 of 1996, hereafter known as the Constitution, makes provision for public administration. This is contained in Chapter 10 of the Constitution, where the basic values and principles governing public administration are laid out. It goes on to state that public administration must be governed by the democratic values and principles enshrined in the Constitution, including the following:

- A high standard of professional ethics must be promoted and maintained;
- Efficient, economic and effective use of resources must be promoted. Information management, as a strategic resource, can play an important part in ensuring that public sector institutions use their resources as intended ;
- Public administration must be development-orientated;
- Services must be provided impartially, fairly, equitably, and without bias;
- People's needs must be responded to, and the public must be encouraged to participate in policy-making;
- Public administration must be accountable;

- Transparency must be fostered by providing the public with timely, accessible and accurate information. The citizens must be made aware of the services that are available to them;
- Good human resource management and career development practices must be cultivated to maximize human potential; and
- Public administration must be broadly representative of the South African people, with employment and personnel management practices based on ability, objectivity, fairness and the need to redress the imbalances of the past to achieve broad representation.

From the afore-going discussion, it can be said that public administration is an extrapolation of the executive, and it must therefore implement the policies determined by this branch of government (Devenish, 2005: 365). There has consequently been a paradigm shift by all government departments. Government departments will be accountable for their actions, transparent in their actions; use resources efficiently, economically and effectively, cater equally for all citizens and ensure that they are represented by all race groups. Section 32 of the South African Constitution Act 108 provides for the right of access to information, also known as the right to know.

These provisions are unique among human rights instruments, but are comparable with freedom of information legislation in other countries. The right to know was enshrined in the South African Bill of Rights in reaction to the restrictive information policies by the Apartheid regime. Section 32 states that "Everyone has the right of access to any information held by the state; and any information that is held by another person and that is required for the exercise or protection of any rights." Section 32 not only provides for access to information held by the state, but also from a third party if it is required, to exercise or protect any right. This makes this provision unique, even among freedom of information legislation, which commonly applies only to public bodies. Section 32 applies to public bodies as well as private bodies, including companies.

2.5 Contextualising Public Administration in the study

This study is located within the principal theories of the Public Management Model. In applying this model, one has to bear in mind that the eThekwini Emergency Medical Rescue Services is a public institution and as such, is contextualised within the broad arena of public administration. Furthermore, Chapter 10 Section 195 of the Constitution of RSA (Act 108 of 1996) clearly articulates the basic values and principles governing public administration. According to Fox and Meyer (1995: 105), the term 'public administration' represents a combination of theory and practice aimed at understanding government and its relationship with society, promoting government policy and stabilising management practices in public institutions, to ensure efficiency and effectiveness. Koning (1996: 4) asserts that public administration may be understood as a social system existing and functioning in accordance with its own order, but largely depending on environmental conditions in a complex and changing society.

Public administration in any society is important and complex. It affects most aspects of society. Its approach and effectiveness determine the society's culture, quality of life, success, and viability. It also acts as pace setter, planner, implementer, educator, peacemaker, and disciplinarian, all with different emphases, depending on the society's culture and agendas. A competent public administration with sufficient capacity and influence can provide for a fulfilled society.

2.6 A public management model

In an attempt to conceptulise, explain and simplify the complexities of public management, a model may prove to be a useful tool. The model used here, presented in Figure 1, accepts the fundamental premises of the contingency approach to management. The contingency approach is based upon the open

systems theory, and stresses the importance of the environment for the theory and practice of management (Fox, Schwella & Wissink, 1991: 3).

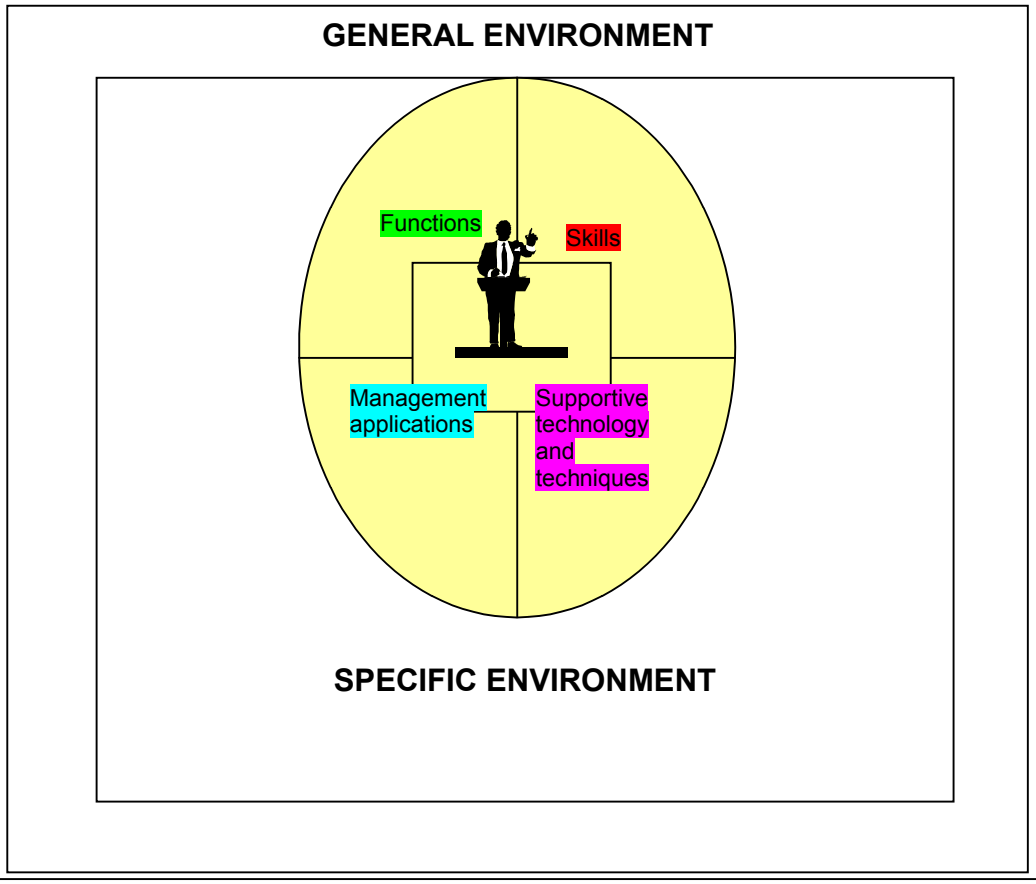
2.6.1The public management environment

The public management environment consists of general and specific components. The general component includes the political, economic, social, cultural and technological aspects of the environment. The specific environment includes suppliers, regulators, competitors and consumers. It is important to analyse and acknowledge the effects of the environment on particular public management functions, skills, applications and technological aids (Fox, Schwella & Wissink, 1991: 5).

Public management, being a component of public administration, includes concrete policies and programmes by which public goods and services are delivered, the promotion and regulation of certain forms of economic and social behaviour and the effective functioning of whole systems of public institutions. Metcalfe and Richards (1993: 73-75) state that the explicit focus of public management is to deal with structural problems at the level of the system as a whole, while Haynes (2003: 9-10) notes the emphasis of the New Public Management as attempting to deal with the inability of political systems to create a rational leadership and strategic management of policy.

Fox, Schwella & Wissink (1991: 5) see the Public Management model as based on the open systems contingency approach to public management. In this context, the Open Systems theory focuses on the critical role of the environment for the theory and practice of public management.

FIGURE 2.1 - THE PUBLIC MANAGEMENT MODEL



GENERAL ENVIRONMENT

Political * Social * Economic * Technological * Cultural

FUNCTIONS	SKILLS	APPLICATIONS
Policy-making	Decision-making	Policy analysis
Planning	Communication	Strategic management
Organising	Management of change	Organisation development
Leading	Management of conflict	SUPPORTIVE TECHNOLOGY AND TECHNIQUES
Control and evaluation	Negotiation	Computer technology and information management
		Techniques for public management

Fox, Schwella & Wissink (1991: 4)

2.7 General Environments

The general environment is made up of other environments that are discussed hereafter.

2.7.1 Political environment

The political environment includes laws, acts, regulations and directives, for example, the legal process for the institutional mergers is stated in Sections 23 and 24 of the Health Act 101 of 1997. The transformation of the health system landscape is encapsulated in the Constitution Act 108 of 1996. The Batho Pele White Paper outlines the whole set of directives on democratic structures and principles of governance. State institutions are expected to be fully committed to implementing these policies to ensure the broadest possible input into effective health system, research and development activities. According to the discipline of Public Administration, government has an obligation to be committed to regulating such institutions through compliance with policy implementation and by giving grants towards the provision of improved services. However, for the government to be able to pursue such actions, it needs a cadre of visionary leaders with special skills to steer and sustain the process of governance.

2.7.2 Economic environment

In the economic environment, the Health system firstly had to be transformed to redress the inequalities in terms access, participation, success, resources, and staff complement. Secondly, the Health system had to be effective, efficient and ensure equity, with its limited resources, as well as the range of research and service outputs required for national development.

2.7.3 Cultural environment

Skodvin (1999: 65) states that a successful Health system is above all characterised by "visible and strong management which is able to collect the different sub-cultures, as well as create a joint feeling of identity and organisational structure". Culture is a significant factor to consider in the context of transformation in the South African Health System. The merging of cultures that are historically and symbolically different is challenging, with the underlying cultural differences presenting a threat to the planned integration (Martins and Samuels, 1994: 229-231; Bouno and Bowditch, 1989: 142). The notion of the entrenched history, myths, beliefs, loyalties, values, customs and traditions which are transgenerational, symbolic and cumulative, are central to the understanding of organisational culture, hence this emphasis on the cultural environment.

2.7.4 Social Environment

The social environment can be viewed as patterns of interactive social roles within and outside Health Department. One can analyse social factors by looking at demographic trends of the population, urbanisation, integration and human development in South Africa. These characteristics influence the need of the consumer group as well as the public servant. Stakeholders and the Health Ministry have identified the need for human resource training as part of the social problem, hence there is an increase in the demand for training. This is a major challenge for the Government institutions because they have to provide training by identifying the skills that are needed by the South African economy.

2.7.5 Technological environment

Reference is made to part of the organisations external environment in which changes in technology affect the organisations working conditions. The changing technological environment may pose threats or present opportunities.

The specific environment in the Public Management Model includes the Regulators, Suppliers, Consumers and Competitors. They constantly interact with the Medical services and influence the decision-making process. For example, regulators are usually vested with some form of authority to provide enforceable rules by which these institutions will have to abide. Regulatory institutions like legislatures can influence the behaviour of eThekwini Emergency Medical Rescue Services when they are required to implement some legislation and policies. The public management environment further impacts on public management functions, skills and applications, including policy-making, planning, organising, leading, and control and evaluation. Public management requires both the theoretical knowledge, as well as the practical managerial skills for effective public management. Critical skills required in effective public management include decision–making, the management of change and conflict and constructive negotiation (Fox, Schwella & Wissink, 1991: 9).

The public management environment presents with several challenges as in the case of government institutions. Specific systematic applications are in place to support public managers in carrying out their duties. These applications include:

- Policy analysis;
- Strategic management, and
- Organisational development.

This study is based on the concepts outlined in the public management model as it examines and describes the changes in eThekwini EMRS and its impact on employees, beliefs, customs, loyalties and traditions. The information EMRS collects has to be managed properly. There have to be employees with the necessary skills available to do this. Once this information is analysed, it has to be used to plan for the future. Strategic decisions have to be taken by management so that there is organisational development.

The Schwella model, as discussed earlier, has often been used in highlighting the role and nature of public administration. There have been new developments within the discipline which will be discussed hereafter.

2.8 New Public Management approach

New Public Management (NPM) has changed the way governments use public administration to deliver services to the citizens. This model has been adopted by a number of countries to varying results. A detailed discussion on this model follows.

2.8.1 New Public Management framework

In the 1980s, the traditional bureaucratic public administration model of Max Weber and Woodrow Wilson was challenged in Anglophone countries such as England, Australia and New Zealand. A new model of public sector management emerged in these countries, which was called New Public Management. NPM is not a logical theory but rather a discrete set of ideas that can be generally divided into two categories. First, there is the use of private management ideas such as the delivery of more responsive and efficient services; performance agreements including service standards; greater autonomy and flexibility for managers, and innovative financial techniques. Second, there is greater use of market mechanisms, such as privatisation and public-private partnerships in service provision. NPM is generally inspired by the principles and concepts of the private sector. It was seen as a way of cutting through the red tape and rigidity associated with old-style public administration and as a way of improving efficiency and service delivery (Cameron, 2009: 912).

The key areas which are generally considered to be part of the NPM range of ideas are:

- Decentralisation of authority and responsibility to managers;
- Rightsizing, which entails reducing the size of the public sector;
- Corporatisation in the form of converting departments into free standing units, the creation of the Senior Management System (SMS), and the use of the contract system for heads of departments;
- The creation of a more flexible human resource system, and
- The introduction of performance management and attempts to improve service delivery (Cameron, 2009: 911).

2.8.2 Rise of New Public Management in South Africa

During the apartheid era, South African public service was isolated and out of touch with global developments. After 1994, it was quite clear at one level what needed to be done. There had to be a fundamental transformation from an apartheid-driven bureaucracy towards a more democratic public service which puts citizens first. However, at another level, the newly-elected government and new senior officials had limited knowledge of public sector reform trends. The new dispensation was looking for new sources of influence. In the early 1990s, NPM was at its peak and its tenets had a certain appeal (Fraser-Moleketi & Salojee in Cameron 2009: 914).

While the government kept to its constitutional and development role, it is generally accepted that NPM reforms were influential in South Africa. Miller (in Cameron, 2005: 70) states that many of the reforms (in South Africa) paralleled those which were implemented in other countries, in particular Britain and the USA. The Director-General for Public Service & Administration, Richard Levin, argues that public sector reform in South Africa has been shaped by the tenets of NPM, including a strong focus on decentralised management of human resources and finance (Cameron, 2009: 915).

2.9 Information management and public management

One lives in a society which is dominated by a constant need for information (Fox, Schwella & Wissink, 1991: 254). Information is generally regarded as one of the most important resources in modern institutions (Van der Waldt & Du Toit, 1999: 343). The viability and success of any society is largely a function of how its resources can be leveraged. The Public Service Act No. 103 of 1994 acknowledges information as a strategic resource. The Information Age has brought about a total shift in the resource paradigm that enables societal and economic activity. The Industrial Age thrived on physical resources, such as land and buildings, material and minerals, to enable value creation. Information was part of the production factor mix, but played a secondary role. In the Information Age, information has become the ultimate resource required to enable effective management (Minnaar & Bekker, 2005: 42).

From the above discussion, it can be argued that the information architecture structures the goals of creating and leveraging knowledge in terms of two processes:

- *Information access*, which is achieved by codifying explicit information into collections of "information objects" made available through the company's intranet, and
- *Information exchange*, which is achieved by cultivating communities of practice around strategic information domains.

Communities of practice like the eThekwini Emergency Medical Rescue Services are therefore a key component of the company's information strategy, an approach in line with its long tradition of valuing community and collaboration. The need for accurate, reliable, timely and useful information has been recognised by the National Department of Health as a pre-requisite for evidence-

based planning and effective local management of EMS (Department of Health 2007: 5).

Public sector institutions need information to be able to provide services to the citizens. Fox, Schwella & Wissink (1991: 5) highlight information management as a part of the public management environment. The authors emphasise that in exercising the public management functions and skills, public managers can be assisted by using available supportive technological aids and techniques. The two sets of supportive technological aids and techniques include computer technology and information management, as well as various techniques useful in public management.

For the public manager to be able to use this information there has to be an information system in place. There are two basic types of information systems, management information system (MIS) and an operational information system (OIS). The MIS provides information of a strategic nature and OIS provides information relating to the production of goods and/or services (operational purposes).

2.9 Conclusion

The discussion in this chapter has shown that information management plays a key role in public administration. Each role serves specific constituencies and purposes and is implemented differently. Jointly, it builds society's intellectual capital to improve the effectiveness of public and private decision-making and situation handling. Four Public Administration information management areas are considered: improve decision-making within public services; assist the public to participate effectively in public decision-making; put together competitive societal intellectual capital capabilities, and develop an information-competitive work force. Numerous information management approaches are adopted to serve

these purposes. Most efforts address specific needs. Only few approaches pursue broad, deliberate and systematic information management. Examples of these approaches and perspectives are discussed. The premise for information management is that, amongst other factors, effective and intelligent behavior depends on having appropriate understanding in addition to being informed. It can therefore be emphasised that the public sector cannot function without information, which is a strategic resource that must be managed effectively, efficiently and economically. This information allows management to plan so that public sector departments are able to fulfill their mandates. Eventually, this will lead to a better life for all citizens.

CHAPTER THREE
MANAGEMENT OF INFORMATION IN EMRS WITH EMPHASIS ON ETHEKWINI DISTRICT

3.1 Introduction

An ambulance service plays a key role in society. Whenever there are emergencies, either trauma or medical, an ambulance with its crew stabilises and then transports the injured to a hospital. People's lives are regularly dependent on the rapid response and experienced care of emergency medical technicians (EMTs) and paramedics (www.bls.gov).

