Determining the level of usage of information systems in selected small businesses

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ABSTRACT

When starting a new business, the owner has the vision to grow the business to a large corporate enterprise. In the small business stage, many challenges face the management of such businesses though. The influence of the external environment pushes the business from one side to the other. It is at this point where a true entrepreneur takes control and uses all necessary skills to succeed in generating the expected return on the invested money.

One of the skills in the management armour of the small business manager is the ability to use information as a management tool. To gain insight into the dynamics of information management, a detailed literature study was done on all the aspects relevant to the topic. Previous research studies were taken into account to form a broad understanding of the study field. To determine the use of management information in small businesses as a tool in decision-making activities, a qualitative research study was done.

The outcome of this study shows that there is a good understanding of the advantages of using management information as a decision-making tool, but that application does not happen to its full extent in practice. The management of data seems to be not very recent in small businesses.

The objectives of the study was to determine the use of information, as well as the possibility of creating a communal information bureau, to assist in the availability of relevant data in the information support process. Certain recommendations were made in terms of the direct results and conclusions raised by the empirical study. Future studies can be done to determine the feasibility of communal data warehouses and data bureaus.

Key words: Small business, Information management, Decision-making, Management Information System, Data, Information Bureau.

ACKNOWLEDGEMENTS

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CHAPTER 1

NATURE AND SCOPE OF THE STUDY

1.1 INTRODUCTION

Nothing is as worthless as an old newspaper, and on the other hand, timeous information is sometimes worth a pot of gold. Timely information is one of the crucial factors for success in business management. Therefore, the price of information is sometimes very high, and entrepreneurs are willing to pay enormous amounts for selected information.

According to Timmons and Spinelli (2009:45), it is very important that the entrepreneur analyses himself when beginning a new business. The ability to take up risk and make quick decisions is essentially part of their profile. The entrepreneur, as the decision-maker of the business, does it in a constant manner. When making a deal or signing a contract, he has to be very informed on the implications of the deal, as well as what the return will be. The availability of external information then puts him in a good state in foreseeing the variables and outcomes of factors outside his reach.

Information in large- and corporate businesses is more available and huge databases are available for use in decision-making. The small business owner and manager have to rely on networking and other sources to reap information for use in his business environment.

The combination of historical data, market information and entrepreneurial skills is a perfect mix for business success.

1.2 BACKGROUND TO THE STUDY

The flow of information has become a two-sided factor. Information has value when you have it available to yourself, but on the other side also involves a risk when information of your business

is in the hands of competitors. It is for this reason very important that the entrepreneur manages business information in such a way that he will always benefit from it.

Information management can furthermore be divided into internal and external categories. Collecting data from own activities enrich a database of reliable information. On the other hand is the collection of data from the industry, for example, the comparison of the cost of operations.

Market intelligence is an additional factor that cannot be ignored by new and upcoming businesses. According to Kahaner (1997:16), *competitive intelligence is a systematic program for gathering and analysing information about a competitor's activities and general business trends to further your own company's goals.* Kahaner also *states the company that knows how to turn information into intelligence will succeed, and the company who does not, will fail.* Business decisions are much un-riskier when good information is available.

There are many different Management Support Systems (MSS) available, and the applications will differ from business to business. Turban and Aronson (2001:1) describe MSS as *a collection of computerised technologies used to support managerial work and decision-making. The manager's three major roles are interpersonal, information and decision-making.*

The need and importance for good management information as support tool, for entrepreneurs as business managers, seems absolute and this study has the aim to determine the usage of such systems in small businesses.

1.3   PROBLEM STATEMENT

The Business News of 23 November 2010 placed an article *More companies closing down. According to Statistics SA the number of liquidations for the first 10 months of 2010 were 3323, almost 2% higher than the same period in 2009.* The reason why, may primarily be the economic downturn, but it might also be that business owners don't make use of business and management information to survive, or even under circumstances capitalise on the opportunities in this situation when others fall out.

Entrepreneurs in new businesses have to focus on the critical aspects of day-to-day business activities, and normally do not put enough time and effort in the preparation of decision-making activities. The only thing of importance is the flow of cash and this value is normally used as the only indicator of the success of the small business.

The result of a study done by Sharma, Bhagwat and Dangayach (2008:21) to determine the performance measurement of information systems, revealed that many small business owners do not consider the implications of long-term benefits of information management. These business owners or managers only focus on the short-term operations of the business and do not invest in proper management information systems. This puts the small and often young business in a risk situation.

Financial statements are for many entrepreneurs a matter of history and a burden to keep the "Taxman" happy. In an uncompetitive market, the risk is not that high, but when market share is relevant, the entrepreneur has to take calculated risks by means of informed decisions. For this, he needs a good management information system.

Swart (2002:24) states that general management needs to take place even if the entrepreneur is a one-person enterprise. The other areas of management are called functional management and include financial-, marketing-, production-, purchasing-, human resource-, and public relations management.

Information Management can be added to this list of functional management areas. The fact is that in the initial stages, the business normally cannot afford an internal management information function, within the budget of the business. The manager has to know what is going on in the market and has to position the business against competitors. A good management information system that fits the specific business, and the specific market within, is of absolute importance, even if only a small and agile version.

Although quick-fit MIS software packages are available in the retail market, the format and interface to other in house systems can be a problem. The specific industry of each business has some unique information needs and benchmarking figures are not always available.

In cases where managers have access to unstructured information, the volume of these data is of such a nature that it is merely impossible to make any sense out of it. A good information system gathers the data and converts it into workable information. The information technology team, internal or external has the ability to create a good and cost-effective MIS. Harizanova (2003:1) states that whether the information is concise, relevant, timely and complete will depend on the capabilities of the people involved in the processing and selection of it. This shows that the management and understanding of information is very important.

The problem is that managers sometimes do not know what they do not know. This study aims to determine to what extent small business owners and managers make use of management information systems in their role as decision-makers.

1.4   OBJECTIVES OT THE STUDY

1.4.1   Primary objectives

According to the Business dictionary (2011), decision-making is *a thought process of selecting a logical choice from the available options.* The aim of this study is to determine the level of usage of information (available options) in small business decision-making by owners and managers. It also will collect valuable information on the different types of information necessary to add value to business owners. This can lead to a data bureau service.

1.4.2   Secondary objectives

In order to achieve the primary objectives the following secondary objectives were formulated:
- to define management information;
- to obtain insight into the dynamics of management information systems;

- to test the existence of management information systems;
- to determine the level of information support;
- to gain insight into the information management skills;
- to obtain the extent of data management;
- to gain insight into decision-making practices;
- to validate the reliability of the questionnaire used to measure the level of use of management information; and
- to draw conclusions from the empirical study and offer recommendations in terms of the supply of information via bureaus for benchmarking purposes.

1.5   SCOPE OF THE STUDY

1.5.1   Field of the study

The field of study is information management with special reference to the relevant support systems in small businesses. The study also only focuses on managers and/or owners in the decision-making process.

1.5.2   Geographical demarcation

The research was conducted on a national level, although almost 60% of the respondents come from the Gauteng area. The field of business is diverse with a good distribution between professional and commercial types of businesses. Some of the businesses used in the research have a branch structure and represent more than one province.

1.6   RESEARCH METHODOLOGY

According to Welman, Kruger and Mitchell (2010:2), research methodology considers and explains the logic behind research studies. This study involves a literature study on the relevant topics associated with the subject, as well as an empirical study to gain insight to the matter.

1.6.1 Literature study

The literature study includes the review of several publications relating to the topic. This includes textbooks, journals and web-based publications.

In this study the different methods of information management and data types will be analysed. It will then be evaluated and used to compile a report on the usages of management information by the entrepreneur in small businesses. The criteria in compiling the questionnaire mainly focus on the level of usage, and availability of the specific type of information. The following topics form part of the literature study:

- Information systems;
- Success factors of information systems;
- Business reports;
- Data management;
- Importance of good decision-making; and
- The small business environment.

The benefits and advantages in the cases where management currently use such reports will also be analysed.

1.6.2 Empirical study

The empirical study was done by means of the following process:

1.6.2.1 Study population

The study was done primarily by means of a questionnaire sent to small business owners or managers. According to the definition, a small business does not employ more than 50 staff members. The normal practise is that the owner himself participates in the day to day activities,

and is the main decision-maker. In cases where the owner does not take part in the daily business decisions, the manager was involved in the study and completed the questionnaire.

1.6.2.2 Construction of questionnaire

The questionnaire was designed with the focus on four different areas. In section A, biographical information about the participant and the business were collected. Section B includes questions with frequency based questions, while section C includes value based questions. All the questions have answers values on a 5 point Likert scale. Section D concludes with an optional space for comments and opinions.

The questions were randomly placed and measured the use of information for decision-making by means of the following related subjects:

- Existence of a MIS
- Information support
- Management information skills
- MIS and decision-making
- Data management

1.6.2.3. Gathering of data

The data was gathered by distributing questionnaires via e-mail to individuals identified to take part in the study. A formal cover letter was included to explain the purpose and background of the study. Emphasis was placed on confidentiality. In total, 54 questionnaires were sent out, and 41 were returned. Four of these questionnaires were eliminated because they were not within the definition of a small business.

1.6.2.4 Statistical analysis

In order to determine the outcome of the research, the data analysis will be done in the form of descriptive statistics. The data comprises the information of the participant and a number of

questions regarding the topic, as well as an option for comments. The collected data was statistically analysed by using *Moonstats2*.

By analysing the result of the questionnaires, the attitude towards MIS as well as the role of management information in small business decision-making can be determined. An important part of the research is the possibility of rendering a MIS service in the small business community.

A complete report will form part of the document.

1.7   LIMITATIONS OF THE STUDY

The study focuses on the use of management information in the small business environment. In terms of this definition, no business with a staff compliment greater than 50 members were used in the study.

A second limitation was that only owners and managers were involved in the completion of the questionnaire. Other decision-makers were excluded for purposes of this study.

Although the researcher is quite familiar with business information with the emphasis on enriching financial data with market and industry figures, there might be a lack of knowledge, or poor understanding at the general small business owner, or manager, who complete the questionnaire.

There is no limitation on the geographical distribution of the participants.

1.8   LAYOUT OF THE STUDY

This paragraph describes the layout and structure of the research document in relation to figure 1.1.

Chapter 1 – Nature and scope of the study

It is an introduction to the study. As shown in figure 1.1, it gives the background and perspective why the study was done. The problem statement, as well as the objectives of the study within certain limitations, is described to give the reader some insight in the subject.

Figure 1.1: Structure of the study

RESEARCH PROBLEM

OBJECTIVES OFTHE STUDY

LITERATURE REVIEW OF
MANAGEMENT
INFORMATION

QUESTIONAIRE

(USAGE OF MIS)   (NEED FOR MIS)

CONCLUSION&
RECOMMENDATION
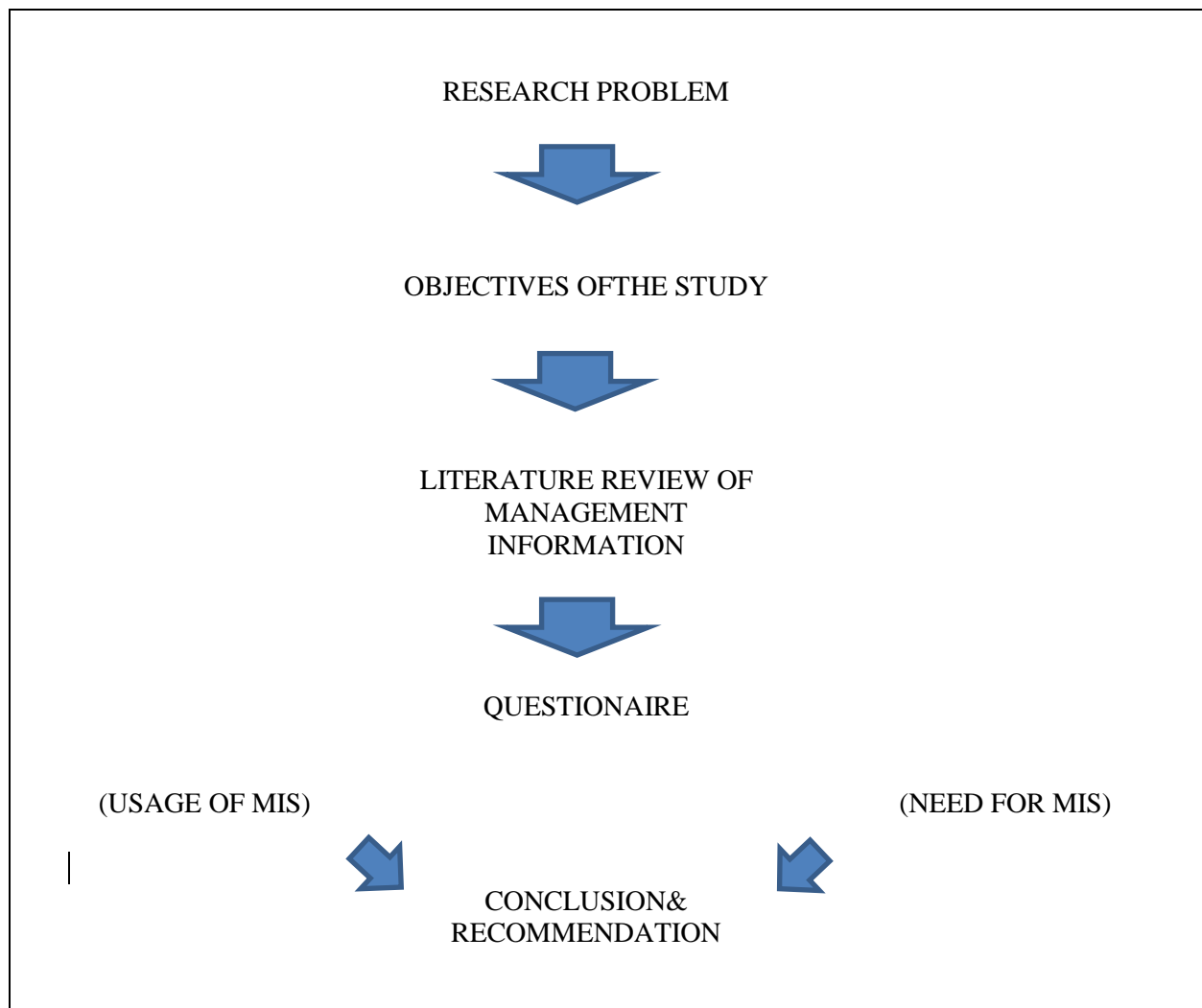
As prerequisite for analysing and conclusion of the research, a detailed literature study was done. This includes defining the relevant terms and methods used in the field of management information and decision-making. The chapter also concerns itself with the defining and development of a management information models. Data management and reports for the use of decision-making in small businesses was included in the overview.

