

**AN EMPIRICAL INVESTIGATION ON QUALITY OF
INFORMATION USED FOR DECISION MAKING IN THE
DEPARTMENT OF SOCIAL DEVELOPMENT, BOJANALA
DISTRICT**

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A mini-dissertation submitted in partial fulfilment of the requirements for the degree of Masters in Business Administration at the Mafikeng Campus of the North-West University

SUPERVISOR: PROFESSOR S LUBBE

OCTOBER 2013

DECLARATION

I Nkgomoditse Georgina Molema hereby declare that the mini-dissertation entitled “**AN EMPRICAL INVESTIGATION ON QUALITY OF INFORMATION USED FOR DECISION MAKING IN THE DEPARTMENT OF SOCIAL DEVELOPMENT, BOJANALA DISTRICT**” is my own work that was carried out at the Graduate School of Business and Government Leadership, Faculty of Commerce and Administration, North West University, Mafikeng Campus, Republic of South Africa.

The work contained herein is my original work and has never been submitted wholly or in part to any University or Institution for an award of a degree

Sign:

Date: 29 October 2013

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ABSTRACT

An organisation depends on quality information for effective operations and decision making, thus quality in management decision plays a vital role; and there is a direct and strong relationship between the quality of information used by a decision maker and decision performance. Hence Information is not an isolated resource, but it flows within organisation and, consequently, its quality must be tackled as an organisational issue (Caballero et al., 2008). Given these arguments, information quality should be a process intertwined to all business core processes because it is a means to an end; and indirectly impacts the bottom line of an organisation. This is not a fact at Department of Social Development, Bojanala District where Information Quality is not prioritised and integrated within all programs it delivers, hence this study is to investigate the impact that information quality has on managerial decisions within a financial Services Firm. In this study, the primary data will be collected by means of survey using a structured questionnaire. A survey will be conducted to test the association between information quality and managerial decisions, with an aim to establish the extent to which the information quality impact on managerial decisions. In the public sector, competition is not aimed at winning the market, but ensuring that service provisions are improved because, the public sector bodies must answer to the Ministers and Government secretaries and the citizens. Legislative mechanism and budgetary constraints also determine the scope of decision making. Therefore organisation must compare its performance against those of similar organisation and its past records. Moreover they may have reasons to work together or collaborate in different areas, in order to achieve their common objective (McBride et al., 2013). The findings of this research reveals that managers are aware of Information Quality and they do make decisions but the efficiency and consistency is not understood by many hence like any other organisation the department is faced with changes in the environment which brings along a new wave of challenges. The Department has to continually adapt its strategies and programmes to fit these managerial decision making changes. An assessment of the environment then becomes a continuous process. In order for the department to thrive it will need competent and skilled human resources. The Department of Social Development Bojanala District should therefore invest in fruitful Information development programmes if it plans to win or manage these challenges.

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CHAPTER 1

OVERVIEW OF THE STUDY

1.1 INTRODUCTION

This chapter presents an overview of the problem statement, outlining the challenges facing the organisations with regards to management of information in a way that promotes information quality and effective managerial decisions. The discussion begins by broader information quality challenges that are affecting Department of Social Development, Bojanala District, which is a public setting to be used as a case study and narrows down to look at specific objectives set for this study.

This study emphasises on the level of how the district employs its IM, the strategy looks into the future which will ensure good planning and implementations. In addition to confidentiality, integrity and availability (CIA), the responsibility, integrity, trust and ethicality (RITE) principles hold the key for successfully managing information in the next millennium. However users will have to be wary of the manner in which these principles are implemented (Dhillon and Backhouse, 2000).

The first part introduces the study, its context and explains the literature that will be used. The second part is the background to the problem statement stating the ideal information system that promotes good quality of data for management decision making. The third part is the problem statement outlining the challenges currently faced by the department. The fourth part is the objectives that prompted to investigate the status of the department. The fifth part is the research design that is applicable to the study and the sixth part is the overview of the chapters that are will be featured to conclude the study and finally is the seventh part were conclusion is been made.

1.2 BACKGROUND TO THE PROBLEM STATEMENT

Gordon and Gordon (2004) define Information Systems as a combination of Information Technology with data, procedures for processing data and people who collect and use the data. It is the responsibility of the organisation to ensure that they employ well IT, skilled personnel for collection and processing of data and finally use credible, validated, reliable and verified information. This ultimately will lead to informed decision making by top management and also a competitive advantage for the organisation.

Managers at all levels need appropriate routine information to analyse the social development situation, set relevant objectives, and make appropriate plans which can be locally-monitored using pre-defined indicators. Most importantly, the availability of good quality, timely and complete data from all service delivery points is crucial to support the district social development system (Heywood and Rohde, 2006).

Organisations overtly invest in IS for one of two reasons which are to be more efficient and more effective. IT cannot deliver either efficiency or effectiveness gains by itself. IT can enable changes in IS and human activity systems which in turn lead to changes in the efficiency or effectiveness of organisations (Beynolds-Davies, 2002).

Information must be current to be useful to managers at all levels. Informal actions can only be based on up to date data. Monitoring effectiveness of those actions requires immediate measurement of the results. Thus, timely submission (within a couple of days of the end of the month), rapid entry into the computer, and immediate reports provided from the standard report generator programs are also critical. In many industries, survival and even existence is difficult without extensive use of information technology. Businesses use IS to achieve six major objectives; operational excellence, new products, services and business models, customer/supplier intimacy, improved decision making, competitive advantage and day to day survival (Laudon and Laudon, 2011).

At a minimum, in order for something to as a capability, it must work in a reliable manner. Therefore process of standardization is desirable and particularly in service industries, offers technical interchangeability, compliance with regulations and improved customer confidence. Tasks can be supported by proper technological solution and systems can theoretically lead to an increased standardisation, since the processes are executed in a way that is consistent with specifications and rules. However many processes are more art than science. Imposing rigid rules squashes innovation reduces accountability and harms performance. Organisations should avoid the over-standardisation of such artistic processes (Beynolds-Davies, 2002).

Management Information System (MIS) are an integral part of the overall management system in an purposeful organisation and form part of tools such as Enterprise Resource Planning (ERP) and overall IS. The management systems support management activities on all levels as well as provide for the identification of key performance indicators. MIS differs from regular IS because the primary objective of these systems are to analyse other

systems dealing with the operational activities in the organisation. In this way MIS is a subset of the overall planning and control activities covering the application of humans, technologies and procedures of the organisation (Sorensen et al. 2010).

1.3 PROBLEM STATEMENT

Managers function in a global marketplace, in which organisation deal within and across national boundaries. Understanding this global context and sharing information worldwide have become challenges that face managers. Difference of time, culture and language create barriers to effective communication that information system can reduce.

Organisations operate in an increasingly electronic economy. Managers can take advantage of this trend to improve service delivery. Electronic business transaction drive down cost, increase speed and create flexibility for customers. Organisations can take orders electronically to reduce sales costs and eliminates errors. Goods can be purchase electronically, reducing paperwork and automatically search for and secure the best price from qualified providers(Laudon and Laudon, 2011).

To survive in a competitive environment, organisations need to focus on performance. Clients may be won over by promises of free services, better service, higher quality and devoted attention. However, they will not return unless the organisation can deliver on its promises. Managers are responsible for assuring that their organisations deliver what they promise. Information systems help them to monitor performance and to take steps to improve it (Gordon and Gordon, 2004).

The other factor is reporting this data from the lower level to the next level which is the service points and institutions. The policy is available that stipulates who report to who and how frequent and when, despise of this, the district is faced by a challenge of parallel reporting. Meaning the same data will be requested by the district and the provincial office with different reporting forms. This creates conflict in terms of figures that are not the same but being reported by the same service point when compared.

The crucial factor that is detriment to the district is the issue of personnel. There is no dedicated staff to do the work. Important personnel that are needed are information officers that are not prioritized as critical thus making the information systems to suffer. No one from management wants to take responsibility in ensuring that these posts are filled with immediate effect.

1.4 OBJECTIVES

The aim of this study is to determine the impact of information quality on managerial decisions. The specific objectives are:

- What is the effectiveness of managerial decisions based on information quality?
- What are the users' perceptions of impact of information quality?
- What is the extent to which information quality impacts on managerial decisions? and
- How the quality of information of various sources used for decision making can be improved in the organization?

The aim and objectives of this study necessitate a quantitative research design because it will explore the possible correlation between information quality and managerial decisions.

1.5 RESEARCH DESIGN

In this study, the primary data will be collected by means of survey using a structured questionnaire. A survey will be conducted to test the association between information quality and managerial decisions, with an aim to establish the extent to which the information quality impact on managerial decisions.

The method of study to be employed will be a quantitative scientific approach. According to Maree (2008) Quantitative research is a process that is systematic and objective in its ways of using numerical data from only a selected subgroup of a universe (or population) to generalise the findings to the universe that is being studied. As there are five municipalities in the Bojanala district each will contribute 10 respondents who are managers capable of registering response in relation to IM procedures and principles. The data thus collected will be analysed and interpreted for final recommendations.

The study was conducted in the five Service Points of Bojanala in the North West Province. These are:

- Kgetleng Service Point
- Madibeng Service Point
- Moretele Service Point

- Moses Kotane Service Point and
- Rustenburg Service Point

Each Service Point consist of a Deputy Director who is an overall overseer assisted by three Assistant Directors for Corporate Services, Social Welfare and Community development responsible for Management and 115 staff members. As already mentioned that 50 respondents will be collected from the population of managers specifically because it is where the study is based. According to de Vos at el (2005) larger samples enables researchers to draw more representative and more accurate conclusions, and to make more accurate predictions than in smaller samples.

1.6 OVERVIEW OF THE STUDY

This study comprises of five chapters, as follows:

Chapter One introduces the study and presents the problem formulation. It also provides the aim and objectives of the study.

Chapter Two provides a review of literature which covers the theoretical framework relevant to the study

Chapter Three presents a detail account of the research design. It includes methods and procedures used in the sampling, collection of data and analysis of the collected data. In addition ethical considerations and limitations are discussed.

Chapter Four presents the findings of the study such as a result of data analysis and comparison to literature. The findings are interpreted in relation to the aim of the study.

Chapter Five presents summary of the study draws pertinent conclusions and makes recommendations.

1.7 CONCLUSION

This chapter gave an overview of the problem statement, provided description of the significance of the study, presented an overview of the research design and outlined the structure of the study. It provided a high level view of what is contained in the study.

The study is important in order to reveal in a scientific manner the link between data quality and managerial decisions. This study will make a significant contribution to the social development sector through its recommendations on the strategies used to ensure

quality data and make improvements on the strategic planning.

The results shall enlist the support and cooperation of staff and management making them to understand that the operational duties is not only one-sided but we all contribute to the success of quality service delivery. The results of the study will also benefit the employees in assessing personal beliefs, attitude and values, and learning about other points of view, where there is an atmosphere in which people feel free to share their differing perspective and points of view.

The next chapter presents background information of the organisation under study. It presents how this organisation has been affected by information quality challenges and looks at the solutions being put in place to address their information quality challenges and thereby improve managerial decisions.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

Information is defined as knowledge communicated or received concerning a particular fact or circumstance; or knowledge gained through study, communication, research; or the act or fact of informing (Rashed et al., 2011). Today, knowledge is power. Market cannot follow and understand the changes without information. In globalised world an event at a location can be learned too far from the region by rapid communication system (Calayoglu, 2011). Data and information are often used synonymously. In practice, managers differentiate information from data intuitively, and describe information as data that has been processed. Unless specified otherwise, this study will use data interchangeably with information. Hence it is important to ensure that the quality of information that is used for decision making is of high quality.

While the effects of information quality and the importance of information have been studied in IS literature, little empirical evidence and understanding of the impact of information quality on decision performance has been documented in the IS literature (Jung, 2004). The purpose of this study is therefore to investigate the impact of Information quality on Managerial Decisions.

To search for relevant literature the following key words were used: - Impact of information quality on managerial decisions; Impact of Information Quality; Managerial Decision Making; Information quality; Information System and Information Management have been used to search for articles in the following search engines and databases- Google; Google scholar; International Journal of Information, Business and Management; International Journal of Information Management; and Search Oracle.

This chapter firstly looks at how existing literature discuss Information Systems as the base for starting on improving performance on organisations. The chapter also explains in detail the value of information management and its influence on the information quality that subsequently impacts on management decisions which complement the information system of the organisation. Further, information quality is explored with the dimensions to emphasise quality (accessibility, timely, reliability and accuracy etc.). There is also a discussion on the role of managerial decisions in the organisations. Furthermore, focus is placed on the impact of poor management of information in organisations. Lastly this chapter looks at the ideal information quality within dynamic business environments,

which highlight potential solutions to information quality challenge that will make an organisation a quality orientated organisation.

2.2 INFORMATION SYSTEMS

IS can be defined as an example of a system concerned with the manipulation of signs; a type of socio-technical system; a mediating construct between actions and technology. It can be also considered a semi-formal language which supports human decision making and action (Beynolds-Davies, 2002). IS enables organisations to sense and respond to environment changes. It has been argued that attitude toward new technology system impact organisational agility through actual use of IT. The attitude toward the new IT systems is a function of perceived usefulness and perceived ease of use of IT (Almahamid, 2013). IS helps to collect, synthesise and analyse a huge amount of open-ended and close ended data while maintaining a high level of ethical practice as well as ensuring confidentiality. Further works on these data help to introduce a research environment and culture to facilitate the running of organisations (Hashim et al., 2010).

Holistic thinking is one of the most significant features of system thinking as it allows see in the Big Picture. Instead of examining each part of the system, the whole system is examined. Whatever the problem is experienced, searching for its source, focus should be widening to include the bigger system because dealing with the wholes rather than parts is a very effective idea in system analysis. Each part of the department in the organisation is not isolated from other department, so trying to solve a problem in one process rather first look for the whole organisation and the interconnections inside it to understand the nature and the reasons for such problem (Ah-Qirem, Alomoush and Shaqrah, 2013).

To fully understand IS awareness of the broader organisation, people and IT dimensions of systems and their power to provide solutions to challenges and problems in the business environment. This broader understanding of IS, which encompasses an understanding of the people and organisational dimension of system as well as the technical dimension of system as IS literacy (Laudon and Laudon, 2011). This study is adopting this approach and examining each dimension of IS which is organisation, people and IT below.

2.2.1 ORGANISATION

In the public sector, competition is not aimed at winning the market, but ensuring that service provisions are improved because, the public sector bodies must answer to the Ministers and Government secretaries and the citizens. Legislative mechanism and

budgetary constraints also determine the scope of decision making. Therefore organisation must compare its performance against those of similar organisation and its past records. Moreover they may have reasons to work together or collaborate in different areas, in order to achieve their common objective (McBride et al., 2013)

As organisations demand for computer system resources increases over time, scalability is an important feature in a system. Also, portability which means the capability of software, package to run in a different environment, has become an important issue for software engineers. Interoperability which means the ability of two or more systems or components to exchange and use information in an effective way, as one of the most important IT characteristics should be incorporated in an organisation strategy (Pereira, 2009).

Modern organisations offer services through multiple channels, such as branches, ATMs, telephone and Internet sites and are supported by multi-functional software architectures. Different functional modules share data, which are typically stored in multiple local databases. Functional modules are usually not integrated across channels, as channels are implemented at different times within independent software project and are subject to right requirements of availability and performance. This lack of channel and functional integration raises quality problems in information products. In particular, in complex systems in which data are managed in multiple databases, timeliness is critical (Cappiello et al., 2005).

Organisations must be careful when implementing a new innovation such as Human resource information systems. Innovation is defined as an iterative process initiated by the perception of a new market and/or new service opportunity for a technological-based invention which leads to the development, production and marketing tasks striving for the commercial success of the invention. Therefore organisation that seeks to maintain their competitiveness and economic success should strive for more innovation and seek new opportunities (Obeidat, 2013). For organisations to be best served by their IS, a high degree of data quality is required and the need to ensure this quality has been addressed by both researchers and practitioners for some time. (Wang et al., 1995) Cooperating to enhance competitiveness relates to internal and external cooperation which is necessary to allocate resources effectively and efficiently. Therefore, products will be delivered to market in a cost effective and efficient manner. Organising to master change means how flexible is an organisation structure to permit relocation of all organisation resources. Leveraging the

impact of people and information means how flexible and configurative are human and information resources (Almahamid, 2013).

2.2.2 PEOPLE

People play an important role in succeeding on information, and employees have to be trained, motivated and appropriately rewarded to ensure excellent performance and good customer care. Put everybody in the organisation to work to accomplish the transformation. It calls for executive leadership team to take action to accomplish the data quality transformation. Executives must create a culture of continuous information process improvement (Smalltree et al., 2012).

The employees should be given flexible working hours, should be engaged in the decision making of work life policies, because employees engagement as much as commitment and support from the management, helps to motivate the employees which in turn enhances their intent to remain with the organisation. Therefore, it can be recommended that managers should focus on employee work life balance in order to reduce their job stress, which in turn is expected to reduce the turnover intention (Rainayee, 2013). People put the technology to work in managing information and people are ultimately responsible for whether information technology succeeds or fails. Over the last 15-20 years the apparel sector has been in a state of continuous restructuring (Rashed et al., 2011).