In South Africa, this type of service is a critical one because there is a high motor vehicle accident rate, high prevalence of violence and a very high HIV/Aids infection rate. It is also important to highlight that the majority of the citizens are poor and rely on state services. Therefore, an efficient and effective Emergency Medical Service (EMS) is paramount for responding to the needs of the citizens.

For an efficient, effective and economical EMS, there has to be proper planning. EMS managers can only do this with information management. The information that is collected is used for planning, budgeting, monitoring and evaluation. Information management requires the involvement of all EMS staff. It is important for everyone to understand their role and responsibility to guarantee the successful application of an information system (Department of Health, 2007: 6). A brief history of EMRS KwaZulu-Natal follows.

3.2 Brief history of EMRS KwaZulu-Natal

The first provincial ambulance service in South Africa was established in the then Natal in January 1982 (Page-Lee, 1991: 1). This was a completely multi-racial organisation operated by the Natal Provincial Administration on behalf of the

state. The then KwaZulu Government also provided an ambulance service to certain parts of the province. This service was mostly concentrated on inter-hospital transfers.

After the 1994 democratic elections, there was a need for all public sector departments to transform. The National Department of Health in South Africa went through a process of transformation, in line with the country's transformation agenda. This transformation was focused on creating coherent health care structures that can meet the health requirements of the population. The health system was changed from its predecessor, which according to the Health Sector Strategic Framework (HSSF) 1999-2004, "was built on apartheid ideology and characterised by racial and geographic disparities, fragmentation and duplication and hospi-centricism, with lip services to the primary healthcare approach". The HSSF continues to state that the system was changed to one that "recognises health as a pre-requisite for both social and economic development". The HSSF draws heavily from the White Paper on the Transformation of the Health System (WPTHS). The WPTHS has identified the following aims of restructuring the health sector:

- Merge the disjointed health services at all spheres into a comprehensive and integrated national health system;
- Decrease disparities and inequalities in health service delivery and increase access to improved and integrated services, based on primary health care principles;
- Provide priority to maternal, child and women's health;
- Mobilise all partners, including the private sector, non-governmental organisations (NGOs) and communities in support of an integrated national health system (Madue & Mahwai, 2008: 361).

In line with the above discussion, the KwaZulu-Natal Department of Health set about transforming EMRS.

3.3 Emergence of EMRS

According to the Constitution (Schedule 5 Part A), ambulance services are functional areas of exclusive provincial legislative competence. This led to the transformation of the ambulance services. Negotiations took place with the relevant stakeholders and a transformed ambulance service was born.

The service was named Emergency Medical Rescue Services (EMRS). The Head Office is located in Pietermaritzburg and is within the Department of Health. Head office provides policy, budgetary, monitoring and evaluation, and operational functions to the districts. The districts report to the Chief Technical Advisor EMRS. The districts have their own command structures that manage the district.

EMRS uses the district structure that is set up for the municipalities. Each district has bases situated strategically that can service the citizens of the district. EMRS is broken down into 11 districts, namely:

- eThekwini;
- Ugu;
- Ilembe;
- Uthungulu;
- Umgungundlovu;
- Sisonke;
- Uthukela;
- Amajuba;
- Umzinyathi;
- Umkhanyakude, and
- Zululand.

The map (Figure 3) on the next page illustrates these districts geographically.

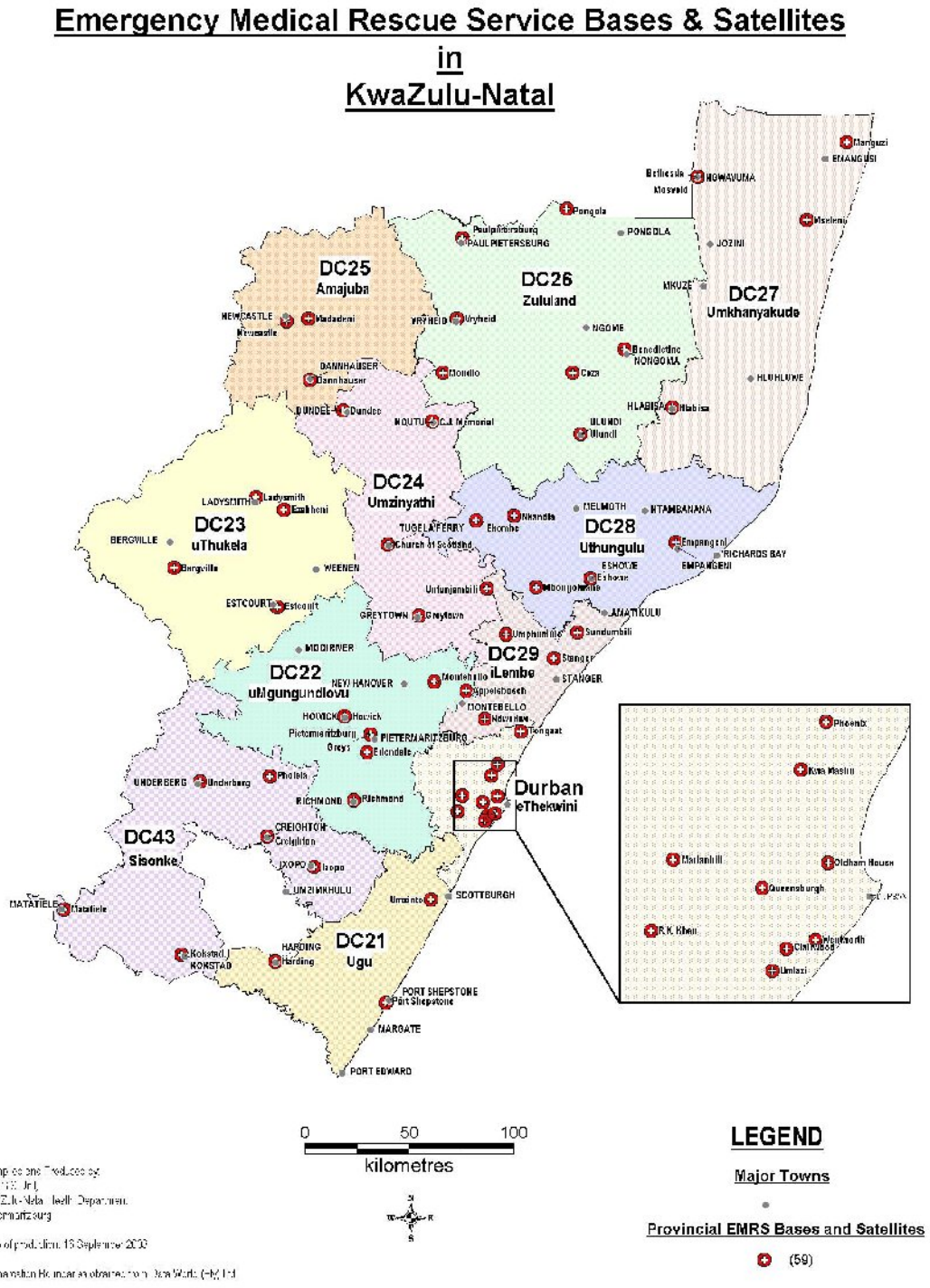


Figure 3.1: Department of Health – KwaZulu-Natal (2003)

The broad aims of Emergency Medical Rescue Services (EMRS) are two-fold. The first function is to provide a service that meets the emergency medical and rescue needs of the citizens of KwaZulu-Natal. The second mandate is to provide a non-emergency transportation service for the transport of elective ambulatory patients from hospital to hospital and clinic to hospital, in accordance with the district health referral system.

These services are provided under the following sub-programmes:

- Emergency Patient Transport, which includes emergency response to, stabilisation of, and transportation of all patients, involved in trauma, medical emergencies, maternal and other emergencies through the utilisation of specialised vehicles, equipment and skilled Emergency Care practitioners.

- Planned Patient Transport, which includes non-emergency referrals between hospitals and hospitals and clinics to hospitals for indigent persons with no other means of transport.

- Disaster Management, which includes pre-hospital mass casualty incident management and in-hospital mass casualty incident management. The sub-programme conducts surveillance and facilitates action in response to early warning systems for the department and activates effective response protocols.

EMRS had to set a strategic direction for the organisation. Organisations set strategic directions in various ways. Two of the most widely used tools are the vision and mission statements as proffered by Ehlers & Lazenby (2004: 47). The use of vision and mission statements differ from organisation to organisation.

3.4 Vision, Mission and Core Values

The following vision, mission and core values set a strategic direction for EMRS.

3.4.1 Vision

To strive for excellence in the provision of Emergency Medical rescue Services in the province of KwaZulu-Natal.

3.4.2 Mission

To provide an equitable, efficient, effective, quality and caring medical emergency rescue service, within available resources, through a transformed and amalgamated structure, by a professional, disciplined and demographically representative staff.

3.4.3 Core Values

The following are the core values in EMRS:

- Professionalism;
- Discipline;
- Honesty;
- Respect;
- Accountability, and
- Transparency.

3.5 EMRS eThekwini

EMRS eThekwini provides EMS to the citizens of eThekwini District, which incorporates Durban and surrounding areas. The current population of eThekwini

District is estimated at approximately 5 million. Furthermore, the majority of the citizens rely on EMRS to provide an ambulance service.

3.5.1 EMRS eThekwini bases

EMRS eThekwini has one Communications Centre and nine ambulance bases. The Communications Centre is based at Oldham House in central Durban.

The bases are situated in the following areas:

- Central Durban;
- Clairwood Hospital;
- Kwa Mashu;
- Marianhill;
- Mpumalanga;
- Phoenix;
- RK Khan Hospital;
- Umlazi, and
- Wentworth.

Planned Patient Transport is based at Clairwood Hospital. The balance of the bases is for EMS vehicles.

3.5.2 Staff Breakdown at EMRS eThekwini

EMRS eThekwini's staff complement comprises management, operational, administration and general orderly employees. A comprehensive breakdown is provided in the table below.

TOTAL NUMBER OF STAFF: 649

STAFF BREAKDOWN IN DIFFERENT CATEGORIES							
MANAGEMENT		**OPERATIONAL**		**ADMIN**		**GEN. ORDERLY**	
TOTAL	**54**	**TOTAL**	**544**	**TOTAL**	**35**	**TOTAL**	**16**
DISTRICT MANAGER	1	ECP A	15	FINANCE/SUPPLY CHAIN	11	G.O ETHEKWINI	16
OPS. MANAGER	1	ECP I	214	H.R.	10		
ZONAL OFFICERS	5	ECP B	315	BASE CLERK	14		
SHIFT SUPERVISORS	45						
P.P.T. OFFICER	1						
V.M.O.	1						

Table 3.1: Human Resource Department eThekwini EMRS, 2009

3.5.3 Information Management at EMRS eThekwini

A discussion on the different data collection tools used by EMRS eThekwini is highlighted hereafter.

3.5.3.1 Data collection

Data collection forms the basis of a well-functioning information system (Department of Health, 2007: 5). Operational Emergency Care Practitioners are accountable for data collection at the point of service delivery, for example, at the scene or in the control room. These are the data collectors. Management is responsible for providing simple, practical and easy to use data collection tools for them to do this (Department of Health, 2007: 6).

Data collection tools used by EMRS are the Vehicle Control Form (VCF) used at the Communications Centre to log the details of a person who calls in and requires an ambulance, and an Ambulance Return Form used by operational crews who respond to the case. All the patient details are logged on this form.

EMRS eThekwini fills in a template at the end of each month, as shown in the Annexures. All the information is captured on this template and after it has been verified by the District Manager, it is submitted to Head Office. This information is added to the other districts. A provincial template is then drawn up and sent to the National Department of Health. This information is used to engage in strategic planning for EMRS.

3.6 Data flow at EMRS

The diagram below is a generic illustration of data flow that is used by all public sector EMS departments.

Diagram: Proposed EMS data flow and timeframes

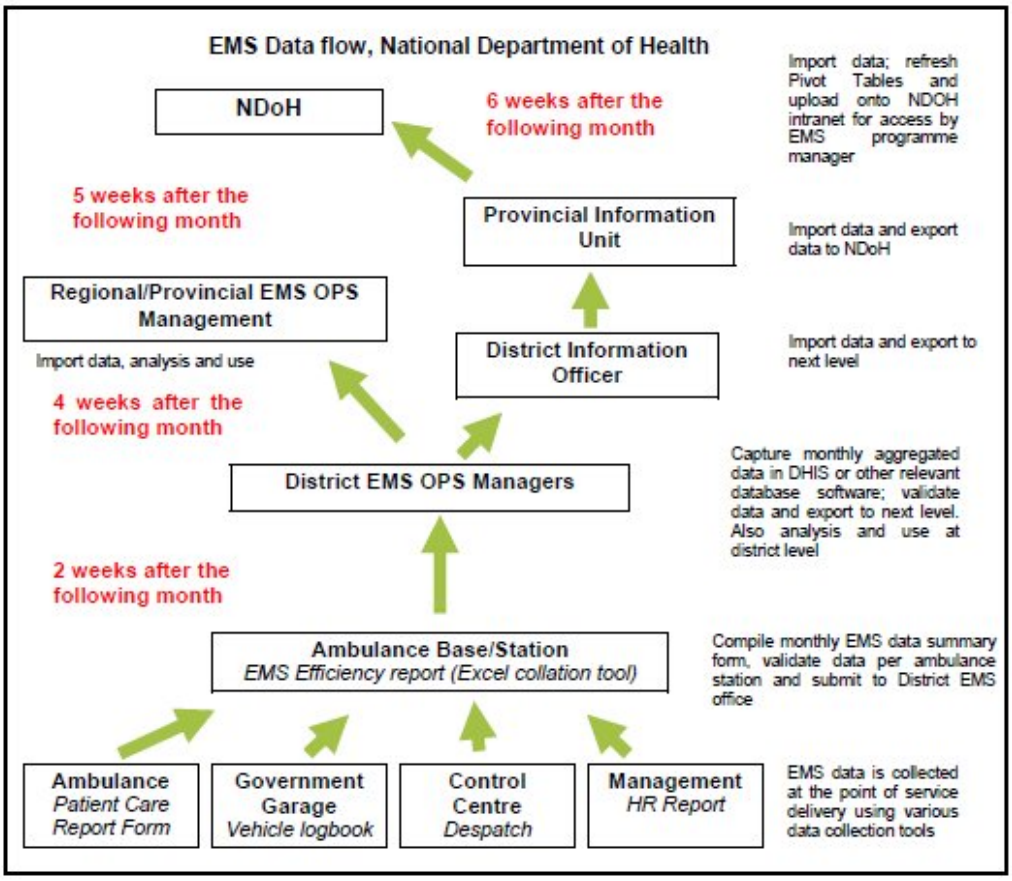


Figure 3.2: Data flow and time frames (Department of Health, 2007: 16)

3.7 Contribution of information towards service delivery

Hlahla (2003: 50) states that information is at the heart of government business. Government has a responsibility to treat the information and knowledge it collects and produces as a strategic resource. It must make sure that information/knowledge is secure, accurate, accessible and utilised properly.

3.8 Limitations of information to service delivery

Hlahla (2003: 51) also highlights the following limitations:

- Inadequate access to relevant information;
- Inability to track relevant information;
- Problems with accuracy and standardisation of information;
- Problems with distribution of information;
- Suitable availability and response to information;
- Repetition of information sources;
- The high level of inaccessibility of unstructured information because it is mostly paper based, and
- Limited availability of management information and creation of business intelligence/knowledge, etc.

These limitations were also found at EMRS eThekwini.

3.9 Conclusion

The evaluation of literature plays an important role in a research study. To be able to give a sense to the evaluator of the reason for using the literature, is vital. One of the limitations of this study is that there is very little information available on EMRS KwaZulu-Natal. EMRS does have a link in the KwaZulu-Natal Department of Health's website, which does offer information on EMRS. However, this information is limited. This will be highlighted in the recommendations section of Chapter Five. For EMRS to function effectively and efficiently, proper information management practices have to be in place. This can only be achieved if everyone is aware of this practice, which will be discussed further in the next chapter. The preceding literature review has guided the methodology and design which follows in the next chapter.

CHAPTER FOUR
RESEARCH METHODOLOGY, INTERPRETATION AND ANALYSIS OF DATA

4.1 Introduction

A comprehensive review of the relevant literature was discussed in previous chapters which substantiated the problem statement. However, one of the main reasons for this study is to uncover the perception of EMRS staff towards information management. To achieve this, the EMRS staff were questioned on information management and its impact in the work place.

The key research questions in this research study are as follows:

- What are the information management policies and strategies being adopted by EMRS?
- What are the different data collection methods being used at EMRS Ethekwini?
- What information behaviours and values underpin information practices at EMRS?
- What effect do information behaviours and values have on the use of information and its outcomes?
- How do employees perceive the outcome of information use in their work situation?

A case study approach was used involving multiple sources and techniques in the data gathering process. The primary method of data collection was conducted through a questionnaire survey. This chapter deals with the issues relating to the manner in which the research was conducted, a review of the survey instrument, sampling technique, sample size and data analysis technique. The chapter also includes the results of the data that were collected from the completed structured questionnaires.