Chapter 3 –Results and discussion

In this chapter the questionnaire material will be discussed and the meaning of the different questions compiled. Chapter 3 also involves the empirical study and analysing of the collected data by means of a pre-defined statistic model.

Chapter 4 – Conclusion and recommendation

The final chapter draws a conclusion on the role of management information in small business decision-making. A recommendation on the supply of management information for benchmark purposes via information bureaus will also be done. An evaluation of the achievement of the research objectives will conclude this chapter.

CHAPTER 2

LITERATURE REVIEW ON INFORMATION MANAGEMENT

2.1   INTRODUCTION

Management information serves as the foundation in decision-making. It is, therefore, important that the quality of the information as output from the information system is of such a nature that it is useful and reliable. Management information only becomes useable when relevant information specific to the business is put into a system, and transformed to an output that can be used as a figure of measurement. Normally, financial data and operational data are used as separate inputs into the system and the combined output will be useful as a result when business decisions are made.

In businesses where modern computerised operational systems are used, a standard output thereof is the captured data. This data is of great value and can be an input in the management information system. These operational systems usually take a lot of the decision responsibility by means of default settings. The decision function still lies in the default setting though, and has to be updated by the human act, with intellect gained from some kind of information system.

The aim of the study is to determine the use of such information systems in the broader sense and therefore the literature study on management information systems, as well as decision-making systems will be done. In this chapter, the reader will be informed of all the relevant concepts.

2.2   DEFINITIONS

2.2.1   Management Information System (MIS)

O'Brien (2004:21) defined a management information system as a business application, which provides managerial end users with predefined management reports that would give managers the information they need for decision-making purposes. Raw data flows into the system where it

is transformed into a result determined by the end users. There are three core components to the MIS, namely data, the IT system and user interference. The level and manner of manipulation of the data into a meaningful output will result in a successful system.

The interface between the different operational systems and the MIS is most important. In addition, the external data, which are gathered by means of research and data mining, has also to be transformed into a useable form and the combination thereof as an output becomes of value to the user.

2.2.2   Management Support System (MSS)

According to Turban and Aronson (2001:1), management support systems are collections of computerised technologies used to support managerial work and decision-making. The output of these systems is also a type of report in the MIS environment.

Technology makes management reports very accessible. With mobile devices and smart phones, managers can get access to their business information server from any place on the globe.

2.2.3   Information

Shelly, Cashman and Rosenblatt (2000:1.3) define information as data that has been processed into a useful output. An example of such an output is a report with client sales figures. The old cliché is still true in information management, GIGO = garbage in − garbage out. The quality of the information is a result of the data input.

Information as a useful output means a report typically produced on paper or electronic screenshot. Jessup and Valacich (2006:87) explain how report generators retrieve data from the database, and manipulate and display it in a useful format.

2.2.4 Competitive intelligence

According to Kahaner (1997:16), competitive intelligence is a systematic program for gathering and analysing information about your competitor's activities and general business trends to further your own company's goals. A real effort goes into the activity when more classified information is needed in certain cases where strategic decisions have to be made. The level of competitive intelligence must always be set off against the company's policy of integrity.

The focus of competitive intelligence must not only be on the direct competitors, but also on the needs and behaviour of the clients. Kotler and Armstrong (2010:127) define marketing intelligence as the systematic collection and analysis of publicly available information about consumers, competitors and developments in the marketplace.

Competitive intelligence leads to a situation where the business has an edge on the rest of the competitors in the specific industry. This intelligence has to be transformed into usable information via the MIS. Marchand, Kettinger and Rollins (2004:217) list the following information characteristics as essential to be competitive:

- *senses competitive information to shape its business strategies;*
- *leverages information to ensure partner loyalty;*
- *maintains control of its suppliers through extensive information exchange;*
- *exploits information received from customers and partners to win new markets; and*
- *eliminates information 'middle men' who do not add value.*

Good competitive intelligence involves a balance between knowing all you have to know, but not to offend other role-players related to the business.

2.2.5 Management

Turban and Aronson (2001:5) quoted Mintzberg saying that *management can be classified into three major categories: interpersonal, informational and decisional.* This shows that information

and decision-making are the essence of good management. The management level determines the level of information needed. Some managers rely more on underlying information, while others will trust their gut formed by previous experience based on informal information sets.

In their book, *Ten secrets of successful leaders*, Brooks and Brooks (2005:23) mentioned that *the use of data as information source is not enough to be a successful as leader.* The supplementation thereof with good interpersonal skills and knowledge of the environment is necessary. This is a strong indication that managerial skills are an underlying prerequisite for good decision-making. It is thus important that the manager in context of the subject has all the necessary skills and knowledge to understand the theory of information management and is able to interpret the outcomes of management reports.

2.2.6   Decision-making

In their study, Marshall and De La Harpe (2009:11) conclude that *a decision-making process is an integral part of key business activities including those, which determine future strategies and goals*. Managers are responsible for directing the business through a changing marketplace. Decisions normally are forced onto the business by changes in the external environment. Inmon, Imhoff and Sousa (2001:5) are of the opinion that businesses need capabilities to support business intelligence and management functions like decision-making. Nieboer (2011:25) also states that the MIS should be able to support managers in this decision-making process by providing reliable reports.

2.2.7   Data

Data is a stream of raw facts representing events occurring in organisations or the physical environment before they have been organised and arranged into a form that people can understand and use (Laudon & Laudon, 2002:8). Data normally comes from any source in the internal and external environment. The quality of raw data is very important, as bad data will have an effect on the reliability of the information used in decision-making. Data imports into the database have to be done under very strict controlled processes.

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The term metadata is described by Inmon *et al.* (2001: 169) as data about data, and everything needed to promote its administration and use. Inmon *et al.* (2001:195) also defined the data mart as *customized data that is derived from the data warehouse and tailored to support the specific analytical requirements of a given business unit*.

2.2.8   Small business

The South African National Small Business Act no. 102 of 1996 (SA, 1996), and National Small Business Amendment Act no. 29 of 2004 (SA, 2004:2) define a small business as a separate and distinct business entity, including co-operative enterprises and non-governmental organisations, managed by one or more owners, does have fewer than 50 employees and an annual turnover less than R25million.

Fink (1998:244) mentioned that there are a number of characteristics that have an effect on IT in smaller businesses. These characteristics are environmental, organizational, decisional and psycho-sociological. The attitude of the manager of small businesses towards these factors will have a direct influence on the level of MIS usage in the business. In his study, Fink (1998:252) concludes that internal factors have a larger impact on the adoption of information technology than external factors.

Small and medium size businesses differ from large and corporate businesses in a number of ways. Bhagwat and Sharma (2007:284) list a few smaller business key characteristics:
- personalised management;
- severe resource limitations;
- informal and dynamic strategies;
- flat and flexible structures;
- high innovatory potential;
- small customer base;
- reactive and fire fighting mentality; and
- limited financial investment capacity.

All of these characteristics relates to the ability of the business to react in due time. The necessary information to prompt this reaction will be a crucial factor.

2.2.9   Industry

InvestorWords (2011) describes an industry as *a basic category of business activity. If a company participates in multiple business activities, it is usually considered to be in the industry where the most of its revenues are derived.* The type of products or services rendered will be the indicator hereof. When benchmarking take place, it is very important that the relevant industrial information is being used. Every industry has its own driving forces and as such set the indicators for management information purposes.

De Silva (2010) explains the logics of business environments in terms of information needs. The type of business will have an impact on the total information management need in the business. In manufacturing environments, the cost of goods will have a much different value as for instance in a service business. The extent of fixed versus variable expenses will also require a different mind set by the relevant manager. In financial businesses, the external information will be of absolute importance, while a medical institution will concentrate on information about new developments in medical science.

The term industry can very much relate to the business environment wherein the business operates. Geminigeek defines the business environment as *a set of conditions that are uncontrollable in nature and affects the functioning of the organisation.* De Silva (2010) divides the business environment into a macro- and operating- environment. The information need in terms of these different areas, which have an impact on the business, will be discussed with reference to figure 2.1.

The macro environment

The small business is very vulnerable for changes in the macro environment. Economic and political factors, for instance, can have a huge impact on the business. Small businesses are

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sometimes the victims of changes in legislation, as the impact cannot be absorbed. As the small business is much more to the end of the economic chain, social implications manipulate the flow of the business. It is very important though that the management of these small businesses have as much as possible information to their use. The insight into these macro environmental changes and implications can sometimes be invaluable.

Figure 2.1: Business environment
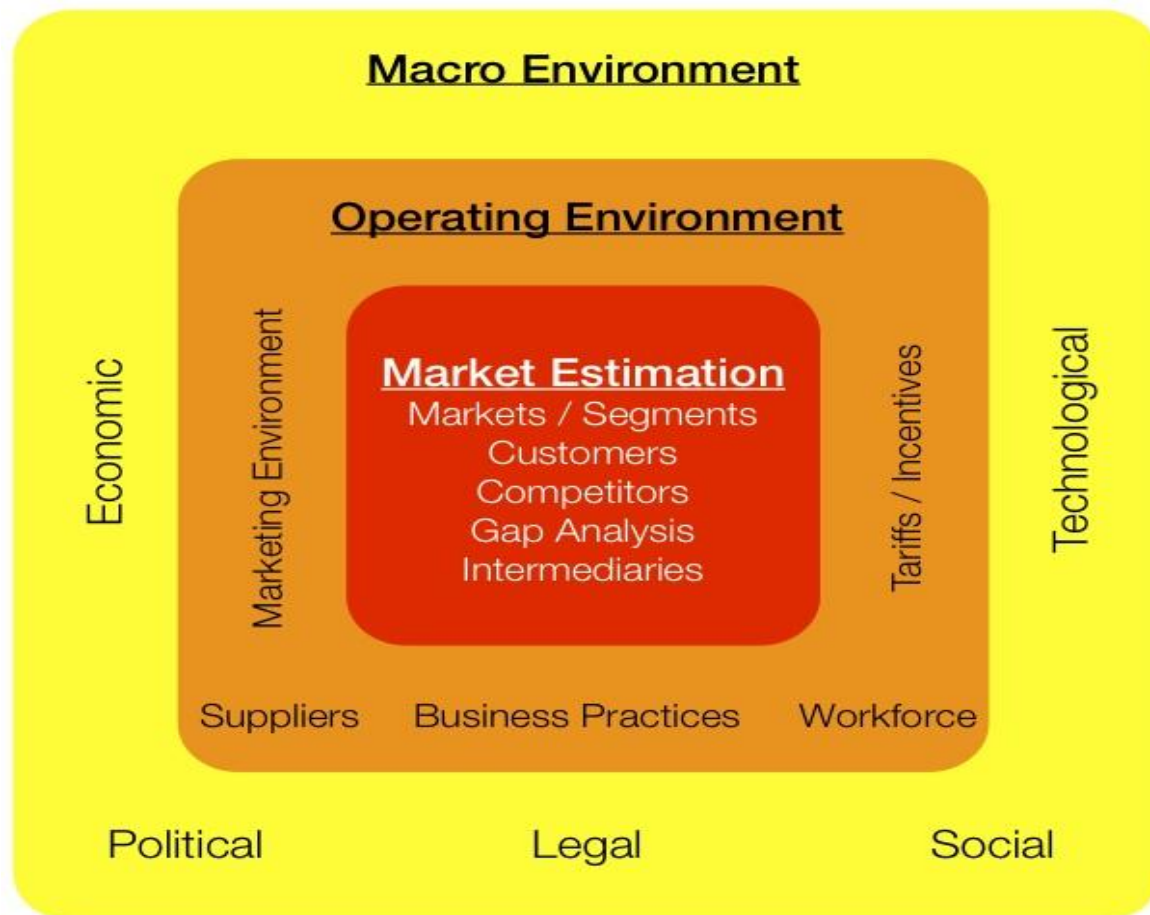
Source: De Silva (2010)

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The operating environment

Also referred to as the task environment, the operating environment involves the immediate surroundings of the business. Although more controllable, this environment still includes external components like suppliers and customers of the business. The internal MIS can keep the business decision-makers updated with all the changes in this area by means of good industrial intelligence. The pure internal environment create data source which is the core of the database used by the MIS.