2.2.3 TECHNOLOGY

IT could be defined as inter-organisational systems whereby it prior goals that have stimulated its use are providing management support, reducing operational cost, improving customer service and gaining competitive advantage by means of increasing logistics flexibility. There is no doubt about IT's importance, but buying the best-of-breed IT does not necessarily bring higher organisational performance. In fact a lack of framework for deciding which package of technology is the best for a company's situation may endanger possible improvements in the firm's performance (Pereira, 2009).

IT can also be defined as any equipment or interconnected system or subsystem of equipment that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission or reception of data or information. That is why IT is perceived as a transformative force bringing about a radical redesign of how clients receive care. This view suggests that adoption of computers and

computer software to convert, store, protect, transmit and securely retrieve information is fundamentally changing the practice of professional discipline (Balust and Macario, 2009).

The emphasis should be placed less on design and more on learning what the farmers do and how they act, and not only letting researchers design their own views of farm management decisions. Potential problems pointed out those software developers should understand the farmers and work closer with them and that the resulting systems should be adaptable to suit a range of farmer characteristics. However systems still have to be enhanced in terms of collaboration with automated acquisition of operational farm data and integration with the overall management information system (Sorensen et al., 2010).

The effective management of information requires IT. Technology is therefore crucial to organisational success. Using IT systems to capture and analyse information can have a significant impact on a firm's performance. IT comes in many ways. It forms-networked personal computers, software applications and the Internet. What all types of IT have in common is that their effective use depends upon users (Rashed et al., 2011). Using technology allows organisation to imitate others products and services which leads to shorten the life cycle experienced and also forces them to invest in technology (Obeidat, 2013).

2.3 INFORMATION/DATA MANAGEMENT

It is clear that Information Management (IM) plays a role in an organisation, which is information-intensive. It is also a source of competitive advantage in which a business data process is shared in a controlled, integrated and coordinated supply chain can be achieved. On the other hand, information visibility can reduce lead times and costs and improve profits and decision making. It should be also used to eliminate redundant activities and reduce lead times, substituting physical inventory (Pereira, 2009). Information plays an increasingly important role in strategic decision-making process within the business. Therefore, information quality and its assessment have become critical subjects for information products delivered to information consumers (Parssian et al., 2002).

The all-round exponential growth of information makes it necessary that information is collected, stored and retrieved in various fields so that it could be usefully exploited as and when needed. Information is an important driver that companies have used to become both efficient and more responsive. The tremendous growth of the importance of information technology is a testimony to the impact that information can have on improving a

company. By using information technology companies reach a point when they must make the trade-off between efficiency and responsiveness (Rashed et al., 2011).

The increasing use of computers and the dramatic increase in the use of the internet have to some degree improved and eased the task of handling and processing of internal information as well as acquiring external information. However, the acquisition and analysis of information still proves a demanding task, since information is produced from many sources and may be located over many sites and it not necessarily interrelated and collaborated. The potential of using these data will reach its full extent when suitable information management systems are developed to achieve beneficial management practice (Sorensen et al., 2010).

Data support organisational activities in a meaningful way should be warehoused. However, a particular data set may support several low-level organisational activities, whereas another supports only one activity but with higher priority. Data warehousing efforts have to address several potential problems. For example, data from different sources may exhibit serious semantic differences. A classic case is the varying definitions of “sales” employed by different stakeholders in a corporation. Furthermore, data from various sources is likely to contain syntactic inconsistencies, which also have to be addressed. For example, there may well be discrepancies in the time periods for activity reports (such as bimonthly vs. every two weeks). Moreover, the desired data may simply not have been gathered (Ballou and Tayi, 1999).

The quality of a large world data set depends on a number of issues, but the source of the data is the crucial factor. Data entry and acquisition is inherently prone to errors both simple and complex. Data cleansing is much more than simply updating a record with good data. Serious data cleansing involves decomposing and reassembling the data. One can break down cleansing into six steps: elementising, standardising, verifying, matching, house holding, and documenting (Maletic and Marcus, 2000).

Data integration is a key technology for efficient incident information collecting, sharing, dissemination, exploitation and analysis, which are crucial to assist decision makers in making timely and right decisions during emergencies. The objective of the data mining module in incident information management framework is to help decision makers understand characteristics of emergencies and predict future events by analysing available incident information using a collection of data mining functions (Peng et al., 2010).

Large amounts of data can be stored in databases. One of the most important contributions is filtering data. The decision making time is shortened with filtered data. In this way, managers can make decisions more efficiently. For accurate and reliable information, hardware, software and support services are required. For these benefits, investments should be made and the necessary updates should be followed (Calayoglu, 2012). Do not waste time and effort in data correction activities, instead send the defective data back to the originating information producers to be corrected and updated (Smalltree et al., 2013). Such large volumes of data are difficult for humans digest and interpret. On the other hand, missing important patterns or trends in the data can compromise decision making, with potentially deleterious consequences (Gatt et al., 2009).

The interrelationships among data, information and knowledge are hierarchical where data represents the elementary and crude form of existence of information; information represent data endowed with meaning; and knowledge represent information with experience, insight and expertise. The creation of the three manifestation of information is to be logically incremental whereby data is consolidated with human insight, experience and context to become knowledge. Data and information depend on knowledge for their proper interpretation and understanding. In other words, knowledge is the highest form of manifestation that is required to understand and interpret data and information (Kebede, 2010).

Data collection pose a challenge on many organisation because they lack expertise in paper and electronic form design and rely on ad hoc mapping of required data fields to data entry widgets by intuition. In the paper form transcription process, double is too costly and takes long (Chen et al., 2010).

Currently, however, this automatically collected data or data by manual registration is not used due to data logistic problems leaving a gap between the acquiring of such data and the efficient use of this in management decisions making. Cost of time spent managing the data in many cases outweigh the economic benefits of using the data and it seems that future use of wireless communication is gaining much of interest. In all, a refined and integrated solution to analyse and transform the acquired data is needed to improve decision making in the future (Sorensen et al., 2010).

2.4 INFORMATION / DATAQUALITY

Data Quality (DQ) can be best be defined as fitness for use, which implies the concept of data quality is relative. Thus data with quality considered appropriate for one use may not possess (Wang 1998). Information Quality has become a critical concern of organisations and active area of MIS research. The growth of data warehouse and the direct access of information from various sources by managers and information users have increased the need for and awareness of high quality information in organisations (Lee et al., 2002). The quality of data plays a critical role in all business and governmental applications. It is recognised as a relevant performance issue of operating processes of decision-making activities and of inter-organisational cooperation requirements (Batini et al., 2009).

Data Quality Management (DQM) as quality-oriented management of data as an asset, that is, planning, provisioning, organisation, usage and disposal of data that supports both decision making and operational business processes, as well as the design of the appropriate context, with the aim to improve data quality on a sustained basis. Data or information quality is defined on the basis of two consentient aspects: First, the dependence of perceived quality on the user's needs; second, the fitness for use, which is the ability to satisfy the requirements of intended use in a specific situation (Weber et al., 2009).

Data quality must meet the needs of all customers and knowledge workers so they can perform their work effectively. DQ characteristics must be defined for the shared use to support other end users and knowledge workers who depend on the information. DQ has become a bigger issue as organisations have come to realise that DQ issues are business issues (Smalltree et al., 2012).

Data quality, as presented in literature, is a multidimensional concept. Frequently mentioned dimensions are accuracy, completeness, consistency and timeliness. The choice of these dimensions is primarily based on intuitive understanding, industrial experience or literature review. However a literature review shows that there is no general agreement on data quality dimensions (Wand and Wang, 1996).

The data quality literature highlights multiple causes for poor data quality, ranging from dirty data in source databases, to inadequate data management procedures, software errors and contextual uncertainty. Several authors define the quality of data as their "fitness for use", for example, the ability of a data collection to meet user requirements. Therefore, the

causes for poor data quality are closely related to the applications managing data to satisfy the requirements of the real world modelled by those data (Cappiello et al., 2005).

One can deduce from a view of information systems that there are a number of general data quality rules. Recently, as large organisations have begun to create integrated data warehouses for decisions support, the resulting data quality problems have become painfully clear. These organisations have discovered that the quality of the data in their legacy databases is their single biggest problem (Orr, 1998).

This helps to cease dependency on mass inspection in order to achieve quality meaning to eliminate the need for inspection on a mass basis by building quality into the service in the first place. This can be summed up in the shorter, more common phrase, “garbage in, garbage out”. Data Quality must be a priority from the get-go, so that the right kind of information is being sent to a data quality system (Smalltree et al., 2012).

Generic classifications of data quality costs can offer various advantages, ranging from clearer terminology, changes in perspectives, to more consistent measurement metrics. A classification is the ordering of entities into groups or classes on the basis of their similarities. Classifications minimise within-group variance and maximise between-group variance, thus facilitating analysis, organisation and assessment (Eppler and Helfert, 2004).

Considering information quality assessment as a foundation for Information Quality Management (IQM), the objective of IQM is to improve the usefulness and validity of the information. IQM has three realms of management: quality management, information management and knowledge management (Ge and Helfert 2012).The trend is expressed by the following figure (Figure1);

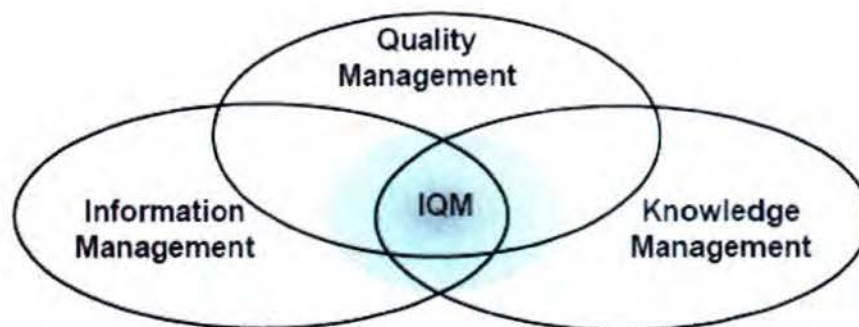


Figure 1: Information Quality Management (IQM) Source: Ge and Helfert (2012)

They furthermore explain the merge quality management, information management and knowledge management into IQ management to analyse the current quality management;

- **Quality Perspective:** With the principle “manage your information as a product”, Wang, 1998 proposes a total data quality management (DQM) methodology, which consists of four stages: define, measure, analyse and improve. The objective of DQM is to deliver high-quality information products to information consumers.
- **Information Perspective:** With the principle “Integration, validation, contextualization, activation”, Eppler (2006), proposes a framework, which includes four steps: identification, evaluation, allocation and application. The objective of this framework is to structure the IQ handling and value adding activities.
- **Knowledge Perspective:** With the principle “Know-what, know-how, know-why”, (Pipino et al., 2002), propose a framework, which comprises three processes: improve quality of information, make tacit knowledge explicit, and create organisational knowledge. The objective of this framework is to transform high-quality information into organisational knowledge.

In order to examine the impact of the quality of information on the quality of a decision, the information quality needs to first be measured. Among many data quality dimensions studied and reported in the literature, we focus on metrics associated with two quality attributes, accuracy and incompleteness, that are of critical importance to information consumers. Many of the other data quality dimensions are closely tied to these two. For instance, the lack of timelines leads to incompleteness or inaccuracy of the data availability to end-users and similarly, data available to end-users. Similarly, data inconsistency is usually caused by inaccuracies in the data or incompleteness of the data (Parssian et al., 2002). Furthermore there are problems associated with data quality which cannot be addressed effectively without an understanding of the data quality dimensions selected for this study (Tayi and Ballou, 1998).

2.5 ACCESSIBILITY

Accessibility is a dimension reflecting ease of data attainability. The metric emphasizes the time aspect of accessibility and is defined as the maximum value of two terms: 0 or one minus the time interval from request by user to delivery to user divided by the time interval from request by user to the point at which data is no longer useful. Again, a sensitivity factor in the form of an exponent can be included. If data is delivered just prior to when it is no longer useful, the data may be of some use, but will not be as useful as if it were delivered much earlier than the cut-off time (Pipino et al., 2002).

Metric trades off the time interval over which the user needs data against the time it takes to deliver data. Here the time to obtain data increases until the ratio goes negative, at which time the accessibility is rated as zero (maximum of the two terms). In other applications, one can also define accessibility based on the structure and relationship of the data paths and path lengths. As always, if time, structure, and path lengths all are considered important, then individual metrics for each can be developed and an overall measure using the min operator can be defined (Pipino et al., 2002).

2.6 TIMELY

Timeliness has been defined in terms of whether the data is out of date and availability of output on time. A closely related concept is currency which is interpreted as the time a data item was stored (Wand and Wang, 1996). Data must be captured at a point in time that enables information producers and knowledge workers to perform their work effectively and efficiently (Smalltree et al., 2012).

Timely implies that the recorded value is not out-of-date. Data must be available in time to influence the decision, and therefore can vary based upon the decision-maker and circumstance; a strategic planner may use information that is several years old, but a production manager must have recent data (Fisher and Kingma, 2001).

Timeliness is especially critical in prediction and pattern recognition because delays can reduce the usefulness of effective interventions and alternative courses of action (Peng et al., 2010). Timeliness reflects how up-to-date the data is with respect to the task it's used for. A general metric to measure timeliness has been proposed by Ballou and Tayi (1999) who suggest timeliness is measured as the maximum of one of two terms: 0 and one minus the ratio of currency to volatility. Here, currency is defined as the age plus the delivery time minus the input time. Volatility refers to the length of time data remains valid; delivery time refers to when data is delivered to the user; input time refers to when data is received by the system; and age refers to the age of the data when first received by the system (Pipino et al., 2002).

2.7 RELIABLE

Reliability has been linked to probability of preventing errors or failures; reliability has been interpreted as a measure of agreement between expectations and capability reality (Wand and Wang, 1996). Reliable quality and shared information reduces costs and increases value (Smalltree et al., 2012).

Believability or reliable is the extent to which data is regarded as true and credible. Among other factors, it may reflect an individual's assessment of the credibility of the data source, comparison to a commonly accepted standard, and previous experience. Each of these variables is rated on a scale from 0 to 1, and overall believability is then assigned as the minimum value of the three. Assume the believability of the data source is rated as 0.6; believability against a common standard is 0.8; and believability based on experience is 0.7. The overall believability rating is then 0.6 (the lowest number). As indicated earlier, this is a conservative assessment. An alternative is to compute the believability as a weighted average of the individual components (Pipino et al., 2002).

2.8 COMPLETE

Generally, the literature views a set of data as complete if all necessary values are include all values for a certain variable are recorded" (Wand and Wang, 1996). Complete refers to "the degree to which values are present in a data collection". It focuses on whether all values for all variables are recorded and retained (Fisher and Kingma, 2001).

The completeness dimension can be viewed from many perspectives, leading to different metrics. At the most abstract level, one can define the concept of schema completeness, which is the degree to which entities and attributes are not missing from the schema. At the data level, one can define column completeness as a function of the missing values in a column of a table. This measurement corresponds to column integrity, which assesses missing values. A third type is called population completeness. If a column should contain at least one occurrence of all 50 states, for example, but it only contains 43 states, then we have population incompleteness.

Each of the three types (schema completeness, column completeness, and population completeness) can be measured by taking the ratio of the number of incomplete items to the total number of items and subtracting from 1 (Pipino et al., 2002).

2.9 CORRECT / ACCURACY

Accuracy could refer to recording correctly facts regarding the disposition of a criminal case, completeness to having all relevant information, and timeliness to recording the information shortly after the disposition (Tayi and Ballou, 1998).

The information must be verified as accurate through a comparison of data representing a real world object or event being analysed e.g. the accurate spelling of a given name (Smalltree et al., 2012).

Therefore, inaccuracy can be interpreted as a result of garbled mapping into a wrong state of the information system. Second, incompleteness may cause choice of a wrong information system state during data production, resulting in incorrectness (Wand and Wang, 1996). Accuracy generally means that the recorded value conforms to the real-world fact of value. Accuracy refers to lack of errors and is considered by consumers of data to be the most important characteristic of data quality (Fisher and Kingma, 2001).

The free-of-error dimension represents data correctness. If one is counting the data units in error, the metric is defined as the number of data units in error divided by the total number of data units subtracted from 1. In practice, determining what constitutes a data unit and what is an error requires a set of clearly defined criteria. For example, the degree of precision must be specified. It is possible for an incorrect character in a text string to be tolerable in one circumstance but not in another (Pipino et al., 2002).

2.10 CONSISTENT

In the literature, consistency refers to several aspects of data (Wand and Wang, 1996). The consistency dimension can also be viewed from a number of perspectives, one being consistency of the same (redundant) data values across tables. Referential Integrity constraint is an instantiation of this type of consistency. As with the previously discussed dimensions, a metric measuring consistency is the ratio of violations of a specific consistency type to the total number of consistency checks subtracted from one (Pipino et al., 2002).

One of the most troubling implications of the model to data quality has to do with confidentiality and secrecy. If the quality of data is truly wrapped up in its use, then there seem to be serious limitations to the quality of confidential/secret data (Orr, 1998).