4.2 Survey instrument

In this research, a structured questionnaire was used as a survey instrument. According to McNabb (2002: 125), questionnaires are the most popular way to gather primary data; it has been estimated that questionnaires are used in 85 percent or more of all quantitative research projects. Questionnaires can be used to gather information of large numbers of respondents (populations) and from small groups (samples). The greatest of these is the considerable flexibility of the questionnaire.

The questionnaire must:

- Successfully gather information that answers each study question;
- Motivate respondents to answer all questions to the best of their ability, and
- Keep all potential error to a minimum.

The questionnaire survey used in this research project attempted to reach a broad cross-section of the various groups of people (management, operations, and administrative staff) who take part in information work, and hence develop a broad sense of their perceptions and beliefs about how information is managed and used at eThekwini EMRS. The questionnaire contained three main sections on information management, information behaviours and values, and information use outcomes.

4.3 Cronbach's alpha

According to the Academic Technology Services at the University of California, Los Angeles (UCLA Academic Technology Services, 2002), the Cronbach's alpha measures how well a set of items (or variables) measures a single one-dimensional latent construct. When data contain a multidimensional structure,

Cronbach's alpha will usually be low. Technically speaking, Cronbach's alpha is not a statistical test but is a coefficient of reliability (or consistency).

Cronbach's alpha can be written as a function of the number of test items AND the average inter-correlation among the items. Below, for conceptual purposes, is the formula for the standardised Cronbach's alpha:

$$\alpha = \frac{N \cdot \bar{r}}{1 + (N-1) \cdot \bar{r}}$$

Here, N is equivalent to the number of items and r-bar is the average inter-item correlation amongst the items.

It can be seen from this formula that if there is an increase in the number of items, Cronbach's alpha increases. In addition, if the average inter-item correlation is low, alpha will be low. As the average inter-item correlation increases, Cronbach's alpha increases as well.

This makes sense intuitively: if the inter-item correlations are high, there is evidence that the items are measuring the same underlying construct. This is really what is meant when someone says they have "high" or "good" reliability. They are referring to how well their items measure a single one-dimensional dormant construct (http://www.ats.ucla.edu/stat/spss/faq/alpha.html)

.4.4 Reliability and validity

The two most important aspects of precision are reliability and validity, which are discussed next.

4.4.1. Reliability

Reliability is the extent to which test scores are accurate, consistent or stable. A test score's validity is dependent on the score's reliability: if the reliability is inadequate, the validity will also be poor (Struwig & Stead, 2001: 130). Reliability refers to the reproducibility of a measurement. It is quantified by taking several measurements on the same subjects. Poor reliability degrades the precision of a single measurement and reduces the ability to track changes in measurements in experimental studies. Validity refers to the agreement between the value of a measurement and its true value. It is quantified by comparing one's measurements with values that are as close to the true values as possible. Poor validity also degrades the precision of a single measurement, and reduces the ability to characterise relationships between variables in descriptive studies (http://www.ats.ucla.edu/stat/spss/faq/alpha.html).

4.4.2. Validity

Validity refers to the extent to which a research design is scientifically sound or appropriately conducted (Struwig & Stead, 2001: 136). Validity refers to the agreement between the value of a measurement and its true value. It is quantified by comparing one's measurements with values that are as close to the true values as possible. Poor validity also degrades the precision of a single measurement and reduces the ability to characterise relationships between variables in descriptive studies (http://www.ats.ucla.edu/stat/spss/faq/alpha.html).

Below is a summary of the Cronbach's alpha reliability scores for the overall and individual categories regarding the role of information management in the Department of Health within the eThekwini EMRS (KZN).

Section Concept	**Cronbach's alpha score**
Overall Reliability	0.863
Reliability: Section B - Information Management	0.872
Reliability: Section B - Tacit	0.523
Reliability: Section C - Integrity	0.031
Reliability: Section C - Transparency	0.820
Reliability: Section C - Sharing	0.695
Reliability: Section C - Proactiveness	0.824
Reliability: SectionC- Informal Practices on Information Management	0.832
Reliability: Section C - Control	0.573
Reliability: Section D - Information use outcomes	0.615

Table 4.1 Cronbach's alpha score

A reliability coefficient of 0.70 or higher is considered as "acceptable". The overall reliability score of approximately 0.863 indicates a high degree of acceptable, consistent scoring for the different components for this research. An analysis of the categories indicates that the reliability may not be as consistent (values highlighted). The reason for this lies in the interpretation of the questions by the respondents. This will be further analysed in the section on factor analysis (http://www.ats.ucla.edu/stat/spss/faq/alpha.html). This shows that that the questionnaire that was used in this study did achieve the correct results.

4.5 Descriptive statistics

There was a 3:1 ratio for males:females in the sample.

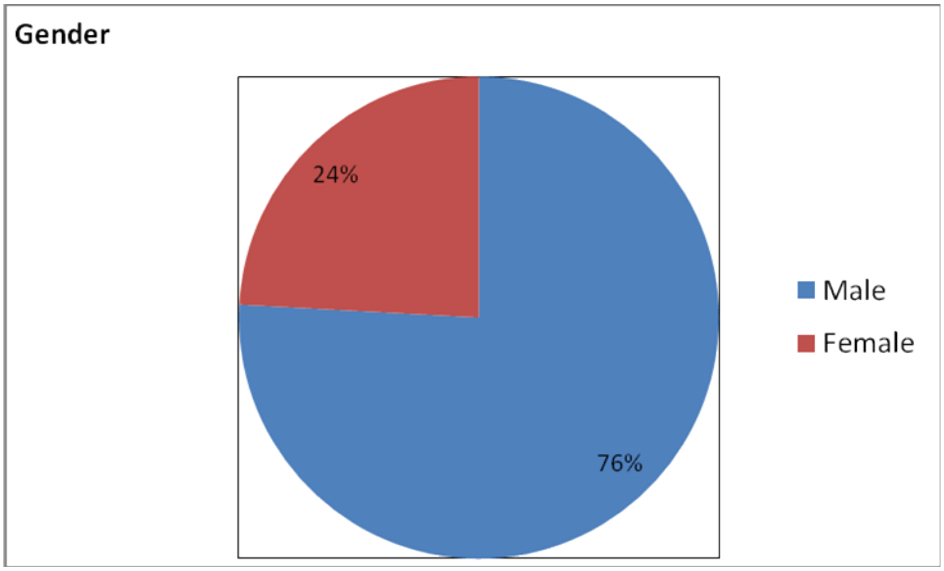


Figure 4.1: Gender profile

The employment practices at EMRS prior to transformation were skewed. There was no emphasis on gender. This led to more males than females being employed. The dangers and physical aspects associated with the profession also do not make the profession attractive to females. This is the reason why evidently there are more males than females at EMRS eThekwini. It is worth noting that this challenge was highlighted throughout the public service. Legislation such as the Employment Equity Act was drawn up to ensure that these challenges were addressed. EMRS has also addressed this challenge by employing females to make up for this shortfall.

The sample consisted of the following race groups:

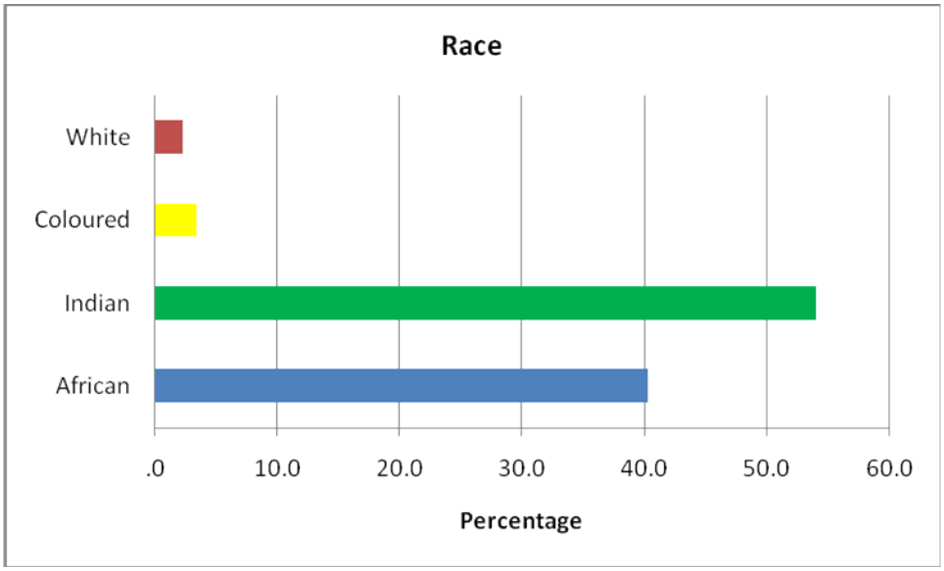


Figure 4.2: Race profile

An analysis of the race group by gender shows the following:

Race * Gender Cross tabulation					
			Gender		Total
			Male	Female	
Race	African	Count	24	11	35
		% within Gender	36.4%	52.4%	40.2%
		% of Total	27.6%	12.6%	40.2%
	Indian	Count	38	9	47
		% within Gender	57.6%	42.9%	54.0%
		% of Total	43.7%	10.3%	54.0%
	Coloured	Count	3	0	3

		% within Gender	4.5%	.0%	3.4%
		% of Total	3.4%	.0%	3.4%
	White	Count	1	1	2
		% within Gender	1.5%	4.8%	2.3%
		% of Total	1.1%	1.1%	2.3%
Total		Count	66	21	87
		% within Gender	100.0%	100.0%	100.0%
		% of Total	75.9%	24.1%	100.0%

Table 4.2: Demographic profile

The largest representative race group is Indian. Indian males constitute 58% of the Indian proportion of the sample, and 44% of the overall population sample. The white proportion of the sample constitutes 2.3% of the entire sample, with 1 respondent each for males and females.

As stated earlier, the employment practices at EMRS eThekwini was skewed. This led to employment of staff who met the criteria required. There was no employment equity in the 1980s and early 1990s. After EMRS was “transformed” in the mid 1990s, there were many resignations especially from the white race group. Unfortunately, EMRS did not keep records of resignations as per race group to substantiate this theory, but the Human Resource Department does acknowledge this shortcoming. This is the reason why there are few whites in the overall staffing population.

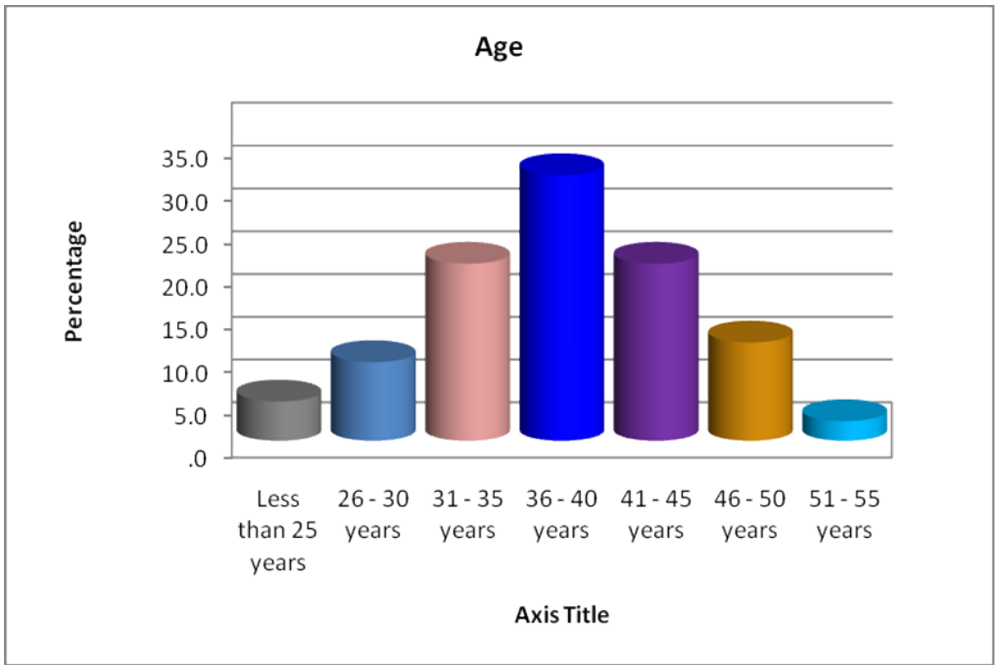


Figure 4.3: Age profile

The age group is somewhat normally distributed with the majority of the sample (34%) belonging to the 36-40 year group. The smallest categories belonged to the youngest and oldest members in the company.

Occupation

	Percent
Management	12.6
Operation	78.2
Administration	9.2
Total	100.0

Table 4.3: Occupation breakdown

The sample consisted of employees who belonged to 3 major sections. Of these, 78% were from the Operational division.

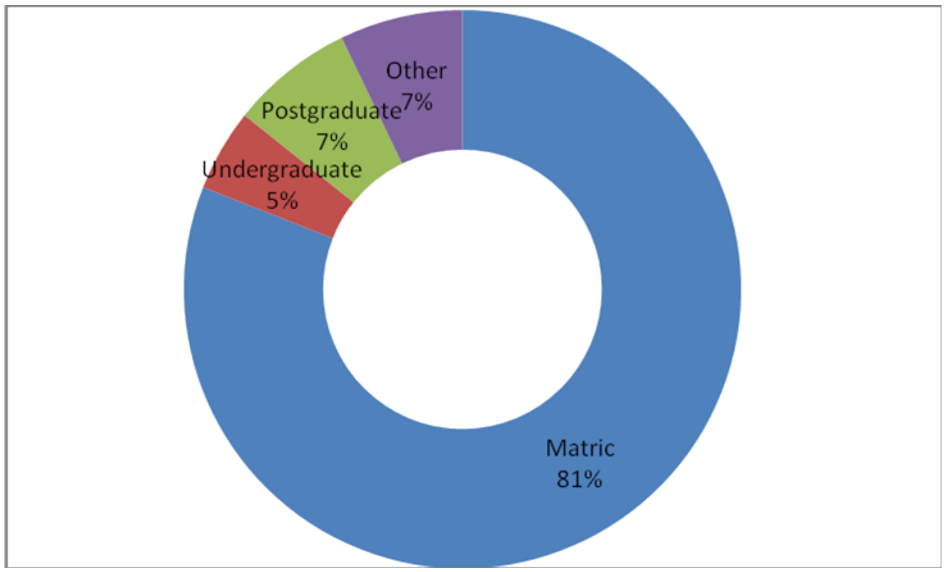


Figure 4.4: Educational qualifications

Most of the employees (81%) across the divisions had only a Matric education. Only 7% had a postgraduate degree. An analysis of the educational qualifications by occupation is given in the table below.

			Occupation			Total
			Management	Operation	Administration	
Educational Qualification	Matric	Count	10	52	6	68
		% within Occupation	90.9%	80.0%	75.0%	81.0%
		% of Total	11.9%	61.9%	7.1%	81.0%
	Undergraduate	Count	0	4	0	4
		% within Occupation	.0%	6.2%	.0%	4.8%
		% of Total	.0%	4.8%	.0%	4.8%
	Postgraduate	Count	1	3	2	6
		% within Occupation	9.1%	4.6%	25.0%	7.1%

		% of Total	1.2%	3.6%	2.4%	7.1%
	Other	Count	0	6	0	6
		% within Occupation	.0%	9.2%	.0%	7.1%
		% of Total	.0%	7.1%	.0%	7.1%
Total		Count	11	65	8	84
		% within Occupation	100.0%	100.0%	100.0%	100.0%

Table 4.4: Educational breakdown

It is noted that employees of the Operational division have the highest number of postgraduate degrees. Approximately 12% of Management have only a matric qualification.

EMRS does most of its training through its College of Emergency Care (COEC), based in Northdale Hospital, Pietermaritzburg. Most of the courses offered are short courses. COEC has introduced a two year mid-level diploma. The first student cohort qualified in . The Durban University of Technology does offer a Bachelor of Technology Degree in Emergency Care but few staff members register for it because of the financial implications. Staff can apply for a bursary from the department, but it is not a guarantee of acceptance. It is also noted that management has limited tertiary qualifications.

4.6 Factor analysis

Factor analysis was also used in the empirical study. A brief description of this approach is presented hereunder.

Why is factor analysis important?

Factor analysis is a statistical technique whose main goal is data reduction. A typical use of factor analysis is in survey research, where a researcher wishes to

represent a number of questions with a small number of hypothetical factors. For example, as part of a national survey on political opinions, participants may answer three separate questions regarding environmental policy, reflecting issues at the local, state and national level. Each question, by itself, would be an inadequate measure of attitude towards environmental policy, but *together* they may provide a better measure of the attitude. Factor analysis can be used to establish whether the three measures do, in fact, measure the same thing. If so, they can then be combined to create a new variable, a factor score variable that contains a score for each respondent on the factor. Factor techniques are applicable to a variety of situations. A researcher may want to know if the skills required to be a decathlete are as varied as the ten events, or if a small number of core skills are needed to be successful in a decathlon. One need not believe that factors actually exist in order to perform a factor analysis, but in practice the factors are usually interpreted, given names, and spoken of as real things (http://www.ats.ucla.edu/stat/spss/faq/alpha.html).