2.3   DYNAMICS OF INFORMATION MANAGEMENT

2.3.1   Management information systems

Jessup and Valacich (2006:213) define a management information system (MIS) as *a system used to produce scheduled and ad hoc reports to support the ongoing, recurring decision-making activities associated with managing an entire business.* An MIS can be seen as the backbone in the decision-making function. Managers and owners of small businesses have to base their decisions on certain beliefs and knowledge of the business they are in. These types of business decisions can, and must sometimes be made with very short notice. Therefore, the entrepreneurial skills must be present.

Information systems come alive when day-to-day operational as well as bigger and more important long-term strategic decisions have to be made. Normally the reporting is set up to point out if there is a deviation to set performance indicators. In terms of these criteria, a default rule must be in place and business activities will go on in the current way. Figure 2.2 puts the dynamics of an MIS in context. It shows the normal flow of data as input, the processing thereof, and the output of information. This figure perfectly illustrates all the different business activities that form part of the information need for decision-making. Feedback forms the outer layer of the system by means of a defined report facility.

Harizanova (2003:1) stated that the term "management information system" is synonymous with computer-based systems and involves the study of providing information to people who make choices about the disposition of valuable resources in a timely, accurate and complete manner.

Management information systems (MIS) can be in the form of large and expensive integrated computerised systems like a MRP or ERP program, or it can be a self-developed Excel program and operated by a single person collecting the data from various points in the business.

Figure 2.2: Dynamics of a MIS
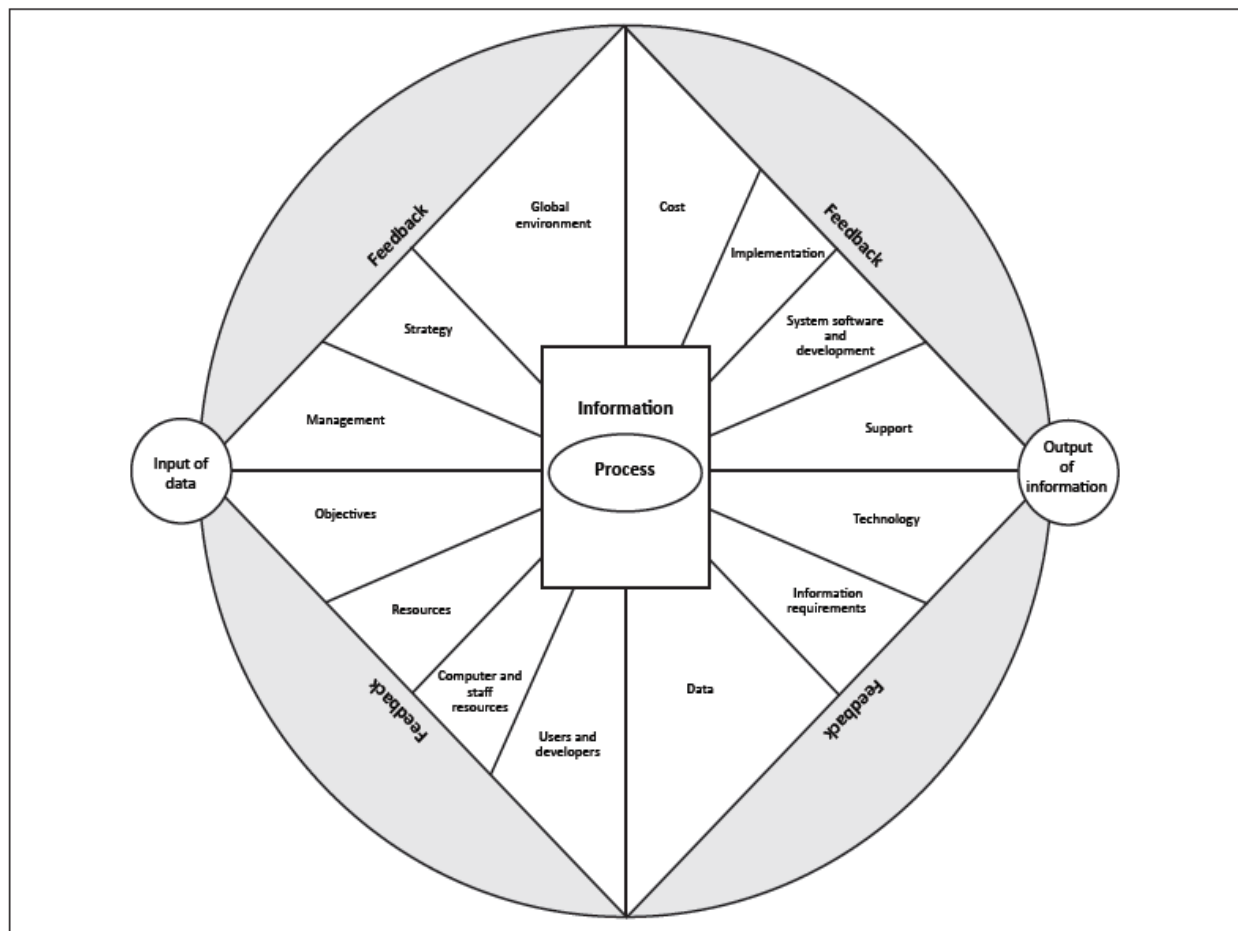
Source: Boddy, Boonstra and Kennedy (2005)

The MIS leads to the next system, called the decision support system (DSS) and as previously mentioned; it is a system, which supports the manager in such a way that he can choose the best option in a specific situation. Information gained from the MIS is used to compare situations

with each other and eliminate uncertainties. Turban and Aronson (2001:9) stated the following as reasons for the use of a decision support system:

- speedy computations;
- increase productivity;
- technical support;
- quality support;
- competitive edge; and
- overcoming cognitive limits in processing and storage.

Halal (2000:137) speaks about a concept where large organisations are breaking down to smaller units to improve on flexibility and focus. This leaves the consolidation en cohesion to the management information system. *Intelligent information systems then integrate all operations into a working whole*. The same argument can be raised for integration of management operations in small business. It is important though that the organisation profile and structure match the information layout.

2.3.2 Executive information system

Another form of information system is the Executive Information System (EIS) and is used on top management level in the form of an information dashboard. Managers can proactively monitor performance and business trends. The dashboard shows a lot of graphical information with a drill down facility if needed. According to Baltzan, Phillips and Haag (2009:122), it differs from a decision support system (DSS) in the sense that EIS contains also data from external sources and has capabilities such as consolidation, drill down and slice-and-dice.

Bentley (1998:74) defines an Executive information system as *a system that provides exactly the information needed by particular executives to support them with their decision-making* with as near as perfect information as possible. It is also commonly considered as a specialised form of a DSS. Figure 2.3 shows the hierarchy of the business and the applicable information system. From this figure, it is clear that in a corporate environment many sub systems can be employed.

Figure 2.3: Executive information system

Source: Octium (2011)

Chauke (2006:53) defines a decision support system as *a specific class of computerised information systems that support business and organisational decision-making activities.* This system assists users on different levels of the organisation in their decision-making task. Table 2.1 illustrates the concept of a decision support system. The first column indicates the DSS component. The other three columns gives examples of secondary attributes namely, users, purpose and technology type.

Table 2.1: Decision support systems

Dominant DSS component	Target users	Purpose	Deployment technology
Communications *Communications driven DSS*	Internal teams now expanding to external partners	Conduct a meeting or help users collaborate	Web or client/server
Data based *Data driven DSS*	Managers, staff, expanding to suppliers	Query a data warehouse, monitor performance indicators	Mainframe, Client/server web
Document based *Document driven DSS*	Specialists and user groups are expanding	Search web pages or find documents	Web or client/server
Knowledge based *Knowledge driven DSS*	Internal users expanding to customers	Management advice or help structure decision processes	Client/server web
Models *Models driven DSS*	Managers and staff expanding to customers	Crew scheduling, financial planning or decision analysis	Stand alone PC, client/server web

Source: Chauke (2006:53)

Information used in the EIS has to be categorised to fit the profile of the decision-maker, in terms of level in the company. Campbell (1996:41) puts the emphasis on the look and feel of the reports. Lots of graphics and integrated text are utilized to present the information to even someone with very little computer-related skills. He lists the following characteristics of a good EIS:

- meet the information need of individual executive users;
- provide tracking facilities of key performance indicators;
- can be tailored to the individual style;
- contain extensive graphics;
- provide information for decisions made under pressure;
- automatically highlights deviations;
- accommodates the style of the business;
- provide for status access of KPIs;
- provide quick access to second level information;
- provide filter options;
- support open ended solutions; and
- linked to external database.

In the small business environment though, the system will probably be combined into one information system with a supporting database.

2.3.3 Marketing information system

As business is all about the marketplace, the entrepreneur has to be very well informed of the issues in this arena. To make the correct decisions in connection with marketing activities, the quality of marketing information is crucial.

Kotler and Armstrong (2010:123) mentioned that business is about customers and relationships. Marketers, or entrepreneurs in small businesses, must build meaningful relationships by gaining fresh, deep insights into what customers need and want. Such insight comes from good

marketing information. This information almost forms the first data feed input in the management information system (MIS).

To assist managers in marketing decision-making a Marketing Information System is used. A marketing information system is defined by Kotler and Armstrong (2010:125) as *a system consisting of people and procedures for assessing informational needs, developing the needed information, and helping decision-makers to use the information to generate and validate actionable customer and market insights.* Data are gathered by means of a wide variety of sources such as internal data, market intelligence, and market research projects. The role of this system is to ensure that data is relevant and of good quality. It can be seen as a sub-system to the MIS.

It is also emphasised by Kotler and Armstrong (2010:147) that managers of small businesses do understand the importance of marketing information and research. Although on a smaller scale, the core objective and principles are exactly the same.

2.4 SUCCESS FACTORS OF INFORMATION SYSTEMS

When using a MIS, managers should be very well aware of the following factors having an influence on the value of the output. When the output is not good, decisions made on the information will be ineffective.

2.4.1 Relevance of data

It is important to use data that is relevant to the business. The information collected from the external environment should be from activities in the same industry. When creating benchmarks to use in performance measuring, a well-balanced set of applicable data will be necessary.

Internal data must also be sorted and filtered into a form where the combination with other data, will make sense and be useful. Faul (2003:2) states that any accounting program can be seen as a specialised information system. The term "relevant information" is used in the context and refers

to the management accounting data that is used for decision-making purposes. Faul says that in the modern, international orientated economy and business activities, managers require a high level of relevant accounting information to make informed decisions.

Accounting data can be divided into financial- and management accounting information. Stolowy and Touron (1998:2) explain financial accounting as mainly for use in external reports, while management accounting are used in internal reporting, such as management packs.

2.4.2 Timeliness

Data is a collection of raw facts and form a set over time. The value of the data is in the application thereof into the information stage. Data on long periods of activities can be very useful to create trend reports. It also can be out-dated and misleading if used incorrectly.

The value of information though, lies in the ability of the system to produce timeous reports. Sub-systems must therefore generate "real time" data and make it available for use in the MIS. System integration helps to merge information generated in several different sources. Blackwell, Shehab and Kay (2006:3550) did a study on decision-support frameworks and found that organisations should consider integrating all of their systems or rather none of them. Information is only valuable if it is complete. The MIS combine information and supply it in a timeous manner.

2.4.3 Quality

Data can easily be incorrect or unusable. When it comes to information quality, Bentley (1998:133) states that management is clearly responsible for the integrity and control thereof. When creating a dataset, the developing standards in terms of the criteria and parameters must be very clear. The format and specification of the data has to be controlled when entering the database. "Garbage in – Garbage out". If data is not set up correctly, the information will probably be useless.