2.11 MANAGERIAL DECISION MAKING

Decision making, monitoring and controlling, regulatory approach and governance are common factors of management. However, the fact remains that the informal approaches and actions of those in management are vital in achieving organisational goals, aims and objectives. As such 'accountability' is a major concern in the management process and this

is often lacking in participatory approaches resulting in its replacement with the bureaucracy model in actual practice (Hashim et al., 2010).

Decisions are often taken at different levels and noted that there are three key levels of management in any organisation: Corporate, Tactical and Operational level. In the private sector these levels are represented by: Corporate level (Board of Governors and the Chairperson of the company), Tactical (Human Resource Manager, ICT Manager, Operations Manager etc., Operational level (Supervisors, Team leaders and Foreman). Whereas within the public sector these level are represented thus: Corporate (Political class that is Ministers and Secretaries), Tactical (Public sector managers: Directors, Departmental Heads), Operational (Team leaders, supervisors etc.) (McBride et al., 2013).

It is necessary to know the situation and variables thoroughly which affect the problem in order to achieve accurate decision making. Managers must develop alternative solutions and select the most suitable method to achieve the targets most effectively. In such cases, taking into consideration the questions how to reach the required details, what are the alternatives, how to get decision making immediately and accurately. It is obvious that answer of these questions is to have an information system in business (Calayoglu, 2012).

MIS provides information managers to be able to plan and control the different operations of an organisation that further helps them to take a good decision for the effective business. The computer has added one or more dimensions such as speed, accuracy, reliability and the increased volume of data that enables the consideration of more alternatives in a decision making process. That is why these systems are also called operations support systems. In simple words one can end with that MIS is an information system, which provides information support for decision-making in the organisation. One of the major needs of different levels of manager of higher authorities is to recognize of the purpose of the organisation, its policies, programs, plans and goals however the decisions may be according to the ability of analytical approach of using the information of the manager (Calayoglu, 2012).

2.12 IMPACT OF BAD/POOR INFORMATION

More and more references to poor data quality and its impact have appeared in the news media, general-readership publications, and technical literature. Poor data quality impacts the typical enterprise in many ways. At the operational level, poor data leads directly to consumer dissatisfaction, increased cost, and lowered employee job satisfaction. Poor data

quality increases operational cost because time and other resources are spent detecting and correcting errors (Redman, 1998).

Poor data and information quality have a significant negative impact on organisations' success. Consequently, organisations are implementing programs to improve data quality to achieve competitive advantage. Such improvement programs are critical for the development and maintenance of data warehouses, which are being built by organisations to improve customer service and managerial decision making. Without proper data warehouse will begin to accumulate dirty data (Khalil et al., 1999).

Poor data quality has many impacts on decision-making. People make choices based on limited resources (data), and misinformed people tend to make poor decisions. It is clear that wrong data is likely to result in wrong decisions (Fisher and Kingma, 2001).

It is already noted that most organisations cannot answer the most basic questions about their data, never mind routinely use them to create value. The poor quality of an organisation's data further underscores this point because data is not correctly defined, inaccurate, out-date, or otherwise unfit for use. Poor quality data lie at the root of issues that capture our collective attention and will not let go such as:

- Intelligence failures
- Financial reporting
- Census undercounts and over counts
- The year 2000 Presidential election, and
- The bombing of the Chinese Embassy in Kosovo. (Redman, 2002)

In the low quality data cost section, the key distinction is, as stated, the one among direct costs and indirect costs. Direct cost is defined as negative monetary effects that arise immediately out of low data quality, namely the costs of verifying data because it is questionable credibility, the costs of re-entering data because it is wrong or incomplete, and the cost of compensation for damages to others based on bad data. Indirect costs are those negative monetary effects that arise, through intermediate effects, from low quality data (Eppler and Helfert, 2004).

It is up to the IQ Management Team to quantify the extent of the impact of risks, caused by poor levels of IQ, on the performance of an Information Management Processes (IMP). For each one of the identified risks, a contingency plan must be drawn up in order to minimise their effects on the IMP. Contingency plans must be conveniently evaluated in order to

determine if they are feasible. If not, it is necessary to assume and to estimate what the consequences are going to be should the risks become reality. If possible, actions must be executed in order to modify the IMP to avoid these risks or to support their impact (Caballero et al., 2008)

2.13 IDEAL INFORMATION QUALITY

Recent research has demonstrated that simply telling people the quality of the quality of their data doesn't predict whether they will use that information about their data quality (Chengalur-smith et al., 1999; Fisher, 1999). The students were asked to complete the apartment selection task (Appendix A) to determine the amount of use, if any, that a person makes of data quality information (DQI) when it is provided (Fisher, 2001).

If data quality is a function of its use, there is only one sure way to improve data quality improve its use! To improve our data quality, it is necessary to determine how good the data in our database is today. Use-based data quality audits involve answering a number of key questions: To improve data quality, it is mandatory to improve the linkage among the various uses of data throughout the system. One of the problems is deciding where to begin (Orr, 1998). International Standard on quality management rephrase the five key terms by defining them as follows;

- A data quality policy – refers to the overall intention and direction of an organisation with respect to issues related to the quality of data products. This policy is formally expressed by top management
- Data quality management – is the management function that determines and implements the data quality policy
- A data quality system encompasses the organisational structure, responsibilities, procedures, processes, and resources for implementing data quality management.
- Data quality control is the set of operational techniques and activities that are used to attain the quality required for a data product.
- Data quality assurance includes all those planned and systematic actions necessary to provide adequate confidence that a data product will satisfy a given set of quality requirement (Wang et al., 1995).

IS professionals also need to apply process-oriented techniques, like IS auditing, to the processes that produce this data. IS professional must understand the difference between the technical accessibility they supply and the broad accessibility concerns of data

consumers. Once this difference is clarified, technologies such as data warehouses can provide a smaller amount of more relevant data, and graphical interfaces can improve ease of access (Strong et al., 1997).

2.13.1 Quality Improvement

The difference between quality assurance and quality improvement may not be obvious to everyone. With quality improvement, processes are continually being evaluated, even if nothing adverse happens, because every process can be improved. For example, this typically starts with a data-gathering process to identify opportunities (Balust and Macario, 2009).

2.13.2 Quality Assurance

Traditionally, the term 'quality assurance' is a method utilised to determine how well a product meets specifications. Characteristics of quality assurance include that it is retrospective, relies on inspection, focuses on high profile, but low-frequency events and does not allow changes in the system until after the event (Balust and Macario, 2009).

Costs are a relevant perspective considered in methodologies, due to the effects of low quality data on resource consuming activities. The cost of poor quality can be reduced by implementing a more effective data quality program, which is typically more expensive. Therefore by increasing the cost of the data quality program, the cost of poor data quality is reduced. This reduction can be seen as the benefit of a data quality program (Batini et al., 2009). According to Eppler and Helfert (2004) who have presented a framework of four scenarios in which data Quality classification can be useful. These scenarios are explored as follows:

2.13.2.1 Data Quality Risk Assessment

Before investing in a data quality project or initiative (even before putting together a business case), an organisation may want to examine the potential risks associated with low quality data in order to better position the issue within its corporate context. Instead of an undirected, heuristic search for possible data quality mine fields (e.g. based on past experiences and events), the presented taxonomy and framework outlines examples of what to look for. The direct and indirect data quality costs can be examined in terms of their likelihood and effect, thus contributing to an overall risk assessment of low data quality in a company (Eppler and Helfert,2004).

2.13.2.2 Data Quality Business Case

New IT initiative typically have to prove their feasibility by outlining how the invested money will yield benefits for a company in terms of time-optimisation, higher quality levels, or lower costs. An IT analyst or prospective data quality project manager can use the framework to list such potential costs that are going to be reduced because of the data quality project (Eppler and Helfert, 2004).

2.13.2.3 Data Quality Program Assessment

Whereas business case are ex-ante estimates of the cost benefits of a project, assessments are after action reviews that show where and how costs have been lowered because of an initiative. In this context, the framework can be used to outline all possible cost reduction effects that have taken place as a direct or indirect result of a data quality initiative (Eppler and Helfert, 2004).

2.13.2.4 Benchmarking

Whether in research or in practice comparing data quality cost levels among organisations is an important objective. Based on benchmarking figures, companies can set more realistic and competitive goals for their data quality levels. Based on consistent benchmarking information, researchers can find correlations and causalities that show what the drivers for data quality costs really are. For both target groups, however, a consistent taxonomy and terminology is essential (Eppler and Helfert, 2004).

2.13.2.5 IM Policy

An organisational policy is a set of rules which might be applied to any actions of the organisations in order to work under the same criteria. Therefore, IQ organisational policies are a way to universalise several issues regarding how to manage IQ dimensions, IQ risks, and how to modify data models and process models to support the best organisational IQ practices (Caballero et al., 2008).

Benefits of DQM:

DQM reduces costs by creating an efficient process involving these aspects. Reports must meet the needs of recipients and be easily accessible or they will not be used. Well-established processes and documentation enable people to deal with facts rather than emotions when problems occur. Process improvement meetings must be well structured and leave the organization with a prioritized list of solutions. Solutions must be

communicated back to the organisation following a process improvement meeting to insure everyone is working on the same priorities. The entire organization benefits from the use of process maps both internally (e.g. new hire training) and externally (e.g. sales efforts). Using DQM to develop well-engineered process with less manual intervention means hiring fewer employees to manage the process. Using DQM establishes credibility within and outside of the organisation. Across groups – fosters working relationship between QA and engineering (Kovac and Weickert, 2002).

With the Board of Directors – this creates confidence with investors. With external customers –it enables productive improvement discussions with the client. Process maps help focus development efforts by highlighting vulnerabilities such as hand-offs. Having initial process maps to reference is excellent reminder for people to focus on quality as they develop roles and improves procedures. Early visions of process maps must be continuously updated as the process evolves (Kovac and Weickert, 2002).

2.14 RESEARCH QUESTIONS

From the literature it has been established that most of the problem statement has been answered. However, the following questions have not been answered:

1. What is the effectiveness of managerial decisions based on information quality?
2. What are the users' perceptions of impact of information quality?
3. What is the extent to which information quality impacts on managerial decisions? and
4. How the quality of information of various sources used for decision making can be improved in the organization?

2.15 CONCLUSION

Implementing DQM in a start-up situation is essential. Quality initiatives must be in place early to guarantee the continued success of the organisation. By using DQM from the beginning, Concept shopping identified problem processes as before the system was in full operation. Development priorities could then be established to focus on building the right processes from the start, rather than fixing error prone processes later. By mapping and measuring the processes during the initial implementation, DQM successfully prevented errors and increased customer satisfaction (Kovac and Weickert, 2002).

Further the literature states that, an organisation depends on quality information for effective operations and decision making, thus quality in management decision plays a vital role; and there is a direct and strong relationship between the quality of information used by a decision maker and decision performance. Hence Information is not an isolated resource, but it flows within organisation and, consequently, its quality must be tackled as an organisational issue (Caballero et al., 2008). Given these arguments, information quality should be a process intertwined to all business core processes because it is a means to an end; and indirectly impacts the bottom line of an organisation.

The next chapter will look at research methodology that will be used to measure the impact of information quality on managerial decisions. The research methodology used for this study is quantitative method. An in-depth discussion on disadvantages and advantages associated with each paradigm will be explored, and the decision will be made based on this method to get information needed to answer the questions raised.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

Research methodology is concerned with description of the specific technique to be employed, the specific measuring instruments to be utilised and the specific series of activities to be conducted in making the measurements (Maree, 2008). This chapter defines the research methodology used in this study to collect data to answer to the raised questions on the previous chapter earlier discussed.

Research design and methodology is the most crucial and fundamental feature in any given study. To satisfy the information needs of any research project or study there must be a design or a template or a framework upon which such study should be developed. It also focuses on the end product, formulates a research problem as a point of departure and also focuses on the logic of the research. Again research design can be defined as a plan according to which data are collected to investigate the research hypothesis or question in the most economical manner (de Vos et al., 2005).

The purpose of this study is to determine the extent to which information quality impact on the quality of managerial decisions. Therefore it is necessary to employ a good research methodology to gather data to produce commendable analysis from responses. This chapter will look at the research type that will be employed, types of data used, data collection methods, sampling methods, ethical and limitation that researcher's had to adhere to and finally the conclusion.

3.2 RESEARCH TYPES

3.2.1 QUALITATIVE AND QUANTITATIVE RESEARCH

Qualitative research is concerned with understanding the process and the social and the cultural contexts which underlie various behavioural patterns and is mostly concerned with exploring the "why" questions of research. It is also typically studies people or systems by interacting with and observing the participants in their natural environment and focusing on their meanings and interpretations (Maree, 2008). The importance is on the quality and depth of information and not on the scope or breadth of the information provided as in quantitative research. There are other distinctions in addition to the qualitative-quantitative distinction. One is that of "objective" (positivity) versus "subjective" (constructivist)

approaches, where the objective approaches are concerned with discovery of general laws (nomothetic) while the constructivist approaches are concerned with the uniqueness of each particular situation (idiographic) (Maree, 2008)

Quantitative research is concerned with only those groups of small, worked-out formulas from which prospective researchers can develop one (or more) suitable to their specific research goals and objectives. The classification scheme for quantitative research designs is that the first category is that of the pre-experimental, hypothesis-developing or exploratory design. Design of this type do not use pretests, they measure the dependant variable only after the independent variable has been introduced. Ex post facto designs, one-shot (or cross-sectional) case studies, the one group posttest-only design, the multigroup posttest-only design and the longitudinal case study all belong to this category (de Vos et al., 2005). Secondly, the quantitative-descriptive or survey designs are of a more quantitative nature, requiring questionnaires as a data collection method. Respondents are ideally selected by means of randomised sampling methods. Randomised cross-sectional surveys and replicated randomised cross-sectional surveys fall into this category (de Vos et al., 2005). This study will employ the quantitative research methodology as it aims at examining the correlation between information quality and performance of managerial decisions and the extent to which information quality impact on quality of managerial decisions.

3.3 TYPES OF DATA

Gathering preliminary data is one way of refining thoughts, or looking for symptoms as a doctor often does. Secondary data contained in an organisation's reports and documents may help to sharpen focus on the problem identified (or to open eyes to other more profound problems). Often this is simply not done to an adequate extent because the researcher is anxious to get to the stage of gathering primary data; that is, data that has not been accumulated before. The problem in rushing through this stage is, of course, that one can end up expending a great deal of effort in discovering things that had, in fact been discovered before, and were readily available, had the researcher only known.

3.4 DATA COLLECTION METHODS

3.4.1 Survey

Maree (2008) defines a survey as the assessment of current status, opinions, perceptions, plans, beliefs and attitudes by questionnaires or interviews from a known population. Also

the importance of survey design is to aim for optimal control over the survey environment for example in terms of when and at intervals respondents that will be surveyed, data gathering techniques, sampling strategy, the necessity of a pilot study and follow up administration.

Surveys may be used for descriptive, explanatory and exploratory purposes. They are chiefly used in studies that have individual people as the units of analysis. Although this method can be used for other units of analysis, such as groups or interactions, it is necessary that some individual persons are used as respondents or informants (Babbie, 1995)

In this study, the primary data was collected by means of survey using a structured questionnaire which will be given to all managers in the district who will be asked to fill in the questionnaire as well disseminate it to other decision makers in their areas. The reason for taking this route is time and cost efficiency given the geographic location of service points within the district.

A survey was conducted to test the association between information quality and managerial decisions, with an aim to establish the extent to which the information quality impact on managerial decisions. The preferred design for the survey will be cross sectional because there will be no sufficient time to do observations of participants over a long time.

3.4.2 Questionnaire

The questionnaire was used as the data-gathering tool. This allowed the collection of quantifiable and qualitative data and allow for the analysis of this data to determine patterns and relationships. The proposed survey questionnaire was a word document. The management personnel were asked to complete the survey.

Questionnaire Outline

A note to respondents explaining what the research is all about	
Explanation how to complete the questionnaire	
'Thank You' Note	
Part 1	Request permission from the respondents to use their responses for academic research

Part 2 Questions 1 to 5	Gathers biographical data on the respondents including age, gender, and qualifications
Part 3 Questions 6 to 10	Focuses on the implementation of management of information to assess understanding on policies, training and technology.
Part 4 Questions 11 to 15	Focuses on specific questions with regards to the extent the information quality impacts on managerial decisions.
Part 5 Questions 16 to 19	Looks at frequency in decision making as well as the level of decisions that are normally made by a respondent.

Table 3.1 Questionnaire Outline

3.4.3 Methods of collecting data

A number of different methods can be used to collect from a sample of respondents. Each method has advantages and disadvantages, and some methods are better in some circumstance than others. The methods are namely;

- Group administration of questionnaires
- Postal or Mailed Questionnaires
- Telephone Questionnaires
- Face to face survey
- Self-administered Questionnaires

The method that will be used by the study is the self-administering of questionnaires reason being that the questionnaires will be handed to the respondents, who complete them on their own, but the researcher is available in case problems are experienced. The researcher thus largely remains in the background and can at most encourage the respondent with a few words to continue with his contribution or lead them back to the subject (de Vos et al., 2005).