The table of communalities is given below:

Communalities

	Extraction
EMRS has a formal policy or strategy for managing knowledge and information.	.676
EMRS has formal procedures to collect knowledge.	.779
EMRS has formal procedures to share knowledge.	.780
EMRS identifies and obtains knowledge from outside sources (e.g. industry partners, governments, universities).	.602
Knowledge and information at EMRS is available and organised to make it easy to find what I need.	.652
Information about good work practices, lessons learned, and knowledgeable persons is easy to find in my organisation.	.722
EMRS makes use of information technology to facilitate knowledge and information sharing.	.670
EMRS has a culture intended to promote knowledge and information sharing.	.655
My work unit encourages experienced workers to communicate their knowledge to new or less experienced workers.	.599

EMRS encourages workers to attend training and/or education courses.	.578
EMRS has formal mentoring programs and/or apprenticeships.	.649
My work unit has a culture intended to promote knowledge and information sharing.	.647
Of the four (4) models, which one summarises information management practices at eThekwini EMRS?	.781
Amongst the people I work with regularly, it is common practice to distribute information to justify decisions already made.	.580
Amongst the people I work with regularly, I believe/think individuals keep information to themselves.	.793
There is a tendency to leverage information for personal advantage.	.497
Managers and supervisors of my work unit encourage openness.	.641
The people I work with regularly share information on errors or failures openly.	.791
Information on failures or errors is used to address problems constructively.	.782
I often exchange information with the people with whom I work regularly.	.610
I often exchange information with people outside of my regular work unit.	.672
Are you a person who people approach regularly for information?	.711
I often exchange information with citizens, customers, or clients outside my organisation.	.640
I often exchange information with partner organisations (SAPS, Fire Dept. Metro Police).	.744
I actively seek out relevant information on changes and trends going on outside my organisation.	.736
I use information to respond to changes and developments taking place outside my organisation.	.877
I use information to create or enhance my organisation's products, services, and processes.	.818
I trust informal information sources (e.g. colleagues) more than I trust formal sources (e.g. memos, reports).	.838
I use informal information sources (e.g. colleagues) extensively even though formal sources (e.g. memos, reports) exist and are credible.	.725
I use informal information sources (e.g. colleagues) to verify and improve the quality of formal information sources (e.g. memos, reports).	.762
I receive information about the performance of my organisation.	.706
My knowledge of organisational performance influences my work.	.615
In my organisation, information is essential to enhancing organisational performance.	.621
Information in my organisation is distributed on a 'need to know' basis.	.615
I can quickly recognise the complexities in a situation and find a way of solving problems.	.580
My work tasks demand new, creative ideas and solutions.	.513

My work benefits my organisation.	.579
I have influence over what happens within my work unit.	.640
Sharing information is critical to being able to perform my duties.	.607

Table 4.5: Communalities

Of note is the following:

- The rotation method used is the Varimax Method with Kaiser Normalisation. This is an orthogonal rotation method that minimises the number of variables that have high loadings on each factor. It simplifies the interpretation of the factors.
- Factor analysis /loading show inter-correlations between variables.

Correlations

			EMRS makes use of information technology to facilitate knowledge and information sharing.	EMRS has a culture intended to promote knowledge and information sharing.	Amongst the people I work with regularly, it is common practice to distribute information to justify decisions already made.	I often exchange information with the people with whom I work regularly.	I often exchange information with citizens, customers, or clients outside my organisation.
Spearman's rho	EMRS makes use of information technology to facilitate knowledge and information sharing.	Correlation Coefficient	1.000	.552**	.302**	.170	-.088
		Sig. (2-tailed)	.	.000	.005	.117	.418
		N	87	87	86	86	86
	EMRS has a culture intended to promote knowledge and information sharing.	Correlation Coefficient		1.000	.362**	.138	.037
		Sig. (2-tailed)		.	.001	.204	.735
		N		87	86	86	86

	Amongst the people I work with regularly, it is common practice to distribute information to justify decisions already made.	Correlation Coefficient			1.000	.167	.016
		Sig. (2-tailed)			.	.126	.884
		N			86	85	85
	I often exchange information with the people with whom I work regularly.	Correlation Coefficient				1.000	.161
		Sig. (2-tailed)				.	.139
		N				86	86
	I often exchange information with citizens, customers, or clients outside my organisation.	Correlation Coefficient					1000
		Sig. (2-tailed)					.
		N					86

Table 4.6: Correlations

The table indicates that there are considerable relationships between three pairs of statements. The p-values are all less than 0.05, indicating a significant correlation. As the ignificant Spearman coefficient values are all positive, it indicates a directly proportional relationship between the variables.

A key question this research addresses is: What effect does information behaviours and values have on the use of information and its outcomes? The variables mentioned above were tested to find out if there is a significant relationship between them. The test concluded that there is a correlation between these three sets of statements:

- EMRS makes use of information technology to facilitate knowledge and information sharing and EMRS has a culture intended to promote knowledge and information sharing.
- EMRS makes use of information technology to facilitate knowledge and information sharing and amongst the people I work with regularly, it is common practice to distribute information to justify decisions already made.
- EMRS has a culture intended to promote knowledge and information sharing amongst the people and it is common practice to distribute information to justify decisions already made.

One can conclude from the relationship among these statements that EMRS transfers knowledge through formal and informal channels. Hansen *et al* (in Choo *et al*, 2007: 493), surveyed a number of organisations and found two different knowledge management strategies in place: one based on codification, and another on personalisation. The codification strategy focuses on the re-use of explicit knowledge. Knowledge is codified, stored and disseminated through the use of information technology. The personalisation strategy focuses on the sharing of tacit knowledge. Knowledge is shared through person-to-person interaction that takes place via mentoring, conversations, and social networks.

The communality for a given variable can be interpreted as the proportion of variation in that variable explained by the factors that make up the variable. In this instance, there are 8 variables that make up the first component (as indicated in the component matrix table below). The analysis is similar to that for multiple regression: signage against the two common factors yields an R^2 = 0.676 (for the first variable), indicating that about 68% of the variation in terms of the formal policy or strategy for managing knowledge and information is explained by the factor model.

This argument can then be extended to the rest of the model as the communality values are high for the variables. It is noted though, that certain components are split into finer ones. This is explained below in the rotated component matrix.

An assessment of how well this model is doing can be obtained from the communalities. The ideal is to obtain values that are close to one. This would indicate that the model explains most of the variation for those variables. In this case, the model is fairly decent as it explains approximately 68% of the variation for the 9 categories. The average scores (in percent) of the categories are as follows:

Explicit	69.2
Tacit	65.1
Integrity	62.4
Transparency	73.8
Sharing	67.5
Proactiveness	81.0
Informal Practices on Information Management	77.5
Control	63.9
Information use outcomes	58.4

Table 4.7: Questionnaire categories

The highest score is Proactivenes on 81%, which means that 81% of the variation (away from the norm) can be explained. There is only 19% uncertainty. This shows that the model did explain what was intended.

The lowest score is Information use outcomes on 58.4%, which means that there is almost a 40% level of uncertainty in terms of why the results varied. This shows that the model did not explain what was intended.

Factors that load perfectly have high communalities and those with low communalities load across various factors. These are illustrated in the rotated component matrix below.

This gives the percentage of variation explained in the model. This might be looked at as an overall assessment of the performance of the model. However, this percentage is higher than the proportion of variation explained by the first Eigen value obtained earlier. The individual communalities tell how well the model is working for the individual variables, and the total communality gives an overall assessment of performance.

Rotated Component Matrix[a]

	Component								
	1	2	3	4	5	6	7	8	9
EMRS has a formal policy or strategy for managing knowledge and information.	.712	-.132	.165	.098	.142	-.107	.158	.161	.180
EMRS has formal procedures to collect knowledge.	.696	-.204	.279	.031	-.085	-.062	.008	.404	-.014
EMRS has formal procedures to share knowledge.	.820	-.005	.019	-.133	.003	.031	-.047	.291	.045
EMRS identifies and obtains knowledge from outside sources (e.g. industry partners, governments, universities).	.631	.224	-.196	.097	.025	.237	-.210	.024	.066
Knowledge and information at EMRS is available and organised to make it easy to find what I need.	.728	-.126	.221	-.190	.119	.056	.041	-.038	.010
Information about good work practices, lessons learned, and knowledgeable persons is easy to find in my organisation.	.730	.016	.154	.180	.143	.080	-.321	-.058	-.016
EMRS makes use of information technology to facilitate knowledge and information sharing.	.559	.013	.167	.110	.115	.325	.229	-.313	-.220
EMRS has a culture intended to promote knowledge and information sharing.	.710	-.031	.156	.014	.031	.176	.218	-.213	.023

My work unit encourages experienced workers to communicate their knowledge to new or less experienced workers.	.329	.069	.543	.072	.014	.032	-.052	.229	-.360
EMRS encourages workers to attend training and/or education courses.	.526	.200	.231	-.262	-.151	.218	.240	.017	-.107
EMRS has formal mentoring programs and/or apprenticeships.	.668	.093	.184	-.297	.026	.171	.023	-.201	.027
My work unit has a culture intended to promote knowledge and information sharing.	.361	.153	.450	.113	.065	.512	-.061	.078	-.042
Of the four (4) models, which one summarises information management practices at eThekwini EMRS?	.116	-.030	-.023	-.041	.218	.015	.040	.105	.839
Amongst the people I work with regularly, it is common practice to distribute information to justify decisions already made.	.481	.139	.375	.308	.023	-.082	-.171	-.193	-.144
Amongst the people I work with regularly, I believe/think individuals keep information to themselves.	.021	.112	-.250	-.011	-.156	.144	.815	.046	.080
There is a tendency to leverage information for personal advantage.	.165	-.036	-.046	-.115	-.317	.072	.401	.429	-.057
Managers and supervisors of my work unit encourage openness.	.281	-.090	.711	.017	.121	.074	-.073	-.138	-.064
The people I work with regularly share information on errors or failures openly.	.142	.103	.838	-.163	.091	.036	.053	-.126	.047
Information on failures or errors is used to address problems constructively.	.172	-.002	.798	-.207	.028	.141	-.193	.003	.125
I often exchange information with the people with whom I work regularly.	.209	.008	.177	.400	.202	.266	.346	.193	-.326
I often exchange information with people outside of my regular work unit.	.105	.145	-.222	.605	-.090	.155	.303	-.178	.261
Are you a person that people approach regularly for information?	.073	.165	.097	.414	-.203	.357	.096	-.015	.565
I often exchange information with citizens, customers, or clients outside my organisation.	-.226	.269	.055	.486	-.117	-.049	.447	.005	.247
I often exchange information with partner organisations (SAPS, Fire Dept. Metro Police).	.118	.596	-.157	.400	.099	-.147	.301	.255	.056

I actively seek out relevant information on changes and trends going on outside my organisation.	.070	.795	-.034	.108	.160	.175	.117	.122	.037
I use information to respond to changes and developments taking place outside my organisation.	-.095	.904	.132	.085	.032	.147	.052	-.030	-.016
I use information to create or enhance my organisation's products, services, and processes.	-.054	.861	.077	.185	.088	.147	-.057	-.033	.016
I trust informal information sources (e.g. colleagues) more than I trust formal sources (e.g. memos, reports).	.068	.088	.119	-.155	.871	-.023	-.143	-.069	.045
I use informal information sources (e.g. colleagues) extensively even though formal sources (e.g. memos, reports) exist and are credible.	.144	-.001	.098	.043	.820	.065	-.110	-.033	-.059
I use informal information sources (e.g. colleagues) to verify and improve the quality of formal information sources (e.g. memos, reports).	.008	.217	-.008	-.010	.824	.128	.060	-.002	.130
I receive information about the performance of my organisation.	.313	.101	.066	-.025	.293	.690	.047	-.130	.108
My knowledge of organisational performance influences my work.	.075	.174	.029	.124	.212	.626	.260	.201	-.135
In my organisation, information is essential to enhancing organisational performance.	.139	.255	-.140	.309	-.042	.556	-.068	.325	-.029
Information in my organisation is distributed on a 'need to know' basis.	-.150	.078	-.026	.729	-.037	.166	-.097	.125	-.023
I can quickly recognise the complexities in a situation and find a way of solving problems.	-.078	.350	-.198	.614	-.071	.123	-.084	.064	-.067
My work tasks demand new, creative ideas and solutions.	.241	.380	.035	.452	.276	.060	-.096	.111	-.054
My work benefits my organisation.	-.006	.187	-.174	.225	-.015	.306	.021	.587	.156
I have influence over what happens within my work unit.	-.005	.088	.295	.176	-.195	.639	.046	.076	.247
Sharing information is critical to being able to perform my duties.	-.227	.332	-.040	.396	-.060	.134	.244	.450	-.042

Table 4.8: Rotated Component Matrix

As noted, factor analysis is a statistical technique whose main goal is data reduction. A typical use of factor analysis is in survey research, where a researcher wishes to represent a number of questions with a small number of hypothetical factors (categories). With reference to the table on the preceding pages, the following are noted:

- The principle component analysis was used as the extraction method, and the rotation method was Varimax with Kaiser Normalization. This is an orthogonal rotation method that minimises the number of variables that have high loadings on each factor. It simplifies the interpretation of the factors.
- Factor analysis/loading shows inter-correlations between variables.
- Items of questions that loaded similarly imply measurement along a similar factor. An examination of the content of items loading at or above 0.5 (and using the higher or highest loading in instances where items cross-loaded at greater than this value) effectively measured along the nine dimensions.

It is noted that four categories (explicit, transparency, proactiveness and Informal Practices on Information Management) loaded perfectly. This means that the questions contained within these categories measured what they had set out to measure. As they loaded completely across different categories, it was clearly distinguishable in terms of what they were measuring. The category on Control loaded almost perfectly, with only one variable not aligning with the rest.

All the categories above showed high communality values. This is expected as the loadings were perfectly aligned, except for one question. However, all of the other categories have variables that overlap, indicating a mixing of the variables. This means that the questions in the overlapping categories did not specifically measure what they set out to measure, and that the respondents did not clearly

distinguish between the questions constituting the dimensions, or that the questions measured quantities similar to what was asked in other categories.

A cross tabulation result is too cumbersome to include at this point. However, selected Spearman correlations indicate significant relationships. An example of this is found when investigating information transfer.

For the factors that overlap, respondents may have had problems interpreting the questions, especially if they seemed closely linked to concepts in other sections. A more detailed analysis of the table indicates that statements that loaded along a factor had similar factor loading scores. For example, the 3 questions on informal practices in information management all scored more than 0.82. This pattern is found throughout the table. Factors that split had very different factor loading scores.

4.7 Category analysis

Below is a summarised graphical representation of the nine categories, using the mean scores to illustrate scoring pattern trends. It is noted that scores of 4 and above constitute agreement with the questions and those of 2 and below constitute disagreement.

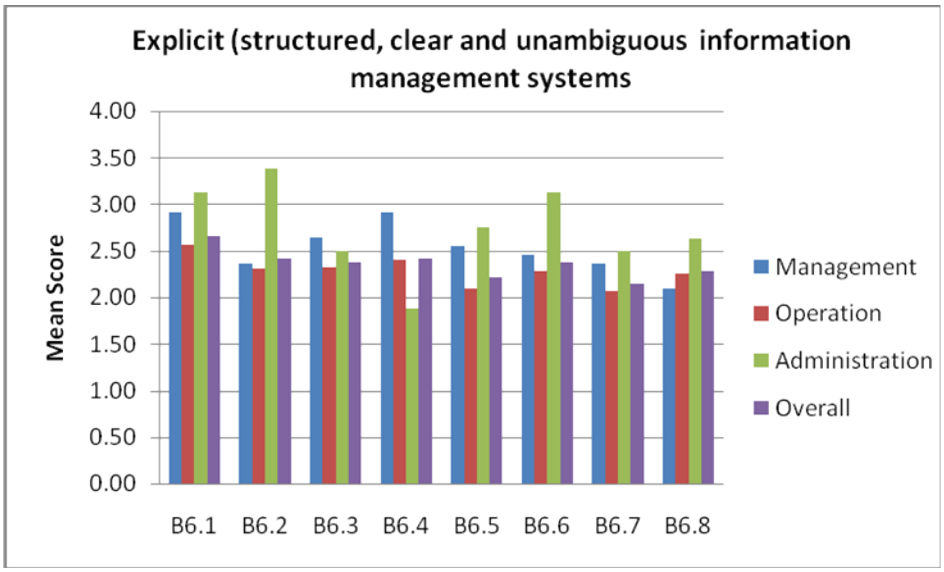


Figure 4.5: Explicit

EMRS has a formal policy or strategy for managing knowledge and information.	B6.1
EMRS has formal procedures to collect knowledge.	B6.2
EMRS has formal procedures to share knowledge.	B6.3
EMRS identifies and obtains knowledge from outside sources (e.g. industry partners, governments, universities).	B6.4
Knowledge and information at EMRS is available and organised to make it easy to find what I need.	B6.5
Information about good work practices, lessons learned, and knowledgeable persons is easy to find in my organisation.	B6.6
EMRS makes use of information technology to facilitate knowledge and information sharing.	B6.7
EMRS has a culture intended to promote knowledge and information sharing.	B6.8

The category Explicit measured the codification of information. Data are codified, stored and disseminated through the use of information technology, electronic document systems, and formal procedures. It is noted that the average scores across the categories lie between 2.0 and 3.0. This indicates that the perception

is of uncertainty. The average score also implies that there were as many respondents who answered in agreement as those who answered in disagreement. Administration staff tended to score higher than management and operations staff.