Data management programs are available to manage large databases, but in the case of smaller businesses, a good quality control of the data will do. Quality involves the format, trustworthiness of the source of the data, applicability and validity of the data.

2.4.4 System security

Information is one of the most valuable assets of the business. Management must take good care of it. To use data/information to its full capacity, the system must be secure and always ready. The control of access to the data has to receive a high priority and involvement from management.

Another aspect is the security in terms of hacking by competitors and possible misuse thereof. In an article on information security management, Analytix (2011:02) points out that an effective information security system (ISMS) will ensure that the MIS is secured in terms of access to data, identification of weaknesses and also responsibility by stakeholders.

2.4.5 Management involvement

The manager of the small business has to be involved in the information management process. This involvement is not only to give inputs to the needs of the system, but also in terms of participation as an example. Thong (1999:208) finds, in his study on information systems adoption, that in cases where the small business is managed by a CEO that understands information systems, and promotes and invests in it, the organisation benefits from improved efficiency and effectiveness.

2.5 INFORMATION SUPPORT

Information support realise by means of certain outputs from the information system. The system also integrates with other computerised applications and forms part of the inbound network. Bentley (1998:77) states that there can be a formal and informal information system. Formal systems stem from the network mainframe, and generate formal reports as per universal need.

Informal systems normally live on individual computers and are used by individuals in an unsynchronised way. Report layouts are defined by the single user and are uncertified.

Bhagwat and Sharma (2008:293) are of the opinion that the existence of an information system will give the business a certain advantage and lead to a potential continuous growth in a highly competitive environment. Small businesses with the ability to respond quickly and autonomously, can expect the following advantages of an integrated information system:

- **strategic decision thinking** – the system will guide the decision process;
- **marketing accessibility** – available information of the market players and customers make access very easy;
- **autonomous operation** – the regulation of information can be done very effectively in terms of the use on different levels and for different purposes;
- **communication** – across functional communication is enhanced. Internal as well as external communication can be controlled and selectively used;
- **technical problems and R&D** – good information systems are supported by well positioned technical experts. Internal prompt systems lead to early problem solving;
- **flexible operations capability** – an agile approach to business will be complimented by an appropriated information system;
- **improved cooperative coordination** – the ability to cooperate with other ventures can easily be done by means of the sharing of information; and
- **improved customer service –** valuable information about customers can be collected in the system and by analysing this information, a perfect service can be rendered.

Information support in this context also means the reporting facilities generated by the MIS. The user of these reports defines the content thereof. Depending on the profile of the person, information that's support managers in their daily management activities differs from one another. These reports contain normal business information, but Marchand, Kettinger and Rollins (2001:75) describe the life cycle of information management. This implies a cycle consisting of collecting, organising, processing and maintaining of information. The manager then senses (scans) for new information needs in the external environment, and insert it to the cycle. The

report type will be determined by the position of the user. The following are basic reports used in small businesses.

2.5.1 Management reports

The most important thing, according to Stair, Reynolds and Chesney (2008:276) in setting up a management report is to determine the user's need. The specific division of management is the most important, and secondly the level of the person who is going to use the report. Senior managers will need a more brief report while managers lower in the business want to see more detail and operation information. The third important aspect will be the skill and personal preferences of the person. Report systems are just a tool and therefore will be used by managers in different ways.

Stair *et al.* (2008:273) speak about reports as outputs of the MIS. They classify different types of reports namely:

- scheduled reports;
- demand reports;
- exception reports; and
- drill down reports.

Sometimes managers use management information as a performance measurement tool and will then include some of the lower level's information as set Key Performance Indicators.

Management information contains various elements of data from a number of diverse sources. Only when the data from these aspects and parts of the business are combined into a logic output will there be true value. Management accounting for instance is a much more lenient reporting scenario as the financial accounting domain.

Reports are supposed to be the focus point in executive meetings and this practise should be in place in the small business environment. The integration with other systems and applications like SharePoint and virtual databases give the advantage of publishing performance results in an

internal public domain. For the manager involved, the negative result as shown against certain benchmarks and KPI's should activate the next step in the decision process. Baltzan (2009:37) defines benchmarking as a process of continuously measuring system results, comparing those results to optimal system performance and identifying steps and procedures to improve system performance.

2.5.2   Financial Reports

For the financial manager the MIS report will consist of financial information for analysing purposes. In small businesses the manager act in this position and with help of an external financial consultant set up a decent financial report structure. Megginson, Smart and Graham (2010:39) define ratio analysis as *calculating and interpreting financial ratios to assess a firm's performance and status.* At the basis of financial analysis lies the financial accounting system. When analysing financial figures, the understanding must be that all financial and bookkeeping transactions have to be captured and reconciled. In the interim, management accounting figures can be used.

It is very important that the manager and owner of any small business knows what the net value of its investment is. Sometimes, small businesses become a selling proposition, and on short notice the current value must be available. In terms of the latest and previous performance of the business, the future value can be calculated by using financial equations as explained by Megginson *et al.* (2010:67).

Financial reports normally include a couple of standard financial ratios. Each ratio calculates a different value to show performance in specific areas of business. These values get alive when comparing actual figure with budgets and previous results. Brigham and Daves (2004:229) describe the following financial ratios as important:
- Current ratio – shows the ability to meet short-term obligations;
- Acid Test – shows how liquid the assets is;
- Inventory turnover ratio – measure the time to sell inventory;
- Debtors / creditors payment ratio – shows the collection time of money;

- Gross Profit – Profit from operations;

- Net Profit – Profit after expenses;

- ROA – Return on assets; and

- ROE – Return on Equity.

Budgeting is perhaps even more important in small organisations than they are in large companies. Smaller firms must keep a constant eye on their cash flows. This is the statement of Garrison and Noreen (2003:373), and confirms that small businesses have to be on top of their information supply. Budgets are the core of the direction and tempo in which the business is moving.

The actual financial performance is seldom in line with the company budget, but budgeting is like putting a flag at the end of the line. Deviations from the budget will occur, but the small business manager has to know what the reason therefore is. When the correct financial information is available, correctional decisions can be made.

When analysing the financial figures, the manager can do recalculations to predict year-end performance. With constant knowledge of the financial position, profit planning can be done, to maximise the wealth position of the business.

2.5.3 Organisation feedbacks

Another important part of management information management is the sharing of relevant information throughout the business. Managers have the task to communicate information very selectively to staff members and role-players. Big decisions almost have a substantial influence on the personnel and relatives in the business. In the small business environment most of the staff members perform more than one task and the change in business can have an effect on the composure of job contents. The change in priorities alone can sometimes be something managers must handle with great care. Feedback and information is vital for commitment success.

According to Cummings and Worley (2009:139), several characteristics should be present in feedback information, namely:

- relevance;
- understandable;
- descriptive;
- verifiable;
- timely;
- limited;
- significant;
- comparative; and
- unfinalised.

It is very interesting that the argument is that feedback has to be unfinalised. The door must be left open for further discussion and personnel should be encouraged to use the selected information for more in-depth discussion. Good management skills and judgment is needed to ensure the goal of decision for change will still be achieved throughout the process.

Data needed for internal communication such as decision feedbacks, comes almost from inside the business. An appropriate database should be compiled with data from relevant information. According to Cummings and Worley (2009:121), it can also be collected by means of questionnaires, interviews, observations and unobtrusive measures. Managers must know what to communicate and to what extent. Figure 2.2 illustrates the process of the continuous information channel.

Figure 2.4: Data-Collection and Feedback Cycle
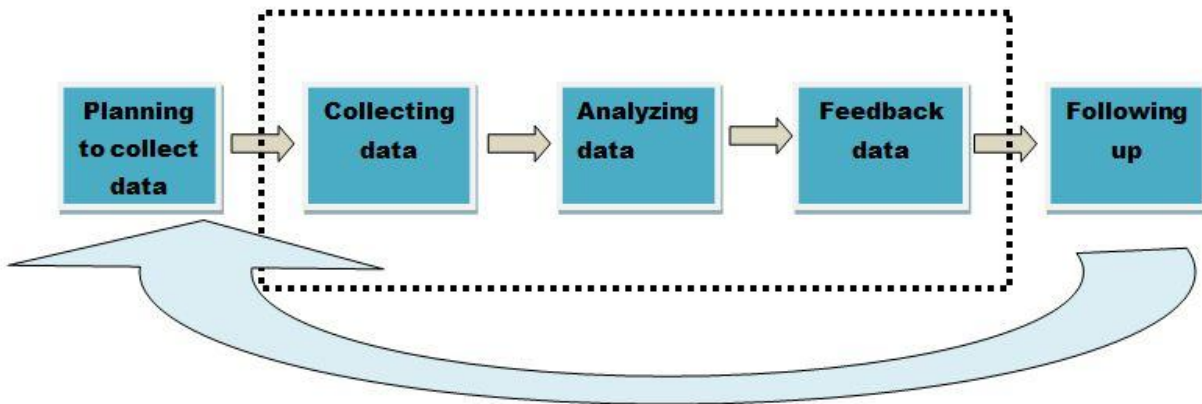
Source: Cummings and Worley (2010:122)

This first step in this data-collecting process is to plan what data is needed. Only relevant data must be included and the identification thereof is critical for the success of the output. The next three steps consist of the collection, analysing and feedback of the collected data. The valuation of the data will be important when the follow-up step occurs. Data do not have a long lifespan, and this cycle has a continuous nature.

2.6   DATA MANAGEMENT

Data is a collection of raw information. Collecting data over periods of time has becomes very useful in terms of the conversion into any sort of report. Stair *et al.* (2008:414) demonstrate the flow of data in the data management process. Data is stored in databases and can consist of any valuable figures inside and outside the business.

Internal data is generated from normal business activities and is easy to gather. This data comes from programs and applications used in the normal operations on a daily basis. Internal programs can be interfaced with each other and the duplication of manual transactions is minimized. Examples of this are data from the bookkeeping-, human resource-, or operational systems. When data is collected, the data manager makes sure that it is in a format useable for importing in the database. These quality aspects form part of the data integrity needed when entering the

database. Bentley (1998:69) argues that data is managed by means of an information systems infrastructure to ensure that:

- it meets the current needs of the business;
- it is secure and reliable; and
- it adapts to changing requirements.

External data is more difficult to gather and to maintain. Only relevant data should be imported into the database, and the data manager must know exactly what the need of users thereof is. External data can then be used to set up benchmarks and comparisons against internal performance. A further dimension on data is the collection thereof from the industry, purely to be informed on the business world outside. Jarke *et al.* (2003:62) refer to the concept of data cleaning. This becomes relevant when data from heterogeneous data sources are put together. The internet is a main source of information, gathering from various sources.

Baltzan, Phillips and Haag (2009:94) describe a typical data warehouse content as follows:

- Internal database
    - o Marketing
    - o Sales
    - o Inventory
    - o Billing
- External database
    - o Competitors
    - o Industry
    - o Mailing lists
    - o Stock markets

In the internal database, the bookkeeping and personnel data can also be added.

According to Jessup and Valacich (2006:83), a database management system (DBMS) is being use to interact with data in the database. This DBMS compiles and retrieves information from these databases, transforms the information using a common set of enterprise definitions, and

loads it into a data warehouse. The data warehouse then sends subsets of information to data marts that contains specific data. Figure 2.5 illustrates the working of a data warehouse model.

Data is being sourced from groups of internal- and external databases. As shown in figure 2.5, the data is being transferred to the data warehouse. Within the warehouse, the data is stored in different data cubes and the cubes represent the multi dimension of the information. A cube consists of different stores and layers dividing the data, ready for extraction into an information system or manipulation program. Data mining is the technique used to extract large volumes of data from a data warehouse, and by means of statistical programs sort it to meaningful reports (Baltzan, Phillips & Haag, 2009:94).

Figure 2.5: Data warehouse model

Source: Baltzan, Phillips and Haag (2009:94)

Potgieter (2007:19) refers to the concept of an Essential dataset. This means that only the necessary information needed to provide good reporting, is captured in the dataset. On the other hand, it might be that the business model requires information loads and lots of number crunching has to be done. In his book Super Crunchers, Ayres (2005:62) explains that firms should more proactively figure out what pieces of information are missing, and take action to fill the gaps in their data.

Small businesses definitely have to set up a data warehouse and although not necessary to the same extent as in corporate businesses, manage it well in the favour of good reporting, and eventually management information.

2.7   DECISION-MAKING IN SMALL BUSINESSES

Business is all about decisions. From the very first day of business the entrepreneur is confronted with difficult choices and alternatives. Every decision has an impact on the success of the business and also has a cost implication. Stair *et al*. (2008:268) demonstrates that information systems assist management to make better decisions. Decisions with a huge impact on the business require a high level of skill from the responsible person. The problem is that the responsible person is not always in a position to make decisions in time. The solution for this problem is the creation of default rules or programmed decisions, according to Stair *et al.* (2008: 269). Default rules are a set of pre-decided alternatives based on scenarios that may occur. A system warning will let the manager know if the default is not an option, and other decisions have to be taken. With a good information- and decision support system in place, decision-making are mostly not necessary, or much easier to make.