3.4.4 Sampling Methods

Sampling goal is to use the sample to learn about the population, it is very important for the sample to be drawn in such a way that it would be valid to generalise its results to the population. Sampling theory has been developed to suggest ways of drawing scientific samples (Marce, 2008). Sampling is described as taking a portion of a population or universe and considering it representative of that population or universe. Population refers

to individuals in the universe who possess specific characteristics or to a set of entities that represents all the measurements of interest to the researcher (de Vos et al., 2005).

The population of interests for this study are all the managers in the Bojanala District which are District Director, Deputy Directors, and as well Assistant Directors in all Service Points. To get a fair representation in the sample, a lists of names of all managers mentioned above was obtained and randomly select the sample used in the survey following the stated criteria.

Maree (2008) has provided an example for the establishment of the appropriate sample size (S) based on the size of the population (N). In terms of this study, for $N = 81$, $S = 55$, therefore, for this study, S was taken as 55. Thus, a minimum of 55 completed questionnaires was required for meaningful conclusions drawn from the data gathered from the survey.

3.4.5 Data Analysis Approach

Data Analysis means the categorising, ordering, manipulating and summarising of data to obtain answers to research questions. The purpose of analysing is to reduce data to an intelligible and interpretable form so that the relations of research problems can be studied tested and conclusions drawn. (de Vos et al., 2005)

The approached that was employed by the study was, after collecting data from the respondents it was captured on the computer as numbers, called raw data. The descriptive statistic was used to organise and summarise data in a meaningful way. This serves to enhance the understanding of the properties of the data. On the computer, the data was organised in variables. For example, a question that asks for the respondent's gender was represented by the variable of gender; this variable is of the nominal type since that is the scale on which it is measured (Maree, 2008). The statistical analysis of data was done by a qualified statistician who used statistical software to ensure credibility and quality of results.

The results from the survey were analysed to determine the relationship between the concepts and variables. Relationships between variables were explored and results checked, to determine whether they are consistent with the theory and conclusions made from the literature. Inferential statistics were applied to explain why it is not sufficient to provide significance levels only, but instead to calculate effect sizes and provide

guesstimates of the practical significance of differences between population means (Maree, 2008).

Further to determine analysis of relationship correlation coefficient will be calculated to measure the strength of linear relationship between two quantitative variables. Regression analysis was used to derive a mathematical expression to represent the relationship and in prediction (Maree, 2008)

3.5 ETHICAL CONSIDERATIONS

Ethics are defined as a set of widely accepted moral principles that offer rules for and behavioural expectations of the most correct conduct towards experimental subjects and respondents, employers, sponsors, other researchers, assistants and students. Important issues that are explored are that no harm should come to experimental subjects and/or respondents should; that prospective respondents should give their informed consent; that respondents should not be deceived in any way; and that researchers should be competent and responsible (de Vos et al., 2005)

It was considered unethical to use any personal details of respondents in the report, which can identify who the respondent is. Each participant was informed of the exact nature of the research and was assured that the information provided would not be used for any purpose other than stated. According to Babbie (1995) also agrees that the clearest concern in the protection of subjects' interest and wellbeing is the protection of their identity in survey research. Babbie (1995) emphasises the technique of anonymity and confidentiality which assists in ensuring that this is adhered to by researchers.

3.6 LIMITATIONS

Potential limitations are often numerous even in the most carefully planned research study and it is important that they be listed. Generally when identifying limitations, it must consider the validity and reliability of all data collection instruments, the generalisability of the sample to the population from which it was drawn, access to data, ethical problems and the ability to control extraneous factors in the environment and in respondents (de Vos et al., 2005).

The limitation identified is that the study was limited to one district, which is Bojanala Social Development in the North West Province. This is acknowledged as a limitation in that the researcher therefore could not learn from how other districts within the Province are operating and understanding impact of information on managerial decisions. This

limitation means that the solution to be designed will be based on findings and recommendations from only one district in the Province on the public sector setting.

3.7 CONCLUSION

This chapter defined the research design and methodology used in this study. Further, it looked at instrumentation, research type, population, sampling method, and data gathering methods from a theoretical perspective. The next chapter will be devoted to data analysis, validity and reliability of data thoroughly discussed.

CHAPTER 4

DATA DISCUSSION

4.1 INTRODUCTION

This chapter discusses the research findings and provides analysis and interpretation of data. In the survey, certain specific questions were asked and the analysis was done based on the application of Pearson correlation coefficient and value. Diamantopoulos and Schlegelmilch (2004) note that the Pearson correlation method correlates that are listed variables with each other and indicate which of the resulting relationships are statistically significant. The p-value provides more information on how far down in the significant region the results lay.

The survey was conducted among all stakeholders that handle management of information in all Service Points namely; Kgetleng Rivier, Madibeng, Moretele, Moses Kotane and Rustenburg within Bojanala District, to assess the extent the information quality impacts on managerial decisions.

The layout of this chapter begins with the rate of return of the questionnaires from respondents, followed by the discussion and analysis of variables. Correlation co-efficient analysis for coefficients greater than or equal to 0.5 in the negative and in the positive will be discussed and lastly the conclusion

4.2 RESPONSE RATE

The population of interests for this study was all the managers in the Bojanala District which are District Director, Deputy Directors, Assistant Directors as well as Programme Coordinators in all Service Points which constitute of 55 managers in total. Therefore, 55 questionnaires were distributed and 91% of them were properly completed and returned. The response rate from this study made it meaningful to the variable used. Responses given were useful to the study to be able to make a meaningful conclusion in chapter five. The following statistical sample shows that the sample met the strict rules and it was randomly selected. It is also acknowledged that it can be used to confirm the results.

DEMOGRAPHICS

4.3.1 Age Distribution



Figure 4.1: Age of Respondents

As figure 4.1 shows, from 50 respondents, 16 respondents were aged 31 to 40 years; 26 were aged between 51 and 60 years; 1 were aged between over 60 years and two respondents did not want to answer the question. The majority of respondents were aged between 41-50 years. This may mean that this age group within the working class has matured enough in order to make sound decisions informed by good quality of information and therefore transfer the skill to the next level as depicted by the age group between 31 and 40 years old. It is important that this group responded, as they are the ones to inform older and younger workers about incorporation into the organisation.

4.3.2 Gender Distribution



Figure 4.2: Gender of Respondents

Fifty (50) respondents completed and returned the completed questionnaires. Of these 44 were female and 6 male workers. It is evident from the figures above that the difference between male and female is huge. This is aggravated by the nature of profession which is the core of the organisation which is social workers; therefore the profession is mostly selected by females. Furthermore the sex distribution of respondents in the sample studied may be seen to represent the sexual distribution.

4.3.3 Distribution by Position



Figure 4.3: Indicate your position in the organisation

Figure 4.3 indicates that respondents are in managerial positions at different levels of management. 30 respondents are programme coordinators, 4 respondents have a deputy director position and 16 are assistant directors in the organisation. This is a balanced and fair distributions because most of work is done at operational level where programme coordinators are implementing the operational plan of the organisation. However, this also raises a concern on the number of deputy directors which are few but managing the largest district in North West Province.

4.3.4 Distribution by years of experience

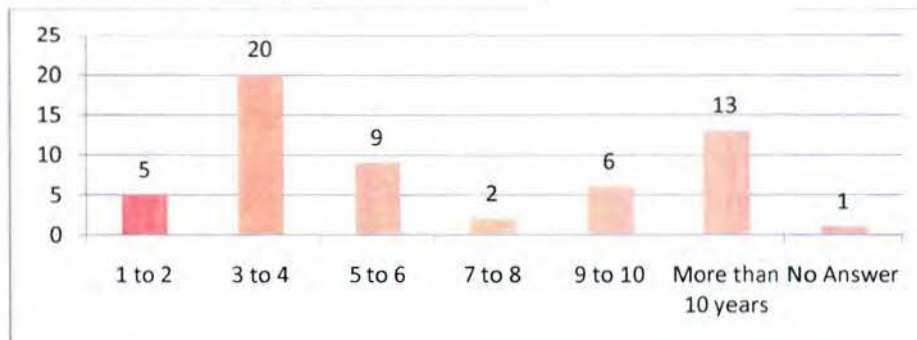


Figure 4.4: Indicate your years of experience in your position

Figure 4.4 indicates that most of the respondents have a working history of between 3-4 years (20). There were five that worked from 1-2 years. There were 20 workers from 3 to 4 years. There were 9 workers from 5-6 years. There were 2 workers from 7 to 8 years. There were 6 workers from 9 to 10 years. There were 13 workers who have worked for more than 10 years and one respondent did not want to answer this question due to personal reasons. This is a good spread from the study. Figure 4.2 shows that females have been interacting in development to do their activities more regularly than men and thus females

are better skilled and at their work place. There were periodic bouts of employer agitation regarding the need for reforms to skills development in the past 15 years (Heywood and Rhode, 2006). It was the growing interest of the union movement to offer the principal drive to transform the South African skills development system along the lines seen today.

4.3.5 Distribution by Qualification

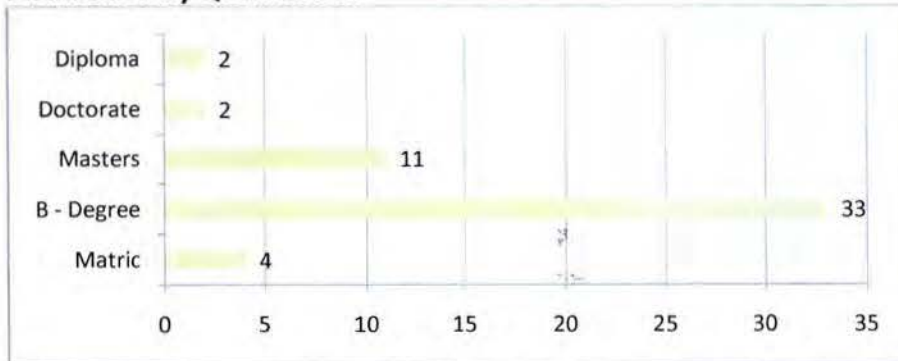


Figure 4.5: What is your highest level of education?

According to the questionnaires, 33 respondents have a B –degree, 4 respondents have matric qualification, 11 respondents have a master’s degree, 2 respondents have a doctorate degree, and 2 respondents have a diploma qualification. The findings reveal that that the respondent’s education status is up to standard, since most of the respondents have a masters or degree. The respondents’ educational status is an indicator for the fair handling of projects. Organisations must improve and motivate their employee’s education through further studies. Employees are expected to use as many tools to aid in their environment to be more flexible, engaging and challenging (Heywood and Rhode, 2006). The Constitution of the Republic of South Africa, Section 29 (1) states that everyone has the right to a basic education, including adult basic education, and to further education, which the state, through reasonable measures, must make progressively available and accessible

4.4 RESULTS OF THE INVESTIGATION

The discussion is in a form of question explanations and graphs. The questions will be explained with the support of Chapter 2. The graphs will be used as illustrations of the data collected. The researcher will then prove negative and positive results of the research questions rose before the study through these results.

4.4.1 Training of Information Management

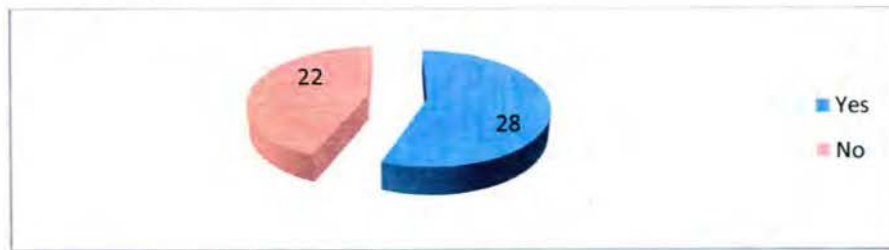


Figure 4.6: Were you trained on Information Management?

Figure 4.6 indicates that twenty eight (28) respondents were trained on Information Management, whereas, twenty two respondents were not trained on Information Management. Thus despite finance emerging from the national skills levy system, the opportunity to induce workplace equity has been missed. Pereira (2009) argues that Information Management (IM) plays an important role in an organisation, which is an information-intensive. It is also a source of competitive advantage in which a business data process is shared in a controlled way and an integrated and coordinated supply chain can be achieved. Furthermore, information visibility can reduce lead times and costs and improve profits and decision making. It should be also used to eliminate redundant activities and reduce lead times, substituting physical inventory.

4.4.2 Data Flow policy

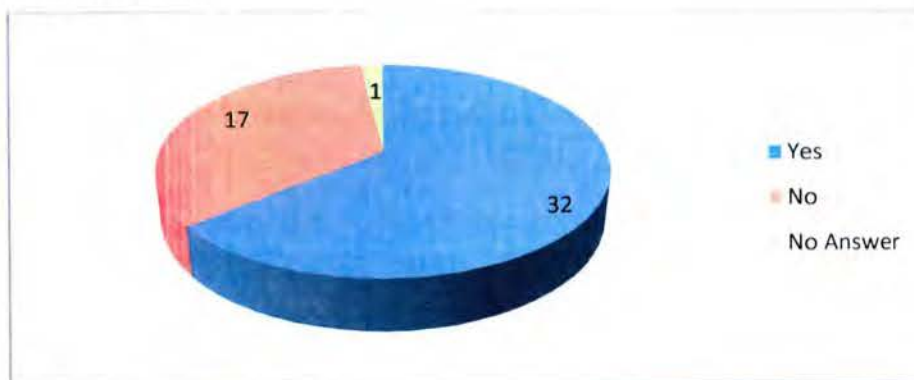


Figure 4.7: Do you know the data flow policy?

Figure 4.7 indicates that the majority of respondents (32) understands what the data flow policy is. Seventeen respondents do not know or understand what the data flow policy is and one respondent did not want to answer the question. Peng et al., (2010) state that integration is a key technology for efficient incident information collecting, sharing, dissemination, exploitation and analysis which is crucial to assist decision makers in

making timely and right decisions during emergencies. The objective of the data mining module in incident information management framework is to aid decision makers to understand characteristics of emergencies and predict future events by analysing available incident information using a collection of data mining functions.

4.4.3 Access to Computer and Printer

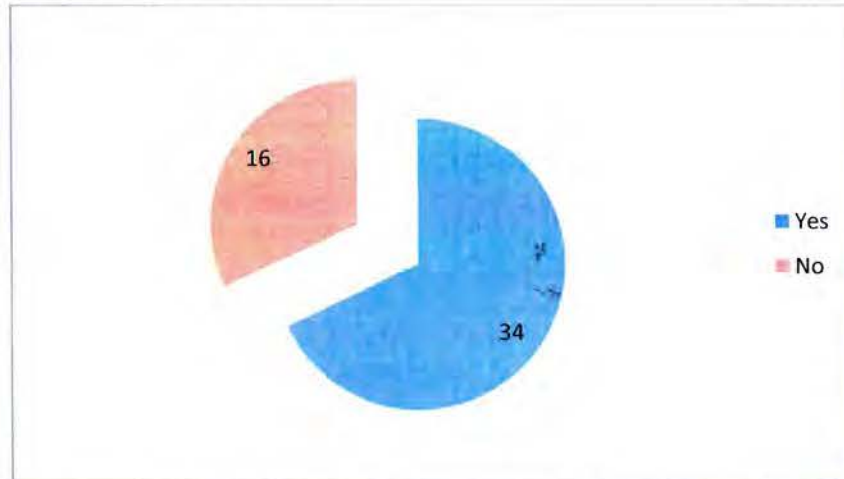


Figure 4.8: Do you have access to a computer and printer?

Figure 4.8 indicates that thirty four respondents have access to a computer and printer whereas sixteen of the respondent's do not have access to a computer and printer. Figure 4.2 indicates the reason for of the high representation of female employees within the Information management development environment. This is in agreement with Wang (1998). Data Quality (DQ) can be defined as fitness for one which implies the concept of data quality is relative. Thus data with quality considered appropriate for one use may not possess Information Quality has become a critical concern of organisations and active area of Management Information System (MIS) research. The quality of data plays a critical role in all business and governmental applications. It is recognised as a relevant performance issue of operating processes of decision-making activities and of inter-organisational cooperation requirements (Batini et al., 2009). IT is perceived as a transformative force bringing about a radical redesign of how clients receive care. Also, adoption of computers and computer software to convert, store, protect, transmit and securely retrieve information is fundamentally changing the practice of professional discipline (Balust and Macario, 2009).

4.4.4 Access to Internet and Email

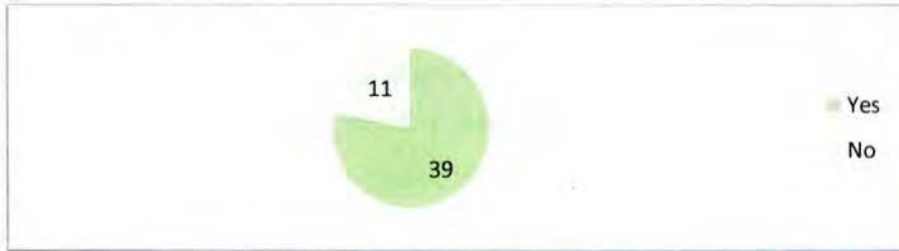


Figure 4.9: Do you have access to Internet and email?