These findings correlate with Heeks (2006: 101), who surmises that organisations may find a knowledge gap where staff do not know about the nature and role of information and information systems, organisational systems and processes, or the basics if IT.

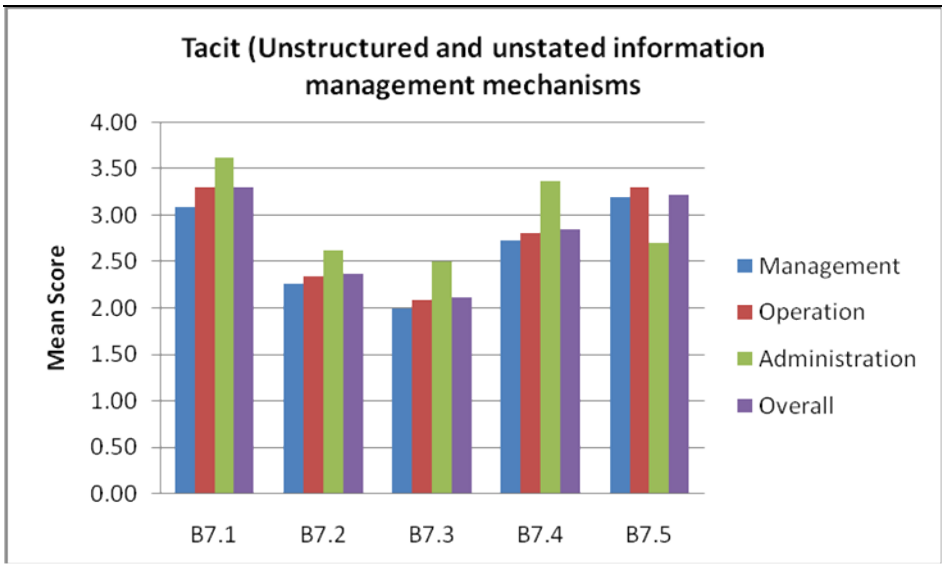


Figure 4.6: Tacit

My work unit encourages experienced workers to communicate their knowledge to new or less experienced workers.	B7.1
EMRS encourages workers to attend training and/or education courses.	B7.2
EMRS has formal mentoring programs and/or apprenticeships.	B7.3
My work unit has a culture intended to promote knowledge and information sharing	B7.4
"Information politics" refers to the assumptions made about how people generate and use information in organisations. This is an important element of information management. Of the four (4) models listed below,	B7.5

which one summarises information management practices at eThekwini EMRS?	

From the above, the category Tacit measured the personalisation of information. Information is shared through person-to-person interaction that takes place in mentoring, conversations and social networks. It is noted that the questions B7.1, B7.4 and B7.5 tended towards agreement with the questions. These questions are concerned with the transfer of knowledge and the manner of its transfer. However, the two questions pertaining to training opportunities (B7.2 and B7.3) are scored as disagreements. This indicates that staff does not believe that these opportunities are readily available. It is also noted that staff across the occupation groups scored along similar lines.

According to Oppenheim (2003: 161), such tacit knowledge cannot be transferred or transformed into information that represents in any form the knowledge base of a particular person. Rather the information produced must be assimilated and incorporated within another person's knowledge structure in order to gain meaning. Because acquiring knowledge involves the act of comprehension, which is an inexpressible process, such tacit knowledge cannot be communicated or transferred.

Figure 4.7: Integrity

Amongst the people I work with regularly, it is common practice to distribute information to justify decisions already made.	C8.1
Amongst the people I work with regularly, I believe/think individuals keep information to themselves.	C8.2
There is a tendency to leverage information for personal advantage.	C8.3

The category on Integrity measured the use of information in a trustful and principled manner at the individual and organisational level. It is noted that the average score for this category is approximately 3. This means that there were as many respondents who agreed with the statements as those who disagreed. This was a common scoring pattern across the categories, as can be observed in the graph above.

The employees do not use the information they acquire at an organisational level. Employees will leverage information for personal gain. This shows that the organisation does not have a culture of information integrity.

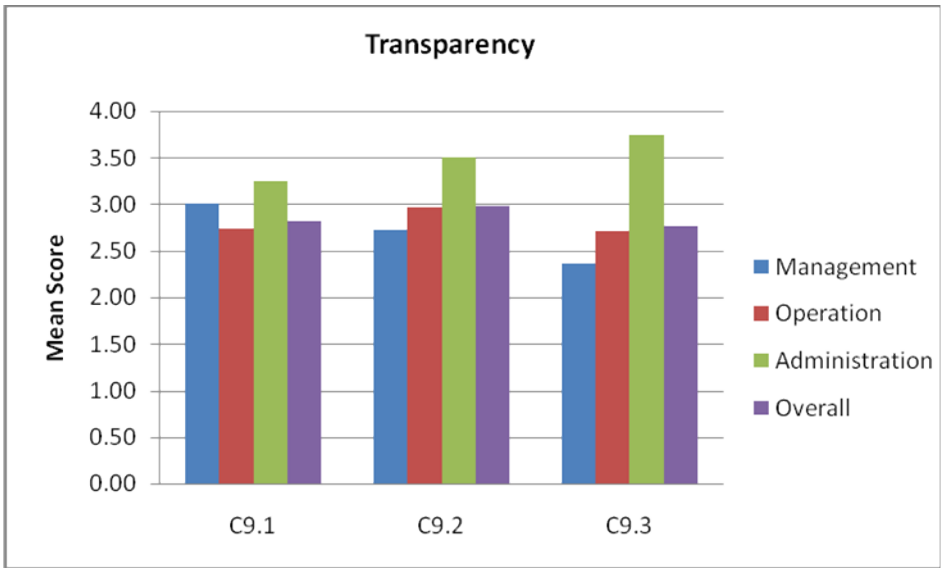


Figure 4.8: Transparency

Managers and supervisors of my work unit encourage openness.	C9.1
The people I work with regularly share information on errors or failures openly.	C9.2
Information on failures or errors are used to address problems constructively.	C9.3

The category of Transparency measured openness in reporting and presentation of information on errors, failures, and mistakes. It permits organisational members to learn from failures, errors, and mistakes. The average results per employee designation, as well as the overall mean scores, fall in the region between uncertainty and agreement, although none are close to the agreement scale score. Management and Operations employees tended toward the lower end of this range (closer to disagreement). This goes to show that in the interaction between management and operational staff, there is limited openness and transparency. This will perhaps lead to a breakdown in their working relationship. Administration seemed to score higher across all questions because their work is expected to be open and transparent. Audits are done timeously and work is scrutinised.

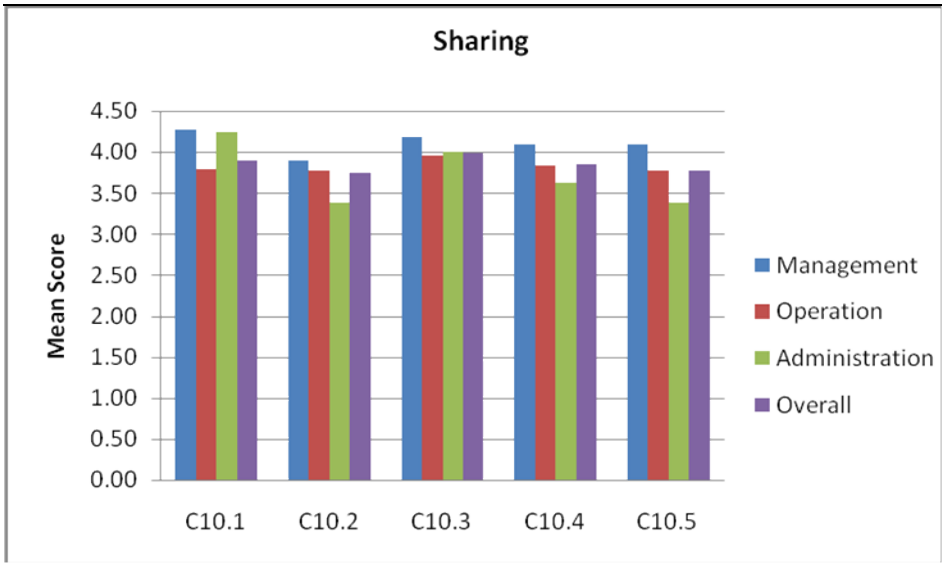


Figure 4.9: Sharing

I often exchange information with the people with whom I work regularly.	C10.1
I often exchange information with people outside of my regular work unit.	C10.2
Are you a person that people approach regularly for information?	C10.3
I often exchange information with citizens, customers, or clients outside my organisation.	C10.4
I often exchange information with partner organisations (SAPS, Fire Dept & Metro Police).	C10.5

The category on Sharing dealt with the exchange of information, either from or to the respondent. Even though none of the variables reach the mean agreement value of 4, most of the mean values are close to 4. This is primarily due to the higher scoring manner of Managers and Operators, as compared to the Administrators, whose scoring lowered the overall average. Management and operations scored higher because they interact more. Managers pass on information to employees during shift changes and pre-shift inspections. Administrators tend to work alone and there is minimal interaction with managers and operational staff.

Further analysis of this category revealed the following comments by respondents:

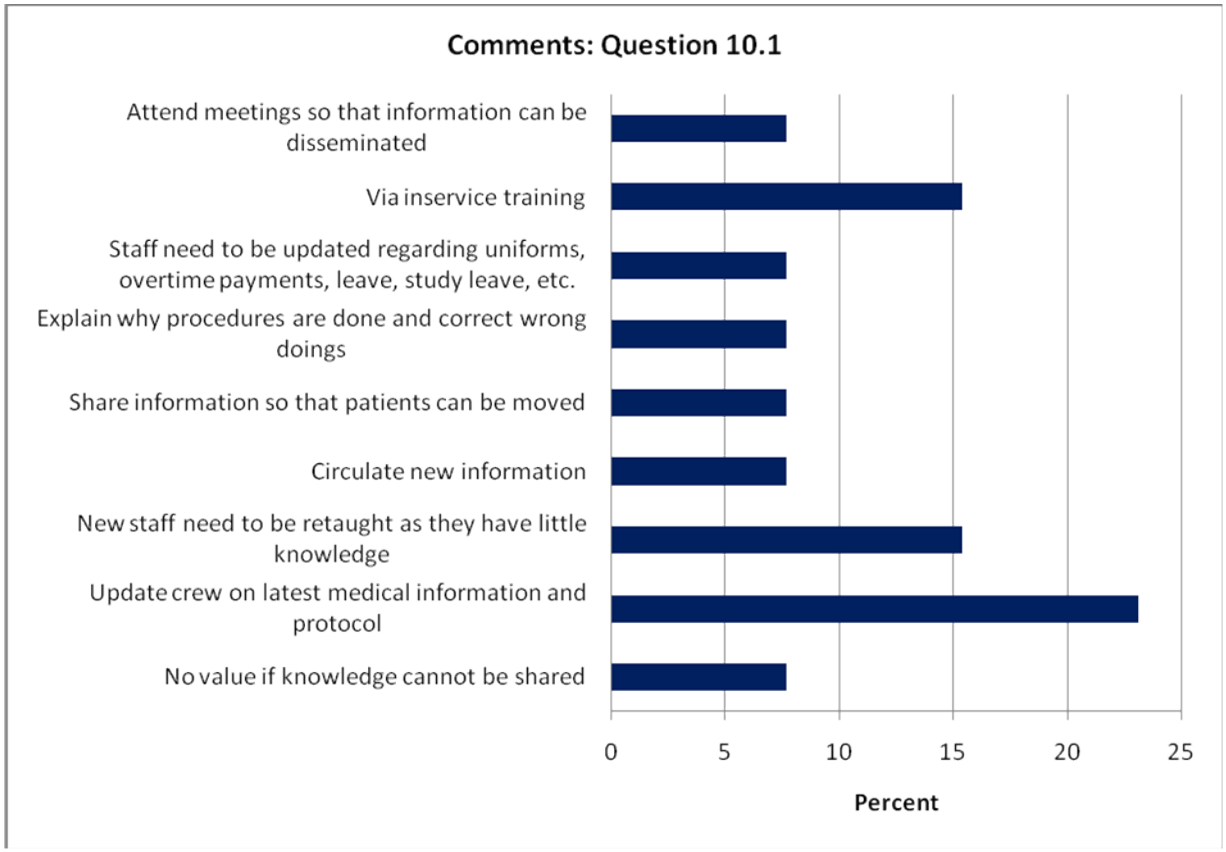


Figure 4.10: Comments - Question 10.1

Of the 13 respondents who submitted comments, approximately 37% indicated that the pre-eminent ways to transfer information would be via in-service training and by updating the crews on latest medical information and protocols. Each of the other comments had a response rate of 7.5%.

Once the crews report for duty, a pre-shift inspection is carried out by the Shift Supervisor. Thereafter, the crews check their in full (ESV) and if everything is in order, they avail themselves for cases. From the above discussion, it can be deduced that there is limited time to transfer information. This is the reason why it

is suggested by the respondents that all pertinent information is distributed at in-service training sessions for ease of reference.

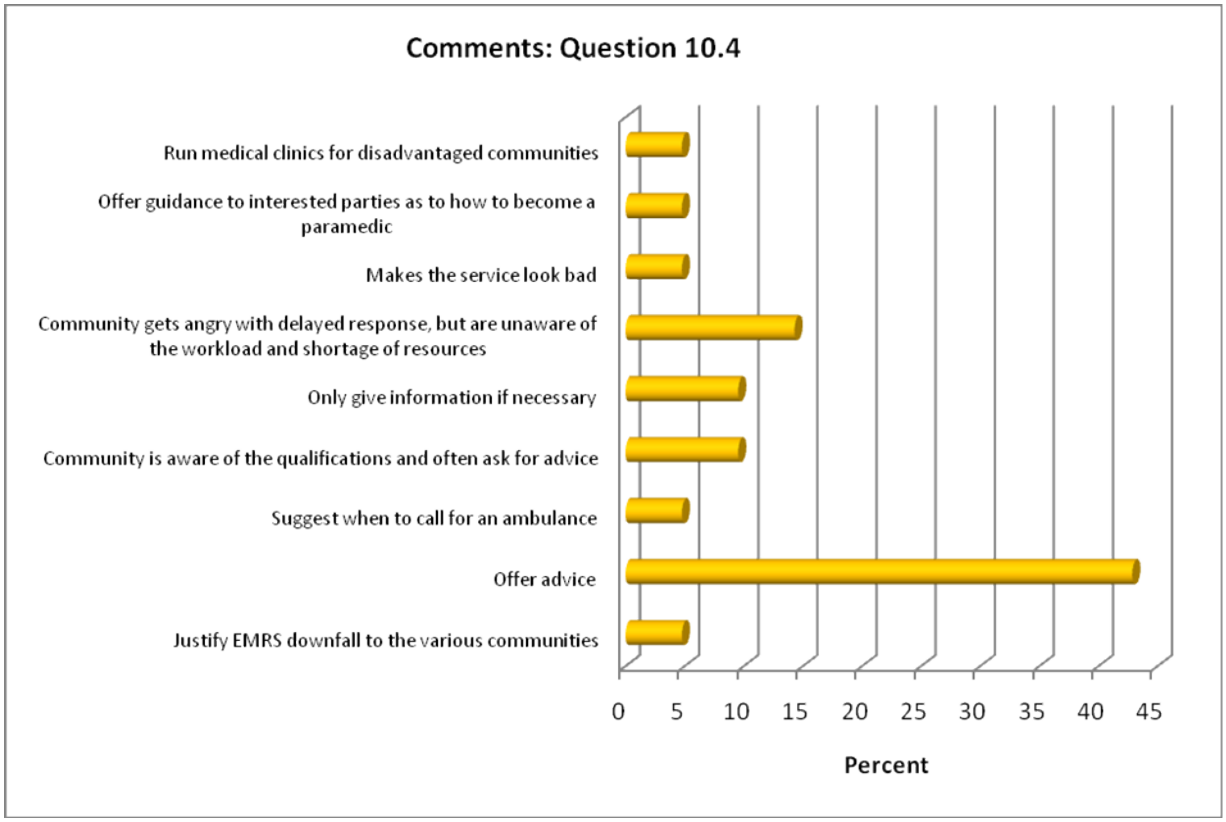


Figure 4.11: Comments - Question 10.4

The most common form of interaction between the respondents and people outside the organisation was the advice that the respondents offered. Together with community awareness, these factors contribute to 50% of the interaction. EMRS's external customers are the people of eThekwini District. Respondents (14%) have identified that communities are unaware of the working conditions of the paramedics and that their anger and frustration is erroneously directed. This is a shortfall on the side of management which has not made information available to the communities. This is an important consideration for EMRS.