Sharma *et al.* (2008:13) argue that information systems provide the ability to serve the functions of planning, controlling and decision-making at different levels of the organisation. In terms of the different levels in the organisation the emphasis falls on the frequency and importance of the decision to be made. On the lower levels decisions must be taken on an on-going basis and defaults can be used to minimise unskilled staff involvement in the process. Middle management has the task to ensure that defaults and system parameters are correct. On the executive level decision-making is on a very low frequency and very few defaults can be used. Sharma *et al*. (2008:13) also say that information systems can help reducing the reporting levels, by providing managers the ability to supervise larger numbers of workers.

Baltzan *et al.* (2009:119) categorised three levels in the business with the relevant decision-making model. As shown in Figure 2.3, top management use the Executive Information System

(EIS), Middle management uses the Decisions Support System (DSS) and Lower level managers use Transaction Processing Systems (TPS).

Figure 2.6: Information Systems in a business
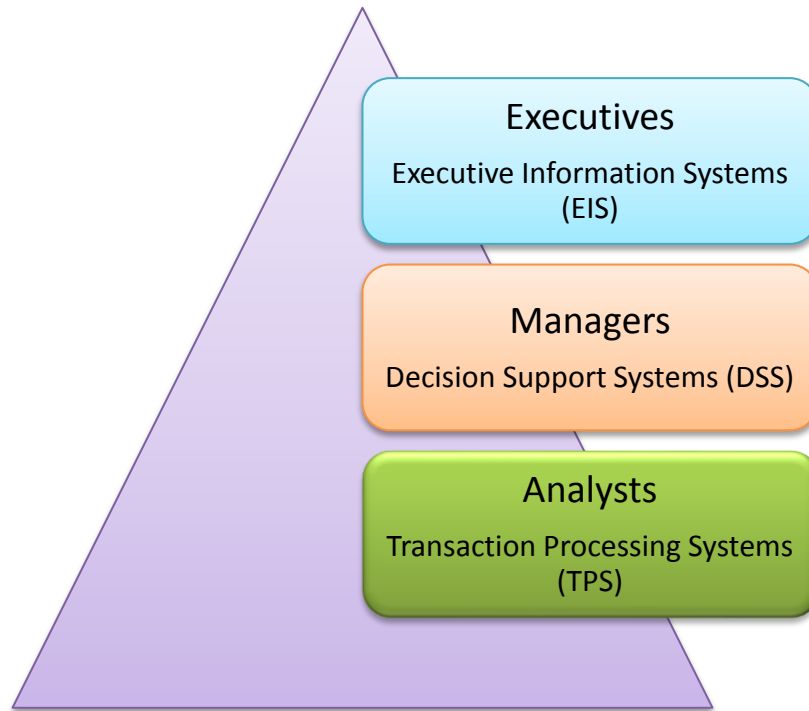
Source: Baltzan, Phillips and Haag (2009:119)

According to Turban (2001:41), there are four basic phases in decision-making. Firstly is the Intelligence phase, secondly is the design phase, thirdly the choice phase and fourthly is the implementation phase. A DSS assists the manager through every phase in the process and facilitates the application thereof.

Turban (2001:70) states that there are many decision-making models, such as the Paterson decision-making process, Pounds' flowchart, Kepter-Tregoe method, core decision ideas of Hammond *et al.* and Cougar's creative problem-solving concept.

The entrepreneur as small business owner and manager must be capable of making decisions in every level or stage in the business activity. Timmons and Spinelli (2009:359) argue that the

entrepreneur has to do a self-assessment and places the emphasis on the awareness of the total environment in which their decisions are made.

2.8 THE SMALL BUSINESS ENVIRONMENT

Small businesses in terms of this study can be involved in any industry. The environment and circumstances wherein the business is managed will differ, but the principles will more or less be the same. To be successful the business must have some advantage on the rest of the competitors in the industry. Stair *et al.* (2008:48) define competitive advantage as *the ability of a firm to outperform its industry, that is to earn a higher rate of profit than the industry norm and can result from higher-quality products, better customer service and lower costs.* This can only be achieved by meaningful information on these relevant business activities. The study aims to determine the need for, as well as the capability of these entrepreneurs to make MIS part of their business activities and decisions.

According to Smit and Cronjé (2000:101), the business consists of an internal and an external environment. These two environments have sub-environments and a change in any of them will have an effect on the other. The manager must be informed of the changes in the external side of the business and take action internally if necessary. MIS, supported by data of these environmental issues, will be of great value in this regard. This information can be used in a SWOT analysis, and MIS reports can be very supportive if set up as such.

Smit and Cronjé (2000:101) also state that the external environment consists of the market environment and the macro environment. The market environment is the place of business and the manager's involvement with clients, suppliers, competitors and the opportunities and threats within, is very important. Although in the external side, the management thereof does have an influence on this environment. The macro environment has an impact on the small business, and nothing can be done about it, but it has to be managed carefully. The impact has to be absorbed by the business in such a way that possible advantages been capitalised on, and possible disadvantages were eliminated as far as possible.

Street and Meister (2004:476) argue that small businesses have been traditionally seen as reluctant to invest in information systems. Evidence over the past decade shows a total increase in awareness of the use of information systems in the defined small business environment. Managers of such small businesses enrich themselves with knowledge and skills in this support facility.

Knowledge management (KM) is a concept that expands MIS into a format where all systems and people on all levels of the business are included. KM is then used to facilitate the sharing of information in the business. In the growing phases of a small business, KM adds value in the sense that different role-players stay connected and decision-makers are informed on other parts of the business (Wagner & Cassimjee, 2002:49).

2.9   SUMMARY

According to Timmons and Spinelli (2009:317), the entrepreneurial leader must have certain basic skills to be a competitive and successful business owner. Most of these skills are underlying by the ability to utilise relevant information. The utilisation of this information to be useful and supportive in the decision-making part of management requires a great deal of involvement from the manager himself. In the initial stages of setting up a MIS managers have to be directly involved in the creation of the required outputs (reports).

In the small business there are normally not enough resources available to implement a large information system. The fact is that a management information system can run on a Microsoft Excel program with great success, and does not have to be a comprehensive and integrated system. The combination of the MIS, EIS, DSS and other information systems can easily be done as the information load in a small business is not yet that much. A lot of MIS software is available and is very user friendly to implement and to use. Tradecart, Prism and Essemtec are examples of this software.

Collecting the relevant data is the essence in this matter and the user (manager) of the system must define what he needs. The external data needed is normally the problem because it is not

commonly available. Information bureaus are very useful in the matter, but are also very general in their approach.

This study on Management Information Systems and the application thereof in small businesses will also reveal the possible opportunity for the creation of a data warehouse. Such a bureau will give participants the opportunity to gain access to collective data, without the risk of sharing classified information. Benchmarking is the only purpose of this collective data warehouse.

CHAPTER 3

RESULTS AND DISCUSSION OF THE EMPITICAL STUDY

3.1   INTRODUCTION

Questionnaires were sent to a target group of small business managers. The participants were informed about the objectives of the research and a broad explanation was given by means of a covering letter. The questionnaire was compiled to fit the specific study objectives.

The aim of the empirical study was to determine how small business managers feel towards the use of management information systems (MIS) in the decision-making activities. Although the literature study created a certain perception of the use of MIS, the real value lies in the results of the field study. In this chapter, the questionnaire development and collection process will also be discussed. After completion the questionnaires were structured in a meaningful way for scientific analysis.

3.2   GATHERING OF DATA

3.2.1   Questionnaire development

The questionnaire was designed with the focus on four different sections. Section A gains biographical information about the participant and the business. Section B includes 22 questions with frequency based questions, while section C includes 9 value based questions. The questions were answered on the values of a 5 point Likert scale. Section D concludes with an optional space for comments and opinions. A copy of the questionnaire is attached as annexure A.

The questions were set to evaluate the state and management profile of the participant. The questionnaire was sent with a code number and marked on a control list. Submission of the questionnaire was done via e-mail and in some cases by hand. In a number of cases a follow-up action per telephone was necessary. A total of 72 questionnaires were sent out and 36 usable

forms were received back. Two questionnaires could not be used due to mismatching the criteria of a small business.

3.2.2   Participants' profile

The typical profile of the participants is that of a person who has to make the decisions in the business. As the focus falls on smaller businesses, it can be that it is the owner self, or an executive manager, or even line managers.

The questionnaire covers a range of relevant information topics, and the position indicator in section A will give perspective of the participant's views on specific answers. The type of business is very diverse which gives a good overall impression on the topic.

3.3   BIOGRAPHICAL INFORMATION OF THE PARTICIPANTS

The questionnaire was sent at random to a number of participants, in any region without knowledge of the precise business act or profile. Section A of the questionnaire covered the general information about the participant and the business, and will be discussed per question. The analysis of the biographical part of the questionnaire is only of value for purposes of insight to the empirical questions.

3.3.1   Biological status

i)   Background

The biological status includes two questions: age and gender. The reason for inclusion of the age question is to get a feeling of the impact of generation differences on the study. Although there is no discrimination between genders in the workplace, there might be different attitudes towards management of small businesses. In the past decade there was a significant increase of woman entrepreneurs in this sector of the business environment. Woman entrepreneurs make large

contributions to the economy, and the dynamics in terms of their approach to the topic of the study, can be very illuminative.

ii)   Result

Figure 3.1:   Age of respondents

Pie chart for AGE

-30: 26.47 %

31-40: 26.47 %

61+: 5.88 %
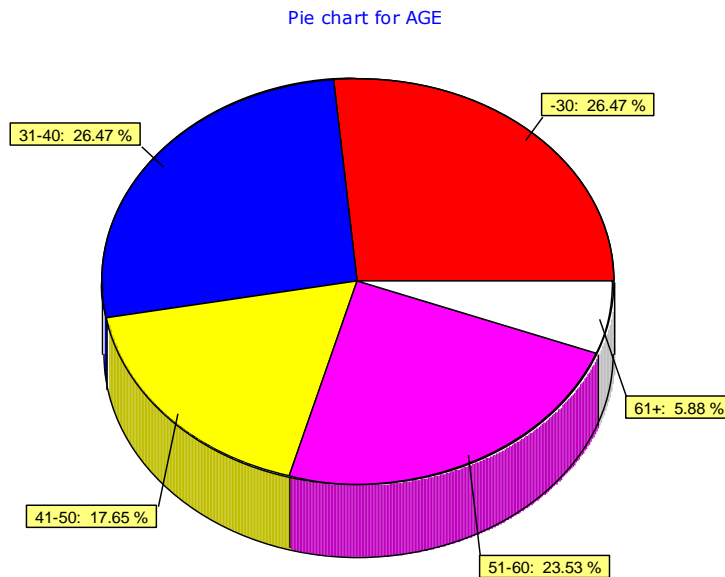
41-50: 17.65 %

51-60: 23.53 %

Figure 3.2:   Gender of respondents

Pie chart for GENDER

male: 79.41 %

female: 20.59 %
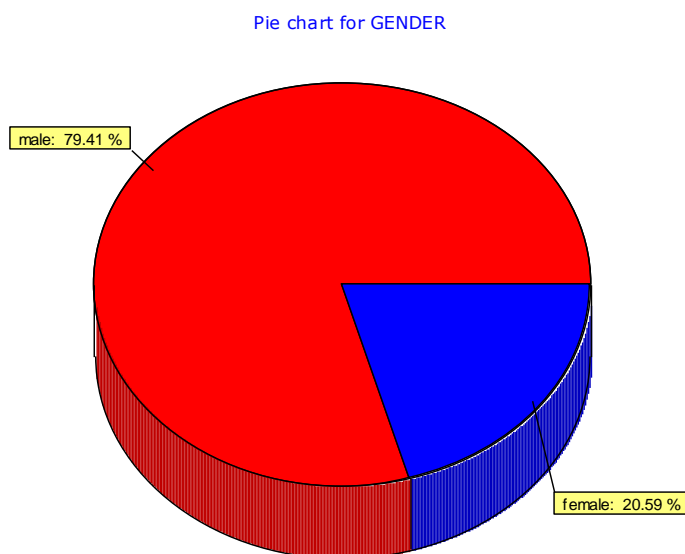
Analysis

The research shows that the ages of the respondents are equally spread in the first four groups namely: up to 30 = 26.47%, 31-40 = 26.47%, 41-50 = 17.65% and 51-60 = 23.53%. Very few respondents (5.88%) are older than 60 years of age.