Figure 4.9 shows that most of the respondents (39) have access to Internet and email and eleven respondents do not have access to Internet and email assigned to it in their functional area. There is a need to address this problematic matter in the organisation. IS awareness of the broader organisation, people and IT dimensions of systems and their power is used to provide solutions to challenges and problems in the business environment. This broader understanding of IS which encompasses an understanding of the people and organisational dimension of system as well as the technical dimension of system as IS literacy (Laudon and Laudon, 2011).

4.4.5 Sources of Information

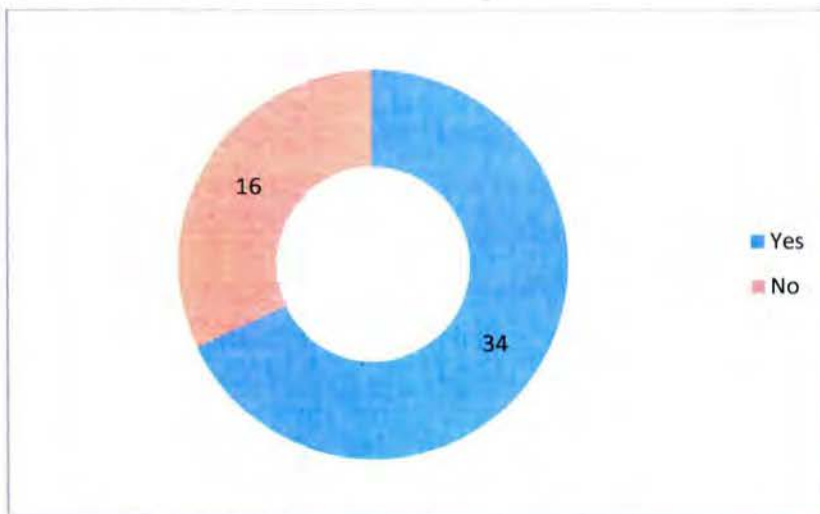


Figure 4.10: Are there multiple sources of information within your organisation?

Figure 4.10 illustrates that most of the respondents (34) agree that there multiple sources of information within the organisation whereas sixteen respondents believe that there isn't multiple sources of information within the organisation. The findings indicate that there are obstacles between employees with their training skills, building trust and that as the

obstacles become lesser the more they will act on what they believe. Orr (1998) has noted that employees are encouraged to build capacity through teamwork and co-operation and to make management and administration more cost and time effective. An experienced and well trained employee can be defined as a person who can perform difficult tasks while working without help or supervision. In addition, employee attitudinal and social skills are widely regarded to be acute for one to be successful (Wang, 1998). The manager's attribute and decisions in all aspects are essential for staff members to function well in their positions.

4.4.6 Quality of Information

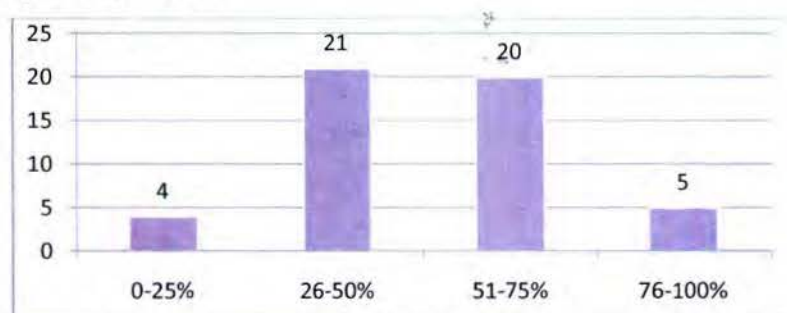


Figure 4.11: Information Quality is identified as the extent to which users think that the information is useful, good, current and accurate, what is your rating?

Figure 4.11 shows that most of the respondents believe that Information Quality is identified as the extent to which users think that the information is useful, good, current and accurate. Four respondents strongly agree that Information Quality is identified as the extent of 0-25% to which users think that the information is useful, good, current and accurate, twenty one respondents agree that Information Quality is identified as the extent of 26-50% to which users think that the information is useful, good, current and accurate, twenty respondents disagree that Information Quality is identified as the extent of 51-75% to which users think that the information is useful, good, current and accurate and five respondents strongly disagree that Information Quality is identified as the extent of 76-100% to which users think that the information is useful, good, current and accurate. This is in agreement with Chen *et al.* (2010).

DQM as quality-oriented management of data as an asset, that is, planning, provisioning, organisation, usage and disposal of data that supports both decision making and operational business processes, as well as the design of the appropriate context, with the aim to improve data quality on a sustained basis. Data or information quality is defined on

the basis of two consentient aspects: First, the dependence of perceived quality on the user's needs; second, the fitness for use, which is the ability to satisfy the requirements of intended use in a specific situation (Weber et al., 2009). This means that the respondents rely and expect leadership qualities from a manager to lead them. The organisation should place importance on the projects at hand and implement a better structure, to be able to relate and communicate better during the implementation. Caballero et al (2011) notes that an organisation determines its own ethics and organisation's ethical way is similar to organisational culture; which is a system of shared beliefs and values that influence employee behaviour.

4.4.7 Trustfulness on Information

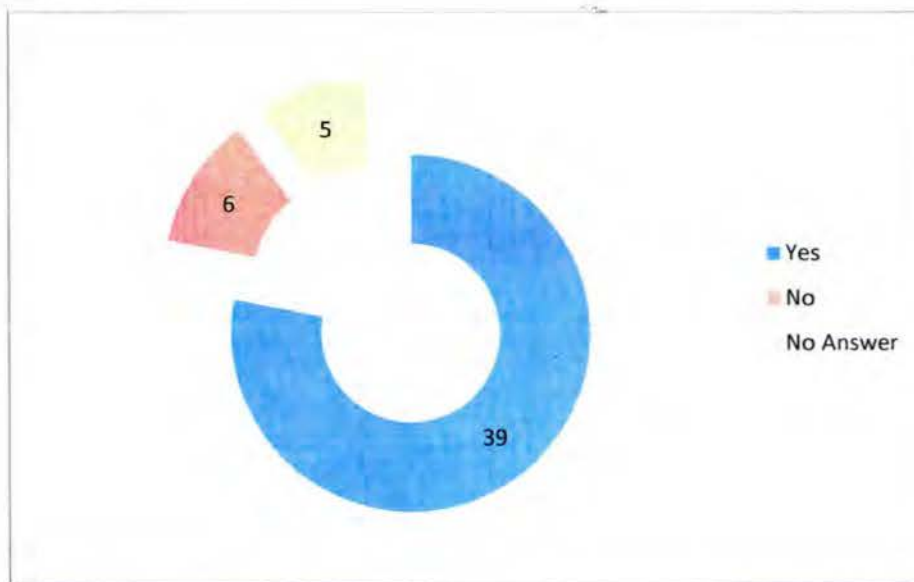


Figure 4.12: Do you trust this information?

Figure 4.12 shows that the majority of respondents (39) do trust the information accountability, six respondents do not trust the information accountability and five respondents did not want to answer. This is a positive result. Obeidat (2013) argues that organisations should be cautious when implementing a new innovation such as Human resource information systems. Innovation is defined as an iterative process initiated by the perception of a new market and/or new service opportunity for a technological-based invention which leads to the development, production and marketing tasks striving for the commercial success of the invention. Therefore organisation that seeks to maintain their competitiveness and economic success should strive for more innovation and seek new opportunities

4.4.8 Consistency on Information



Figure 4.13 How consistent is the information from the used sources?

Figure 4.13 shows that the majority of respondents (45) do agree that satisfactory accountability was placed on the business for their function in the project. Fifteen respondents strongly agree that there was satisfactory accountability placed on the business for their function in the project whereas thirty respondents disagree that satisfactory accountability was placed on the business for their function in the project.

4.4.9 Availability of Information

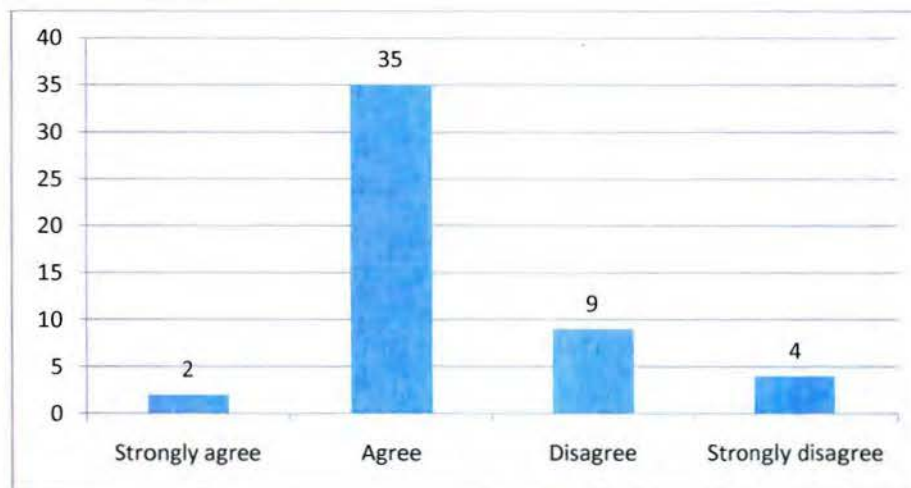


Figure 4.14: Information is always available when needed?

Figure 4.14 indicates that most of the respondents (35) agree Information was always available when needed. Two respondents strongly agree that Information was always available when needed, nine respondents disagree that Information was always available when needed and four respondents strongly disagree that Information was always available when needed. Smalltree et al. (2012) states that people in general, play an important role in succeeding on information and employees have to be trained, motivated and appropriately

rewarded to ensure excellent performance and good customer care. Also, all staff in the organisation should work to accomplish the transformation. Executive leadership team is required to take action to accomplish the data quality transformation. Executives must create a culture of continuous information process improvement. If data is delivered just prior to when it is no longer useful, the data may be of some use, but will not be as useful as if it were delivered much earlier than the cut-off time (Pipino et al., 2002).

4.4.10 Effectiveness of decisions

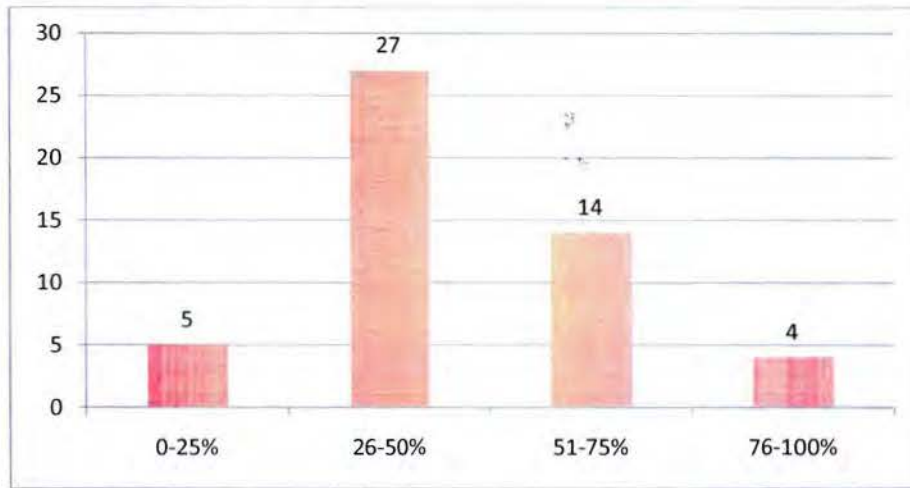


Figure 4.15:How would you rate the effectiveness of decisions based on Information Quality?

Figure 4.15 shows that five respondents rate 0-25% that the effectiveness of decisions based on Information Quality, twenty seven respondents rate 26-50% that the effectiveness of decisions based on Information Quality, twenty seven rates 51-75% that the effectiveness of decisions based on Information Quality and four rate 76-100% that the effectiveness of decisions based on Information Quality. The term quality assurance is a method utilised to determine how well a product meets specifications. Characteristics of quality assurance include that it is retrospective, relies on inspection, focuses on high profile, but low-frequency events and does not allow changes in the system until after the event (Balust and Macario, 2009). An organisation depends on quality information for effective operations and decision making, thus quality in management decision plays a vital role and there is a direct and strong relationship between the quality of information used by a decision maker and decision performance. Hence Information is not an isolated resource, but it flows within organisation and consequently, its quality must be tackled as an organisational issue.

4.4.11 Frequency on decision making

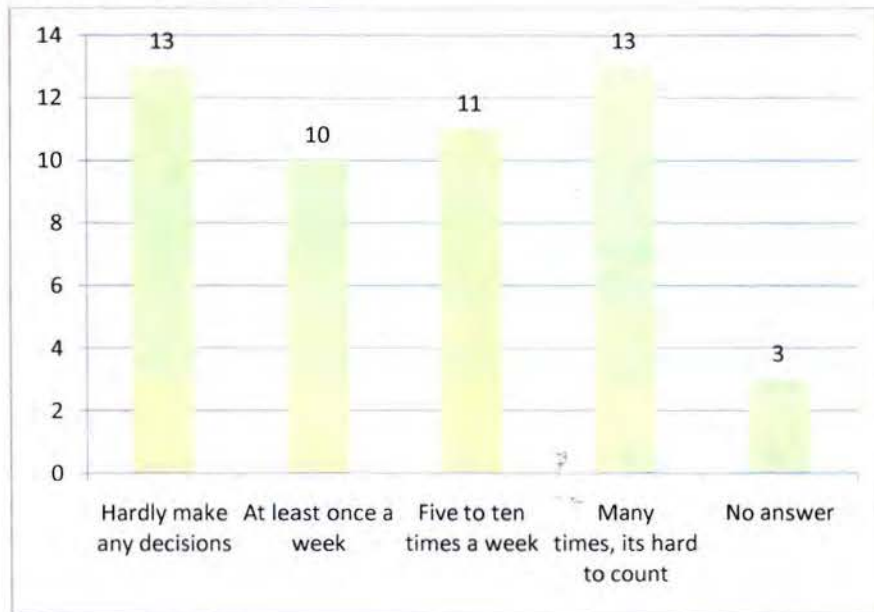


Figure 4.16: How frequently do you make decisions in your organisation?

Figure 4.16 indicates that the majority of respondents agree that they frequently make decisions more than once a week in the organisation. There are thirteen respondents who hardly make any decisions frequently in the organisation. There are ten respondents who make decisions at least once a week in the organisation. There are eleven respondents who make decisions five to ten times a week in the organisation. There are thirteen respondents who make many decisions frequently in the organisation. There are three respondents who do not want to answer the question. Caballero et al., (2008) argue that information quality should be a process intertwined to all business core processes because it is a means to an end and indirectly impacts the bottom line of an organisation. Employees due to lack of financial education and awareness knowledge are not forward looking into the future to improve their financial independence. Kebede (2010) attest to the fact that money does not make you rich. Knowledge makes you rich. And knowledge is derived from a process. One of the major needs of different levels of manager of higher authorities is to recognize of the purpose of the organisation, its policies, programs, plans and goals however the decisions may be according to the ability of analytical approach of using the information of the manager (Calayoglu, 2012).

4.4.12 Levels of decisions

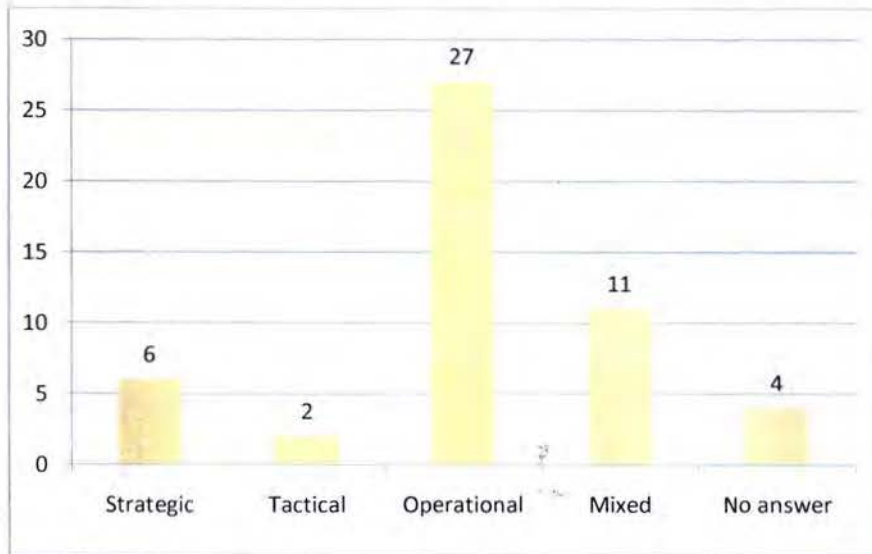


Figure 4.17: What level/type of decision do you normally make?

Figure 4.17 indicates that six of respondents make strategic decisions. Two respondents make tactical decisions, twenty seven respondents make operational decisions, eleven respondents make mixed decisions and four respondents did not want to answer. Hopkin (2010) argues that there is a relationship between personal risk appetite and lifestyle decisions. Therefore, individuals will require to take lifestyle decisions based on risk appetite, risk exposure and risk capacity. Managers are required to make decisions efficiently for accurate and reliable information, hardware; software and support services. For these benefits, investments should be made and the necessary updates should be followed (Calayoglu, 2012). Do not waste time and effort in data correction activities, instead send the defective data back to the originating information producers to be corrected and updated (Smalltree, 2013). Decisions are often taken at different levels and noted that there are three key levels of management in any organisation: Corporate, Tactical and Operational level. In the private sector these levels are represented by: Corporate level (Board of Governors and the Chairperson of the company), Tactical (Human Resource Manager, ICT Manager, Operations Manager etc., Operational level (Supervisors, Team leaders and Foreman). Whereas within the public sector these levels are represented thus: Corporate (Political class that is Ministers and Secretaries), Tactical (Public sector managers: Directors, Departmental Heads), Operational (McBride et al., 2013).

4.4.13 Sources to make decisions

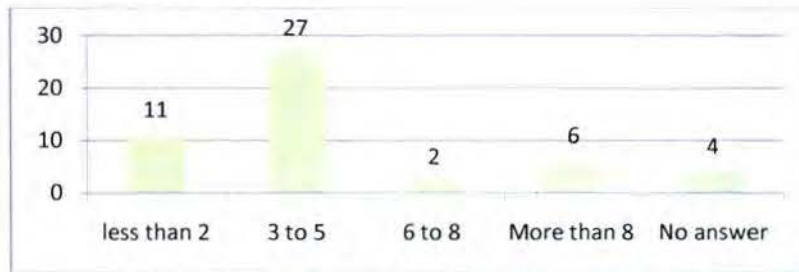


Figure 4.18: When you need to make to obtain Information to make decisions, how many sources do you have to consult before you can make a decision?

Figure 4.18 indicates that eleven respondents need less than 2 sources to consult before they can make a decision, twenty seven respondents need 3 to 5 sources to consult before they can make a decision, two respondents need 6 to 8 sources to consult before they can make a decision and six respondents need more than 8 sources to consult before they can make a decision team and four respondents did not want to answer. If data quality is a function of its use there is only one sure way to improve data quality improve its use. To improve data quality, it is necessary to determine how good the data in the organisation database is. Use-based data quality audits involve answering a number of key questions: To improve data quality it is mandatory to improve the linkage among the various uses of data throughout the system. One of the problems is deciding where to begin (Orr, 1998). International Standard on quality management rephrase the five key terms by defining them as follows:

- A data quality policy refers to the overall intention and direction of an organisation with respect to issues related to the quality of data products. This policy is formally expressed by top management
- Data quality management – is the management function that determines and implements the data quality policy
- A data quality system encompasses the organisational structure, responsibilities, procedures, processes, and resources for implementing data quality management.
- Data quality control is the set of operational techniques and activities that are used to attain the quality required for a data product.
- Data quality assurance includes all those planned and systematic actions necessary to provide adequate confidence that a data product will satisfy a given set of quality requirement (Wang et al., 1995).

4.5 MEASURES OF ASSOCIATION

A measure of the relation between two or more variables defines correlation. The measurement scales used should be at least interval scales, but other correlation coefficients are accessible to handle other types of data. The simplest question one could ask about two continuous variables is whether they vary in related way, is there a correlation between them. Pearson's Correlation Coefficient will be used for data interpretation. Correlation Coefficients can range from -1.00 to +1.00 representing a perfect negative correlation while a value of +1.00 represents perfect positive. A value of 0.00 represents a lack of correlation.

Correlations

		Age	Gender	Status	Years	Qualification	Qu6
Age	Pearson Correlation	1	.108	-.051	-.069	-.049	.037
	Sig. (2-tailed)		.454	.724	.633	.733	.798
	N	50	50	50	50	50	50
Gender	Pearson Correlation	.108	1	-.012	-.148	-.091	.069
	Sig. (2-tailed)	.454		.937	.304	.531	.632
	N	50	50	50	50	50	50
Status	Pearson Correlation	-.051	-.012	1	.264	-.139	.099
	Sig. (2-tailed)	.724	.937		.064	.334	.493
	N	50	50	50	50	50	50
Years	Pearson Correlation	-.069	-.148	.264	1	-.074	-.373**
	Sig. (2-tailed)	.633	.304	.064		.611	.008
	N	50	50	50	50	50	50
Qualification	Pearson Correlation	-.049	-.091	-.139	-.074	1	-.321*
	Sig. (2-tailed)	.733	.531	.334	.611		.023
	N	50	50	50	50	50	50
Qu6	Pearson Correlation	.037	.069	.099	-.373**	-.321*	1

	Sig. (2-tailed)	.798	.632	.493	.008	.023	
	N	50	50	50	50	50	50
	Pearson Correlation	-.165	-.036	.072	.228	-.153	.022
Qu7	Sig. (2-tailed)	.252	.806	.618	.111	.290	.878
	N	50	50	50	50	50	50
	Pearson Correlation	-.017	.147	.136	-.287*	-.327*	.825**
Qu8	Sig. (2-tailed)	.908	.307	.347	.044	.020	.000
	N	50	50	50	50	50	50
	Pearson Correlation	.223	.202	-.084	.093	-.161	-.031
Qu9	Sig. (2-tailed)	.119	.160	.563	.519	.263	.833
	N	50	50	50	50	50	50
	Pearson Correlation	.002	.175	.157	-.272	-.285*	.757**
Qu10	Sig. (2-tailed)	.991	.225	.277	.056	.045	.000
	N	50	50	50	50	50	50
	Pearson Correlation	.104	-.143	.143	.269	.044	-.023
Qu11	Sig. (2-tailed)	.474	.322	.321	.059	.759	.872
	N	50	50	50	50	50	50
	Pearson Correlation	.143	.040	.046	-.078	-.399**	.037
Qu12	Sig. (2-tailed)	.322	.783	.753	.589	.004	.797
	N	50	50	50	50	50	50
	Pearson Correlation	-.030	.273	.032	-.249	-.191	.114
Qu13	Sig. (2-tailed)	.834	.055	.825	.081	.185	.431
	N	50	50	50	50	50	50

Correlations

	Qu7	Qu8	Qu9	Qu10	Qu11	Qu12

Age	Pearson Correlation	-.165	-.017	.223	.002	.104	.143
	Sig. (2-tailed)	.252	.908	.119	.991	.474	.322
	N	50	50	50	50	50	50
Gender	Pearson Correlation	-.036	.147	.202	.175	-.143	.040
	Sig. (2-tailed)	.806	.307	.160	.225	.322	.783
	N	50	50	50	50	50	50
Status	Pearson Correlation	.072	.136	-.084	.157	.143	.046
	Sig. (2-tailed)	.618	.347	.563	.277	.321	.753
	N	50	50	50	50	50	50
Years	Pearson Correlation	.228	-.287	.093	-.272	.269	-.078**
	Sig. (2-tailed)	.111	.044	.519	.056	.059	.589
	N	50	50	50	50	50	50
Qualification	Pearson Correlation	-.153	-.327	-.161	-.285	.044	-.399*
	Sig. (2-tailed)	.290	.020	.263	.045	.759	.004
	N	50	50	50	50	50	50
Qu6	Pearson Correlation	.022	.825	-.031	.757**	-.023*	.037
	Sig. (2-tailed)	.878	.000	.833	.000	.872	.797
	N	50	50	50	50	50	50
Qu7	Pearson Correlation	1	.096	-.043	.142	-.027	-.006
	Sig. (2-tailed)		.505	.767	.326	.851	.968
	N	50	50	50	50	50	50
Qu8	Pearson Correlation	.096	1	.054	.909*	.054*	.137**
	Sig. (2-tailed)	.505		.710	.000	.711	.343
	N	50	50	50	50	50	50
Qu9	Pearson Correlation	-.043	.054	1	.089	-.115	.154
	Sig. (2-tailed)	.767	.710		.537	.428	.286

	N	50	50	50	50	50	50
	Pearson Correlation	.142	.909	.089	1	.116*	.084**
Qu10	Sig. (2-tailed)	.326	.000	.537		.421	.562
	N	50	50	50	50	50	50
	Pearson Correlation	-.027	.054	-.115	.116	1	-.031
Qu11	Sig. (2-tailed)	.851	.711	.428	.421		.828
	N	50	50	50	50	50	50
	Pearson Correlation	-.006	.137	.154	.084	-.031**	1
Qu12	Sig. (2-tailed)	.968	.343	.286	.562	.828	
	N	50	50	50	50	50	50
	Pearson Correlation	.025	.174	.242	.191	-.227	.313
Qu13	Sig. (2-tailed)	.865	.228	.090	.184	.114	.027
	N	50	50	50	50	50	50

The correlation between age and rating of Information Quality is identified as the extent to which users think that the information is useful, good, current and accurate shows -0.798. This means that if a person grows older there is a strong chance (correlation) of 0.798 that people will have a higher education and better knowledge on using Information Quality.

The correlation between gender and position in the organisation shows +0.937. This means employees are generally happy with the performance on Information Quality development according to this.

The correlation between position in the organisation and age shows - 0.724- a high positive association. This means that most of the employees are generally happy with their position and the organisations needs to train more employees in the future to keep this up.

The correlation between age and how consistent is the information from the used sources shows +0.908- a high positive association. This means that employees are experienced or able to understand Information Quality and trust the Information consistency.

The correlation between the rating of Information Quality which is identified as the extent to which users think that the information is useful, good, current and accurate and the

rating of the effectiveness of decisions based on Information Quality shows + 0.872- a positive association. Most employees are well trained to understand Information Quality when it comes to Information decisions with adequate management support.

The correlation between gender and the level/type of decision managers make shows + 0.783 - a positive. Employees are generally happy with the accountability placed on their performance in their decision levels while understanding the Information.

The correlation between years of experience in your position and how consistent is the information from the used sources shows - 0.327 – a high negative association. Generally, the employees in managerial positions are not satisfied with the consistency of information used from different sources and this limits their ability to perform well.

The correlation between the rating of the effectiveness of decisions based on Information Quality and the rating of a need to obtain Information to make decisions, how many sources are consulted before making a decision shows -0.227 - a high negative association. This means in general, all employees in managerial positions require many sources to make a final decision that will be effective for Information Quality.

The correlation between rating the effectiveness of decisions based on Information Quality and the trust in information shows + 0.909 - a high positive association. This shows that employees trust the information to base their decisions effectively and it impacts on Information Quality while been given the adequate commitment by management.

The correlation between information is always available when needed and functional area how would you rate the effectiveness of decisions based on Information Quality + 0.710 - a positive association. This means that employees are generally pleased with the information been provided by the organisation in order for them to be skilled in their functional area with the implemented planning measures for effective decisions to be made.

4.6 CONCLUSION

Chapter four provided analysis and interpretation of data gathered using a questionnaire as a method of collecting data, a number of statistics techniques were applied to guide the analysis. Correlation was used specifically to establish meaning of the analysis of data collected. In some instances the use of charts and tables were used to assist in the presentation of the analysis. The findings have also established a link between literature that was reviewed in this study with the data which was collected and presented. The study

used a quantitative approach to describe and analyse the findings on the impact of implementation of improvement in Department of Social Development, Bojanala District. This was followed by the findings and measures of association statistics.

The next chapter consolidates all the work conducted and consists of the theoretical and empirical findings, conclusion and recommendations. These recommendations are divided into two; operational findings that will benefit the department under review and academic recommendations as the second.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter presents the summary and overview followed by recommendations and conclusion. The previous chapter, Chapter 4 has focused on data collection, analysis and interpretation in relation to the research objectives. Strategic planning is important to ensure that businesses are well positioned and enabled to compete well with those of their male counterparts for long term survival and sustainability.

The purpose of this research is to determine the extent of alignment of the impact of information quality on managerial decisions. This chapter references the literature discussed in Chapter 2 pertaining to the different functional areas prevailing social, political, and economic. Conditions that the Department of Social Development Bojanala District faces include the alignment of Information quality development. These conditions need to be addressed in order to support the conclusions drawn around the research questions.

This chapter comprises a summary of the study, addresses the findings per research question, provides managerial guidelines for opportunities and highlights future research opportunity in this field of study. Conclusion of the study will be drawn and recommendations will also be outlined.

5.2 SUMMARY OF THE STUDY

The nature and extent of this alignment is currently unknown. The research was aimed at determining the extent of alignment of the impact of information quality on managerial decisions with the challenges faced by Information development in Department of Social Development Bojanala District in South Africa. This study analysed the extent of this alignment through the use of research questions in Chapter 4 that focused on the different functional areas of the prevailing social, political, and economic conditions in history and in the present.

5.3 RESPONSE TO THE RESEARCH QUESTIONS

The core findings of this research in relation to each research question are discussed. Each question is followed by a discussion of the findings relating to that question.

5.3.1 What is the effectiveness of managerial decisions based on information quality?

It was found that the effectiveness of managerial decisions based on information quality was not rated well by respondents as opposed to the fact that the majority of them were trained on Information Management, equipped with resources which will ensure that they rate this question well between 76% and 100%. This was not the case which means that there must be an understanding and importance of information quality to make effective decisions. Furthermore Caballero et al. (2008) argue that an organisation depends on quality information for effective operations and decision making, thus quality in management decision plays a vital role and there is a direct and strong relationship between the quality of information used by a decision maker and decision performance. Therefore, Information is not an isolated resource but it flows within organisation and consequently its quality must be tackled as an organisational issue. Information quality should be a process entwined to all business core processes because it is a means to an end and indirectly impacts the bottom line of an organisation.

Orr (1998) states that there are numerous general data quality rules one can deduce from a view of information systems: Lately, large organisations have begun to create integrated data warehouses for decisions support and the resulting data quality problems have become clearer. These organisations have discovered that the quality of the data in their legacy databases is their single biggest problem. Organisations are implementing programs to improve data quality to achieve competitive advantage and such improvement programs are critical for the development and maintenance of data warehouses. They are being built by organisations to improve customer service, managerial decision making and without proper data warehouse will begin to accumulate dirty data (Khalil et al., 1999).

Al-Qireem et al. (2013) note that thinking rounded is one of the most significant features of system thinking as it allows us to see the immense picture. Instead of examining each part of the system the whole system is examined. Each part of the department in the organisation is not isolated from other department so trying to solve a problem in one

process rather first look for the whole organisation, the interconnections inside it to understand the nature and the reasons for such problems.

Products should be delivered to market in a cost effective and efficient manner. Organising to master change means how flexible is an organisation structure to permit relocation of all organisation resources. Leveraging the impact of people and information means how flexible and configurative are human and information resources (Almahamid, 2013).

Managers must develop alternative solutions and select the most the suitable method to achieve the targets most effectively. Calayoglu (2012) argues that it is essential to know the situation and variables thoroughly which affect the problem in order to achieve accurate decision making. In such circumstances taking into consideration the questions how to reach the required details, what are the alternatives, how to get decision making immediately and accurately. It is obvious that answer of these questions is to have an information system in business. The computer has added one or more dimensions such as speed, accuracy, reliability and the increased volume of data that enables the consideration of more alternatives in a decision making process. One of the major requirements of different levels of manager of higher authorities is to recognise of the purpose of the organisation, its policies, programs, plans and goals however the decisions may be according to the ability of analytical approach of using the information of the manager.

Individuals seem to make choices based on limited resources and misinformed persons tend to make meagre decisions. It is clear that wrong data is likely to result in wrong decisions (Fisher and Kingma, 2001).

The decision making time is shortened with filtered data and in this way managers can make decisions more efficiently. For precise and reliable information, hardware, software and support services are compulsory. For these benefits, investments should be made and the necessary updates should be followed (Calayoglu, 2012). Do not waste time and effort in data correction activities, instead send the defective data back to the originating information producers to be corrected and updated (Smalltree et al., 2013). Such large volumes of data are difficult for humans digest and interpret. Therefore, missing important patterns or trends in the data can compromise decision making with potentially deleterious consequences (Gatt et al., 2009).

5.3.2 What are the users' perceptions on the impact of information quality?

It was revealed that perception of users on information quality was also not rated well because Information Quality is identified as the extent to which users think that the information is useful, good, current and accurate, this question was rated by the majority of respondents between 26%-50%. This is a cause for concern because the majority of respondents trust this information and its consistency is also questionable because majority of respondent rated this question between 26%-50% which is a low score as compared to 76%-100%. It is evident that the users do not understand the impact of information quality in the organisation. Put everybody in the organisation to work to accomplish the transformation. It calls for executive leadership team to take action to accomplish the data quality transformation. Executives must create a culture of continuous information process improvement (Smalltree et al., 2012). People put the technology to work in managing information and people are ultimately responsible for whether information technology succeeds or fails. Over the last 15-20 years the apparel sector has been in a state of continuous restructuring (Rashed et al., 2011).

Probable problems pointed out that the software developer should understand the users, work closer with them and that the resulting systems should be adaptable to suit a range of farmer characteristics. However, systems still have to be improved in terms of collaboration with automated acquisition of operational farm data and integration with the general management information system (Sorensen et al., 2010).

Rashed et al. (2011) argue that when using IT systems to capture and analyse information it should have a significant impact on a firm's performance. IT comes in many ways forms-networked personal computers, software applications, the Internet and more-but one thing all types of IT have in common is that their effective use depends upon users. Using technology allows organisation to imitate others products and services which leads to shorten the life cycle experienced and forces them to invest in technology (Obeidat, 2013).