Batho Pele Principles makes it compulsory for government departments to interact with their customers. EMRS needs to pass on information to its customers so that they are kept abreast of the latest developments that affect

them. Customers can also pass on information to EMRS that will assist them in improving service delivery.

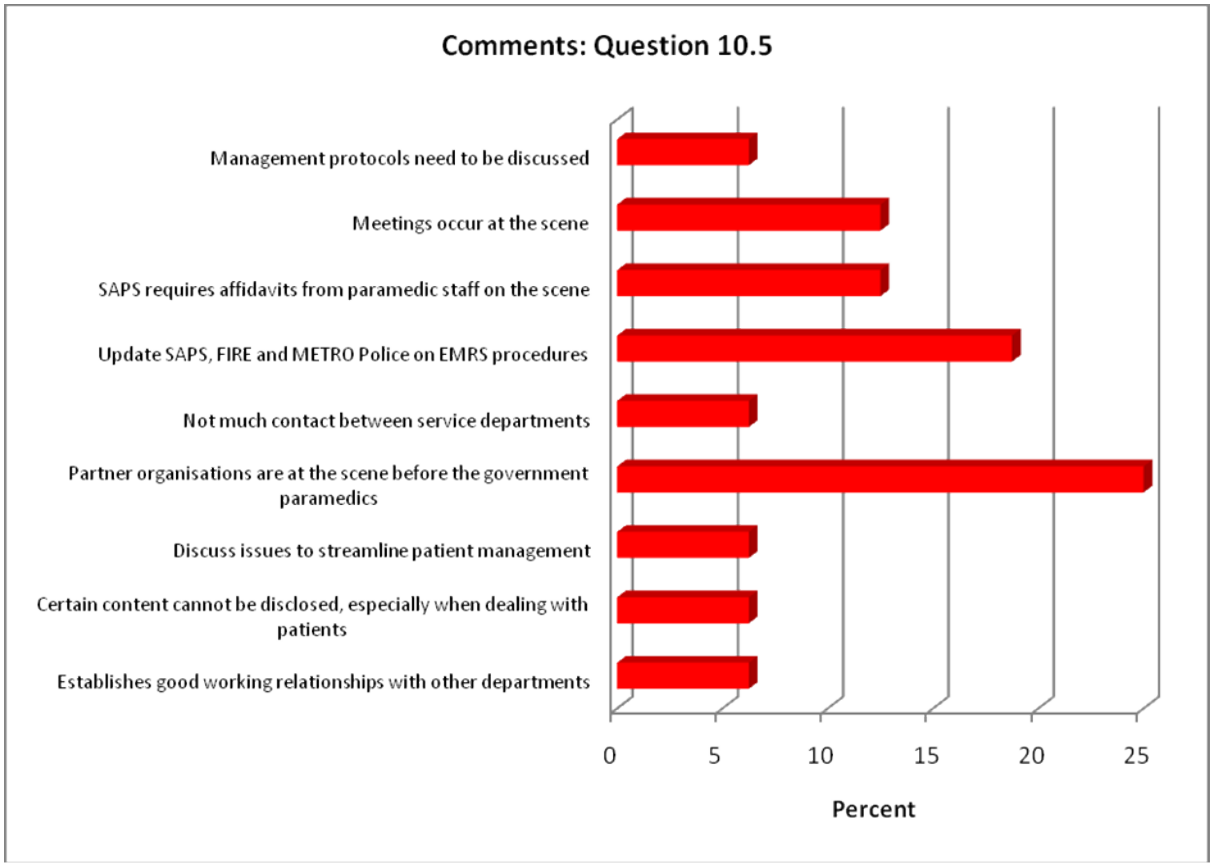


Figure 4.12: Comments - Question 10.5

The most common comments are those represented by the highest percentages in the graph above. At any motor vehicle accident (MVA) scene, there will be other services present. Each service on scene has its own roles and responsibilities. To treat and transport a patient from an emergency scene, there has to a certain amount of interaction between the different services on scene. EMRS management needs to update the management of the other emergency services on EMRS's role and responsibility on scene. This will ensure that patients get the best possible care on the scene of an emergency. The majority of the respondents highlighted the fact that partner organisations arrive on scene before EMRS.

This can be attributed to the following:

- There were no ESV's available when the call was received;
- The ESV that was dispatched was far from the scene;
- The call was received long after the incident happened;
- The caller gave the incorrect address, and
- The EMD took down the incorrect details.

The other factors each average approximately 6%. This is an integral aspect for due consideration by EMRS.

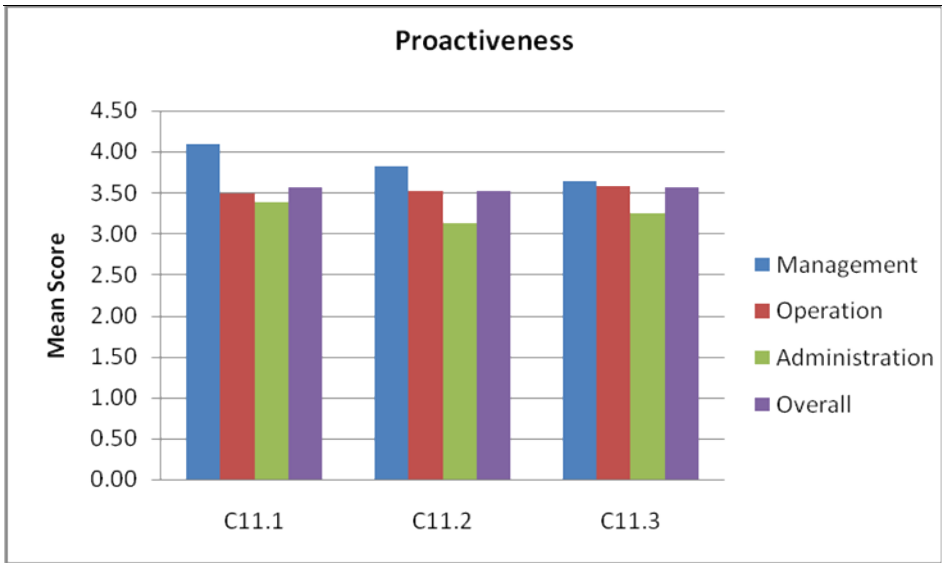


Figure 4.13: Proactiveness

I actively seek out relevant information on changes and trends going on outside my organisation.	C11.1
I use information to respond to changes and developments taking place outside my organisation.	C11.2
I use information to create or enhance my organisation's products, services and processes.	C11.3

Pro-activeness measured the initiatives taken by respondents to update and improve themselves. It seems that the managers are more proactive than their counterparts regarding these trends. Managers, by attending meetings, workshops and courses, are continuously receiving information on changes and trends in EMS. The other categories of staff are not exposed to this and therefore cannot access information. This conclusion is a major challenge for EMRS.

The staff have limited opportunities to attend courses and workshops which will allow them to improve their knowledge base. It should be noted that in spite of this, staff are keeping themselves updated on the latest developments so that they can provide the patients with the best possible care.

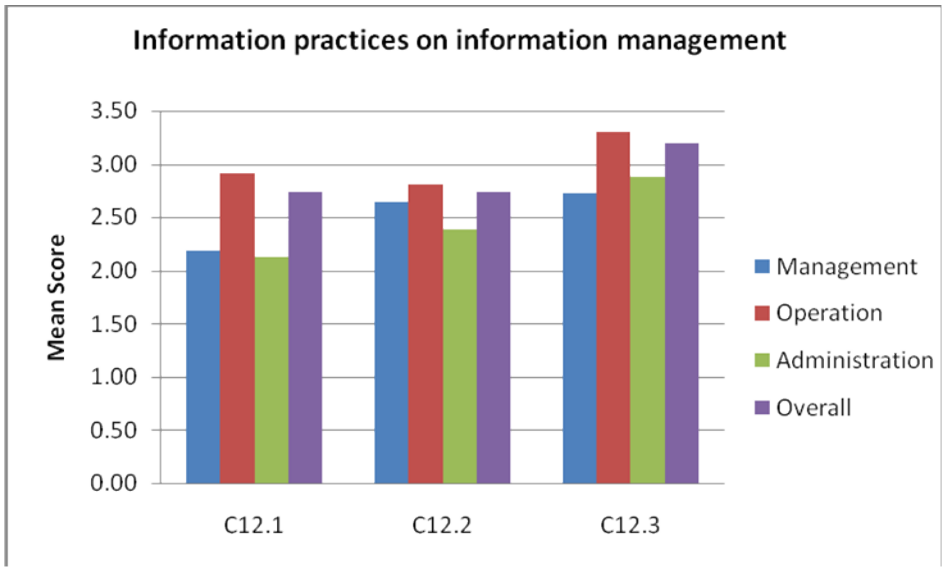


Figure 4.14: Information practices on information management

I trust informal information sources (e.g. colleagues) more than I trust formal sources (e.g. memos, reports).	C12.1
I use informal information sources (e.g. colleagues) extensively, even though formal sources (e.g. memos, reports) exist and are credible.	C12.2
I use informal information sources (e.g. colleagues) to verify and improve the quality of formal information sources (e.g. memos, reports).	C12.3

The graph above indicates that managers are least likely to trust informal sources, while operators are most likely. However, the scores are again in the uncertainty range, implying that there are as many respondents who trust informal sources as there are those who do not. EMRS Operational staff are shift workers, who receive information once they return to work following their days off. There are instances where they are not told of the latest memos or reports by their Supervisor, due to a number of reasons. They will hear of these from their colleagues in other shifts. Clearly, pertinent information cannot be disseminated in such a haphazard manner.

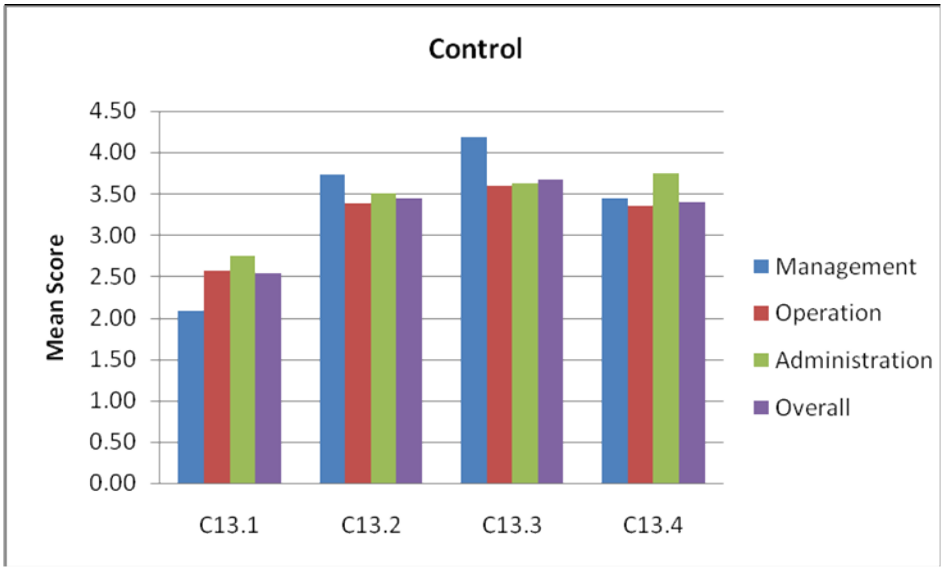


Figure 4.15: Control

I receive information about the performance of my organisation.	C13.1
My knowledge of organisational performance influences my work.	C13.2
In my organisation, information is essential to enhancing organisational performance.	C13.3
4 Information in my organisation is distributed on a 'need to know' basis.	C13.4

There is some agreement that information is not easily available regarding the organisation, especially amongst the managers (C13.1), even though they

believe that information is essential to succeeding and making the organisation successful (C13.3). There is some degree of uncertainty regarding the other two questions. About 55% of the respondents somewhat agree with these statements (though not completely).

To provide the best possible service to its customers, EMRS needs to equip its staff with the necessary tools. One of these tools is information. As can be seen from the responses of participants, this is not forthcoming. This finding poses a threat to the efficacy of information management at EMRS.

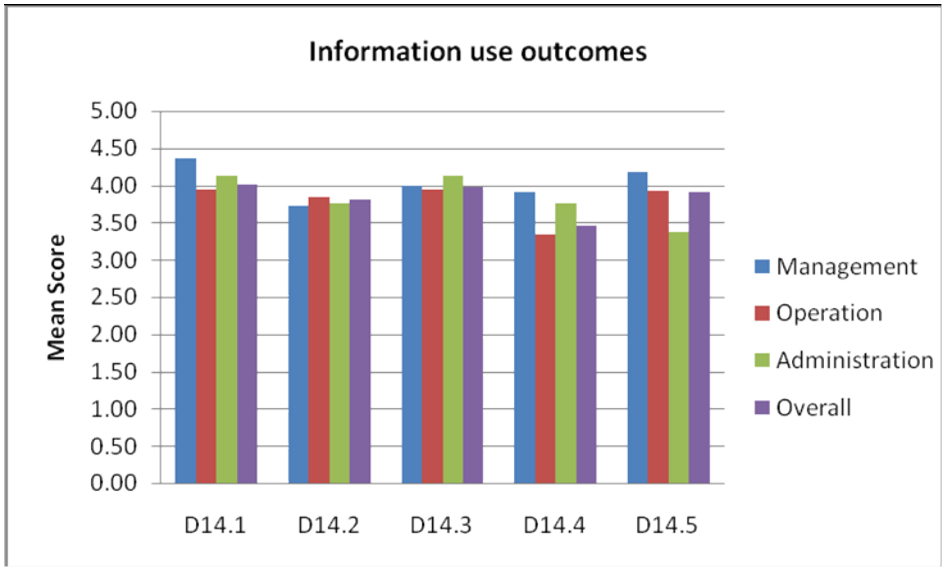


Figure 4.16: Information use outcomes

I can quickly recognise the complexities in a situation and find a way of solving problems.	D14.1
My work tasks demand new, creative ideas and solutions.	D14.2
My work benefits my organisation.	D14.3
I have influence over what happens within my work unit.	D14.4
Sharing information is critical to being able to perform my duties.	D14.5

From the above illustration, there is agreement on most of the questions, apart from D14.4, which deals with the influence a respondent has over his work. A summary of the other questions indicates that there is a degree of innovativeness and commitment to the job description of the respondents. This shows that staff can adapt when a situation arises. They have the “let’s make a plan” mentality. When exposed to difficult situations on scene, staff can adapt to improve the situation.

4.8 Gap Score Analysis

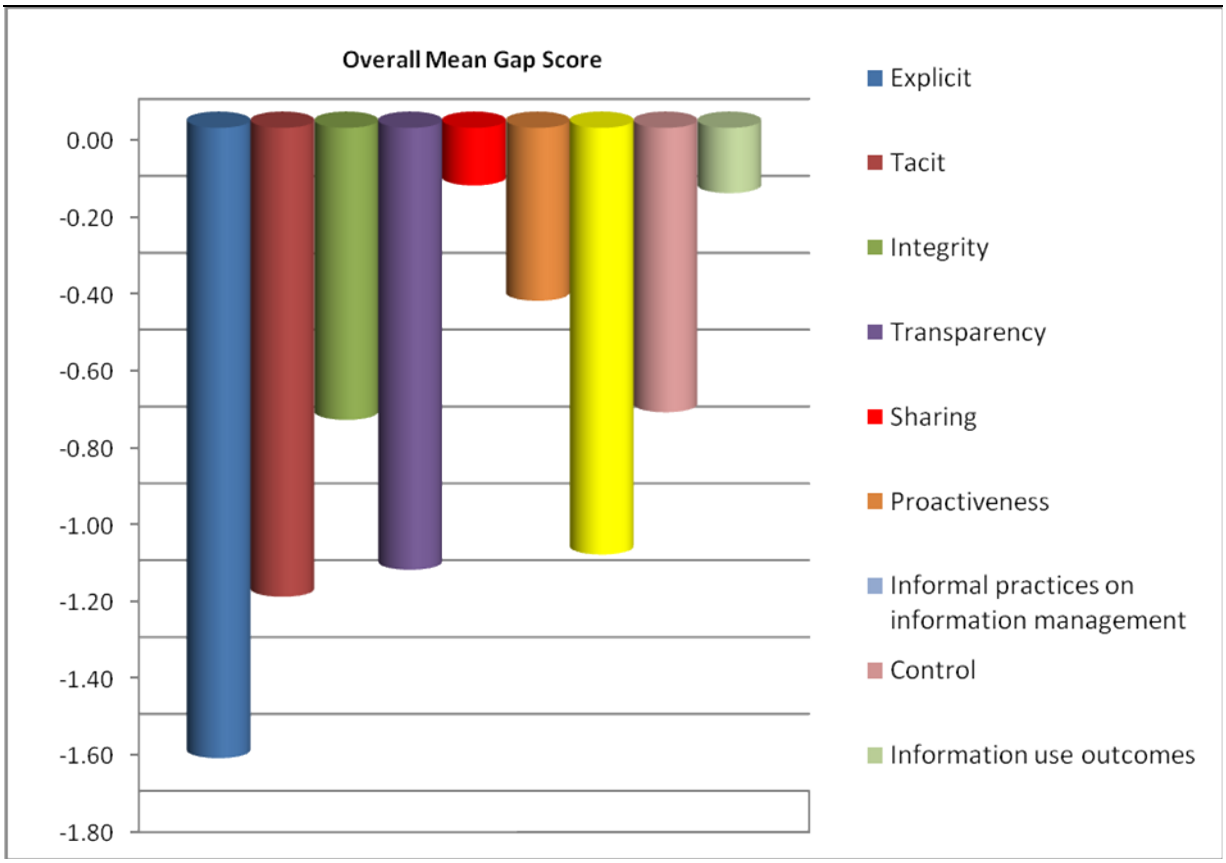


Figure 4.17: Overall mean gap score

Using 4 as a benchmark score of agreement, the overall mean scores of each category were determined and the difference found with respect to the benchmark. The graph above summarises the results obtained.

It is noted that two categories, Sharing and Information Use Outcomes, had the smallest differences. These categories seem to be only slightly under-achieving what they are meant to be doing.

Four of the other categories have gaps of almost 1 or more. These indicate that there is a significant difference to what is expected. The remaining three categories are an inter-mediate phase, neither totally under-performing nor over-performing.

4.9 HYPOTHESIS TESTS

Tests were performed to determine whether there was a statistically significant difference between the variables and occupation type.

The chi-square test was used to determine whether there was an association between the occupation types and the various categories. The null hypothesis states that there is no association between the two. The alternate hypothesis indicates that there is an association. The results are presented in the table below.

Crosstabs	**Chi square p-value**
EMRS has a formal policy or strategy for managing knowledge and information. * Occupation	0.159
EMRS has formal procedures to collect knowledge. * Occupation	0.045
EMRS has formal procedures to share knowledge. * Occupation	0.494
EMRS identifies and obtains knowledge from outside sources (e.g. industry partners, governments, universities). * Occupation	0.492
Knowledge and information at EMRS are available and organised to make it easy to find what I need. * Occupation	0.148
Information about good work practices, lessons learned, and knowledgeable persons are easy to find in my organisation. * Occupation	0.475
EMRS makes use of information technology to facilitate knowledge and information sharing. * Occupation	0.509

EMRS has a culture intended to promote knowledge and information sharing. * Occupation	0.979
My work unit encourages experienced workers to communicate their knowledge to new or less experienced workers. *Occupation	0.592
EMRS encourages workers to attend training and/or education courses. * Occupation	0.111
EMRS has formal mentoring programs and/or apprenticeships. * Occupation	0.231
My work unit has a culture intended to promote knowledge and information sharing. * Occupation	0.803
Of the four (4) models, which one summarises information management practices at eThekwini EMRS? * Occupation	0.101
Amongst the people I work with regularly, it is common practice to distribute information to justify decisions already made. * Occupation	0.973
Amongst the people I work with regularly, I believe/think individuals keep information to themselves. * Occupation	0.411
There is a tendency to leverage information for personal advantage. * Occupation	0.571
Managers and supervisors of my work unit encourage openness. * Occupation	0.632
The people I work with regularly share information on errors or failures openly. * Occupation	0.411
Information on failures or errors is used to address problems constructively. * Occupation	0.123
I often exchange information with the people with whom I work regularly. * Occupation	0.724
I often exchange information with people outside of my regular work unit. * Occupation	0.681
Are you a person that people approach regularly for information? * Occupation	0.784
I often exchange information with citizens, customers, or clients outside my organisation. * Occupation	0.730
I often exchange information with partner organisations (SAPS, Fire Dept. Metro Police). * Occupation	0.623
I actively seek out relevant information on changes and trends going on outside my organisation. * Occupation	0.682
I use information to respond to changes and developments taking place outside my organisation. * Occupation	0.456
I use information to create or enhance my organisation's products, services, and processes. * Occupation	0.783
I trust informal information sources (e.g. colleagues) more than I trust formal sources (e.g. memos, reports). * Occupation	0.047
I use informal information sources (e.g. colleagues) extensively even though formal sources (e.g. memos, reports) exist and are credible. * Occupation	0.948
I use informal information sources (e.g. colleagues) to verify and improve the quality of formal information sources (e.g. memos, reports). * Occupation	0.791

I receive information about the performance of my organisation. * Occupation	0.613
My knowledge of organisational performance influences my work. * Occupation	0.586
In my organisation, information is essential to enhancing organisational performance. * Occupation	0.422
Information in my organisation is distributed on a 'need to know' basis. * Occupation	0.435
I can quickly recognise the complexities in a situation and find a way of solving problems. * Occupation	0.554
My work tasks demand new, creative ideas and solutions. * Occupation	0.406
My work benefits my organisation. * Occupation	0.203
I have influence over what happens within my work unit. * Occupation	0.575
Sharing information is critical to being able to perform my duties. * Occupation	0.879

Table 4.9: Hypotheses tests: P-values and statistical significance

The traditional approach to reporting a result requires a statement of statistical significance. A p-value is generated from a test statistic. A significant result is indicated with "$p < 0.05$".

The table indicates that the p-values are all more than 0.05 (except two). This means that the null hypothesis can be expected i.e. that there is no association and that any differences are due to chance. This means that the occupation type did not influence the outcome of each question.

The two statements that did show a difference were: *The EMRS has formal procedures to collect knowledge*, and *I trust informal information sources (e.g. colleagues) more than I trust formal sources (e.g. memos, reports)*. This implies that the null hypothesis is false, and that occupation type did play a role in the manner in which the questions were answered. Analyses of the graphs indicate that B6.2 has Administrators scoring very differently from Managers and Operators. Similarly, C12.1 has Operators scoring very differently from the other two occupation categories.

4.10 THEORY OF STATISTICS USED

The following statistical approaches informed the study:

4.10.1 Statistical approach

Both Descriptive and Inferential Statistical analyses are covered in this research. *Descriptive statistics* describes the organising and summarising of quantitative data. Uni-variate and bi-variate analysis is most appropriate for descriptive statistics. Uni-variate analysis is concerned with measures of central tendency and measures of dispersion. The most appropriate measure of central tendency for interval data is the mean and the most appropriate measure of dispersion for interval data is the standard deviation. Bi-variate analysis concerns the measurement of two variables at a time (Lind, Marchal & Mason, 2001: 6). Descriptive statistics is useful as it summarises results for an experiment, thereby also allowing for more constructive research after more detailed analysis. Descriptive data analysis aims to describe the data by investigating the distribution of scores on each variable, and by determining whether the scores on different variables are related to each other.

Linear correlation is an associated degree of measure between two interval variables. The level and the direction of any relationship between the perception and expectation variables are therefore described by the correlation coefficient calculated by correlating the two means of the variables (Lind *et al*, 2001: 457-460).

The Pearson's r-value gives an indication as to the strength of the relationship between the variables. The closer the values are to ±1, the stronger the relationship (both positive and negative). The closer the value is to 0, the weaker the relationship.

Inferential statistical analysis is concerned with the testing of hypothesis. The independent t-test is the most appropriate parametric test for a comparison of the means. This tests any significant difference between the two variables. Primary data were collated and analysed, and comments and concluding discussions are thereafter based on the results obtained (Lind *et al*, 2001: 348-351). Inferential statistical analysis allows the researcher to draw conclusions about populations from sample data.

4.10.2 Hypotheses tests: p-values and statistical significance

The most important application in the social sciences of the statistical theory around sampling distributions has been significance testing or statistical hypothesis testing. The researcher is interested in the outcome of a study on the impact of service delivery.

The traditional approach to reporting a result requires a statement of statistical significance. A **p-value** is generated from a **test statistic.** A significant result is indicated with "$p < 0.05$" (Lind *et al*, 2001: 347). The choice of the value 0.05 as the level of significance is in fact totally arbitrary, but has become enshrined as a standard in statistics.

Hypothesis testing is applied to nominal, ordinal, interval and ratio data in the form of statistical tests.

4.11 STATISTICAL SOFTWARE

The analysis was performed using two statistical software packages. SPSS (version 17), a comprehensive set of programmes designed for use by social scientists, was invaluable. Although the software provided a wide range of

statistical options for design, analysis and presentation, the research was also analysed with the aid of Statgraphics Centurion.

4.12 Conclusion

The questionnaire was a useful tool in trying to ascertain how the staff of EMRS perceived information management. As discussed in the chapter, the responses to the questions were varied. One significant point to note is that the staff are not aware of their role in the information system. This could be a challenge for EMRS eThekwini because it is imperative that the staff understand their role in the information system so that service delivery can be improved. This will be discussed further in Chapter Five. The researcher would also like to place on record at this stage that it was a challenge to get the questionnaires out to the staff. EMRS has bases situated in different parts of eThekwini District. The staff were moreover sceptical about their role in filling out the questionnaires. It had to be explained to them that the completion of the questionnaires was only for the purposes of the study. The staff are also not familiar with scientific research and the methods that are used to gather information. In the next chapter, the conclusion and recommendations are presented.

CHAPTER FIVE
CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

A detailed discussion on the data collected was offered in Chapter Four. Out of such discussion, a conclusion and recommendations can be drawn up that will assist EMRS in achieving its vision and mission.

5.2 Conclusion

This research examined the information use environment of EMRS. The outcomes of information as a function of public administration and information management were analysed. Looking at information management, the research established that perceptions of information use outcomes are connected significantly with perceptions of information values involving sharing, proactiveness, transparency and informality.

This research identified the norm of information sharing as having a major effect on information use outcomes. The knowledge management literature often distinguishes between tacit and explicit forms of knowledge. In this organisation, the research highlighted that employees perceive information management focusing on two areas: information management activities that develop policies and procedures to codify explicit knowledge (IME), and information management activities that focus on the person-to-person sharing or transfer of tacit knowledge (IMT).

It is important to recognise the limitations of the present research. This is the first study to be conducted at EMRS, and it is not clear to what extent the findings may be generalised to other sectors and departments within the KwaZulu-Natal Department of Health.

5.3 Recommendations

The study makes the following key recommendations for the improvement of service delivery through information management.

5.3.1 Information as a resource

Information has to be accepted as a resource. EMRS needs to ensure that the information and knowledge it collects and produces, is treated as a strategic resource. It has to make sure that such information/knowledge is secure, accurate, accessible, and used properly. Information management should therefore be aligned to EMRS's business strategy. This is no different to how finance and human resources will be treated.

5.3.2 Engagement with stakeholders

All the relevant stakeholders and role-players at EMRS should discuss information management. The discussion should focus on whether or not EMRS is obtaining the maximum benefit of information management practices at present. Plans should also be put in place to maximise the use of information management to improve service delivery.

5.3.3 Improving problem areas

EMRS, like any other organisation has areas where it can perform better. Information management should be used as a tool to address these problems. This will lead to services being delivered faster, more effectively and in innovative ways.

5.3.4 Access to information

EMRS completes a template at the end of every month. This template gives a complete breakdown of all the activities of EMRS eThekwini for that specific month. This template should be sent to all bases so that staff can review the

month's activities for ease of access to the relevant information in order to expedite decision-making.

5.3.5 Information, communication and technology

Information technology is a vital tool in any organisation. It can be used to deliver and store information. The Communications Centre should be fitted with computers so that emergency calls can be taken electronically. This could eliminate mistakes and ensure that the ambulances get to the patients quickly. Computers should also be installed at all bases and staff should have access to these computers. Staff should be allocated e-mail addresses so that all the latest circulars and memos could be sent to their in-boxes. This will ensure that everyone receives vital information.

5.3.6 Appointment of a Chief Information Officer

A Chief Information Officer is crucial to all government departments. All departments within the government have these specialists to manage their information. EMRS eThekwini should appoint a Chief Information Officer to manage the information and knowledge it collects and produces.

5.3.7 Further research

As emphasised earlier in this study, information on EMRS is limited. This remains an ongoing challenge. EMRS KwaZulu-Natal, pre- and post-apartheid, has been in existence for 28 years. However, to date there has been no research done at this organisation. In this regard, research on EMRS should be conducted on an ongoing basis in the quest to improve service delivery in this department.

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UNIVERSITY OF
KWAZULU-NATAL

RESEARCH OFFICE (GOVAN MBEKI CENTRE)
WESTVILLE CAMPUS
TELEPHONE NO.: 031 – 2603587
EMAIL : ximbap@ukzn.ac.za

28 NOVEMBER 2008

MR. K THUMBIRAN (204000239)
PUBLIC ADMINISTRATION

Dear Mr. Thumbiran

ETHICAL CLEARANCE APPROVAL NUMBER: HSS/0738/08M

I wish to confirm that ethical clearance has been approved for the following project:

"The role of information management in the Department of Health, with particular reference to eThekwini Emergency Medical Rescue Services in KwaZulu-Natal"

PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years

Yours faithfully

P Ximba

MS. PHUMELELE XIMBA

cc. Supervisor (Mrs. M Subban)
cc. Mrs. C Haddon

HEALTH
KwaZulu-Natal

Health Research & Knowledge Management sub-component
10 – 103 Natalia Building, 330 Langalibalele Street
Private Bag x9051
Pietermaritzburg
3200
Tel.: 033 – 395 2944
Fax.: 033 – 394 3782
Email.: hrkm@kznhealth.gov.za
www.kznhealth.gov.za

Reference : HRKM066/08
Enquiries : Mr X. Xaba
Telephone : 033 – 395 2805

19 December 2008

Dear Mr Thumbiran

Subject: Approval of a Research Proposal

1. The research proposal titled **'The role of information management in the Department of Health: a case study of eThekwini Emergency Medical Rescue Services (EMRS), KwaZulu Natal"** was reviewed by the KwaZulu-Natal Department of Health. The proposal is hereby **approved** for research to be undertaken at EMRS in eThekwini District.

2. You are requested to undertake the following:
   a. Make the necessary arrangement with identified facilities before commencing with your research project.
   b. Provide an interim progress report and final report (electronic and hard copies) when your research is complete.

3. Your final report must be posted to **HEALTH RESEARCH AND KNOWLEDGE MANAGEMENT, 10-102, PRIVATE BAG X9051, PIETERMARITZBURG, 3200** and e-mail an electronic copy to hrkm@kznhealth.gov.za.

For any additional information please contact Mr X. Xaba on 033-395 2805.

Yours Sincerely

L. Sphies

Dr S.S.S. Buthelezi
Chairperson: Provincial Health Research Committee.

Dear Respondent,

Masters Degree in Public Administration Research Project
Researcher: Mr K.Thumbiran 0824056343
Supervisor: Mrs. M. Subban (031)2067763
Research Office: Ms P Ximba (031)2603587

I am THUMBIRAN KUMARASEN, an MPA student at the School of Public Administration of the University of KwaZulu-Natal. You are invited to participate in a research project entitled 'The Role of Information Management in the Department of Health with particular reference to eThekwini Emergency Medical Rescue Services in KwaZulu-Natal'.

The aim of this study is to explore the perspectives of employees in eThekwini EMRS, on the role of information management as a strategic resource for enhanced service delivery.

Through your participation I intend exploring the impact of information management as a strategic resource in providing a service that meets the emergency and rescue needs of the people in eThekwini District, KZN. The results of the survey are intended to contribute to emergency medical rescue services through an integrated approach that will enhance efficiency and effectiveness.

Your participation in this project is voluntary. You may refuse to participate or withdraw from the project at any time with no negative consequences. There will be no monetary gain from participating in this survey. Confidentiality and anonymity of records identifying you as a participant will be maintained by the School of Public Administration, UKZN.

If you have any questions or concerns about completing the questionnaire or about participating in this study, you may contact me or my supervisor at the numbers listed above.

The survey should take you approximately 20-30 minutes to complete. I trust that you will take the time to complete this survey.

Sincerely,

Investigator's signature_____ Date_____

UNIVERSITY OF KWAZULU-NATAL
Masters Degree in Public Administration Research Project
Researcher: Mr K. Thumbiran 0824056343
Supervisor: Mrs. M. Subban 0312067763
Research Office: Ms P Ximba 031-2603587

CONSENT

I…… (Full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.
I understand that I am at liberty to withdraw from the project at any time, should I so desire.

SIGNATURE OF PARTICIPANT DATE

_____ _____

TO WHOM IT MAY CONCERN

8 November 2010

This dissertation, entitled *The role of information management in the Department of Health, with particular reference to Emergency Medical Rescue Services in KwaZulu-Natal*, by K Thumbiran, has been edited to ensure technically accurate and contextually appropriate use of language.

In the editing process, attention was given to the following in particular:

- Diction, to ensure correct and effective word choice;
- Grammar (concord and punctuation, to ensure consistency);
- Formatting (numbering, referencing and spacing), and
- Sentence construction (refinement, structure and flow), to avoid redundancy and repetition and in order to sustain a scholarly academic style and argument, for this level of research.

Yours sincerely

Dr CM ISRAEL
BA Hons (UDW) MA (UND) MA (US) PhD (UNH)
Language Editor

RESEARCH QUESTIONNAIRE

THE ROLE OF INFORMATION MANAGEMENT IN THE DEPARTMENT OF HEALTH, WITH PARTICULAR REFERENCE TO eTHEKWINI EMERGENCY MEDICAL RESCUE SERVICES IN KWAZULU-NATAL.

EMEGERNCY MEDICAL RESCUE SERVICES EMPLOYEES - MANAGEMENT

Interview Location: _____

Date: _____

Time: _____

Please indicate your answer by circling in the relevant box.

SECTION A: BIOGRAPHIC INFORMATION

1. Gender

Please state your gender.

Male	1
Female	2

2. Race Group

Please indicate your race group for research purposes.

African	1
Indian	2
Coloured	3
White	4

3. Age

Please state your age.

Less than 25 yrs	1
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46 – 50 yrs	6
51 – 55 yrs	7
56 – 60 yrs	8

4. Occupation

Please state your occupation.

Management	1
Operation	2
Administration	3

5. Educational Qualifications

Please state your qualifications for research purposes.

Matric	1
Undergraduate	2
Postgraduate	3
Other	4

SECTION B: INFORMATION MANAGEMENT

6. EXPLICIT (STRUCTURED, CLEAR AND UNAMBIGUOUS INFORMATION MANAGEMENT MECHANISMS)

6.1 EMRS has a formal policy or strategy for managing knowledge and information.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

6.2 EMRS has formal procedures to collect knowledge.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

6.3 EMRS has formal procedures to share knowledge.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

6.4 EMRS identifies and obtains knowledge from outside sources (e.g. industry partners, governments, universities).

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

6.5 Knowledge and information at EMRS is available and organized to make it easy to find what I need.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

6.6 Information about good work practices, lessons learned, and knowledgeable persons is easy to find in my organization.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

6.7 EMRS makes use of information technology to facilitate knowledge and information sharing.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

6.8 EMRS has a culture intended to promote knowledge and information sharing.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

7. TACIT (UNSTRUCTURED AND UNSTATED INFORMATION MANAGEMENT MECHANISMS)

7.1 My work unit encourages experienced workers to communicate their knowledge to new or less experienced workers.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

7.2 EMRS encourages workers to attend training and/or education courses.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

7.3 EMRS has formal mentoring programs and/or apprenticeships.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

7.4 My work unit has a culture intended to promote knowledge and information sharing.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

7.5 "Information politics" refers to the assumptions made about how people generate and use information in organizations. This is an important element of information management.
Of the four (4) models listed below, which one summarizes information management practices at eThekwini EMRS?

An absence of any overall information management policy leaving individuals to obtain and manage their own information (Anarchy)	1
An emphasis on technical approach to information management stressing categorization and modelling of an organization's full information assets (Technocratic utopianism)	2
An approach to information management based on consensus and negotiation on the organization's key information elements and reporting structures (Federalism)	3
Management of information by individual business units or functions, which define their own information needs and report only limited information categories and reporting structure by the firm's leaders, who may or may not share the information willingly after collecting it (Feudalism)	4
None of the above	5

SECTION C: BEHAVIOURS AND VALUES

8. INTEGRITY

8.1 Amongst the people I work with regularly, it is common practice to distribute information to justify decisions already made.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

8.2 Amongst the people I work with regularly, I believe/think individuals keep information to themselves.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

8.3 There is a tendency to leverage information for personal advantage.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

9. TRANSPARENCY

9.1 Managers and supervisors of my work unit encourage openness.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

9.2 The people I work with regularly share information on errors or failures openly.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

9.3 Information on failures or errors are used to address problems constructively.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
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10. SHARING

10.1 I often exchange information with the people with whom I work regularly.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5
EXPLAIN:	

10.2 I often exchange information with people outside of my regular work unit.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

10.3 Are you a person that people approach regularly for information?

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

10.4 I often exchange information with citizens, customers, or clients outside my organization.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5
SPECIFY:	

10.5 I often exchange information with partner organizations (SAPS, Fire Dept. Metro Police).

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5
SUBSTANTIATE:	

11. PROACTIVENESS

11.1 I actively seek out relevant information on changes and trends going on outside my organization.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

11.2 I use information to respond to changes and developments taking place outside my organization.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

11.3 I use information to create or enhance my organization's products, services, and processes.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

12. INFORMAL PRACTICES ON INFORMATION MANAGEMENT

12.1 I trust informal information sources (e.g. colleagues) more than I trust formal sources (e.g. memos, reports).

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

12.2 I use informal information sources (e.g. colleagues) extensively even though formal sources (e.g. memos, reports) exist and are credible.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
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12.3 I use informal information sources (e.g. colleagues) to verify and improve the quality of formal information sources (e.g. memos, reports).

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
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13. CONTROL

13.1 I receive information about the performance of my organization.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

13.2 My knowledge of organizational performance influences my work.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

13.3 In my organization, information is essential to enhancing organizational performance.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

13.4 Information in my organization is distributed on a 'need to know' basis.

Strongly disagree	1
Disagree	2
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SECTION D: INFORMATION USE OUTCOMES

14.1 I can quickly recognize the complexities in a situation and find a way of solving problems.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

14.2 My work tasks demand new, creative ideas and solutions.

Strongly disagree	1
Disagree	2
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Agree	4
Strongly agree	5

14.3 My work benefits my organization.

Strongly disagree	1
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14.4 I have influence over what happens within my work unit.

Strongly disagree	1
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14.5 Sharing information is critical to me being able to perform my duties.

Strongly Disagree	1
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Thank you for your participation.

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Interview Location: _____

Date: _____

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Other	4

SECTION B: INFORMATION MANAGEMENT

6. EXPLICIT (STRUCTURED, CLEAR AND UNAMBIGUOUS INFORMATION MANAGEMENT MECHANISMS)

6.1 EMRS has a formal policy or strategy for managing knowledge and information.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

6.2 EMRS has formal procedures to collect knowledge.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

6.3 EMRS has formal procedures to share knowledge.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

6.4 EMRS identifies and obtains knowledge from outside sources (e.g. industry partners, governments, universities).

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

6.5 Knowledge and information at EMRS is available and organized to make it easy to find what I need.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

6.6 Information about good work practices, lessons learned, and knowledgeable persons is easy to find in my organization.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

6.7 EMRS makes use of information technology to facilitate knowledge and information sharing.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

6.8 EMRS has a culture intended to promote knowledge and information sharing.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

7. TACIT (UNSTRUCTURED AND UNSTATED INFORMATION MANAGEMENT MECHANISMS)

7.1 My work unit encourages experienced workers to communicate their knowledge to new or less experienced workers.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

7.2 EMRS encourages workers to attend training and/or education courses.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

7.3 EMRS has formal mentoring programs and/or apprenticeships.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

7.4 My work unit has a culture intended to promote knowledge and information sharing.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

7.5 "Information politics" refers to the assumptions made about how people generate and use information in organizations. This is an important element of information management.
Of the four (4) models listed below, which one summarizes information management practices at eThekwini EMRS?

An absence of any overall information management policy leaving individuals to obtain and manage their own information (Anarchy)	1
An emphasis on technical approach to information management stressing categorization and modelling of an organization's full information assets (Technocratic utopianism)	2
An approach to information management based on consensus and negotiation on the organization's key information elements and reporting structures (Federalism)	3
Management of information by individual business units or functions, which define their own information needs and report only limited information categories and reporting structure by the firm's leaders, who may or may not share the information willingly after collecting it (Feudalism)	4
None of the above	5

SECTION C: BEHAVIOURS AND VALUES

8. INTEGRITY

8.1 Amongst the people I work with regularly, it is common practice to distribute information to justify decisions already made.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

8.2 Amongst the people I work with regularly, I believe/think individuals keep information to themselves.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

8.3 There is a tendency to leverage information for personal advantage.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

9. TRANSPARENCY

9.1 Managers and supervisors of my work unit encourage openness.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

9.2 The people I work with regularly share information on errors or failures openly.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

9.3 Information on failures or errors are used to address problems constructively.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

10. SHARING

10.1 I often exchange information with the people with whom I work regularly.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5
EXPLAIN:	

10.2 I often exchange information with people outside of my regular work unit.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

10.3 Are you a person that people approach regularly for information?

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

10.4 I often exchange information with citizens, customers, or clients outside my organization.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5
SPECIFY:	

10.5 I often exchange information with partner organizations (SAPS, Fire Dept. Metro Police).

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5
SUBSTANTIATE:	

11. PROACTIVENESS

11.1 I actively seek out relevant information on changes and trends going on outside my organization.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

11.2 I use information to respond to changes and developments taking place outside my organization.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

11.3 I use information to create or enhance my organization's products, services, and processes.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

12. INFORMAL PRACTICES ON INFORMATION MANAGEMENT

12.1 I trust informal information sources (e.g. colleagues) more than I trust formal sources (e.g. memos, reports).

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

12.2 I use informal information sources (e.g. colleagues) extensively even though formal sources (e.g. memos, reports) exist and are credible.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

12.3 I use informal information sources (e.g. colleagues) to verify and improve the quality of formal information sources (e.g. memos, reports).

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

13. CONTROL

13.1 I receive information about the performance of my organization.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

13.2 My knowledge of organizational performance influences my work.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

13.3 In my organization, information is essential to enhancing organizational performance.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

13.4 Information in my organization is distributed on a 'need to know' basis.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

SECTION D: INFORMATION USE OUTCOMES

14.1 I can quickly recognize the complexities in a situation and find a way of solving problems.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

14.2 My work tasks demand new, creative ideas and solutions.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

14.3 My work benefits my organization.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

14.4 I have influence over what happens within my work unit.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

14.5 Sharing information is critical to me being able to perform my duties.

Strongly Disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

Thank you for your participation.

Additional Data

ID	Data Element	Value	Comment
1	**Esablishment:**		
2	Admin Staff		
3	ALS		
4	BLS		
5	Comms Centre Officer		
6	District Manager		
7	EMD's		
8	General Assistants		
9	HR Officers		
10	HR Practioner		
11	ILS		
12	Learner(no qualification)		
13	Operations Manager		
14	Shift Supervisors		
15	Volunteers		
16	Zonal Managers		
17	**Staff Movement:**		
18	Boarded		
19	Death		
20	Dismissed		
21	New Appointments		
22	Resignations		
23	Retirements		
24	Suspended		
25	Transferred in		
26	Transferred out		
27	**Absenteeism:**		
28	Number of Staff that have taken sick leave		
29	Days lost due to sick leave		
30	Number of staff Injured on Duty(new cases)		
31	Days lost due to IOD		
32	Number of Staff absent with nil notification		
33	Days lost due to nil notification		
34	Number of staff absent due to COEC/study		
35	Number of days lost due to COEC/study		
36	Number of staff that have taken Vac leave		
37	Number of days lost due to Vac leave		
38	Number of staff declared AWOL		
39	Days lost due to AWOL		
40	Number of Staff that have taken Mat.leave		
41	Days lost due to Mat.leave		
42	**Disciplinary Matters:**		
43	Cases closed		
44	Current cases(pending)		
45	New cases opened		
46	**Vehicles - Ambulance**		
47	Ambulance (Other Specify)		

48	Ambulance Hiace		
49	Ambulance Landcruiser 4x4		
50	Ambulance Marathon		
51	Ambulance Spectron		
52	Ambulance Sprinter		
53	Ambulance Sprinter MICU		
54	Ambulance VW LT		
55	Ambulance VW LT MICU		
56	**Vehicles - Operational Support**		
57	ALS Response		
58	Disaster Bus		
59	Medical Backup		
60	Officer vehicles		
61	Other(specify)		
62	Rescue		
63	Sedans		
64	Trailers		
65	Truck		
66	Truck Roll-Back		
67	**Vehicles - Other**		
68	2X4 Hi Riders		
69	Isuzu D/Cab		
70	Landcruiser converted into bakkies		
71	Nissan Hirider Utility		
72	Other(specify)		
73	Sedans		
74	Stores		
75	Toyota Hilux		
76	**Vehicles - PPT**		
77	PPT-25 seater (small)		
78	PPT-35 seater (medium)		
79	PPT-60 seater (Large)		
80	PPT-Minibus		
81	PPT-Officer vehicles		
82	PPT-Other (Specify)		
83	**Vehicle Exists:**		
84			
84	Vehicles writtren off due to accident damage		
86	Vehicles scrapped due to high milage		
87	Vehicles hi-jacked/stolen-(not recovered)		
88	Vehicles hi-jacked/stolen-(recovered)		
89	Vehicles not replaced		
90	**Vehicles - History**		
91	Ambulances with more than 200 000Kms		
92	Paramed units with more than 200 000Kms		
93	Rescue units with more than 200 000Kms		
94	Vehicles booked in for routine service		
95	Vehicles booked in for minor repairs(mechanical)		
96	Vehicles booked in for major repairs(mechanical)		
97	Vehicles booked in for accident repairs		

98	Average downtime for routine service (Days)		
99	Average downtime for minor repairs (Days)		
100	Average downtime for major repairs (Days)		
101	Average downtime for accident repairs (Days)		
102	**MVA Own: Injuries:**		
103	Staff		
104	Staff-Hospitalised		
105	Staff-Blue Codes		
106	Third Party		
107	Third Party-Hospitalised		
108	Third Party-Blue Codes		
109	**MVA Own: Damages**		
110	No Damages - Own		
111	Minor - Own		
112	Moderate - Own		
113	Major - Own		
114	No Damages - Third Party		
115	Minor - Third Party		
116	Moderate - Third Party		
117	Major - Third Party		
118	**Vehicle Kilometres**		
119	Number of Kilometres Travelled by Ambulance		
120	Number of Patient Kilometres Travelled by Ambulance		
121	Kilometres Travelled by Operational Support		
122	Number of Patient Kilometres Travelled by Operational Support		
123	Kilometres Travelled by PPT		
124	Kilometres Travelled by Other (Administration Stores,etc)		
125	Total Kilometres Travelled		
126	**CaseLoad:**		
127	Total number of calls logged		
128	Number of P1 (Red Codes) Dispatched Urban		
129	Number of P2 (Yellow Codes) Dispatched Urban		
130	Total number of calls logged Urban		
131	Number of P1 (Red Codes) Dispatched Rural		
132	Number of P2 (Yellow Codes) Dispatched Rural		
133	Total number of calls logged Rural		
134	Number of P1 (Red Codes) on scene (Urban)		
135	Number of P1 (Red Codes) on scene (Rural)		
136	Total number of P1 (Red Codes) logged on scene		
137	Number of P1 (Red Codes) enroute to hospital (Urban)		
138	Number of P1 (Red Codes) enroute to hospital (Rural)		
139	Total number of P1 (Red Codes) logged enroute to hospital		
140	Number of Blue Codes on scene		
141	Number of Blue Codes enroute to Hospital		
142	Total number of Blue Codes logged enroute to hospital		
143	Number of P2 (Yellow Codes) on scene		
144	Number of P3 (Green Codes) on scene		
145	Total number of P2 and P3 logged on scene		
146	Number of ESV Interhospital transfers(E)		
147	Number of ESV Interhospital transfers(N/E)		

148	Total number of ESV Transfers logged		
149	**Exempt Cases:**		
150	Hoax Calls		
151	Patient refused services		
152	Cannot locate patient		
153	Patient transported by private vehicle		
154	Patient transported by private ambulance		
155	Call cancelled by caller		
156	Patient removed by Law Enforcement		
157	Other(specific)		
158	Total Exempt Cases		
159	**EMS response time**		
160	Response call code red < 30 min - urban Provincial Target		
161	Response call code red < 60 min - rural Provincial Target		
162	Response call all > 60 min		
163	**EMS emergency - trauma**		
164	Child Abuse		
165	Domestic Accidents		
166	Industrial Accidents		
167	Total (Types of cases)		
168	**Aeromedical Usage:**		
169	Number of Fixed Wing Callouts Transfers		
170	Number of Rotor Wing Callouts Transfers		
171	Number of Fixed Wing Callouts Primary		
172	Number of Rotor Wing Callouts Primary		
173	Number of Interprovincial Calls		
174	Total Aeromedical usage		
175	**ALS Productivity:**		
176	Caseload(Calls responed to by Paramed unit)		
177	Number of ALS Transfers done by local ALS		
178	Total Milage of Paramed units		
179	Number of ALS CPR Cases		
180	Number of successful ALS CPR Cases		
181	**Rescue Productivity:**		
182	Caseload(Calls responed to by rescue unit)		
183	Number of entrapments/query entrapments responded to		
184	Number of extrications actually done		
185	**Total milage of Rescue unit**		
186	**Service Delivery Feedback:**		
187	Number of external complaints received		
188	Number of internal complaints received		
189	Total number of complaints		
190	Number of commendations/compliments		
191	**Planned Patient Transport:**		
192	Hospital-Number of patients moved(both trips)		
193	Hospital-Number of patients repatriated		
194	Hospital to Clinic		
195	Hospital-Total Number of patients moved		
196	C.H.C to C.D.C Intra-District		
197	C.D.C to C.D.H Intra-District		

198	C.D.H to Specialist-Intra-District		
199	Clinic to Hospital-Intra-District		
200	Clinic-Total Number of patients moved		
201	Total Patients moved		