When the gender was analised, results show that 79.41% of the participants are males versus a female representation of 20.59%

3.3.2 Field of business

i) **Background**

When analysing the information, the field of business in which the manager is, will not only indicate the need for information, but also put an emphasis on the external or internal generated data source. Some industries are more information driven than others.

ii) **Result**

Figure 3.3: **Field of the business**

Pie chart for FIELD

- fin: 38.24 %
- serv: 11.76 %
- other: 8.82 %
- prof: 17.65 %
- manuf: 11.76 %
- retail: 2.94 %
- constr: 8.82 %
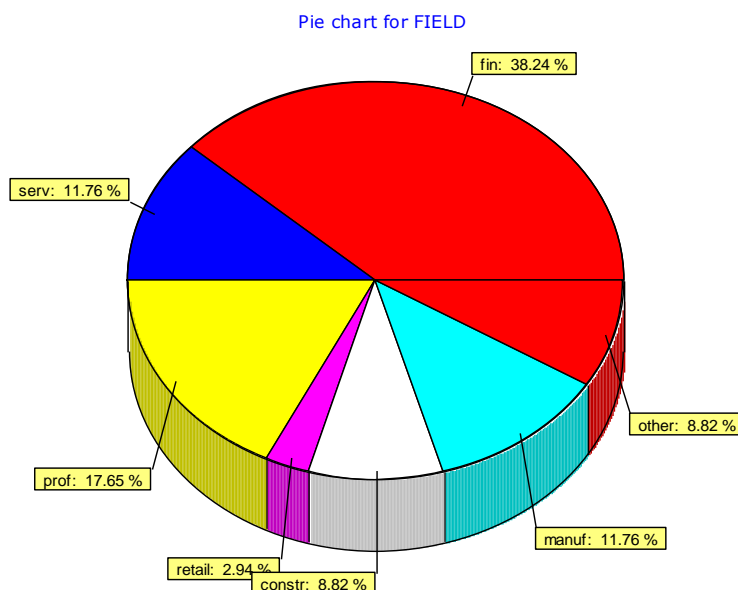
iii)   Analysis

The majority of businesses used in the study are of financial (38.24%) and professional (17.65%) nature. The other two prominent fields of business are services and manufacturing, both with 11.76% of the participants. When grouped together, two thirds of the participating businesses are service related.

3.3.3   Geographic distribution

i)   Background

The only reason for including this information is to get an idea of the geographical distribution of the respondents for further research. It would not necessarily have an effect on the study.

ii)   Result

Figure 3.4:   Location of the business

Pie chart for LOCATION

gauteng: 79.41 %

more than 1: 2.94 %

mpumal: 2.94 %

freestate: 5.88 %

kwa zulu: 2.94 %

n west: 5.88 %
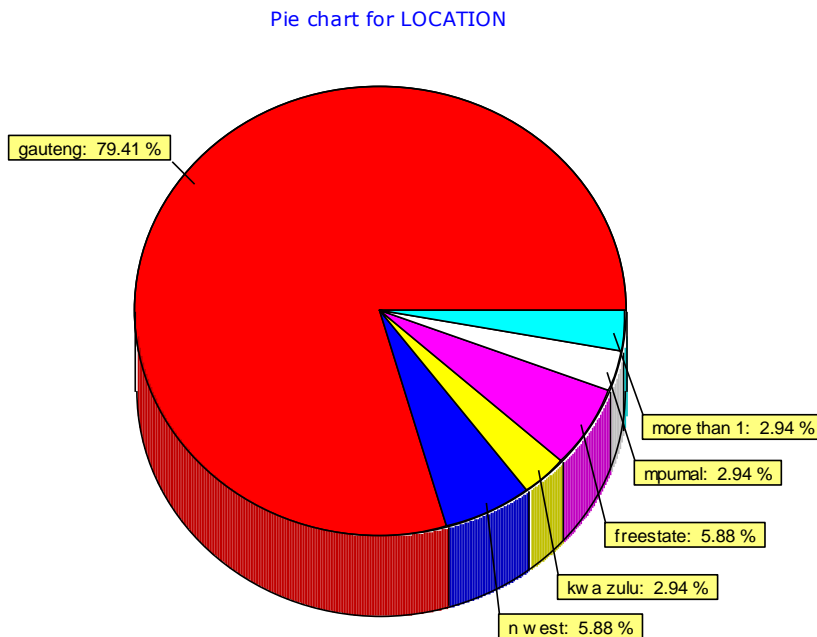
iii)   Analysis

A very high number (79.41%) of the participating businesses are in Gauteng. The other 20.59% represent other provinces of the country. Limpopo, the Northern- and Eastern-Cape are not represented in the study.

3.3.4   Position of participant

i)   Background

Information management is all about the ability to make good decisions. The level and importance of the decisions to be made will depend on the position of the decision-maker in the business. It is very important for purposes of the study to know this position of the participants.

ii)   Result

Figure 3.5:   Position of the decision-makers

Pie chart for POSITION

owner: 58.82 %
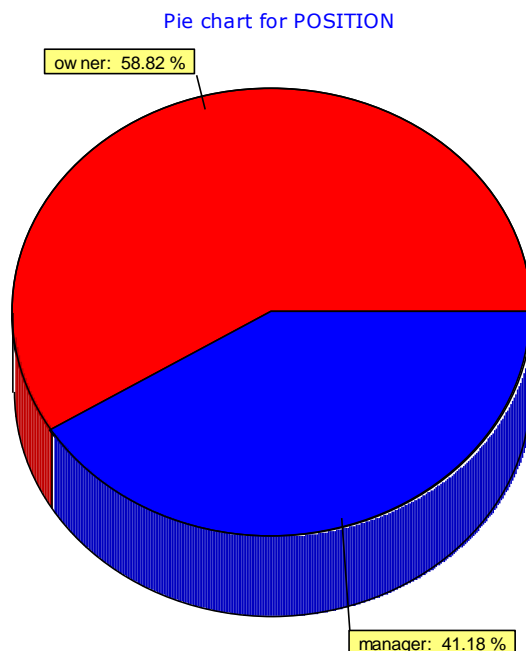
manager: 41.18 %

iii)   Analysis

Most of the participants, 58.82%, are owners/managers, and 41.18% are only managers of the relevant businesses.

3.3.5   Profile of the business

i)   Background

Although all the respondents are per definition classified as small businesses, the deeper insight into the scale of the business can add value to the analysis. In context of a small business, variables such as number of employees, client base, annual turnover and legal status can make a difference. The results of figure 3.6 to figure 3.9 will be discussed in paragraph 3.3.5(iii).

ii)   Result

Figure 3.6:   Number of staff members

Pie chart for NUMOFSTAFF

6-10: 20.59 %

1-5: 20.59 %

11-20: 29.41 %

20-50: 29.41 %
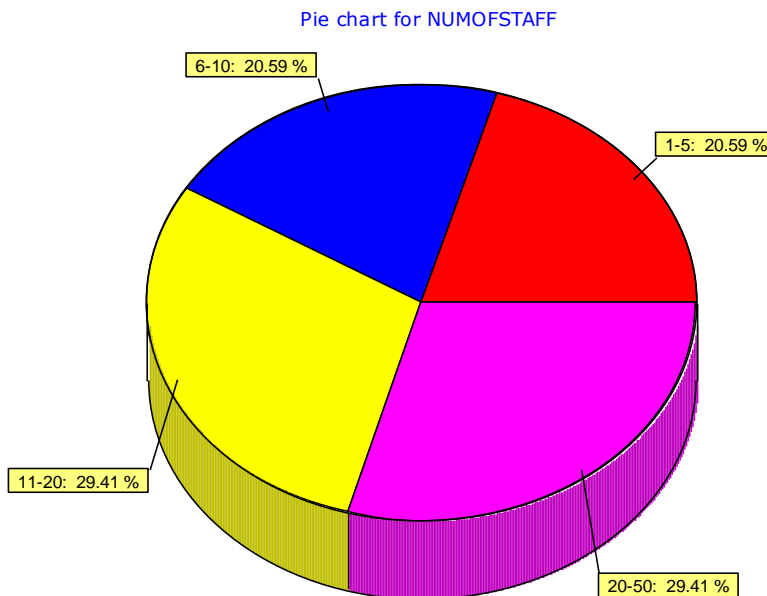
Figure 3.7:   Annual turnover

Pie chart for TURNOVER

1001 - 5000k: 44.12 %

251 - 500k: 8.82 %

101-250k: 2.94 %

5001k +: 44.12 %
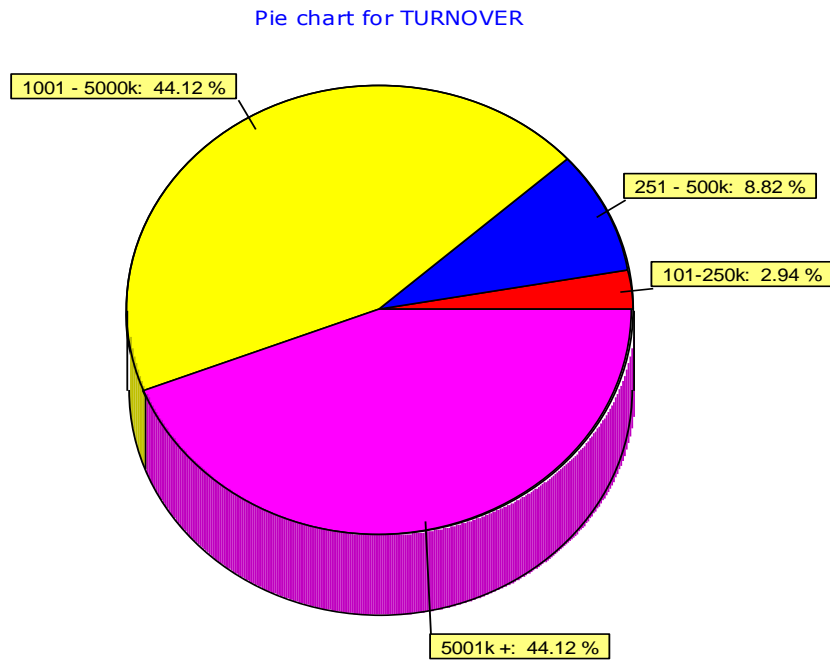
Figure 3.8:   Number of years in business

Pie chart for BUSSYEARS

3-6: 20.59 %

1-2: 5.88 %

7-10: 11.76 %

0-1: 8.82 %

10+: 52.94 %
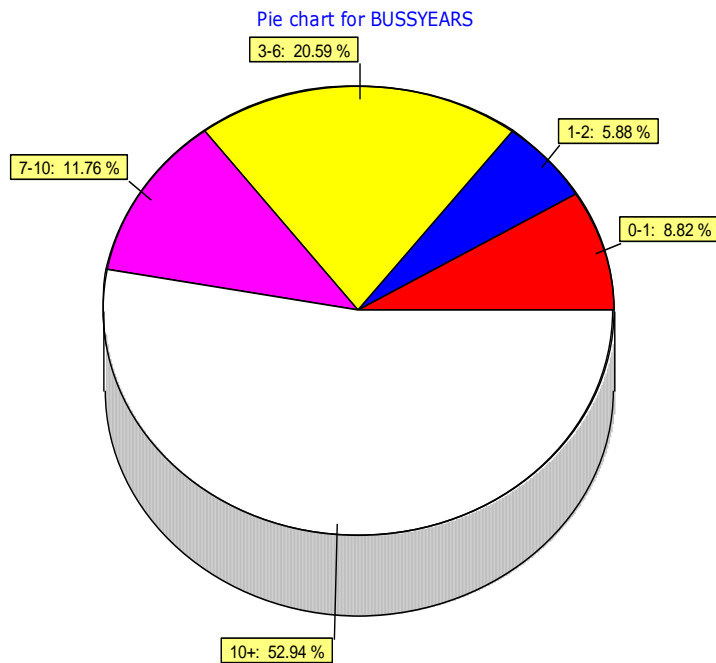
Figure 3.9:   Legal status of the business

publ: 8.82 %

cc: 29.41 %

part: 2.94 %

prop: 5.88 %

pty: 52.94 %
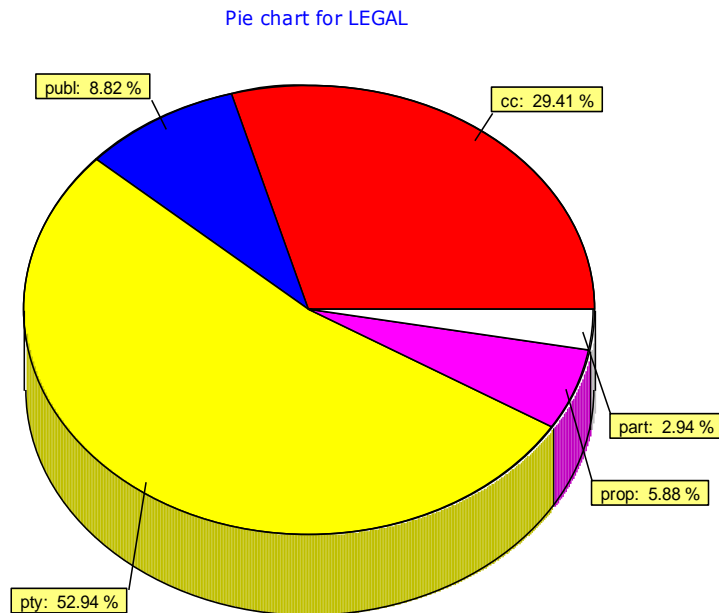
iii)   Analysis

When analysing the staff compliment of the representative businesses the results were as follows: 1-5 members = 20.59%, 6-10 members = 20.59%, 11-20 = 29.41% and 20-50 members = 29.41%. There are very few micro businesses used in the study in terms of the staff member count as far as the definition is concerned.44.12% of the participated businesses have a turnover of more than R 5 000 000 p.a. An equal number, 44.12% of the participating businesses have a turnover of R1 000 000 to R 5 000 000, and 11.76% have a turnover of less than R 1 000 000 p.a.