The quality of data plays an essential role in all business and governmental applications and it is recognised as a relevant performance issue of operating processes of decision-making activities. Lately, Information Quality has become a critical concern for organisations and an active area of MIS research (Lee et al., 2002). The development of a data warehouse and the direct access of information from various sources by managers and

information users have increased the necessity and awareness of high quality information in organisations.

Several of the other data quality dimensions are closely tied to the lack of timelines leads to incompleteness or inaccuracy of the data availability to end-users and data available to end-users (Parssian et al., 2002). Data inconsistency is usually caused by inaccuracies in the data or incompleteness of the data.

It is a necessity for IS professionals to apply process-oriented techniques corresponding IS auditing to the processes that produces this data. IS professionals must understand the difference between the technical accessibility they supply and the broad accessibility concerns of data consumers. Once this difference is clarified, technologies such as data warehouses can provide a smaller amount of more relevant data and graphical interfaces can improve ease of access (Strong et al., 1997). Little empirical evidence and understanding of the impact of information quality on decision performance has been documented in the IS literature (Jung, 2004).

5.3.3 What is the extent to which information quality impacts on managerial decisions?

Findings revealed that there is an impact on managerial decision based on information quality. According to the findings, the majority of respondent trust the information, it is always available and majority of them make decisions at different levels. The other fact from the findings is that they were trained on Information Management and they know the data flow policy. The consistency of these decisions and effectiveness is scored at a low percentage this is raising a concern because these managers are highly skilled according to their education level and their years of experience is enough for them to be matured and be able to do effective and consistent decision informed by good quality of information.

IS enables organisations to sense and respond to environment changes and that attitude toward new technology system impact organisational agility through actual use of Information Technology (IT). The attitude toward the new IT systems is a function of perceived usefulness and perceived ease of use of IT (Almahamid, 2013). IS helps to collect, synthesise and analyse a huge amount of open-ended and close ended data while maintaining a high level of ethical practice as well as ensuring confidentiality. Further works on these data help to introduce a research environment and culture to facilitate the running of organisations (Hashim et al., 2010).

Organisations must be careful when implementing a new innovation such as Human Resource Information Systems. Innovation is defined as an iterative process initiated by the perception of a new market and/or new service opportunity for a technological-based invention which leads to the development, production and marketing tasks striving for the commercial success of the invention. Therefore organisation that seeks to maintain their competitiveness and economic success should strive for more innovation and seek new opportunities (Obeidat, 2013).

It is clear that IM plays an important role in an organisation, which is information-intensive. It is also a source of competitive advantage in which a business data process is shared in a controlled way and an integrated and coordinated supply chain can be achieved. On the other hand, information visibility can reduce lead times and costs and improve profits and decision making. It should be also used to eliminate redundant activities and reduce lead times, substituting physical inventory (Pereira, 2009).

The all-round exponential growth of information makes it necessary that information is collected, stored and retrieved in various fields so that it could be usefully exploited as and when needed. Information is an important driver that companies have used to become both efficient and more responsive. The tremendous growth of the importance of information technology is a testimony to the impact that information can have on improving a company. By using information technology companies reach a point when they must make the trade-off between efficiency and responsiveness (Rashed et al., 2011).

The increasing use of computers and the dramatic increase in the use of the internet have to some degree improved and eased the task of handling and processing of internal information as well as acquiring external information. However, the acquisition and analysis of information still proves a demanding task, since information is produced from many sources and may be located over many sites and it not necessarily interrelated and collaborated. The potential of using these data will reach its full extent when suitable information management systems are developed to achieve beneficial management practice (Sorensen et al., 2010).

Data integration is a key technology for efficient incident information collecting, sharing, dissemination, exploitation and analysis, which are crucial to assist decision makers in making timely and right decisions during emergencies. The objective of the data mining module in incident information management framework is to help decision makers

understand characteristics of emergencies and predict future events by analysing available incident information using a collection of data mining functions (Peng et al., 2010).

It is up to the IQ Management Team to quantify the extent of the impact of risks, caused by poor levels of IQ, on the performance of an Information Management Processes (IMP). For each one of the identified risks, a contingency plan must be drawn up in order to minimise their effects on the IMP. Contingency plans must be conveniently evaluated in order to determine if they are feasible. If not, it is necessary to assume and to estimate what the consequences are going to be should the risks become reality. If possible, actions must be executed in order to modify the IMP to avoid these risks or to support their impact (Caballero et al., 2008)

5.3.4 How the quality of information of various sources used for decision making can be improved in an organisation?

It was found that the organisation has multiple sources of data because 34 respondents agreed to this question which is a cause of concern in a growing society whereby integration of sources or systems is emphasised by growing organisations. Large amounts of data can be stored in databases. One of the most important contributions is filtering data. The decision making time is shortened with filtered data. In this way, managers can make decisions more efficiently. For accurate and reliable information, hardware, software and support services are required. For these benefits, investments should be made and the necessary updates should be followed (Calayoglu, 2012). Do not waste time and effort in data correction activities, instead send the defective data back to the originating information producers to be corrected and updated (Smalltree et al., 2013). Such large volumes of data are difficult for humans digest and interpret. On the other hand, missing important patterns or trends in the data can compromise decision making, with potentially deleterious consequences (Gatt et al., 2009).

The use is the one sure way to improve data quality and it is necessary to determine how good the data in our database is today if data quality is a function of its use. Use-based data quality audits involve answering a number of key questions: One must improve data quality linkage among the various uses of data throughout the system. One of the problems is deciding where to begin and the International Standard on quality management rephrase the five key terms by defining them as follows (Orr, 1998):

- A data quality policy –the overall intention and direction of an organisation with respect to issues related to the quality of data products. This policy is formally expressed by top management.
- Data quality management – is the management function that determines and implements the data quality policy.
- A data quality system encompasses the organisational structure, responsibilities, procedures, processes, and resources for implementing data quality management.
- Data quality control is the set of operational techniques and activities that are used to attain the quality required for a data product.
- Data quality assurance includes all those planned and systematic actions necessary to provide adequate confidence that a data product will satisfy a given set of quality requirement (Wang et al., 1995).

Scalability is an important feature in a system as organisations demand for computer system resources increases over time (Pereira, 2009). The capability of a software package to run in a different environment has also become an important issue for software engineers. Interoperability which means the ability of two or more systems or components to exchange and use information in an effective way as one of the most important IT characteristics should be incorporated in an organisation strategy.

Wang et al. (1995) note that collaborating to enhance effectiveness relates to internal and external cooperation which is necessary to allocate resources effectively and efficiently. Organising to master change means how flexible is an organisation structure to permit relocation of all organisation resources.

5.4 LIMITATIONS

The study focused only on one group in the Department of Social Development Bojanala District which is general Information. It is important that surveys be conducted in other groups to get a complete picture of challenges in the Information Quality department

5.5 MANAGERIAL GUIDELINES

From the results of this study, the following guidelines are given to the Department of Social Development Bojanala District that has a solution in planning to develop and implement sustainability in the future:

- The organisation should increase the need for and awareness of high quality information as the quality of data plays a critical role in all business and governmental applications. It is recognised as a relevant performance issue of operating processes of decision-making activities and of inter-organisational cooperation requirements.
- The organisation needs an important standard to determine how to align the different functional Information development areas as mentioned in Chapter 2.
- Ethics should be considered because acquired abilities and delegation by management improves the alignment in the Information decision making development area. The benefits associated with improving this alignment are discussed in Chapter 2.
- Incentives should be made available for employees who were able to successfully attend information quality decision making development programmes and show an improvement in their jobs. This could be an encouraging factor to employees.
- Acknowledging and recognising the attempts and performance of employees assists in boosting confidence and pushes employees to learn and perform better.
- They should be given extra duties to perform so that they become experts in their field. If a vacancy for a higher post becomes available, the internal personnel should be given a chance to prove that they can do the job before the job is advertised externally.
- Data Quality Management (DQM) should be used as a quality-oriented management of data as an asset, that is, planning, provisioning, organisation, usage and disposal of data that supports both decision making and operational business processes, as well as the design of the appropriate context, with the aim to improve data quality on a sustained basis.
- Informal approaches and actions of those in management are vital in achieving organisational goals, aims and objectives.

5.6 CONCLUSION

Laudon and Laudon (2011) argue that Information must be recent to be useful to managers at all levels and informal actions can only be based on up to date data. Monitoring effectiveness of those actions requires immediate measurement of the results. Thus, timely compliance prompt entry into the computer and immediate reports provided from the standard report generator programs are also critical. In many industries, survival and even existence is difficult without extensive use of information technology. Businesses use IS to achieve six major objectives; operational excellence, new products, services and business models, customer/supplier intimacy, improved decision making, competitive advantage and day to day survival.

Unlike any other organisation the department is faced with changes in the environment which brings along a new wave of challenges. The Department has to continually adapt its strategies and programmes to fit these managerial decision making changes. An assessment of the environment then becomes a continuous process. In order for the department to thrive it will need competent and skilled human resources. The Department of Social Development Bojanala District should therefore invest in fruitful Information development programmes if it plans to win or manage these challenges.

REFERENCES

- Almahamid, S. M. (2013). E-Government System Acceptance and Organisational Agility: Theoretical Framework and Research Agendas. *International Journal of Information, Business and Management*, 5, 1.
- Al-Qirem, R. M., Alomoush, K. S and Shaqrah, A. A. (2013). New Paradigm to Enhance BI Tools: A System Thinking Approach. *International Journal of Information, Business and Management*, 5, 1.
- Babbie, E.(1995). *The Practice of Social Research*. 7th ed. United States of America: Wadsworth Publishing Co.
- Ballou, D. P and Tayi, G. K. (1999). Enhancing Data Quality in Data Warehouse Environments. *Communication of the ACM*,42, 1.
- Balust J and Macario A.(2009). *Can Anesthesia Information Management Systems Improve Quality in the Surgical Suite*. Wolters Kluwer Health, Lippincott Williams Wilkins
- Batini C, Cappiello C, Francalanci, C and Maurino, A. (2009). Methodologies for Data Quality Assessment and Improvement. *ACM Computing Surveys Volume 41 No.3 Article 16*
- Beynolds-Davies, P.(2002). *Information Systems. An introduction to Informatics in Organisations*. New York : Palgrave
- Caballero I, Caro A, Calero, C and Piattini, M(2008). Information Quality Management Maturity Model. *Journal of Universal Computer Science*, 14, (22).
- Calayoglu, I. (2012). Effects of Information technologies over decision making process about cost controlling at food and beverage department at 5 star hotels: 2nd World Conference on Information Technology: Awerprocedia Information Technology & Computer Science.
- Cappiello, C., Francalanci C, Pernici, B and Milano, P. (2005). Time-Related Factors of Data Quality in Multi-Channel Information Systems
- Chen, K., Chen, H., Conway N, Hellerstein J. M and Parikh T. S.(2010). USHER: Improving Data Quality with Dynamic Forms. Institute of Electrical and Electronics Engineers.

- Diamantopoulos, A and Schlegelmich, B. B (2004). Taking Fear Out of Data Analysis, from Communication of the London: Thomson Learning.
- Dhillon, G and Backhouse, J. (2000). Information System Security Management in the new millennium. Article ACM, 43, 7.
- de Vos, A. S., Strydom, H, Fouche C. B and Delport C. S. L.(2005). Research at Grass Roots: For the Social Science Professions. 3rd ed. Hatfield, Pretoria: Van Schaik
- Eppler, M and Helfert, M.(2004). A Classification and Analysis of Data Quality Costs. Proceedings of Ninth International Conference on Information Quality.
- Fisher, C. W (2001). A College Course: Data Quality in Information Systems. Proceedings of the Six International Conferences on Information Quality.
- Fisher, C. W and Kingma, B. R (2001). Critically of Data Quality as Exemplified in two disasters. Information and Management 39 109-116.
- Gordon SR and Gordon JR (2004). Information Systems. A Management Approach. 3rd ed. United States of America: Leyh Publishing.
- Gatt, A., Potter, A., Reiter, E., Hunter, J., Mahamood, S., Moncur, W and Stripada, S (2009). From data to text in the Neonatal Intensive Care Unit: Using NLG Technology for decision support and information management.
- Ge M and Helfert M (2012). A Review of Information Quality Research, Develop a research agenda.
- Hashim, F., Alam G. M and Siraj, S. (2010). Information and Communication Technology for Participatory based Decision-Making-E-Management for Administrative Efficiency in Higher Education. International Journal of Physical Sciences, 5, (4), pp. 383-392.
- Heywood, A and Rohde, J. (2006). Using Information for Action. Strengthening equitable access to quality services for all South Africans. Equity project: Pretoria.
- Jung, W. (2004). Review of Research: An Investigation of the Impact of Data Quality on Decision Performance, ACM International Conference Proceeding Series 90:166-177.
- Kovac, R and Weickert, C (2002). Starting with Quality: Using TDQM in a Start-Up Organisation. Proceedings of the Seventh International Conference on Information Quality.
- Kebede, G.(2010). Knowledge Management: An Information Science Perspective. International Journal of Information Management 30 416-424.

- Khalil, E. M., Strong, D. M., Kahn, B. K and Pipino, L. L. (1999:). Teaching Information Quality in Information System Undergraduate Education. *Informing Science* Vol.2, No.3
- Laudon, K. C and Laudon,J. P.(2011). *Essentials of Management Information Systems*. 9thEd. New Jersey: Pearson Education Inc.
- Lee, Y. W., Strong, D. M, Kahn, B.K and Wang, R.Y .(2002). A Methodology for Information Quality Assessment. *Information and Management*,40, pp. 133-146.
- Maletic, J. and Marcus, A.(2000). *Data Cleasing: Beyond Intergrity Analysis*.
- Maree, K. (2008). *First Steps in Research*. Pretoria, Van Schaik.
- McBride, N., Hall, R and Okwaro, I. (2013). Examining Managerial Decision Making Process in Information Technology Shared in Public Sector Entities from an Activity Theory Perspective. *International Journal of Information, Business and Management*, 5, 1.
- Obeidat, B. Y (2013). The Relationship between Innovation Diffusion and Human Resource Information System. *International Journal of Information, Business and Management*, 5, 1.
- Orr, K. (1998). Data Quality and Systems. *Communication of the ACM* Vol. 41, No.1.
- Parssian, A., Sarkar, S and Jacob, V. S (2002). Assessing Information Quality for the Composite Relational Operation Join. *Proceedings of the Seventh International Conference on Information Quality*
- Peng, Y. I., Zhang, Y., Tang, Y. U and Shiming, L. I. (2010). An Incident Information Management Framework Based on Data Intergration, Data Mining and Multi-Criteria decision making. *Elsevier Journal Decision Support Systems* 51 316-327 Science Direct
- Pereira, J. V. (2009). The New Supply Chain's Frontier: Information Management. *International Journal of Information Management* 29 372-379
- Pipino, L. L., Lee, Y. W and Wang, R. Y. (2002). Data Quality Assessment. *Communications of the ACM*, 45,4.
- Rainayee, R. A.(2013). Employee Turnover Intentions: Job Stress or Perceived Alternative External Opportunities. *International Journal of Information, Business and Management*, 5, 1.

Rashed CA, Bagum N, Khan S and Hasan M, 2011: A Model on Factory Information Systems: Review of General Management Volume 14, Issue no. 2

Redman TC, 2002: A Comprehensive Approach to Data Quality Governance. Data Quality Governance – White Paper- Final

Redman TC, 1998: The Impact of Poor Data Quality on the Typical Enterprise. Communication of the ACM Vol. 41, No. 2

Sharma A and Khanna S 2012: Role of Management Information System in Telecom Agency, International Journal of Computer Applications & Information Technology Vol.1, No.1

Smalltree H, Sparapani J, Statford J, Webb M, Matturro B, Koury L and Bolduc M, 2012: Ensuring Data Quality Throughout Your Oracle Environment. TechTarget SearchOracle Inc

Sorensen CG, Fountas S, Nash E, Pesonen L, Bochtis D, Pedersen SM, Basso B and Blackmore SB, 2010: Conceptual Model of a Future Farm Management Information System: Elsevier Journal Computers and Electronics in Agriculture 72 37-47 Science Direct

Strong DM, Lee YW and Wang RY, 1997: Data Quality in Context. Communication of the ACM Vol. 40, No.5

Tayi GK and Ballou DP, 1998: Examining Data Quality. Communication of the ACM Vol.41 No.2

Wand Y and Wang RY, 1996: Anchoring Data Quality Dimensions in Ontological Foundations. Communications of the ACM Vol.39, No.11

Wang RY, 1998: A Product Perspective on Total Data Quality Management. Communications of the ACM Vol.41, No.2

Wang RY, Storey VC and Firth CP, 1995: A Framework for Analysis of Data Quality Research. Transactions on Knowledge and Data Engineering Vol.7 No.4

Weber K, Otto B and Ostelle H, 2009: One Size Does Not Fit All: A Contingency Approach to Data Governance, ACM Journal of Data and Information Quality Volume1, No.1 Article 4

APPENDIX A: MATRIX

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Concept Matrix (CM)

How to Complete the Concept Matrix

1. To complete the *Personal Information* section click each blue block under *Column G* to fill in your personal information.
2. Extract your *Key Concepts* from the *Problem Statement* section of your *Research Proposal* (which should be between 5 and 8 pages in length)
2. Read only the abstracts and conclusions of references to determine their relevance.
3. Record sources e.g. (Jones et al., 2012) in leftmost column.
4. List key concepts, e.g. (Urban Food Deserts) at the top of each column.
5. Mark the occurrence of a concept in a source with the number 1.
6. The Concept Matrix will automatically tally up the total number of concepts per source, as well as the total number of references per concept.
7. After your supervisors have assessed your CM you can generate bar graphs to start you off on exploring trends emerging from your literature review.
8. The CM is set up in A4 "Normal" landscape layout for ease of use. Before printing it, set it to "Page Layout" (via View) so that it will print on A4 pages.

Personal Information

Student Initials and Surname:

NG Molema

Student Number:

####

University:

North West University

Abbreviated Topic:

ity of Information used for decision Making by Managers

References	Concepts																											
	Concepts per source	Information System	organisation	people	technology	Information Management	Data Management	Database Management	Information Quality	Accessible	timely	reliable	complete	correct	intergrity	consistent	valid	Managerial Decision Making	Quality	Impact of Good Info	Quality	Impact of Bad Info	Quality	challenges on Information	Quality	Organisation	Quality	Information Quality
References per concept	6	9	7	8	6	9	3	10	5	13	9	9	7	7	4	3	11	0	8	2	8	0	0	0	0	0	0	0
Sharma & Khanna, 2012	3	1				1												1										
Rashed et al., 2011	6	1	1	1	1	1												1										
Gatt et al., 2009	1						1																					
Calavoglu, 2012	3						1	1										1										
Pipino et al., 2002	10					1	1		1	1	1	1	1	1	1	1	1											
Ge & Helfert, 2012	7					1			1	1	1			1				1										
Weber et al., 2009	4		1		1		1											1										
Caballero et al., 2008	4							1	1												1							
Baum et al., 2009	9								1	1	1	1	1	1	1	1	1				1							
Eppler and Helfer, 2004	9							1		1	1	1	1	1	1	1	1				1	1	1					
Chen et al., 2010	1		1																									
Peng et al., 2010	4			1	1					1								1										
Balust and Macario, 2009	6	1		1	1													1			1							
Sorensen et al., 2010	4	1			1			1										1										
Hashim et al., 2010	3		1		1													1										
Ahmed et al., 2013	4	1	1							1		1																
Mebride et al., 2013	2		1																		1							
Al-Qurem et al., 2013	2			1														1										
Rainavee, 2013	2		1	1																								
Obeidat, 2013	3		1	1	1																							
Kebede, 2010	2					1	1																					
Pereira, 2009	2				1	1																						
Smalltree et al., 2012	6			1			1		1	1	1	1	1	1	1	1	1											
Lee et al., 2002	8								1	1	1	1	1	1	1	1	1											
Redman, 2002	1																											
Fisher and Kingma, 2001	6	1								1	1	1	1	1	1	1	1				1							
Maletic and Marcus, 2000	1							1																				
Ballou and Tavi, 1995	1							1																				
Khalil et al., 1999	2								1																			
Tavi and Ballou, 1998	5							1	1	1	1	1	1	1	1	1	1											
Redman, 1998	5									1	1	1	1	1	1	1	1											
Strong et al., 1997	5									1	1	1	1	1	1	1	1											
Wang and Wang, 1996	6								1	1	1	1	1	1	1	1	1											
Wang et al., 1995	2		1																									
Wang, 1998	1								1																			
Orr, 1998	3								1									1										
Fisher, 2001	1																											
Parssian et al., 2001	4							1						1	1	1	1											
Cappiello et al., 2005	7		1						1		1	1	1	1	1	1	1											
Kovac and Weickert, 2002	1																											

APPENDIX B: Questionnaire Development Matrix

Questionnaire Section	Types of Research Question	Question Nr.	Development Matrix				
			Survey Question/ Statements	Response Options	Data Type	Appropriate Data Measure	Appropriate Statistical Test
Section I Demographic Questions		1.1	Please tick your age group in the appropriate block:	21-30, 31-40, 41-50, 51-60, 60+	Discrete	Ordinal	Basic descriptive statistics, single group t test, the z proportions test the X ² test. (Use demographic data to characterise your respondents)
		1.2		Male - Female	Dichotomous	Nominal	
		1.3	What is your gender?	Director, Deputy Director, Assistant Director, Programme Coordinators	Dichotomous	Nominal	
		1.4	Please indicate your Position in the organisation	1-2, 3-4, 5-6, 7-8, 9-10, 10+		Ordinal	
		1.5	Please indicate your years of experience in your position?	Matric, B-degree, Masters, Doctorate, Diploma Postgraduate	Discrete	Nominal	
			Please mark your type of qualification		Dichotomous		

Section 2	Information System Management Questions	2.1	Where you trained on Information Management	Yes - No	Dichotomous	Nominal	
		2.2	Do you know the data flow policy	Yes - No	Dichotomous	Nominal	
		2.3	Do you have access to computer and printer	Yes - No	Dichotomous	Nominal	
		2.4	Do you have access to internet and email	Yes - No	Dichotomous	Nominal	
		2.5	Are there multiple sources of information within your organisation	Yes - No	Dichotomous	Nominal	

Section 3	Information Quality Questions	3.1	Information quality is identified as the extent to which users think that the information is useful, good, current and accurate. Given this definition, how would you rate the information quality of the used sources?	0-25%, 26-50%, 51-75%, 76-100%	Discrete	Ordinal	
		3.2	Do you trust this information	Yes - No	Dichotomous	Nominal	Any member of the X^2 family or correlation tests ...

		3.3	How consistent is the information from the used sources	0-25%, 26-50%, 51-75%, 76-100%	Discrete	Ordinal	Basic descriptive statistics, single group t test, the z proportions test the χ^2 test.
		3.4	Information is always available when needed	Strongly Agree - Agree - Disagree - Strongly Disagree	Continuum	Scalar (Likert Scale)	
		3.5	How would you rate the effectiveness of decisions based on information quality	0-25%, 26-50%, 51-75%, 76-100%	Discrete	Ordinal	
Section 4	Decision Making Questions	4.1	How frequently do you make decisions in your organisation?	Hardly make any decisions, at least once a week, two to three times in a week, five to 10 times a week, many times, it hard to count.	Dichotomous	Ordinal	Any member of the χ^2 Any member of the χ^2 family or correlation tests, e.g., Phi co-efficient, the contingency coefficient and Cramer's V, the lambda co-efficient or the uncertainty coefficient (U) or the Pearson significance test.
		4.2	What level/type of decisions do you normally make		Dichotomous	Ordinal	
		4.3	When you need to obtain information to make decisions, how many sources do you have to consult before you can make a decision		Discrete	Ordinal	
		4.4	What	Yes - No			(Continuous data reveal attributes of

		intervention/measures do you suggest should be put into place to improve information quality in your organisation	Less than 2, 3-4, 5-6, More than 7		whatever one studies, allow one to determine general trends and establish significant correlations = co-relation trends between two attributes)
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APPENDIX C: QUESTIONNAIRE

FOR OFFICE USE ONLY: Respondent Code: _____

VOLUNTARY QUESTIONNAIRE FOR
"An Empirical Investigation on Quality of Information used for Decision Making in the
Department of Social Development, Bojanala District"
Graduate School: NWU

Researcher: NG Molema
Supervisor: Prof S Lubbe

Note to the respondent

- We need your help to understand how managers use information to make sound decisions.
- Although we would like you to help us, you do not have to take part in this survey.
- If you do not want to take part, just hand in the blank questionnaire at the end of the survey session.
- What you say in this questionnaire will remain private and confidential. No one will be able to trace your opinions back to you as a person.

The questionnaire has five parts:

Part 1 asks permission to use your responses for academic research.

Part 2 asks general personal particulars like your age, gender and home language.

Part 3 to 5 asks about the information management, quality and decision making

How to complete the questionnaire

1. Please answer the questions as truthfully as you can. Also, please be sure to read and follow the directions for each part. If you do not follow the directions, it will make it harder for us to do our project.
2. We are only asking you about things that you and your fellow researchers should feel comfortable telling us about. If you don't feel comfortable answering a question, you can indicate that you do not want to answer it. For those questions that you do answer, your responses will be kept confidential.
3. You can mark each response by making a tick or a cross, or encircling each appropriate response with a PEN (not a pencil), or by filling in the required words or numbers.

Thank you very much for filling in this questionnaire.

Part 1: Permission to use my responses for academic research

I hereby give permission that my responses may be used for research purposes provided that my identity is not revealed in the published records of the research.

Initials and surname _____ Postal address: _____

Postal code: _____

Contact numbers: Home: _____ Cell: _____

No.	PART 2: GENERAL PERSONAL PARTICULARS Please tell us a little about yourself Please mark only ONE option per question below.		PART 4 Please mark only ONE option per question below	
1.	I am within this age group <input type="checkbox"/> 21-30 yrs. <input type="checkbox"/> 31-40 yrs. <input type="checkbox"/> 41-50 yrs. <input type="checkbox"/> 51-60yrs <input type="checkbox"/> Over 60 yrs.	11.	Information quality is identified as the extent to which users think that the information is useful, good, current and accurate. Given this definition, how would you rate the information quality of the used sources? <input type="checkbox"/> 0-25% <input type="checkbox"/> 26-50% <input type="checkbox"/> 51-75% <input type="checkbox"/> 76-100%	
2.	I am a: <input type="checkbox"/> Female <input type="checkbox"/> Male	12.	Do you trust this information? <input type="checkbox"/> Yes <input type="checkbox"/> No	
3.	Indicate your position in the organisation. <input type="checkbox"/> Director <input type="checkbox"/> Deputy Director <input type="checkbox"/> Assistant Director <input type="checkbox"/> Programme Coordinator	13.	How consistent is the information from the used sources? <input type="checkbox"/> 0-25% <input type="checkbox"/> 26-50% <input type="checkbox"/> 51-75% <input type="checkbox"/> 76-100%	
4.	Indicate your years of experience in your position. <input type="checkbox"/> 1-2 years <input type="checkbox"/> 3-4 years <input type="checkbox"/> 5-6 years <input type="checkbox"/> 7-8 years <input type="checkbox"/> 9-10 years <input type="checkbox"/> More than 10 years	14.	Information is always available when needed <input type="checkbox"/> Strongly Agree <input type="checkbox"/> Agree <input type="checkbox"/> Disagree <input type="checkbox"/> Strongly Disagree	
5.	Please mark your type of qualification <input type="checkbox"/> Matric <input type="checkbox"/> B-degree <input type="checkbox"/> Masters <input type="checkbox"/> Doctorate <input type="checkbox"/> Diploma	15.	How would you rate the effectiveness of decisions based on Information quality <input type="checkbox"/> 0-25% <input type="checkbox"/> 26-50% <input type="checkbox"/> 51-75% <input type="checkbox"/> 76-100%	
PART 3 Please mark only ONE option per question below		PART 5 Please mark only ONE option per question below		
6.	Where you trained on Information Management? <input type="checkbox"/> Yes <input type="checkbox"/> No	16.	How frequently do you make decisions in your organisation <input type="checkbox"/> Hardly make any decisions <input type="checkbox"/> At least once a week <input type="checkbox"/> Five to ten times in a week <input type="checkbox"/> Many times, it's hard to count	
7.	Do you know the data flow policy? <input type="checkbox"/> Yes <input type="checkbox"/> No	17.	What level/type of decision do you normally make <input type="checkbox"/> Strategic <input type="checkbox"/> Tactical <input type="checkbox"/> Operational <input type="checkbox"/> Mixed	
8.	Do you have access to computer and printer? <input type="checkbox"/> Yes <input type="checkbox"/> No	18.	When you need to make to obtain information to make decisions,	<input type="checkbox"/> less than 2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> More than 8

			how many sources do you have to consult before you can make a decision	
9.	Do you have access to internet and email? <input type="checkbox"/> Yes <input type="checkbox"/> No			
10.	Are there multiple sources of information within your organisation? <input type="checkbox"/> Yes <input type="checkbox"/> No			

APPENDIX D: CORRELATION

		Age	Gender	Status	Years	Qualification	Qu6
Age	Pearson Correlation	1	.108	-.051	-.069	-.049	.037
	Sig. (2-tailed)		.454	.724	.633	.733	.798
	N	50	50	50	50	50	50
Gender	Pearson Correlation	.108	1	-.012	-.148	-.091	.069
	Sig. (2-tailed)	.454		.937	.304	.531	.632
	N	50	50	50	50	50	50
Status	Pearson Correlation	-.051	-.012	1	.264	-.139	.099
	Sig. (2-tailed)	.724	.937		.064	.334	.493
	N	50	50	50	50	50	50
Years	Pearson Correlation	-.069	-.148	.264	1	-.074	-.373**
	Sig. (2-tailed)	.633	.304	.064		.611	.008
	N	50	50	50	50	50	50
Qualification	Pearson Correlation	-.049	-.091	-.139	-.074	1	-.321*
	Sig. (2-tailed)	.733	.531	.334	.611		.023
	N	50	50	50	50	50	50
Qu6	Pearson Correlation	.037	.069	.099	-.373**	-.321*	1
	Sig. (2-tailed)	.798	.632	.493	.008	.023	
	N	50	50	50	50	50	50
Qu7	Pearson Correlation	-.165	-.036	.072	.228	-.153	.022
	Sig. (2-tailed)	.252	.806	.618	.111	.290	.878
	N	50	50	50	50	50	50
Qu8	Pearson Correlation	-.017	.147	.136	-.287*	-.327*	.825**
	Sig. (2-tailed)	.908	.307	.347	.044	.020	.000
	N	50	50	50	50	50	50

Qu9	Pearson Correlation	.223	.202	-.084	.093	-.161	-.031
	Sig. (2-tailed)	.119	.160	.563	.519	.263	.833
	N	50	50	50	50	50	50
Qu10	Pearson Correlation	.002	.175	.157	-.272	-.285*	.757**
	Sig. (2-tailed)	.991	.225	.277	.056	.045	.000
	N	50	50	50	50	50	50
Qu11	Pearson Correlation	.104	-.143	.143	.269	.044	-.023
	Sig. (2-tailed)	.474	.322	.321	.059	.759	.872
	N	50	50	50	50	50	50
Qu12	Pearson Correlation	.143	.040	.046	-.078	-.399**	.037
	Sig. (2-tailed)	.322	.783	.753	.589	.004	.797
	N	50	50	50	50	50	50
Qu13	Pearson Correlation	-.030	.273	.032	-.249	-.191	.114
	Sig. (2-tailed)	.834	.055	.825	.081	.185	.431
	N	50	50	50	50	50	50

Correlations

		Qu7	Qu8	Qu9	Qu10	Qu11	Qu12
Age	Pearson Correlation	-.165	-.017	.223	.002	.104	.143
	Sig. (2-tailed)	.252	.908	.119	.991	.474	.322
	N	50	50	50	50	50	50
Gender	Pearson Correlation	-.036	.147	.202	.175	-.143	.040
	Sig. (2-tailed)	.806	.307	.160	.225	.322	.783
	N	50	50	50	50	50	50
Status	Pearson Correlation	.072	.136	-.084	.157	.143	.046
	Sig. (2-tailed)	.618	.347	.563	.277	.321	.753

	N	50	50	50	50	50	50
	Pearson Correlation	.228	-.287	.093	-.272	.269	-.078**
Years	Sig. (2-tailed)	.111	.044	.519	.056	.059	.589
	N	50	50	50	50	50	50
	Pearson Correlation	-.153	-.327	-.161	-.285	.044	-.399*
Qualification	Sig. (2-tailed)	.290	.020	.263	.045	.759	.004
	N	50	50	50	50	50	50
	Pearson Correlation	.022	.825	-.031	.757**	-.023*	.037
Qu6	Sig. (2-tailed)	.878	.000	.833	.000	.872	.797
	N	50	50	50	50	50	50
	Pearson Correlation	1	.096	-.043	.142	-.027	-.006
Qu7	Sig. (2-tailed)		.505	.767	.326	.851	.968
	N	50	50	50	50	50	50
	Pearson Correlation	.096	1	.054	.909*	.054*	.137**
Qu8	Sig. (2-tailed)	.505		.710	.000	.711	.343
	N	50	50	50	50	50	50
	Pearson Correlation	-.043	.054	1	.089	-.115	.154
Qu9	Sig. (2-tailed)	.767	.710		.537	.428	.286
	N	50	50	50	50	50	50
	Pearson Correlation	.142	.909	.089	1	.116*	.084**
Qu10	Sig. (2-tailed)	.326	.000	.537		.421	.562
	N	50	50	50	50	50	50
	Pearson Correlation	-.027	.054	-.115	.116	1	-.031
Qu11	Sig. (2-tailed)	.851	.711	.428	.421		.828
	N	50	50	50	50	50	50
Qu12	Pearson Correlation	-.006	.137	.154	.084	-.031**	1

	Sig. (2-tailed)	.968	.343	.286	.562	.828	
	N	50	50	50	50	50	50
	Pearson Correlation	.025	.174	.242	.191	-.227	.313
Qu13	Sig. (2-tailed)	.865	.228	.090	.184	.114	.027
	N	50	50	50	50	50	50