More than half of the businesses (52.94%) have been in the business longer than 10 years in business. The next highest group is those of three to six years, 20.59%. Privately owned companies are the most common form of legal status in the study with a 52.94% representation. Next on the list are closed corporations with 29.41%.

3.4   THE USE OF MANAGEMENT INFORMATION

The scope of the study is to test the use of management information in small businesses. The questionnaire will show valuable information on a number of related issues, but mostly concentrate on the following:

- Existence of a MIS

- Information support

- Management information skills

- MIS and decision-making

- Data management

The questions of both sections, B and C were combined as the answers were categorised in another set of values. The questions were ranked on the 5point Likert scale, and the higher the number, the better the value. One question was asked in a way that the nature of the answer has no correlation to the value of the use of management information.

A mean and standard deviation was calculated for each question, and will be sort according to compared values of the rest of the questions in the group, ranked from high to low. The mean gives the average value for the question, while the standard is an indication of how closely values are clustered around the mean. Approximately 68% of cases lie between one standard deviation below and one standard deviation above the mean.

3.4.1   Existence of MIS

i)   Background

For this part of the study, eight questions were asked to determine the existence of some kind of a management information system. For the analysis the questions were grouped and ranked from high to low in terms of the mean.

Table 3.1:   Outcome of questionnaire – existence of MIS

	Description	N	Mean	StdDev
B16	Advantage of implementing MIS	34	4.29	0.94
B11	Information part of problem solving	34	4.09	0.79
B20	Use of internet as source of information	34	3.76	1.10
C1	Level of information available	34	3.74	0.86
C5	Level of informal information available	34	3.74	0.79
B1	Is there a MIS in the business	34	3.68	1.32
C2	Timorousness of financial information	33	3.48	0.91
B21	Knowledge of MIS software packages	34	2.71	1.57

iii)   Analysis

A high mean of $\dot{x}$ = **4.290** was calculated for the question **is there an advantage in implementing MIS.** The next highest question, **is information part of problem solving** also has a mean of $\dot{x}$ = **4.090**. Three **questions in connection with the availability calculate** means of $\dot{x}$ = **3.760**, $\dot{x}$ = **3.740 and** $\dot{x}$ = **3.740**. A question on the **knowledge of MIS software packages** calculates a mean of $\dot{x}$ = **2.710**. The standard deviation on this question is 1.570.

3.4.2   Information support

i)   Background

This group of questions aims to measure the support for management information in the selected small businesses. Seven questions relate to supportive instruments towards a MIS.

Table 3.2: Outcome of questionnaire – information support

	Variable	N	Mean	StdDev
C3	Importance of timorousness information	33	4.27	0.72
B4	Are financial figures available	34	4.24	1.05
C6	Level of computer literacy	34	4.15	0.74
B17	Financial data involved in MI	34	4.12	0.81
B2	Is the information reliable	34	3.94	1.04
C9	People's feeling towards value of information	34	3.76	0.74
B10	Are there specific drivers in the business	34	3.65	1.10

iii)   **Analysis**

The group of questions in table 3.2, involve information support. There are several aspects that determine successful use of information. The highest supporting aspects in the group are **Importance of timorousness with $\dot{x}$ = 4.270**, and **Availability of financial figure with $\dot{x}$ = 4.240**. People's feeling towards: **The value of information has a mean of $\dot{x}$ = 3.760**.Although still well above average, the lowest calculated mean in this group is $\dot{x}$ = **3.650** and it is for the question, **Are there specific drivers in the business**.

3.4.3   Management information skills

i)   **Background**

In this group of questions, the skills level in connection with the use of management information is measured. Four questions were included in this group.

Table 3.3:   Outcome of questionnaire – MI Skills

	Variable	N	Mean	StdDev
B15	Relationship between MIS and performance	34	4.24	0.96
C8	Experience in Budgeting	34	4.00	0.78
C7	Experience in Finance Management	34	3.76	0.99
B6	Use of MI for performance management	34	3.53	1.13

iii)   **Analysis**

Management information skills relates to activities connected to MIS. Certain questions were asked to test these skills. The question on the **Relationship between MIS and performance** calculated a mean of $\dot{x}$ = **4.240**. **Experience based questions (budgeting and financial management**) have a mean of respectively $\dot{x}$ = **4.000 and** $\dot{x}$ = **3.760**. The **Use of MI for performance management purposes** has a mean of $\dot{x}$ = **3.530**, the lowest in this group. These means are also above the neutral view of the participants.

3.4.4   MIS and decision-making

i)   **Background**

The relationship between the use of a MIS and decision-making in the small business is very important in terms of this study. This group of five questions aims to get insight to this relationship in the participating businesses.

ii)   Result

Table 3.4:   Outcome of questionnaire – MIS and decision-making

	Variable	N	Mean	StdDev
C8	Level of change requires decision-making	34	4.00	0.78
B12	Information to employees on purpose of work	34	3.74	0.96
B13	Information to employees on result of work	34	3.71	0.87
C4	Level of recurring decisions	34	3.56	0.89
B5	How many decisions without sufficient information	34	2.18	0.90

iii)   Analysis

Change seems to be very important when it comes to decision-making. The question on the **Level of change calculates a mean of $\dot{x}$ = 4.000**. Two questions: **Information availability to employees on purpose of work**, and **Information availability on result of work**, were included and have a mean of $\dot{x}$ = **3.740 and $\dot{x}$ = 3.710** respectively. The **Level of recurring decisions** has a mean of $\dot{x}$ = **3.560** and the lowest scoring question is **Decisions made without sufficient information**, with a mean of $\dot{x}$ = **2.180**. This last question was stated in a negative way.

3.4.5   Data management

i)   Background

An alternative for inbound data facilities is the creation of a communal data bureau. The questions in this group relate to data management, and will give an indication of the need for such a bureau. Six questions were included to get insight into the topic.

Table 3.5:   Outcome of questionnaire – data management

	Variable	N	Mean	StdDev
B22	Data acquiring from external sources	34	3.62	1.13
B18	Could own database been created	34	3.53	1.05
B9	Aware of where external data comes from	34	3.44	1.35
B3	Benchmarks availability	34	3.38	1.02
B19	Data bureau's awareness	34	2.76	1.37
B7	Importing of external data into MIS	34	2.71	1.38

iii)   **Analysis**

The highest mean in this group concerning data management, is calculated for the question **Would you acquire information from an external data provider** ($\dot{x} = 3.620$). The question **Can you create your own database** calculates a mean of $\dot{x} = 3.53$, while **Awareness of where external data comes from** has a mean of $\dot{x} = 3.440$. The questions on **Benchmarking data availability,** and **Data bureau awareness,** have means of $\dot{x} = 3.380$ and $\dot{x} = 2.760$. The lowest scoring question in the group is **Do you import external information into your MIS**. A mean of $\dot{x} = 2.710$ was calculated for the last question.

3.4.6   Data sharing

i)   **Background**

A single question was included in the questionnaire to determine the willingness of small business managers to share information to external parties. If a data bureau can be created, it will

be important to know what percentage of managers wants to share data.

ii)   Result

Table 3.6:   Outcome of questionnaire – Data sharing

	Variable	N	Mean	StdDev
B14	Will you share information with external parties	34	1.85	0.82

Figure 3.10: Sharing of data

Pie chart for B14

never: 38.24 %

often: 2.94 %

neutral: 17.65 %
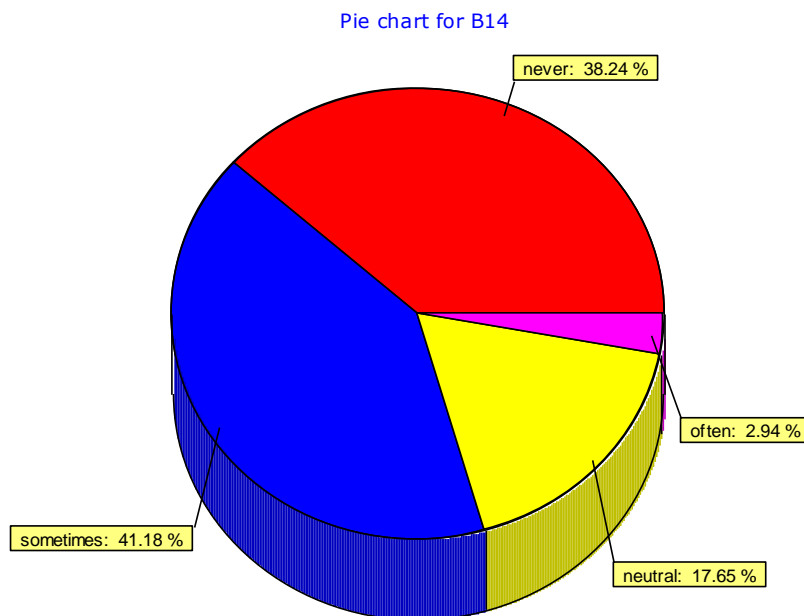
sometimes: 41.18 %

iii)   Analysis

The question on **Sharing of un-certified information** calculates a mean of **ẋ = 1.85**. 38.24% of the participants indicated that they will never share information, and another 41.18% will sometimes do so. The purpose of this question was to determine the possibility of exploring this issue in context of data warehousing.

3.5   SUMMARY

The survey data contains, as a starting point, biographical information of the small business managers participated in the study. This information includes age, gender, position, location, period in business, field of business, staff compliment, annual turnover and legal status profile.

The survey also includes information about the use of management information. The questions were grouped into five topics related to the objective of the study. The aim was to determine the level of use of information in the decision-making process. The survey also includes questions to support the objective to set a basis for possible discussions for development of an information bureau.

The survey results were presented by means of pie-charts and frequency tables. The questions were grouped into the related topics and valued as such. The results were then analysed in the context of the research objectives. The analysis was mainly done by calculating the mean of each question, supplemented by the standard deviation from the mean.

In chapter four conclusions on this analysis will be done, with recommendations in terms of the outcome on the study objectives.

CHAPTER 4

CONCUSIONS AND RECOMMENDATIONS

4.1   INTRODUCTION

Business in recent times is a matter of information technology and systems, all that potentially generates data. From the literature study done in chapter two, it is clear that access to information has become very easy. This study aims to determine if small business managers use relevant management information systems in their decision-making activities. In other words, do they access this mass of data and transform it into usable information?

The purpose of this chapter is to conclude the empirical study by drafting a profile of the manager using management information with the emphasis on decision-making in a small business. The conclusion on the feasibility of an information bureau will also be done in this chapter.

The last part of the chapter will include a critical evaluation of this study, as well as possible future research on the topic.

4.2   CONCLUSIONS ON THE EMPIRICAL STUDY

4.2.1   Biographical information results

The figures show an even distribution between the four different age groups of persons under 60 years of age. Very little respondents are in the age of more than 60 years. Four out of five respondents are males.

Most of the responses come from the financial and professional business environments. There is significant representation from other business fields as well. This gives a good distribution for purposes of this study.

The businesses are mainly in the Gauteng region, but are represented in most of the provinces in the country. Some of the companies have branches in more than one province and is calculated as a business unit as such.

From the received questionnaire, almost a third of the participants are the owners of these small businesses. That gives a strong indication that the persons who take the decisions, are very involved with the outcome thereof. The second group is the managers, who are certainly also very motivated to achieve the best, by means of good decision-making.

It seems that the businesses used in the study are well spread in terms of the criteria set out in the questionnaire. Most of the businesses have a turnover of more than R 5 000 000 p.a. and must have enough activities to justify an information need. As expected, the research sample consists mainly of privately owned companies and closed corporations.

4.2.2   Existence of a MIS

A very high number of the participants feel that the implementation of a MIS will give their business some kind of advantage, and are also of the opinion that information is essential in problem solving. A couple of participants comment that the use of MIS is such an essential part of the decision-making process, and are not able to manage properly without the facility.

The availability of management information is slightly above the neutral view in terms of the Likert scale, but indicates an under-expected use of management information. This is in contrast with the fact that the majority of respondents agree to the advantages thereof. The existence of a formal MIS seems to be the reason why information is only available in this extent. On a question about the creation of an own database, many participants are of the opinion that they can create their own information platform. This raises the question about the level of understanding of the meaning of a management information system.

Very few participants know about MIS software packages, and the standard deviation from the mean also indicates the lack of knowledge in this regard. Installing a decent MIS will lead to

expansion of a management information culture in the business, but a lot of training and support will be necessary to set it to its full potential.

4.2.3   Information support

It seems that there exists a decent understanding towards the value of information support. The conclusion from the related research questions is that managers think that timorousness, and the availability of financial figures, are the core factors to support information management. The study also shows that people in general have a good feeling towards the value of information. The indication is that there is some kind of business drivers in the participating businesses. This aspect strengthens the argument that management information as an important decision-making and management tool, is not utilised to its full extent. There has to be a bridging action to get managers to move from the understanding and realising position, to the actual implementing of a good MIS.

4.2.4   Management information skills

The opinion of the participants is, like in the previous sections, that there is a close relationship between the use of MIS and the performance of the small business. Most of the managers have above average skills in terms of financial forecasts and statements. This is a very positive factor in terms of the utilisation of an MIS as a management tool. When the manager is capable of combining different business drivers and indicators by means of MIS formulas, the real value of management information will come to the surface. The low level of use of MI for performance management purposes will automatically improve.

4.2.5   MIS and decision-making

Change is sometimes the result of decisions. On the other hand, decisions are sometimes needed to address change. Most of the participants indicate that change is very much part of their business activity. Information as basic component in the decision-making process, seems to be available quite often, but not always. The availability of formal information for decision-making

is not very high. Very few managers though, make decisions without some form of management information at all.

The analysis shows that recurring decisions are very much part of the normal activities of a small business. A MIS can thus be a permanent solution to make this recurring decision by default rules.

4.2.6   Data management

It seems that most of the participating managers do know about data-management in the broad sense of the word. The majority of managers is willing to acquire data from external sources, but is also of the opinion that they can create their own database. The possible lack of understanding of database principles might be a problem when creating or implementing own databases. Comments from some of the participants are that database management is very complicated, and that layout and structure are very important..

Managers in general are very aware of where external data comes from, and as a result, only slightly more than half of them, will import external data into their MIS. The under-accessing of available industry data has a potential risk in terms of the completeness of management information. Managers might make decisions without complete insight into a particular matter. Less than half of the participants are aware of data bureaus in their industries.

Almost half of the participants indicated that they will not share information with external parties. A significant part of the participants also has a neutral stance towards this statement, and a few of them will sometimes do. The research study shows that the need for communal information exists.

4.3   RECOMMENDATIONS

To enhance the level of use of management information in small businesses, the following recommendations are made with all the conclusions in paragraph 4.2 taken into account.

4.3.1 Awareness campaign

The conclusion of the empirical research study is that managers in small businesses do use some form of informal management information in their decision-making activities. The research also reveals that managers in these businesses do not use management information to the extent of the known value of it. As discussed in paragraph. 2.4.5, Thong (1999:208) finds in his study on information systems adoption that in cases where the small business is managed by a CEO that understands information systems, and promotes and invest in it, the organisation benefits from improved efficiency and effectiveness.

The recommendation is that a governing body like the Department of Trade and Industry launches an awareness campaign on the true value of the use of management information, and the advantage of the decision-making process. A proposal can be made to the public relations department of the DTI in terms of the following:

- A presentation on their annual summit in 2012;
- Placing of an article in their National Dictionary of Small Business Support Programmes;
- Publish this research paper on their website.

4.3.2 Data warehouses and bureaus

The usage of management information is an internal culture, and although it has proven advantages, managers themselves have to take up practices that use MIS, EIS and DSS applications. A result of this study is that data warehousing and communal data bureaus are not part of the mindset of most small business managers. The recommendation is that this concept of shared data in specific industries, have to be studied further to determine the possibility of creating a business opportunity by rendering a support service in this regard.

The study can be done with the aim to set up such a bureau as information support centre in specific industries.

4.3.3   MIS software packages

The study also reveals unawareness towards MIS software packages and as such a need in this. It is recommended that the marketing and/or selling of these products can be considered as a business opportunity.

The possibility was discussed with a number of financial service providers, doing consultation in the field of business administration and information. The next step will be to act as agents for a MIS software provider. This can also be a sales point in terms of the next recommendation.

4.3.4   MIS implementation and training

Another recommendation is that MIS implementation and accompanied training as a professional service to managers of small businesses can be rendered. In the analysis of the results of this study, the under-utilisation of management information as a management tool, points to be a reality, when measured against the true value of it. The angle of benchmarking in the use of MIS will create a new dimension and this need can be filled with formal MIS implementation and training programs. This can be done in two ways:

- The DTI can run a special campaign by means of their training programs, or
- It can be a private initiative in the form of a service business, incorporating the MIS software agency.

4.4   CRITICAL EVALUATION OF THE STUDY

The objectives of the study were set out in chapter 1.4 of this study. The success of this study is based upon realising these primary, as well as secondary objectives.

4.4.1   Primary objective re-visited

The primary objective of this study was to determine the level of usage of managing information systems by managers of small businesses in their decision-making activities. It also will collect

valuable information on the different types of information necessary to add value to business owners and the creation of an information service in the form of a communal data bureau.

4.4.2   Secondary objectives re-visited

In order to achieve the primary objectives the following secondary objectives were formulated:

- to define management information;
- to obtain insight into the dynamics of management information systems;
- to test the existence of management information systems;
- to determine the level of information support;
- to gain insight into the information management skills;
- to obtain the extent of data management;
- to gain insight into decision-making practices;
- to validate the reliability of the questionnaire used to measure the level of use of management information; and
- to draw conclusions from the empirical study and offer recommendations in terms of the supply of information via bureaus for benchmarking purposes.

4.4.3   Achieving of secondary objectives

The first and second secondary objectives namely to define management information, and to obtain insight into the dynamics of management information systems, was achieved through a comprehensive literature study in chapter two.

The third secondary objective, to test the existence of management information systems was achieved through an empirical study as discussed in chapter three and concluded in chapter four.

The fourth secondary objective was to determine the level of information support in small businesses. This objective was realised through an empirical study, as discussed in chapter three and concluded in chapter four.

The fifth and sixth secondary objectives, namely to gain insight into information management skills, and to determine the extent of data management were achieved through a literature study in chapter two, as well as a detailed empirical study discussed in chapter three, with a conclusion in this chapter.

The seventh secondary objective, to gain insight into decision-making practices was achieved by means of a literature study in chapter two, followed by an empirical study discussed in chapter three and concluded in chapter four of this study.

The eighth secondary objective, to validate the reliability of the questionnaire used to measure the level of use of management information was realised when the reply on the questionnaire was successfully received and processed by means of a statistical process. The output of the questionnaire was usable and no conflicts occur in the analysis thereof.

The last secondary objective was to draw conclusions from the empirical study and offer recommendations in terms of the supply of information via bureaus for benchmarking purposes. This objective was successfully achieved by the conclusions and recommendations in paragraph 4.2 and 4.3 of the chapter.

Through the achieving of all the secondary objectives, it can be concluded the primary objective namely, to determine the level of usage of information by managers of small businesses in their decision-making activities the primary objective was achieved. It also will collect valuable information on the different types of information necessary to add value to business owners and the creation of an information service in the form of a communal data bureau, was achieved.

4.5   SUGGESTIONS FOR FUTURE RESEARCH

This research shows that the value of data exploration is not necessarily part of the strategic thoughts of managers in the small business environment. The collection of data from various sources and warehousing thereof for benchmarking can be of extreme value for especially small

business managers. This study shows a resistance towards data exchanging. A study can be done with the objective to find a way to cross this barrier.

4.6   SUMMARY

This chapter concluded the empirical study by compiling the typical profile of a manager using management information in a small business decision-making process. The biographical profile was discussed, followed by a conclusion of the categorised statistical analysis of the questions directed to gain insight into management information and decision-making in small businesses. All the relevant steps in the executing of the research methodology were done to value the insight obtained in support of achieving the study objectives.

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ANNEXURE A

Code Number:

RESEARCH ON THE USE OF MANAGEMENT INFORMATION IN SMALL BUSINESSES

in assosiation with:

Compiled by Pieter Botha in support of an MBA study at the

Potchefstroom Business School
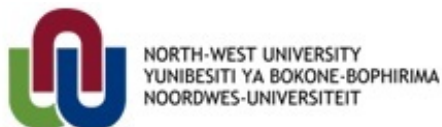
QUESTIONNAIRE: MANAGEMENT INFORMATION

Background to this questionnaire

The Purpose of this questionnaire is to examine the level of usage of Management Information in small businesses. This research forms part of a study for enrolment for a MBA degree at the Potchefstroom Business School.

O'Brien (2004:21) defined a management information system as a business application that provides managerial end users with predefined management reports that would give them the information they need for decision-making purposes.

According to the National Small Business Act of 1996, small businesses are enterprises with a staff component not more than 50 employees. If your business falls within this spectrum, you are invited to participate in the completion of this questionnaire.

Participation in the completion of this questionnaire is voluntary and anonymous, and the researcher will maintain absolute confidentiality. It is very important that participants answer this questionnaire honestly.

Layout of the questionnaire

Section A	:	General information about the participant.
Sections B & C	:	The use of management information.
Section D	:	Opinion and comments.

Appreciation

Thank you kindly for completing this questionnaire. Your answers and comments are valued. After completion, the questionnaire can be sent to one of the following addresses:

1) Email: info@sunel.co.za   2) Fax no: 012 348 5010

3) Post: P.O. Box 138
         Newlands
         0049

Section A

Information of participant / business.

Mark the applicable block with a cross (X).

A1	What is your age?	-30yrs	31-40yrs	41-50yrs	51-60yr	60yrs +

A2	What is your gender?	Male	Female

A3	What field of business are you in?	Financial		Food		Services		Professional	
		Other		Retail		Construction		Manufacturing Services	

A4	Where is your business situated?	N Cape		Gauteng		Free State		MP			
		E Cape		Limpopo		North West		KZN		W Cape	

A5	What is your position in the business?	Owner	Manager	Fin Manager	IT Manager	Other

A6	Number of staff members?	1-5	6-10	11-20	21-50	51-100	100+

A7	Your Business turnover pa (more than)?	R 50 000		R 250 000		R 1 000 000	
		R 100 000		R 500 000		R 5 000 000	

A8	How long have you been in business?	0-1yrs	1-2yrs	3-6yrs	7-10yrs	10 + yrs.

A9	Legal status of your business?	Closed Corp		Public Comp		Partnership		Trust	
		Private Comp		Proprietorship		Co-operative		Franchise	

Section B

Please rate the extent to which you agree or disagree with the following statements by making an "X" below the appropriate number on the 1 to 5 point scale next to the statement.

1 = Never	2 = Sometimes	3 = Neutral view	4 = Often	5 = Always

	STATEMENT	SCALE				
		1	2	3	4	5
B1	Is there a Management Information System in the business?					
B2	Is the information reliable?					
B3	Are there benchmarks available in the respective industry?					
B4	Are financial figures available?					
B5	How many decisions do you make without sufficient information?					
B6	Do you use management information for performance management purposes?					
B7	Do you import external information into your Management Information System?					
B8	What is the level of change in your business?					
B9	Are you aware of where external data comes from?					
B10	Are there specific business drivers in the business system?					
B11	Is information a part of your problem solving process?					
B12	Do your employees receive sufficient information on the purpose of their work?					
B13	Do your employees receive sufficient information on the result of their work?					
B14	Will you share un-certified information with external parties?					
B15	In your opinion, is there a positive relationship between the use of a Management Information System, and the performance of a business?					
B16	In your opinion, are there advantages in implementing a formal management information system?					
B17	What do you think is the level of financial data involved in management information?					

B18	Do you think you could create your own database for use in information management?					
B19	Are you aware of data bureaus in your industry?					
B20	Do you use the internet as source of business information?					
B21	Do you have knowledge of MIS Software packages?					
B22	Would you be interested in acquiring management information, for benchmark purposes, from an external data provider?					

Section C

Please rate the extent to which you agree or disagree with the following statements by making an "X" over the appropriate number on the 1 to 5 point scale next to the statement.

1 = *Bad*	2 = *Poor*	3 = *Neutral view*	4 = *Good*	5 = *Excellent*

	STATEMENT	SCALE				
		1	2	3	4	5
C1	What is the level of information available in your business?					
C2	What is the timorousness of financial information?					
C3	How important is timorousness for you?					
C4	What is the level of recurring decisions made in the business?					
C5	What is the level of availability of informal information?					
C6	What is your level of your computer literacy?					
C7	What is your experience in Financial Statements?					
C8	What is your experience in Budgeting?					
C9	How are people in general, towards the value of information?					

Section D
Kindly provide your comments and opinions here: