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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Management writers are in agreement that businesses worldwide have entered an era of information explosion. Although Toffler (1980) popularized the term 'The Third Wave' with regards to this era, by far the most common term for this found in management and economics literature is 'the information age'. The information age holds a number of daunting challenges for modern organizations, and more specifically, modern marketers. These challenges have contributed towards a fast-changing and dangerous environment for organizations. Testimony to this is the fact that, of the forty-three 'excellent' companies identified by Peters & Waterman in their seminal work 'In Search of Excellence' (1984), only 14 could still be considered 'excellent' five years later (Pascale 1990:16). The rest were experiencing management problems, and eight of them were in serious financial trouble. Research by De Geus (1988:70) confirmed this trend. Of the Fortune 500 companies of 1970, one third had vanished by 1983. South Africa reflected similar findings. In 1994, only 53 of the top 100 industrial companies of 1983 were still in business. Of these, only 32 grew their business in real terms (Sake-Beeld 1994:S1).

In order to gain insight into these environmental challenges, it is important to gain a perspective on developments in the business environment, the importance of information management in coping with these developments and to identify the problem statement, study objectives and approach to the research.

1.2 BACKGROUND TO THE PROBLEM

The problems that the modern organization face did not come about suddenly. Rather, it can be seen as part of an evolution of environmental challenges. What is true, however, is that the pace of change is accelerating. As part of the background, it is important to understand how this evolution (and sometimes revolution) took place.

1.2.1 The Industrial Revolution

According to Ansoff & McDonnell (1984:3), the evolution of challenges to business organizations was preceded by the period of development known as the Industrial Revolution (1820-1900). Rapid technological progress and the creation of a modern industrial infrastructure characterized this era. It was also a period of strategic turbulence, as organizations focused on the domination or absorption of competition (often through sheer size), instead of meeting competitors head-on in the marketplace. Thus, organizations in this era were predominantly inward looking in their approach to strategy and environmental change. They did not need to be externally oriented or to focus on marketing, as the relatively unsophisticated consumers of that time were eager to obtain any and all products that these emerging industries could produce. Strydom, Jooste & Cant (2000:10) describe this mindset as a 'production orientation'. In other words, it was a manufacturing organization's dream - a world where demand exceeded supply. Blattberg & Glazer (1993:10) describe it as an era of undifferentiated products and decentralized markets, where the role of marketing was restricted to identifying buyers and sellers.

1.2.2 The mass production era

The era of mass production (1900-1930) followed the Industrial Revolution. It was the result of the consolidation and further development of the industrial

infrastructure established during the Industrial Revolution, and was characterized by a production mentality. The basis of marketing and competing during this period was simple: the competitor offering its product at the lowest prices would win, often sacrificing quality. As a result, the focus was on mass production and scientific management (to minimize costs) above all else. Curry (1993:6) provides the examples of Coca-Cola, who sold one brand of cola, and Clairol, who sold only hair dye. However, Strydom *et al* (2000:11) point out another dimension of this era: the emergence of consumerism as a reaction to the unethical sales practices and misleading advertising often used to get rid of surplus products. Strydom *et al* refer to this era as the era of 'sales orientation'. According to Blattberg & Glazer (1993:10) two mindsets applied to this era, namely undifferentiated products in centralized (mass) markets, and differentiated products in centralized markets.

1.2.3 *The mass marketing era*

After the mass production era, markets for basic consumer goods were maturing quickly. Consumers were becoming more sophisticated and aware of their rights, and this triggered a shift to marketing as a basis for competition. The mass marketing era - 1930 to mid 1950's, referred to by Strydom *et al* (2000:11-12) as a 'marketing orientation' - saw the emergence of an open, extroverted organization, in which the role of consumer influence was paramount, often at the expense of production efficiencies. It could be said that in this era production was dominated by consumer needs. An example of this is the proliferation of 'gadgets' (for example in household goods and cars) that were often used to differentiate products, but were often inefficient to manufacture. This era was one of differentiated products in differentiated markets (Blattberg & Glazer 1993:10)

1.2.4 The post-industrial era

Examining the characteristics of the previous eras, it becomes clear that the organization could - up to the mass marketing era - control its own destiny by its own actions to a large extent, and were thus primarily driven by internal factors. With the advent of the post-industrial era in the mid 1950's, it is therefore not surprising, as Ansoff & McDonnell (1984) observe, that business managers still attempted to overcome discontinuity and environmental change by increasing their focus on products and markets. They mostly continued with inward looking strategies, which soon proved to be insufficient to manage change in this new era. This necessitated some new thinking, and so led to an era of strategic marketing management.

1.2.5 The era of strategic marketing management

The post-industrial era was followed by the era of strategic marketing management, which had an external focus and thus represented a paradigm shift for organizations as they realized that an internal focus was not adequate for this new era. This approach attempts to reconcile the strengths and weaknesses of the organization with its external opportunities and threats, to the best advantage for the organization (Strydom *et al* 2000:472-474). In other words, the focus was on managing the changes that occurred around the organization. It was consistent with the emergence of strategic management thinking during the same era, when open-system advocates like Chester Barnard came to the conclusion that organizations are in direct interaction with its environment, and does not control its environment, but is rather controlled by it (Thompson 1967:7). Strategic marketing management embraces the same principles of systemic thinking, external orientation and long-term planning as conventional strategic management, as can clearly be seen by comparing the concept with, for example, the work of Pearce & Robinson (1994) and Aaker (1995).

1.3 THE IMPORTANCE OF INFORMATION IN MANAGING CHANGE

The preceding paragraphs have alluded to the importance of information in addressing and managing change. From this, it follows that the most suitable management model for the information age is strategic management. Strategic management necessitates analysis of the organization's external and internal environments, in order to align resources with external opportunities. This analysis then forms the basis for long term and shorter term planning and implementation of these plans. As a whole, strategic management strives to align the management of the organization with environmental demands (Pearce & Robinson, 1994). This idea is further reinforced by the concept of market orientation (see Chapter 3). Market orientation theory determines that there are strong links between organizational success and the extent to which organizations generate, disseminate and especially act on information about its environment. Meehan (1999:122-124) points out that market orientation is dependent on the responsiveness to customer needs and the ongoing learning about the market that takes place in the organization

It would therefore appear that a vital aspect of survival and prosperity in the information age is the availability of information. As a key strategic asset, no organization could hope to survive without it. Furthermore, the mere availability of information is not enough - the information should be accurate, relevant to the decision it supports and in the right place in the right time. As the following discussion will show, more and more organizations are investing in information as a key resource.

Stanat (1990:5-6) recognizes three important trends in the way strategic management is influencing organizations:

- The trend to downsize (that is, to reduce the number of employees).
- The development of competitive intelligence operations.
- The increasing sophistication of corporate information centers.

It is interesting to note the consistency of the two latter trends with the concept of market orientation and the importance of supplying actionable information to managers. In fact, as Stanat subsequently explains, top companies invest large amounts of money and other resources in the provision of information to the organization. Table 1 is a summary of these information trends in the American Fortune 1000 companies.

Table 1 American Fortune 1000 information trends

FUNCTION	FORTUNE 50	FORTUNE 100	FORTUNE 500	FORTUNE 1000
Has a central data repository	85%	60%	40%	20%
Has an electronic system	60%	40%	25%	5%
Customized corporate intelligence databases	60%	35%	20%	<5%
Uses hard copy	65%	70%	85%	95%
Annual budget (\$000)	750-1000	500-750	250-500	0-250
Staff complement (# of employees)	6-8+	4-6	2-4	0-2
Profit center	Yes	Yes	No	No

Source: Stanat (1990:13)

From table 1, it is obvious that organizations in the top 50 and 100 invest significantly more in centralized electronic databases customized for use by the organization. On the other hand, they are moving away from hard copy sources of information. Furthermore, they devote considerably more resources (money and people) to their information resources, and tend to treat it as a profit center. The importance of this is that it could mean that information is seen as a strategic resource and not a commodity, and is therefore in great demand. The conclusion from this is that more successful companies tend to take the provision of information more seriously than less successful companies, a finding that seems to be supported by the market orientation concept (see chapter 3).

Table 2 provides an analysis of the types of information in greatest demand in the top American Fortune 1000 companies.

Table 2 American Fortune 1000 information products mix

TYPE OF INFORMATION	FORTUNE 50	FORTUNE 100	FORTUNE 500	FORTUNE 1000
Full-scale analytical projects and data-bases	60%	40%	25%	<15%
<i>Ad hoc</i> research	20%	30%	30%	20%
Quick information requests	10%	20%	40%	60%
Consulting and training	10%	10%	5%	<5%
TOTAL	100%	100%	100%	100%

Source: Stanat (1990:14)

From table 2 certain trends can again be extracted. The most important of these is the emergence of a trend towards full-time, professional data management and databases and away from *ad hoc* information provision. This certainly indicates, together with the previous table, that information management has become a serious issue in top organizations. It is also an indication that timely, proactive information is becoming more important and top companies are willing to invest resources in it, while *ad hoc* research and quick requests are becoming less important.

As a logical consequence to the analysis of corporate information centers, Stanat (1990: 187-198) makes a strong case for a strategic information system for marketing, regarding it as a vital component for managing the external changes facing marketing today. This leads one to examine the importance of marketing information systems to the organization, which will be dealt with after the key definitions have been expounded in the following section.

1.4 KEY DEFINITIONS

It is appropriate at this stage to introduce some of the key definitions regarding marketing information systems.

1.4.1 Management Information Systems (MIS)

Zwass (1992:6) defines the MIS as:

'An organized portfolio of formal systems for obtaining, processing and delivering information in support of the business operations and management of an organization.'

It is important to note that MIS is a support function, and serves as the 'decision-making infrastructure' of an organization. It therefore logically includes any sub-system such as marketing information systems (MKIS, see paragraph 1.4.2) that fulfills the same function.

Zwass (1992: 107) identifies Management Reporting Systems (MRS) and Decision Support Systems (DSS) as the management information systems most suited to lower and middle management, while Executive Information Systems (EIS) are targeted at top management. Ahituv & Neumann (1990:130-131) also identify Structured Decision Systems (SDS) as one of the components of a MIS. The following are brief definitions of each:

- MRS consist mostly of internal reports generated for study by managers. The format is very structured and detail, with very little analysis supplied. The focus is to support managerial control.
- DSS are used mainly for planning and decision making. It is future oriented, and is used mostly to analyze future scenarios and unstructured problems.
- EIS focus on the top-level control of the organization. Typically it provides summarized, high level information, but does allow for 'drill-down' into the detail information. In essence, it is a MRS for top management.
- SDS are aimed at structured decisions. It supports mainly the operational levels, and the SDS uses the data input to make the structured decision.

1.4.2 Marketing Information Systems (MKIS)

The marketing information system is one of the systems making up the organization's management information systems (MIS). It conforms to the definition of MIS, although Kotler (2000:100) provides a more detailed definition: *'A marketing information system consists of people, equipment and procedures to gather, sort, analyze, evaluate and distribute needed, timely and accurate information to marketing decision makers.'*

This includes any systems (like the MDSS defined in paragraph 1.4.3) which can be used to streamline and make the process of information gathering, processing, dissemination and decision-making in the organization more effective. MKIS will be discussed in more detail in Chapter 4.

The functioning of the MKIS is dependent upon data gathered about various aspects of the marketing environment, by various means such as internal reports, marketing research and market intelligence subsystems. Various marketing models are used to process and interpret the data, in order to provide meaningful information. The information is then distributed to marketing decision-makers at all levels, which will make decisions and communicate to their target markets based on the information. It is important to note that the primary role of MKIS is to support marketing decision-making (Schultheis & Sumner 1992:391).

1.4.3 Marketing Decision Support Systems (MDSS)

Although some authors, for example Van Nieveldt (1984:74), regard a Marketing Decision Support System as virtually identical to a Marketing Information System, the MDSS is a specific application within the MKIS. MDSS is defined by Little (quoted by Pitt & Bromfield, 1994:151) as:

'...a coordinated collection of data, systems, tools and techniques with supporting software and hardware by which an organization gathers and interprets relevant information from business and environment and turns it into a basis for marketing action.'

The MDSS will be described in more detail in paragraph 4.3.1.2.

1.4.4 Marketing Information

In order to gain a deeper understanding of the functioning of a MKIS, it is useful to understand the components of marketing information. Kotler (2000:100) and Pitt & Bromfield (1994:49) categorize some of the components of marketing information as below.

- Marketing research, which refers to the systematic design, collection analysis, and reporting of data and findings relevant to a specific marketing situation facing an organization. It is thus reactive and *ad hoc* by nature.
- Market intelligence, the procedures whereby everyday information is obtained. It is more proactive in nature.
- Internal reports, which consist of internal information such as sales records and reports and financial data.
- Marketing models or information analysis, which are needed as a cognitive framework in which to analyze, interpret and make sense out of data.

A term that seems to be used often in organizations as representative of the full spectrum of marketing information is 'market intelligence' (see for example Skyrme 1990 and Nel, Pitt & Van Erkom Schurink 1996). That term will therefore be used in this thesis interchangeably with 'marketing information'.

1.5 THE IMPORTANCE OF MKIS IN MARKETING

There seems to be a general recognition that marketing information is an important input into the marketing decision-making process. In fact, Borg & Hartvigsen (1991:145) describe the marketing function as primarily an information processing function. This statement is supported by the fact that most prominent marketing textbooks regard the environmental analysis function as the crux of the marketing effort - the foundation of all marketing strategies. For example, Strydom *et al* (2000:141) regard the management of marketing information as a strategic priority of the enterprise. Higgins, McIntyre & Raine (1991:50) stress the importance of information in marketing by stating that the management of marketing information is crucial to the success of the organization, and that it should be integrated with the strategic planning process. Aaker (1995) and other strategic marketing theorists like McDonald (1999:25-66) regard environmental analysis (and thus the management of environmental information) as the starting point and driving force pivotal to the strategic marketing process.

In order to maximize the use of marketing information, technology and processes need to be put in place to manage it. A marketing information system (MKIS) presents a solution to the marketer to gather, process and disseminate the information in the quickest and most effective way (MKIS is discussed in detail in chapter 4). Pitt & Bromfield (1994:1-13) describe it as a 'lens' through which the marketing decision-maker should be presented with a picture of the 'real world', and as such it should assist them in making intelligent marketing decisions. Applied correctly it has massive potential, and several cases point towards this potential. For example, Mayros (1990:97, 101) refers to several cases where organizations, through their use of information technology (IT) in marketing and sales, have gained impressive results. These included substantial increases in sales and productivity, and reduction in marketing costs and order turnaround times. Mayros (1990) quotes one example of a Fortune 500 organization

investing \$35.7 million in an MKIS for a return of \$325.4 million in increased sales in all its territories. McCann (1990:101) reports several successes enabled by MKIS. For example, Colgate Palmolive improved shelf coverage by 30% in its first year of implementation and Xerox Corporation improved marketing productivity by 10 percentage points. McCann also points out the dangers of not investing in MKIS. Whereas one out of every two of all marketing plans fail where MKIS has not been used, only 20 per cent fail when MKIS was used. Meehan (1999: 122-123) reports that companies that are responsive to customer requirements and competitive actions are clearly more successful than other companies who merely gather information. It is therefore clear that MKIS is not only a theory or a 'nice to have' for marketers, but can contribute materially to the success of companies willing to invest in it.

The concept of MKIS has no formal links with any specific technology, and is regarded by early exponents to be a conceptual system, in which the flow of information is the essential element. Technology plays a secondary role. However, IT has developed so rapidly, and has become so prevalent in organizations, that virtually all decisions involve some interaction with technology. Also, the marketing function promises to benefit greatly through the use of IT (see Moriarty & Swartz 1989:100). Because of the reasons stated above, it is impossible to conduct any study of MKIS without taking into account the role of technology.

1.6 THE EVOLUTION OF MKIS

Through the years the way in which IT has been used in processing marketing information has changed with the developments in IT. The evolution of MKIS is described below (McDaniel & Darden 1987:116-117).

1.6.1 Electronic Data Processing (EDP)

This form of processing was extensively used during the 1960s and 1970s. It consisted mainly of processed data (in other words, information) in the form of data summaries. Wallis (1989:1) describe these as 'freight systems', providing huge amounts of essential data about all operations. Wallis (1989:3) describes this as the 'early applications era', focusing on back-office applications such as personnel records and payroll functions. This era had little or no links with corporate strategy, and little top executive involvement. The focus was mainly on transaction processing and record-keeping (Fletcher 1990:46). A contribution to this state of affairs was that computer technology was still in an early development phase, and computer literacy was not prevalent among users of information - especially not among marketing decision makers.

1.6.2 The Marketing Information System (MKIS)

The next step in the evolution was the formalization of the marketing information system (MKIS). The focus of the MKIS is information, often 'creating' data by various collection methods such as marketing research and market intelligence programs. It provides the marketing decision-maker with data in general and summarized format. The burden is on the decision-maker to select the useful information. Mohan & Holstein (1994:246) describe this situation as an overload of data, but with a lack of meaningful information. The MKIS developed after the enthusiastic reception of management information systems (Li, McLeod & Rogers, 1993:166).

1.6.3 Marketing Decision Support Systems

During the 1970s, the concept of marketing decision support systems (MDSS) became popular. The systems and flow of information are relatively unstructured, but its value lies in the use of information systems and software by decision-

makers to generate information to support a specific decision directly. It relies on computerized versions of marketing models and decision models to enable decision-makers to manipulate data. Mohan & Holstein (1993:231) forecast that MDSS will be expanded in scope and sophistication, and will become an essential component of the organization's ability to remain competitive. However, for various reasons, many marketers tend to cling to the 'traditional' concept of the MKIS, as Li *et al* (1993:166) point out in their research findings.

1.6.4 High-order Convergence

Wallis (1989:3) identified a fourth era, namely that of 'high-order convergence', which has already started and will increasingly lead to the convergence of voice, data and communications networks. A current example of this is the Internet. Fletcher (1990:46) regards this state of convergence as the current pinnacle of the computer evolution, where the computer is part and parcel of the strategic planning process, decision-making and implementation of business processes. In other words, IT can be used in business processes to obtain a competitive advantage. This approach is consistent with the high level of complexity encountered by modern organizations.

1.7 MARKETING INFORMATION IN THE SERVICES INDUSTRY

Services currently make up more than half the gross domestic product of the United States of America (Churchill & Peter 1998:286). Churchill & Peter (1998) also refer to the growth of the 'service economy', an economy in which service organizations are playing an increasingly important role. One example of this is the global presence of credit card companies. This growth in services is also the trend in most developed and developing countries. However, there are signs that service organizations are not coping well with the demands of their customers.

Nel, Pitt & Van Erkom Schurink (1996:4) report that service organizations are generally not as market orientated as their counterparts in wholesale/retail and in manufacturing. This is borne out by the Markinor survey among service customers (1999), in which South African service organizations are generally rated poorly by their customers.

In a general sense, the latest World Competitiveness Report (IMD International 1998:280) rates 'customer orientation' as one of South Africa's weak points. South Africa is rated 41st in this aspect out of 46 countries rated in the survey. A more detailed discussion of South African service organizations is provided in chapter 2, section 2.10.

1.8 PROBLEM STATEMENT

Generally, service organizations (and indeed other organizations) worldwide experience the same kinds of information problems, which are more acute in developing countries. They are hampered by insufficient information and knowledge, which plays a key role in coping with change, and may be a possible reason for the poor performance in satisfying customer requirements. The problems they are experiencing are similar to those identified by Proctor (1991:55) below.

- There is too much irrelevant information.
- Not enough information of the right kind is disseminated.
- Information is too dispersed to be useful. Due to the piecemeal development of MIS and the geographic and organizational dispersion of information, integrated and meaningful information is hard to obtain.
- Information arrives too late to be useful. Due to the number of systems involved and the geographical dispersion of information sources, key management information is sometimes too old to be useful.
- Information arrives in a form that gives no idea of its accuracy and therefore lacks credibility.

Buttery & Buttery (1991:26) point out that MKIS is exciting and promising in theory but is often a disappointment in practice. Even in companies who have implemented MKIS, adoption and satisfaction among users are generally low. This often leads to the failure of MKIS. Cambridge Market Intelligence (1996) point out that the following problems are hampering the adoption of MKIS:

- Short term vision.
- Poor understanding of MKIS benefits.
- Pressure for quick results.
- Lack of management commitment.
- Users who are reluctant to seek help when they experience problems.
- Ineffective change management around MKIS implementation.
- Weak project management.
- Poor communication around MKIS.

Table 3 summarizes some of the problems surrounding MKIS identified by Cambridge Market Intelligence (1996).

Table 3 Myths and realities of sales and marketing systems

MYTH	REALITY
The database collects what is needed	Easily available information is collected
The database measures what matters	Users measure what is least embarrassing
The database users understand what data is needed	Users know what was used last, what the textbooks say and what might be interesting on a rainy day
The database needs to hold more and more data	Lots of data creates a false feeling of security, even when nobody knows how to use it
The database must integrate the data physically	Neat solutions are required, whatever the cost
The database will save staff time	More staff is needed to analyze data
The database will harmonize marketing, finance and sales	All functions will compete for scarce resources, and that involves fighting
The database is the one single source of market intelligence	Business problems have not been thought through

Adapted from: Cambridge Market intelligence (1996)

Guerra (1999:73-76) also identifies the lack of data integrity (in other words, 'dirty' data) as a source of many problems in the application of customer databases.

From the above, it seems as if service organizations are in great need of an integrated MKIS supplying timely, accurate and relevant information to its marketing decision makers. This leads to the problem statement.

Service organizations lack an integrated marketing information systems (MKIS) model that will solve the aforementioned problems.

1.9 STUDY OBJECTIVES

The objectives of the study can be divided into primary and secondary objectives. Broad hypotheses are identified with the objectives. These hypotheses will be expanded and discussed (taking into account the results of the research) in chapter 8.

The primary research objective is:

- To provide guidelines for the formulation of a marketing information system model for South African service organizations.

Hypothesis: *Marketing decision-makers in service organizations have a higher requirement for decision-support information on the market environment (customers and competitors) than other marketing decision-makers.*

The secondary research objectives that flow from the primary objective are:

- To determine the antecedents of MKIS in South African service organizations.

Hypothesis: *Timely, accurate and relevant information in the right format will result in high satisfaction with the quality of marketing information.*

- To determine the level of MKIS development in South African service organizations.

- To determine the extent to which information technology (IT) plays a role in MKIS in South African service organizations.

Hypothesis: *Marketing decision-makers in South African service organizations have a higher usage of high-level decision support technology than other marketing decision-makers.*

- To determine the link between MKIS and market orientation in South African service organizations.

Hypothesis: *The higher the level of satisfaction with marketing information quality, the more market oriented marketing decision-makers will be.*

- To compare the application of MKIS in South African service organizations with the application of MKIS in international organizations.

Hypothesis: *American and European marketing decision-makers are more advanced in their use of information technology and is therefore more satisfied with the quality of marketing information available to them.*

- To determine further possible areas of study in this dynamic field.

1.10 RESEARCH METHODOLOGY

The research objectives will be addressed by a combination of secondary and primary research. Chapters 2 to 5 will address the literature review and secondary sources of information as well as some conclusions regarding the theoretical aspects. The methodology for primary research will be addressed in detail in chapter 6.

1.11 CHAPTER OUTLINE

Chapter 1 provides the introduction, the background to the study, the primary and secondary research objectives and the chapter outline.

Chapter 2 provides a background of services marketing, in other words the nature and scope of the environment that a service organization functions in. It also provides an overview of the services industry in South Africa. In addition, this chapter provides a background to the structure of marketing information and marketing information requirements of marketing decision-makers in service organizations.

Market orientation is the topic of chapter 3. This important concept is pivotal to the understanding of the role of information in marketing decision making and organizational success in general.

In chapter 4, the theoretical background to marketing information systems is discussed. This includes a discussion on the role of information technology in marketing, which is followed by an analysis of MKIS models and international research on this topic.

Chapter 5 integrates the theory discussed in previous chapters into an integrated MKIS model that will be used in the empirical research undertaken in chapter 6.

Chapter 6 outlines the hypotheses and research methodology for the empirical research.

In chapter 7 empirical research findings are discussed.

Chapter 8, the final chapter, contains the conclusions based on the empirical results and the comparison thereof to the secondary research. This chapter also contains recommendations and suggestions for further research.

1.12 CONCLUSION

Chapter 1 sets the tone for the rest of the thesis by providing a background analysis of the problem. It first illustrated that the business environment has changed to the extent that organizations are finding it difficult to cope. It then illustrated that this is also applicable to the service industry. The important role of information (and subsequently of information systems) in assisting organizations to survive was highlighted next, and it was finally illustrated that service organizations are having difficulties in coping with their environments. This led to the definition of the problem statement, in response to which research objectives and a chapter outline was formulated. Chapter 2 will address the issue of the nature of marketing information and decision-making.

CHAPTER 2

SERVICE ORGANIZATIONS AND THE USE OF MARKETING INFORMATION FOR DECISION-MAKING

2.1 INTRODUCTION

The marketing of services has attained some prominence in marketing literature. However, far more attention has been given to the marketing of products, even though services account for the majority of economic activity in developed countries (Randall 1993:188). In order to understand the relationship between service organizations and marketing information, it is important to first obtain an understanding of the nature of service organizations and services marketing. In addition to this, it is important to understand the nature of marketing information and how it benefits service organizations. This will be followed by an analysis of the processes involved in services marketing, the importance of relationship marketing and finally the relationship between specific aspects of services marketing and marketing information. In the last section (section 2.10) attention will be given to the South African services industry.

2.2 THE NATURE OF SERVICES MARKETING

While many product offerings contain service elements, just as many service offerings contain tangible elements, there are specific characteristics that distinguish services marketing from the marketing of products. Lovelock (1996:49-50) have identified four kinds of services:

- People processing, aimed at customers' bodies, such as medical services and the beauty care industry.
- Possession processing, such as car cleaning services and house renovations, focusing on customers' possessions.

- Mental stimulus processing, that provides mental stimulation to customers. This may include services like films, the theatre, education and television and radio broadcasting.
- Information processing, such as banking, legal services, accounting and insurance.

The basic differences between products and services are defined by Lovelock (1996:16-21) and Kurtz & Clow (1998:10-14) and are discussed below.

2.2.1 Intangibility

One of the most obvious differences between services and products is that the bulk of the service being sold is intangible. However, the service may contain a physical element. For example, for a subscriber to a cellular service, the cellular phone and accessories are tangible, but the bulk of the offering (for example making and receiving calls, voice mail and caller identification) is intangible.

2.2.2 Perishability

Since service is intangible, it cannot be kept in inventory, saved or stored like a product.

2.2.3 Inseparability of production and consumption

A unique characteristic of a service is that the production and the consumption of the service cannot be separated and occurs simultaneously. For example, a film is being projected at the same time that it is being watched by patrons who paid for that service.

2.2.4 Variability of service

Variability refers to the random levels of service that may be experienced by customers, and is a direct result of the nature of service. While products are controlled and are manufactured uniformly at their point of production before ultimately being sold and consumed, every service encounter is unpredictable and may deliver a different result to the customer.

2.2.5 Customers take part in creating the service

Quite often the customer in services marketing actually participate in the production process. An obvious example of this is a telephone, where customers dial the numbers they want to call themselves.

2.2.6 People form part of the product

In the delivery of services, other people (service employees and other customers) often form part of the product offering. For example, in a theatre, the ticket seller, ticket controllers and sellers of refreshments all form part of the offering. Other customers sharing the experience (and their reactions) also form part of the offering or experience of the service.

2.2.7 Quality control issues

Since services are created in real time, with a lot of influences that are difficult to control, it is very difficult to control quality.

2.2.8 Customer evaluation

In the case of a tangible product, it is relatively easy for the buyer to evaluate the product. However, with services the customers mostly have only their own

feelings and emotions and those of others to go on. This makes it very difficult for the customer to evaluate the experience, both before and after the purchase. For example, if a customer wants to see a film, the only information to support the decision may be the information from friends who have seen the film and from film critics. Even after the film has been seen, the customer may be uncertain as to whether it really provided value for money and may again rely on the opinions of others.

2.2.9 Time constraints

In order for production and consumption to occur at the same time, customers have to commit their time in order to experience the service. This may bring about time constraints for the customer and some reluctance to spend the time required. For example, the customer may require some complex dental work that needs commitment for 3 hours, but find it hard to commit more than an hour to have the work undertaken.

2.2.10 Different distribution channels

In the delivery of services, the distribution channel also forms part of the creation of the product. As such it needs to support the positioning of the service. For example, a plastic surgeon who targets up-market patients who need cosmetic surgery would need to be in a location in suitable rooms to convince wealthy patients that he is qualified to trust with their appearance.

2.2.11 Relationship

A characteristic defined by Churchill & Peter (1998:289) is the relationship nature of services marketing. For example, subscription services such as a telephone service (where customers are billed on a monthly basis) precipitates a

relationship where the service provider and the customer constantly exchange information.

The characteristics discussed above are not the only differences between services and products. Traditionally, the 'marketing mix' focused on the 'four p's' - namely product, place, price and promotion. However, for service organizations, this concept was broadened to include people, process and physical evidence as additional tools in the services marketing mix. The seven p's of services marketing are discussed using Zeithaml & Bitner (1996:23-27) as a guideline.

- The product refers to the actual product or service, the way it is packaged and branded and the quality associated with it. For example, MTN Weekender is branded as a package for 'on-the-go' young individuals who have time to spend on weekends.
- The place refers to the distribution channel used to distribute the service. In the case of the Weekender, it is distributed through MTN service providers.
- Price is an important component of any service offering. This refers to all aspects of price, for example level, flexibility and discounts.
- Promotion encapsulates those activities used to communicate with the target market. In the case of the Weekender, for example, television and print advertising was used extensively. However, all aspects of sales promotions, salespeople and publicity are also included in this category.
- The people component of services marketing includes all people involved in creating the experience of service delivery. This may include the following: staff, the customer being serviced and other customers in the service environment.
- All services are delivered by means of a process that involves certain steps. For example, in getting a Weekender package, the customer has to apply for it, his credit references are checked, and the application is approved. Then the customer will get the cellular phone, the telephone number and SIM card needed to activate the service. The complexity of the process may differ from service to service.

- The tangible aspects (for example buildings, signage, equipment and clothing) used in providing the services are known as physical evidence. In the case of the Weekender package, the cellular phone and SIM card are examples of physical evidence.

It seems that the marketing of services tend to be more complex due to the unique characteristics of services. This may be one of the reasons why service organizations experience problems with service levels. In order to understand this complexity better, it is necessary to examine the process whereby services are provided.

2.3 THE SERVICE DELIVERY PROCESS

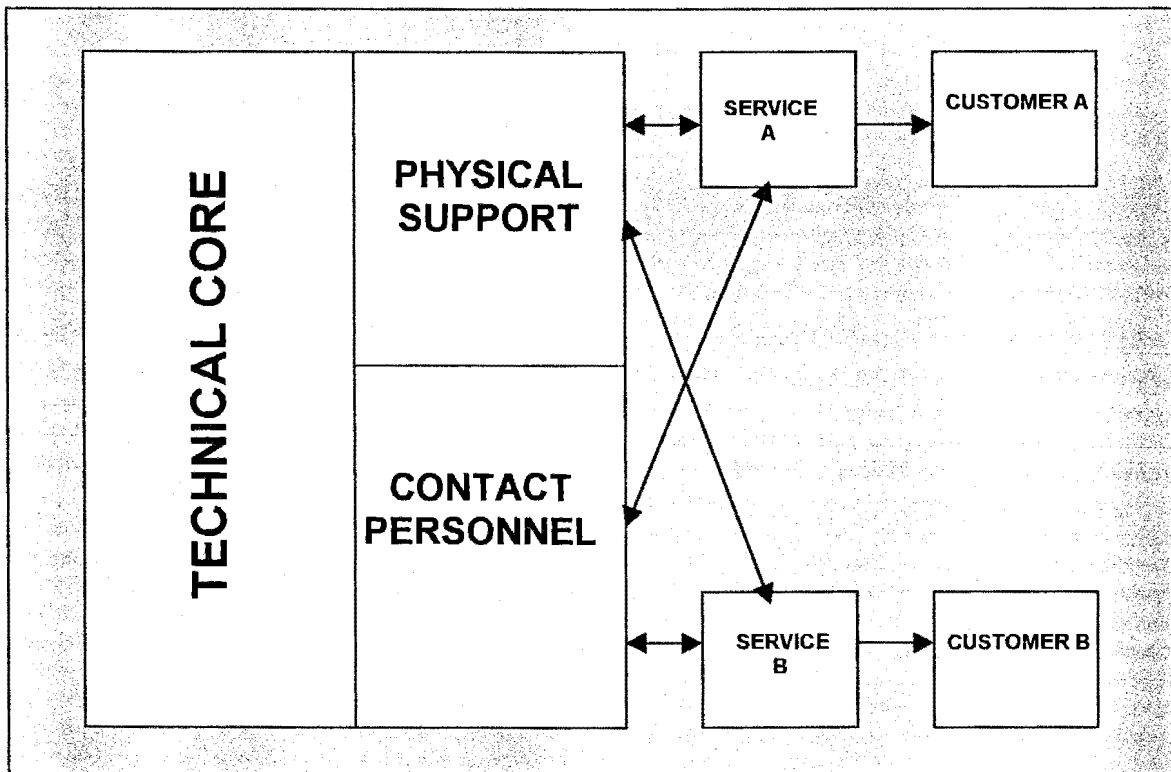
The service delivery process determines when, where and how a service is provided to the customer. A diagram of this process is provided in figure 1. The process will subsequently be discussed using a telecommunications organization as an example.

The operational heart of service delivery lies in the technical core. Here, the service is 'manufactured'. For example, in the case of a telecommunications organization, the telecommunications network consisting of telephone exchanges, signal relays and other elements has to be built, operated and maintained.

The physical support component of a service refers to the physical infrastructure required to provide a service. In the case of a telecommunications organization, this may mean things like call centers, customer service centers and telecommunications equipment need to be in place before a service can be delivered. The physical support function can interact with the customer without the presence or intervention of customer contact personnel. For example, every time a telephone service subscriber picks up the phone, a 'dial tone' is provided

without the necessity for contact with service personnel. Customer contact personnel also play an important part in the service delivery process. However, it is often only when customers require more information, want to subscribe to or purchase a new service or want to complain that contact personnel interface with the customer. While the technical core is key to the production of a service, the physical support and contact personnel together form the interface to the customer and will determine which customers end up with which service. In terms of the figure, the contact personnel will determine that service A is provided to customer A and service B to customer B.

Figure 1 The service delivery process



Source: Lovelock (1996:52)

There are many possible contact opportunities that may also have an effect on the customer's purchase and/ or experience of a service, such as:

- Billing.

- Advertising and promotional activities.
- Sales calls.
- Marketing research surveys.
- Mail.
- Telephone calls.
- Random exposure to the organization or service (such as seeing a vehicle with the organization's logo).
- Chance encounters with service personnel.
- Word-of-mouth.

The service delivery process describes the process by which a service is delivered. However, this looks at service provision from the point of view of the organization. The next topic to be addressed is the decision process from the customer's point of view, also called the service purchasing decision process. In other words, how does the customer decide when, where and how to obtain a service?

2.4 THE SERVICE PURCHASING DECISION PROCESS

The service purchasing process comprises of a pre-purchasing process, a service encounter and a post-purchase evaluation. These three phases will now be discussed in more detail. Again, the telecommunications industry will be used as an example to illustrate the discussion.

2.4.1 Pre-purchasing phase

During this phase, the customer weighs different service alternatives and the relative benefits of different service options. The factors influencing this phase are factors internal to the customer, external to the customer, factors related to the service organization and the perceived risk (Kurtz & Clow 1998:35-54).

2.4.1.1 Internal factors

These are factors internal to the customer and includes the following:

- In every purchase decision, the needs and wants of the customer is the most important factor. For example, when choosing cellular services, customers may respectively have the need for mobility, security, status or affordability that may influence their decision.
- Expectations of customers may also have an impact on their decisions. For example, based on advertising, word-of-mouth and past experience, a customer may expect a prepaid cellular service to be an affordable way of getting a cellular service.
- Past experience (whether positive or negative) may dictate customer choice. For example, if the service in the above example does turn out to be affordable, it would tend to have a positive influence on the customer's perception.
- The level of involvement required purchasing the service. If the customer buys a normal telephone service, less time would be spent on information gathering and deciding than when buying an expensive data subscription service and equipment.

2.4.1.2 External factors

These are factors outside of the customer influencing the decision. These include:

- The competitive options available. For example, customers subscribing to cellular services may have the choice between three cellular providers providing different contract and prepaid service packages.
- The social context of the service. For example, a customer may choose a brightly colored telephone for the home, but a more sedate color for the office.

- Word-of-mouth heard by the customer when asking other people for advice or comment on particular suppliers and services.

2.4.1.3 Factors produced by the service organization

The service organization also produces a number of stimuli designed to guide customers' decision making. These are:

- Promotions, for example when Telkom offers discounts for a limited time on installation charges to encourage customers to subscribe to telephone services.
- Pricing may play a role in the decision when considering value for money. In the cellular industry, prices for services have dropped consistently as the market matures and seem set to continue dropping as the battle for subscribers continues.
- Distribution of the service to make it accessible to customers. For example, vending machines in public areas are now used to sell prepaid Telkom and cellular phone cards.

2.4.1.4 Risk

Services are often experiential in nature, and are therefore regarded as a more risky purchase than products. The different types of risk influencing the customer's decision are:

- Social risk – would this service influence the customers' standing negatively? For example, a customer may refrain from using a public telephone for business in favor of a cellular phone, in order to maintain a business-like image. This concept is closely related to the concept of psychological risk. In other words, could the service cause psychological damage to the customer?

- Opportunity loss – could the customer have done or purchased something else that might have provided more value for money than consuming the service?
- Performance risk – would the service perform as required? For example, if a customer purchased a prepaid service to save money on the telephone account, it should result in savings on the monthly telephone spending in order to perform to expectations.
- Financial risk – would the service be a waste of money to the customer? As in the example above, if the service does not lead to savings as expected, the customer may perceive it as a waste of money.
- Time-loss risk – would the customer waste time in consuming the service? For example, when applying for a telephone landline, customers often have to wait for weeks, whereas a prepaid cellular is available immediately. Customer may choose the cellular option to avoid time-loss.
- Physical risk – is there a physical risk to the customer? One example of this is the recent debate as to whether cellular signals can cause brain tumors or not.

2.4.2 Service encounter

The service encounter is the second phase in the service purchasing decision process and refers to the point where the decision has been made and the service is purchased and consumed. The factors influencing the customer during this phase are described below.

2.4.2.1 Service personnel

The encounter with service personnel can to a great extent define the customer's experience of the service. Service personnel can interact with customers in two ways:

- According to a role that was specified and is 'played' by the service employee, for example an employee handling customer complaints at a regional Telkom office.
- According to a script, where a certain pattern of questioning or interaction is repeated for every customer. For example where a customer reports a fault to a call center and a specific set of questions is asked of every customer.

2.4.2.2 Service environment

This refers to the physical environment in which the service is consumed. This can vary, for example, from a customized physical environment such as a retail outlet (for example Vodaworld) right down to a 'virtual environment' on the Internet. For example, through the Flexi-bill service, Telkom subscribers can gain on-line access to their telephone accounts.

2.4.2.3 Support services

Support services enable a service to happen and to be delivered to the customer. For example, support services in the context of a telecommunications organization may include things like physical installation, fault repairs and account enquiry services.

2.4.3 Post-purchase evaluation

After consuming the service, the customer will evaluate the experience. This is the third phase in the service purchasing decision process. This will lead to a certain level of satisfaction and will influence whether the customer uses the service again or not. In other words, the service experience and the way the service lives up to customers' expectations influence customer retention. It may also influence the way in which the customer relates the experience; in other words it would also influence the purchasing decision of other customers. The next section deals with those factors influencing customers' expectations.

2.5 ANTECEDENTS OF CUSTOMER SERVICE EXPECTATIONS

One of the key areas that determine the customer's satisfaction with service delivery is customer expectations. There are many influences on these expectations, which are described below (Kurtz & Clow 1998:70-82). However, this contributes to and illustrates the complexity of the service environment, since many of these factors are almost impossible to control.

2.5.1 Internal factors

These are factors internal to customers that determine service expectations.

- What are the customer's needs? For example, if the customer has a need for security, this may make network coverage and availability of emergency numbers the most important expectations in buying a cellular service.
- The higher the tolerance of service deviations, the lower the level of involvement the customer would be willing to tolerate. For example, the acceptable level of involvement may be lower when buying an 'incoming only' prepaid cellular service for a customer than when buying a R600 per month business cellular contract.

- Past experience with the service provider is the most important determinant of expectations.
- Personal service philosophy may also play a role in expectations. Some customers tend to have higher service standards than others. For example, metropolitan customers might have higher service expectations than rural customers.

2.5.2 External factors

These are factors outside of the customer influencing expectations.

- The competitive options available. Customers will match expectations of service to the services delivered by competitive service providers.
- The social context in which the service is presented. For example, in a business context among colleagues customers may be more demanding than when they are on their own in a personal context.
- Word-of-mouth, interaction with other past and present customers of a service would also tend to influence expectations.

2.5.3 Situational factors

These factors are almost 'circumstantial' in nature, but may influence the expectations of the customer greatly.

- Weather may influence service expectations. For example, in rainy weather Telkom customers might expect more faults to occur than under normal circumstances.
- The customer's mood may influence their expectations. For example, customers in a good mood tend to be more tolerant of service personnel.
- The reason for the purchase may influence expectations. For example, if a telephone is acquired mainly as a social instrument, the customer may have different expectations to when it is acquired as a security measure.

- Time constraints on the customer may influence their expectations. If the service is required immediately, expectations might be lower than when the customer has time available to make the decision.

2.5.4 Antecedents produced by the service organization

The organization itself produces a number of factors that may greatly influence customer's expectations. The following may influence customer expectations:

- Promises made during a promotional activity around the service.
- The higher the price, the higher the service expectation.
- Consistency - where customers may expect the same service from similar distribution channels. For example, customers will expect similar service at all Telkom customer service branches.
- The communication between service personnel and the customer will influence expectations. For example, if a customer is told that a new telephone service will take approximately 48 hours to install, that is what the customer will expect.
- Tangible cues to service levels, for example uniforms worn by service staff and the exterior and interior appearance of Telkom service branches may influence customer expectations.
- The way that other customers react to service may influence expectations. For example, if a customer is treated well at the service branch counter, other customer may expect the same treatment.
- The image (or 'branding') of the organization may dictate expectations. For example, if image of the service provider is poor, that will tend to lead to lower expectations.
- Pre-service waiting (for example a queue at a service branch) may influence the customer expectations. The longer the wait, the higher the service expectation.

The above discussion illustrated the relatively complex nature of services marketing. In addition to this complexity, service organizations also operate in a complex environment. This further drives the need for marketing information, as the following section will show.

2.6 ENVIRONMENTAL FACTORS AND MARKETING INFORMATION

The previous sections examined the nature of services and the processes involved in both the organization providing the service and in the customer who makes the purchasing decision. However, before the importance of marketing information in service organizations can be examined, some understanding needs to be gained of the nature of marketing information.

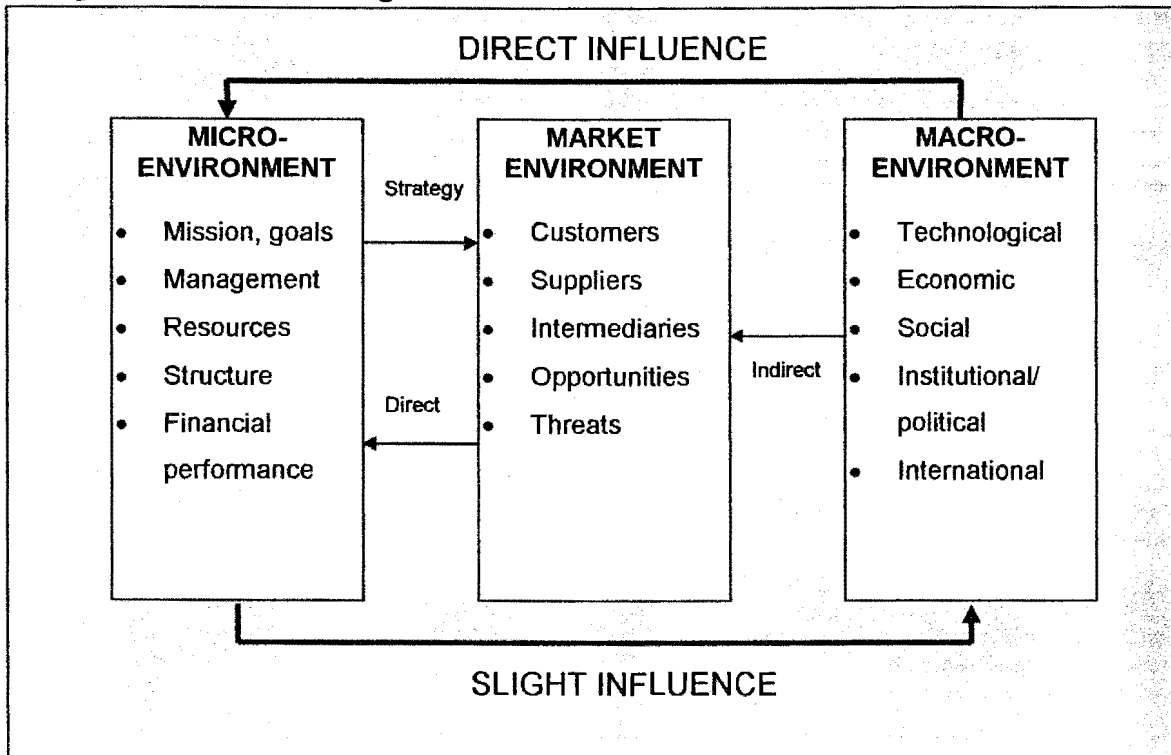
Cronjé, Du Toit & Motlatla (2000: 63-97) identify three levels of environmental influence on any organization, namely:

- An internal or microenvironment, which refers to the situation within the organization itself. In other words, the functional areas of management.
- An industry or market environment consisting of consumers and competitors, which is partly under control of the organization.
- A remote or macro-environment which is not under the control of the organization at all, consisting of economic, social, institutional, international and other factors.

Within these three levels there are some differences in approach. This theoretical framework will be discussed in this section, based on the work of Palmer & Worthington (1992:65-232); Pearce & Robinson (1994:61-100); Aaker (1995:43-149); Cronjé, Du Toit & Motlatla (2000: 63-97) and Strydom *et al* (2000:33-69). Figure 2 is a schematic representation of the marketing environment.

Three sub-environments in the marketing environment are identified in figure 2. The sub-environments and the extent to which they interact are discussed below.

Figure 2 The marketing environment



Adapted from: Cronjé, Du Toit & Motlatla (2000:64)

2.6.1 The remote or macro-environment

This sub-environment is the furthest removed from the organization and could influence the organization directly or indirectly. In turn, the organization has relatively little influence over the macro-environment. It may attempt to exert some influence, such as lobbying the government.

The macro-environment is generally divided into the following categories:

- A technological environment, which drives technological renewal and change. For example, in the telecommunications industry the newly developed

Wireless Access Protocol (WAP) promises to drive a range of new services and applications for cellular telephony.

- An economic environment, with macro economic factors such as monetary and fiscal policy as the main drivers of change. For example, lower taxes in higher income brackets are expected to drive some new investment and growth in the economy.
- A social environment, which refers to the human element of the macro environment, which includes aspects such as lifestyle, culture, demographics and consumerism. An example of this is the growth trend in prepaid cellular telephones, which have become a status symbol in lower income groups.
- A physical environment, which consists of natural phenomena as well as man-made physical structures. A lot of service delivery mechanisms have a direct impact on the environment, such as telephone booths, automatic teller machines (ATMs) and cellular masts.
- The institutional/political environment with government, politics and the law of the land as its major components. For example, the telecommunications laws have a fairly direct bearing on the way telecommunications services may be delivered.
- An international environment, where events outside of the national borders influence the organization. In the services industry, many services are now available on a global scale, for example credit card services may be used anywhere in the world.

2.6.2 The market environment

This is the environment immediately surrounding the organization. The organization exerts a direct (albeit limited) influence on it, while being directly influenced by it. Components of this environment are:

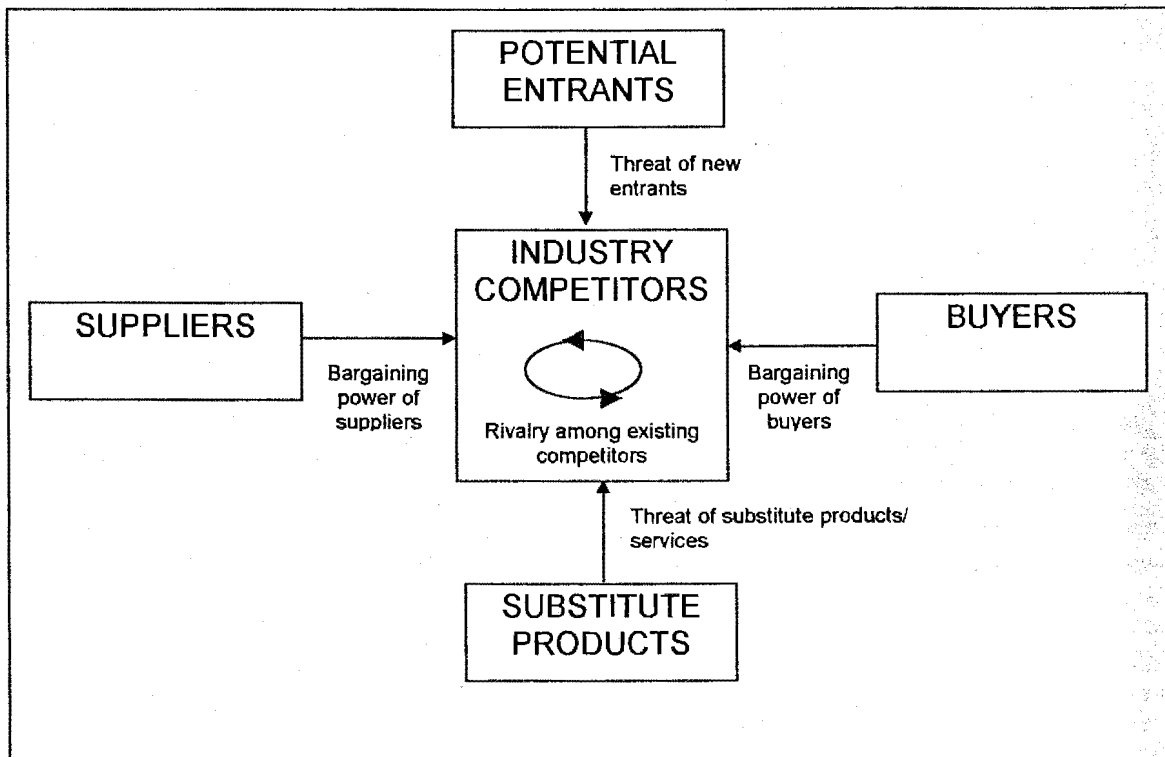
- Customers with specific consumer behavior and buying patterns. For example, the electricity and telecommunications suppliers in South Africa have seen massive growth in the demand for prepaid services.
- Competitors wanting to improve or maintain their position. An example of this is the media debate between Vodacom and MTN on network quality that characterized the competitive relationship a few years ago.
- Distributors or channels (for example retailers) handling the organization's products and services or those of its competitors. More and more 'third party' intermediaries are being used to deliver services. For example, agreements between Shoprite and Telkom allow Telkom to operate booths in selected Shoprite stores.
- Suppliers of material, labor, financing and other resources to the organization.
- Interest groups or stakeholders. This may range from the broad public to specific shareholders in the organization.

Of particular interest in this regard is the 'five forces' approach to industry analysis advocated by Porter (1980:127-190) and which is still widely used today. This is represented in figure 3. Porter contends that there are five forces that drive competition in any industry. These are:

- The relative power suppliers can exert on organizations due to their position in the industry. For example, Telkom has a certain level of power over its customers due to its fixed-line telephone service monopoly.
- The relative power of buyers due to their size and relationship with the organization. For example, Telkom recently caused a crisis in the electronics industry when changes in procurement policies of network equipment were announced that were expected to influence profit margins in the industry negatively.
- The threat of new entrants to the industry. The third cellular operator is currently a new entrant preparing for entry into the telecommunications industry.

- The availability of substitute products to replace existing products or as an attractive alternative. In that regard, the landline telephone industry has seen some customers opting for cellular telephones instead.
- Rivalry among existing firms in the industry (‘jockeying for position’) such as the rivalry between Vodacom and MTN in the cellular industry.

Figure 3 Forces driving industry competition



Adapted from: Pearce & Robinson (1994:77)

Pearce & Robinson (1994:83-88) also point out that an industry could further be analyzed by defining industry boundaries and industry structure, which refers to the level of concentration, economies of scale, product differentiation and barriers to entry which apply to the industry.

2.6.3 *The micro or internal environment*

The microenvironment is the organization itself. It consists of aspects like:

- Mission of the organization. In other words, what is the direction of the organization? For example, it has been a goal of MTN to become a continental telecommunications provider rather than confining themselves to South Africa.
- Management of the organization. This involves the risk profile and management style of the organization. For example, banks have traditionally been managed relatively conservatively.
- Resources refer to resources available to the organization in the form of capital, working capital and human resources.
- Financial performance may relate to the extent that funding would be available for new projects and expansion.
- Strengths and weaknesses of the organization relative to its competitors. For example, while Telkom has more existing customers and a larger network than the cellular providers, the cellular providers are able to move faster in offering new products and services.

The preceding paragraphs provided a glimpse of the complexities of the environment that service organizations have to function in. However, the organization needs to gather information in order to understand the environment. The possible sources of information are summarized in figure 4 and discussed below.

External information is information acquired externally to the organization, as opposed to internal information. On the other hand, secondary information refers to existing information, while primary information is information that is gathered for the first time.

Figure 4 Sources of information

Secondary	<ul style="list-style-type: none"> • Industry publications • Annual reports • Publications • External databases • Special reports • Market intelligence 	<ul style="list-style-type: none"> • Internal records and databases
Primary	<ul style="list-style-type: none"> • Market surveys • Market intelligence 	<ul style="list-style-type: none"> • Internal surveys
	External	Internal

Adapted from: Du Toit (1990:9-20), Malhotra (1993:120-155) and Kotler (2000:100-118)

This division of information results in four possible combinations of information.

- Secondary internal information is the information already existing within the organization, for example sales and accounting records.
- Primary internal information refers to information gathered afresh inside the organization. For example, an internal survey on internal customer service would fall into this category.
- Secondary external information is typically published outside the organization, and can be obtained or bought by the organization as required. Companies are often inundated by secondary information, ranging from free information

from the Internet to very expensive specialized industry research. This aspect needs careful management. Some examples of this information:

- Industry and government body publications, such as the International Telecommunications Union (ITU) reports in the telecommunications industry.
- Specialist industry research, such the BMI-Techknowledge Databook in the IT industry.
- Annual company reports can also be a valuable source of information.
- External databases, for example the I-Net Bridge news and financial database.
- Special reports, such as the King Report on Corporate Governance.
- Primary external information consists basically of market surveys conducted to address specific issues or topics and market intelligence. It is the *'systematic design, collection, analysis and reporting of data and findings relevant to a specific marketing situation facing the company'* (Kotler 2000:103). In essence, primary external information or market intelligence will focus on the market environment. Research generally follows a specific, scientific process and can be quantitative or qualitative or both (Palmer and Worthington 1992:8-10). It can consist of:
 - Syndicated research (one survey conducted for many customers).
 - Custom research (specifically tailored to one customer).
 - Specialty line research, for example where an organization specializes in one type of research. Some research companies are now emerging that specialize in Web-based research.

On the other hand, market intelligence is less concerned with scientific process and more concerned with monitoring day-to-day happenings that could influence the organization. It is important to reiterate here that market intelligence involves both primary and secondary information sources. Kotler (2000:102-103) has identified the following types of market intelligence gathering:

- Educating the sales force to provide feedback on 'happenings' in the industry.

- Suppliers and intermediaries can be used to pass along useful information.
- Specialist suppliers (such as marketing research agencies) can be hired specifically to gather market intelligence, for example to conduct 'mystery shopping' surveys.
- Competitor intelligence can be gathered by buying competitive products, attending trade shows, reading competitors' published reports and annual reports.
- A customer advisory panel can be used as a continuous source of information on industry trends, customer needs and service improvement strategies.
- Information can be purchased from external suppliers such as AC Nielsen, I-Net Bridge or McGregors.
- A marketing information center can be used to scan the environment and to gather and disseminate environmental information.

There are many possible sources of information. With South Africa's re-entry into international markets, the available sources of information have grown exponentially. This requires disciplined and structured management, as it is tempting to possess as much information as is possible, rather than what is useful.

The above discussions have illustrated the complexity of services marketing, the complex environment it operates in and the array of information sources available to the service organization. This complexity has led to the development of the paradigm that the relationship with individual customers is the key to success in a service-marketing environment. Relationship marketing is the topic of the next section.

2.7 RELATIONSHIP MARKETING AND SERVICE ORGANIZATIONS

One of the logical outflows of the increased focus on services marketing was the focus on relationship marketing. Relationship marketing is characterized by the

realization that relational exchanges between an organization and its various markets are of a continuous nature, whereas traditional marketing focused on transactional exchanges, which have a distinct beginning, short duration, and a sharp ending by performance (Dwyer, Schurr & Oh 1987). This concept is illustrated in table 4.

Table 4 The marketing strategy continuum

The strategy continuum	Transaction marketing	Relationship marketing	
<i>Time perspective</i>	Short term focus	Long term focus	
<i>Dominating marketing function</i>	Marketing mix	Interactive marketing (supported by marketing mix activities)	
<i>Price elasticity</i>	Customers tend to be more price sensitive	Customers tend to be less price sensitive	
<i>Dominating quality dimension</i>	Quality of output dominates	Quality of interactions dominate	
<i>Measurement of customer satisfaction</i>	Monitoring market share (indirect approach)	Managing customer base (direct approach)	
<i>Customer information system</i>	Ad hoc surveys	Real-time customer feedback system	
<i>Interdependency between marketing, operations and personnel</i>	Interface of no or limited strategic importance	Interface of substantial strategic importance	
<i>Role of internal marketing</i>	Of no or limited importance to success	Of substantial strategic importance to success	
Product continuum	Consumer packaged goods → Consumer durable goods → Industrial goods → Services		

Adapted from: Grönroos (1997:329)

The content of table 4 suggests that relationship marketing differ substantially from 'transaction marketing' in a variety of ways. For example, the focus of a transaction oriented customer information system is on *ad hoc* surveys. In the domain of relationship marketing, the focus is on a real-time customer feedback system. It also points out that service and the relationship marketing concept are

strongly related. Various other differences between a transaction approach to marketing strategy and a relationship approach to marketing strategy are also highlighted. However, the most important finding is that transaction marketing is more applicable to consumer-packaged goods and consumer durable goods. On the other end of the spectrum, relationship marketing is more applicable to industrial goods, and especially to services.

Seth & Parvatiyar (1995:71-87) are of the opinion that relationship marketing and thus relationship behavior of consumers, is more than just repeated buying and loyalty. It also means a relationship that strives to offer more value to the customer by engaging in a partnership with the customer that will lead to a meaningful exclusive relationship with the marketer.

From table 4 it is clear that the quality of customer and other information available to the decision-maker is of substantial importance.

Why are customers willing to become involved in relationships with organizations? Seth & Parvatiyar 1995:71-87 identify some reasons:

- It may assist customers to be more effective in decision-making.
- It reduces the task of information processing when making decisions.
- It helps customers to be more consistent in the cognitive decision making process.
- It reduces risk with regards to future decisions.

For the organization, it means:

- Greater marketing productivity by practicing one-to-one marketing principles. By involving the customer in the organizational functions of design, development and sales, relationship marketing will become more effective in satisfying the needs of customers.
- More effective marketing because the marketing of the organization is not associated with competitive mass marketing.

Seth & Parvatiyar (1995) and Morgan & Hunt (1995:20-38) point out the following characteristics of a relationship approach:

- Customers may resist attractive short-term alternatives in favor of the expected long-term benefits of staying with existing partners, in other words, there is a long term commitment.
- Organizations and customers will view potential high-risk factors prudently because of the belief that their partners will not act opportunistically, in other words there is trust.
- Goals may be shared that can only be achieved through acting interdependently.
- The power of the buyer or seller is related to the level of interdependency in the relationship.
- Termination of the relationship may be difficult due to structural bonds.
- Many of the 'investments' in the relationship cannot be recovered once the relationship is terminated.

Relationships between buyers and sellers have existed from the beginning of time when goods and services were first exchanged. These relationships developed naturally as trust developed between buyers and sellers. Although all buy-sell situations do not lead to intense relationships, the development of buyer-seller relationships is of strategic importance in today's business environment where marketers are striving to engage in relationships with their suppliers in order to meet both parties' objectives. This is especially true of service organizations.

To link this back to the concept of marketing information, it is important to note that Meehan (1999:125) has concluded that successful organizations generate a lot of information, but all levels of management in those organizations are also responsive to and have strong relationships with customers.

2.8 THE INFORMATION REQUIREMENTS OF MARKETING DECISION-MAKERS IN SERVICE ORGANIZATIONS

The above discussion focused on the nature of service organizations and the nature of information available to managers in organizations. Due to the complexity of the customer relationship of a service organization, a lot of information is created or available to marketing decision-makers. In order to link this to the concept of MKIS, it is important to understand the information requirements of decision-makers and the flow of information.

An important paradigm used in the literature on information management is the hierarchical division of management into three levels, namely a top management level (strategic), a middle management level (tactical) and lower or junior management level (operational). According to Schultheis & Sumner (1992:322-340) and Ahituv & Neumann (1990:126) there are different types of information that are important for every level. This is summarized in table 5.

In essence, it can be seen in table 5 that top management (or executive) requires higher level information that will enable them to make decisions about the long-term future of the organization. On the other extreme, operational management requires a steady flow of detailed information that will allow them to manage the day-to-day activities of the organization optimally.

The important outflow of this division is that theoretically, each level of management requires different information systems. A more comprehensive discussion of information systems can be found in chapter 4.

Table 5 Information requirements for different management levels

INFORMATION SYSTEM LEVEL	OPERATIONAL	TACTICAL	STRATEGIC
Nature of decisions supported	Task oriented	Control and resource allocation (budgets, tactical plans)	Goal oriented (long range plans)
Level of customization	Repetitive	Both repetitive and customized	<i>Ad hoc</i> and highly customized
Dependability of results	Predictable	Unexpected findings	Unexpected findings
Currency	Up-to-date	Mixed	Relatively old
Time focus	Past	Comparative, trends	Future (predictive)
Level of detail	Detail	Summarized	Summarized
Focus area	Internal	Both internal and external	Mostly external
Flexibility	Highly structured	Some unstructured	Highly unstructured
Accuracy	Accurate	Some subjective	Highly subjective
Frequency	Often (often daily or continuous)	Periodic (weekly or monthly)	<i>Ad hoc</i>
Scope	Narrow focus	Comparative (broad focus)	Very broad focus
Typical user	First line supervisors	Middle management	Top management
Output	Transaction records	Exception reports, summary reports, <i>ad hoc</i> reports	Strategic decision support

Adapted from: Schultheis & Sumner (1992:329)

From the previous discussion, it would seem that marketing decision-makers in service organizations need high quality information to support them in their interaction with customers. But what determines information quality? Ahituv & Neumann (1990:58) suggest that timeliness, content, accuracy, format and cost determine the quality of information to its user. The authors also make the statement that for top and middle management content or meaning is more important than timeliness. In addition, Zwass (1992:86) defines precision, completeness, conciseness and relevance as measures of information quality.

In table 6 Ahituv & Neumann (1990:41) identify certain types of information that are useful during the phases of decision-making. In addition, table 6 also identifies the 'delivery systems' used to deliver the information to marketing decision-makers.

Table 6 Decision phases and decision support

DECISION PHASE	REPORTS	SYSTEMS
Intelligence gathering	Status reports Trend reports Exception reports <i>Ad hoc</i> queries	MRS EIS
Design (further analysis)	Models and analytical tools	DSS SDS
Choice	Alternatives 'What if?' Feedback and follow-up	DSS SDS

Adapted from: Ahituv & Neumann (1990:41)

From table 6 it would seem that MRS (Management Reporting Systems) and EIS (Executive Information Systems) are more useful in the relatively simple phase of intelligence gathering, while DSS (Decision Support Systems) are more useful in the analysis (design) and choice phases, since it allows users to explore unstructured decisions. SDS (Structured Decision Systems) are designed to make decisions on behalf of its users. For a more complete definition of the systems identified in table 6, see paragraph 1.4.1.

2.9 AN OVERVIEW OF THE SOUTH AFRICAN SERVICE INDUSTRY

Before discussing the South African service industry it is important to define what is meant by a service organization. However, first a service (as opposed to a product) has to be defined. According to Kurtz & Clow (1998:10-13) a service is distinguished by its four main characteristics, namely intangibility, perishability, inseparability of production and consumption and variability (also see section 2.2). Zeithaml & Bitner (1996:5) characterize services as '*...deeds, processes and performances*'. Intangibility is also an important characteristic of services identified by Zeithaml & Bitner. However, in practice, services and products are often entangled or bundled as a package. Therefore, a practical definition of a service for the purpose of this thesis would be 'A service is a deed, process or performance of which the majority of the value lies in intangible components'.

This provides one with a guideline to identify services. However, no formal definitions of service organizations could be found. As a practical guideline, the following can be used: 'A service organization is an organization that derives the majority of its revenues from providing services'.

The definitions provided above is useful to separate the organizations that provide service with a relatively small tangible content (such as banks providing chequebooks) from those organizations providing products with a small service content (for example manufacturers providing delivery services).

According to Statistics South Africa (1999) South African industry is broadly classified into three categories. This classification is depicted in table 7.

- Primary industries, which comprise mostly agriculture and mining activities. This sector contributed 10.3% to the Gross Domestic Product (GDP) in 1998.
- Secondary industries, which comprise mostly manufacturing, construction and electricity and water generation, and contributed 25.4% to the 1998 GDP.
- Tertiary industries, which are mostly services-based and contributed 64.3% to the 1998 GDP.

However, for analysis purposes the classification into tertiary, secondary and primary is not practical. Therefore it was decided to categorize the industry sectors into four 'natural' groupings, namely services, wholesale and retail, manufacturing and construction and 'other' that would be more sensible to compare. Table 7 depicts the split into the four overarching categories. A discussion of the four categories follows from table 7.

Table 7 A classification of South African industry

Sector	Industries	1998 GDP contribution (%)	Thesis categories
Primary	Agriculture, forestry and fishing	3.8	'Other'
	Mining and quarrying	6.5	'Other'
Secondary	Manufacturing	19	'Manufacturing and construction'
	Electricity and water	3.3	'Manufacturing and construction'
	Construction	3.1	'Manufacturing and construction'
Tertiary	Wholesale, retail, hotels, restaurants	13.2	'Wholesale and retail'
	Transport and communication	9.6	'Services'
	Finance, real estate and business services	18.4	'Services'
	Community, social and personal services	2.9	'Services'
	General government services	17.2	'Services'
	Other producers	2.9	'Other'

For purposes of discussion in this thesis, four broad sectors were used:

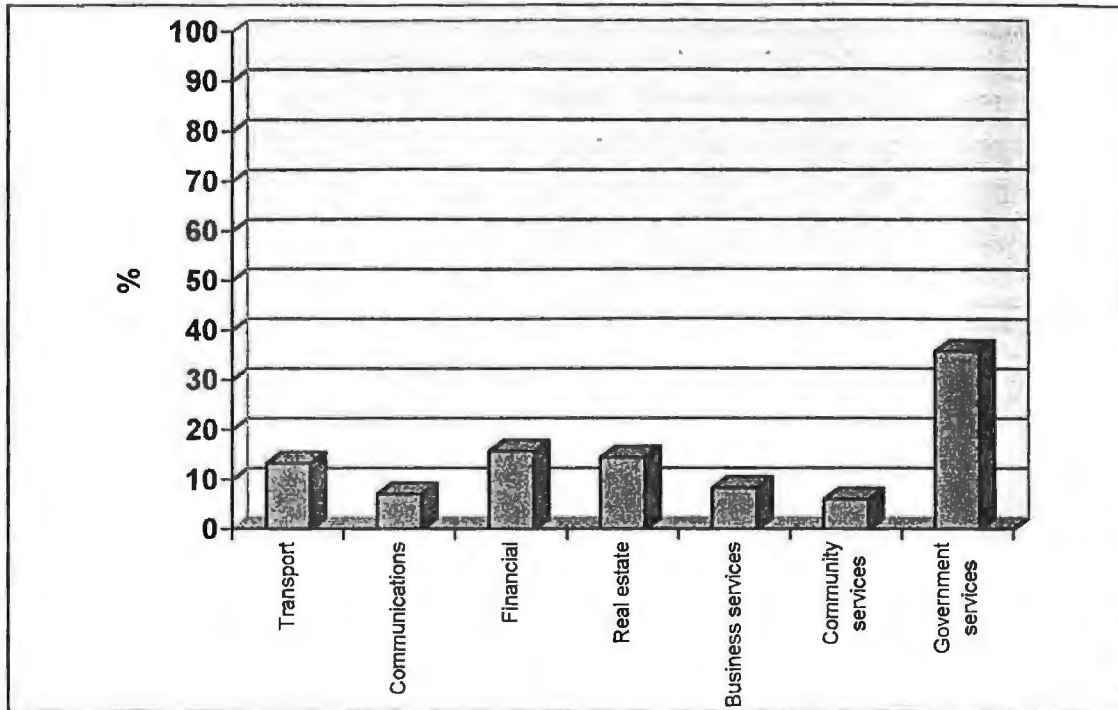
- Services, which exclude retail and wholesale. This sector contributed approximately 48.1% of the 1998 GDP. Thus almost half of the national economy is related to services. This is an indication of the relative importance of services in the economy. This compares well to the 53.6% contribution of services to the GDP of the United States (Kurtz & Clow 1998:6). In the U.S.A, services also create the most jobs, namely 71% of total employment. Because of its size as a service provider, the 'Electricity' sector was included in the services sector for analysis purposes. This includes large service providers such as Eskom and municipal service providers.
- Retail and wholesale is in essence a service provided to manufacturers, but is often regarded as a different sector with different requirements. It contributed approximately 13.2% to the 1998 GDP.
- Manufacturing and construction, which contributed approximately 25.4% to the 1998 GDP.

- 'Other', which acts as a catchall for sectors not included above (such as the primary sector), and contributed approximately 13.2% to the 1998 GDP.

The 'Services' categories can be divided further into various categories. These are discussed below. Figure 5 is an analysis of the contribution of each of the various sectors within 'Services' to its GDP contribution.

- The transport sector, which contains various large players like Transnet, but also sustains many smaller independent transport operators.
- Communications, which is dominated by the SABC, Telkom and the cellular industry.
- Finance and insurance, where several large players - banks and insurers - dominate the industry. However, this industry also sustains a number of medium and small organizations, such as insurance brokers, small niche banks and asset management specialists.
- The real estate industry, which is a very competitive industry. In this industry, there are relatively few really dominant players, but many small realtors and property management organizations.
- The business services sector (which contains players like business consulting and information technology services organizations) is also a competitive industry, contested by large numbers of small and medium -sized organizations rather than large dominant organizations.
- The community, social and personal service sector contributes relatively little to the economy. It is also an industry containing many smaller organizations.
- The government (with a contribution of 17.2%) is still a very large driver in the services industry, although government policy is to reduce the government contribution to the economy.

Figure 5 Contribution per sector to 'Services' GDP for 1998



Source: Statistics South Africa (2000)

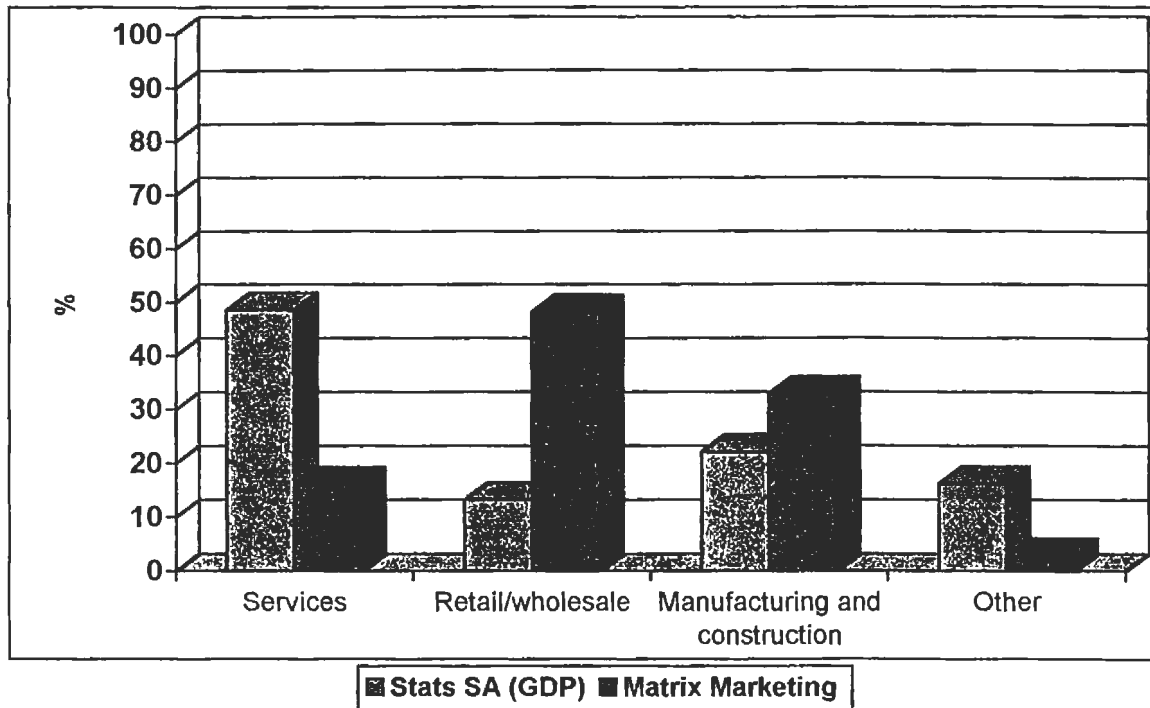
In figure 5 it can be seen that the government is by far the most dominant player in the provision of services, and contributes over one third of the GDP ascribable to services.

The Statistics South Africa data provides a background of the contribution of each sector to the national economy, but does not provide an indication of the concentration of the number of organizations per sector. Matrix Marketing, a commercial list broker, was approached to establish if data could be obtained to estimate the concentration of organizations per sector.

The Prospector database (Matrix Marketing 2000), a commercial database of approximately 52 000 formal South African businesses was compared with the 1998 GDP contribution. The number of businesses per sector as a percentage

(identified from the Matrix database) from this source is compared with GDP contribution in figure 6.

Figure 6 A comparison of GDP contribution and concentration of organizations per sector (1998)

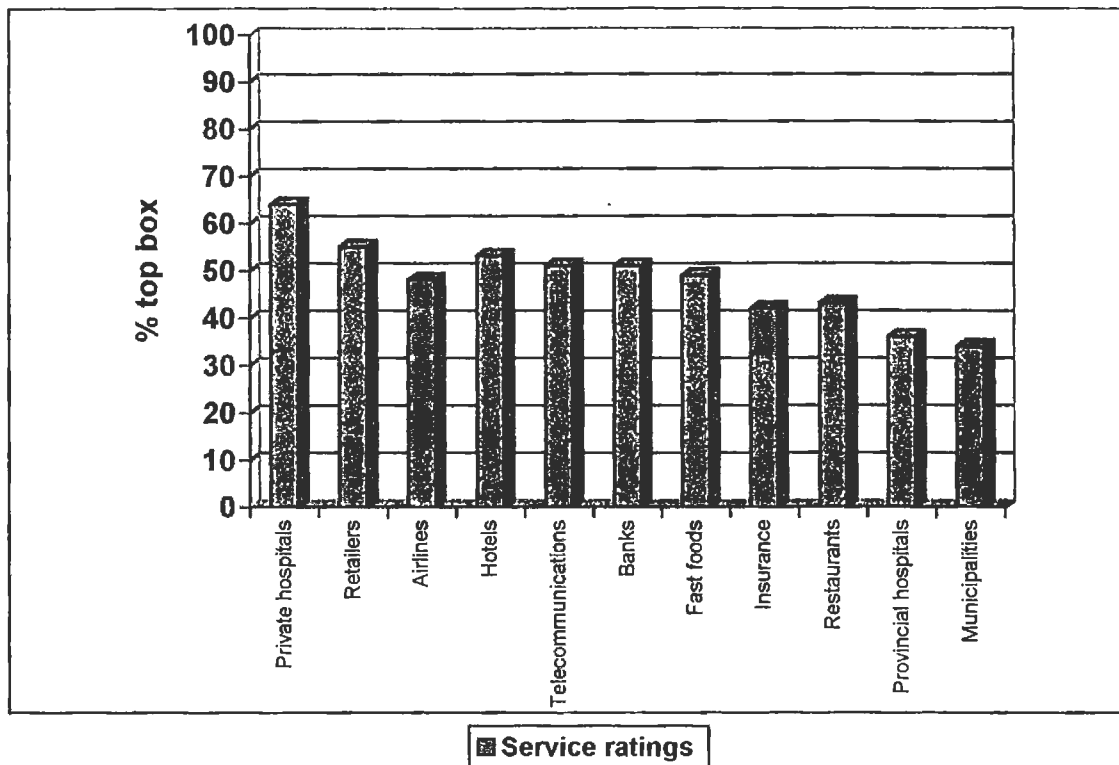


An interesting observation is that there are far fewer service organizations than their contribution to the GDP would suggest. For the retail exactly the opposite seems to hold true. This seems to suggest that the service industry is dominated by a smaller number of very large organizations (such as Telkom and Eskom), while retailing and wholesaling comprises of a larger number of smaller organizations (such as small clothing retailers and corner shops).

It was suggested earlier that service organizations have problems providing good service (see section 1.8). Markinor, a Johannesburg-based research organization conducted a comprehensive survey among consumers to determine their perception of the service levels for various types of service organizations. The service problems experienced by service customers are demonstrated clearly by the results of the Markinor survey, Project Service (1999:1-15). Figure 7

demonstrates the top-box comparisons ('very good' and 'excellent' service) for a selected number of South African service organizations. This compares poorly with the international norms of customer satisfaction top-box ratings in excess of 75% normally encountered in developed economies.

Figure 7 Project Service results (1999)



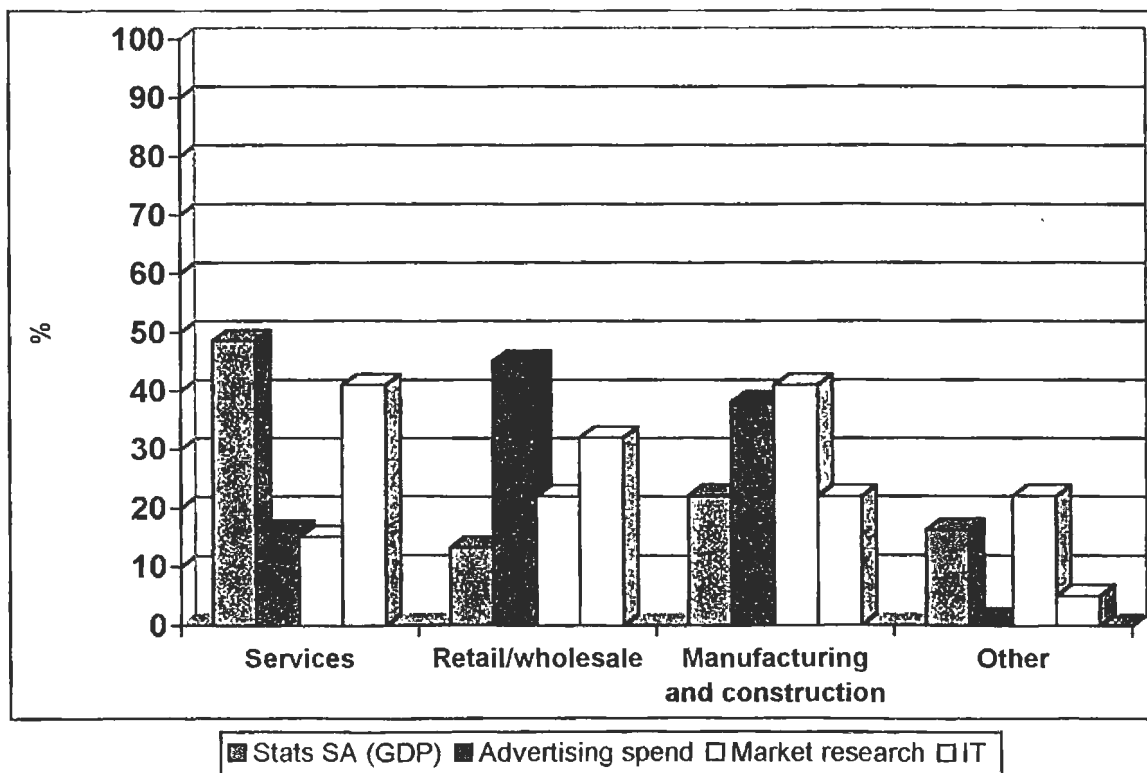
However, Kurtz & Clow (1998:7-8) report that service levels in the United States have been declining, and cite reasons that could be very applicable to the South African situation:

- Many organizations are downsizing and cutting costs to be more competitive or simply to survive. Therefore, fewer resources are available to deliver service.
- In some cases, hiring skilled employees is difficult, meaning that the service levels required by customers could be in jeopardy.

- Many organizations tend to focus on short-term goals. Since customer relationships have a long-term focus, it could mean that customer relationships are sacrificed in favor of short-term performance.
- Customers are becoming more demanding, which may lead to the perception that service is declining.

There is sufficient evidence to suggest that customer relationships are not getting the attention it deserves from service organizations. This is further highlighted by the results from the SA Business Survey (1997). This survey was conducted among 3000 organizations across the spectrum of small, medium and large businesses, and provides a number of insights into the spending patterns of service organizations. Some of those findings are compared in figure 8 and are discussed below.

Figure 8 An analysis of spending patterns for service organizations



Source: SA Business Survey (1997)

What is notable in figure 8 is the relatively low spending of service organizations on advertising and marketing research, compared to manufacturing and retail/wholesale organizations. The relatively low advertising spend is understandable. Many professional service organizations like lawyers and doctors are not allowed to advertise, and some (like business consultants) tend not to advertise extensively. However, in light of the importance of the customer relationship for service organizations, the low spending on marketing research is of some concern.

2.10 CONCLUSION

The complex relationship that service organizations have with their customers results in a constant flow of information from service organizations to their customers and back, as well as to and from its environment. There are many possible sources, and users of marketing information also have their expectations and requirements regarding the information that they require. This in itself is a complex situation, but as Meehan (1999:125) have pointed out, the real differentiation between successful and unsuccessful organization seems to lie in how they use the information at their disposal. It was further demonstrated that service organizations are seemingly neglecting customer relationships, as shown in section 2.10. In this section it was mentioned that (similar to the U.S.A.), the service quality of South African service organizations is on the decline. This was addressed by Grönroos (1997:329), who pointed out that real-time feedback is an important difference between traditional approaches to marketing and relationship marketing. The relationship between organizational performance and information is the topic of chapter 3 that addresses the market orientation of organizations.

CHAPTER 3

MARKET ORIENTATION

3.1 INTRODUCTION

Ultimately, the mere existence of marketing information in the organization does not ensure its effective use. On the other hand, it is difficult to measure the relationship between the use of information and organizational success. The concept of market orientation provides such a conceptual framework that provides a link between the use of information and the success of the organization. In other words, it provides a tool to help understand what role MKIS plays in the success or failure of a business. In the search to conceptualize this elusive measure, the concept of market orientation appears to describe the role of marketing information in the organization better than any other theoretical model.

Market orientation is an established concept in marketing theory that received renewed interest in the 1990s as the foundation of sound marketing practice. The objective of this chapter is to analyze the concept of market orientation with specific reference to its links with marketing information.

3.2 DEFINING MARKET ORIENTATION

In order to define market orientation, it is really meaningful to start with the definition of marketing. The Chartered Institute of Marketing (as quoted by Wilson, Gilligan & Pearson 1997:3) define it very succinctly as *'the management process for identifying, anticipating and satisfying customer requirements profitably'*. This definition is in line with the central focus of marketing, namely the marketing concept. In short, the marketing concept states that satisfaction of customer needs leads to organizational success.

Market orientation refers to a philosophy rather than a process. Chan & Chau (1998:17) reports on the definition of market orientation of Kotler & Armstrong: *'...determining the needs and wants of target markets and delivering the required satisfaction more effectively and efficiently than competitors'*. Nel (1997) summarizes the components of the definition of market orientation as follows:

- The generation of market intelligence pertaining to current and future customer needs.
- Dissemination of market intelligence across departments in the organization.
- Responsiveness to market intelligence. In other words, to what extent is market intelligence a driver and basis for decisions.

'Market intelligence' is a central concept in the description of market orientation. This refers (as explained in paragraph 1.4.4) to the broad concept of marketing information, and includes external information in the form of marketing research and market intelligence, internal reports and marketing decision models.

Generating market intelligence refers to all activities geared towards gathering useful information about customers and competitors. This may range from analysis of internal sales information to gathering of primary research information from consumers.

The dissemination of this information refers to the ways in which the market intelligence generated is distributed to the organization. This can range from informal methods such as 'hall talk' between colleagues to formal methods such as presentations or intelligence newsletters.

However, the most important aspect of market orientation refers to the responsiveness to market intelligence. The actions and decisions made on the basis of market intelligence may mean things like selecting target markets,

designing or adapting products and/ or services for current and future customer needs and selecting a marketing mix to lead to favorable customer response.

In addition, Nel (1997) and Nel, Pitt & Van Erkom Schurink (1996:5) point out that market orientation has certain foundations necessary for it to exist in an organization. These are discussed below.

- Customer focus, which refers to the concept of satisfying customer needs and preferences. It is more than customer research, as it refers to market intelligence rather than only customer opinions. It focuses on the creation of superior value for customers.
- Coordinated marketing, which points out that marketing is more than just the activities of the marketing department. Indeed, all functional departments such as Human Resources, Finance and other functions should be aware of customer needs and respond to those needs. This includes internal customers. As McKenna (1991:65) points out, '*marketing is everything and everything is marketing*'.
- Profitability: it is uncertain whether profitability is a component or a consequence of market orientation, but earning sufficient profit to cover long term expenses and to satisfy key customers and stakeholders is a key foundation of the organization.
- Competitor orientation means that competitors' (and potential competitors) strengths, weaknesses and strategies have to be recognized and taken into account in the marketing decision making process. Wilson *et al* (1997:4) state that competitor focus represents a change from the initial thinking around the marketing concept. The rationale is that satisfying customer needs is not enough - it needs to be satisfied better than competitors in order for the organization to be successful.
- A long term focus, which necessitates appropriate investments in the business.

It is important to point out that there are differences between the concepts of 'market orientation' and 'marketing orientation'. Market orientation is the concept defined above, and it refers to a philosophy of being customer focused to the point where it drives every decision in the organization. On the other hand, a marketing orientation indicates a focus on marketing activities; a focus on the implementation of marketing in the organization that may not necessarily be appropriate to the philosophy of market orientation.

3.3 THE IMPORTANCE OF MARKET ORIENTATION

Nel *et al* (1996:4) point out that in South Africa, like in the rest of the world, more market-oriented companies are likely to perform better in terms of return on investment (ROI). It therefore seemingly has an impact on the long-term profitability of the organization. Ruekert (1992:243), who concludes that there is a positive correlation between market orientation and the long-term financial performance of the organization, confirms this. This has the implication that investing in market orientation may not have significant positive effects on short-term financial performance, but may be beneficial in the long run. Chan & Chau (1998:25) report similar findings for non-profit organizations. The more market oriented the sample organizations were, the more they were able to satisfy their 'customers' and to attract funding. Although some authors such as Au & Tse (1995:80-85) have reported on research results that do not confirm the positive relationship between market orientation and financial organization success, the evidence to support this positive relationship is by far in the majority.

However, profitability is not the only organizational metric on which market orientation has a positive influence. In addition to ROI, Greenley (1995:1-13) found that market orientation has a positive effect on other long-term measures like sales growth and new product success rates. It would therefore appear that market orientation is a business philosophy that could contribute to the long-term survival of the organization. The paragraphs to follow will explore market

orientation in more detail.

3.4 A MARKET ORIENTATION MODEL

Although market orientation is a philosophy rather than a process, it does have certain antecedents that impact on its occurrence in an organization, and some consequences once it does occur. This model of market orientation is discussed below.

3.4.1 Antecedents of market orientation

Jaworski & Kohli (1993:53-70) uncovered a positive correlation between the following antecedents and market orientation:

- Senior Management factors such as the extent to which top management encourage the generation, dissemination and responsiveness to market intelligence. Risk aversion can affect responsiveness negatively, leading to a decline in market orientation.
- Interdepartmental dynamics, namely the extent to which departments are connected and strive towards the same goal or are in conflict, influence the dissemination of and responsiveness to market intelligence. Maltz & Kohli (1996:57-58) have found that there are certain 'thresholds' in interdepartmental communication. Learning only takes place after a certain level of contacts per time period is achieved. However, if a certain number of contacts are exceeded, it can have negative consequences on the relationship.
- Organizational dynamics, such as the reward systems that emphasize market orientation (for example rewards for customer service excellence), correlate positively with market orientation. Centralization of decision making may inhibit market orientation, while formalization may enhance it. Departmentalization refers to the number of departments in a business unit,

but is relatively less important than the feeling of unity that is required to establish market orientation.

Ruekert (1992:242-243) identified similar antecedents when he found that higher levels in market orientation corresponded with high levels of market orientation in support units (for example recruiting). Thus, the better internal service delivery is, the higher market orientation should be. In addition, his research also pointed to the necessity of top management facilitating and creating a climate for market orientation.

The antecedents set the tone for market orientation and can lead to an environment that is either conducive or counter to market orientation.

3.4.2 Consequences of market orientation

Market orientation also has some consequences for the organization, as proven by Jaworski & Kohli (1993). It has already been shown that market orientation can be linked positively to long-term organizational success. In addition to this, a high level of market orientation can lead to:

- Improved *esprit d'corps* and employee commitment to the organization.
- Higher customer satisfaction leading to improved customer retention and superior provision of value to customers.

This is consistent with the findings of Ruekert (1992:243) whose research indicated a positive correlation between market orientation and employee job satisfaction, commitment and trust in management.

3.4.3 *Moderators of market orientation*

Moderators are those factors that are not antecedents or direct consequences of market orientation, but that can nevertheless influence business performance. Business performance can be moderated by supply and demand side moderators that are not necessarily directly influenced by market orientation factors. The main sources of moderating factors are market and technological turbulence and competitive intensity.

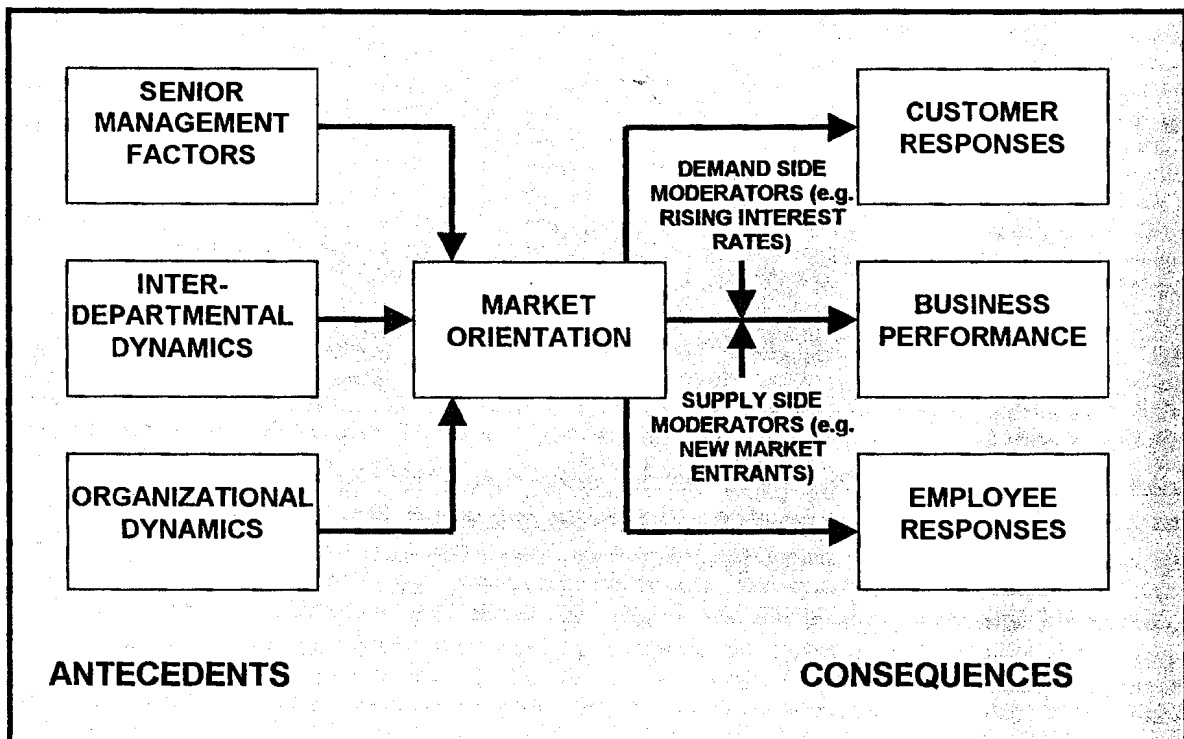
It could be argued that market orientation is not a suitable philosophy in all types of environments. For example, in environments where extreme market turbulence, competitive intensity and technological turbulence are present market orientation may in fact be inhibiting the lightning fast 'instinctive' reactions to environmental changes that are often needed to survive. This means that it might be inhibiting the market orientation - business performance relationship. On the other end of the scale, a market orientation philosophy in a very static and predictable environment may also be a waste of time and effort.

Slater & Narver (1994:53) have a divergent view. They argue very strongly that moderators should not have an effect on market orientation. In fact, the very fact that organizations are market orientated should serve to make it less susceptible to environmental influences. Therefore Slater & Narver conclude that the more market oriented, the better positioned an organization would be for success under any market conditions. This implies that it is better to strive to establish market orientation rather than to attempt to adjust the level of market orientation to changes in the environment.

3.4.4 An integrated model

Figure 9 provides a graphic summary of the discussion above. Antecedents are those aspects that precede the occurrence or are part of market orientation in an organization. In turn, market orientation has certain consequences, which can be moderated by external factors.

Figure 9 Antecedents and consequences of market orientation



Source: Jaworski & Kohli (1993:55) and Nel (1996)

3.5 MEASURING MARKET ORIENTATION

Kohli and Jaworski (1993:467) identified the lack of a systematically developed measurement tool as one of the major shortcomings of market orientation theory. In response to this, Kohli, Jaworski & Kumar (1993:467-477) developed a comprehensive market orientation measurement tool named MARKOR (an

abbreviation for market orientation). The development of the MARKOR tool followed the steps outlined below:

- A literature study was conducted to identify the concepts to be included.
- The scale items were generated.
- The first pretest was conducted after which the number of items was reduced.
- The second pretest was conducted and items were further reduced to 32 items in total.
- The third pretest was conducted with the previous items, which led to only minor changes.
- MARKOR was then applied with various validation and reliability tests being completed to assure the validity and reliability of the questionnaire. The final result was therefore a validated, reliable 32-item questionnaire.

Slater & Narver (1993) also developed an instrument called MKTOR (also an abbreviation for market orientation), a 21-item questionnaire for measuring market orientation. However, Kohli *et al* have criticized the MKTOR measure on the grounds that it:

- Focuses only on customers and competition, and not on other factors that influence customer needs and expectations (such as technology).
- It does not measure the speed of generating and disseminating market intelligence.
- Includes a number of items unrelated to market orientation.

(Farrell & Oczkowski 1997)

Although other questionnaires and methods have been used to test market orientation, MARKOR seems to represent the most thoroughly field-tested measurement tool available.

Whereas the previous sections have focused on what market orientation is and how to measure it, the next section will focus on how organizations can develop market orientation as a business philosophy.

3.6 DEVELOPING MARKET ORIENTATION

The literature provides a number of examples and guidelines for implementing market orientation. Some natural 'inhibitors' or negative influences on market orientation have been identified. In a sense, these are similar to moderators, but are internal to the organization. For example, Nel *et al* (1996) found that service companies tend to perform worse than manufacturing and retail/ wholesale companies in the area of market orientation. Larger companies tend to perform worse than smaller companies - in other words, large size is an 'inhibitor' of market orientation. All companies experience the most problems (of the three areas of market orientation) with intelligence dissemination.

The results that are reported by Meehan (1999:121-126) are supportive of the above discussions. In particular, Meehan found that the most significant discriminator between high and low performing companies in his study was the extent to which the organization has been sensitized to competitor moves. Successful organizations also had more extensive customer contact programs. Meehan concludes that virtually all companies are convinced of the importance of market intelligence and are indeed spending a lot of time and effort on the rhetoric of 'being customer focused'. Most companies are generating a great deal of market intelligence. However, in order to become truly market oriented requires more than rhetoric and the mere existence of information, and Meehan suggests the following as important aspects to become truly responsive and to create continuous learning about the market (in other words to be truly market oriented):

- Close customer contact to the extent that customer needs dominate the thinking of all employees.
- Measurement and reward systems that are linked to customer satisfaction.
- Leadership (in other words, top management support and commitment).

In summary, this is indicative of an organization culture that is supportive of the customer focus, that is a learning organization and that shares information and learning across the organization.

Other guidelines to be more market oriented are provided by Hayden (1993:33-46), Slater & Narver (1994:25-27) and Slater & Narver (1995:71). These guidelines are discussed below.

- Educating and gaining the commitment of top management to a culture of market orientation. This is also one of the antecedents of market orientation, and therefore it would make sense to focus on top management. This would also ensure buy-in throughout the organization.
- Focus on a strong, open culture. As Hayden (1993:37) points out, a strong, open culture leads to relatively uniform attitudes and behavior with an external focus. Hayden also provides some practical guidelines for establishing such a culture, which includes:
 - Understanding the philosophy of marketing and internal marketing throughout the organization.
 - Using marketing research (as opposed to simply generating it).
 - Recognizing the value of implementing market segmentation for the organization.
 - Working with suppliers to incorporate customer benefits into product and service specifications.
 - Customer benefits need to form part of contractual deliverables alongside financial control and activity (in other words, customer benefits provided need to be measurable).
 - Empowering all levels of consumers by providing them with a way to communicate with the organization.
 - Select and reward staff on measurable market orientation based criteria.
 - Take a marketing approach to strategic planning, by making market and customer focus the driving force of strategic planning.

- Devolve management for service provision by bringing the managers closer to the customers. This may imply a flattening of traditional service provision structures.
- Invest in public relations to key stakeholders.

Because of its external focus and interactive nature, marketing in the organization plays a vital role in creating an organization that thrives on generative learning (in other words the willingness to question long held assumptions about its own beliefs). This in turn creates the most sustainable platform for organizational survival. In this, the potential role of market orientation as a philosophy based on learning and the sharing of information should be obvious.

3.7 MARKET ORIENTATION AND MKIS

The similarities between market orientation and MKIS should by now be clear:

- Both have the generation of market intelligence as input.
- Both have dissemination of market intelligence in the organization as a goal.
- Both have decision support at the core.

On the flip side, the differences between market orientation and MKIS must also be pointed out. In summary, market orientation is a philosophy, while MKIS is one of the management instruments by which it can be implemented in the organization. Put another way, MKIS is part of the infrastructure of creating market orientation within the organization.

3.8 CONCLUSION

In this chapter, the concept of market orientation was described in some detail. It was also demonstrated that market orientation is linked to measures of success,

inter alia in service organizations. The roles of market orientation and MKIS in the organization seem interwoven. There is little doubt that market orientation is the 'practical application' of the marketing concept. In turn, MKIS seems to be one of the practical aspects of implementing market orientation in the organization. The following chapters and the empirical research will explore this bond further.

CHAPTER 4

MARKETING INFORMATION SYSTEMS

4.1 INTRODUCTION

In the previous chapter it was seen that MKIS play an important role in the establishment of market orientation. One of the aspects that play a vital role in the implementation of MKIS is information technology (IT), which in this context can be described as all technology that enable the gathering, processing and dissemination of marketing information. The first objective of this chapter is to provide a theoretical overview of IT available to support MKIS. The theory of MKIS has also been through a number of changes, and the discussion of these MKIS models is the second objective of the chapter. In the last part of this chapter a brief overview of recent research regarding the use of MKIS is provided.

4.2 REASONS FOR MKIS IN SERVICE ORGANIZATIONS

There are many reasons why MKIS have become a necessity rather than a luxury for any industry. Pitt & Bromfield (1994:19-20) summarize some of the most important reasons as follows:

- Time pressures necessitate more and better decisions in less time.
- Greater quantities and quality of marketing information is required across a broader scope of activities.
- Intelligent decisions are required to maximize the use of scarce resources.
- Customers have higher expectations, requiring more careful decisions, for example on customer care programs. This necessitates the use of MKIS to support decision-making.

- The creative and intelligent use of information can result in a competitive advantage in itself, for example where sales are increased or costs decreased due to good marketing decisions.
- Modern marketing managers are bombarded with lots of information (note that the commonly used term 'information overload' applies to this situation), which has to be managed in order to separate the valuable information from the rest. The complexities of marketing information in a service organization are discussed in more detail in section 5.2.

Li (1995:13) also states that MKIS allows rapid reaction to customer needs, and to determine how well those needs are being satisfied. It also provides access to marketplace information that will drive product and service strategies. This is in line with the thinking of many authors that MKIS can in fact provide a competitive advantage, as opposed to merely being a mechanism for handling information. However, just as there are certain advantages to using MKIS, there are certain problem areas. These will be discussed in the following section.

4.3 BENEFITS AND POTENTIAL PROBLEMS OF MKIS

4.3.1 Benefits

Correctly implemented, MKIS can deliver many benefits to the organization. Talvinen & Saarinen (1995:20) list a number of these. Placing it in the context of the study, MKIS can potentially create the following benefits in terms of marketing information in the organization:

- Accurate marketing records, due to less human intervention and more diligent information gathering from source systems.
- Improved analysis of marketing activities. Since more powerful systems for analysis and more complete data may be a result of MKIS, this may lead to better quality decisions.

- Improved targeting of marketing campaigns and improved marketing planning are the results of better decisions.
- Improved sales, as a result of better targeting and planning, while cost savings might also be a benefit. The overall result is therefore improved sales productivity
- Because of the computerized flow of information and the speed with which this occurs, the improved management of marketing programs may be a result.
- Improved sales forecasting may also be a benefit of more sophisticated analysis and forecasting tools.
- Improved customer information as a result of more focus on information.
- Improved customer satisfaction due to better targeting of customers.
- Improved internal communication due to more widespread availability of marketing information.
- Improved productivity in general.

The main improvements have to do with the improved marketing productivity due to better decisions, which generally results in higher revenues and decreased costs.

4.3.2 Potential problems

Venter & Heath (1995:8) point out some of the problems that may emerge with new technologies:

- There may be a focus on technical design rather than on process and functionality.
- There are still many gaps in the knowledge about what applications can do.
- Marketing decision-makers will have to get used to finding and analyzing their own information.

- A 'blame it on the system' mentality could develop, where all poor decisions are blamed on MKIS.
- Data proliferation and complexity may bring its own problems.

Once again the main problems experienced seem to be in design and implementation, and especially with the potential lack of consideration of human factors.

4.4 AN OVERVIEW OF THE USE OF INFORMATION TECHNOLOGY IN MARKETING

It is appropriate at this point to provide a broad overview of the application of information technology (IT) in marketing. This is a field that is rapidly developing, and the following discussion will attempt to provide some sense of the current and future technologies in use. This section should be regarded as a broad overview rather than an in-depth discussion of IT.

This section draws on the work of Borg & Hartvigsen (1991), Shaw (1991), Venter (1992:54-78), Zwass (1992), McDonald, Hewson & Wilson (1993), Chapman & Holtham (1994), Blattberg, Glazer & Little (1994), Van Belle & Wegner (1994:4), Venter & Heath (1995), Cambridge Market Intelligence (1996), Hurry (1996) and Peacock (1998:9-17).

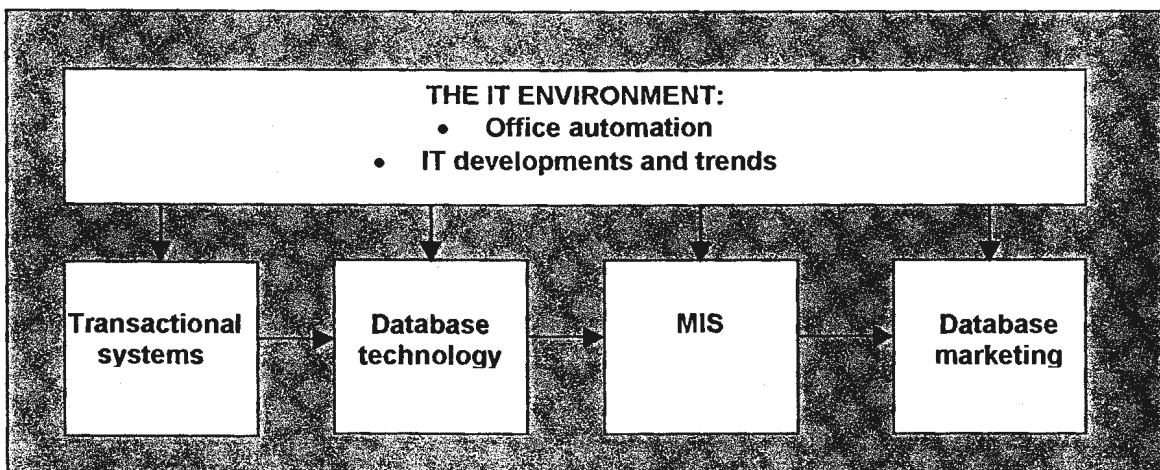
There are several categories of IT which have a possible impact on marketing. These are:

- Management Information Systems, which is the category of information systems that support management decision-making.
- Database technologies, which refer to the internal and external content of information systems on which decisions are based.
- Transactional systems, the category of information systems that capture transactional source information.

- Office automation, which is the category of IT that refers to general applications in the office to improve productivity, such as fax machines.
- Database marketing, which refers to the marketing trend to exploit databases optimally for relationship marketing purposes.
- As IT changes rapidly, there are other general IT trends that impact on marketing.

These categories will subsequently be discussed. Figure 4.1 is a graphical depiction of the relationship between the elements identified above.

Figure 10 The relationship between IT elements



Transactional systems (such as point-of-sale systems) are the sources of most marketing information in the organization. The data captured from transactional systems are fed into databases, where database technologies are used to maintain and manipulate data. From databases, MIS are used to extract useful information in the format required by decision-makers. Database marketing is a direct application of this information used by decision-makers, although it can also be used operationally.

Office automation and general developments in IT influence all the elements of IT relating to the gathering, processing and dissemination of information.

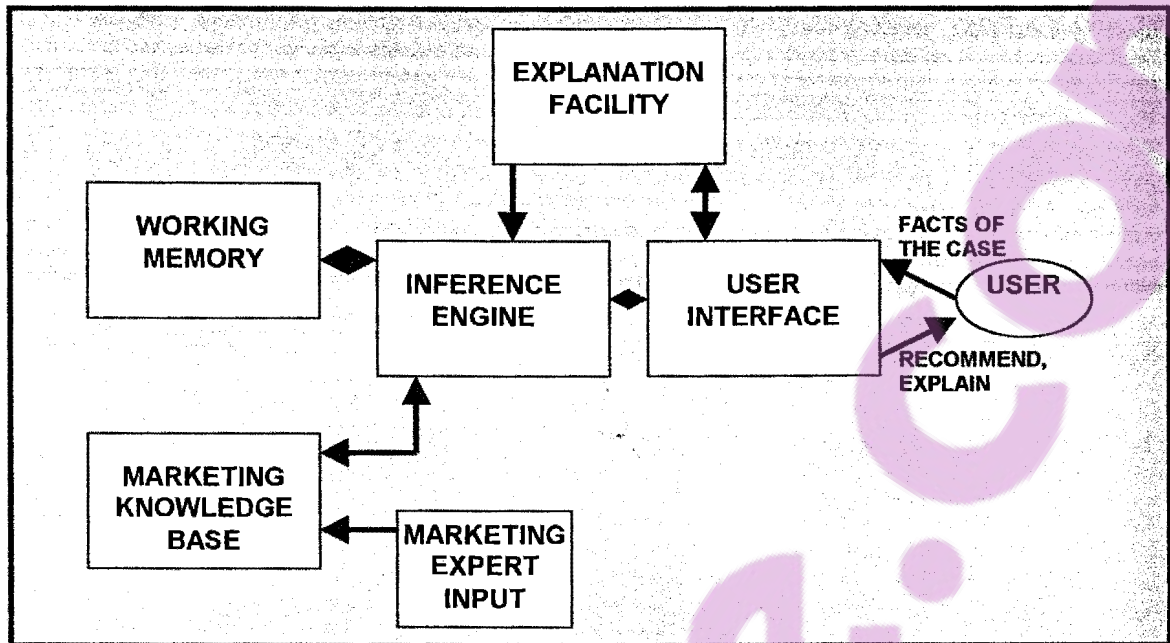
4.4.1 Management Information Systems (MIS)

This section will focus on those information technologies that form part of the MIS in the organization, in other words those information systems that support management decision-making. Management Reporting Systems (MRS) as a concept will not be discussed, due to its relative simplistic and generic nature. A description of MIS and some of its components can be found in paragraph 1.4.1.

4.4.1.1 Marketing Expert Systems (MES)

Marketing Expert Systems (MES) are similar to the Structured Decision Systems described by Ahituv & Neumann (1990) - see paragraph 1.4.1. SDS provides a facility for making decisions on behalf of its user. Since the inception of SDS, the field of Artificial Intelligence (AI) has developed, and SDS and AI come together in the MES application. A MES use information as part of its input, and its final output is the actual decision. One of the outstanding abilities of AI-based systems is their ability to 'learn' from previous interaction and decisions, ever expanding its knowledge base. Dubelaar, Finlay and Taylor (1991:374) describe it as a cost-effective consultant. Due to its nature, MES are also suitable at lower organizational levels (for example, to determine the price of a product for a specific customer). However, recently some higher level (top and middle management) expert systems have been introduced as a result of technological advancements. The working of an expert system is briefly discussed with the help of figure 11.

Figure 11 The working of a marketing expert system (MES)



Adapted from: Zwass (1992:577)

The MES is developed by means of a process called knowledge engineering, where the subject expert and human knowledge engineers combine to develop the knowledge base. The knowledge base forms the basis for a rules-based expert system – in order to achieve that it contains both facts and rules. On the other end, the user has a user interface to enable communication with the expert system in a customized format. The user's input consists of the facts of the case to be decided. The inference engine controls the 'reasoning' of the system. The explanation facility explains the system's 'reasoning' and how it arrived at a recommendation or explanation. Generally, the user interfaces with the expert system by means of a natural language interface (for example English).

An example of the application of an expert system is a credit application system. The user (for example a loan officer) inputs the personal particulars for an individual that are relevant to the application. Based on

its business rules, the expert system then recommends whether the loan should be extended or not, and provides the reasoning behind the decision. It is of course still possible for human intervention to 'override' the system.

4.4.1.2 Marketing Decision Support Systems (MDSS)

MDSS (see paragraph 1.4.3) are systems supporting middle and top management with semi-structured decision-making (Greco & Hogue 1990:28). Its components are discussed below.

- A database of relevant information, where data management takes place. This data is supplemented with data from both external and internal data sources.
- A model bank to manipulate and process the information, where model management takes place. The creation, maintenance and use of mathematical and quantitative models are the focus of this subsystem.
- A user interface, where users can interact with the system to obtain the output of the system. Zwass (1992:533) also refers to this as 'dialog management'. Menus, icons, natural language interfaces and graphics support users in their interface with the MDSS.

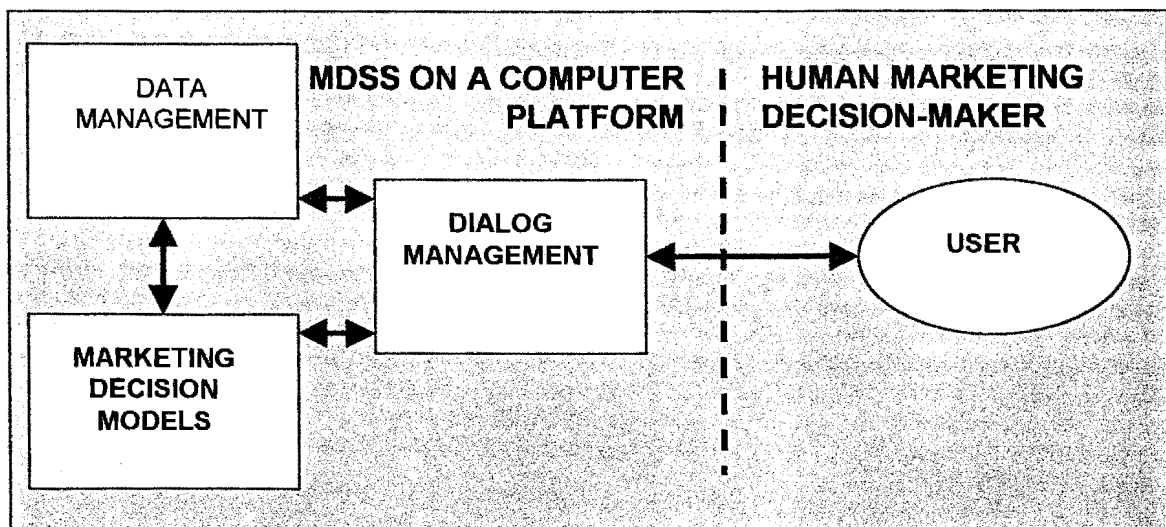
Pitt and Bromfield (1994:153-154) and Zwass (1992:530-532) point out a number of advantages of MDSS over generic management reporting systems (MRS - see paragraph 1.4.1). These are:

- The ability to support decision-making in highly unstructured situations that require the processing of huge volumes of data.
- Its speed in obtaining quantitative results to support decision-making.
- The ability to operate in *ad hoc* mode to support the current needs of the user, for example to allow decision-makers to construct 'what if?' scenarios.

- It supports easy modification of models to allow adaptation to the environment.
- It supports various phases of decision-making, from problem identification to selecting the best alternative.
- Integrates human judgment with available information to foster high-quality decision-making.
- Flexibility to suit the decision style of individuals.
- Facilitates decision implementation by allowing common decision models across functional boundaries.
- It allows group decision-making.
- It is typically user friendly, with graphical and natural language interaction.
- It allows managers an opportunity to gain a better understanding of their business by developing models.

Figure 12 is a graphic depiction of the working of a Marketing Decision Support System.

Figure 12 A marketing decision support system (MDSS)



Adapted from: Zwass (1992)

The working of a MDSS is best explained by an example. A marketing decision-maker needs to make a decision whether to introduce a product in a new market segment. The decision-maker retrieves data from the database on market sales for the product segmented by area, time period (for example past three years) and customer segments. If the data is available, the sales of competing products in all areas can also be tracked. Based on this, a decision can be made on whether it would be wise to extend distribution to the new area. The key feature of the MDSS is that it provides information tailored to the specific needs and decision models of the decision-maker, and the final decision rests with the decision-maker.

4.4.1.3 Executive Information Systems (EIS)

EIS represents a development in MIS where aggregated data is presented to top management, focusing on the key performance areas of the organization and environmental scanning data. The principle is to provide only salient information which executives can access on a day by day basis. The key focus of EIS is on simplicity and the identification of problems and opportunities. It supports top management with a tool to control and conduct strategic planning.

Typically, the EIS does allow the executive to 'drill' deeper into the data supporting the EIS. The EIS is often set up according to the key business objectives of the organization.

4.4.1.4 Geographical Information Systems (GIS)

GIS allows decision-makers to view data spatially on a map. This is an exciting development in marketing, as it allows a global spatial view of data, while it also allows a view of individual entities. For example, a

manufacturer of fast moving consumer goods can look at retail outlets for the whole South Africa, categorized according to turnover. When it is noticed that outlets in the Western Cape has a tendency to under perform, the supporting data allows zooming in on the Western Cape and even on individual outlets. In that way problem-solving efforts may be focused on the right entities. Indications are that GIS will form part of MDSS and MES, for example to view the impact of decisions spatially.

4.4.1.5 Business Intelligence Systems (BIS)

Business Intelligence Systems (BIS) is the collective term for the move towards centralized organization-wide databases and intelligent end-user tools for extracting intelligence from raw data. It postulates that, instead of having dedicated information analysts spending 100% of their time analyzing data, marketing professionals and decision makers will spend 10% of their own time analyzing information with custom designed software tools. Central to the idea of BIS is the Data Warehousing concept. However, BOC (1999) point out that the existence of a Data Warehouse is no guarantee that users' business information needs are solved. Hence, the BIS concept suggests that various tools can be used to extract and manipulate data. Some of the more common terms associated with BIS are the following:

- On-line Analytical Processing (OLAP) which refers to the basic principle of BIS, namely to analyze masses of aggregated data to extract trends and anomalies that can assist in problem solving and decision making. For example, data can be aggregated according to user specified dimensions like measurement variables (for example 'revenue', time, geography and product information. In a sense, OLAP is nothing more than decision support systems, since it draws on a database and user-defined decision models to provide analytical data.

- Query and reporting software tools, which allows the drawing up of queries and reports according to user needs. This is an extension and modernization of the Management Reporting System (MRS) concept (see paragraph 1.4.1).
- Data mining is a systematic process that allows the users of BIS to use computing and statistical techniques (like neural networks, data visualization and tree-based models) to explore data and discover knowledge. Data mining tools can be used, for example, to define market segments according to a number of user attributes and to cluster those customers belonging to one segment together and profile them.

The most important factor distinguishing MKIS from BIS is that BIS does not focus on functional division. It sees marketing, financial, human resources and other functional information requirements as user-defined applications. It therefore promotes an extremely flexible and user focused approach, where users define and implement their own decision support requirements. The MKIS could subsequently be seen as a subset of an organization-wide BIS.

4.4.2 Database technologies

The application of MKIS would be impossible without the existence of internal and external databases. Some of the more pertinent database technologies are subsequently discussed.

4.4.2.1 Data Warehousing

A very big trend in centralized data repositories is the Data Warehouse. The concept of the Data Warehouse dictates that relevant data is gathered

from existing (mainly transactional) systems and loaded onto a central data repository - the Data Warehouse. Data Warehouses are typically relational databases, which means that information can be linked and complex relationships between information entities can be established. In other words it provides the user with the 'big picture'. Attributes of these marketing databases are that they will:

- Keep core databases for consistency (for example to eliminate duplication of records), yet will allow distributed processing at the user interface.
- Provide flexibility in viewing the data through relational database technology.
- Have easy to use graphical user interfaces (GUIs).
- Be easy to change and adapt.

It also represents a range of significant technical challenges, like mass updating of data, data integrity management, and integration with other technologies.

4.4.2.2 External databases

External information is information obtained externally to the organization. The following are sources of external information:

- The Internet is probably the most prevalent source of electronic external information, providing access to literally thousands of sources of information. It is the fastest growing technology in the world today, requires standard equipment to gain access, and is relatively cheap to use. A current problem with the Internet is that there is literally too much information. A simple search could yield millions of documents, making it almost impossible to find the information you want easily. In attempts to bridge this problem, sophisticated search engines, technologies like Intelligent Agents and megaportals (that are

somewhat like cyber-malls) are being used to make the process of finding information, services and products easier. In addition to being a valuable information source, the Internet is also becoming an important supporting technology, for example to advertise and conduct business on. It already is a virtual electronic point-of-sale (EPOS) system. For example, on amazon.com customers can make on-line book or Compact Disc selections and pay for them by credit card.

- Other electronic databases, such as the South African McGregor's Information Services with stock exchange and financial data are also available, providing access on compact disc or via the Internet.

4.4.2.3 Intranets

Intranet is an area of information systems currently undergoing explosive growth. An Intranet allows intra-organization networks (using the Internet protocol) to be a vehicle for sharing information, by for example using HTML format. The greatest advantages of Intranet are the wide area networking capabilities it enables as well as the fact that it provides a single access point within the organization to access a wide variety of internal (and also external) data.

4.4.2.4 Knowledge management systems

Knowledge management systems is a branch of information technology that developed from the need of companies to extract, store and share the knowledge contained in 'peoples' heads', as part of the quest to share learning across the organization (Lotus 1998:2). Probably the best examples of knowledge management systems can be found in the professional consulting industry, where an integral part of every consultant's job is to provide formal input and summaries of every project

into a formal knowledge management system. An Intranet provides a very good platform for a knowledge management system.

4.4.3 Transactional systems

Transactional systems are the primary source of management information. Not surprisingly, the main source of transactional information for marketing is the electronic point-of-sale (EPOS). Some of these developments are discussed below.

- Barcode scanning allows accurate merchandising and inventories management because it can be linked to inventory systems and allows accurate charging at EPOS.
- Electronic commerce (e-commerce) allows the organization to capture data on customers and transactions instantly as transactions are completed on-line.
- Electronic funds transfer, electronic credit checking and Electronic Data Interchange (EDI) can improve the speed of transactions and allow for 'paperless trading'.
- Computer Telephony Integration allows more sophisticated telephonic interaction and data capturing by the combination of telephony and computing power, for example in a call center environment.
- The increasing use of 'smart cards' from the home and at EPOS will allow companies access to massive amounts of data on buying behavior.
- Multimedia technology and virtual reality will increasingly allow companies to integrate the promotional effort with the EPOS. For example the customer might be able to view a house electronically, and then make an offer and apply for a loan (or pay for it) from the same electronic site.
- Satellite and wireless technologies are allowing companies to extend their points of sale into rural areas, and to roll out their computer networks faster than ever before.

- Sales and Contact management systems allow sales representatives to consolidate customer information and manage their customer contact and time more efficiently, while at the same time providing sales management information.

4.4.4 Office automation

Various technologies are contributing to productivity improvements at the very basic level of document creation and storage, communication, personal management and data access and handling. Although developments in this area occur so rapidly, there are some specific technologies that will be discussed in the interest of providing a broad perspective. Some of these technologies that may have specific reference to marketing are described below.

- Statistical software packages like SAS, Statistica and SPSS allow the input statistical processing of data according to the needs of the user. These packages are also becoming more and more sophisticated, becoming part of BIS solutions. These packages provide decision support by easily doing mathematical and statistical analyses that would normally not be possible (or very difficult) by other means.
- Groupware systems allow interaction between users to make group decisions. Used in conjunction with, for example, MDSS, it may combine the power of decision models with the benefits of group decision-making. The biggest advantages are timeliness, objectivity and the effortless bridging of distance.
- Direct marketing software allows users to plan and carry out direct mail and telemarketing campaigns. It is usually supported by list management software, which eliminates duplication of information and perform actions like sorting, addressing and mailing. It follows almost without saying that direct marketing and list management systems should be linked to the central databases or Data Warehouse to maximize efficiency.
- Fax on demand (FOD) allows a user to access a database and request

information, which is then automatically dispatched by fax.

- General office automation in this context refers to generic technologies like word processors, spreadsheets, databases, desktop publishing technologies, telephone systems, electronic mail and fax machines. These technologies provide some very obvious advantages to the marketing function. Not only does it enable productivity improvements, but it also enables easier contact and new methods of communicating with business associates and customers alike. Personal Information Managers also allow individuals to store their own customer data and diary functions. These are also available in Groupware and network software versions, allowing users to communicate and schedule group meetings, for example. Of these technologies, e-mail is probably the one currently having the most revolutionary effect on the way people are conducting business.
- Specialist marketing software refers to the software supporting various specialist aspects of the marketing effort are freely available. Some examples of areas covered are marketing planning software, sales negotiation planning, sales forecasting and idea generation.

4.4.5 Database marketing

The concept of database marketing has become so commonly used that it needs some exploration as a prerequisite to the understanding of MKIS. In many marketers' minds, database marketing equals direct marketing, in other words direct mail or telemarketing campaigns. However, the use of a customer database offers far more than that. It offers, among other things, the ability to:

- Manage the market segmentation process.
- Target advertising and promotions efforts at the correct areas and customers.
- Target the most profitable customers.
- Combine various demographic characteristics in order to be efficient in marketing efforts.

- Combine with computer telephony integration tools and IT innovations (like smart-cards) in order to manage customer relationships efficiently; and
- Provide a basis for computer-integrated marketing and selling.

Looked at in this way, it becomes obvious that database marketing is nothing more than the intelligent application of the MKIS or BIS to develop customer relationships. At best, the customer database becomes the core of the companies marketing effort, and allows it to come closer to the ultimate goal - mass customization.

4.4.6 Other IT trends that will impact on the marketing function

As Blattberg *et al* (1994) point out, marketers are facing an information revolution. One of the characteristics of this revolution, is the astonishing pace of development. The objective of this section is to define some of the broad trends that will affect marketing:

- Computers are becoming smaller and smaller, allowing great levels of portability, yet becoming more and more powerful at the same time.
- Software is becoming more sophisticated, yet it is becoming more user friendly and easy to customize.
- Computer networks are proliferating to the extent that the majority of business computers used today form part of either a Local Area Network (LAN) or a Wide Area Network (WAN), allowing high connectivity across organizational and geographic boundaries.
- As telecommunications networks expand and telecommunications technologies develop, more and more data and multimedia will be easily transportable along telecommunication infrastructure. For example, the ability to transmit voice, data and video simultaneously is already within the means of individuals by means of ISDN lines.
- Computers and telephony are converging, resulting in extremely intelligent

networks and call center applications.

- The integration of expert systems, decision support systems, GIS and the Internet will lead to very powerful, knowledge based systems for decision support that are easily accessible.
- Increasing mobility in computers and telephony will allow mobile offices with access to data from virtually anywhere (virtual and mobile offices).
- The emergence of managers and specialists with both technical and business competence.
- Intelligent Agents are software agents that can be dispatched by its users to complete a certain task. For example, an Intelligent Agent may be dispatched to find information on a certain topic on the Internet. The Intelligent Agent will apply the search criteria and find the most suitable sources and bring it back to the requester. It could even be programmed to 'negotiate' a price on behalf of its owner and conclude the transaction once the price has been settled. Intelligent Agents are especially suitable to complete routine, time consuming tasks. In a sense, it acts as a computerized personal assistant.
- Voice recognition is an application of computing technology that allows users to interact with computers using only voice as input. Voice recognition can for example be used to automate routine customer interfaces.

Meyer (1994:204-205) has identified seven meta-trends that influence the use of information technology in marketing:

- Faster marketing (accelerated marketing procedures).
- Target marketing (more accurate observation and handling of marketing information).
- Intelligent marketing (more focused individual problem solving).
- Multi-informational marketing (many sources and computerized models).
- Network marketing (organizational and technical networking in and between organizations).
- Visual marketing (the trend towards visual information).
- Emotive/creative marketing, which clarifies the limits of computerization and

identifies the trend towards individual creativity.

4.4.7 The CIMa model

Meyer (1994:205-212) developed a model for computer integrated marketing (CIMa) The model was the result of a research project undertaken at the Technical University of Berlin, and the objective was the integration of computers in marketing over the next decade.

At the heart of the CIMa model lies the marketing workbench. It is a collection of systems which support the decision making process. From the marketing workbench, the decision-maker can control virtually every marketing function by means of information flows. Various Wide Area Networking and information technologies support the flow of information. The idea of the CIMa model is to see the whole of marketing information technology as a single system.

The value of the CIMa model lies in the integration of information technology and marketing, which provides valuable guidelines for implementation. It also provides an indication of the direction technology is moving in, and is a comprehensive model for the application of a broad range of technologies in marketing. On the negative side, it falls into the trap of being too prescriptive, too difficult to implement and it ignores the individualism of most organizations. Its major flaw is that it appears to be driven by technology, rather than by the unique marketing needs of the organization. In this sense, it ignores the 80/20 principle and attempts to be all things to everyone within marketing. For that reason, CIMa cannot be considered a suitable model for MKIS.

4.5 THEORETICAL MODELS OF MARKETING INFORMATION SYSTEMS

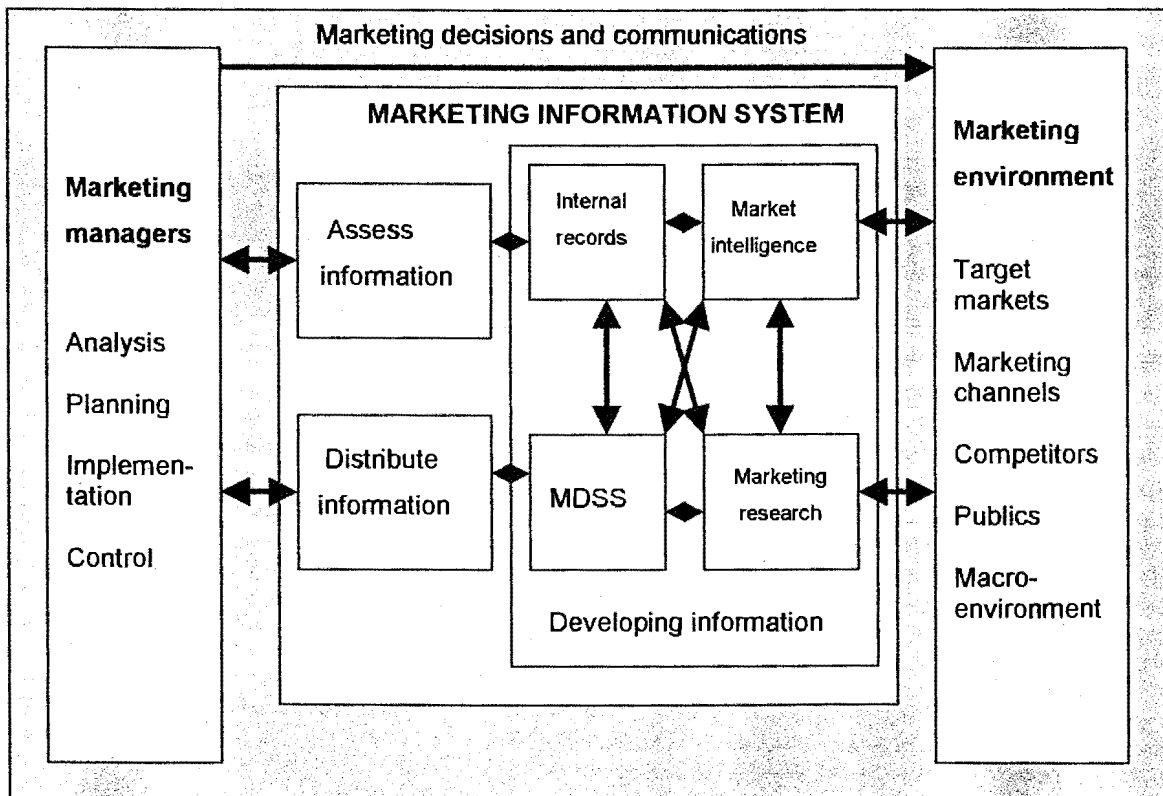
This section provides a discussion of various MKIS theories. What complicated the selection of models for discussion was the fact that there are no generally accepted MKIS (Li 1995:15). Instead it tends to be specific to the organization or industry it serves. The selected MKIS theoretical models are the following:

- The model of Kotler (2000) is a model that originated almost 30 years ago, and has been adapted and modernized to incorporate technological changes. It is a model with a proven track record and is well known in the industry (see for example Li 1995:14).
- The second model is a model that was developed and researched over 15 years by McLeod & Rogers (1982:106-116), McLeod & Rogers (1985:59-75), Li, McLeod & Rogers (1993:165-192) and Li (1995:13-31). This model was also tested extensively in research in the U.S.A.
- The third model is one proposed by Schultheis & Sumner (1992:393-398). The reason for its inclusion is that it is one of the few models proposed from the information management discipline rather than from the marketing discipline.
- The fourth model under discussion is the model developed and applied by Skyrme (1990:54-61) in the computer industry. It is used as an example because it is a model based on practical realities in a high technology service industry.
- The last model under discussion is the Intelligent Marketing Information System Model (IMKIS) of Amaravadi, Samaddar & Dutta (1995:7). This model is included because it includes many of the MIS technologies described above. As such, it is a relatively 'modern' approach to MKIS.

4.5.1 The model of Kotler

Kotler (2000:100-118) proposed the model represented in figure 4.4. Marketing managers need information about the marketing environment in order to analyze, plan, implement and control. The MKIS assesses information needs and develops the information by means of internal records, marketing decision support systems, market intelligence and marketing research. The information is then distributed back to the marketing manager by means of the MKIS where marketing decisions are made.

Figure 13 The MKIS model of Kotler



Source: Kotler (1991:96), Kotler (2000:100-118)

There are four major areas to be considered in Kotler's model of MKIS. These are:

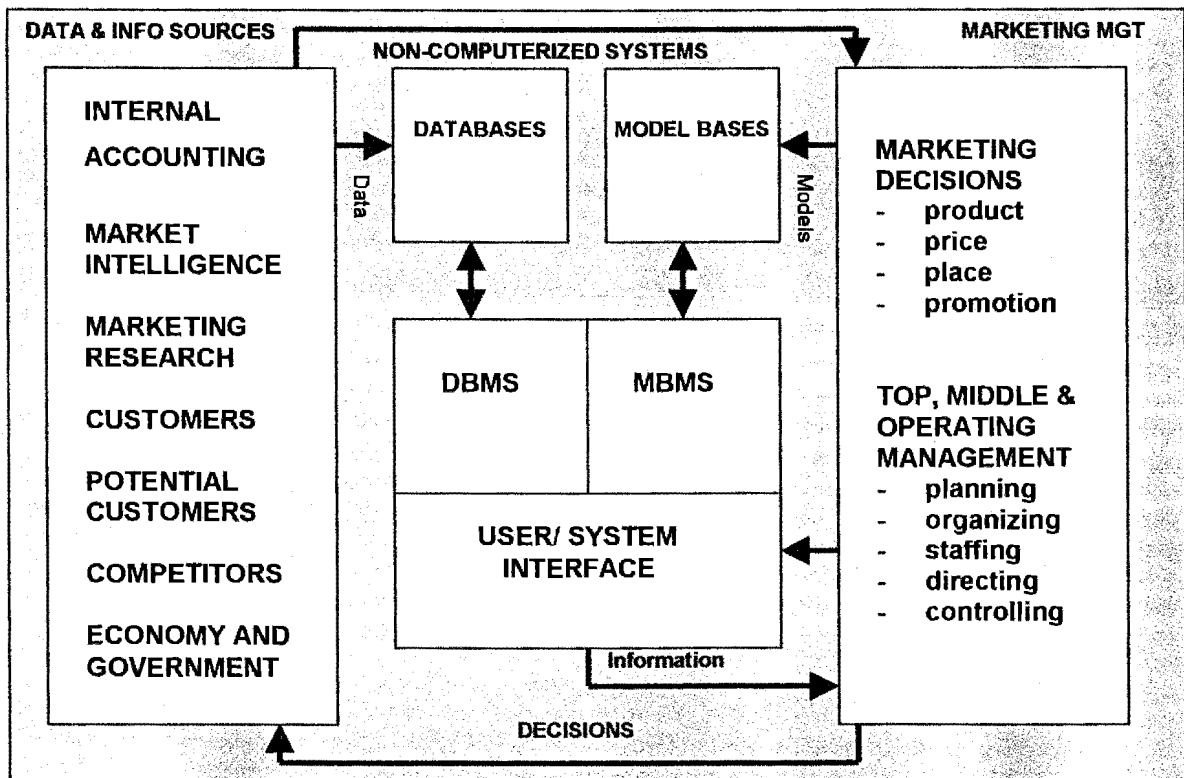
- The internal record subsystem that consists of information generated by the order-shipping-billing cycle and by sales reporting systems. As Kotler points out, user friendliness and speed are two important issues that should be inherent to internal records.
- Kotler regards market intelligence as the proactive identification and communication of 'happenings' in the environment.
- Marketing research in Kotler's model refers to the conventional process of marketing research:
 - Defining the problem and research objectives.
 - Developing a research plan that includes data sources, research approaches, research instruments, a sampling plan and contact methods.
 - Collecting the information.
 - Analyzing the information.
 - Presenting the findings.
- Notably, Kotler regards the MDSS (see paragraph 4.4.1.2) as part of the MKIS. Kotler's description of MDSS corresponds with the description of MDSS presented above.

4.5.2 The model of McLeod & Rogers

The value of the McLeod & Rogers model (as discussed in Li 1993) is that it was developed over a period of 15 years through research in the top American companies. Figure 14 represents the McLeod & Rogers MKIS model as depicted by Li (1993:14). Information is obtained from various data and information sources in the form of internal accounting data, marketing research, market intelligence and other environmental data. This information is stored in databases or supplied through manual systems to the decision-makers. On the other end of the spectrum, marketing decision-makers have to make decisions on the four Ps of marketing - product, price, place and promotion. The way decision-makers think about these areas determine their marketing models, which is in turn stored as models in the marketing model base. Their decisions also affect the

environment and are part of the feedback loop. On all levels of management (top, middle and operational) management activities take place. These are planning, organizing, staffing, directing and controlling. To conduct all of these marketing and management activities, marketing decision-makers need information. If not obtained via a manual system, it is obtained by means of making an inquiry on a user interface. The relevant information is then obtained with the help of a database management system (DBMS) and a model base management system (MBMS) in tandem. Information is processed and fed back to the user. It is interesting to note that this approach corresponds very closely to the definition of a decision support system.

Figure 14 The MKIS model of McLeod & Rogers



Source: Adapted from Li (1993:14)

4.5.3 *The model of Schultheis & Sumner*

Schultheis & Sumner (1992:417) propose an MKIS that is focused on the different levels of marketing management. They also state that the MKIS should be linked to other systems in the organization in order to provide the information required. Figure 15 is a depiction of the Schultheis & Sumner model.

Schultheis and Sumner's approach is focused on the categorization of information systems and applications. The basic point of departure of the model is the fact that three levels of marketing decisions occur, namely strategic, tactical and operational level. Strategic planning information systems, tactical information systems and operational information systems support these.

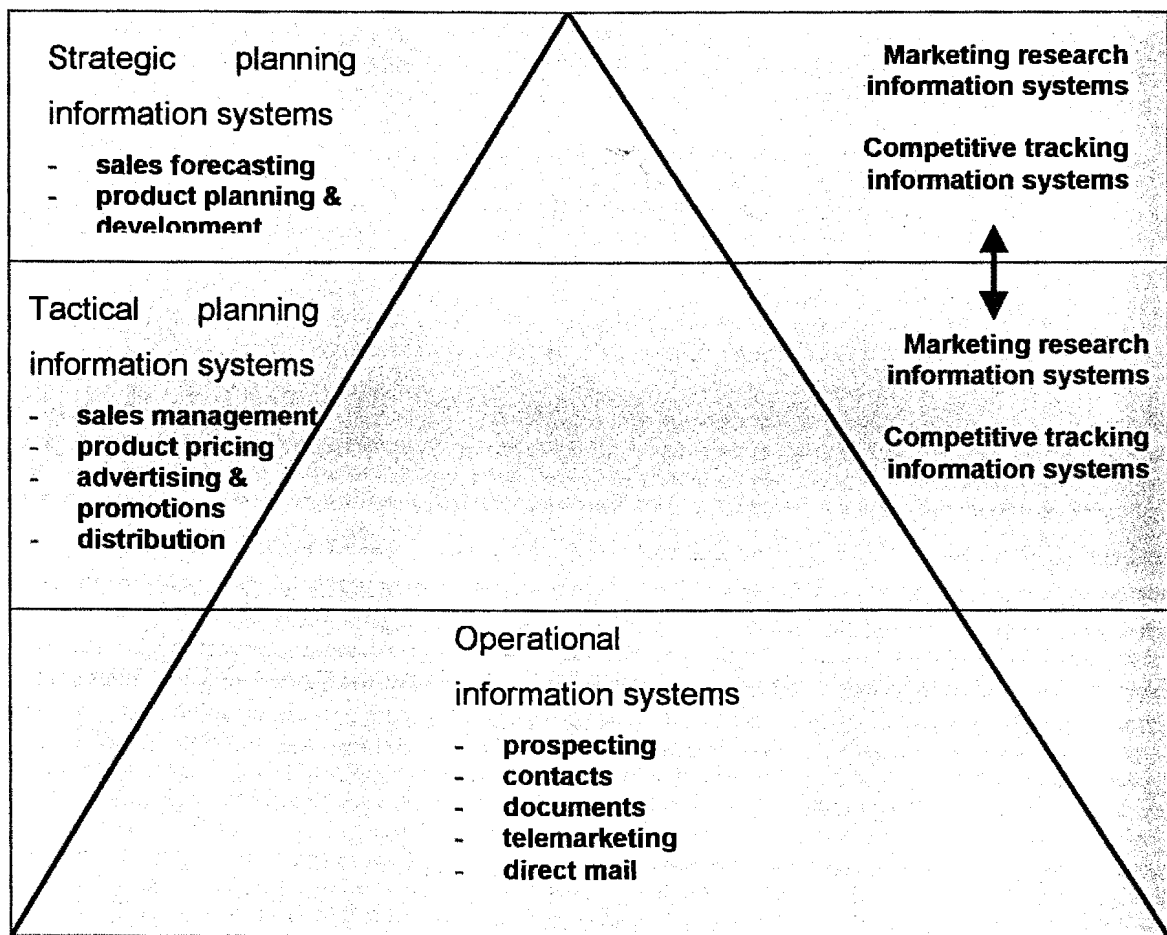
According to Schultheis & Sumner (1992:393-398) operational information systems produce information that is repetitive, descriptive, expected and objective, and has historical focus. It is usually derived from internal sources and is highly structured and accurate. They consist of subsystems such as sales prospects; customer contacts lists and call reports, documents such as pro forma letters and memorandums, telemarketing systems for managing telephonic sales and direct mail systems for managing mailings to customers.

On the other hand, tactical information systems provide information to support decisions about marketing plans. The information therefore tends to be unstructured, internal and external, summarized and detailed and may include subjective information. The subsystems of the tactical information system are for example:

- The sales management information system, that will help marketing decision-makers make decisions about the deployment and application of the sales force.
- Advertising and promotions information systems, that will support decisions to maximize the usage of advertising and promotions budgets.

- Product pricing information systems that will allow decision-makers to apply pricing models and make decisions on pricing.
- Distribution channel information systems that will provide information on the performance of distribution channels, for example cost of the channel versus sales generated by the channel.

Figure 15 The Schultheis & Sumner MKIS model



Source: Adapted from Schultheis & Sumner (1992:393)

At the level of the strategic planning information system, Schultheis & Sumner identify two subsystems contributing to strategic planning decisions, namely:

- Sales forecasting subsystems.
- Product planning and development subsystem, in which marketing research is used to make decisions about products.

Two general support information systems are also identified at the strategic and tactical levels:

- The marketing research information systems, which facilitates the flow of marketing research information to marketing decision-makers.
- The competitive tracking information system that allows decision-makers access to competitive information.

There are several criticisms from a MKIS perspective against the Schultheis & Sumner model. Of these, the most important are:

- The focus on applications rather than on the flow of information.
- The model does not reflect the underlying complexity of marketing decisions.
- The model does not provide a holistic approach to MKIS.

4.5.4 *The market intelligence model of Skyrme*

Skyrme's model (1990:54-61) is based on the work the author performed in Digital Equipment Corporation from 1982. Apart from its applicability to the IT industry, there are other attributes which makes Skyrme's model unique. These are:

- The high need for published information indicated in the model.
- The cohesive devolution of market intelligence into Business Units.
- The establishment of the market intelligence function as an external revenue-generating unit in its own right.

As part of the development process, Skyrme followed a specific process, which consists of the following steps:

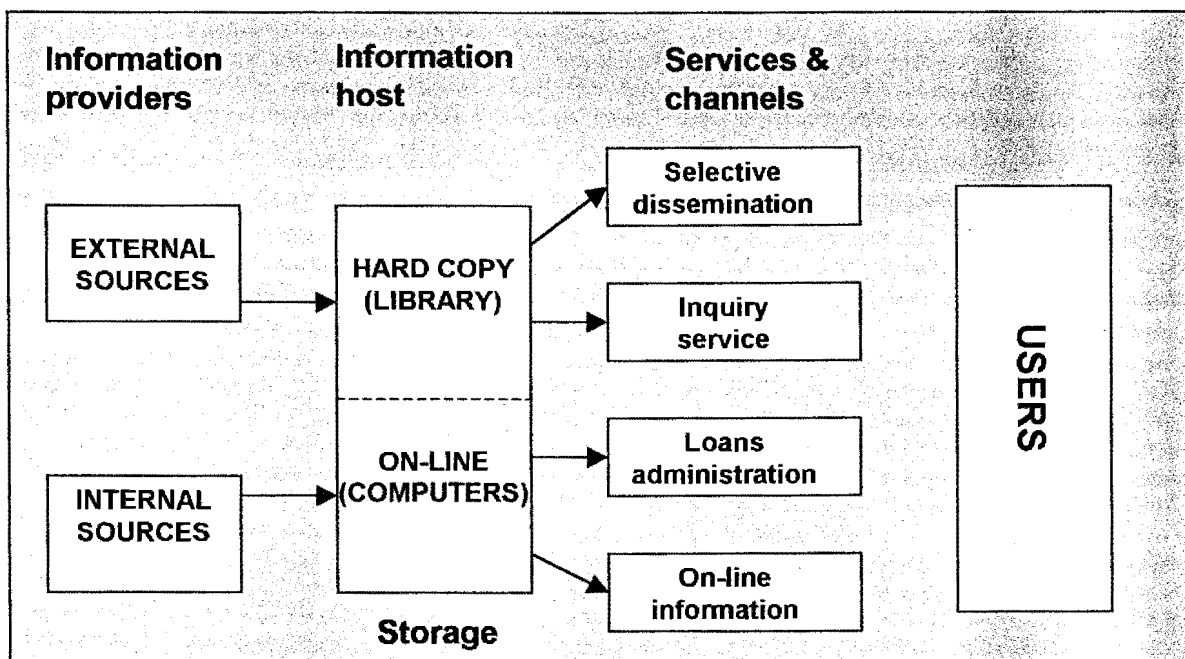
- Identifying the marketing activities to be supported and their effectiveness.
- Understanding the needs of internal customers through marketing research.
- Formulating a strategy for market intelligence which focused on the issues of who competitors are, what value market intelligence adds to the customers,

what market intelligence's business is, what their goals are and what strategy will be used to attain those goals.

- Detailed planning follows outlining development programs in order of priority and organization principles (such as intensive training).
- Establishing marketing operations, including an own logo and useful literature.

Figure 16 is a graphic depiction of Skyrme's model. Data is gathered from external and internal sources and structured and indexed before archiving it either electronically or in hard copy in a library. From there, users could obtain the information either by selective dissemination, inquiring after information or on-line searches. Loans of market intelligence material from the hard-copy library were administered by an on-line library management facility.

Figure 16 The market intelligence model of Skyrme



Source: Skyrme (1990:58)

Skyrme adds that his management of the market intelligence process rests on two principles:

- Self-evaluation of his section and corrective action based on that.

- Computer support for the market intelligence function through multidimensional modeling and quality information.

The Skyrme model does provide a useful model, since it does follow the broad flow of information suggested in other MKIS models. However, it does not specifically focus on the marketing function.

4.5.5 The Intelligent Marketing Information System (ImkIS) model of Amaravadi, Samaddar & Dutta

The IMkIS model includes a number of the MIS concepts already identified and discussed. According to Amaravadi, Samaddar & Dutta (1995:5), the feature that distinguishes IMkIS from MKIS is the knowledge base. Interpreted another way, IMkIS integrates intelligent (expert) systems with the more traditional features of MKIS and MDSS. Figure 17 illustrates this model.

The input system collects data from the internal and external environments. The incoming data from the internal environment is typically transactional information, while the information from external sources is typically market intelligence.

The filter's role is to distinguish relevant from irrelevant information. In this case, the filter is constructed using key words. All information containing certain key words is sent to the decision-maker, while irrelevant information is ignored.

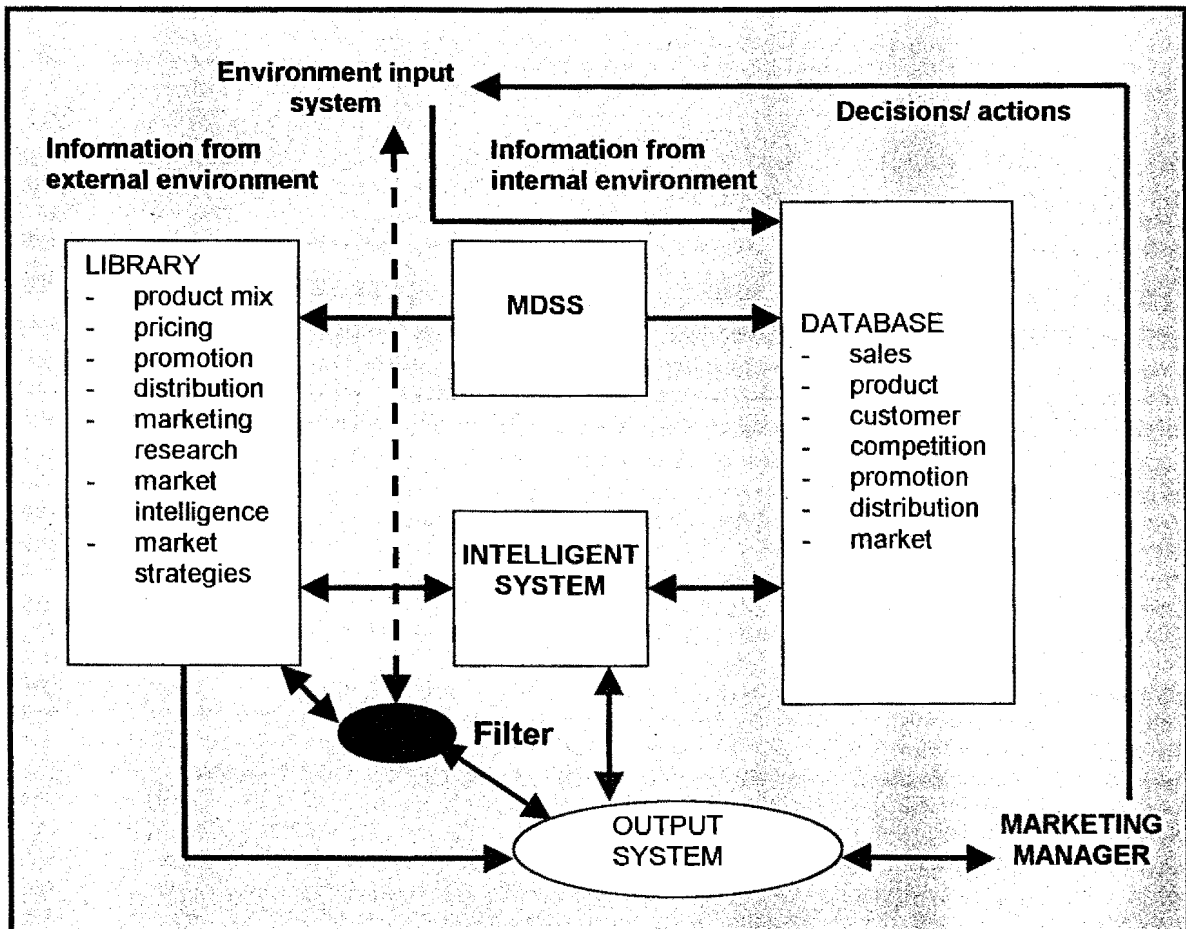
In this instance, the library is a 'virtual' library, where the process of collecting, storing and forwarding of information is automated.

The MDSS as identified in the model conforms to the general definition of MDSS provided above. In this instance, it combines internal and external information to assist decision-makers in developing alternatives and 'what if?' scenarios.

The output system is the mechanism for the manager to interact with the system. It is a terminal screen, allowing the marketing manager to raise questions ranging from standard database queries to queries from the knowledge base.

The intelligent system identified in the model conforms to the definition and structure of expert systems as identified above. The knowledge base allows rules-based searches inter-relating certain constructs, for example to determine what promotional strategies were used in the past in relation to a specific product.

Figure 17 The ImkIS model of Amaravadi, Samaddar & Dutta



Adapted from: Amaravadi *et al* (1995:5)

According to Amaravadi *et al* (1995), IMKIS allows more than just the mechanical processing of information. The value of this model is that it is the only model that combines the MDSS and MES concepts (see paragraph 4.4.1) into a single approach.

4.5.6 *Summary of theoretical models*

Table 8 is a summarization of the MKIS concept. The work conducted by Talvinen (1995:11) was also used as input into the process. An important dimension is the level of MKIS. While Schultheis & Sumner (1992) proposed a three-level approach, Talvinen (1995:10) regards the management and operational (transaction processing) levels as sufficient to distinguish between MKIS applications. Some authors, like Kotler (2000), ignored the decision-making level, indicating either a focus on management or an acceptance of high levels of customization in MKIS output. For the purposes of this discussion, the three-tier approach was used, namely strategic level, tactical level and operational level, because of its close correspondence to general management theory. The aim of the summary is to identify the 'common ground' between the various models. In order to achieve that, broad categorizations were used, namely data gathering systems, management information systems and output subsystems. These reflect the process of 'input-transformation-output' generic to systems theory. Table 8 also reflects the sources of each category.

Table 8 A summary of MKIS theory

DATA GATHERING AND STORAGE SYSTEMS	MANAGEMENT INFORMATION SYSTEMS	OUTPUT SUBSYSTEMS
<p>Internal:</p> <ul style="list-style-type: none"> • Accounting systems • Sales <p>(McLeod & Rogers 1982, Amaravadi et al 1995)</p>	<p>Marketing Decision Support Systems</p> <ul style="list-style-type: none"> • Model base • Database <p>(Kotler 2000, McLeod & Rogers 1982, Amaravadi et al 1995)</p>	<p>Management level:</p> <ul style="list-style-type: none"> • Top management • Middle management • Operating management <p>(McLeod & Rogers 1982, Schultheis & Sumner 1992)</p>
<p>External:</p> <p>Market intelligence</p> <ul style="list-style-type: none"> • Customers/ markets • Competitors • Publics <p>Marketing research</p> <ul style="list-style-type: none"> • Target markets/ potential customers • Marketing channels • Product • Promotion <p>Macro-environment</p> <p>(Kotler 2000, McLeod & Rogers 1982, Amaravadi et al 1995, Schultheis & Sumner 1992)</p>	<p>Marketing Expert Systems</p> <ul style="list-style-type: none"> • Rules-based intelligent system <p>(Amaravadi et al 1995)</p> <p>Library (hard copy and on-line)</p> <p>(McLeod & Rogers 1982, Skyrme 1990, Amaravadi et al 1995)</p> <p>Competitive tracking and marketing research information systems</p> <p>(Schultheis & Sumner 1992)</p>	<p>Subsystems:</p> <ul style="list-style-type: none"> • Analysis • Planning • Implementation • Control <p>(Kotler 2000, McLeod & Rogers 1982)</p> <p>Outputs:</p> <ul style="list-style-type: none"> • Marketing decisions • Communications • Marketing actions • Sales forecasting <p>(Kotler 2000, McLeod & Rogers 1982, Amaravadi et al 1995, Schultheis & Sumner 1992)</p>

Some shortcomings of the theoretical MKIS models and technically integrated MKIS were identified by Talvinen (1995:14-15) and Amaravadi, Samaddar and Dutta (1995:4-5). These shortcomings are:

- MKIS do not reflect and consider the organization strategy and marketing management process.
- If technical integration of MKIS components happen without functional integration, it could lead to information 'islands'. For example, it may result in

separate systems for product managers and advertising and communications managers.

- MKIS currently do little more than process data (at high cost) and information overload can still occur.
- Technical complexity is still prohibiting widespread usage of MKIS.
- MDSS generally cannot handle situations where incomplete information is available.
- Marketing expert systems are typically focused on one problem and very rigid in its approach (for example, it cannot deal with semi-structured problems).

However, despite the questions and shortcomings, Talvinen (1995) concludes that the integration of MKIS is necessary and beneficial if done for business rather than technical reasons. Other possible criticisms against the theoretical models may include:

- Relatively little focus on the nature of the input and output.
- No indications of the application of major technologies like the Internet to integrate the flow of information in MKIS.
- Typically a fragmented view prevails, where activities, applications and outputs are looked at in isolation rather than as an integrated whole.
- Little indication of how operational MKIS and management MKIS can be linked or integrated.
- Very few authors have suggested a 'built in' mechanism to ensure the maintenance of MKIS in terms of information flow and design principles.

4.6 WORLD WIDE RESEARCH ON MARKETING INFORMATION SYSTEMS

A number of international research studies on MKIS have been conducted. In this paragraph, several of the most recent available international research studies are discussed. Due to possible differences in approach and application, American and European research are discussed separately. No previous South African published research could be found.

4.6.1 North American Research

4.6.1.1 The research by McLeod, Rogers & Li

The research conducted by McLeod, Rogers & Li between 1980 and 1997 represents the only identified longitudinal study conducted on MKIS. It is the most focused on 'classical' MKIS theory, which makes it important in the context of this study. This research was also used to develop and test the MKIS model of the same authors (see paragraph 4.5.2)

The research commenced with publication of the 1980 MKIS research in the Fortune 500 companies (McLeod & Rogers 1982). The outstanding aspect of the 1980 survey compared to later surveys was the low level of computerization (which probably was to be expected at the time). This research was repeated in 1985 with a slightly revised questionnaire among the Fortune 1000 companies (McLeod & Rogers 1985). The study was slightly revised and the Fortune 500 marketing executives were again approached in 1990 (Li, McLeod & Rogers 1993). A further survey was conducted in 1993 in the Business Week Top 1000 companies (Li 1995:16) and also among small American companies (Li 1997). Li (1995) conducted a replica of the 1985 study in order to provide a longitudinal view of MKIS in top American companies. In general, the decision was made to use the 1985 study as a comparison to the 1993 study as reported in Li (1995). The work of Li (1997) on MKIS in small companies will also be used in the comparison. The main reason for this is that the 1980 study was conducted too early to be meaningful as a tracking study, while the results of the 1990 and 1993 studies were very similar. The main findings are discussed in the following paragraphs.

In the 1993 survey, 75% of companies indicated that they have an MKIS. Although the lack of growth is surprising (if not disappointing) compared to the 76% of the 1985 survey, it nevertheless represents a high incidence of formal MKIS. In small companies (Li 1997:34) only 51% have indicated usage of a MKIS.

Of the companies indicating that they have MKIS, 81% also had company-wide information systems (CIS). This refers to computers networked across the organization. However, in only 59% of cases were CIS influenced by marketing strategy. On the other hand, 89% had formal marketing planning, and only 53% of marketing plans were influenced by the status of information resources (Li 1995:17). The small companies study identified that 73% of the companies with MKIS also had CIS. However, almost half of them had formal CIS and 67% had formal marketing plans. Only 48% of respondents indicated that their information resources influence their marketing plans.

Computers, as could be expected - mainly mainframes and personal computers - overwhelmingly support MKIS, also in small companies. Another observation seems to be the tendency to store information rather than data. In other words, the data is processed and then stored as ready to be accessed. This is very much in line with trends towards multidimensional data analyses and DSS.

The three main categories of software used to support MKIS were decision modeling and spreadsheets, conventional programming and database management. Li (1995:18) comments that artificial intelligence and expert systems do not seem to be meeting their expected demand (these systems are not as widely used as initially expected).

Access to personal computers are common (93%), and 73% of respondents indicated daily usage of computers. This differs significantly from the 53% in 1985.

The computers are mostly used to retrieve data (88%) and to produce reports (78%).

As far as electronic communication was concerned, electronic mail (68%) was by far the most popular application.

As in 1985, internal accounting data was still the most popular source of information (65%). Market intelligence was less popular (24% versus 28% in 1985) while marketing research improved significantly (21% versus 13% in 1985).

Customer information, as in 1985, was still the most popular information content (100% gather it versus 91% in 1985). It is also highly computerized (in 93% of cases). Although competitor information and prospect information was much more popular than in 1985 (77% versus 33% and 65% versus 25% respectively), it is not generally computerized (37% and 35% respectively). Information sources that are generally used (as in 1985) are corporate annual reports, sales call reports, purchased reports and clipping services. However, computerization of these sources is generally very low.

The management level most supported by MKIS is middle management (42%), although support for operational management is increasing (31% versus 19% in 1985). Planning and controlling are the two management functions being the most supported by MKIS. Marketing decisions (product, price, promotion and place) do not generally stand out as being supported by MKIS. An interesting observation was the increase from 16%

to 32% for pricing decision support compared to the decrease (51% to 31%) for decision support on products.

A wide variety of decision models are used. However, the fastest growing of these were indicated as new product evaluation, pricing strategy and advertising media selection. The models most likely to be computerized are pricing strategy and operational budgeting. This represents a major move away from operational budgeting as the main application in 1980 (60%) towards more strategic marketing models. Mathematical models (tested in the 1990 survey) were not regarded as important to marketing executives, despite their predictive capabilities.

There does not seem to be any standard industry definition for MKIS. Furthermore, 54% felt that MKIS gave the organization some competitive advantage but only 32% were really satisfied with their MKIS. There was also a strong correlation between satisfaction and perceived competitive advantage. In the sample of small companies, 41% felt that their MKIS did not give them any competitive advantage, while 58% expressed some dissatisfaction with MKIS.

4.6.1.2 The research by Higby & Farah

Higby & Farah (1991) conducted research into the use of MKIS, MDSS and MES among a large group of American marketing (and other) executives. Higby & Farah's sample was very divergent, and not focused on the top American companies. Despite a low response rate (7%), it probably provides a very useful baseline on all companies. Their main findings can be summarized as follows:

- Microcomputers (PCs) and software were widely used by marketing executives.

- 91% of the sample indicated that they use MKIS, while Lotus 1-2-3 was the most popular software used for marketing activities.
- Middle management was the heaviest user of marketing information.
- 32% indicated that they use MDSS, mostly for sales forecasting and budgeting.
- 6% of respondents used MES, mostly for order processing and inventory control.
- Customer profile analysis was the most popular activity supported by MKIS, and was also recognized as the activity being best supported by MKIS.
- Large firms typically are more likely to use marketing expert systems.

4.6.1.3 The research by Jiang, Klein, Motwani & Balloun

Jiang, Klein, Motwani & Balloun (1997:120-121) found that marketing decision-makers are generally positive towards the use of IT in marketing. However, Jiang *et al* (1997) also suggest that the involvement of marketing professionals in policy setting, more emphasis on end-user computing, iterative development ('prototyping') and end-user education may assist in alleviating the dissatisfaction of marketing professionals with MKIS.

4.6.2 European Research

4.6.2.1 The research by Vandermerwe & Carney

Vandermerwe and Carney (1987) conducted research into the computer use of European marketing managers. Although the research was not specifically geared to MKIS, the main findings were still of interest. Their main findings were as follows:

- 74% used computers daily.
- By far, analysis of sales and financial data was the most important application (72% usage compared to 50% for word processing/reports/memos and 48% customer database usage).
- The most often used applications were inventory management, customer orders, sales forecasting, sales tracking, pricing and electronic mail.
- The majority agreed that computers had some effect on their jobs.
- The categories of positive impact were increased speed of work, more work accomplished, improved quality of performance and enhanced understanding of work.
- Respondents did not seem to suggest that computers made decision making a lot easier.
- Problems experienced related mostly to technical problems (for example lack of user friendliness) while managerial problems were also experienced, mainly around training; and
- 80% felt that computers could be used for more applications in order to enhance their managerial capabilities.

Vandermerwe & Carney (1987) state that managers fully understood that computers would change their jobs even more in the future. To guide this change, the respondents suggested a range of issues for better utilization and integration:

- Training.
- Improved technology.
- Standardization and integration (especially within the organization).
- More link-ups and networks - for example access to on-line information.
- Increased usage of technology by managers.

The managers in the survey also suggested that external and internal communication link-ups, electronic mail, access to more data (external and internal), more financial applications, desktop publishing and new and more simulations, models and decision making tools would be the most important potential future uses for computers. Overall they indicated that computers changed their work on an operational level, but not at a strategic level.

4.6.2.2 The research by Talvinen & Saarinen

Talvinen & Saarinen (1995:21-26) also conducted research into the MKIS usage of Finnish wholesalers. Due to the focused nature of this study, it is not discussed in great detail. However, the key finding was that information content of MKIS is often unsuited to specific marketing and sales tasks.

4.6.2.3 The research by Wierenga & Oude Ophuis

Wierenga & Oude Ophuis (1997:276-290) conducted an extensive survey into the factors influencing the adoption of MDSS, the intent to adopt MDSS, and the satisfaction with MDSS. Their major findings are summarized below.

- The factors influencing the adoption of MDSS are different to the factors influencing satisfaction.
- The key factors influencing adoption and the intention to adopt are top management commitment and support, a positive attitude towards MDSS in the marketing division and support from colleagues, the availability of information sources and the awareness of successful applications in other companies.

- The initial adoption of MDSS is not based on the analytical capabilities, but on the more mundane basis that it is required to make more information available.
- The factors influencing the success (satisfaction with MDSS) are related to the level of direct interaction (the more the better), the sophistication of the MDSS, adaptability of MDSS and the perception of the user whether they participated in the development and implementation process.

4.6.3 Summary of research conclusions

The major results from the previous research conducted can be summarized as follows:

- The overall usage of MKIS and computers is high in both the U.S.A. and Europe.
- Marketing strategy does not seem to drive the development of MKIS to the extent it should.
- MKIS is used mostly for operational activities, such as retrieving data, generating reports, sales forecasting, operational budgeting and sending electronic mail.
- To achieve this, spreadsheets and modeling software are used commonly.
- Accounting and sales data are the most popular sources of data.
- 'Soft' data (for example competitor information) is generally not computerized.
- Middle management is the group with the highest usage of MKIS.
- Planning and controlling are the management functions most supported by MKIS.
- Generally, MDSS and expert systems are not commonly used.
- Satisfaction with MKIS is generally low.
- Success with MDSS (and presumably MKIS) relates more a factor of communication, learning and leadership than to technology or systems.

In general, the most disappointing trends extracted from the research are that MKIS might be changing marketing functions in an operational way but not in a strategic way. In addition, MKIS is not being implemented with the human component in mind, shows a lack of valuable applications and is highly dependent on internal historical data.

In summary, it would seem that there is not a good fit between the nature of marketing and the current state of MKIS. This is evident from the following:

- Marketing is future and externally oriented, while MKIS focuses on historical, internal data.
- Top and middle management making strategic and tactical decisions drive marketing, yet MKIS supports these managers with operational functions.

The relatively low satisfaction levels, demands for more human involvement and demands for additional applications suggest that the problem may in fact lie with the design and implementation of MKIS rather than with the concept of MKIS.

4.7 DESIGNING AND IMPLEMENTING MKIS

A study by Smith & McKeen (1992) has shown rifts between management and information technologists. This could be one of the greatest constraints when implementing MKIS: to get information technologists and marketers to strive for common solutions, rather than clashing goals. Some of the ways to achieve this are:

- Marketers should commit themselves to understanding the technology that can impact on their function.
- MKIS development should be done in joint project teams.
- The IT function should be introduced to basic business concepts that will help them understand the business better and in turn help them to provide better

IT solutions.

The fact that human factors are so important to the success of MKIS implies that the implementation processes around MKIS are in a sense more important than the end product. Buttery & Buttery (1991:26) identified the unfulfilled promises and unexpected dysfunctional consequences as a major shortcoming of MKIS, despite the theoretical advantages they could offer marketing decision-makers.

One way to overcome the negative aspects and disadvantages of MKIS is to have a sound design and implementation strategy. Buttery & Buttery (1991) identified three possible approaches to designing MKIS. These will subsequently be discussed.

4.7.1 The prescriptive approach

The prescriptive approach (Buttery & Buttery 1991:27-29) follows the broad trend of prescribing structures and determines how to design and implement MKIS. Proponents of this approach generally recognize that management and user involvement in design is necessary, that design and development should not be relegated to technical staff groups and that management commitment is vital to success. Thus it avoids many of the pitfalls of MKIS. Furthermore, it is simple to understand and apply. On the negative side, it ignores all evidence of culture, structure and priorities of the individual firm, and is also mostly based on anecdotal evidence rather than on empirical evidence.

4.7.2 The positivist approach

The positivist approach (Buttery & Buttery 1991:29-30) requires of the researcher to remain detached, objective and unbiased. It is the basis of scientific management (indeed of natural science itself) and is the basic approach to

problem solving. Buttery & Buttery (1991) quote Jenkins, who regards a positivist approach to solving any problem as consisting of four steps:

- Systems analysis.
- Systems design.
- Implementation.
- Operation (including control).

The advantages of the approach lie in its focus on the problem, and its straightforward methodology to understand the structure, human and technical aspects of the problem. It could indeed be successfully applied to MKIS. On the negative side, it:

- Identifies problems rather than understanding and learning.
- Applies a modeling approach that ignores many of the complexities, dynamism and adaptability of human driven systems.
- Assumes that objective knowledge can be gained by examining hard facts, even in the case of human objects.
- Proposes that researchers can actually remain detached from the process and that eliminating bias is a matter of experimental control.

4.7.3 Phenomenology

Phenomenology (Buttery & Buttery 1991:30-32) promotes the idea of joint discovery and understanding, and sees the role of the researcher to provide the means of producing a system reflecting a consensus of beliefs. It therefore puts the individual at the center, which may explain why other approaches have yielded results which are technically sound but are not used.

The theory of phenomenology in systems design can be summarized as follows:

- Stages 1 and 2 involve the building up of a 'rich picture' of the situation, aiming at understanding rather than formulating a problem.

- Stage 3 involves the agreement on common root definitions, reflecting a consensus of views;
- In stage 4 a conceptual system model is constructed reflecting all definitions.
- In stage 5 the conceptual model is compared to equivalent systems in the real world.
- In stage 6 designers agree on changes to be made to the model.
- In stage 7 changes are implemented to lead to a successful MKIS.

The major advantage of this approach is the fact that it recognizes the central role of people in the organization, which ensures their commitment to the process. Its disadvantages are:

- That it is suitable to a soft system, but not to a 'hard system'.
- The practical and time constraints of involving everyone in decision making in the development process.

It also does not consider the fact that powerful influences may be exerted by powerful entities in the organization, influencing less powerful entities.

In summary, Buttery & Buttery (1991:33) conclude that the best approach for MKIS implementation would be an approach drawing on the best features of each approach. In order to do this, the subsystems operating in an MKIS environment should be understood.

First, human decision making is central to MKIS. This would be best studied by means of a phenomenological approach that deals best with the human element.

Second, the computer system is also a key part of MKIS. A positivist or prescriptive approach best serves this aspect. For example, Buttery & Buttery (1991) quote Miles' positivist approach to systems design by means of activity phases as an example:

- Technical and economical feasibility testing.
- Determination (by analysis) of detailed information requirements.

- Design of computer system.
- Construction (programming and hardware architecture).
- Implementation.
- Operations.

Buttery & Buttery (1991:34) warn that the different approaches in fact represent paradigm shifts, and therefore subsystems should be identified that can make use of one of the approaches rather than a combination. This is most certainly possible, but would require holistic management of the design and implementation process to ensure that the most suitable design paradigms are applied rigorously.

Soderlund (1990:7-9) also examined similar approaches to that of Buttery & Buttery. He distinguished between modernistic and post-modernistic approaches to MKIS design. Whereas modernistic approaches are collective in nature and assumes for example that the way industry leaders do things may be a good starting point for all firms in that industry (similar to a positivist approach), post-modernism assumes that individuals (and individual firms) are irrational, individualistic and unpredictable. This corresponds closely with Buttery & Buttery's phenomenological view of MKIS design. Although Soderlund does not make a clear recommendation, he does suggest that post-modernistic tools should be used to initiate an open exchange of information. This again corresponds to Buttery & Buttery's notion that phenomenological methods should be used to address human and therefore relatively unpredictable aspects of MKIS design. Furthermore, concurrent with Buttery & Buttery, Soderlund's thinking was triggered by the fact that modernistically designed business intelligence systems have not yet proven themselves to be successful.

Higgins, McIntyre & Raine (1991:51-52) added another dimension when they proposed that global expansion added new requirements to MKIS, especially in the light of the prevailing 'global marketing' approach. In order for MKIS to be

successful in global and multinational companies, they proposed the following:

- In global MKIS, the corporate office retains control of market information.
- Hardware and software becomes the domain of the corporate office.
- Information needs may differ across subsidiaries and therefore national and international sharing of information must become possible, however, similarities in needs outweigh differences.
- MKIS procedures may need to be centrally controlled.
- More focus is placed on usage and less on design.

4.8 CONCLUSION

MKIS is about the combination of three powerful forces, each with its own unique nature namely technology, human beings and the marketing decision making process. The key to success in MKIS should therefore be found in managing these three forces. That can never be an easy task, as technology is constantly changing, human needs differ from person to person and marketing decision making is a complex process that interacts with a fast changing environment.

This chapter has shown that there is a mismatch between the technology currently in use and the nature of marketing decision making. Furthermore, it has pointed out that the human factor is neglected in MKIS implementation, resulting in a high level of dissatisfaction, low usage and often the complete failure of MKIS.

Some problems and gaps between theory and reality have also been highlighted, while some principles and guidelines for design and implementation have been provided. This provides a base for Chapter 5, which will attempt to reconcile the nature of information in service organizations with MKIS design in order to formulate a model for MKIS in the South African service industry.

CHAPTER 5

FORMULATING A MARKETING INFORMATION SYSTEM FOR SOUTH AFRICAN SERVICE ORGANIZATIONS

5.1 INTRODUCTION

The previous chapters dealt with the main elements of theory necessary to understand marketing information systems (MKIS) and to provide a basis for formulating an MKIS model. First, the background to understand the importance of MKIS in the context of a changing business environment was provided in Chapter 1. Second, the environment in which service organizations function and the information requirements of marketing decision-makers was analyzed and illustrated in Chapter 2. The nature of market orientation and its relevance to information processes in organizations was the topic of chapter 3. Finally, the information technology (IT) explosion and various relevant technologies were discussed in Chapter 4, along with the nature and existing theoretical models of MKIS. This chapter represents the convergence of the previous chapters by seeking to formulate a MKIS model for the South African services industry.

Part of the shortcomings of the existing MKIS models are that they tend to focus on either the process of supplying marketing information to decision makers in conceptual terms, or focus on the specific underlying technologies or technical processes the author regards as prevalent at the time. Very little work was done to integrate the process with technology. While it is certainly not feasible or desirable to be too specific, certain aspects of the process and the IT environment have become generic to the point where it is possible to integrate them in a model.

The objective of this chapter is therefore to develop a MKIS model for the services industry that provides an integrated view of MKIS rather than focusing

purely on the generic steps in supplying marketing information. The process by which the above objectives will be achieved is to:

- Examine the uniqueness of marketing information in a service organization.
- Identify the major technology trends.
- Develop the design principles for MKIS
- Discuss the required steps and shortcomings of existing models and specify the level of detail required for the model.
- Integrate existing models.
- Develop a single model
- Specify the conclusions.

5.2 STEP 1: EXAMINING THE UNIQUE NATURE OF MARKETING INFORMATION IN A SERVICE ORGANIZATION

The information needs in service organizations are different and quite unique. Some of the reasons for that are described below.

- The operational processes of many service organizations worldwide generate a staggering amount of data. This is especially true of large service organizations like banks and telecommunications service providers. For example, in Telkom SA, the more than five million accounts generate in excess of 30 billion telephone calls per year. Every call is a transaction, and this does not take into account the sales of products and services, data services and transactions, fault repairs and new installations, all of which are fully fledged transactions in their own right.
- Large service organizations often develop a diversity of systems for various aspects of service delivery that generate information. This proliferation of information systems of varying shapes and sizes, some of which are inter-linked and some which are not, with an equal number of varying applications make the meaningful extraction of data a difficult exercise.
- Customer service is not generally a strong point of service organizations, as Markinor's research report (1998) proves. The main reason for this is the

sheer complexity of the service relationship, but in South Africa this is compounded by a lack of service culture.

- The evolution of competition in service industries and the entry of South Africa into international markets see new competitors entering the market and threatening the incumbent service organizations.
- Customer relationships have progressed beyond the level of knowing the number of transactions customers do per month or what their correct address is. Demographic and psycho-graphic data are needed for relationship management, which does present a problem when an organization has a large number of customers or do not have formal systems for capturing that kind of information.

It seems clear that there is a great need for reform in the area of MKIS for most service organizations. However, from the above it is also clear that there is a certain danger of being swamped by information that is meaningless or unusable. Another potential problem involves information being hard to get at, like having to consult various information sources for a single coherent piece of information.

The next section will focus on the emerging dominant technologies related to MKIS.

5.3 STEP 2: IDENTIFYING TECHNOLOGY TRENDS IN MKIS

Although it has been stated previously that MKIS is a concept rather than a specific approach, it is not possible to deny and separate the role of the MKIS concept and the role of technology. Therefore, technology has to be considered in the design of MKIS. On the other hand, with rapid developments in IT, the proliferation of technologies is staggering. The solution is to identify the broad categories of IT that influence MKIS most. These have already been identified to

some degree. Some rules for the selection of these 'generic' technologies in relation to MKIS were:

- They are categorized broadly so as not to be classified as proprietary (no single entity holds right of ownership over the technology).
- The technologies enjoy wide acceptance in both the IT community and among end users of the technology (in other words, the technology has a 'track record').
- The technology is strategic or tactical in nature rather than operational. It supports decision making processes by the storing, extracting and analysis of data rather than supporting specific operational processes (for example barcode scanning technologies).

The discussion builds on the technology discussion in section 4.4. When analyzing the literature discussed in that section, it appears that there are four major technology directions emerging as important in the context of MIS. These are discussed below.

5.3.1 Data Warehousing

The concept of the central electronic information repository has manifested popularly as the Data Warehouse. As the name suggests, the Data Warehouse is a central point to collect data from various other databases or operational systems. With the advent of open systems architecture and advanced processing technologies, it is becoming easier to establish Data Warehouses and to provide access to the data contained therein. Typically, subsets of information processed by operational systems are transferred to the Data Warehouse on a regular (for example weekly) basis. With the increasing importance of customer databases and database marketing, Data Warehouses provide an ideal base for customer database management.

5.3.2 *Intranet*

The Internet is arguably the most important IT development of the information age. As an almost universally accessible IT platform, a whole range of applications are being implemented on the Internet. Users of the Internet can send e-mail, faxes, or communicate using videoconferencing. They can browse information on a whole range of topics, run special interest applications, play games, and shop. The Internet, therefore, is simultaneously an information repository, an information access tool, an application platform and a point-of-sale terminal.

Intranets developed as a consequence of the Internet, with companies using the functionality and accessibility of the Internet to provide IT solutions internal to the organization and not open to the general Internet user group. Typically Intranets are shielded from the rest of the Internet community by security measures such as 'firewalls', and access is password controlled. In the Intranet environment, the Internet functionality can be used to exchange communication, store and extract information. It can also provide a link to other information systems. In fact, over time the Intranet could become the 'glue' holding organizations together. One measure of its popularity is the fact that in 1999, 67% of large companies already had Intranets in use (BMI Techknowledge 1999:67).

One outstanding application of the Intranet is the Knowledge Management System, where learning and information is shared across the organization (see paragraph 4.4.2.4).

5.3.3 *Business Intelligence Systems (BIS)*

Whereas Data Warehouses and Intranets facilitate the management of and access to information, BIS allows the manipulation of data according to the needs

of the individual information user. It supports decision making and problem solving. For example, it can support low-level data mining functionality that will allow the decision-maker to extract the information and see it in a graph or spreadsheet format. At the other end of the scale, it also allows the decision-maker to use higher order data mining or OLAP functionality to explore complex relationships, for example to see what sales patterns occur in specific channels where competitors are active.

5.5.4 Geographic Information Systems (GIS)

Although it could be argued that GIS is really an extension of the MDSS concepts, it is attracting so much attention that it warrants to be examined in its own right. The power of GIS lies in the fact that it enables users of information to see a number of variables in 'layers' on an electronic map. This functionality makes GIS a very powerful application. Considering that most businesses are dependent on geographical data, it is possible to help identify (spatially) where markets are, what their profiles are and how they behave. Because of its functionality it can depict how the business is positioned relative to its market, and whether the marketing effort is synchronized with the behavior of the market. It represents a very powerful tool to understand how to address markets, and a great deal of work is currently being done to integrate MDSS and GIS.

However, technology is only the infrastructure of MKIS. The next section addresses the design principles that need to be taken into account.

5.4 STEP 3: FORMULATING THEORETICAL DESIGN PRINCIPLES OF MKIS

MKIS should be linked to operational systems. Zakon & Winger (1987:20) quote the example of Benetton to illustrate this concept. Benetton, a clothing manufacturer and merchandiser, uses information from its point of sales system

to compile information on what items are selling and which are not. This information is fed by dynamic links to the manufacturing facility, which adapts its production output to manufacture more of the fast selling items and less of slow selling items.

Stanat (1990), Curry (1993:19) and Griffiths (1996) provide further guidelines to the development of MKIS, with special reference to external information:

- External and internal data should be integrated.
- Every customer opportunity should be used as a data gathering opportunity.
- A central electronic repository should be used to store data gathered.
- Electronic means should be implemented of extracting and applying the data obtained from the repository.
- Daily and weekly scanning of data should take place to provide customized market intelligence.
- Marketing decision-makers should be provided with access to marketing research documents and reports.
- Strategic information audits should be used to define users' information needs.
- A move away from paper based documentation should take place towards full-time, analytical databases.
- It has an infinite time horizon and evolves over time.
- It is flexible enough to suit the needs of individual users.
- It is still based on proven decision models and decision-making processes.
- It promotes a holistic approach.
- It resides and develops within the organization as part of their learning processes.

Douglass (1990:11) suggests that computer technology should be designed to aid overall corporate decision making. Every aspect of MKIS should be integrated, and that MKIS should be integrated with the external environment. This includes the following guidelines:

- All marketing phases should be integrated into an overall system,
- MKIS should cross organizational boundaries.
- Customer service areas should be specifically targeted.
- Access should be provided to a variety of information sources.
- Areas of responsibility for MKIS should be established.
- Hidden costs could be a danger.

From the work of Talvinen (1995:16-22) some pertinent conclusions can be drawn on principles for MKIS implementation:

- Raw data has to be converted into information and ultimately knowledge (even wisdom) if it is to support the marketing function.
- MDSS forms an integral part of the above conversion process.
- The different levels of MKIS should be managed in such a way that they become a coherent whole.
- MKIS should be integrated with other functions in the organization.

An additional requirement should also be to reduce complexity for the user of marketing information. It is an axiom that the deluge of information creates management stress because of the efforts required managing it. MKIS should reduce that stress rather than compound it, which is why a single point of access to information, graphical user interfaces and customized user-friendly design should be central to MKIS implementation.

In summary, four factors should feature high on the agenda in designing and implementing MKIS:

- Adding value to raw data in a way that creates knowledge and learning and supports decision making according to the decision-maker's needs.
- Integration of technology and functionality to form a coherent whole. Technology should be an enabler, not a driver.
- Management commitment and acceptance of accountability.
- Managing the change to MKIS by focusing on the human factor.

The design of MKIS should take into account the problems experienced with MKIS (see section 1.8), the problems specific to service organizations (section 5.2 above) and the theoretical design principles in this paragraph. Table 9 combines all these factors and identifies certain principles, and conceptual and technological approaches to address each principle or problem.

Table 9 MKIS design principles and solutions

PROBLEM OR DESIGN PRINCIPLE	CONCEPTUAL SOLUTION	MKIS TECHNOLOGY SOLUTION
Link to operational systems	Feed transactional data into MKIS	Data Warehouse
There is too much irrelevant information	User selects only the relevant information	Business Intelligence System
Information is too dispersed to be useful	A central database, with organization-wide on-line access	Data Warehouse Intranet
Information arrives too late to be useful	User extracts data when required	Business Intelligence System
Information arrives in a form that gives no idea of its accuracy and therefore lacks credibility	Effective database management at transactional level	Data Warehouse
Short term vision and pressure for quick results	Manage user expectations - use phenomenological approach (see section 4.7)	-
Poor understanding of MKIS benefits	Manage user expectations - use phenomenological approach (see section 4.7)	-
Lack of management commitment	Focus on information-sharing culture, communicating benefits and successes and ensuring management participation <i>Moorman (1995) and Wierenga & Oude Ophuis (1997)</i>	-
Users who are reluctant to seek help when they experience problems	User-friendly interfaces and adequate support systems	Business Intelligence System
Ineffective change management around MKIS implementation	Change management programs	-
Weak project management.	Use prescriptive and/ or positivist approach (see section 4.7)	-
Poor communication around MKIS	Focus on information-sharing culture, communicating benefits and successes	-

	<i>Moorman (1995) and Wierenga & Oude Ophuis (1997)</i>	
External and internal data should be integrated	Central data repository	Data Warehouse Intranet
Every customer opportunity should be used as a data gathering opportunity	Effective database management at transactional level	Data Warehouse
A central electronic repository should be used to store data gathered	Central electronic repository	Data Warehouse
Electronic means should be implemented of extracting and applying the data obtained from the repository	Electronic user interface	Business Intelligence System
Daily and weekly scanning of data should take place to provide customized market intelligence	User customization	Business Intelligence System
Access to marketing research documents and reports	Library (hard copy and on-line)	Intranet
Strategic information audits should be used to define users' information needs	User needs surveys	Marketing Intelligence Database
A move away from paper based documentation should take place towards full-time, analytical databases	Full-time analytical database	Business Intelligence System
It has an infinite time horizon and evolves over time	Ongoing user needs definition and development	-
It is flexible enough to suit the needs of individual users	User customization	Business Intelligence System
It is still based on proven decision models and decision-making processes	Incorporate marketing decision models	Business Intelligence System
It promotes a holistic approach	Organization-wide system	Business Intelligence System
It resides and develops within the organization as part of their learning processes	Focus on information-sharing culture, communicating benefits and successes <i>Moorman (1995) and Wierenga & Oude Ophuis (1997)</i>	-
All marketing phases should be integrated into an overall system	Incorporate marketing decision models, user defined	Business Intelligence System
MKIS should cross organizational boundaries	Organization-wide system	Business Intelligence System
Customer service areas should be specifically targeted	Effective database management at transactional level	Data Warehouse
Access should be provided to a variety of information sources	Centralized data repository	Data Warehouse
Areas of responsibility for	Organizational responsibility	-

MKIS should be established	for MKIS to be determined	
Hidden costs could be a danger	Use prescriptive and/ or positivist approach (see section 4.7)	-
Raw data has to be converted into information and ultimately knowledge if it is to support the marketing function	Add value to data	Business Intelligence System GIS
MDSS forms an integral part of the above conversion process	MDSS implementation	Business Intelligence System
The different levels of MKIS should be managed in such a way that they become a coherent whole	Holistic solution	Business Intelligence System
MKIS should be integrated with other functions in the organization	Organization-wide system	Business Intelligence System
An additional requirement should also be to reduce complexity for the user of marketing information	User interface easy to operate and understand	Business Intelligence System GIS
The threat of competition to incumbent organizations	MKIS should provide competitive edge	-
Customer relationship focus	Effective database management at transactional level, database marketing at tactical level	Data Warehouse Business Intelligence System
'Dirty data'	Data cleaning projects	-
Business problems have not been thought through	Use phenomenological approach (see section 4.7)	-
All functions will compete for scarce resources	Organization-wide approach	Business Intelligence System
More staff is needed to analyze data	User operates interface	Business Intelligence System
Neat solutions are required, whatever the cost	Provide what is needed - use prescriptive and/ or positivist approach (see section 4.7)	-
Lots of data creates a false feeling of security, even when nobody knows how to use it	Provide what is needed	Business Intelligence System
Users know what was used last, what the textbooks say and what might be interesting on a rainy day	Use phenomenological approach (see section 4.7)	-
Users measure what is least embarrassing	Link MKIS to business objectives	-
Easily available information is collected	Collect what is needed - use prescriptive and/ or positivist approach (see section 4.7)	-

From table 9 it is clear that there are many problems that cannot be solved by technology. In these cases, focus on human factors is required. In terms of conceptual solutions, the work of Buttery & Buttery (1991 - see section 4.7) was particularly useful, since it combines different approaches to MKIS implementation.

This section identified design principles and solutions for MKIS. However, not all solutions can be integrated into an MKIS model, since it focuses on the human factor and the planning process. The next section will focus on integrating the MKIS solutions into a coherent whole, using the MKIS models as a point of departure.

5.5 STEP 4: INTEGRATING MARKETING INFORMATION SYSTEMS MODELS

As part of the process of understanding the current status of MKIS, table 10 outlines the integration of the models of MKIS (see paragraph 4.4.6) with the solutions identified in table 9. This model was compiled by combining all aspects from the theoretical model under the headings of 'Data gathering and storage systems', 'Management Information Systems' and 'Output subsystems'. This classification represents the broad system elements of input (data gathering), transformation (MIS) and output (decision-making).

In table 10, the bottom row represents the integration of theory. In the first instance, there are not many changes to the data gathering process, since the data gathering processes are generic to all organizations. However, due to the fact that it should be an organization-wide process, other organizational systems in addition to transactional systems should be involved. In service organizations, there may be a stronger focus on service delivery aspects, both technical (for example average duration of transaction) and functional (how the employee treats the customer). Apart from that, there is still a focus on internal information,

Table 10 An integration of MKIS theory

DATA GATHERING AND STORAGE SYSTEMS	MANAGEMENT INFORMATION SYSTEMS	OUTPUT SUBSYSTEMS
<p>Internal:</p> <ul style="list-style-type: none"> • Accounting systems • Sales <p>(McLeod & Rogers 1982, Amaravadi et al 1995)</p>	<p>Marketing Decision Support Systems</p> <ul style="list-style-type: none"> • Model base • Database <p>(Kotler 2000, McLeod & Rogers 1982, Amaravadi et al 1995)</p> <p>Marketing Expert Systems</p> <ul style="list-style-type: none"> • Rules-based intelligent system <p>(Amaravadi et al 1995)</p>	<p>Management level:</p> <ul style="list-style-type: none"> • Top management • Middle management • Operating management <p>(McLeod & Rogers 1982, Schultheis & Sumner 1992)</p> <p>Subsystems:</p> <ul style="list-style-type: none"> • Analysis • Planning • Implementation • Control <p>(Kotler 2000, McLeod & Rogers 1982)</p>
<p>External:</p> <p>Market intelligence</p> <ul style="list-style-type: none"> • Customers/ markets • Competitors • Publics <p>Marketing research</p> <ul style="list-style-type: none"> • Target markets/ potential customers • Marketing channels • Product • Promotion <p>Macro-environment</p> <p>(Kotler 2000, McLeod & Rogers 1982, Amaravadi et al 1995, Schultheis & Sumner 1992)</p>	<p>Library (hard copy and on-line)</p> <p>(McLeod & Rogers 1982, Skyrme 1990, Amaravadi et al 1995)</p> <p>Competitive tracking and marketing research information systems</p> <p>(Schultheis & Sumner 1992)</p>	<p>Outputs:</p> <ul style="list-style-type: none"> • Marketing decisions • Communications • Marketing actions • Sales forecasting <p>(Kotler 2000, McLeod & Rogers 1982, Amaravadi et al 1995, Schultheis & Sumner 1992)</p>
<p>DATA GATHERING INTEGRATION</p> <ul style="list-style-type: none"> • Transactional systems • Other organizational systems • Marketing research • Market intelligence • Macro-environmental scanning 	<p>MIS INTEGRATION:</p> <ul style="list-style-type: none"> • Business Intelligence • GIS • Data Warehouse • Intranet 	<p>OUTPUT INTEGRATION:</p> <p>No level distinction, customized support for decision-making</p>

market information and macro-environmental information as discussed in chapter 2.

The Business Intelligence System (with a GIS capability) and the Intranet (for example in the application of knowledge management) are the only MIS systems.

BIS supports only the decision-making process, and in the context of this thesis, the marketing decision-making process. This integration will be further explored in the next section, which formulates an integrated MKIS.

5.6 STEP 5: DEVELOPING AN INTEGRATED MODEL FOR MKIS

The objective of the integrated model is to combine the technology and theory of the flow of marketing information into a single model (see figure 18). Tables 9 and 10 serve as input into this process.

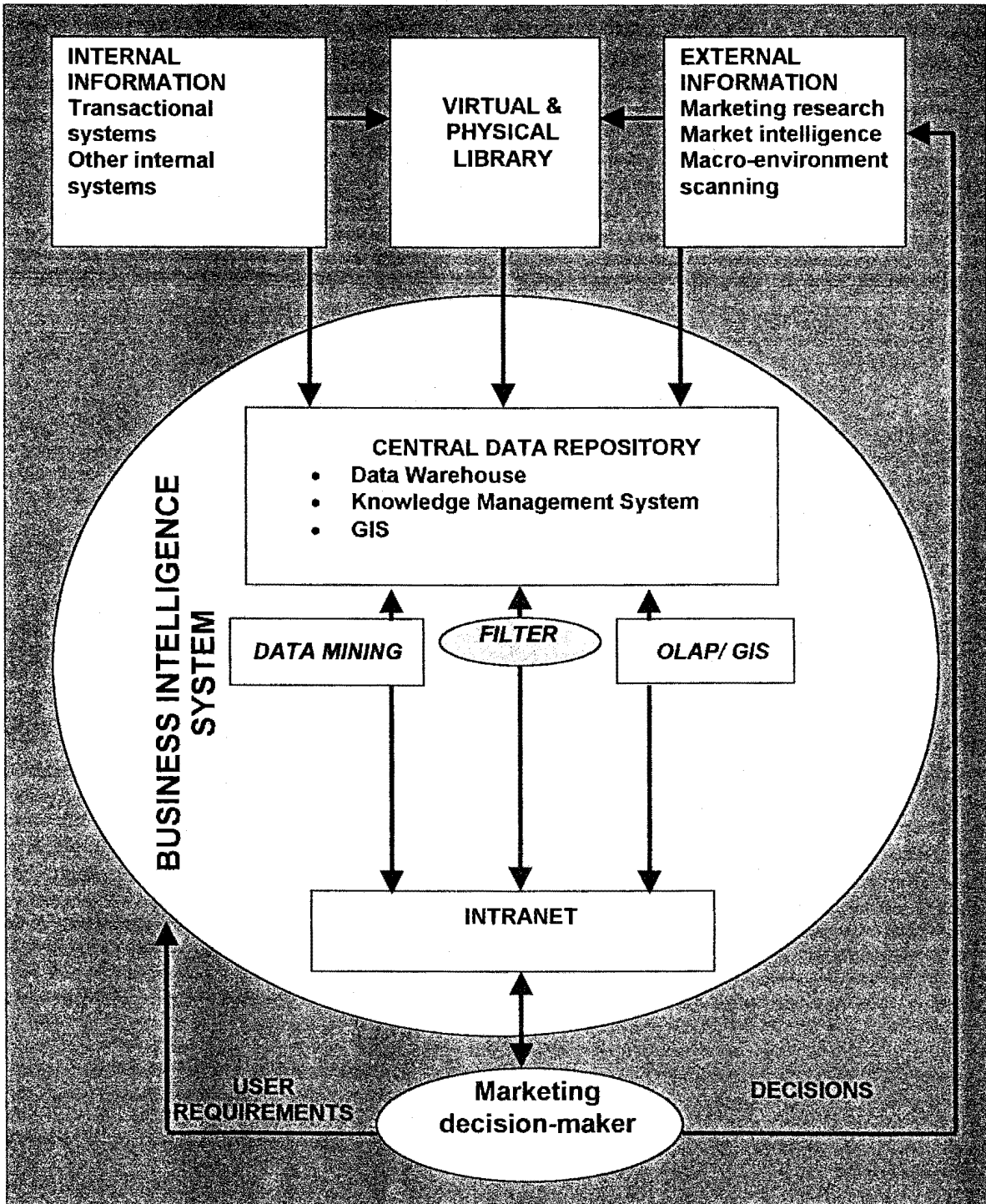
In the model, the process begins with the marketing decision-maker, whose single user interface is with an Intranet. Through the Intranet, information can be retrieved on request, or can be supplied proactively based on known information needs.

At the other end of the process, external information and internal information are gathered and stored in a central data repository and/ or in a physical library. Conceptually, the central database may contain a Data Warehouse component, a knowledge management component, and a GIS capability.

The decision-maker has the following options for retrieving information via the Intranet:

- Receiving information directly or through a 'filter' that recognizes particular user needs and forwards information proactively.
- In the case of more complex, unstructured problems, the solution may lie in

Figure 18 An integrated MKIS model for service organizations



using OLAP (which may contain a GIS interface) or data mining tools (see paragraphs 4.4.1.5 and 4.4.1.4) to explore the problem, derive possible alternatives and explore the effect of each alternative. This approach is similar to

the MDSS-type applications for 'intelligent' decision support. In this context, OLAP contains the decision modeling functionality.

In conducting the analyses, forecasts and decisions, the marketing decision-maker provides important feedback into the system. User requirements are refined by feedback to the BIS, while the marketing decisions ultimately impact on the external environment.

5.7 CONCLUSION

In this chapter some critical conclusions were made regarding the nature of MKIS in service organizations generally, and this includes South Africa. A conceptual model was derived as the aggregate of theoretical work and practical application. However, the model does not seem to distinguish between service organizations and other organizations on the basis of the elements it contains. Therefore, the main differences should be in the content of MKIS. The model provides a platform for testing some aspects of the MKIS concept empirically. In chapter 6, the empirical research methodology will be discussed.

CHAPTER 6

RESEARCH METHODOLOGY

6.1 INTRODUCTION

The first four chapters provided a theoretical outline of aspects relating to marketing information systems, specifically as it relates to service organizations. The fifth chapter combined aspects from these first chapters into an integrated view of marketing information systems, in the form of a theoretical model. Importantly, this model also provided an important guideline in designing the research instrument. This chapter outlines the research methodology followed to complete the empirical part of this thesis.

The research will focus on South African service organizations. This chapter will focus on the steps in the research process, namely the research objectives, research strategy, questionnaire design, sampling methodology, data collection and data analysis techniques used.

6.2 RESEARCH OBJECTIVES

This section reviews the research objectives formulated in chapter 1 (see section 1.9). The primary research objective is to formulate a marketing information system model for South African service organizations.

The secondary research objectives that flow from the primary objective are:

- To determine the antecedents of MKIS in South African service organizations.
- To determine the level of MKIS development in South African service organizations.
- To determine the extent to which information technology (IT) plays a role in MKIS in South African service organizations.

- To determine the link between MKIS and market orientation in South African organizations.
- To determine further possible areas of study in this dynamic field.

The research objectives will be obtained by comparing the theoretical discussions and model with empirical research results.

6.3 RESEARCH STRATEGY

According to the research classification grid of Mouton & Marais (1990:51), this thesis constitutes mainly a study of general interest. It can further be regarded as exploratory research, with strong elements of descriptive research. Table 11 is a summary of research strategies, and the research techniques to be used for each. The research strategy strives to make the results applicable to the above mentioned industry, and can thus be regarded as a strategy of achieving internal and external validity. This means that results have to be generalized to the objects studied as well as the universe under consideration. It therefore follows from table 11 that the best combination of techniques is an overview of objects and phenomena by means of exploratory surveys supplemented by sample surveys. Mouton & Marais (1990:43) postulates that an exploratory overview may consist of a literature review, a survey of people (or by analogy, organizations) with experience relevant to the problem and an analysis of 'insight-stimulating' examples. Participant observation is also an accepted method to obtain internal validity. Participation observation was applied in this study from the author's position in the market intelligence division in Telkom South Africa Ltd.

Table 11 Research strategies and techniques

RESEARCH STRATEGY		
RESEARCH GOAL	Contextual interest (internal validity)	General interest (internal and external validity)
Exploratory research	Overview of phenomena by means of case studies and in-depth interviews	Overview of phenomena by means of exploratory surveys
Descriptive research	Case studies, in-depth interviews, participant observation	Sample surveys
Explanatory research	Contextual explanations by means of case studies, historical analysis	Experimental and quasi-experimental studies

Source: Mouton & Marais (1990: 51)

This study is part exploratory and part descriptive, and uses the following research methods. The first part of this thesis (chapters 1 to 5) was the result of a literature survey, which included a number of case studies and participant observation by the author. The bibliography contains a comprehensive list of secondary sources consulted.

For the primary research, the strategy is primarily quantitative research in the form of sample surveys using structured questionnaires. However, a limited amount of qualitative research was used as the exploratory phase of the research. The quantitative research serves as a quantification of concepts identified in the secondary research and qualitative research. This will enable the comparison of theory and application of MKIS.

6.4 DEFINING THE UNIVERSE

Since the focus of the study is on South African service organizations, and the target market for MKIS is marketing decision-makers, the universe can be defined as marketing decision-makers in South African service organizations.

There is no indication in literature or otherwise how large this universe is. Also see section 6.6 on data collection.

6.5 QUESTIONNAIRE DESIGN

A questionnaire was selected as the best method to conduct the survey, for the following reasons:

- The theory is relatively structured and defined, and lends itself to structuring rather than qualitative and open-ended data gathering.
- A relatively large number of responses were required. The target population is distributed nationally.
- The target population is hard to target by telephone and personal interviews, because of their busy schedules.

Due to the nature of a sample survey, the best approach to the questionnaire design was to use a highly structured questionnaire, using as few open questions as possible. Figure 19 outlines the process followed in generating the questionnaire. These steps will now be discussed.

6.5.1 Step 1: MKIS conceptualization

Chapters 1 to 5 of this thesis analyzed the theory of MKIS and a conceptual integrated model was generated. This addressed the first step in this process.

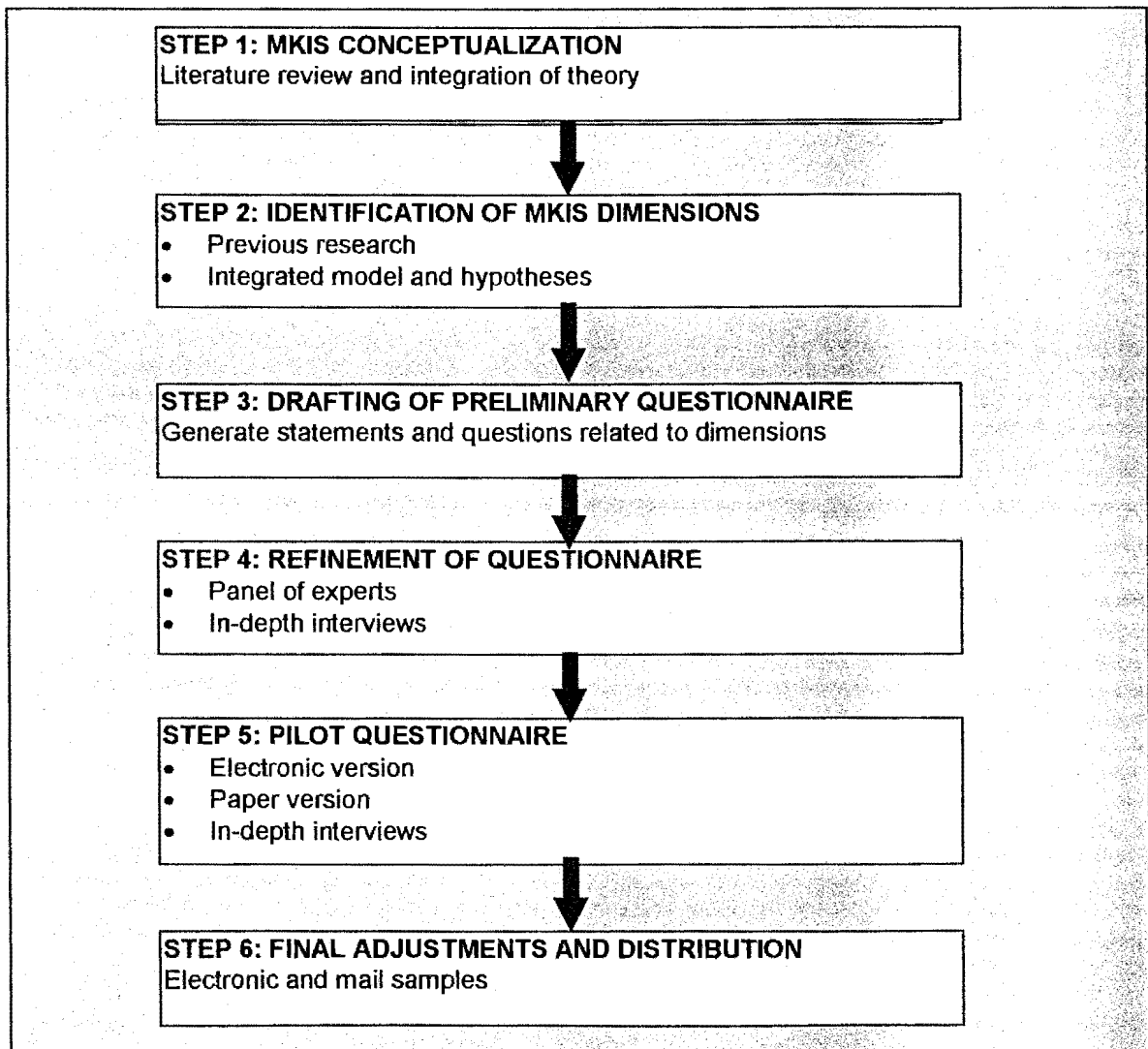
6.5.2 Step 2: Identification of MKIS dimensions

In this regard, the MKIS research previously conducted by Li (1995:24-29), Kohli, Jaworski & Kumar (1993:478), Vandermerwe & Carney (1987) and Higby & Farah (1991) served as input alongside the integrated model and hypotheses generated from the literature review. The MKIS dimensions identified were:

- User requirements.
- Internal and external information sources.

- Information processing and analysis.
- Use of information in decision-making.
- Use of technology.
- Feedback and inter-departmental co-ordination.
- Behavioral issues (such as technology orientation).
- The impact of MKIS on the organization.

Figure 19 Questionnaire development process



Adapted from: Schreuder & Gouws (1995)

6.5.3 Step 3: Drafting of preliminary questionnaire

A copy of the questionnaire and cover letter is attached as Appendix A. In previous research, the tendency to treat complex data elements as simple nominal data elements (such as 'yes/no' answers when a scale or continuum would have been more useful) presented a problem. This presents a problem since there are various levels of MKIS usage and the value derived from MKIS. One example is the question of having an MKIS in the organization. While Li (1995) treats it as a 'yes/no' question, secondary research has clearly shown that a continuum exists. This would imply that all organizations have an MKIS, it differs in how they implement it and the tools they use. Also, respondents may differ as to what they perceive an MKIS to be. Another example would be the use of personal computers to support marketing decision-making. In this case, proficiency in computer usage would clearly be measured more effectively on a scale than as a simple 'yes/no' type question. Therefore, the questionnaires used by the authors mentioned above had limited use.

A new questionnaire was therefore designed, even though it did utilize many concepts developed in previous studies. The next section will examine the questionnaire and its elements, with the reasoning for including each aspect. In order to achieve comparability between all sections of the questionnaire, and to standardize on a scale measurement, all measures were based on an ordinal five-point scale. Although there are numerous arguments for and against five and seven point scales to be found in the literature and practice, in this case the most commonly used scale across all the previous research studies used as input was a five point scale. Therefore, if results are to be compared with international research results, the pragmatic solution is to use a five-point scale.

6.5.3.1 Sections 1 and 2: Information requirements and availability

In the first instance, the questionnaire focused on the information types identified in the marketing theory (see section 2.6). This section addresses the components of user requirements and information sources. Three sources of information were identified, namely the remote or macro-environment, the market or industry environment and the internal or microenvironment. Within each of these, certain dimensions were evident. These were used as follows:

- Economic environment – ‘Economic indicators’.
- Technology environment – ‘Technological developments’.
- Socio-cultural environment – ‘Social trends’.
- Institutional environment – ‘Industry regulation’.
- Customers – ‘Customer demographics and lifestyle’ and ‘Direct customer feedback’.
- Internal organizational information – ‘Sales forecasts’ and ‘Internal company financial information’.

These dimensions were tested not only on their relative importance, but also on their availability within the organization. In this way, information gaps could be identified.

The next set of variables focused on the different formats of information required. These were also tested on availability. The work of Ahituv & Neumann (1990) and Schultheis & Sumner (1992) was used as basis (see section 2.8).

The same authors also identified various characteristics of the information that various levels of management may require (see section 2.8 and table 8). These were encapsulated into a semantic scale containing the characteristics of information required.

In addition to the scales and question banks used above, a few additional questions were asked, testing the following:

- Potential sources of competitive information.
- Information types maintained electronically.

6.5.3.2 Section 3: Marketing Information Systems (MKIS) and market orientation

In order to test the general opinion of MKIS among marketing decision-makers, statements were generated relating to the dimensions discussed. These were examined and refined by a panel identified in paragraph 6.5.4 (for example, to remove statements that were unclear or where testing of more than one concept occurred). After a number of iterations to make sure that only the most necessary statements remain, thirteen (13) statements were left in this question bank. An important consideration was not to use the term 'Marketing Information Systems' in the statements, since this introduced a lot of confusion (every decision-maker has a different perception of what an information system is).

An overall question was also added to test overall quality of market intelligence available to the respondent.

In order to test the hypothesis identified in section 1.9 regarding the relationship between MKIS and market orientation, a market orientation measurement instrument had to be included. In this regard, the work of Farrell & Oczkowski (1997) was used as a guideline. Although several measurement instruments have been used in the past to measure market orientation, the two instruments most highly regarded by researchers generally seem to be MKTOR (Narver & Slater 1990) and MARKOR (Kohli & Jaworski 1993). In section 3.5 it was decided that MARKOR represents

the most acceptable measurement instrument for market orientation. However, Farrell & Oczkowski (1997:2) report on the work of Sigauw & Diamnatopolous (1994), who ran rigorous validity checks using confirmatory factor analysis (CFA) on both instruments and found the results to be disappointing and only '*moderately supportive of the validity of the market orientation construct*'. Farrell & Oczkowski (1997) proceeded to test the identified instruments using CFA methodologies to determine unidimensionality and within-method convergent validity. This was tested on two data sets. In short, the authors found that several items could be deleted from both instruments without affecting its performance. In fact, reducing the number of items for MARKOR from 20 to 10 and for MKTOR from 14 to 8 items significantly increased the performance of both on 'goodness-of-fit' and validity. The resulting altered 10-item MARKOR scale was selected to include in the questionnaire since it seemed to have the potential of providing better results with no large standardized residual items. In addition, since it is more practical to apply, it seems better suited to test market orientation at all levels of marketing decision-making.

In addition to the MKIS and market orientation (MOR) question banks, respondents were asked which technologies they personally use, and an open question was included to receive suggestions for improving MKIS.

6.5.3.3 Section 4: Organization and personal information

This question contains demographic and general organizational profile questions on geographic location, industry type, management function and level, organization size in terms of number of employees and computer usage.

Table 12 is a summary of the questions in the questionnaire and the components they address.

6.5.4 Step 4: Refinement of questionnaire

In order to refine the questionnaire, it was sent to a number of experts in the research field for their comments. This panel consisted of the following:

- 1 university professor (promoter).
- 1 Doctoral graduate and marketing practitioner.
- 2 Masters graduates and marketing practitioners.
- 2 marketing research practitioners.

Three qualitative in-depth interviews were also conducted with market intelligence practitioners in service organizations to further ensure that all relevant aspects were covered. The organizations involved in these interviews were:

- The South African Post Office.
- Nedcor Bank.
- Santam (short-term insurer).

A copy of the discussion guide used in the in-depth interviews is attached as Appendix B. The discussion guide addressed the components of MKIS as identified above.

6.5.5 Step 5: Pilot questionnaire

The questionnaires were finalized and piloted in the following ways:

- The electronic questionnaires were 'torture-tested' on-line. This meant that data was entered and results were examined to see if any anomalies were uncovered or if the questionnaire elicited responses as intended.
- The questionnaire was then sent to ten colleagues of the author to complete and return. Five colleagues completed the questionnaire in electronic format, while five completed the paper copy.
- Some minor language and cosmetic changes were made as a result of pilot testing the questionnaire.

Table 12 Questionnaire components

COMPONENT	RELEVANT QUESTIONNAIRE SECTIONS	TYPES OF QUESTIONS USED
User requirements	Question 1: Importance of information types Question 2: Importance of information formats Question 3: Characteristics of information required	Question 1: 5-point scale Question 2: 5-point scale Question 3: 5-point scale
Internal and external information sources.	Question 4: Availability of information types Question 5: Availability of information formats Question 6: Sources of information used for competitive intelligence	Question 4: 5-point scale Question 5: 5-point scale Question 6: Multiple choice, multiple answers allowed
Information processing and analysis	Section 2: Electronic databases used, IT applications used Question 8: MKIS statements Question 10: MOR statements	Section 2: Multiple choice, yes/no Question 8: 5-point scale Question 10: 5-point scale
Use of information in decision-making.	Question 4: Availability of information types Question 5: Availability of information formats	Question 4: 5-point scale Question 5: 5-point scale
Use of technology.	Question 7: Information sources maintained electronically Question 11: Personal usage of technology Section 4: Frequency of computer usage	Question 7: Multiple choice Question 11: Yes/no Section 4: Categorical
Feedback and inter-departmental co-ordination.	Question 8: MKIS statements Question 10: MOR statements	Question 8: 5-point scale Question 10: 5-point scale
Behavioral issues (such as intensity of computer usage).	Question 8: MKIS statements Question 10: MOR statements	Question 8: 5-point scale Question 10: 5-point scale
The impact of MKIS on the organization.	Question 8: MKIS statements Question 9: Overall satisfaction with market intelligence Question 10: MOR statements Question 12: Suggestions for MKIS improvement	Question 8: 5-point scale Question 9: 5-point scale Question 10: 5-point scale Question 12: Open question
Personal and organization information	Section 4	Multiple options, open question and categorical questions

6.5.6 Step 6: Drafting of preliminary questionnaire

After final changes were made, the questionnaire was distributed to its target universes. This aspect is discussed in more detail in the next section on data collection.

6.6 DATA COLLECTION

The ideal sampling strategy for every primary research survey is to obtain a probability sample of the universe, preferably using random sampling techniques. In this case it was not possible, since there is no single all-encompassing sampling frame for marketing decision-makers in South African service organizations. Therefore a non-probability sampling technique had to be used, namely purposive sampling, in which a particular segment of the target population is over-represented on purpose (Dillon, Madden & Firtle 1993:229).

However, Dillon *et al* (1993) does specify that purposive samples could still be relatively accurate, provided that the sample is representative. Within purposive sampling, there is the option of using the following techniques:

- Convenience samples (or accidental samples) that are based on selection by accident when and where the study is conducted.
- Judgmental samples are frequently used in commercial marketing research studies. An assumption is made that the targeted area or group is representative of the target population.
- Quota samples involve the selection of specified numbers of respondents with a specific characteristic, independent of their true representation in the total population.

Tull & Hawkins (1993:547-548) provide certain guidelines to the decision whether a probability or non-probability sample should be used:

- Is there a need only to estimate proportions or averages, or do the results have to be very accurate and used in projections for the total market?
- Does the problem allow for high or low levels of error tolerance?
- How large are non-sampling errors likely to be?
- Is variation among sampling units expected to be high or low?
- What is the expected cost of errors in the information?

In terms of this study, it was decided to use a purposive sample (judgmental sampling technique) because:

- The requirement is only to project proportions and averages.
- There is a relatively high tolerance and low cost of error.
- The variation between sampling units is expected to be low.
- Non-sampling errors are expected to be low.

6.6.1 The Institute of Marketing Management (IMM)

The IMM is the body representing the marketing profession in South Africa. Therefore the IMM was identified as a possible source for a representative sample.

The IMM currently has a total membership (excluding students) of 3674. Job descriptions were available in 480 cases. Of these, 294 (61.3%) are top management level (for example CEO, Director, Owner, Group Marketing Manager). A hundred-and-thirty (27.1%) are middle managers and the rest are specialists or junior members.

In addition to their job titles, 494 IMM members indicated a 'special interest group' designation. Of these, 268 (54%) are in service related special interest groups.

The Institute for Marketing Management was contacted and agreed to provide a sample of 1000 marketing decision-makers in service organizations. Although this sample is representative of the IMM membership, there is no means of identifying how representative it is of the South African population of marketing decision-makers. The sample specifications dictated that only the names of full members were used, since these members were more likely to be at management level (and therefore to be decision-makers) within their organizations. To further explore the relevance of the sample, certain sample demographics will be compared with known population parameters.

In order to reach marketing decision-makers in other industries, mail and the Internet was used. The same questionnaire as used in the e-mail distribution was printed and distributed by surface mail to the 1000 decision-makers identified by the IMM, with an IMM cover letter. However, these respondents were also offered the option of responding by completing a questionnaire stored on a web site (<http://www.home.intekom.com/marketSurvey>). This questionnaire was created using the Perseus Web Survey software. The questionnaire was then provided to Intekom, who put the questionnaire on a web page and put in place the facility to collect the data on the web server. An additional question on Internet usage was added to the normal mail questionnaire (see Appendix A).

At the same time, two opportunities arose that influenced the sampling strategy. These are discussed below.

6.6.2 *The Telkom sample*

Concurrent to the questionnaire being developed for the IMM sample, there was a requirement to do a similar study internally in Telkom. The same questionnaire as in the IMM sample (see Appendix A) was developed in Pinpoint 3.1 for Windows software. The questionnaire was then 'published' as an executable file (mkintel.exe) which was attached to an electronic mail message and distributed to 136 marketing managers within Telkom. The names were obtained from organizational charts and selected on the Groupwise internal electronic mail system. In order to complete the questionnaire, recipients opened the attachment, which opened as a 'standalone' questionnaire. Simply pointing and clicking on the right answer, saving the file and returning it to the sender could complete the questionnaire.

6.6.3 *The Benchmarking Exchange sample*

The opportunity also arose for an international study to be done as part of a market intelligence benchmark study. However, since the study also had other objectives than this study, it was decided to only include the 'core' modules of the South African questionnaire contained in section 3 (namely the MKIS and market orientation modules) and the series of questions on use of technology.

In order to target an international sample, The Benchmarking Exchange's (TBE) electronic survey service was used. The TBE has approximately 1500 member organizations with more than 5000 individual subscribers from a broad spectrum of disciplines. When hosting a survey, TBE contacts the members and invites them to participate. If they are not the appropriate people to complete the questionnaire, they are requested to forward the invitation to appropriate persons within their organization. Since TBE targets those companies with formalized excellence and benchmarking programs, it would be expected that organizations would represent larger and more successful organizations from around the world, and in that regard is a 'skewed' sample. The questionnaire was hosted on the following web page: <http://benchdb.com/Surveys/AA1/survey.htm>. A copy of this questionnaire is included as Appendix C, together with the e-mail invitation that accompanied it. As an incentive to completing the questionnaire, respondents had the choice of receiving an electronic management report of the findings. Confidentiality was explicitly guaranteed in the invitation, and the undertaking was given that no results would be linked to specific companies and/or individuals.

Of particular concern in this study was the use of the Internet, since some debate has been ongoing about the validity of using the Internet as a primary research tool. However, Yoffie (1998:8) pointed out that Internet research has the same limitation than any other research, but as long as it provides a representative

sample it should not present any problems. Taylor & Terhanian (1999:20) found that Internet and telephone polling results did not differ significantly when they ran a survey on both media.

In addition to the validity issue, the Internet research guidelines of the European Society for Opinion and Marketing Research (ESOMAR 1998) had to be respected. These guidelines are provided below, and all requirements were adhered to.

- Co-operation is voluntary. In this case, respondents had a choice whether they wanted to participate in the study.
- The researcher's identity must be disclosed.
- The respondent's right to anonymity must be safeguarded.
- Adequate data security must be provided.
- Disclosing all relevant information on research methods, sampling frames used and responses must clarify reliability and validity.
- All laws regarding interviewing minors and ethical guidelines for research in general should also be adhered to.
- Unsolicited e-mail (also called 'spamming') should be avoided if possible or kept to a minimum.

6.7 DATA ANALYSIS

The data gathered in the survey was mostly categorical (yes/no) or ordinal. Berenson & Levine (1986:9) describe the characteristics of ordinal data as follows:

- Results provide only broad guidelines for 'ranking' data. Therefore, strong numerical statements of relationships between variables are more difficult to determine than with interval or ratio scales.
- Differences between values are not 'absolute'. For example, the difference between 1 and 2 is not necessarily the same as between 4 and 5.

Generally, ordinal data is regarded as a 'weak' form of measurement. Therefore it was decided not to standardize the data on any other scale, but to work consistently with the 5-point scales used. The fact that the data is in ordinal form is an important consideration when selecting specific statistical techniques.

SPSS 9.0 for Windows was used for all analyses. Therefore all data was captured in or converted to SPSS format. In order to ensure that data was captured correctly, all hard-copy questionnaires were entered twice. After this, a table of maximums and minimums values per range was drawn to see if any 'out-of-range' values were evident. In the small number of cases where this occurred, the original questionnaire was traced and used to correct the error.

6.7.1 Data comparison

Data was compared within questions and across industries using tables and histograms. Generally, top-box comparisons were used in addition to means and standard deviations. Top-box and bottom-box comparisons refer to comparisons where the top two categories (for example 'agree' and 'strongly agree') or bottom two categories (for example 'disagree' and 'strongly disagree') are grouped together to get a better view of the response pattern. This was done since Statsoft (1999) and Berenson & Levine (1986:40) point out that measures of central tendency (such as the mean) may not be the ideal way to summarize large sets of ordinal data. However, where hypotheses were tested or where significance testing was used, means were used in the comparison. In addition to the means and top-box, standard deviation (a measure of dispersion) and item non-response (a possible indicator of question quality or difficulty in understanding) were used.

6.7.2 Reliability and validity testing

In order to trust the survey results, it is important that the data gathered in the survey is reliable and valid. Of the two concepts, validity is by far the most elusive and will be discussed first.

In its most basic form, validity can be described as the extent to which the instrument used to gather data has tested what it set out to test. Statsoft (1999) has identified four interrelated categories of validity:

- **Conclusion Validity:** Is there a relationship in the particular study between the two tested variables?
- **Internal Validity:** Assuming that there is a relationship in the study, is the relationship a causal one?
- **Construct Validity:** Assuming that there is a causal relationship in the study, can it be claimed that the program reflected well the construct of the program and that the measure reflected well the idea of the construct of the measure?
- **External Validity:** Assuming that there is a causal relationship in this study between the constructs of the cause and the effect, can this be generalized to other persons, places or times?

Statsoft (1999) points out that reliability is a factor limiting validity. Therefore an analysis of reliability (in this case using Cronbach's alpha) can also be a good indication of validity.

Reliability refers to the extent that a measurement reflects mostly the true score, relative to the error. Put another way, reliability refers to the extent to which the results of the survey would be duplicated in similar surveys. According to Statsoft (1999), variance for each survey item could be calculated as well as the variance for the sum scale. This forms the basis of reliability testing, and in this case it was decided to use Cronbach's coefficient alpha (α).

Cronbach's alpha is a widely used index of reliability of an array of items tested on a scale. The logic of Cronbach's alpha lies therein that if there is only error in the measures and no true score, then the variance of the sum of all items will be the same as the sum of all the variances of individual items. Therefore, the alpha coefficient would be 0 in such a case, and would be an indication of low reliability and validity. Alpha is measured on a scale of 0 to 1.

The question now arises: at what level is Cronbach's alpha acceptable? Generally, authors have suggested that a reliability level of 0.70 will be sufficient in predictive tests or hypothesized measures of a construct (Nunnally 1978: 245). However, in situations where important decisions have to be made, a minimum of 0.90 should be tolerated.

In Chapter 7, the 'Alpha if deleted' will also be reported on for the MKIS and MOR statements (see section 7.3). This represents the new alpha coefficient if one deletes the item in question. This indicates whether the alpha coefficient will be higher or lower than the current alpha coefficient, and could be viewed as a measure of the quality of the item itself.

6.7.3 Data reduction

To reduce data for ease of analysis and comparison, factor analysis was used. Statsoft (1999) and Hair, Anderson, Tatham & Black (1995:364-404) were used as the basis for this discussion.

Factor analysis is a multivariate method for defining the underlying structure in a data set. This structure is defined in the form of a series of dimensions called 'factors'. All variables are considered in relation to all the other variables in the data set. The objectives of factor analysis are outlined by Hair *et al* (1995:368-370):

- To identify the structure of the relationships between variables or respondents in a data set.
- To identify representative variables for a much bigger set of variables for use in subsequent multivariate analysis.
- To create a smaller number of entirely new variables to replace (or partially replace) the original data set.

Although this study was not initially designed particularly for factor analysis, there are three aspects that play a role in the design (or application) of a factor analysis:

- Input data that is suitable for grouping variables or respondents.
- Design of the variables in terms of type and measurement properties.
- Sample size (preferably 100 or more responses is required).

A key decision to be made concerns the number of factors to be extracted. There are various methods that could be used. In this case, three practical methods were available. First, using only factors with an Eigenvalue (or latent root) of more than 1. This is called the Kaiser-criterion (Statsoft 1999). Second, an *a priori* decision can be made on the practical number of factors to be extracted (for example three) before the analysis is conducted. Thirdly, deciding on the amount of variance that should be explained by the factors to be used for further analysis. While Hair *et al* (1995:368) suggest that at least 95% should be the cut-off point in the natural sciences, these authors also suggest that a cut-off point of 60% or less of variance explained is acceptable in the social sciences.

The key results obtained from a factor analysis are explained below.

- Eigenvalues equal the sum of the squared loadings for the variables on that factor. It is a measure of the percentage of variance in the contributing variables explained by the factor. The importance of the component or factor is measured by the size of the Eigenvalue in relation to the total variance

available for distribution. In this study, it was decided to apply the Kaiser-criterion and use only factors or components with Eigenvalues larger than 1.

- Factor loadings are the correlation between the variables and the factors and provide the key to understanding the nature of a particular factor. Squared factor loadings indicate what percentage of the variance in an original variable is explained by a factor (Hair *et al* 1995: 366). In this regard, Hair *et al* suggest that a factor loading of 0.5 represents a point of 'practical significance'. Therefore, 0.5 was used as the cut-off for the factor loadings.
- Although factor scores can be calculated for each of the new variables that represent combinations of the original variables it was not done for this study.

The extraction of principal components amounts to a variance maximizing (VARIMAX) rotation of the original variable space. VARIMAX strives to simplify the columns of the factor matrix, and thus provide a clearer distinction between factors, making it a better method for this purpose than QUARTIMAX and EQUIMAX. The factor analyses used in this study were conducted with SPSS, using Principal Component Analysis with VARIMAX rotation, not limited to a specific number of iterations.

6.7.4 Hypothesis testing

Hypothesis tests measure the probability that the hypothesized population value for the measure of interest could have led to the observed sample result. The generic steps in hypotheses testing are discussed below. The discussion of these steps is based on Berenson & Levine (1986: 326). Hypothesis testing is used to determine the differences between various groups within the South African sample, and to test for differences between the South African and international samples. See section 1.9 and chapter 8 for a more detailed discussion of the hypotheses pertinent to this study.

6.7.4.1 Step 1: Specifying the hypothesis

Specify the null hypothesis (H_0) and the alternative hypothesis (H_1). When accepting the null hypothesis, it actually means that there is not sufficient statistical evidence to reject it and therefore you must behave as though the hypothesis is true. This is because the only way in which the hypothesis can be accepted with certainty is to know the population parameter, which is not possible with sampling. Hypothesis testing was used to test certain of the research objectives.

6.7.4.2 Step 2: Specifying the level of significance

In many sciences, results that yield $p \leq .05$ (95% level of significance) are considered borderline statistically significant but it must be kept in mind that this level of significance still involves a high probability of error (5%). Results that are significant at the $p \leq .01$ level are commonly considered statistically significant, and $p \leq .005$ or $p \leq .001$ levels are often called highly significant. However, these classifications are still arbitrary conventions that are only informally based on general research experience (Statsoft 1999). In this study, 95% levels of confidence were used as an acceptable level of significance.

6.7.4.3 Step 3: Determine the probability value (P-value)

The probability value (or p-value) is the basis for deciding whether or not to reject the null hypothesis. It is the probability of getting a result as extreme or more extreme than the one observed if the proposed null hypothesis is correct (Statsoft 1999). The calculations are made assuming that the null hypothesis is true. The probability value computed is compared with the significance level chosen. If the probability is less than or equal to the significance level, then the null hypothesis is rejected; if the

probability is greater than the significance level then the null hypothesis is not rejected. When the null hypothesis is rejected, the outcome is said to be statistically significant; when the null hypothesis is not rejected then the outcome is said to be not statistically significant. If the outcome is statistically significant, then the null hypothesis is rejected in favor of the alternative hypothesis (Statsoft 1999). The 0.05 cut-off point associated with a 95% level of significance was used.

Berenson & Levine (1986:324-325) identify certain risks associated with the process of hypothesis testing. These are known as Type I and Type II errors. Type I error is the risk associated with rejecting the null hypothesis when it is true. Type II error is the risk of accepting a false null hypothesis. The 'power of a statistical test' is the probability of rejecting the null hypotheses when it is false, in other words the power of providing a result that is true.

The factors that play a role in determining the power of a test are discussed below (Statsoft 1999):

- Some types of tests are inherently more powerful than others.
- The larger the sample size, the more powerful the test. The objective is to find a balance, in other words a sample that is 'large enough', but not wasteful.
- The size of experimental effects is an indication of the power of a test. For example, if the null hypothesis is wrong by a substantial degree, the test is more powerful than if it was wrong by a marginal degree.
- Measurement error can mask the signals of real experimental effects. Therefore anything that enhances the accuracy and consistency of measurement will enhance the power.

The next section will discuss some of the statistical tests available to compare means.

6.7.5 Comparison of means

One of the core decisions in hypothesis testing is to decide on the method to be used. Some of the possibilities are discussed below.

6.7.5.1 T-tests

Berenson & Levine (1986:359) identify t-tests as a means of comparing two sample means to see if they differ. The test is basically constructed as follows:

$$t = \frac{\text{Sample value} - \text{Hypothesised population value}}{\text{Standard deviation of the sample mean}}$$

The resulting t-value (or test statistic) is compared with a table of values to determine whether it exceeds the criterion values that mark certain levels of probability. There are two types of t-tests, for independent samples and for paired or dependent samples. The latter will be used when two different variables within the same sample are compared or when two measures for the same population are compared.

T-tests are subject to certain assumptions (Berenson & Levine 1986: 360):

- Each population is normally distributed.
- The populations have equal variances.

The levels of significance (or p-values) identified by the t-test is an indication of the risk associated in rejecting the null hypotheses. For example, if the value is less than 0.05, there is less than a 5% chance that the decision to reject the null hypothesis is the wrong one.

T-tests are used in this study to compare means where only two means are compared, for example where two variables within the South African

sample are compared or where the South African and international samples are compared.

6.7.5.2 ANOVA

Berenson & Levine (1986:467-479) identify the analysis of variance (ANOVA) as a method to compare the means for more than two groups. It is used in this study to compare multiple means, for example to compare the results for a battery of statements for all the industry sectors. Statsoft (1999) states that the ANOVA is a generalized version of the t-test. The first method is the one-way ANOVA, which considers only one treatment factor for several groups. The other is the two-way ANOVA, which considers several treatment factors for several groups (such as in a cross-tabulation).

The basic steps are discussed below.

- Computing the total variation of a sample based on the sum of the squared differences between each observation and the overall mean.
- The 'between-group' sum of squares measures the difference between the sample mean of each group and the overall mean. The 'within-group' sum of squares measures the difference between each value and their group's mean, and cumulates this over all groups.
- The ratio of the 'between-groups' variance and 'within-groups' variance follows the F-distribution. If there was a significant difference between the groups, the variance between the groups should be significantly higher than within the groups. Therefore, the null hypotheses would be rejected if the ratio of the two variances were higher than the F value for the level of significance required.

For the two-way ANOVA, the total sum of squares has to be divided between the various factors measured. In other words, the variation or sum of squares for every factor has to be determined.

Normally the steps followed in an ANOVA are represented in an ANOVA table.

Again, the use of ANOVA is subject to certain assumptions:

- The populations follow a normal distribution. As is the case with the t-test, the method is robust against a departure from the normal distribution, as long as the departure is not severe.
- The variances for the populations are homogenous. This is not a stringent assumption provided that sample sizes in each group are roughly equal.
- Independence of error, which means that the variance should be independent for each value.

SPSS Inc. (1999:257) also point out that *post hoc* range tests may be conducted to identify which means differ. A wide range of tests is available to conduct analyses of multiples means, such as the Bonferroni test and Tukey's honestly significant difference test. In this study, *post hoc* tests (the Tukey test) is used to determine which means differ significantly.

6.7.5.3 Non-parametric methods

For each of the parametric tests discussed above, non-parametric equivalents also exist. Non-parametric methods are methods that set less stringent (or no) assumptions about the distribution of the data. It may also be useful in situations where sample sizes are too small to be certain that it follows a normal distribution, or where the data is of quality less than at least interval scale (for example ordinal).

According to Statsoft (1999) the Mann Whitney U-test is a suitable non-parametric equivalent for the t-test when two independent samples have to be compared concerning their mean value for some variable of interest. For multiple groups, instead of the ANOVA, the Kruskal-Wallis analysis of ranks may be used. For the comparison of two variables measured in the same sample we would customarily use the t-test for dependent samples, for which the non-parametric alternatives are Sign test and Wilcoxon's matched pairs test. If the variables of interest are dichotomous in nature (i.e., 'yes' vs. 'no'), then McNemar's Chi-square is appropriate. If there were more than two variables that were measured in the same sample, then we would customarily use repeated measures ANOVA. Non-parametric alternatives to this method are Friedman's two-way analysis of variance.

However, Statsoft (1999) states that non-parametric methods are most appropriate when the sample sizes are small. When the data set is large ($n > 100$, for example) it often makes little sense to use non-parametric statistics at all. This is due to the Central Limit Theorem, which dictates that when the samples become very large, then the sample means will follow the normal distribution even if the respective variable is not normally distributed in the population, or is not measured very well. Thus, parametric methods, which are usually much more sensitive (in other words have more statistical power) are in most cases appropriate for large samples.

Although the use of non-parametric tests was considered due to the fact that the measurements are generally 'weak', for the reasons stated above it was decided to use the t-test and ANOVA for comparison of means between and within samples. However, for comparison of proportions

between variables measured dichotomously (typically 'yes' or 'no', the two methods discussed below were used.

- The chi-square test for more than two independent samples are used in situations where more than two proportions from independent samples are compared. The Chi-square test begins with the null hypothesis that all the means are statistically equal. Therefore, the theoretical frequencies for each cell in the contingency table can be computed. Another crucial element of the Chi-square test is the number of degrees-of-freedom. The number of rows minus 1 (R-1) times the number of columns minus 1 (C-1) determines this (Berenson & Levine 1986:407-409). After determining the theoretical frequency f_t , the test statistic is computed by dividing the sum of squared differences between the theoretical and observed frequencies f_o by the theoretical frequency. The test statistic follows a χ^2 (Chi-square) distribution, and is compared to the critical value for the required level of significance. If χ^2 is larger than the test statistic, the null hypotheses can be rejected.
- The McNemar test is used for comparing proportions from related populations. The McNemar test is used in situations where the samples being tested are related in some way (for example where means from two variables from the same sample are being compared). The basis for this test is the 2x2 table of frequencies (Berenson & Levine 1986: 423-426). The test statistic Z is computed by the difference between frequencies answering 'yes' to only one of the two conditions (some respondents would have answered 'yes' to both conditions), divided by the square root of the sum of the same two frequencies. The test statistic is compared to the critical value for the required level of significance, and if Z is smaller than the critical value the null hypothesis (equal means) is rejected (see the equation below).

$$Z = \frac{B - C}{\sqrt{B + C}}$$

6.8 RELATIONSHIPS IN THE DATA

In order to explore causality, relationships in the data have to be identified. To this end, ordered probit was used as a methodology. Normally when identifying relationships between variables, least squares estimates regression can be used. However, because of the ordinal nature of the data, this form of regression was not appropriate. Due to the inherent ordering of the data, ordered probit modeling was used (Kekre, Krishnan & Srinivasan 1995:1460). The probit model is developed as follows:

- The dependent variable (in this case overall satisfaction with market intelligence) is modeled as a linear factor of all the explanatory variables.
- In turn, a parameter is estimated for each level variable of each explanatory variable.
- A chi-square test can then be used to confirm whether the observed values are significantly different from the model values.
- If the resulting Chi-square statistic is not significant (in other words larger than 0.05) the model is a relatively good 'fit' (Norusis 1997: 68).

Typically, a coefficient is calculated to determine the amount of variance explained. In this case, Somers' D was used. Kekre *et al* (1995: 1462) maintain that the U^2 value (the probit equivalent of R^2 used in ordinary regression analysis, and in this case estimated by Somers' D) is often less than 50%, even when the explanatory power is very good. In fact, the SAS on-line help facility indicates that 'considerable variance' in the overall satisfaction model is explained if the Somers' D is around 50% (0.50).

The SAS ordered probit modeling function was used to conduct the analysis. The parameter estimates generated by the probit modeling indicate the relative importance and relationship with the dependent variable. The Wald chi-square

indicates the level of significance, and indicates to what extent the parameter estimates are different from the observed values.

6.9 CONCLUSION

This chapter served to outline the process of planning and implementing the primary research, from inception to conclusion. A solid basis for conclusions was laid in the methodology for hypothesis testing. In the next chapter, the results are discussed in detail, using the methodologies identified in this chapter. Chapter 8 contains the conclusions based on the hypothesis testing.

CHAPTER 7

RESEARCH RESULTS

7.1 INTRODUCTION

This chapter provides an outline of the main findings of the research. However, it excludes the hypothesis testing, which is handled in chapter 8, the chapter on conclusions. This chapter essentially addresses the results from all sections of the survey, using mostly tables, graphs and other descriptive statistics to illustrate findings. In most cases, only 'valid responses' were used as a base for calculations. Only results that are significant at 95% or better were used.

7.2 QUALITATIVE RESEARCH RESULTS

Qualitative research was conducted by means of three in-depth interviews with representatives of the Post Office, Nedcor and Santam (see paragraph 6.5.4). The results of the qualitative research are discussed, as a background and supplement to the empirical study. Respondents are not identified, in line with ethical research considerations. The discussion follows the outline of the qualitative discussion guide contained in Appendix B.

7.2.1 The process for marketing decision-makers to get decision support

This discussion centers on question 1 in the discussion guide (see Appendix B). The process under discussion refers to the broad application of MKIS in the organization (see section 4.5). The application thereof in the organizations interviewed seems to be somewhat fragmented. In one case, business units are responsible for their own market intelligence (including budget), and the centralized market intelligence/marketing organization only provides basic support such as library services and guidelines and support in briefing research

companies. In most cases there was a clear distinction between marketing research and market intelligence on the one hand, and IT-based intelligence processes on the other hand. For example, in one organization Business Intelligence reports to Research and Development. In that regard, the IT/marketing relationship was cited as a common problem. It also appeared as if a single point of contact for all market intelligence was little more than a future ideal at the time.

7.2.2 Types of information provided

Respondents were questioned as to what types of information they supply to marketing decision-makers in the organization (see question 2, Appendix B). The following information types were mentioned:

- General economic indicators.
- User and attitude studies, customer satisfaction research.
- Image research.
- New product development studies.
- Advertising testing and tracking.
- Secondary research (such as libraries).
- Strategic, marketing and competitive intelligence.
- In scope, research projects seemed to range from *ad hoc* to long term tracking studies.
- In only one case was market segmentation and data mining mentioned as a responsibility of the market intelligence function.

From the above, it appears as if the focus of the MKIS currently in place in service organizations is strongly focused on the traditional role of marketing research and market intelligence, incorporating very little of the latest developments in IT and BIS thinking (see section 4.4).

7.2.3 The marketing information organization

In the response to question 3 in the discussion guide, market intelligence seems to be generally regarded as the responsibility of the marketing organization. However, despite the size of the organizations involved (in all cases 5 000 or more employees), very few people are dedicated to the market intelligence process (MKIS). This ranged from no dedicated staff in the worst case to 5 staff members in the best case. This may be an indication that market intelligence is not regarded as a vital function in the decision-making process by all service organizations.

7.2.4 Information sources

The use of external sources in supplying market intelligence was discussed in section 2.6. Apart from the primary research process employed in all cases, the following were mentioned as external sources of information:

- Bureau for Marketing Research (BMR)
- Bureau of Economic Research
- All Media and Products Survey (AMPS)
- It would appear as if a limited amount of external information is generally used by the market intelligence function in service organizations.

7.2.5 Electronic dissemination of information

Methods for disseminating information electronically were discussed in section 4.4. One respondent - as a means of disseminating information organization-wide - mentioned the use of an Intranet. In the worst case, no information was disseminated electronically.

7.2.6 Electronic marketing decision support

This section examined the use of electronic means of decision support discussed in section 4.4. Although no specific decision support or BIS technologies were mentioned, one of the organizations did mention that they had a BIS under development, while all the of the organizations used at least basic data mining technologies.

7.2.6 Information flow

This section examined the flow of marketing information in the organization from source to decision-maker. Generally, this was limited to the flow of information in the research process. In one case, the flow of information was often directly from customer to end-user, bypassing the market intelligence organization entirely.

7.2.7 Who benefits the most from MKIS?

Generally, it was felt that all management (but especially top management) could benefit from MKIS.

7.2.8 Frustrations with MKIS (the practitioners' views)

The following frustrations were mentioned by the market intelligence organizations of the Post Office, Santam and Nedcor:

- The IT/ marketing rift.
- Information is made available but not used in the relevant time frame.
- The functional splits (silos) make it difficult to gather and disseminate information effectively.

- The fact that clients' information needs are not understood also seems to be an obstacle to effective MKIS. Often this seems to be a lack of effort (or resources) from the market intelligence organization.
- In one case, data integrity was mentioned as a particular frustration.
- The question of how to structure knowledge in the organization in a meaningful way was also mentioned as a frustration.

7.2.9 Benefits and importance of MKIS

Although it was generally agreed that MKIS provides the organization with better focus and decision-making, none could provide concrete examples of MKIS benefits actually realized. One respondent mentioned that MKIS should be a 'backbone' in the marketing organization in times of change.

7.2.11 Suggestions for improving MKIS

The suggestions centered mostly on the lack of prominence of MKIS in the organization and the lack of coordination and co-operation around marketing information processes. One respondent took the view that the organization will (in future) have 5 to 10 'knowledge workers' with specific analytical and interpretive skills doing the analyses, while the rest of the organization will have a need for interpretation of information.

7.2.12 Conclusions of qualitative research

Based on the analysis of the qualitative research, it appears that there are three major problems facing the implementation of MKIS in the organization:

- The 'disconnect' between IT and market intelligence on the issue of MKIS.

- The functional rifts that make the effective gathering and dissemination of market intelligence almost impossible.
- The lack of prominence of the market intelligence function in the organizational context.

7.3 QUANTITATIVE RESEARCH

7.3.1 Response rates of quantitative surveys

The responses received from the local and international samples are discussed below. Throughout the study, local and international data will be compared where possible.

7.3.1.1 The IMM/ Telkom sample

The IMM survey was distributed to 1000 full members of IMM. Of these 1000 initial contacts, 113 responses were received by surface mail. In addition, 10 responses were received via the electronic questionnaire posted on the web site <http://www.home.intekom.com/marketSurvey>.

Telkom was intentionally excluded from the IMM survey because an internal electronic mail survey was being conducted in Telkom using the same questionnaire on Pinpoint 3.1 for Windows software. This survey yielded 56 responses from the sample of 136 marketing decision-makers. However, all 56 responses could not be included in the sample. Therefore, five (5) responses were randomly selected (using the SPSS random case selection process) from the internal survey. The responses from only five respondents were included since it reflects Telkom's 4% membership of IMM full members, and prevents Telkom dominating the sample. The original response translated into a total of 123 responses (12.3%), and an

overall total number of responses of 128 (12.8%). Compared to mail surveys and electronic survey response rates in general, this is well within the norm for response rates (Venter & Prinsloo 1999:206-207). Using the Sampler software, it was calculated that, with 128 respondents at a response rate of 12.8%, the 95% confidence interval for proportions is ± 0.087 and for means ± 0.173 of the actual population average. The frequency table of results for this sample is included as Appendix D.

7.3.1.2 The Benchmarking Exchange sample

The survey conducted using The Benchmarking Exchange (TBE) generated 136 responses via 5000 e-mail contacts (3%). However, only 106 of these results were usable, the rest were duplicates or incomplete. This translates into a disappointing usable response rate of only 2.1%. However, it does not compare entirely unfavorably with similar studies conducted electronically (see Venter & Prinsloo 1999: 206-207). Results were received back from TBE in Microsoft Access format and converted to SPSS data format for analysis. This sample delivers results that are within ± 0.095 of the true population result (for percentages) or within ± 0.189 of the true population mean at the 95% confidence level. The frequency table of the results from the MKIS and market orientation (MOR) questions in the international sample are included as Appendix E.

7.3.2 *Sample demographics*

Section 4 of the questionnaire (see Appendix A) addressed the demographics of the two samples involved.

For the IMM sample, it is not surprising that most of the respondent companies are South African or African (78%). A fair number (12.7%) have headquarters in Europe or the United Kingdom. For the international sample, the bulk of

respondents (approximately 51%) are based in the United States, while the rest are spread mostly around Europe (19%), Asia (14%) and Australasia (12%)

Because of the diversity of services, many South African respondents (53%) and international respondents indicated the main business of their organization as 'Other'. The response was distributed as outlined in table 13. The international sample used a different categorization for the industry type, since it also included non-service organizations.

Table 13 Main business of the organization

MAIN BUSINESS	SOUTH AFRICAN % (n = 121)	INTERNATIONAL % (n = 106)
Telecommunications	5.5	5.7
Retail or wholesale	17.2	3.8
Financial services	12.5	5.7
Information Technology services	3.9	15.1
Public utility	5.5	4.7
Community services	-	4.7
Construction	-	1.9
Manufacturing	-	21.7
Distribution	-	3.8
Other services	53	33

* *'n' represents the number of valid responses for the particular question and will be reported in this way for every set of results*

For more convenient analysis and comparison, the main business was collapsed into the four broad categories identified in section 2.9, namely 'Services', 'Retail and wholesale', 'Manufacturing and construction' and 'Other'. Using these categories, it is interesting to note that 27.4% of South African respondents were in the 'Services' category. This is relatively more than the 16% of service organizations represented on the Matrix database, but similar to the 28% identified in the SA Business Survey (1997). The high concentration of responses in 'Other' was disappointing in both cases. However, an analysis of the data for the South African sample shows that many of the organizations in this category are small organizations. For example, 41% of 'Other' organizations are small compared to 33.3% of 'Retailers and wholesalers' and 21% of more conventional

service organizations ('Services'). Thus, they may not have been able to fit themselves comfortably into one of the more conventional categories. Retail and wholesale responses were low for the TBE sample, probably due to the relatively low involvement of retailers in formal benchmarking activities.

When the South African sample was asked about their main function, several respondents indicated more than one of the options. Because multiple options were not allowed, these responses were regarded as an invalid response and not considered. Consequently the question had a comparatively high number of 'invalid' responses (10.9%). However, all the options in the South African questionnaire were marketing functions or closely related to marketing. Table 14 shows the distribution of responses on this question. Since the TBE questionnaire could not be targeted strictly at marketing decision-makers (only at respondents with a 'business interest' in the topic), a more generic approach was used (see table 15).

Table 14 Main function of respondent - South African sample

MAIN FUNCTION (n = 114)	%
Product management	9.6
Product development	1.8
Market/ business development	47.4
Market Intelligence	3.5
Advertising and Promotions	7
Strategic market planning	14.9
Channel management	1.8
Other marketing support	14

Table 15 TBE response - main function of respondent (international sample)

MAIN FUNCTION (n = 106)	%
Finance	2.8
Human resources	3.8
Information technology	6.6
Marketing	17.9
Operations	11.3
'Other'	19.8
Procurement	0.9
Sales	16
Strategy	20.8

Although only 17.9% of respondents in the international sample indicated their primary function as marketing, the other functions with a strong marketing relationship (sales and strategy) were also numbered substantially.

Respondents were also asked their management level in the organization (top management/ executive, middle management, junior management or specialist). Since the IMM sample focused on marketing decision makers, it makes sense that most of the respondents were either marketing executive (61.3%) or middle managers (23.4%). This corresponds very well with the IMM profile of members discussed in paragraph 6.6.1 - 61.3% executives and 27.1% middle managers. The rest were junior managers or specialists. In comparison, the international sample yielded 33% responses from top management and 43% from middle management.

The question on number of employees was an open question. Since number of employees are generally regarded as a reliable indication of organization size, SPSS was used to categorize the question into a classification of small, medium and large businesses. No formal method or guideline for business size categories could be found, therefore the following arbitrary categories were created:

- Small business – less than 50 employees.
- Medium business – From 50 to 300 employees.
- Large business – more than 300 employees.

This categorization provided an even spread of responses across the three categories, as table 16 demonstrates. It makes sense that the number of large businesses in the international sample is higher, since TBE membership tends to be more established and larger organizations.

Table 16 Size of business by number of employees

BUSINESS SIZE	INTERNATIONAL (%) n = 106	SOUTH AFRICAN (%) n = 122
Small (0-50 employees)	24.2	32.8
Medium (50-300 employees)	26.4	30.3
Large (>300 employees)	49.5	36.9

In addition to the above demographics, respondents were also asked to indicate their usage of personal computers (PCs). For this question, an overwhelming 87.5% of South African marketing decision-makers indicated daily usage of a PC.

After examining the demographic data, it was decided to use the following variables for cross-tabulation purposes:

- Management levels (particularly the differences between marketing executives or top management and middle management).
- Organization size by number of employees.
- Main business of the organization. However, due to small sample sizes in certain sectors, this comparison will be limited to the four broad categories identified above.

7.3.3 Internet usage

These questions were included only in the IMM surface mail questionnaire, the rationale being to determine the effect of Internet usage on chosen method of response. Therefore, this result is only available for the South African sample. Since only 10 responses were received via the web site, it would appear that Internet usage did not make a major difference on the choice of response method. In fact, it was found that the majority of respondents to the mail questionnaire did in fact have access to the Internet either at work (84%) or at home (45%). Of the sample, 38% indicated Internet access both at home and work. This question yielded 94 valid responses for Internet at home and 104 valid responses for Internet at work.

7.3.4 The importance of various information types

This section (Section 1 in the questionnaire, see Appendix A) measured the relative importance of various types of information. It was only asked of the South

African sample. The information types are compared in the table below represented nine (9) information categories. Summary results are provided in table 17 under the headings of valid responses, missing responses, mean and standard deviation. The question was posed as nine statements, which respondents had to rate on a 5-point scale from 'not important at all' (1) to 'critical' (5). The mean is therefore out of a possible 5. Next to each statement, the ranking is given in parentheses (where 1 is the highest ranked and 9 the lowest).

In order to assess the reliability and validity of the scale items used, Cronbach's Alpha was used. The scale measured 0.722, well within the acceptable commercial range of 0.70 (Statsoft 1999). Only one item, namely the item on the importance of information on 'industry regulation', could have improved the reliability of the scale slightly to 0.723.

Table 17 Importance of information types - South African sample

STATEMENT AND RANK	VALID	MISSING	MEAN	STD DEV
Economic indicators (7)	127	1	3.41	0.99
Technology (6)	127	1	3.61	0.90
Social trends (9)	128	-	3.02	1.14
Information on regulation (4)	127	1	3.64	1.04
Customer demographics (8)	127	1	3.28	1.31
Direct customer feedback (2)	128	-	3.87	0.94
Competitor strategies (1)	127	1	4.02	0.79
Sales forecasts (5)	128	-	3.62	1.00
Company financial information (3)	128	-	3.78	1.00

The results from this section are not surprising if the findings of Meehan (1999:122-127) are taken into account. Meehan found that the best performing companies were differentiated firstly by their usage of competitor information, and secondly by their extensive customer relationship programs. This leads to the conclusion that information on competitor strategies and direct customer feedback is the most important external information categories. This seems to be confirmed by the results from this question, which rank these two categories first and second respectively in relative importance. In the third place is company

financial information, which has been important to marketing decision-makers for a long time (see paragraph 4.6.3).

Three categories of information, namely macro-environmental, market and internal information was identified from table 17 based on marketing theory (see section 2.6). Table 18 contains a breakdown of the three identified categories.

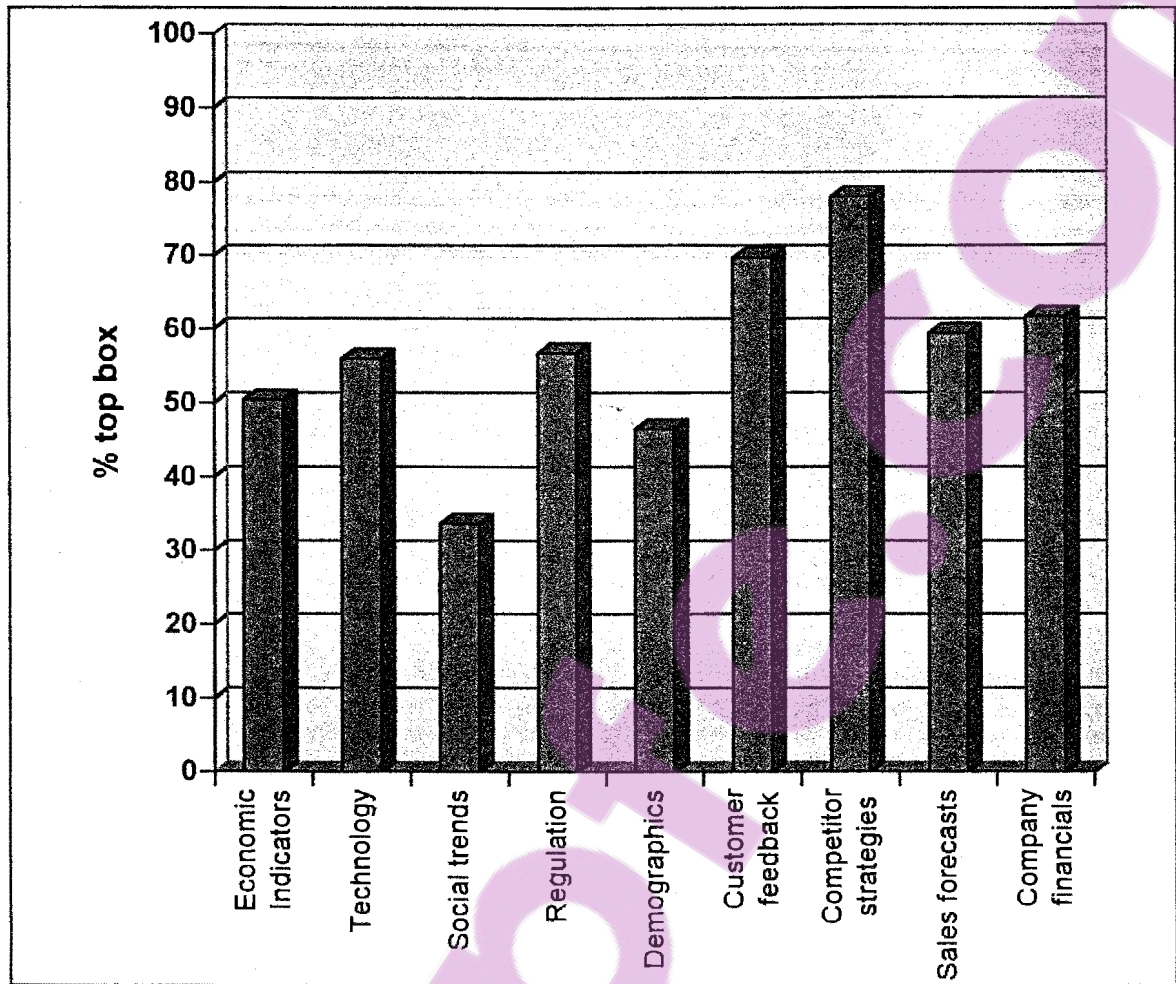
Table 18 Information categories

MACRO-ENVIRONMENTAL	INDUSTRY OR MARKET INFORMATION	INTERNAL ORGANIZATIONAL INFORMATION
<ul style="list-style-type: none"> • Economic indicators • Technology • Social trends • Information on regulation 	<ul style="list-style-type: none"> • Customer demographics • Direct customer feedback • Competitor strategies 	<ul style="list-style-type: none"> • Sales forecasts • Company financial information

In addition to the means, top-box comparisons were also used to analyze this question. The top-box comparison (see figure 20) compares the information categories on number or percentage of respondents rating the information type as 'very important' or 'critical'.

In this case, the top-box analysis confirms the results from table 17.

Figure 20 Importance of various information types - South African sample



The top-box analysis was also run for the respondent's management level, organization size and main business. This is shown in table 19 and in figures 21, 22 and 23 respectively.

Table 19 Means for importance of information types - South African sample

		Economic Indicators	Technology	Social trends	Regulation	Customer demographics	Direct customer feedback	Competitor strategies	Sales forecasts	Company financial information
Executive	Mean	3.43	3.47	2.87	3.66	3.11	3.87	4.01	3.57	3.83
	N	75	75	76	76	75	76	75	76	76
	Std. Dev.	1.1	0.92	1.05	1.03	1.27	0.94	0.69	1.02	0.97
Middle mgt.	Mean	3.48	3.93	3.21	3.66	3.52	3.9	4.17	3.83	3.76
	N	29	29	29	29	29	29	29	29	29
	Std. Dev.	0.74	0.8	1.35	1.01	1.35	0.98	0.8	1	1.09
Small	Mean	3.18	3.4	2.93	3.56	3	3.65	3.93	3.35	3.58
	N	40	40	40	39	40	40	40	40	40
	Std. Dev.	1.06	0.98	1.31	1.17	1.38	1	0.69	1.14	1.11
Medium	Mean	3.58	3.72	3.05	3.86	3.36	4.08	4.03	3.81	4.16
	N	36	36	37	37	36	37	36	37	37
	Std. Dev.	1.02	0.91	1.05	1.06	1.27	0.72	0.81	0.81	0.8
Large	Mean	3.42	3.69	3.09	3.6	3.44	3.84	4.02	3.64	3.58
	N	45	45	45	45	45	45	45	45	45
	Std. Dev.	0.94	0.79	1.1	0.91	1.31	1.04	0.87	1.03	0.99
Services	Mean	3.34	3.8	3.17	3.71	3.66	4.06	3.97	3.71	3.63
	N	35	35	35	35	35	35	35	35	35
	Std. Dev.	0.91	0.87	1.1	1.07	1.14	0.8	0.89	0.83	1.09
Retail or wholesale	Mean	3.95	3.38	3.45	3.95	3.82	3.95	4	4.14	4.18
	N	21	21	22	21	22	22	22	22	22
	Std. Dev.	0.67	0.92	0.91	0.86	0.96	0.79	0.76	0.71	0.8
Other	Mean	3.25	3.62	2.75	3.53	2.97	3.81	4.06	3.45	3.75
	N	64	64	64	64	63	64	64	64	64
	Std. Dev.	1.07	0.92	1.2	1.07	1.44	1.05	0.75	1.08	0.96
Total	Mean	3.4	3.63	3	3.66	3.33	3.91	4.02	3.65	3.79
	N	120	120	121	120	120	121	121	121	121
	Std. Dev.	0.99	0.91	1.15	1.04	1.32	0.94	0.79	0.98	0.98

Figure 21 Importance of information types per management level (SA)

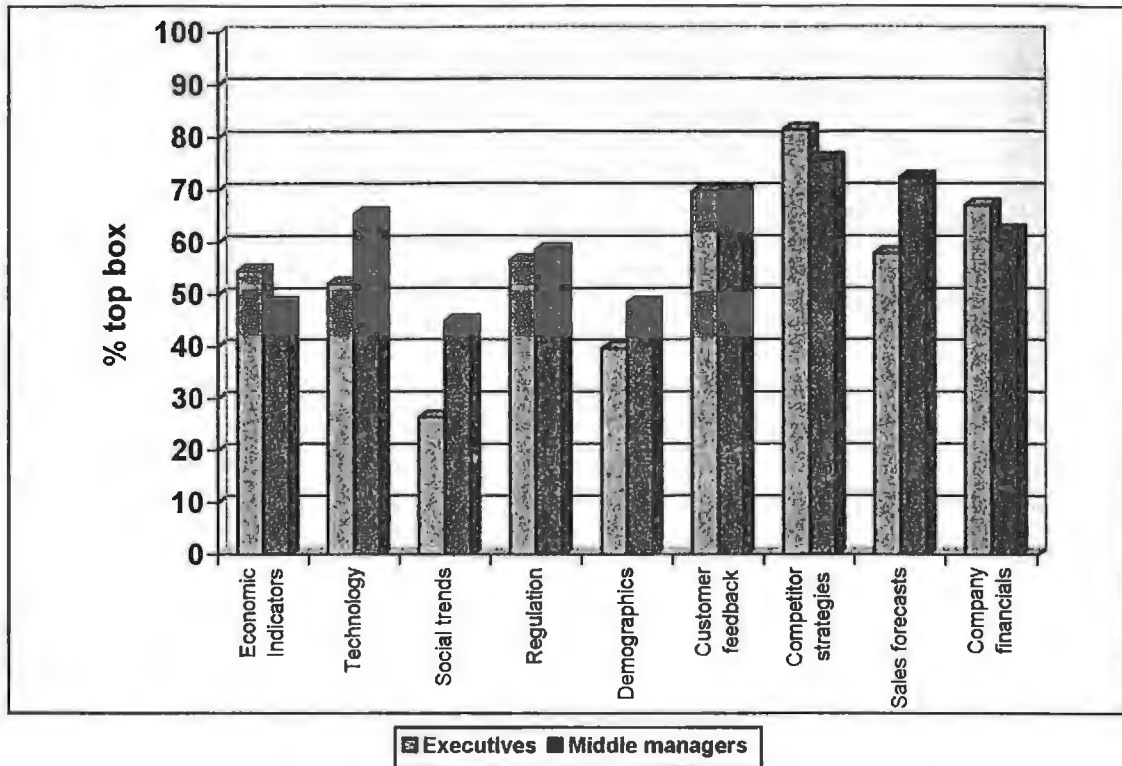


Figure 22 Importance of information types by organization size (SA)

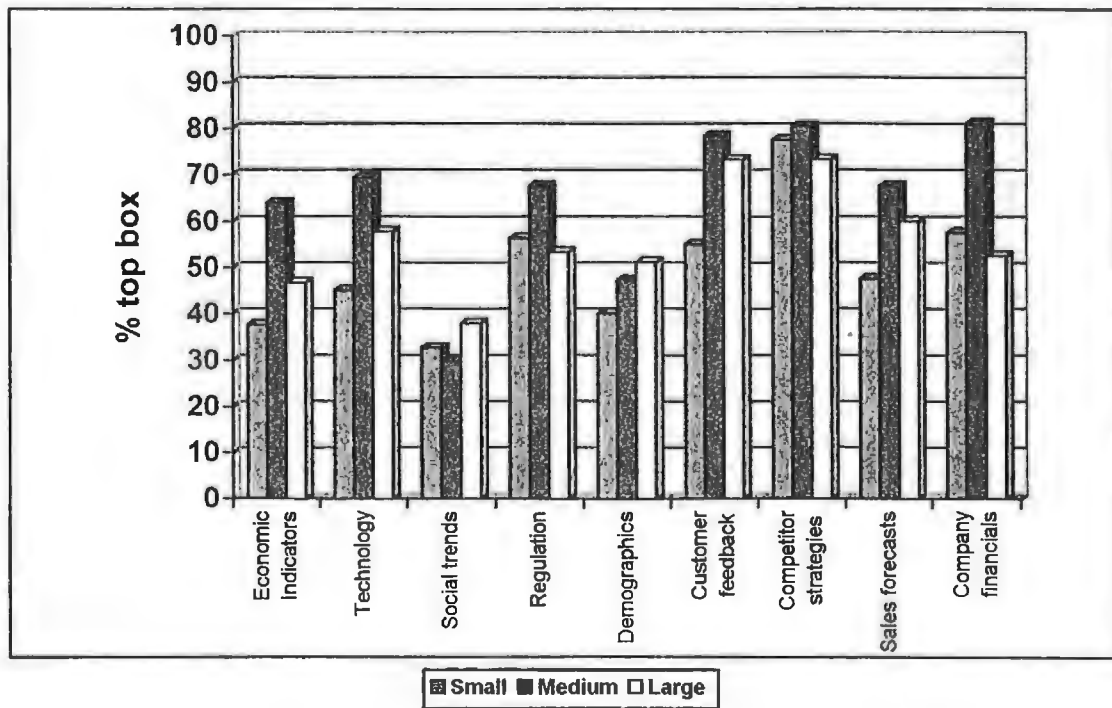
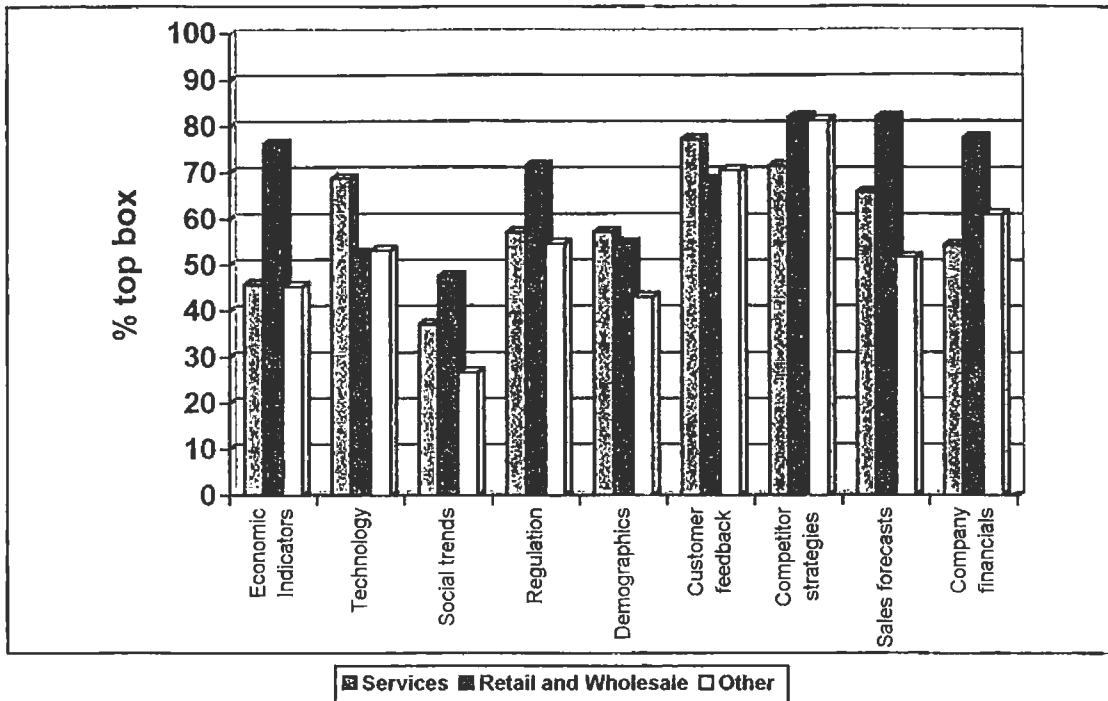


Figure 23 Importance of information types per main business (SA)



The same basic patterns as in the overall results occur in both executive and middle management levels. However, it seems that 'high level' issues like competitor strategies and economic indicators are of more importance to executives, while more operational issues like sales forecasts and technology are more important for middle managers than executives.

In terms of an analysis per organization size, it is surprising that medium sized companies generally indicated higher levels of importance for various types of information. When comparing top-box scores for the broad business types, there are a number of key differences:

- Retailers and wholesalers attach a greater deal of importance to economic indicators, social trends, regulation, sales forecasts and company financial information than the other business types. This may be because of this

sector's dependence on factors that are difficult to control, like discretionary income of consumers, fashions and fads and seasonal variations.

- In contrast, service organizations seem to regard technological information and direct customer feedback as more important. This is consistent with the theory around relationship management (see section 2.3), which postulates that service organizations would benefit more from a relationship marketing approach than from a transactional approach (like retailers and wholesalers typically might follow).

Analysis of variance (ANOVA) was used to compare means for statistically significant differences. The ANOVA tables per management level, organization size and main business type are included below as tables 20, 21 and 23. An explanation of the ANOVA table layout follows.

The ANOVA table can be explained as follows:

- The first column contains the statement being compared for means (across the independent variable specified – in this case management level).
- The second column contains the sum of squares between and within groups – this is a step in the process of computing the test statistic.
- The degrees of freedom are indicated by 'df'.
- 'Mean square' is another step in the calculation process.
- 'F' is the ANOVA test statistic.
- 'Sig.' is the significance of the test. At the 95% level of significance, values less than 0.05 indicate that the risk of rejecting a null hypothesis of equal means is within the specified limits of significance. This is indicated by '*'.

Table 20 ANOVA results for importance of information types by management level (SA)

Statement		Sum of Squares	df	Mean Square	F	Sig.
Economic Indicators	Between Groups	0.066	1	0.066	0.064	0.801
	Within Groups	105.588	102	1.035		
	Total	105.654	103			
Technology	Between Groups	4.51	1	4.51	5.712	0.019*
	Within Groups	80.529	102	0.789		
	Total	85.038	103			
Social trends	Between Groups	2.405	1	2.405	1.856	0.176
	Within Groups	133.443	103	1.296		
	Total	135.848	104			
Regulation	Between Groups	0	1	0	0	0.99
	Within Groups	107.657	103	1.045		
	Total	107.657	104			
Demo-graphics	Between Groups	3.525	1	3.525	2.11	0.149
	Within Groups	170.388	102	1.67		
	Total	173.913	103			
Customer feedback	Between Groups	0.017	1	0.017	0.018	0.893
	Within Groups	93.374	103	0.907		
	Total	93.39	104			
Competitor strategies	Between Groups	0.529	1	0.529	1.016	0.316
	Within Groups	53.125	102	0.521		
	Total	53.654	103			
Sales forecasts	Between Groups	1.439	1	1.439	1.387	0.242
	Within Groups	106.809	103	1.037		
	Total	108.248	104			
Company financials	Between Groups	0.104	1	0.104	0.103	0.749
	Within Groups	104.087	103	1.011		
	Total	104.19	104			

Table 21 ANOVA results for importance of information types by organization size (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Economic Indicators	Between Groups	3.241	2	1.621	1.6	0.206
	Within Groups	119.503	118	1.013		
	Total	122.744	120			
Technology	Between Groups	2.492	2	1.246	1.556	0.215
	Within Groups	94.467	118	0.801		
	Total	96.959	120			
Social trends	Between Groups	0.615	2	0.307	0.228	0.796
	Within Groups	160.311	119	1.347		
	Total	160.926	121			
Regulation	Between Groups	2.063	2	1.031	0.946	0.391
	Within Groups	128.714	118	1.091		
	Total	130.777	120			
Demo-graphics	Between Groups	4.583	2	2.292	1.316	0.272
	Within Groups	205.417	118	1.741		
	Total	210	120			
Customer feedback	Between Groups	3.576	2	1.788	2.012	0.138
	Within Groups	105.768	119	0.889		
	Total	109.344	121			
Competitor strategies	Between Groups	0.267	2	0.133	0.211	0.81
	Within Groups	74.725	118	0.633		
	Total	74.992	120			
Sales forecasts	Between Groups	4.233	2	2.116	2.08	0.129
	Within Groups	121.087	119	1.018		
	Total	125.32	121			
Company financials	Between Groups	8.843	2	4.422	4.624	0.012*
	Within Groups	113.78	119	0.956		
	Total	122.623	121			

Table 22 ANOVA results for importance of information types by business type (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Economic Indicators	Between Groups	7.962	2	3.981	4.279	0.016*
	Within Groups	108.838	117	0.93		
	Total	116.8	119			
Technology	Between Groups	2.314	2	1.157	1.417	0.247
	Within Groups	95.552	117	0.817		
	Total	97.867	119			
Social trends	Between Groups	9.574	2	4.787	3.806	0.025*
	Within Groups	148.426	118	1.258		
	Total	158	120			
Regulation	Between Groups	2.959	2	1.479	1.373	0.257
	Within Groups	126.033	117	1.077		
	Total	128.992	119			
Customer demographics	Between Groups	17.23	2	8.615	5.275	0.006*
	Within Groups	191.095	117	1.633		
	Total	208.325	119			
Direct customer feedback	Between Groups	1.41	2	0.705	0.795	0.454
	Within Groups	104.59	118	0.886		
	Total	106	120			
Competitor strategies	Between Groups	0.204	2	0.102	0.161	0.851
	Within Groups	74.721	118	0.633		
	Total	74.926	120			
Sales forecasts	Between Groups	7.828	2	3.914	4.293	0.016*
	Within Groups	107.593	118	0.912		
	Total	115.421	120			
Company financial information	Between Groups	4.391	2	2.195	2.324	0.102
	Within Groups	111.444	118	0.944		
	Total	115.835	120			

For tables 20 and 21 the following significant differences were identified:

- There is only one set of means that differ significantly between management levels (see table 20), namely importance of 'Technology' information. SPSS Inc. (1999:257) suggests that a *post hoc* range analysis may be used to test, which of the means differ. However, in this case there are only two means,

and inspection of the means reveal that middle management (mean of 3.93) attaches significantly higher importance to technology information than top management (mean of 3.47).

- There is only sufficient evidence in table 21 to suggest that means differ for company financial information by size of the organization. Again, an inspection of the means was used, and revealed that marketing decision-makers in medium organizations (with a mean importance of 4.1 for company financial information) attach significantly higher importance than their counterparts in small or large organizations to this type of information (both measuring a mean of 3.5). This may be due to more short-term performance focus in medium-sized organizations.

Tukey's honestly significant differences (Tukey's HSD) range test was applied post hoc to test which mean differs significantly for the main business types (table 22). The following significant differences were identified:

- As already suggested in the top-box comparisons, retail and wholesale organizations have a significantly higher requirement than service organizations for economic indicators.
- 'Other' service organizations have a significantly lower requirement for information on social trends, customer demographics and sales forecasts.
- An interesting trend is that service organizations commonly fell into both sub-groups identified by Tukey's HSD. This means that service organizations were typically 'in the middle', and that the significant differences generally occurred between retail and wholesalers and 'other' organizations. This was only an exception in the case for economic indicators, where retailers and wholesalers were clearly identified as a sub-group on their own.

7.3.5 The importance of various information formats

While paragraph 7.3.4 on information types addresses the 'what?' of market intelligence, this section on information formats addresses the 'how?'. The importance of various formats of information was measured in this question bank. Eight possible formats were identified and presented to respondents as depicted in the table below. The same format is used as in the previous section. Table 23 below contains the results for this section of the questionnaire.

Cronbach's Alpha was again used as an indication of reliability and validity. In this instance, the standardized item alpha measured at a very high 0.834, with only one item (the importance of 'ad hoc information') influencing the reliability of the scale somewhat negatively ('alpha-if-deleted' is 0.839)

Table 23 Importance of information formats

STATEMENT AND RANK	VALID	MISSING	MEAN	STD DEV
Status reports (5)	127	1	3.15	0.98
Trend reports (1)	127	1	3.39	0.97
Exception reports (7)	124	4	2.93	1.04
Ad hoc information (3)	125	3	3.30	0.87
Marketing decision models (8)	128	1	2.91	1.03
Marketing decision support tools (6)	128	-	2.98	1.04
Alternative courses of action (2)	127	1	3.35	0.82
Answers to 'what if?' questions (4)	128	-	3.27	0.94

An interesting finding is that two of the three most important formats (trend reports and alternative courses of action) deal with processed information to support decision-making, rather than just raw data. The relative importance of *ad hoc* information may have to do with the fact that information requirements are often complex and difficult to predict. The lower number of valid responses in some questions may indicate some confusion with respondents on what was meant by the statement. In general, the means for the importance of formats are lower than the means for the importance of types of information. This is in line with the statement of Ahituv & Neumann (1990:59), namely that content is the most critical aspect of information to decision-makers.

Figure 24 again compares the information formats on top-box scores in graphic format. Both the means and top-box comparisons indicate (albeit not in the same order) that the information formats of most priority are trend reports, *ad hoc* information and information on alternative courses of action.

Figure 24 Importance of information formats - South African sample

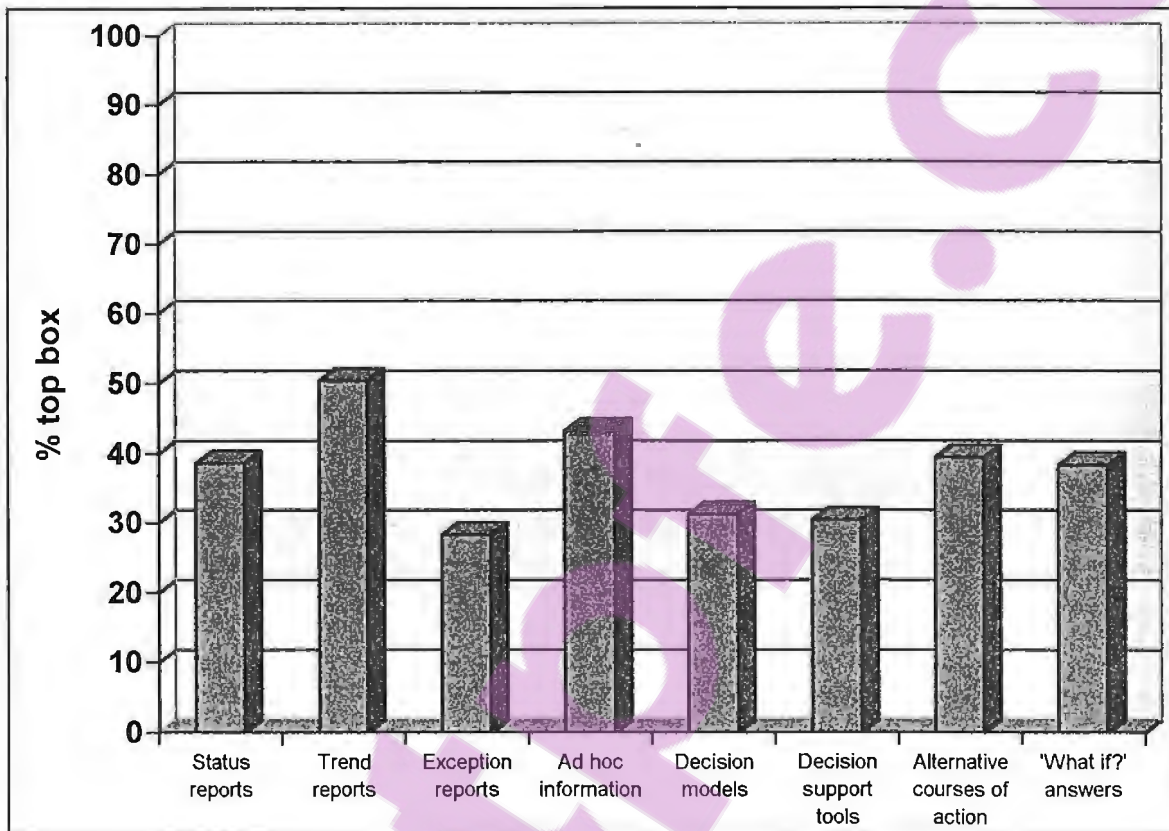


Table 24 is a summary of results across management level, organization size and business type for the types of information formats.

Table 24 Means for importance of information formats - South African sample

		Status reports	Trend reports	Exception reports	Ad hoc information	Marketing decision models	Marketing decision support tools	Alternative courses of action	Answers to 'what if?'
Executive	Mean	3.09	3.38	2.93	3.34	2.76	2.8	3.32	3.36
	N	76	76	74	73	76	76	76	76
	Std. Dev.	0.97	1.02	1.04	0.87	1.07	1.05	0.82	1
Middle mgt.	Mean	3.48	3.59	3.04	3.21	3.24	3.34	3.54	3.21
	N	29	29	28	29	29	29	28	29
	Std. Dev.	0.83	0.78	0.96	0.86	1.02	1.04	0.88	0.9
Small	Mean	2.88	3	2.64	3.11	2.65	2.75	3.15	3.1
	N	40	40	39	38	40	40	40	40
	Std. Dev.	1.14	1.04	1.01	0.95	1.03	1.08	0.86	0.96
Medium	Mean	3.32	3.54	3.03	3.5	2.97	2.97	3.44	3.43
	N	37	37	36	36	37	37	36	37
	Std. Dev.	0.91	0.84	1.11	0.81	1.07	1.07	0.81	1.01
Large	Mean	3.2	3.55	3.07	3.33	3.07	3.11	3.38	3.27
	N	44	44	43	45	45	45	45	45
	Std. Dev.	0.88	0.95	0.99	0.88	0.99	0.98	0.78	0.86
Services	Mean	3.26	3.5	3	3.46	3.11	3.31	3.54	3.26
	N	34	34	33	35	35	35	35	35
	Std. Dev.	0.93	0.93	0.9	0.85	1.02	1.02	0.82	0.95
Retail or wholesale	Mean	3.36	3.68	3.05	3.25	3.32	3.27	3.32	3.27
	N	22	22	21	20	22	22	22	22
	Std. Dev.	0.66	0.78	0.97	0.72	0.78	0.7	0.72	0.94
Other services	Mean	3.08	3.23	2.89	3.22	2.66	2.75	3.27	3.23
	N	64	64	63	63	64	64	63	64
	Std. Dev.	1.1	1.03	1.12	0.92	1.07	1.1	0.87	0.94
Total	Mean	3.18	3.39	2.95	3.3	2.91	3.01	3.36	3.25
	N	120	120	117	118	121	121	120	121
	Std. Dev.	0.99	0.97	1.03	0.87	1.04	1.04	0.83	0.93

Figures 25, 26 and 27 contain the top-box results per management level, organization size and business type.

Figure 25 Importance of information format per management level (SA)

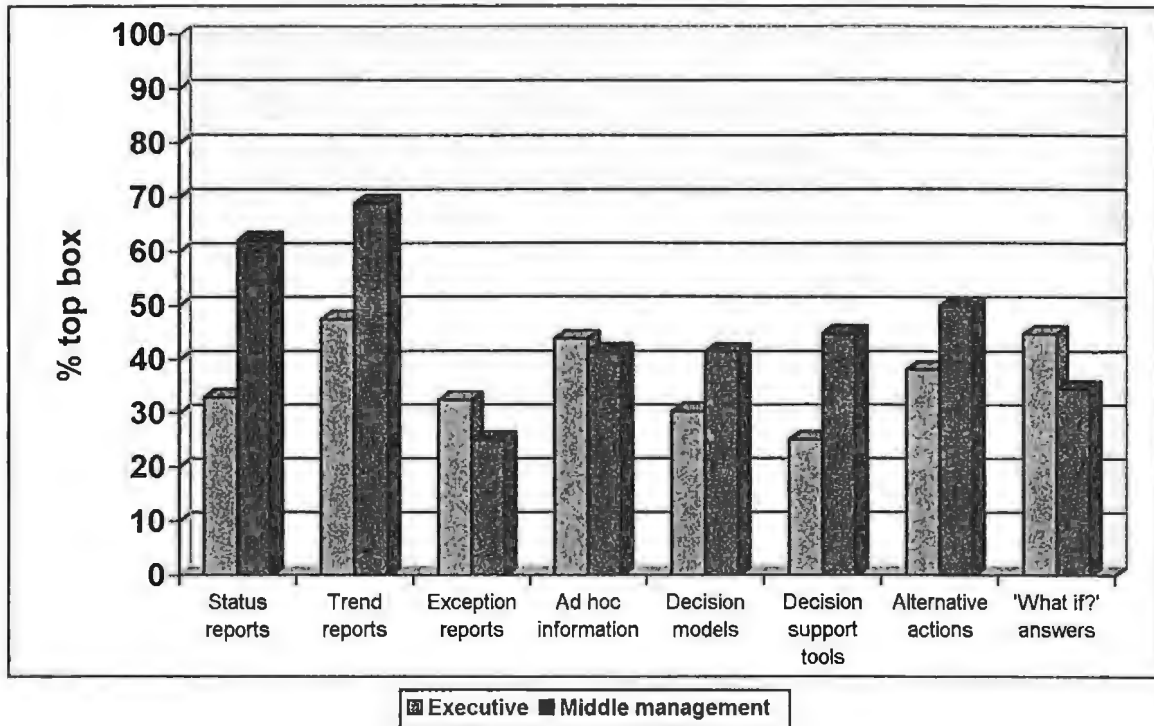


Figure 26 Importance of information format per organization size (SA)

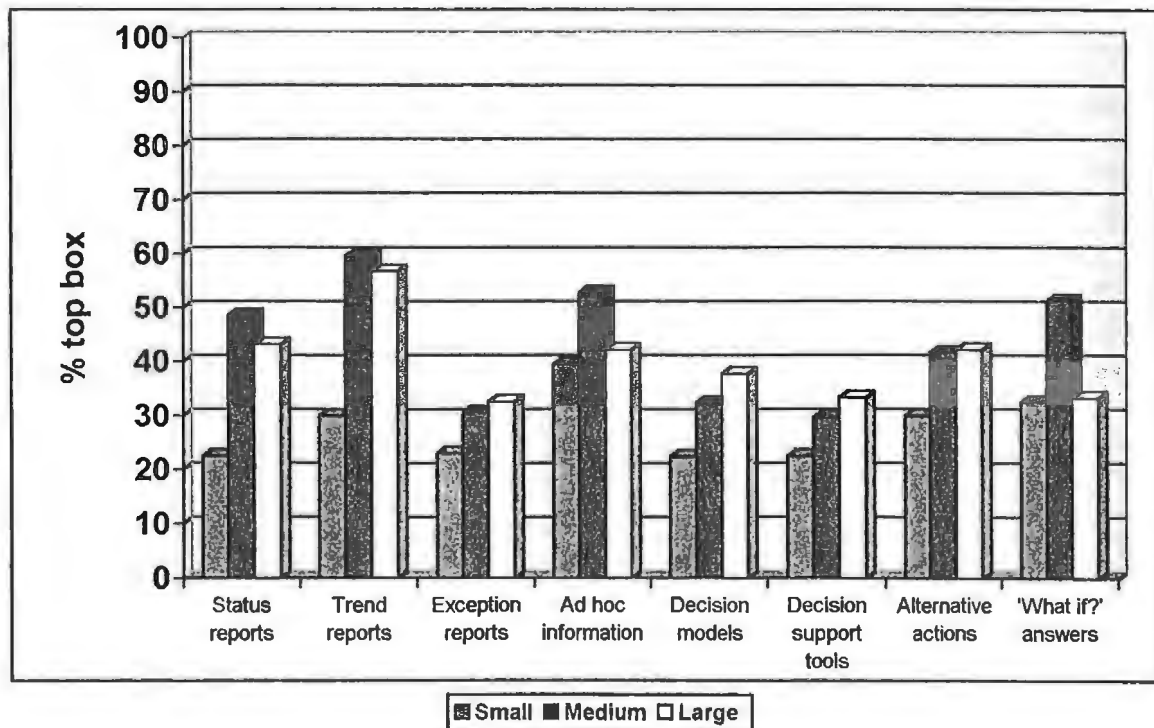
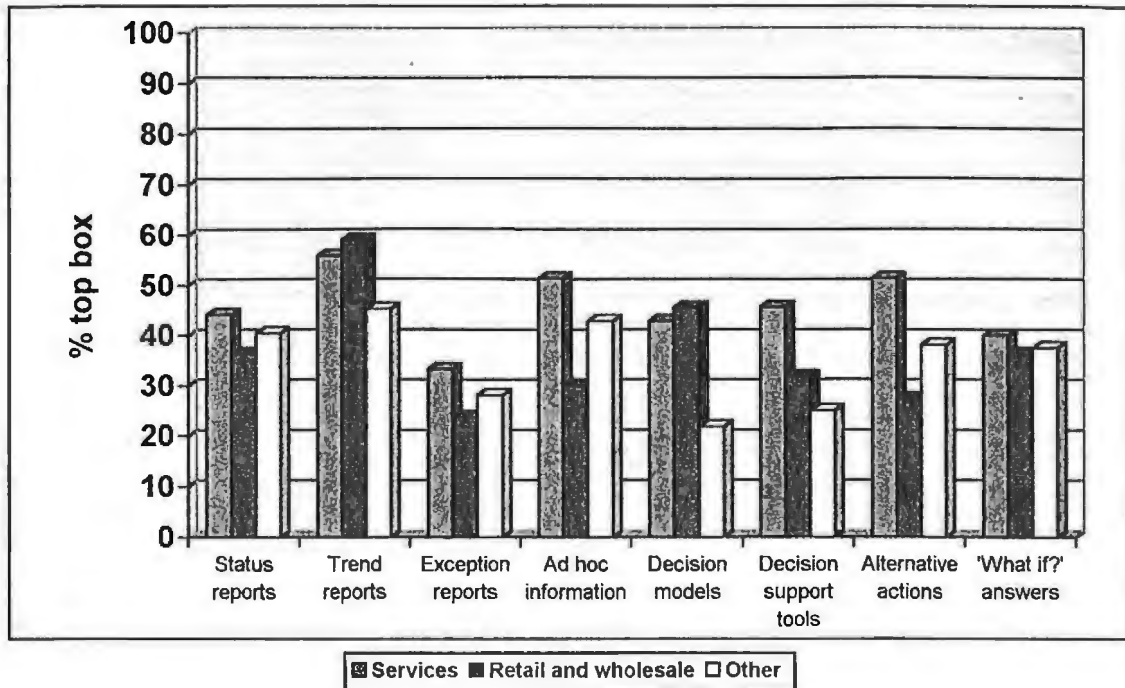


Figure 27 Importance of information formats per business type (SA)



When comparing the relative importance of information formats for different management levels, it is interesting to note that most information formats are generally regarded as more important by middle managers. The exceptions are the availability of exception reports, the ability to obtain *ad hoc* information and the ability to answer 'what if?' questions. Understandably, these are regarded as more important by marketing executives. This is in line with the comments in section 2.8 that higher management has to make more complex decisions. In comparisons between different organization sizes, medium organizations seem to regard *ad hoc* information and alternative courses of information as particularly important information formats.

The ANOVA tables are presented in tables 25 to 27. After the ANOVA tables, the results of the comparisons will be discussed.

Table 25 ANOVA table for comparison of importance of information format by management level (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Status reports	Between Groups	3.203	1	3.203	3.683	0.058
	Within Groups	89.597	103	0.87		
	Total	92.8	104			
Trend reports	Between Groups	0.879	1	0.879	0.953	0.331
	Within Groups	94.969	103	0.922		
	Total	95.848	104			
Exception reports	Between Groups	0.217	1	0.217	0.209	0.648
	Within Groups	103.626	100	1.036		
	Total	103.843	101			
Ad hoc information	Between Groups	0.381	1	0.381	0.507	0.478
	Within Groups	75.197	100	0.752		
	Total	75.578	101			
Decision Models	Between Groups	4.8	1	4.8	4.298	0.041*
	Within Groups	115.047	103	1.117		
	Total	119.848	104			
MDSS tools	Between Groups	6.171	1	6.171	5.645	0.019*
	Within Groups	112.591	103	1.093		
	Total	118.762	104			
Alternative Choices	Between Groups	0.99	1	0.99	1.414	0.237
	Within Groups	71.385	102	0.7		
	Total	72.375	103			
'What if?' analysis	Between Groups	0.462	1	0.462	0.485	0.488
	Within Groups	98.167	103	0.953		
	Total	98.629	104			

Table 26 ANOVA table for comparison of importance of information format by organization size (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Status reports	Between Groups	6.133	6	1.022	1.052	0.396
	Within Groups	109.834	113	0.972		
	Total	115.967	119			
Trend reports	Between Groups	9.101	6	1.517	1.656	0.138
	Within Groups	103.49	113	0.916		
	Total	112.592	119			
Exception reports	Between Groups	2.47	6	0.412	0.374	0.894
	Within Groups	121.222	110	1.102		
	Total	123.692	116			
Ad hoc information	Between Groups	4.509	6	0.751	0.992	0.435
	Within Groups	84.11	111	0.758		
	Total	88.619	117			
Decision Models	Between Groups	13.79	6	2.298	2.255	0.043*
	Within Groups	116.21	114	1.019		
	Total	130	120			
MDSS tools	Between Groups	15.3	6	2.55	2.513	0.025*
	Within Groups	115.692	114	1.015		
	Total	130.992	120			
Alternative Choices	Between Groups	6.921	6	1.154	1.746	0.117
	Within Groups	74.671	113	0.661		
	Total	81.592	119			
'What if?' analysis	Between Groups	7.815	6	1.302	1.535	0.173
	Within Groups	96.747	114	0.849		
	Total	104.562	120			

Table 27 ANOVA table for importance of information formats by main business (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Status reports	Between Groups	1.649	2	0.824	0.844	0.433
	Within Groups	114.318	117	0.977		
	Total	115.967	119			
Trend reports	Between Groups	3.835	2	1.917	2.063	0.132
	Within Groups	108.757	117	0.93		
	Total	112.592	119			
Exception reports	Between Groups	0.518	2	0.259	0.24	0.787
	Within Groups	123.175	114	1.08		
	Total	123.692	116			
Ad hoc information	Between Groups	1.294	2	0.647	0.852	0.429
	Within Groups	87.325	115	0.759		
	Total	88.619	117			
Decision Models	Between Groups	9.247	2	4.623	4.518	0.013*
	Within Groups	120.753	118	1.023		
	Total	130	120			
MDSS tools	Between Groups	9.085	2	4.543	4.397	0.014*
	Within Groups	121.906	118	1.033		
	Total	130.992	120			
Alternative Choices	Between Groups	1.721	2	0.86	1.26	0.287
	Within Groups	79.871	117	0.683		
	Total	81.592	119			
'What if?' analysis	Between Groups	2.826E-02	2	1.413E-02	0.016	0.984
	Within Groups	104.534	118	0.886		
	Total	104.562	120			

The ANOVA has highlighted the following significant differences:

- Middle managers have a significantly higher requirement for marketing decision models and marketing decision support tools than top management. The higher need for functional decision support might be the driving factor in the high requirement for decision models and decision support tools (see table 25).
- Similarly, large organizations (which typically operate in more complex internal environments than small organizations) have a higher requirement

than small organizations for decision models and decision support tools to assist them in decision-making (see table 26).

Post hoc range tests (Tukey's HSD) indicate that retailers and wholesalers have a higher requirement for marketing decision models and decision support tools than 'other' organizations. This might be indicative of the relatively more structured decisions that may have to be made in the retailing and wholesaling environment.

In summary, this section (question 2 in the questionnaire - see Appendix A) have pointed out that:

- Content is more important than format, as suggested by the generally higher importance of information type than information format.
- The main information formats that differentiate between management level, organization size and main business type are marketing decision support tools and marketing decision models.

7.3.6 Information attributes

This section focused on the attributes of the information required by marketing decision-makers, and was measured in question 3 of the questionnaire (see Appendix A). In this section, means were used for comparison rather than top-box scores, since a semantic 5-point scale was used for each attribute. Table 28 summarizes the results of this question bank.

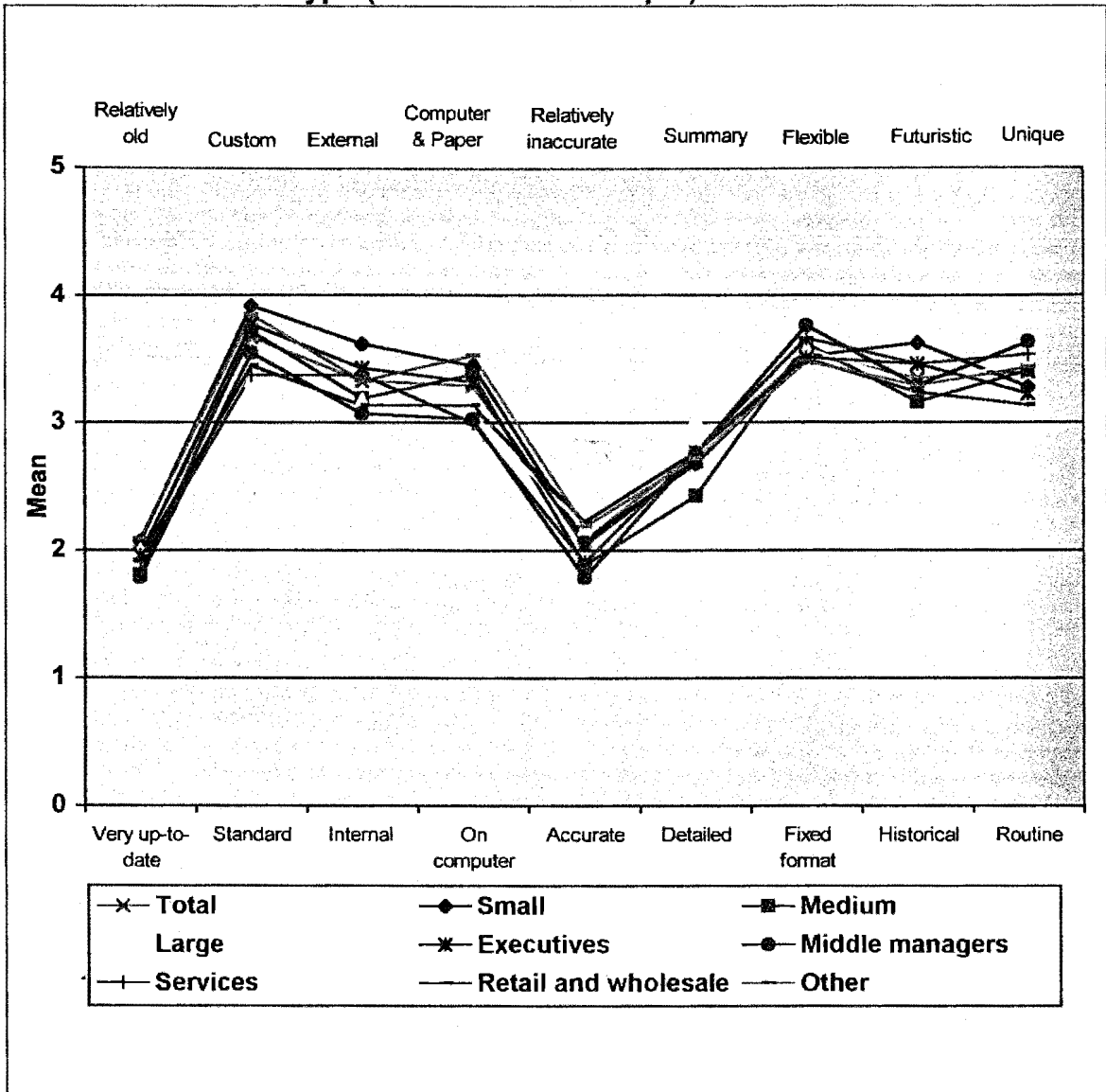
Table 28 Rating of information attributes required (South African sample)

STATEMENT	VALID	MISSING	MEAN	STD DEV
Very up-to-date to relatively old	127	1	1.98	0.84
Standard to customized	126	2	3.67	1.07
Internal to external	127	1	3.33	0.98
On computer to both computer and paper	128	-	3.29	1.34
Accurate to relatively inaccurate	128	-	2.08	0.99
Detailed to summarized	128	-	2.77	1.16
Fixed format to flexible	128	-	3.54	0.92
Historically oriented to future oriented	125	3	3.35	1.03
Routinely circulated to <i>ad hoc</i> /unique	126	2	3.40	1.02

Figure 28 compares the means for each attribute across the total sample, for every different organization size and for executive and middle management levels. It is interesting that there does not seem to be any significant differences in the information profiles required by small, medium or large companies, or between executives and middle managers. A surprising fact is that requirements tend to lean towards very up-to-date and accurate information, while textbooks suggest that the typical information usage profile of executives should be on relatively old, relatively inaccurate information. There are several possible reasons for this:

- Executives are promoted from junior through middle management ranks, and are more comfortable with accurate, detailed information.
- The pace of change in business is quickening, and therefore the decisions that have to be made have a short-term impact.
- Executives may be focusing on tactical rather than strategic decisions.
- As organizations change from hierarchical to flatter structures, the differences in information requirements disappear.

Figure 28 Information attributes by management level, organization size and main business type (South African sample)



For this section, the focus is on testing for differences between means rather than analyzing the means themselves. Tables 29, 30 and 31 compare the means using ANOVA. Results will be discussed on page 216.

Table 29 ANOVA table for information characteristics by management level (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Currency of information	Between Groups	0.625	1	0.625	0.944	0.334
	Within Groups	67.596	102	0.663		
	Total	68.221	103			
Level of customization	Between Groups	1.027	1	1.027	0.933	0.336
	Within Groups	112.319	102	1.101		
	Total	113.346	103			
Internal vs. external	Between Groups	2.676	1	2.676	2.897	0.092
	Within Groups	94.209	102	0.924		
	Total	96.885	103			
Level of computerization	Between Groups	1.661	1	1.661	0.867	0.354
	Within Groups	197.387	103	1.916		
	Total	199.048	104			
Levels of accuracy	Between Groups	1.414	1	1.414	1.478	0.227
	Within Groups	98.548	103	0.957		
	Total	99.962	104			
Levels of detail	Between Groups	0.079	1	0.079	0.057	0.812
	Within Groups	143.35	103	1.392		
	Total	143.429	104			
Level of rigidity	Between Groups	1.265	1	1.265	1.583	0.211
	Within Groups	82.297	103	0.799		
	Total	83.562	104			
Historical vs. future	Between Groups	0.613	1	0.613	0.578	0.449
	Within Groups	106.093	100	1.061		
	Total	106.706	101			
Level of uniqueness	Between Groups	3.532	1	3.532	3.379	0.069
	Within Groups	105.575	101	1.045		
	Total	109.107	102			

Table 30 ANOVA table for information characteristics by organization size (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Currency of information	Between Groups	1.417	2	0.709	1.014	0.366
	Within Groups	82.451	118	0.699		
	Total	83.868	120			
Level of customization	Between Groups	7.6	2	3.8	3.529	0.032*
	Within Groups	125.991	117	1.077		
	Total	133.592	119			
Internal vs. external	Between Groups	4.946	2	2.473	2.571	0.081
	Within Groups	113.484	118	0.962		
	Total	118.43	120			
Level of computerization	Between Groups	3.556	2	1.778	0.982	0.377
	Within Groups	215.403	119	1.81		
	Total	218.959	121			
Levels of accuracy	Between Groups	1.678	2	0.839	0.884	0.416
	Within Groups	112.92	119	0.949		
	Total	114.598	121			
Levels of detail	Between Groups	7.839	2	3.92	2.957	0.056
	Within Groups	157.767	119	1.326		
	Total	165.607	121			
Level of rigidity	Between Groups	0.181	2	0.09	0.106	0.9
	Within Groups	101.655	119	0.854		
	Total	101.836	121			
Historical vs. future	Between Groups	4.434	2	2.217	2.161	0.12
	Within Groups	119.028	116	1.026		
	Total	123.462	118			
Level of uniqueness	Between Groups	0.798	2	0.399	0.377	0.687
	Within Groups	123.794	117	1.058		
	Total	124.592	119			

Table 31 ANOVA table for information characteristics by business type (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Currency of information	Between Groups	0.839	2	0.42	0.605	0.548
	Within Groups	81.127	117	0.693		
	Total	81.967	119			
Level of customization	Between Groups	6.143	2	3.071	2.713	0.071
	Within Groups	131.32	116	1.132		
	Total	137.462	118			
Internal vs. external	Between Groups	0.829	2	0.415	0.43	0.651
	Within Groups	112.762	117	0.964		
	Total	113.592	119			
Level of computerization	Between Groups	7.158	2	3.579	2.025	0.137
	Within Groups	208.528	118	1.767		
	Total	215.686	120			
Levels of accuracy	Between Groups	2.024	2	1.012	1.026	0.362
	Within Groups	116.356	118	0.986		
	Total	118.38	120			
Levels of detail	Between Groups	8.529E-02	2	4.264E-02	0.031	0.97
	Within Groups	164.973	118	1.398		
	Total	165.058	120			
Level of rigidity	Between Groups	0.713	2	0.356	0.399	0.672
	Within Groups	105.37	118	0.893		
	Total	106.083	120			
Historical vs. future	Between Groups	0.841	2	0.42	0.38	0.685
	Within Groups	127.269	115	1.107		
	Total	128.11	117			
Level of uniqueness	Between Groups	2.305	2	1.152	1.128	0.327
	Within Groups	118.519	116	1.022		
	Total	120.824	118			

This set of questions tested the characteristics of information required as indicated by marketing decision-makers. Theoretically, top managers should use information that is relatively old, customized, external in nature, relatively inaccurate, summarized, flexible format, future orientated and unique (see section 2.8).

There is little evidence of statistically significant differences in the means, since only one set of means (level of customization for organization size) differ at the 95% level of significance. There is a significant difference in the level of customization of the information required by different organization sizes. In this regard, small (3.92) and medium organizations (3.72) have a higher requirement for customization than large organizations (3.18). This might be due to the more interactive and less structured culture than large organizations.

The surprising aspect of these findings is that, in contrast to theoretical indications, the attributes of information required across management level, organization size and business type are remarkably similar.

7.3.7 Information type availability

Question 5 in the questionnaire (see Appendix A) tested the satisfaction with the availability of the information types identified in question 1. Table 32 contains a summary of the results of this section in the questionnaire. From this table it can be seen that marketing decision-makers are generally most satisfied with the availability of company financial information, and information on regulation and technology.

Table 32 Availability of information types - South African sample

STATEMENT AND RANK	VALID	MISSING	MEAN	STD DEV
Economic indicators (5)	121	7	3.18	1.06
Technology (3)	128	-	3.33	1.22
Social trends (8)	125	3	2.80	1.09
Information on regulation (2)	127	1	3.51	1.11
Customer demographics (7)	124	4	2.86	1.23
Direct customer feedback (6)	126	2	3.08	1.22
Competitor strategies (9)	128	-	2.71	1.10
Sales forecasts (4)	127	1	3.26	1.07
Company financial information (1)	128	-	3.63	1.18

In the case of availability, it makes more sense to examine the 'information gaps'. This refers to the difference between the importance of a particular information

type versus the satisfaction with its availability. This question contained a 'don't know' option, but this was eliminated (treated as a missing value) to compute the means, since it carried a zero value and would contaminate the results if used to calculate the means and standard deviation. A top-box comparison was used to identify the gaps for the total sample and for the service organizations. The top box comparisons for comparing importance versus availability for the total sample and for service organizations only are provided in figures 29 and 30.

Figure 29 Gaps in availability of information types - South African sample

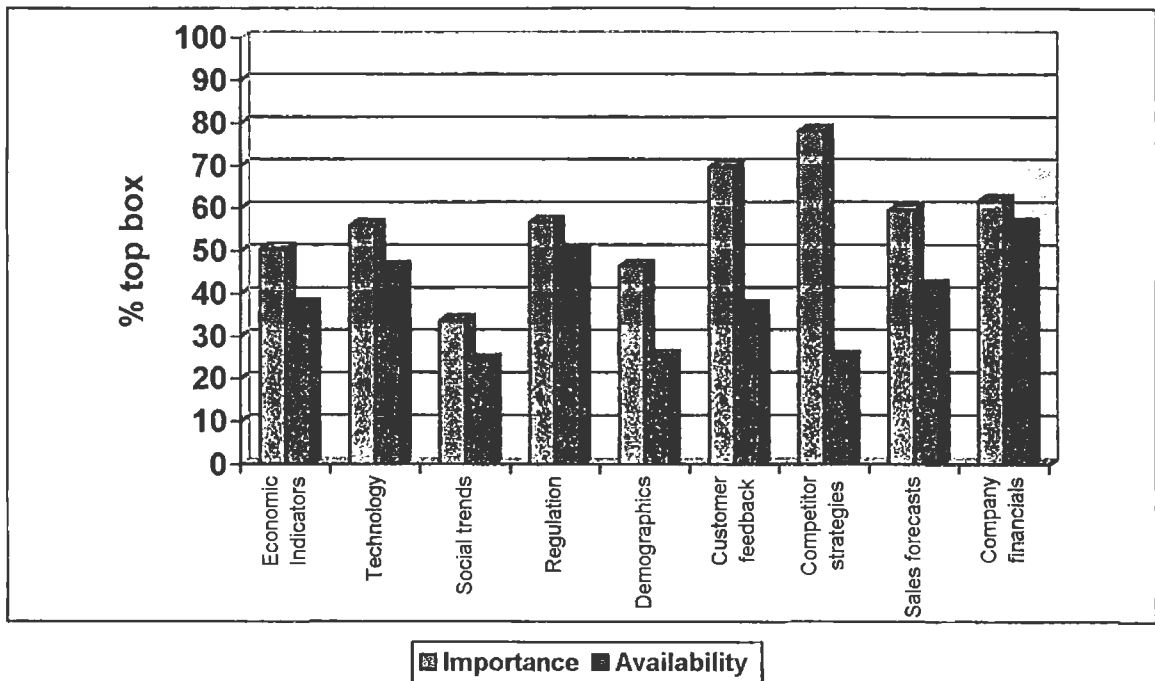
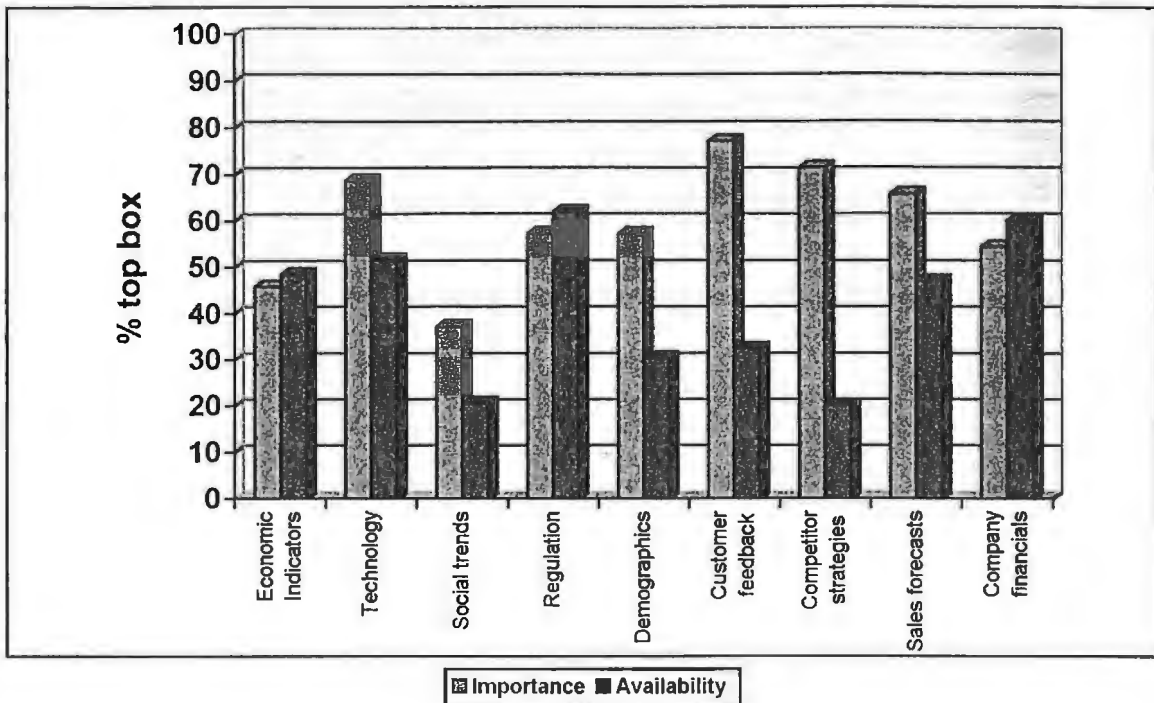


Figure 30 Information gaps for South African service organizations



There is evidence that the most important information content requirements of service organizations are not being met, particularly in the areas of direct customer feedback and information on competitors (see figure 30). This is also true of the total South African sample (see figure 29).

Tables 33 to 35 compare the means for availability of information types, using ANOVA. Across all dimensions tested, there is little evidence of significant differences in satisfaction with availability of information types. The differences are discussed below.

- Middle managers (mean of 3.25) seem to be much happier with the availability of information on social trends than marketing executives (mean of 2.62).
- Large organizations (mean of 3.5) seem to be more satisfied with the availability of economic indicators than small and medium organizations (2.9 and 3.1 respectively).

Table 33 ANOVA table for availability of information types per management level (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Economic indicators	Between Groups	0.171	3	0.057	0.049	0.985
	Within Groups	130.411	113	1.154		
	Total	130.581	116			
Technology	Between Groups	1.008	3	0.336	0.217	0.884
	Within Groups	185.726	120	1.548		
	Total	186.734	123			
Social trends	Between Groups	8.073	3	2.691	2.295	0.081
	Within Groups	137.167	117	1.172		
	Total	145.24	120			
Industry regulation	Between Groups	3.874	3	1.291	1.047	0.374
	Within Groups	146.711	119	1.233		
	Total	150.585	122			
Demo-graphics	Between Groups	2.562	3	0.854	0.563	0.641
	Within Groups	176.03	116	1.517		
	Total	178.592	119			
Customer feedback	Between Groups	7.688	3	2.563	1.755	0.16
	Within Groups	172.32	118	1.46		
	Total	180.008	121			
Competitor strategies	Between Groups	1.418	3	0.473	0.38	0.767
	Within Groups	149.259	120	1.244		
	Total	150.677	123			
Sales forecasts	Between Groups	3.22	3	1.073	0.963	0.413
	Within Groups	132.65	119	1.115		
	Total	135.87	122			
Company financials	Between Groups	8.89	3	2.963	2.238	0.087
	Within Groups	158.884	120	1.324		
	Total	167.774	123			

Table 34 ANOVA table for availability of information types per organization size (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Economic indicators	Between Groups	6.985	2	3.493	3.293	0.041*
	Within Groups	118.806	112	1.061		
	Total	125.791	114			
Technology	Between Groups	7.559	2	3.78	2.595	0.079
	Within Groups	173.326	119	1.457		
	Total	180.885	121			
Social trends	Between Groups	2.036	2	1.018	0.844	0.433
	Within Groups	139.897	116	1.206		
	Total	141.933	118			
Industry regulation	Between Groups	2.44	2	1.22	0.974	0.381
	Within Groups	147.808	118	1.253		
	Total	150.248	120			
Demo-graphics	Between Groups	1.868	2	0.934	0.618	0.541
	Within Groups	173.7	115	1.51		
	Total	175.568	117			
Customer feedback	Between Groups	1.439	2	0.72	0.475	0.623
	Within Groups	177.152	117	1.514		
	Total	178.592	119			
Competitor strategies	Between Groups	0.445	2	0.223	0.181	0.835
	Within Groups	146.514	119	1.231		
	Total	146.959	121			
Sales forecasts	Between Groups	3.269	2	1.634	1.436	0.242
	Within Groups	134.268	118	1.138		
	Total	137.537	120			
Company financials	Between Groups	1.559	2	0.779	0.548	0.579
	Within Groups	169.097	119	1.421		
	Total	170.656	121			

Table 35 ANOVA table for availability of information types per business type (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Economic indicators	Between Groups	2.258	2	1.129	0.958	0.387
	Within Groups	130.9	111	1.179		
	Total	133.158	113			
Technology	Between Groups	0.679	2	0.34	0.217	0.805
	Within Groups	184.61	118	1.564		
	Total	185.289	120			
Social trends	Between Groups	0.186	2	0.093	0.077	0.926
	Within Groups	139.17	115	1.21		
	Total	139.356	117			
Industry regulation	Between Groups	1.995	2	0.998	0.8	0.452
	Within Groups	145.996	117	1.248		
	Total	147.992	119			
Demo-graphics	Between Groups	1.436	2	0.718	0.45	0.639
	Within Groups	181.795	114	1.595		
	Total	183.231	116			
Customer feedback	Between Groups	0.026	2	0.013	0.009	0.991
	Within Groups	171.671	116	1.48		
	Total	171.697	118			
Competitor strategies	Between Groups	3.982	2	1.991	1.693	0.188
	Within Groups	138.795	118	1.176		
	Total	142.777	120			
Sales forecasts	Between Groups	3.33	2	1.665	1.532	0.22
	Within Groups	127.17	117	1.087		
	Total	130.5	119			
Company financials	Between Groups	2.238	2	1.119	0.814	0.446
	Within Groups	162.274	118	1.375		
	Total	164.512	120			

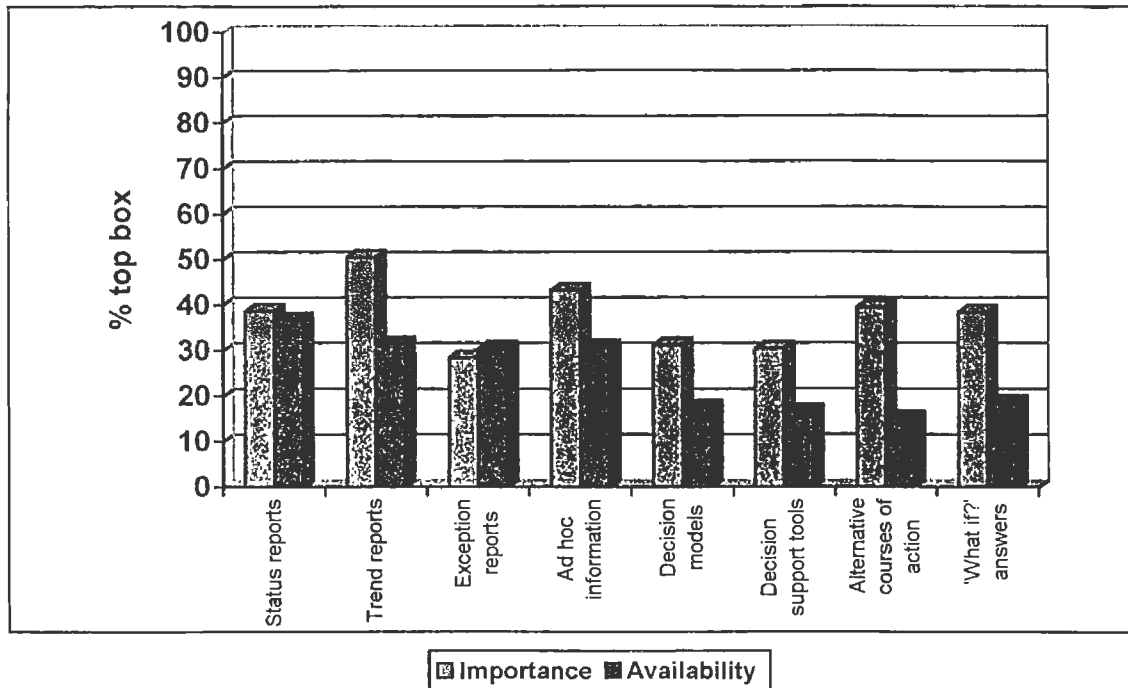
7.3.8 Information format availability

A similar comparison to the previous section was done for information formats. This was based on the results from question 5 in the questionnaire, compared with the results from question 2. Table 36 contains the summary results for question 5, while figure 31 contains the top-box gap analysis.

Table 36 Comparison of information formats (South African sample)

STATEMENT AND RANK	VALID	MISSING	MEAN	STD DEV
Status reports (1)	128	-	3.16	1.06
Trend reports (4)	127	1	2.83	1.15
Exception reports (3)	118	10	2.86	1.16
Ad hoc information (2)	127	1	3.06	1.01
Marketing decision models (7)	125	3	2.39	1.12
Marketing decision support tools (8)	127	1	2.30	1.12
Alternative courses of action (6)	125	3	2.43	1.05
Answers to 'what if?' questions (5)	124	4	2.49	1.08

Figure 31 Gaps in importance and availability of information formats (South African sample)



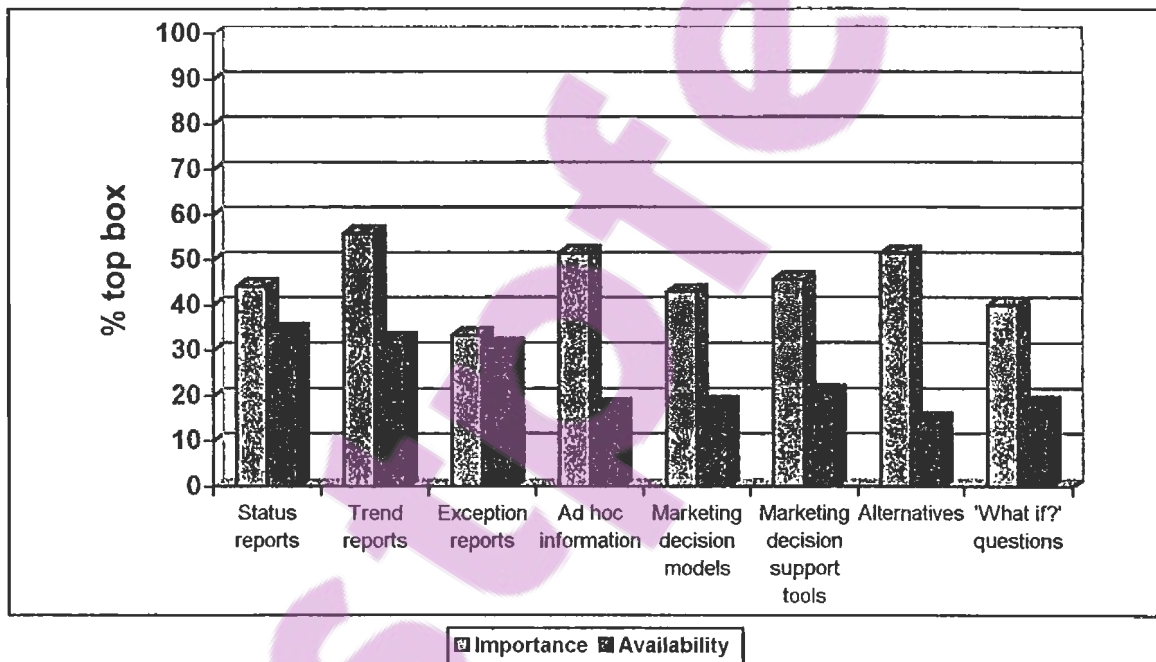
Exception reports were the only category of information where availability exceeded the importance. This is possibly due to the fact that in reactive management depends to a large degree on the availability of exception reports.

While respondents in the South African sample seemed satisfied with the availability of status reports and exception reports, there were generally big gaps in all other information formats. Again, respondents were least satisfied with the availability of the most important formats required. The most important information formats are:

- Trend reports.
- *Ad hoc* information.
- Alternative courses of action.

Figure 32 contains a similar comparison for South African service organizations.

Figure 32 Information gaps for service organizations (SA)



As can be seen from figure 32, large gaps occur between the most important information formats and the availability thereof for South African service organizations. Especially large gaps are evident in the information formats supporting the most uncertain and risky phases of decision making, such as alternative courses of action, marketing decision models and decision support

tools.

Table 37 ANOVA table for availability of information formats per management level (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Status reports	Between Groups	0.136	3	0.045	0.039	0.99
	Within Groups	138.598	120	1.155		
	Total	138.734	123			
Trend reports	Between Groups	3.52	3	1.173	0.877	0.455
	Within Groups	159.228	119	1.338		
	Total	162.748	122			
Exception reports	Between Groups	1.857	3	0.619	0.463	0.708
	Within Groups	146.88	110	1.335		
	Total	148.737	113			
Ad hoc information	Between Groups	5.315	3	1.772	1.857	0.141
	Within Groups	113.515	119	0.954		
	Total	118.829	122			
Decision models	Between Groups	6.35	3	2.117	1.669	0.177
	Within Groups	148.393	117	1.268		
	Total	154.744	120			
MDSS tools	Between Groups	4.447	3	1.482	1.15	0.332
	Within Groups	153.423	119	1.289		
	Total	157.87	122			
Alternative choices	Between Groups	4.004	3	1.335	1.213	0.308
	Within Groups	129.832	118	1.1		
	Total	133.836	121			
'What if?' analysis	Between Groups	0.816	3	0.272	0.225	0.879
	Within Groups	141.432	117	1.209		
	Total	142.248	120			

Table 38 ANOVA table for availability of information formats by organization size (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Status reports	Between Groups	4.972	2	2.486	2.212	0.114
	Within Groups	133.749	119	1.124		
	Total	138.721	121			
Trend reports	Between Groups	6.328	2	3.164	2.389	0.096
	Within Groups	156.284	118	1.324		
	Total	162.612	120			
Exception reports	Between Groups	13.386	2	6.693	5.282	0.006*
	Within Groups	138.105	109	1.267		
	Total	151.491	111			
Ad hoc information	Between Groups	0.686	2	0.343	0.322	0.725
	Within Groups	125.645	118	1.065		
	Total	126.331	120			
Decision models	Between Groups	0.105	2	0.053	0.041	0.96
	Within Groups	148.332	116	1.279		
	Total	148.437	118			
MDSS tools	Between Groups	0.126	2	0.063	0.049	0.952
	Within Groups	151.56	118	1.284		
	Total	151.686	120			
Alternative choices	Between Groups	1.855	2	0.927	0.831	0.438
	Within Groups	129.423	116	1.116		
	Total	131.277	118			
'What if?' analysis	Between Groups	0.147	2	0.074	0.063	0.939
	Within Groups	135.344	115	1.177		
	Total	135.492	117			

Table 39 ANOVA table for availability of information formats by business type (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Status reports	Between Groups	0.938	2	0.469	0.392	0.676
	Within Groups	141.062	118	1.195		
	Total	142	120			
Trend reports	Between Groups	0.168	2	0.084	0.06	0.942
	Within Groups	163.157	117	1.395		
	Total	163.325	119			
Exception reports	Between Groups	1.687	2	0.843	0.587	0.558
	Within Groups	155.286	108	1.438		
	Total	156.973	110			
Ad hoc information	Between Groups	3.214	2	1.607	1.51	0.225
	Within Groups	124.486	117	1.064		
	Total	127.7	119			
Decision models	Between Groups	2.206	2	1.103	0.895	0.411
	Within Groups	141.633	115	1.232		
	Total	143.839	117			
MDSS tools	Between Groups	1.29	2	0.645	0.52	0.596
	Within Groups	145.076	117	1.24		
	Total	146.367	119			
Alternative choices	Between Groups	0.472	2	0.236	0.218	0.804
	Within Groups	124.341	115	1.081		
	Total	124.814	117			
'What if?' analysis	Between Groups	1.589	2	0.795	0.699	0.499
	Within Groups	129.608	114	1.137		
	Total	131.197	116			

As can be seen from table 38, there is statistical evidence of a significant difference in the availability of exception reports between different sizes of organizations.

There is no evidence of differences in availability of information formats between different management levels or business types.

7.3.9 Sources of competitive information

This question (question 6 in the questionnaire, Appendix A) was asked to determine which sources of competitive information are used. This question is relevant as competitor information is regarded as the most important information category, yet respondents are relatively unhappy with its availability. Table 40 contains the results for this question, while figure 33 contains a graphic comparison of the overall results.

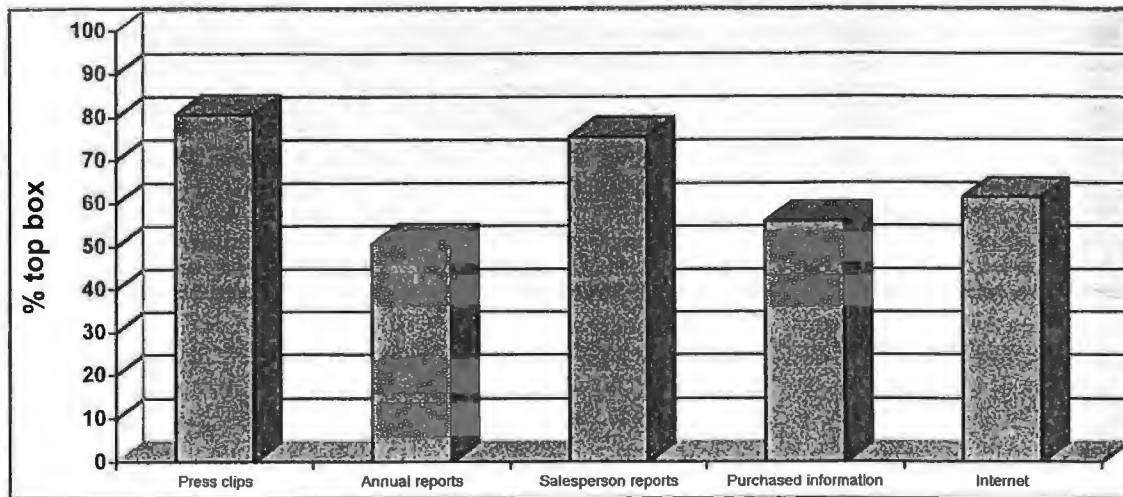
Table 40 Sources of competitive information - South African sample

SOURCE AND RANK	FREQUENCY (%)
Press clipping services (1)	80.5
Annual reports (5)	50.4
Salesperson reports (2)	75.4
Purchased information (4)	55.7
Internet (3)	61.2

From table 40 it seems that press clippings are by far the most popular source of information in this category. This may explain some of the dissatisfaction with availability of information, since information in the press is public information already and contains little in the way of 'cutting edge' information.

In addition to the above sources, 27.2% of respondents indicated that they also use other sources. Of those responses indicating the use of other sources, primary research (both formal and informal) accounted for the most responses. From table 40 it seems that press clippings are by far the most popular source of information in this category. This may explain some of the dissatisfaction with availability of information, since information in the press is public information already and contains little in the way of 'cutting edge' information.

(67.6%).

Figure 33 Competitive information sources (SA)

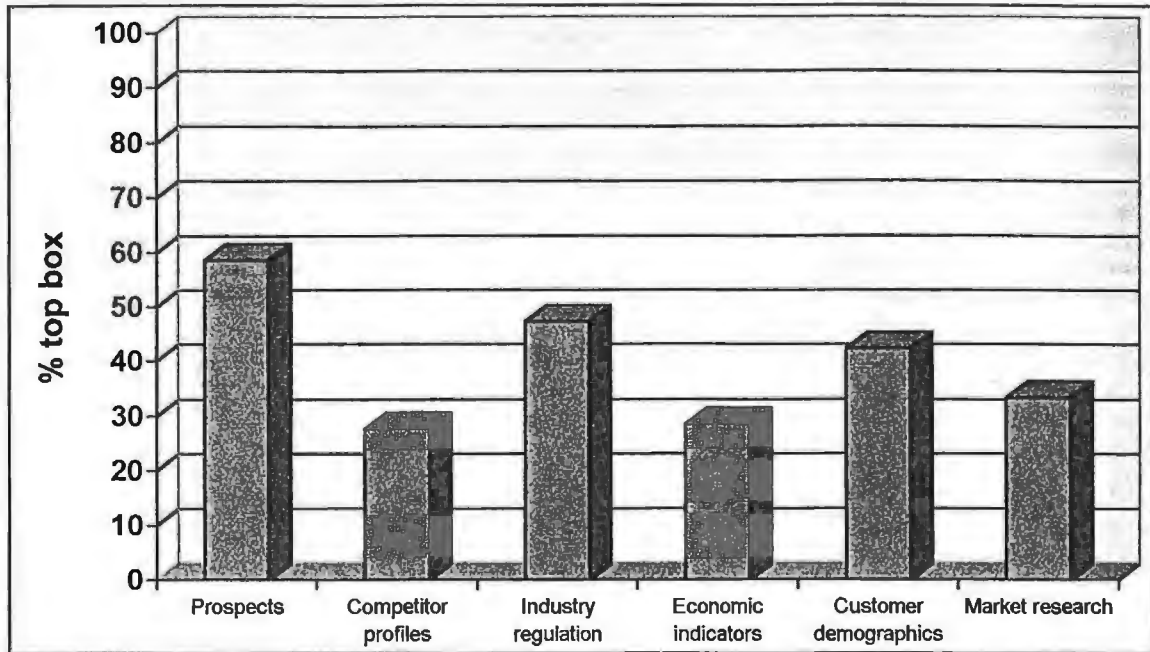
7.3.10 Information maintained electronically

In question 7 in the questionnaire (see Appendix A) respondents had to indicate what types of information is already available electronically in their organizations. These results are provided in table 41. In figure 34 a graphic comparison is provided of the information kept electronically by business type.

Table 41 Information maintained electronically

INFORMATION TYPES AND RANK	FREQUENCY (%)
Potential customers (prospects) (1)	58.5
Competitor profiles (6)	27.6
Industry regulation (2)	47.2
National economic indicators (5)	28.5
Customer demographics (3)	42.3
Marketing research reports (4)	33.3

Very few organizations seem to have a broad base of market intelligence in electronic format, where it would be centrally and easily available. However, the most popular information electronically is customer prospects, indicating a high focus on sales. In addition, information on industry regulation and customer demographics (in other words customer databases) is also popular in electronic format.

Figure 34 Information kept electronically by business type

In this instance, there is some evidence to suggest that service organizations have a higher incidence of electronic customer demographics databases. This is to be expected in light of the prominence of customer relationships in service organizations, which necessitates access to customer demographic information (Grönroos 1997: 329).

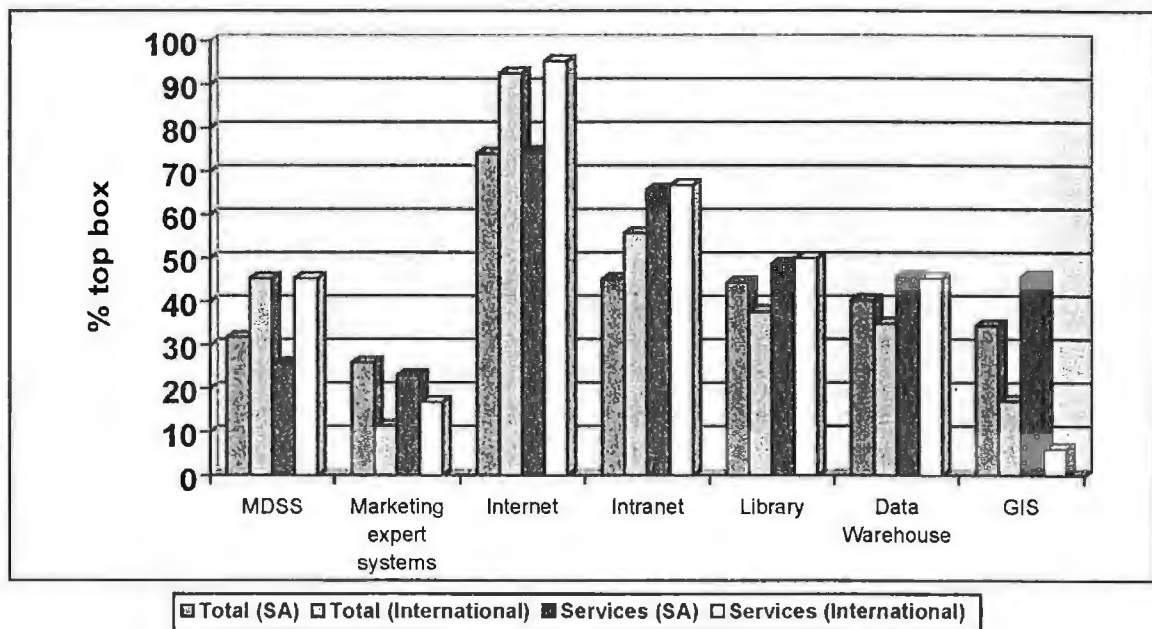
7.3.11 Usage of technology

Respondents were questioned on their personal usage of MKIS-related technology (see question 11, Appendix A). These results are summarized in table 42. Service organizations are compared to other organizations on usage of technologies (figure 35). Since this question was asked to international respondents as well (see question 8, Appendix C) their responses are included.

Table 42 Usage of information technologies (South African and international samples)

SOURCE	INTERNATIONAL (%)	SOUTH AFRICAN (%)
Marketing decision support systems	45.3	31.7
Marketing expert systems	11.3	25.8
Internet	92.5	74.0
Intranet	55.7	45.1
Physical marketing library	37.7	44.3
Data Warehouse	34.9	40.2
Geographical Information Systems (GIS)	17.0	34.4

Figure 35 Usage of information technologies (SA and international)



The main findings regarding this question are as follows:

- The impact of the Internet can be seen in the fact that the Internet turned out to be the single most used technology as a support to their marketing decision-making.
- The international sample seems to be well ahead in its use of the Internet, Intranet and Marketing Decision Support Systems. This may point to the higher availability of advanced technologies in the U.S.A. and Europe.
- Surprisingly, the South African sample seems to be ahead in its use of other technologies like expert systems, even though the usage of advanced MKIS

technologies such as MDSS and expert systems are overall low. It is possible that all respondents may not have understood the terminology equally well, leading to some bias or error in the results.

- The value of the Intranet as a communication medium and source of information was pointed out previously in the section on knowledge management (see paragraph 4.4.2.4). This seems to be supported by the results for service organizations with exceptionally high usage of Intranets compared to businesses in general.
- While South African service organizations are relatively high users of GIS, their international counterparts are relatively very low users of GIS, with no obvious explanation except the geographical challenges that South African organizations face relative to their counterparts in developed countries.

7.3.12 Marketing information systems (MKIS)

Questions 8 and 9 on (MKIS) performance was asked as a battery of 13 statements and a single question on market intelligence quality. Responses could range from 'Strongly disagree' (1) to 'Strongly agree' (5), and in the case of the question of overall market intelligence quality, from 'poor' (1) to 'excellent' (5).

These questions were also asked of the international respondents (see question 1, Appendix C). The results of this question for both samples are provided in table 43, which contrasts the South African and international samples. The headings used are explained as follows:

- The total valid sample is indicated by 'n'.
- Cronbach's alpha coefficient for the item if deleted is indicated by α . This indicates the effect that the deletion of the specific item would have on the reliability of the total scale. The overall scale alpha is indicated at the top.
- The 'mean' for both samples.
- The standard deviation ('Std Dev') for both samples.

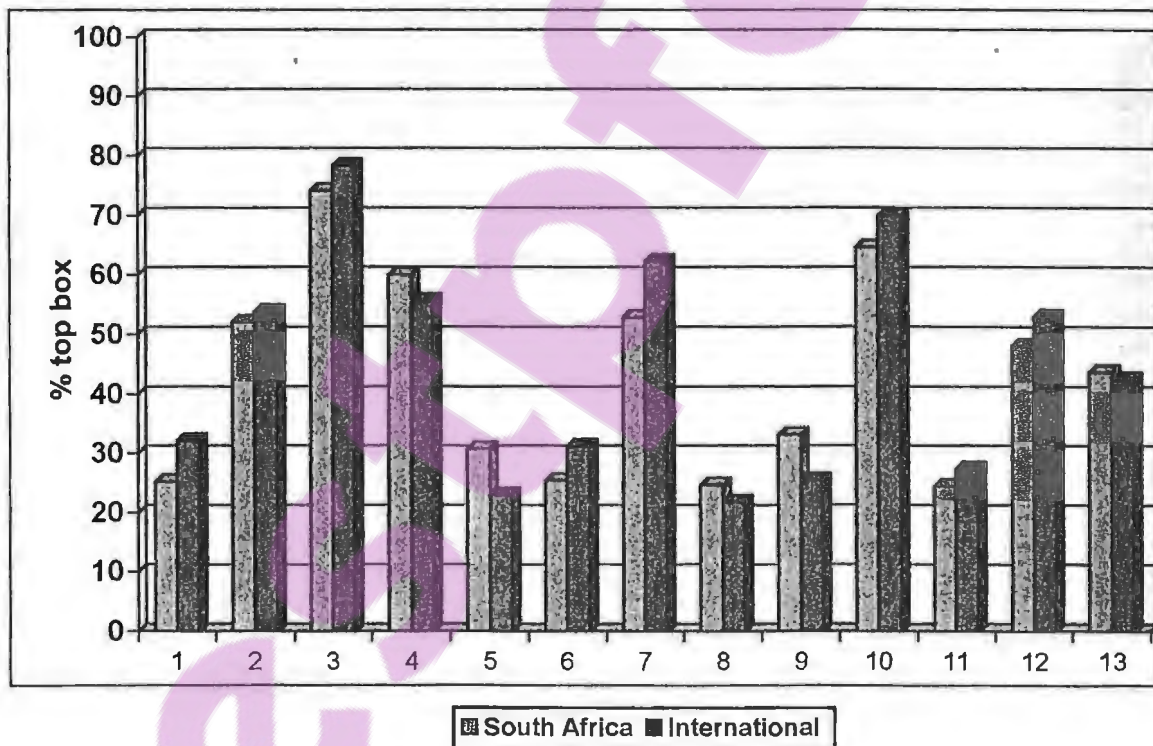
Table 43 MKIS statements for South African and international samples

	n (SA)	n (INT)	SA α if deleted ($\alpha = .67$)	Int. α if deleted ($\alpha = .80$)	Mean (SA)	Mean (INT)	Std Dev (SA)	Std Dev (INT)
1. I have a single point of contact in the organization for all the market intelligence I require	127	106	.66	.79	2.43	2.74	1.24	1.32
2. Our marketing strategy influences our organization's IT strategy	127	106	.62	.78	3.26	3.34	1.17	1.09
3. IT assists me in making better marketing decisions	127	106	.64	.78	3.73	4.07	1.09	0.97
4. Marketing information I receive for decision making is generally accurate	127	106	.63	.78	3.46	3.47	.79	0.90
5. It is easy for me to obtain market intelligence in the format I require	127	105	.63	.77	2.80	2.68	1.08	1.05
6. As a user of market intelligence my requirements are always taken into account when marketing information systems are designed	126	106	.63	.78	2.71	2.86	1.05	1.05
7. IT makes it easy to get access to the right market intelligence	127	106	.64	.79	3.37	3.63	.92	1.00
8. In our organization, the IT department really understand the information needs of marketing	126	106	.62	.78	2.65	2.62	1.15	1.07
9. Information is usually available to me by the time I need it	127	106	.63	.78	2.84	2.72	1.01	0.94
10. I often have to process market intelligence before I can make decisions (R)	127	106	.70	.82	3.55	3.75	1.04	0.84
11. I routinely receive market intelligence relevant to my responsibilities without asking for it	127	106	.63	.77	2.53	3.40	1.08	1.17
12. Our organization uses market intelligence to create a competitive edge in the industry	127	106	.62	.78	3.13	3.36	1.10	1.12
13. I often feel as if I am swamped by useless information (R)	126	106	.74	.81	3.13	2.81	1.10	1.10

There were two negative statements in this battery. These are indicated by (R). Data reliability is a factor that needs to be taken into account. In all instances and for both samples, the Cronbach's Alpha coefficient was acceptable, ranging around 70% or higher. However, the removal of the negative statements would increase the reliability considerably, indicating that the negative statements have the possible effect of introducing some confusion and instability in the measures.

The data from the two samples was also compared on a top-box ('strongly agree' and 'agree') basis (see figure 36). In this instance, the objective was to identify possible differences between the two samples more sharply than means might. Because of the length of the statement, only their number, obtained from table 43, identifies statements in the following charts.

Figure 36 MKIS top-box comparisons - South Africa and international



There are remarkable similarities between the responses of the South African and international samples on the MKIS statements. The statements that were generally agreed with most are:

- IT is contributing towards better marketing decisions.
- Marketing information often has to be processed before decisions can be made. In other words, information is not available in the right format, ready for use. This corresponds with the results shown in figure 28, indicating a high need for flexible information.
- IT makes it easy to get access to the right market intelligence.

On the other hand, the statements that were disagreed with most had to do with:

- That there is a single point of contact for all market intelligence.
- That information is easily available in the desired format.
- That the needs of marketing decision-makers are taken into account when designing MKIS.
- That IT understands marketing information needs.
- That information is available timely.
- That market intelligence is received proactively without being requested.

What is disturbing from this point of view is that:

- Two of the aspects playing a role in information quality, namely format and timeliness (statements 5 and 9, see section 2.8) seem to be neglected.
- The theme of a 'rift' between IT and marketing decision-makers is continued, since marketing decision-makers feel that IT does not understand their needs, and that their requirements are not taken into account when designing MKIS (statements 6 and 8, also see section 7.2).

Table 44 contains the means across management level, organization size and main business type for ratings of MKIS statements.

Table 44 MKIS by management level, organization size and business (SA)

		Single point of contact	Marketing – IT influence	IT and decisions	Accuracy of MI	Format required for MI	User needs addressed	Ease of access to MI	IT understands mktng. needs	Timeliness of MI	Need to process MI	Proactive dissemination	Competitive edge with MI	Info. overload	Overall quality
Executive	Mean	2.41	3.52	3.93	3.48	2.72	2.76	3.53	2.76	2.89	2.4	2.55	3.23	2.74	2.54
	N	75	75	75	75	75	74	75	74	75	75	75	75	74	76
	Std. Dev.	1.2	1.13	0.95	0.79	1.07	1.06	0.88	1.14	0.94	0.9	1.07	1.12	1.05	0.9
Middle mgt.	Mean	2.52	2.93	3.31	3.31	2.83	2.69	3.07	2.62	2.86	2.83	2.41	2.97	2.86	2.55
	N	29	29	29	29	29	29	29	29	29	29	29	29	29	29
	Std. Dev.	1.27	1.07	1.34	0.89	1.1	1.07	1	1.05	1.06	1.28	1.05	1.05	1.16	0.74
Small	Mean	2.77	3.85	3.9	3.46	2.74	2.79	3.33	2.87	2.97	2.31	2.38	3	2.72	2.58
	N	39	39	39	39	39	39	39	39	39	39	39	39	39	40
	Std. Dev.	1.2	0.93	0.79	0.82	0.99	1.06	0.87	1.2	0.99	0.95	0.96	1.08	1.02	1.01
Medium	Mean	2.51	2.97	3.62	3.43	2.81	2.58	3.51	2.42	2.78	2.73	2.51	3.08	2.95	2.49
	N	37	37	37	37	37	36	37	36	37	37	37	37	37	37
	Std. Dev.	1.33	1.21	1.42	0.93	1.27	1.18	0.96	1.08	1.11	1.19	1.19	1.23	1.18	0.93
Large	Mean	2.09	3	3.73	3.53	2.84	2.78	3.27	2.67	2.84	2.4	2.69	3.31	2.96	2.62
	N	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	Std. Dev.	1.16	1.13	0.96	0.66	1.02	0.95	0.96	1.13	0.95	0.94	1.06	1.02	1.07	0.83
Services	Mean	2.17	3.29	3.89	3.51	2.51	2.85	3.29	2.57	2.74	2.46	2.66	3.29	2.94	2.63
	N	35	35	35	35	35	34	35	35	35	35	35	35	35	35
	Std. Dev.	1.15	1.2	0.83	0.78	1.12	1.1	1.02	1.09	1.07	0.89	1.14	1.07	1.14	0.94
Retail or wholesale	Mean	2.77	3.41	3.86	3.32	2.64	2.68	3.45	2.73	2.95	2.41	2.86	3.09	2.57	2.45
	N	22	22	22	22	22	22	22	22	22	22	22	22	21	22
	Std. Dev.	1.23	0.91	0.99	0.72	0.79	0.84	0.8	1.08	1	0.96	1.04	1.11	0.81	0.67
Other services	Mean	2.46	3.17	3.57	3.44	2.97	2.62	3.35	2.63	2.84	2.41	2.3	3.03	2.92	2.52
	N	63	63	63	63	63	63	63	62	63	63	63	63	63	64
	Std. Dev.	1.29	1.25	1.25	0.86	1.14	1.07	0.95	1.22	1	1.14	1.03	1.14	1.17	0.99
Total	Mean	2.43	3.25	3.72	3.44	2.78	2.7	3.35	2.63	2.83	2.43	2.51	3.12	2.87	2.54
	N	120	120	120	120	120	119	120	119	120	120	120	120	119	121
	Std. Dev.	1.25	1.18	1.1	0.81	1.09	1.04	0.94	1.15	1.02	1.03	1.08	1.11	1.1	0.92

Tables 45, 46 and 47 contain the ANOVA results by management level, organization size and business type.

Table 45 ANOVA for MKIS by management level (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Single point of contact	Between Groups	1.11	3	0.37	0.241	0.867
	Within Groups	182.5	119	1.534		
	Total	183.6	122			
Influence of marketing strategy on IT	Between Groups	14.18	3	4.728	3.618	0.015*
	Within Groups	155.4	119	1.307		
	Total	169.6	122			
IT influence on decision making	Between Groups	9.683	3	3.228	2.765	0.045*
	Within Groups	138.9	119	1.167		
	Total	148.6	122			
Accuracy of market intelligence	Between Groups	3.395	3	1.132	1.793	0.152
	Within Groups	75.10	119	0.631		
	Total	78.50	122			
Format required	Between Groups	2.133	3	0.711	0.6	0.616
	Within Groups	140.9	119	1.184		
	Total	143.0	122			
User needs are taken into account	Between Groups	4.619	3	1.54	1.373	0.254
	Within Groups	132.3	118	1.122		
	Total	136.9	121			
Easy to get access to MI	Between Groups	4.83	3	1.61	1.951	0.125
	Within Groups	98.21	119	0.825		
	Total	103.0	122			
IT understands marketing needs	Between Groups	7.863	3	2.621	2.071	0.108
	Within Groups	149.3	118	1.266		
	Total	157.2	121			
Information is available timely	Between Groups	1.328	3	0.443	0.427	0.734
	Within Groups	123.3	119	1.036		
	Total	124.6	122			
Need to process market intelligence	Between Groups	4.957	3	1.652	1.589	0.196
	Within Groups	123.7	119	1.04		
	Total	128.7	122			
Proactive distribution of MI	Between Groups	4.154	3	1.385	1.173	0.323
	Within Groups	140.4	119	1.181		
	Total	144.6	122			
Creating a competitive edge with MI	Between Groups	2.149	3	0.716	0.58	0.629
	Within Groups	147.0	119	1.235		
	Total	149.1	122			
Swamped by useless information	Between Groups	7.529	3	2.51	2.091	0.105
	Within Groups	141.6	118	1.2		
	Total	149.1	121			
Overall quality of MI	Between Groups	1.737	3	0.579	0.73	0.536
	Within Groups	95.19	120	0.793		
	Total	96.92	123			

Table 46 ANOVA for MKIS by organization size (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Single point of contact	Between Groups	9.974	2	4.987	3.31	0.04
	Within Groups	177.8	118	1.507		
	Total	187.7	120			
Influence of marketing strategy on IT	Between Groups	19.48	2	9.744	8.094	0.001*
	Within Groups	142.0	118	1.204		
	Total	161.5	120			
IT influence on decision making	Between Groups	1.47	2	0.735	0.632	0.533
	Within Groups	137.0	118	1.162		
	Total	138.5	120			
Accuracy of market intelligence	Between Groups	0.225	2	0.112	0.175	0.84
	Within Groups	75.97	118	0.644		
	Total	76.19	120			
Format required	Between Groups	0.217	2	0.108	0.091	0.913
	Within Groups	141.0	118	1.195		
	Total	141.2	120			
User needs are taken into account	Between Groups	1.038	2	0.519	0.464	0.63
	Within Groups	130.8	117	1.119		
	Total	131.9	119			
Easy to get access to MI	Between Groups	1.29	2	0.645	0.741	0.479
	Within Groups	102.7	118	0.87		
	Total	104	120			
IT understands marketing needs	Between Groups	3.883	2	1.941	1.503	0.227
	Within Groups	151.1	117	1.292		
	Total	154.9	119			
Information is available timely	Between Groups	0.729	2	0.364	0.355	0.702
	Within Groups	121.1	118	1.027		
	Total	121.8	120			
Need to process market intelligence	Between Groups	3.744	2	1.872	1.776	0.174
	Within Groups	124.4	118	1.054		
	Total	128.1	120			
Proactive distribution of MI	Between Groups	1.964	2	0.982	0.851	0.429
	Within Groups	136.1	118	1.154		
	Total	138.0	120			
Creating a competitive edge with MI	Between Groups	2.21	2	1.105	0.903	0.408
	Within Groups	144.4	118	1.224		
	Total	146.6	120			
Swamped by useless information	Between Groups	1.44	2	0.72	0.608	0.546
	Within Groups	139.7	118	1.184		
	Total	141.1	120			
Overall quality of MI	Between Groups	0.379	2	0.19	0.222	0.801
	Within Groups	101.5	119	0.854		
	Total	101.9	121			

Table 47 ANOVA for MKIS by main business type (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Single point of contact	Between Groups	4.981	2	2.49	1.614	0.203
	Within Groups	180.4	117	1.543		
	Total	185.4	119			
Influence of marketing strategy	Between Groups	0.96	2	0.48	0.343	0.71
	Within Groups	163.5	117	1.398		
	Total	164.5	119			
Information technology and decision making	Between Groups	2.804	2	1.402	1.159	0.317
	Within Groups	141.5	117	1.21		
	Total	144.3	119			
Accuracy of market intelligence	Between Groups	0.521	2	0.26	0.395	0.675
	Within Groups	77.07	117	0.659		
	Total	77.59	119			
Format required	Between Groups	5.155	2	2.577	2.221	0.113
	Within Groups	135.7	117	1.16		
	Total	140.9	119			
User needs are taken into account	Between Groups	1.215	2	0.607	0.56	0.573
	Within Groups	125.8	116	1.085		
	Total	127.1	118			
Easy to get access to MI	Between Groups	0.385	2	0.193	0.215	0.807
	Within Groups	104.9	117	0.897		
	Total	105.3	119			
IT understands marketing information needs	Between Groups	0.328	2	0.164	0.123	0.885
	Within Groups	155.4	116	1.34		
	Total	155.7	118			
Information is available to me by the time I need it	Between Groups	0.614	2	0.307	0.294	0.746
	Within Groups	122.0	117	1.043		
	Total	122.6	119			
Need to process market intelligence	Between Groups	0.051	2	0.026	0.024	0.977
	Within Groups	127.2	117	1.088		
	Total	127.3	119			
Proactive distribution of market intelligence	Between Groups	6.245	2	3.123	2.773	0.067
	Within Groups	131.7	117	1.126		
	Total	137.9	119			
Creating a competitive edge with MI	Between Groups	1.469	2	0.735	0.593	0.554
	Within Groups	144.8	117	1.238		
	Total	146.3	119			
Swamped by useless information	Between Groups	2.217	2	1.108	0.908	0.406
	Within Groups	141.6	116	1.221		
	Total	143.8	118			
Overall quality of MI	Between Groups	0.472	2	0.236	0.274	0.761
	Within Groups	101.61	118	0.861		
	Total	102.083	120			

It is particularly interesting that there are no significant differences between the business types for any of the MKIS statements or for the overall quality rating of market intelligence. However, there are some other significant differences:

- Top management (3.52, see table 45) is generally more positive than middle managers (2.93) that marketing strategy is influencing IT strategy. This may be due to the fact that the perception at the top of the organization is often limited to the planning, and often does not identify with the frustrations lower down in the organization.
- The same goes for statement 3 (see table 45), where top management (3.93) is more positive than middle managers (3.31) that IT is positively influencing marketing decision-making.
- In terms of size (see table 46), small organizations (3.85) are more convinced than medium and large organizations (2.97 and 3.00 respectively) that marketing strategy is influencing IT strategy. This probably is due to the more 'direct' interaction and influencing that management in small organizations are able to exert.

The same analysis was conducted for the international sample. Table 48 contains the summary of the means for the international sample. Tables 49, 50 and 51 contain the ANOVA results by management level, organization size and business type.

Table 48 MKIS by management level, organization size and main business - international sample

		Single point of contact	Marketing - IT influence	IT and decisions	Accuracy of MI	Format required for MI	User needs addressed	Ease of access to MI	IT understands mktng. needs	Timeliness of MI	Need to process MI	Proactive dissemination	Competitive edge with MI	Info. overload	Overall quality
Executive	Mean	2.91	3.54	4.06	3.43	2.74	3.11	3.91	3.09	2.71	3.74	2.69	3.49	3.46	2.65
	N	35	35	35	35	35	35	35	35	35	35	35	35	35	34
	Std. Dev.	1.34	1.09	1.03	0.92	1.15	1.11	0.85	1.04	0.99	0.82	1.08	1.09	1.07	1.12
Middle mgt.	Mean	2.8	3.2	4.11	3.48	2.73	2.74	3.57	2.35	2.65	3.78	2.57	3.26	3.15	2.67
	N	46	46	46	46	45	46	46	46	46	46	46	46	46	46
	Std. Dev.	1.33	0.96	0.71	0.89	0.86	0.83	0.89	0.82	0.87	0.73	1.19	1.02	0.92	0.97
Small	Mean	3.09	3.68	4.18	3.36	2.76	3.27	3.64	3.23	2.95	3.59	2.82	3.77	3.55	2.86
	N	22	22	22	22	21	22	22	22	22	22	22	22	22	21
	Std. Dev.	1.41	0.95	1.01	1.14	1.09	0.94	0.9	0.92	1.09	0.85	1.1	0.97	1.06	1.11
Medium	Mean	2.83	3.21	4.04	3.38	2.54	2.88	3.67	2.42	2.88	3.67	2.63	2.96	3.04	2.54
	N	24	24	24	24	24	24	24	24	24	24	24	24	24	24
	Std. Dev.	1.2	1.14	1.04	1.06	1.14	1.26	1.13	1.21	0.99	0.82	1.1	1.3	0.95	1.22
Large	Mean	2.64	3.18	4.04	3.56	2.71	2.58	3.58	2.31	2.56	3.87	2.53	3.29	3.16	2.64
	N	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	Std. Dev.	1.32	1.03	0.9	0.69	1.06	1.01	0.99	0.97	0.87	0.76	1.22	1.04	1.15	1
Services	Mean	2.79	3.4	4.17	3.52	2.6	2.88	3.5	2.43	2.67	3.69	2.64	3.6	3.17	2.88
	N	42	42	42	42	42	42	42	42	42	42	42	42	42	42
	Std. Dev.	1.3	1.15	0.96	0.97	1.06	0.94	0.89	1.09	0.85	0.98	1.21	1.17	1.17	1.11
Retail or wholesale	Mean	2.75	3.5	4	3.25	2.75	2.75	4	3.5	4	3.5	2.5	3	2.75	2.5
	N	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	Std. Dev.	0.5	0.58	0.82	0.5	0.96	0.96	0.82	1.29	0	0.58	0.58	1.15	0.5	0.58
Manufacturing and construction	Mean	2.8	3.2	4.28	3.48	2.84	2.72	3.76	2.48	2.64	3.88	2.8	3.28	3.12	2.52
	N	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	Std. Dev.	1.26	0.96	0.74	0.92	1.07	1.14	1.05	0.92	1.11	0.78	1.19	1.02	1.13	0.96
Other	Mean	2.63	3.34	3.8	3.43	2.65	2.94	3.66	2.86	2.69	3.77	2.43	3.17	3.31	2.59
	N	35	35	35	35	34	35	35	35	35	35	35	35	35	34
	Std. Dev.	1.48	1.16	1.11	0.85	1.07	1.14	1.11	1.09	0.9	0.73	1.17	1.12	1.05	1.13
Total	Mean	2.74	3.34	4.07	3.47	2.68	2.86	3.63	2.62	2.72	3.75	2.6	3.36	3.19	2.69
	N	106	106	106	106	105	106	106	106	106	106	106	106	106	105
	Std. Dev.	1.32	1.09	0.97	0.9	1.05	1.05	1	1.07	0.94	0.84	1.17	1.12	1.1	1.07

Table 49 ANOVA for MKIS by management level (international)

		Sum of Squares	df	Mean Square	F	Sig.
Single point of contact	Between Groups	4.862	2	2.431	1.409	0.249
	Within Groups	177.7	103	1.726		
	Total	182.6	105			
Influence of marketing strategy on IT	Between Groups	2.409	2	1.204	1.022	0.363
	Within Groups	121.3	103	1.178		
	Total	123.7	105			
IT influence on decision making	Between Groups	0.195	2	0.098	0.102	0.903
	Within Groups	98.34	103	0.955		
	Total	98.53	105			
Accuracy of market intelligence	Between Groups	0.125	2	0.063	0.077	0.926
	Within Groups	84.29	103	0.818		
	Total	84.41	105			
Format required	Between Groups	1.265	2	0.632	0.567	0.569
	Within Groups	113.7	102	1.115		
	Total	114.9	104			
User needs are taken into account	Between Groups	3.425	2	1.712	1.583	0.21
	Within Groups	111.4	103	1.082		
	Total	114.8	105			
Easy to get access to MI	Between Groups	4.844	2	2.422	2.499	0.087
	Within Groups	99.80	103	0.969		
	Total	104.6	105			
IT understands marketing needs	Between Groups	11.48	2	5.744	5.407	0.006*
	Within Groups	109.4	103	1.062		
	Total	120.9	105			
Information is available timely	Between Groups	0.572	2	0.286	0.317	0.729
	Within Groups	92.93	103	0.902		
	Total	93.50	105			
Need to process market intelligence	Between Groups	0.071	2	0.035	0.05	0.952
	Within Groups	73.55	103	0.714		
	Total	73.62	105			
Proactive distribution of MI	Between Groups	0.351	2	0.176	0.127	0.881
	Within Groups	143.0	103	1.388		
	Total	143.3	105			
Creating a competitive edge with MI	Between Groups	1.005	2	0.502	0.394	0.675
	Within Groups	131.3	103	1.275		
	Total	132.3	105			
Swamped by useless information	Between Groups	4.966	2	2.483	2.109	0.127
	Within Groups	121.2	103	1.177		
	Total	126.2	105			
Overall quality of MI	Between Groups	0.195	2	0.098	0.084	0.919
	Within Groups	118.4	102	1.161		
	Total	118.6	104			

Table 50 ANOVA for MKIS by organization size (international)

		Sum of Squares	df	Mean Square	F	Sig.
Single point of contact	Between Groups	2.977	2	1.488	0.865	0.425
	Within Groups	151.4	88	1.721		
	Total	154.4	90			
Influence of marketing strategy on IT	Between Groups	4.076	2	2.038	1.882	0.158
	Within Groups	95.30	88	1.083		
	Total	99.38	90			
IT influence on decision making	Between Groups	0.319	2	0.16	0.171	0.843
	Within Groups	82.14	88	0.933		
	Total	82.46	90			
Accuracy of market intelligence	Between Groups	0.788	2	0.394	0.47	0.627
	Within Groups	73.82	88	0.839		
	Total	74.61	90			
Format required	Between Groups	0.643	2	0.322	0.272	0.763
	Within Groups	103.0	87	1.184		
	Total	103.6	89			
User needs are taken into account	Between Groups	7.22	2	3.61	3.178	0.046*
	Within Groups	99.96	88	1.136		
	Total	107.1	90			
Easy to get access to MI	Between Groups	0.136	2	0.068	0.067	0.935
	Within Groups	89.40	88	1.016		
	Total	89.53	90			
IT understands marketing needs	Between Groups	13.07	2	6.538	6.164	0.003*
	Within Groups	93.34	88	1.061		
	Total	106.4	90			
Information is available timely	Between Groups	2.98	2	1.49	1.625	0.203
	Within Groups	80.69	88	0.917		
	Total	83.67	90			
Need to process market intelligence	Between Groups	1.335	2	0.668	1.052	0.354
	Within Groups	55.85	88	0.635		
	Total	57.18	90			
Proactive distribution of MI	Between Groups	1.199	2	0.599	0.447	0.641
	Within Groups	118.0	88	1.342		
	Total	119.2	90			
Creating a competitive edge with MI	Between Groups	7.692	2	3.846	3.191	0.046*
	Within Groups	106.0	88	1.205		
	Total	113.7	90			
Swamped by useless information	Between Groups	3.28	2	1.64	1.411	0.249
	Within Groups	102.3	88	1.163		
	Total	105.6	90			
Overall quality of MI	Between groups	1.159	2	0.58	0.49	0.614
	Within groups	102.8	87	1.182		
	Total	104	89			

Table 51 ANOVA for MKIS by business type (international)

		Sum of Squares	df	Mean Square	F	Sig.
Single point of contact	Between Groups	0.611	3	0.204	0.114	0.952
	Within Groups	181.9	102	1.784		
	Total	182.6	105			
Influence of marketing strategy	Between Groups	0.769	3	0.256	0.213	0.888
	Within Groups	123.0	102	1.206		
	Total	123.7	105			
Information technology and decision making	Between Groups	4.064	3	1.355	1.463	0.229
	Within Groups	94.47	102	0.926		
	Total	98.53	105			
Accuracy of market intelligence	Between Groups	0.377	3	0.126	0.153	0.928
	Within Groups	84.03	102	0.824		
	Total	84.41	105			
Format required	Between Groups	0.997	3	0.332	0.294	0.829
	Within Groups	113.9	101	1.129		
	Total	114.9	104			
User needs are taken into account	Between Groups	0.797	3	0.266	0.237	0.87
	Within Groups	114.0	102	1.118		
	Total	114.8	105			
Easy to get access to MI	Between Groups	1.705	3	0.568	0.563	0.641
	Within Groups	102.9	102	1.009		
	Total	104.6	105			
IT understands marketing information needs	Between Groups	7.094	3	2.365	2.119	0.102
	Within Groups	113.8	102	1.116		
	Total	120.9	105			
Information is available to me by the time I need it	Between Groups	6.873	3	2.291	2.697	0.05*
	Within Groups	86.63	102	0.849		
	Total	93.50	105			
Need to process market intelligence	Between Groups	0.835	3	0.278	0.39	0.76
	Within Groups	72.78	102	0.714		
	Total	73.62	105			
Proactive distribution of market intelligence	Between Groups	2.144	3	0.715	0.516	0.672
	Within Groups	141.2	102	1.384		
	Total	143.3	105			
Creating a competitive edge with MI	Between Groups	4.247	3	1.416	1.127	0.342
	Within Groups	128.1	102	1.256		
	Total	132.3	105			
Swamped by useless information	Between Groups	1.46	3	0.487	0.398	0.755
	Within Groups	124.7	102	1.223		
	Total	126.2	105			
Overall quality of MI	Between Groups	2.749	3	0.916	0.799	0.498
	Within Groups	115.8	101	1.147		
	Total	118.6	104			

The following are conclusions for the international analysis:

- For the international sample, the main difference is the perception whether IT understands marketing needs. For management levels (see table 49), top managers are more positive than middle managers that IT understands their needs (3.09 versus 2.35). In small organizations (3.23) marketing decision-makers are more positive that IT understands their needs than in large (2.31) or medium (2.42) organizations (see table 50).
- Retailers in the international sample (see table 51) are more positive that they have access to information in a timely fashion (4.00 versus - for example - 2.67 for service organizations). However, this is from a very small base of only 4 responses.

In order to reduce the data for comparative purposes, a factor analysis (Principal Component Analysis) was conducted on both the MKIS questions and the market orientation questions. For a more complete discussion of the factor analysis technique, see chapter 6 (paragraph 6.7.3).

For this analysis the data from the South African sample was used. This was done because the primary focus of the study is on the analysis of South African service organizations. The negative statements 10 and 13 (which reduced the reliability of the scale) were eliminated. The main reasons for this action were:

- To eliminate all elements with the possibility of introducing instability in the data.
- To reduce the data from the outset by eliminating uncertainties.

The factor analysis results for the MKIS section follows in table 52. Only components with an Eigenvalue (or latent root) of more than 1.00 were used. As a cut-off point to determine whether a variable should be allocated to a factor or not, a factor loading of 0.5 was required. See chapter 6 (paragraph 6.7.3) for a more detailed discussion of the rationale behind these criteria. Only the variables

that have a factor loading of 0.5 or more (in other words that contribute to explaining a factor or component) are indicated in the appropriate column.

Table 52 Factor analysis for MKIS questions - South African sample

STATEMENTS	FACTOR 1	FACTOR 2	FACTOR 3
1. I have a single point of contact in the organization for all the market intelligence I require	-	-	0.747
2. Our marketing strategy influences our organization's IT strategy	-	-	0.816
3. IT assists me in making better marketing decisions	-	0.871	-
4. Marketing information I receive for decision making is generally accurate	-	0.653	-
5. It is easy for me to obtain market intelligence in the format I require	0.798	-	-
6. As a user of market intelligence my requirements are always taken into account when marketing information systems are designed	0.610	-	-
7. IT makes it easy to get access to the right market intelligence	-	0.606	-
8. In our organization, the IT department really understand the information needs of marketing	0.691	-	-
9. Information is usually available to me by the time I need it	0.688	-	-
11. I routinely receive market intelligence relevant to my responsibilities without asking for it	0.709	-	-
12. Our organization uses market intelligence to create a competitive edge in the industry	-	0.651	-

Three factors or components were identified in this analysis (see table 52). Together, these factors explain approximately 59% of variation in the data. Hair *et al* (1995:378) suggest that 60% (or in some cases even less) is an acceptable range in the social sciences. The factor analysis results were therefore also acceptable in terms of the variance explained.

The three factors identified by the first analysis are:

- Factor 1: 'Understanding information requirements'. This factor is characterized by issues such as getting information in timely fashion (possibly even before asking for it), getting required information in the required format and the extent to which information requirements are understood by IT.

- Factor 2: 'Decision support quality'. The characteristics of this factor are issues that have to do with the extent to which IT helps or hinders the marketing decision making process, the quality of information delivered (accuracy) and whether market intelligence is used to establish a competitive edge.
- Factor 3: 'Marketing focus'. This factor has to do mostly with the position and dominance of marketing in the organization. Only two variables identify this factor, namely the existence (or not) of a single point of contact for marketing information (possibly indicative of a centralized market intelligence or marketing information division) and the extent to which marketing strategy drives IT strategy.

Hair *et al* (1995:379) also suggest that, where a variable has a particularly high comparative loading, it may be selected as a 'representative' of the factor for analytical purposes. In the case of the MKIS factor analysis, the following statements had high factor loadings and were selected as representative statements:

- Factor 1: 'Understanding information requirements' – Statement 5: 'It is easy for me to obtain market intelligence in the format I require'.
- Factor 2: 'Decision support quality' – Statement 3: 'IT assists me in making better marketing decisions'.
- Factor 3: 'Marketing focus' – Statement 2: 'Our marketing strategy influences our organization's IT strategy'.

These three representative statements will be used for further analysis and comparisons in chapter 8, section 8.4).

7.3.13 Market orientation (MOR)

Question 10 measures MOR as a battery of 10 statements. Respondents could answer in a range from 'Strongly disagree' (1) to 'Strongly agree' (5).

These questions were also asked of the international respondents (see question 2, Appendix C). The results of this question for both samples are provided in table 53, which contrasts the South African and international samples. Again it appears that the negative statement (statement number 3) introduced some instability into the item scale, since its elimination would improve the reliability of the battery. Figure 37 is a top-box comparison of South African and international samples.

Figure 37 Market orientation top-box comparison for South African and international samples

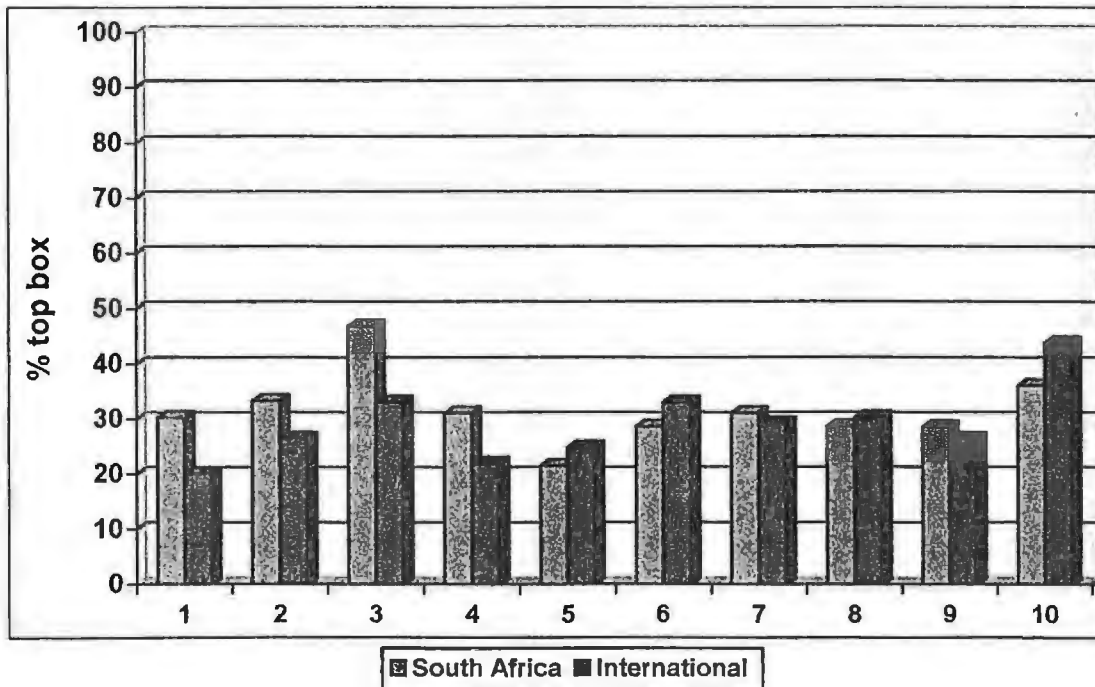


Table 53 MOR statements - South African and international samples

	n (SA)	n (INT)	SA α if deleted ($\alpha = 0.75$)	Int. α if deleted ($\alpha = 0.82$)	Mean (SA)	Mean (INT)	Std Dev (SA)	Std Dev (INT)
1. In this organization, we meet with customers at least once a year to find out what products or services they would need in future	126	105	0.73	0.79	3.55	3.83	1.42	1.26
2. In this organization, we do a lot of in-house marketing research	126	106	0.71	0.79	3.17	3.33	1.18	1.20
3. We are slow to detect changes in our customers' product preferences (R)	126	106	0.84	0.87	2.80	2.93	1.16	1.05
4. We survey end users at least once a year to assess the quality of our products and services	126	105	0.71	0.80	3.37	3.63	1.26	1.26
5. We periodically review the likely effect of changes in our environment (e.g. regulation) on customers	126	105	0.71	0.79	3.54	3.39	0.97	1.09
6. We have interdepartmental meetings at least once a quarter to discuss market trends and developments	126	106	0.69	0.78	3.38	3.23	1.19	1.27
7. Marketing personnel in our organization spend time discussing customers' future needs with other functional divisions	126	106	0.69	0.78	3.19	3.20	1.09	1.13
8. Several departments get together periodically to plan a response to changes taking place in our business environment	126	106	0.68	0.78	3.26	3.31	1.15	1.26
9. If a major competitor were to launch an intensive campaign targeted at our customers, we would implement a response immediately	123	106	0.70	0.79	3.37	3.31	1.30	1.25
10. The activities of the different divisions in this organization are well coordinated	125	105	0.70	0.80	2.98	2.76	1.08	1.14

As can be seen from figure 37 and table 53, the responses to the market orientation battery seemed to follow the same basic patterns in both samples. However, what was interesting in this case is that few clearly positive or negative statements were identified. Generally, the South African sample seemed to be more positive on the first four statements. Therefore, they agreed more that:

- They meet with customers annually to determine their future needs.
- They do a lot of in-house marketing research.
- On the negative side and in a sense contradictory to the above statements, they are slow to detect changes in customer preferences. This may be indicative of the fact that information flow is hampered by organization size and management layers.
- Quality of products and services are surveyed at least annually.

The international sample agreed substantially more with the statement that the activities of various departments in the organization are well coordinated.

Table 54 is a comparison for the South African sample across management level, organization size and main business type.

Table 54 MOR means by management level, organization size and main business type (South African sample)

		Meet with customers annually	Lot of marketing research	Slow to detect changes	Survey end users annually	Review environmental changes	Interdepartmental meetings	Discuss customers' future needs	Joint planning	Response to competitors	Activities well co-ordinated
Executive	Mean	3.7	3.18	3.35	3.39	3.68	3.45	3.28	3.35	3.7	3.16
	N	74	74	74	74	74	74	74	74	73	73
	Std. Dev.	1.37	1.22	1.19	1.24	0.92	1.2	1.08	1.09	1.19	1
Middle mgt.	Mean	3.34	2.9	2.93	3.52	3.34	3.38	2.97	3.24	2.86	2.76
	N	29	29	29	29	29	29	29	29	28	29
	Std. Dev.	1.45	1.14	1.1	1.27	1.01	1.08	0.98	1.15	1.3	1.21
Small	Mean	3.79	3.15	3.51	3.36	3.49	3.23	3.28	3.13	3.62	3.18
	N	39	39	39	39	39	39	39	39	37	38
	Std. Dev.	1.42	1.25	1.25	1.31	1.07	1.22	1.02	1.13	1.14	0.93
Medium	Mean	3.56	3.11	3.28	3.31	3.53	3.47	3.03	3.17	3.56	2.97
	N	36	36	36	36	36	36	36	36	36	36
	Std. Dev.	1.54	1.28	1.11	1.39	0.97	1.18	1.21	1.3	1.46	1.16
Large	Mean	3.36	3.24	2.87	3.47	3.56	3.42	3.2	3.4	3.05	2.87
	N	45	45	45	45	45	45	45	45	44	45
	Std. Dev.	1.32	1	1.06	1.16	0.92	1.2	1.08	1.07	1.24	1.14
Services	Mean	3.43	3.43	2.89	3.66	3.49	3.23	3.26	3.34	3.03	2.88
	N	35	35	35	35	35	35	35	35	32	34
	Std. Dev.	1.29	1.07	1.08	1.06	1.01	1.17	0.98	1.08	1.28	1.2
Retail and wholesale	Mean	3.45	3.36	3.64	3.36	3.59	3.68	3.55	3.5	3.64	3.32
	N	22	22	22	22	22	22	22	22	22	22
	Std. Dev.	1.63	1.36	1.22	1.47	0.91	1.17	1.01	1.19	1.36	1.04
Other	Mean	3.54	2.92	3.14	3.22	3.51	3.29	3.03	3.05	3.46	2.86
	N	63	63	63	63	63	63	63	63	63	63
	Std. Dev.	1.45	1.15	1.13	1.3	0.97	1.18	1.14	1.18	1.28	1.01
Total	Mean	3.49	3.15	3.16	3.37	3.52	3.34	3.19	3.22	3.38	2.95
	N	120	120	120	120	120	120	120	120	117	119
	Std. Dev.	1.43	1.19	1.15	1.27	0.96	1.18	1.08	1.16	1.3	1.08

The means for MOR for the South African sample are compared in tables 55 to 57, again by management level, organization size and business type.

Table 55 ANOVA for MOR statements by management level (SA)

		Sum of Squares	Df	Mean Square	F	Sig.
Meet with customers once a year	Between Groups	5.227	3	1.742	0.875	0.456
	Within Groups	235.0	118	1.992		
	Total	240.2	121			
Lot of in-house marketing research	Between Groups	3.882	3	1.294	0.957	0.415
	Within Groups	159.4	118	1.351		
	Total	163.3	121			
Slow detect changes in customer preference	Between Groups	5.028	3	1.676	1.287	0.282
	Within Groups	153.6	118	1.302		
	Total	158.6	121			
Survey end users at least once a year	Between Groups	3.734	3	1.245	0.786	0.504
	Within Groups	186.9	118	1.584		
	Total	190.6	121			
Review effect of environmental changes	Between Groups	3.919	3	1.306	1.421	0.24
	Within Groups	108.4	118	0.919		
	Total	112.3	121			
Interdepartmental discussions - trends	Between Groups	1.271	3	0.424	0.298	0.827
	Within Groups	167.6	118	1.421		
	Total	168.8	121			
Discuss customers future - other divisions	Between Groups	2.47	3	0.823	0.689	0.56
	Within Groups	140.9	118	1.194		
	Total	143.3	121			
Joint planning response to changes	Between Groups	2.556	3	0.852	0.64	0.591
	Within Groups	157.0	118	1.331		
	Total	159.6	121			
Response to competitive actions	Between Groups	25.89	3	8.631	5.844	0.001*
	Within Groups	169.8	115	1.477		
	Total	195.7	118			
Activities are well coordinated	Between Groups	7.042	3	2.347	2.051	0.11
	Within Groups	133.8	117	1.144		
	Total	140.9	120			

Table 56 ANOVA for MOR statements by organization size (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Meet with customers once a year	Between Groups	4.033	2	2.016	1.002	0.37
	Within Groups	235.5	117	2.013		
	Total	239.5	119			
Lot of in-house marketing research	Between Groups	0.381	2	0.191	0.139	0.871
	Within Groups	160.9	117	1.376		
	Total	161.3	119			
Slow detect changes in customer preference	Between Groups	9.034	2	4.517	3.473	0.034*
	Within Groups	152.1	117	1.301		
	Total	161.2	119			
Survey end users at least once a year	Between Groups	0.553	2	0.277	0.169	0.845
	Within Groups	191.8	117	1.639		
	Total	192.3	119			
Review effect of environmental changes	Between Groups	0.098	2	0.049	0.05	0.951
	Within Groups	113.8	117	0.973		
	Total	113.9	119			
Interdepartmental discussions - trends	Between Groups	1.252	2	0.626	0.434	0.649
	Within Groups	168.8	117	1.443		
	Total	170.1	119			
Discuss customers future - other divisions	Between Groups	1.255	2	0.628	0.517	0.598
	Within Groups	142.0	117	1.214		
	Total	143.3	119			
Joint planning response to changes	Between Groups	1.833	2	0.916	0.678	0.51
	Within Groups	158.1	117	1.352		
	Total	159.9	119			
Response to competitive actions	Between Groups	8.192	2	4.096	2.49	0.087
	Within Groups	187.5	114	1.645		
	Total	195.6	116			
Activities are well coordinated	Between Groups	2.117	2	1.059	0.904	0.408
	Within Groups	135.8	116	1.171		
	Total	138	118			

Table 57 ANOVA for MOR statements by business type (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Meet with customers once a year	Between Groups	0.315	2	0.157	0.076	0.927
	Within Groups	241.6	117	2.066		
	Total	241.9	119			
Lot of in-house marketing research	Between Groups	7.034	2	3.517	2.568	0.081
	Within Groups	160.2	117	1.37		
	Total	167.3	119			
Slow detect changes in customer preference	Between Groups	7.644	2	3.822	2.974	0.055
	Within Groups	150.3	117	1.285		
	Total	157.9	119			
Survey end users at least once a year	Between Groups	4.259	2	2.13	1.326	0.269
	Within Groups	187.8	117	1.606		
	Total	192.1	119			
Review effect of environmental changes	Between Groups	0.16	2	0.08	0.085	0.919
	Within Groups	109.8	117	0.939		
	Total	109.9	119			
Interdepartmental discussions - trends	Between Groups	3.19	2	1.595	1.153	0.319
	Within Groups	161.8	117	1.383		
	Total	164.9	119			
Discuss customers future - other divisions	Between Groups	4.515	2	2.257	1.97	0.144
	Within Groups	134.0	117	1.146		
	Total	138.5	119			
Joint planning response to changes	Between Groups	4.124	2	2.062	1.544	0.218
	Within Groups	156.2	117	1.335		
	Total	160.3	119			
Response to competitive actions	Between Groups	5.743	2	2.871	1.707	0.186
	Within Groups	191.7	114	1.682		
	Total	197.4	116			
Activities are well coordinated	Between Groups	3.681	2	1.841	1.593	0.208
	Within Groups	134.0	116	1.155		
	Total	137.6	118			

Few significant differences were identified. The two main identified differences are:

- Top management is significantly more convinced than middle management that the organization is quick to respond to competitive actions (3.70 versus 2.86 - see table 55). This is interesting, since it either identifies a totally different mindset as to what a 'quick response' entails, or miscommunication of those responses.

- Another interesting finding (see table 56) is that large organizations (2.87) believe that they are slow to detect changes in customer preferences, compared to small (3.51) and medium organizations (3.28). Therefore, even though they adopt more technology and spend as much time and effort on information, it seemingly does not offer them a competitive edge. This compares with the results from table 53.

A similar analysis was once again conducted for the international sample. The results are presented in tables 58 to 61.

The significant differences for the international sample are as follows:

- For management level, the analysis included junior management, who is significantly less impressed with the coordination of the organization than top and middle management (see table 59).
- Small organizations are more positive that they do a lot of in-house marketing research, are quicker to detect changes in customer preferences, have more regular interdepartmental meetings and are better co-ordinated than medium and large organizations (see table 60). This should be no surprise, since Nel *et al* (1996:5) have pointed out that small organizations are more market oriented than large organizations.
- Service organizations, retailers and wholesalers and 'other' organizations are more prone to joint planning than manufacturing and construction organizations (see table 61). This is possibly due to the more functional structures still prevalent in the manufacturing and construction environment, and the high focus on operational efficiencies. However, it should be borne in mind that the sample for wholesalers and retailers was very small in this case.

Table 58 MOR means by management level, organization size and main business type - international sample

		Meet with customers annually	Lot of marketing research	Slow to detect changes	Survey and users annually	Review environmental changes	Interdepartmental meetings	Discuss customers future needs	Joint planning	Response to competitors	Activities well co-ordinated
Executive	Mean	3.89	3.54	2.94	3.49	3.29	3.49	3.34	3.31	3.46	2.97
	N	35	35	35	35	34	35	35	35	35	35
	Std. Dev.	1.18	1.04	1.08	1.2	1.06	1.2	1.14	1.18	1.22	0.98
Middle mgt.	Mean	3.67	3.17	3.26	3.64	3.33	3.04	3.11	3.17	3.15	2.91
	N	46	46	46	45	46	46	46	46	46	45
	Std. Dev.	1.3	1.14	1	1.25	0.9	1.25	1.1	1.35	1.17	1.12
Small	Mean	4.05	3.77	2.27	3.77	3.55	3.77	3.5	3.68	3.68	3.29
	N	22	22	22	22	22	22	22	22	22	21
	Std. Dev.	1.05	0.87	0.94	1.07	0.8	1.02	0.91	1.09	1.04	1.15
Medium	Mean	3.43	2.92	3.42	3.61	3.12	3.08	2.83	2.87	3.21	2.42
	N	23	24	24	23	24	24	24	24	24	24
	Std. Dev.	1.5	1.41	1.1	1.31	1.33	1.32	1.2	1.36	1.32	1.06
Large	Mean	3.91	3.11	3.31	3.67	3.47	2.93	3.22	3.31	3	2.6
	N	45	45	45	45	45	45	45	45	45	45
	Std. Dev.	1.2	1.09	0.95	1.3	1.04	1.29	1.15	1.24	1.31	1.12
Services	Mean	4.14	3.38	3.02	3.79	3.45	3.36	3.38	3.5	3.38	2.76
	N	42	42	42	42	42	42	42	42	42	42
	Std. Dev.	1.05	1.29	1.16	1.24	1.17	1.27	1.15	1.19	1.32	1.23
Retail and wholesale	Mean	4	3.5	3.25	3.75	3.5	3.75	4	4.25	3.5	2.75
	N	4	4	4	4	4	4	4	4	4	4
	Std. Dev.	0.82	0.58	0.96	1.26	0.58	1.26	0.82	0.5	1	1.26
Manufacturing & construction	Mean	3.44	2.92	3.08	3.71	3.24	2.84	2.72	2.76	3	2.42
	N	25	25	25	24	25	25	25	25	25	24
	Std. Dev.	1.29	1.22	1.04	1.2	1.01	1.31	1.21	1.3	1.26	0.97
Other	Mean	3.71	3.54	3.09	3.37	3.41	3.29	3.23	3.37	3.43	3
	N	34	35	35	35	34	35	35	35	35	35
	Std. Dev.	1.45	1.09	0.98	1.33	1.1	1.25	1	1.26	1.2	1.11
Total	Mean	3.83	3.33	3.07	3.63	3.39	3.23	3.2	3.31	3.31	2.76
	N	105	106	106	105	105	106	106	106	106	105
	Std. Dev.	1.26	1.2	1.05	1.26	1.09	1.27	1.13	1.26	1.25	1.14

Table 59 ANOVA for MOR statements by management level (international)

		Sum of Squares	Df	Mean Square	F	Sig.
Meet with customers once a year	Between Groups	2.304	2	1.152	0.723	0.488
	Within Groups	162.6	102	1.594		
	Total	164.9	104			
Lot of in-house marketing research	Between Groups	2.709	2	1.354	0.938	0.395
	Within Groups	148.7	103	1.444		
	Total	151.4	105			
Slow detect changes in customer preference	Between Groups	3.142	2	1.571	1.427	0.245
	Within Groups	113.3	103	1.101		
	Total	116.5	105			
Survey end users at least once a year	Between Groups	1.46	2	0.73	0.457	0.635
	Within Groups	163.0	102	1.599		
	Total	164.5	104			
Review effect of environmental changes	Between Groups	2.063	2	1.031	0.87	0.422
	Within Groups	120.9	102	1.186		
	Total	122.9	104			
Interdepartmental discussions - trends	Between Groups	3.91	2	1.955	1.208	0.303
	Within Groups	166.6	103	1.618		
	Total	170.5	105			
Discuss customers future - other divisions	Between Groups	1.137	2	0.569	0.438	0.646
	Within Groups	133.7	103	1.298		
	Total	134.8	105			
Joint planning response to changes	Between Groups	2.415	2	1.207	0.757	0.472
	Within Groups	164.3	103	1.595		
	Total	166.7	105			
Response to competitive actions	Between Groups	2.106	2	1.053	0.667	0.515
	Within Groups	162.6	103	1.579		
	Total	164.7	105			
Activities are well coordinated	Between Groups	10.43	2	5.216	4.269	0.017*
	Within Groups	124.6	102	1.222		
	Total	135.0	104			

Table 60 ANOVA for MOR statements by organization size (international)

		Sum of Squares	df	Mean Square	F	Sig.
Meet with customers once a year	Between Groups	4.904	2	2.452	1.566	0.215
	Within Groups	136.2	87	1.566		
	Total	141.1	89			
Lot of in-house marketing research	Between Groups	9.463	2	4.731	3.648	0.03*
	Within Groups	114.1	88	1.297		
	Total	123.6	90			
Slow detect changes in customer preference	Between Groups	19.45	2	9.728	9.972	0*
	Within Groups	85.84	88	0.975		
	Total	105.2	90			
Survey end users at least once a year	Between Groups	0.314	2	0.157	0.101	0.904
	Within Groups	135.3	87	1.556		
	Total	135.6	89			
Review effect of environmental changes	Between Groups	2.479	2	1.239	1.077	0.345
	Within Groups	101.2	88	1.151		
	Total	103.7	90			
Interdepartmental discussions - trends	Between Groups	10.69	2	5.345	3.497	0.035*
	Within Groups	134.4	88	1.528		
	Total	145.1	90			
Discuss customers future - other divisions	Between Groups	5.213	2	2.607	2.112	0.127
	Within Groups	108.6	88	1.234		
	Total	113.8	90			
Joint planning response to changes	Between Groups	7.529	2	3.765	2.453	0.092
	Within Groups	135.0	88	1.535		
	Total	142.5	90			
Response to competitive actions	Between Groups	6.873	2	3.437	2.18	0.119
	Within Groups	138.7	88	1.576		
	Total	145.6	90			
Activities are well coordinated	Between Groups	9.57	2	4.785	3.893	0.024*
	Within Groups	106.9	87	1.229		
	Total	116.4	89			

Table 61 ANOVA for MOR statements by main business type (international)

		Sum of Squares	df	Mean Square	F	Sig.
Meet with customers once a year	Between Groups	8.553	3	2.851	1.841	0.144
	Within Groups	156.3	101	1.548		
	Total	164.9	104			
Lot of in-house marketing research	Between Groups	6.013	3	2.004	1.406	0.245
	Within Groups	145.4	102	1.426		
	Total	151.4	105			
Slow detect changes in customer preference	Between Groups	0.229	3	0.076	0.067	0.977
	Within Groups	116.3	102	1.14		
	Total	116.5	105			
Survey end users at least once a year	Between Groups	3.563	3	1.188	0.745	0.528
	Within Groups	160.9	101	1.594		
	Total	164.5	104			
Review effect of environmental changes	Between Groups	0.79	3	0.263	0.218	0.884
	Within Groups	122.2	101	1.21		
	Total	122.9	104			
Interdepartmental discussions - trends	Between Groups	5.67	3	1.89	1.169	0.325
	Within Groups	164.8	102	1.617		
	Total	170.5	105			
Discuss customers future - other divisions	Between Groups	9.723	3	3.241	2.642	0.053
	Within Groups	125.1	102	1.227		
	Total	134.8	105			
Joint planning response to changes	Between Groups	12.74	3	4.248	2.814	0.043*
	Within Groups	153.9	102	1.51		
	Total	166.7	105			
Response to competitive actions	Between Groups	3.25	3	1.083	0.684	0.564
	Within Groups	161.4	102	1.583		
	Total	164.7	105			
Activities are well coordinated	Between Groups	4.845	3	1.615	1.253	0.295
	Within Groups	130.2	101	1.289		
	Total	135.0	104			

Table 62 contains the factor analysis results for the marketing orientation section for the South African sample. Again, the international sample was not used in the factor analysis, since the focus was on analyzing South African service organizations.

Table 62 Market orientation factor analysis - South African sample

STATEMENTS	FACTOR 1	FACTOR 2
1. In this organization, we meet with customers at least once a year to find out what products or services they would need in future	-	0.687
2. In this organization, we do a lot of in-house marketing research	-	0.620
4. We survey end users at least once a year to assess the quality of our products and services	-	0.863
5. We periodically review the likely effect of changes in our environment (e.g. regulation) on customers	0.531	-
6. We have interdepartmental meetings at least once a quarter to discuss market trends and developments	0.770	-
7. Marketing personnel in our organization spend time discussing customers' future needs with other functional divisions	0.758	-
8. Several departments get together periodically to plan a response to changes taking place in our business environment	0.834	-
9. If a major competitor were to launch an intensive campaign targeted at our customers, we would implement a response immediately	0.611	-
10. The activities of the different divisions in this organization are well coordinated	0.817	-

In this instance, one negative statement, (number 3) was removed. The identified factors explain approximately 58% of variation in the data. As explained in the previous paragraph, this is an acceptable range of variance explanation for factor analysis. Only two factors were extracted (see table 62). They are as follows:

- Factor 1: 'Responsiveness'. Aspects that reflect the extent to which the organization is responsive to the environment characterize this factor. This factor has the strongest relationship with the factors that reflect interdepartmental coordination.
- Factor 2: 'Information gathering and processing'. The main drivers of this factor are the extent to which the organization gather and process market intelligence. The variable that stands out in this regard is the extent to which end users are surveyed annually to determine product or service quality.

It was decided to select 'representative variables' from the factors. These are:

- Factor 1: 'Responsiveness' – Statement 10: 'The activities of the different divisions in this organization are well coordinated'.

- Factor 2: 'Information gathering and processing' – Statement 4: 'We survey end users at least once a year to assess the quality of our products and services'.

These representative statements will be used in comparisons in chapter 8 (see sections 8.6 and 8.7).

7.3.14 General suggestions for improving MKIS

In question 12, respondents had the opportunity to contribute suggestions to improve MKIS in their organizations. Relatively few respondents made use of the opportunity, and approximately 42 specific suggestions were received. These suggestions were categorized as follows:

- Improving the dissemination of market intelligence and co-ordination of divisions/ sections (11 suggestions).
- Specific MKIS technologies or processes to be instituted, such as MDSS, Intranet or electronic databases (7 suggestions).
- Improving the MKIS process, typically by spending more time, effort or simplifying the process. In line with this, there were suggestions that MKIS should be more user friendly, easy to use and deliver results more timely (15 suggestions).
- Improving the stature and/ or position if MKIS in the organization (4 suggestions).
- Finding or using better information sources (3 suggestions).
- Improving the marketing / IT relationship (2 suggestions).
- More management involvement in MKIS processes (2 suggestions).

Most of the suggestions were concerned with improving the processes around MKIS.

7.4 CONCLUSION

This chapter serves as a summary of the research results. Several problems and issues were identified, for example, the problems between IT and marketing in the application of information sources and some hints that MKIS may not be providing what decision-makers require. In brief, the most important findings were:

- Marketing decision-makers are lacking in the most important information types that they require, namely information on the market environment.
- There are few significant differences in the information requirements of marketing top and middle management.
- There is significant dissatisfaction among marketing decision-makers with the quality of market intelligence available to them.

These issues will be examined in the next chapter, containing research conclusions and recommendations and concludes the thesis.

CHAPTER 8

CONCLUSIONS AND RECOMMENDATIONS

8.1 INTRODUCTION

This chapter provides the research conclusions based on examination of the research results. In addition, it includes recommendations and suggestions for future research. One important aspect of the chapter is that all hypothesis testing was done at the 95% level of significance, since this seems to be regarded as the marginal limit of significance for scientific purposes (Statsoft 1999) and is also widely accepted in social and business research practice.

8.2 REVIEW OF RESEARCH OBJECTIVES

Since this chapter is the culmination of all stages of the research process, it is appropriate at this stage to once again review the research objectives. The primary research objective is to provide guidelines for developing a marketing information system model for South African service organizations. This will be addressed in section 8.3 of this chapter.

The secondary research objectives are:

- To determine the antecedents of MKIS in South African service organizations. This will be discussed in section 8.3.
- To determine the level of MKIS development in South African service organizations. This will be discussed (using international comparisons) in section 8.4.
- To determine the extent to which information technology (IT) plays a role in MKIS in South African service organizations. This will be addressed in section 8.5.
- To determine the link between MKIS and market orientation in South African organizations. This will be discussed in section 8.6.

- To compare the usage of MKIS in South African service organizations with the usage of MKIS in international organizations. This takes place especially in section 8.4.
- To determine further possible areas of study in this dynamic field. This will be discussed in section 8.9, after conclusions and recommendations have been discussed.

The primary research objective, namely the formulation of a MKIS model, will be addressed first. The secondary objectives will follow. That will lead into research conclusions and recommendations.

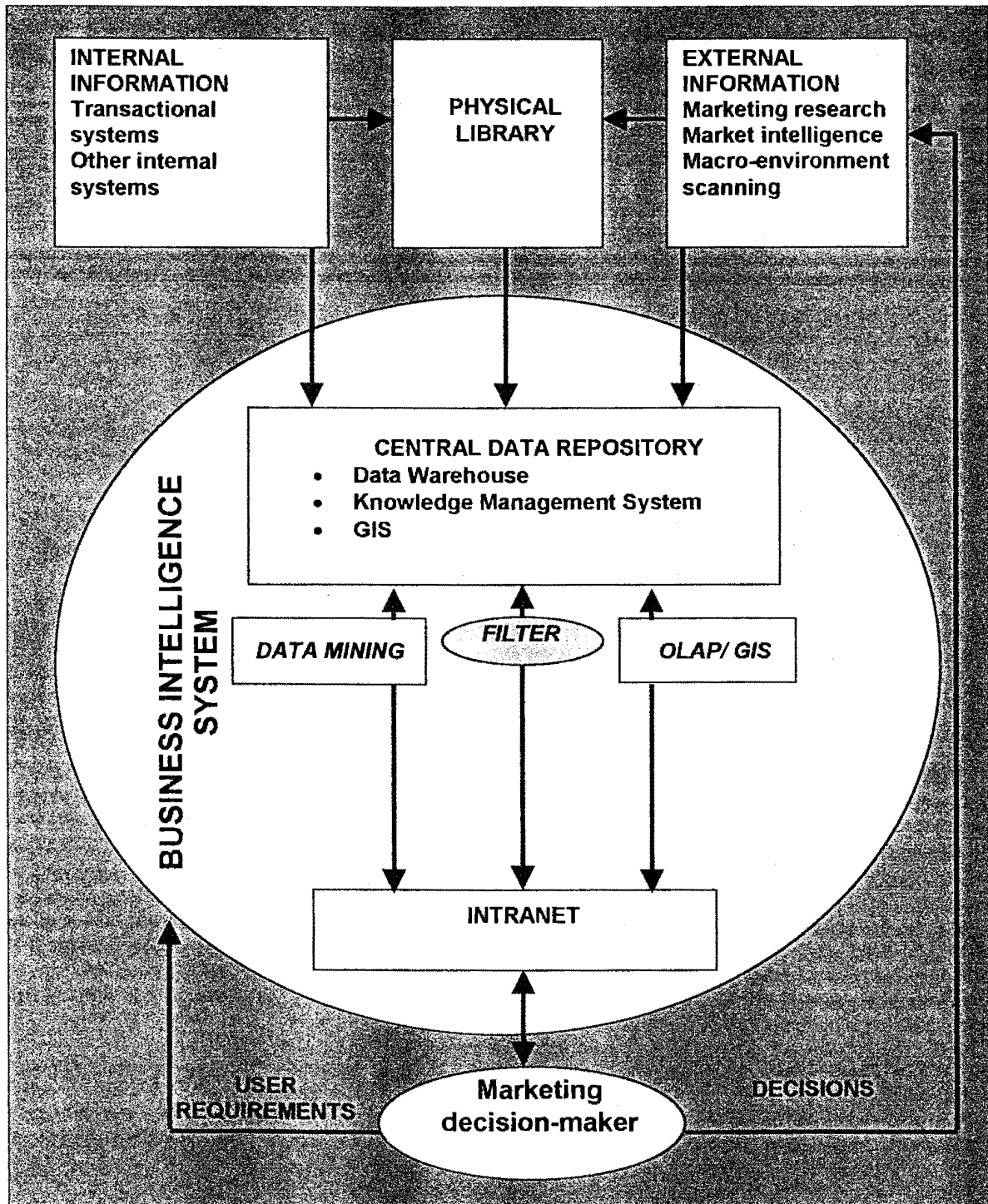
8.3 FORMULATION A MKIS MODEL FOR SOUTH AFRICAN SERVICE ORGANIZATIONS

The theoretical development of a model culminated in a model depicted in chapter 5 as an integrated MKIS model (see section 5.6). That model is depicted again in figure 38, since it will form the hub of the discussion around this model.

There are three areas of importance in examining the model:

- The type of information required. This is represented by the sources of information in the model, namely marketing research, market intelligence, macro-environmental scanning and internal data sources (mainly transactional data).
- The type of technology used to retrieve information. In the model the physical library represents this, as well as the Business Intelligence System, which incorporates other technologies such as Data Warehousing, GIS, Knowledge Management Systems, MDSS, OLAP, data mining and the Intranet.
- The format of information also forms part of the model, albeit indirectly rather than directly. To an extent, the technologies used determine the format of information required. For example, MDSS would generate 'what if' answers, while pure data mining may deliver anything from marketing decision models to status reports.

Figure 38 An integrated MKIS model for service organizations



Hypothesis will be set for each of these focus areas, discussed and tested in order to reach a conclusion. The hypotheses will be null hypotheses. This means that the objective will be to test if the hypothesis should be accepted or rejected. If accepted, the statement can be accepted as true. If rejected, the hypotheses cannot be accepted as true. See paragraph 6.7.4 for a discussion of hypothesis testing.

Hypothesis 1

Marketing decision-makers in South African service organizations have a higher requirement for direct customer feedback than marketing decision-makers in other industry sectors.

Hypothesis 2

Marketing decision-makers in South African service organizations have a higher requirement for customer demographics than marketing decision-makers in other industry sectors.

In chapter 2 it was pointed out that service organizations generally operate in a more complex environment than other types of organizations. In addition, in the South African context aspects like the dichotomous market (developed versus emerging markets), ethnic, language and political divisions make the South African market relatively complex. This complexity seems to be generally introduced by the fact that service organizations operate in a very complex environment that leads to the increased importance of customer relationships (Grönroos 1997:329, see section 2.7)

In order to develop these relationships, customer feedback and information on customers (customer demographics) are a necessity. For example, Grönroos (1997:329) suggests that real-time customer satisfaction feedback systems are more appropriate in service organizations than *ad hoc* customer satisfaction surveys. This suggests that marketing decision-makers in South African service

organizations should generally have a higher requirement for direct customer feedback and customer demographics.

The ANOVA table was used as a tool to compare the means for the two information types mentioned - see table 63 (also see table 22). From table 63 it appears that there is only sufficient evidence that the means differ significantly for customer demographics. Using Tukey's honestly significant difference test (Tukey's HSD) it appears that the significant difference is between 'Wholesalers and retailers' (3.82) and 'Other' organizations (2.97). Service organizations fall in between with a mean of 3.66.

Table 63 ANOVA test for hypotheses 1 and 2

		Sum of Squares	df	Mean Square	F	Sig.
Customer demographics	Between Groups	17.23	2	8.615	5.275	0.006*
	Within Groups	191.095	117	1.633		
	Total	208.325	119			
Direct customer feedback	Between Groups	1.41	2	0.705	0.795	0.454
	Within Groups	104.59	118	0.886		
	Total	106	120			

For the reasons above, there is no evidence that service organizations have a higher requirement for either customer demographics or direct customer feedback. Therefore both hypothesis 1 and 2 are rejected.

The next hypothesis will deal with the type of technology used by service organizations.

Hypothesis 3

Marketing decision-makers in South African service organizations have a higher requirement for Marketing Decision Support Systems (MDSS) (represented in the model by On-line Analytical Processing or OLAP) than other industry sectors.

Hypothesis 4

Marketing decision-makers in South African service organizations have a higher requirement for Intranet than other industry sectors.

Hypothesis 5

Marketing decision-makers in South African service organizations have a higher requirement for Data Warehouses than other industry sectors.

Hypothesis 6

Marketing decision-makers in South African service organizations have a higher requirement for GIS than other industry sectors.

Seeing that service organizations operate in a complex environment, and have the added pressure of customer relationships, it follows logically that service organizations would be more supportive of technologies that enable them to make decisions to identify and solve complex and often unstructured problems. This suggests technologies that will:

- Assist them in making data more 'visual' and simple, like GIS.
- Assist them in developing decision models and extracting data from central data repositories to populate those models (OLAP and Data Warehouse)
- Enable them to share information and knowledge throughout the organization (Intranet).

In order to test the hypothesis, Chi-square analysis was used. The Pearson Chi-square coefficients are reported in table 64. The Chi-square table can be understood as follows:

- The first column contains the variable being tested.
- The second to fourth columns (first layer) contain the response frequencies for the three main business types.
- In the second layer, second column the critical value ('Value') is presented.
- In the third column the 'degrees of freedom' ('df') is presented.
- In the fourth column the asymptotic significance is presented. If it is lower than 0.05, it is significant at the 95% level of confidence and the hypothesis

can be rejected. It is a two-tailed significance, which means that it indicates a significant difference, but not the direction of difference.

Table 64 Chi-square tests for IT usage by business type

		Services	Retail and wholesale	'Other'
MDSS	Yes	9(26%)	9(45%)	20(32%)
	No	26(74%)	11(55%)	43(68%)
Total		35	20	63
	Value	df	Asymp. Sig. (2- sided)	
Pearson Chi-Square	2.181(a)	2	0.336	
Intranet	Yes	23(67%)	6(32%)	23(36%)
	No	12(33%)	13(68%)	40(64%)
Total		35	19	63
	Value	df	Asymp. Sig. (2- sided)	
Pearson Chi-Square	9.294(a)	2	0.01*	
		Services	Retail and wholesale	'Other'
Data warehouse	Yes	16(46%)	2(11%)	29(46%)
	No	19(54%)	17(89%)	34(54%)
Total		35	19	63
	Value	df	Asymp. Sig. (2- sided)	
Pearson Chi-Square	8.295(a)	2	0.016*	
		Services	Retail and wholesale	'Other'
Geographical Information Systems	Yes	16(46%)	6(32%)	18(29%)
	No	19(54%)	13(68%)	45(71%)
Total		35	19	63
	Value	df	Asymp. Sig. (2- sided)	
Pearson Chi-Square	3.007(a)	2	0.222	

Significant differences are reported in only two of the information technology types namely Intranets and Data Warehouses. In examining the data in table 64, it is apparent that service organizations have a higher requirement for Intranets (66% versus 32% and 37% respectively) any of the technologies. This makes sense in the light of the relatively high requirement for information sharing that might be expected in service organizations. In the use of Data Warehouses,

service organizations (46%) have a much higher usage rate than wholesalers and retailers (only 11%) but similar to other organizations (46%).

Based on the information above:

- **Hypothesis 4 is accepted.**
- **Hypotheses 3, 5 and 6 are rejected.**

The following hypotheses test the requirement for information formats, in other words how information is provided to decision-makers.

Hypothesis 7

Marketing decision-makers in South African service organizations have a higher requirement for information in a format that supports marketing decision models than decision-makers in other industry sectors.

Hypothesis 8

Marketing decision-makers in South African service organizations have a higher requirement for information in a format that supports marketing decision support tools than decision-makers in other industry sectors.

Hypothesis 9

Marketing decision-makers in South African service organizations have a higher requirement for information in a format that supports the generation of alternative courses of action than decision-makers in other industry sectors.

Hypothesis 10

Marketing decision-makers in South African service organizations have a higher requirement for information in a format that supports the answers 'what if?' questions than decision-makers in other industry sectors.

These hypotheses really flow from the previous hypotheses. If complex decisions have to be made about complex and unstructured issues, using advanced technology, it follows that information formats should support the phases of decision-making that are most uncertain and risky, namely the development and

selection of alternatives. In order to do that, marketing decision models, alternative courses of action and answers to 'what if?' questions can assist in reducing uncertainty. Table 65 contains the ANOVA results for the specified variables.

Table 65 ANOVA table for information formats by business type

		Sum of Squares	df	Mean Square	F	Sig.
	Total	88.619	117			
Decision Models	Between Groups	9.247	2	4.623	4.518	0.013*
	Within Groups	120.753	118	1.023		
	Total	130	120			
MDSS tools	Between Groups	9.085	2	4.543	4.397	0.014*
	Within Groups	121.906	118	1.033		
	Total	130.992	120			
Alternative Choices	Between Groups	1.721	2	0.86	1.26	0.287
	Within Groups	79.871	117	0.683		
	Total	81.592	119			
'What if?' analysis	Between Groups	2.826E-02	2	1.413E-02	0.016	0.984
	Within Groups	104.534	118	0.886		
	Total	104.562	120			

There is evidence of statistically significant differences in two means, namely those for marketing decision support models and marketing decision support tools. However, in both cases Tukey's HSD test has shown that retailers have a significantly higher requirement for these two information formats than 'other' organizations (see table 24) and similar requirement to service organizations. .

Therefore, hypotheses 7 to 10 are rejected.

8.4 THE ANTECEDENTS OF MKIS IN SOUTH AFRICAN SERVICE ORGANIZATIONS

This section addresses the drivers of satisfaction with MKIS in South African service organizations. In the questionnaire, question 9 (see Appendix A) tested the overall perception of quality with MKIS on a scale from 1 ('poor') to 5 ('excellent'). In order to test the antecedents, four sources of antecedents were identified.

- The relationship between the availability of the information content (as tested in question 4 of the questionnaire) and overall satisfaction with market intelligence.
- The relationship between availability of various information formats (as tested in question 5 of the questionnaire) and overall satisfaction with market intelligence quality.
- The usage of MKIS technology (as tested in question 11 of the questionnaire) and overall satisfaction with market intelligence.
- The relationship between overall satisfaction with market intelligence and various drivers of information and MKIS quality (see section 2.8), as tested in question 8 of the questionnaire.

Rather than setting a specific hypothesis, probit analysis was used to test the relationship between each of the variables identified above and determining where significant relationships exist (see section 6.8 for a more detailed discussion of probit). It is appropriate at this stage to point out that probit only identifies the strength of the relationship between each variable and the overall satisfaction measure, and not the multivariate relationship between all variables. Only a level of significance higher than 95% was regarded as a relationship.

After identifying the antecedents in paragraphs 8.3.1 and 8.3.2 using all organizations, service organizations will be compared to other organizations on those antecedents.

8.4.1 The relationship between availability of information types and overall quality of market intelligence

While various iterations of the probit model was run for the availability of information types, the availability of information formats and the usage of MKIS technologies, the results were disappointing in that regard. The best-fitting model yielded a Chi-square goodness-of-fit probability of 0.271 (larger than 0.05 and therefore a good fit) and a Somers' D coefficient of 0.425, within the range identified as acceptable (see Appendix F). Under this model there is only evidence of the following significant relationships:

- A relationship between the availability of technical information and overall market intelligence quality of 0.20 and borderline significance of 0.046.
- A relationship between the usage of GIS and overall market intelligence quality of -0.62. Technically, this means that usage of GIS contributes significantly to negative perceptions of MKIS quality, and may have to do with the initial complexity of setting up and using GIS in the organization.

The results from this section were not conclusive and no valuable conclusions regarding MKIS antecedents can be made from it.

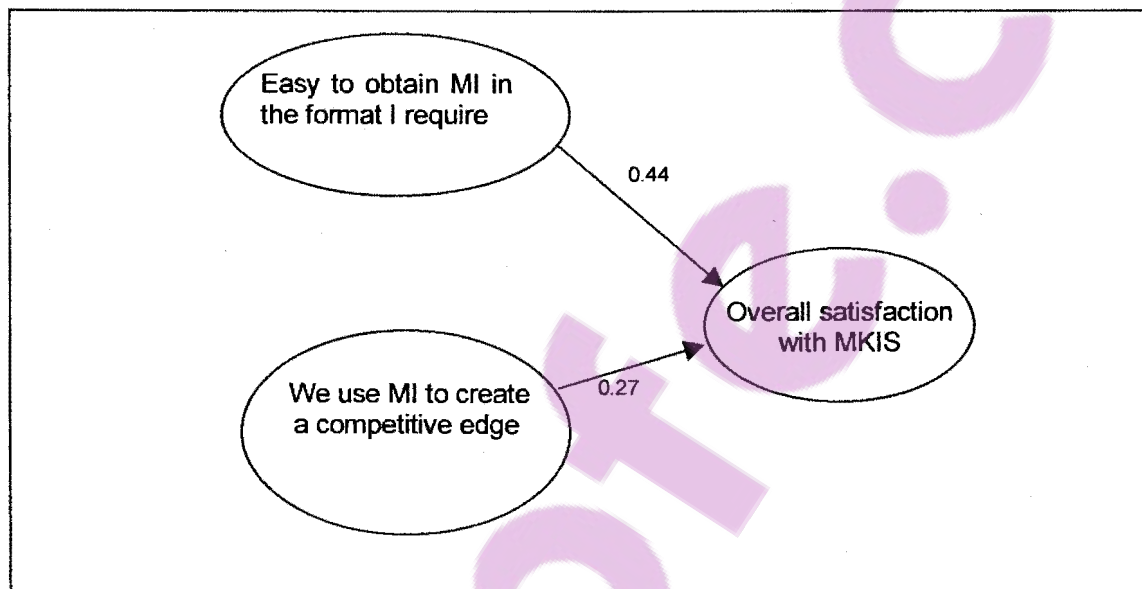
8.4.2 Relationship between MKIS statements and overall quality of market intelligence

Figure 39 contains the results of the probit analysis for the relationship between the MKIS statements that were tested in question 8 in the questionnaire (see Appendix F). The Somers' D for this section was 0.44, which means that it explains considerable variance in the data. It also had a Chi-square probability of larger than 0.05, which indicates a 'good' fit of the model.

The probit model highlights only two significant relationships that can be regarded as antecedents:

- There is a strong relationship with the perception that it is easy to obtain marketing information in the format that it is required.
- The perception that MKIS is used by the organization to create a competitive edge.

Figure 39 The causal relationship between MKIS and market orientation for the South African sample (n = 119)



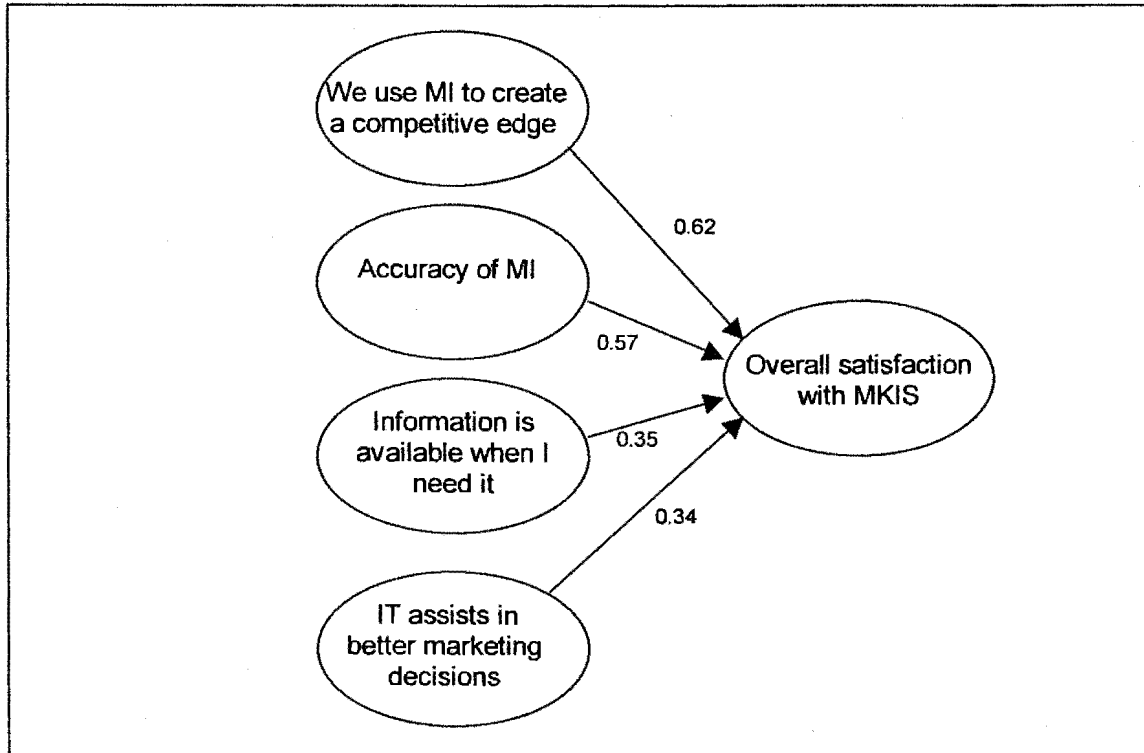
Only one of these is a factor identified by Ahituv & Neumann (1990:59) as one of the determinants of quality of information, namely availability of information in the format required.

The same analysis was repeated for the international sample. The causal relationship depicted in figure 40 identifies the antecedents of overall satisfaction with the quality of market intelligence (in order of priority, all at 95% level of significance):

- The perception that the organization is using market intelligence to achieve a competitive edge in the industry.
- The perception that the marketing information received is accurate.

- The perception that MKIS is received when it is needed (timely).
- The perception that IT assists in making better marketing decisions.
- The Somers' D coefficient for this analysis was 0.593, and therefore highly explanatory of the variance in the overall quality variable.

Figure 40 The causal relationship between MKIS and market orientation for the international sample (n = 100)



The results from this section were generally more conclusive than the previous section, and identified two antecedents of market intelligence quality that were also identified for the South African sample, namely:

- The format of the information.
- The perception that market intelligence is being used to create a competitive edge in the industry. This is an antecedent of MKIS that is also present in the international sample. The prominence of this antecedent may be an indication that the 'branding' of the market intelligence function in the organization and the way it is marketed may be equally as important as content and format.

The interesting difference is that in the international sample, other information quality determinants like timeliness of the information and accuracy were identified as antecedents, compared to only format in the South African sample. One of the possible reasons might be that international organizations are already obtaining much of the information in the format they require, therefore a higher focus on timing and accuracy. It may also be indicative of a more competitive environment where timing and accuracy are important to quick reaction times.

How do service organizations compare to other organizations on these two antecedents? The results from the ANOVA test are included in table 66.

Table 66 ANOVA for MKIS antecedents by main business type (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Format required	Between Groups	5.155	2	2.577	2.221	0.113
	Within Groups	135.7	117	1.16		
	Total	140.9	119			
Creating a competitive edge with MI	Between Groups	1.469	2	0.735	0.593	0.554
	Within Groups	144.8	117	1.238		
	Total	146.3	119			

There is no statistical evidence of any significant differences between business types (services, wholesalers and retailers and 'other') in assessing the ease of obtaining information in the required format or the extent to which a competitive edge is established by means of market intelligence.

8.5 THE LEVEL OF MKIS DEVELOPMENT IN SOUTH AFRICA

When examining the level of MKIS development in South Africa, the most sensible approach is to examine it both from an internal perspective and from an external perspective, which is provided by the international data. The discussion framework is provided by the factor analysis for MKIS (see paragraph 7.3.9). Three representative factors were identified as forming the MKIS concept:

The extent to which information needs are addressed. The statement on the ease of obtaining information in the format required represents this factor.

- Factor 2: 'Decision support quality'. The characteristics of this factor are issues that deals with the extent to which IT helps or hinders the marketing decision making process, and is represented by the statement on 'IT really assists me in making better marketing decisions'
- Factor 3: 'Marketing focus'. This factor has to do mostly with the position and dominance of marketing in the organization, and is represented by the statement that marketing influences IT strategy.

There is also the aspect of overall market intelligence quality, which is an overall measure of the satisfaction with MKIS.

The first step is to re-examine the equality of means for the three statements and overall quality of market intelligence for the three selected cross-tabulation variables, namely management level, organization size and business type, as well as for the overall quality of market intelligence. This is done in tables 67 to 69.

Table 67 ANOVA for MKIS factors by management level (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Influence of marketing strategy on IT	Between Groups	14.18	3	4.728	3.618	0.015*
	Within Groups	155.4	119	1.307		
	Total	169.6	122			
IT influence on decision making	Between Groups	9.683	3	3.228	2.765	0.045*
	Within Groups	138.9	119	1.167		
	Total	148.6	122			
Format required	Between Groups	2.133	3	0.711	0.6	0.616
	Within Groups	140.9	119	1.184		
	Total	143.0	122			
	Total	149.1	122			
Overall quality of MI	Between Groups	1.737	3	0.579	0.73	0.536
	Within Groups	95.19	120	0.793		
	Total	96.92	123			

Table 68 ANOVA for MKIS factors by organization size (SA)

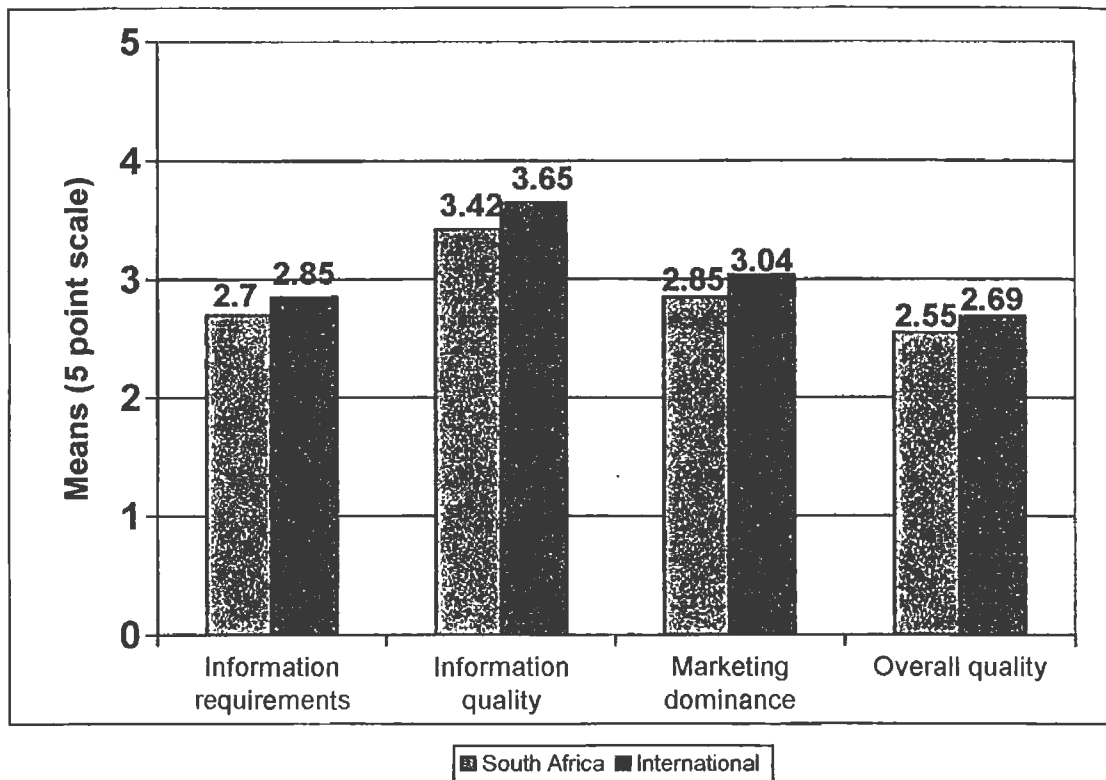
		Sum of Squares	df	Mean Square	F	Sig.
Influence of marketing strategy on IT	Between Groups	19.48	2	9.744	8.094	0.001*
	Within Groups	142.0	118	1.204		
	Total	161.5	120			
IT influence on decision making	Between Groups	1.47	2	0.735	0.632	0.533
	Within Groups	137.0	118	1.162		
	Total	138.5	120			
Format required	Between Groups	0.217	2	0.108	0.091	0.913
	Within Groups	141.0	118	1.195		
	Total	141.2	120			
Overall quality of MI	Between Groups	0.379	2	0.19	0.222	0.801
	Within Groups	101.5	119	0.854		
	Total	101.9	121			

Table 69 ANOVA for MKIS by business type (SA)

		Sum of Squares	df	Mean Square	F	Sig.
Influence of marketing strategy	Between Groups	0.96	2	0.48	0.343	0.71
	Within Groups	163.5	117	1.398		
	Total	164.5	119			
Information technology and decision making	Between Groups	2.804	2	1.402	1.159	0.317
	Within Groups	141.5	117	1.21		
	Total	144.3	119			
Format required	Between Groups	5.155	2	2.577	2.221	0.113
	Within Groups	135.7	117	1.16		
	Total	140.9	119			
Overall satisfaction with MI	Between Groups	0.472	2	0.236	0.274	0.761
	Within Groups	101.61	118	0.861		
	Total	102.083	120			

As previously pointed out (see paragraph 7.3.9), top management is more positive that marketing strategy is influencing IT strategy, and about the positive influence of IT on marketing decision-making. Small organizations are also more positive about having a single point of contact. There are no significant differences in the perception of overall quality of market intelligence. Figure 41 will assist in further examining these factors.

Figure 41 MKIS factors compared - South Africa and international



Once again, the similarities between the South African sample and the international sample are striking. This will be examined further by means of testing the following hypotheses.

Hypotheses 11

There is no significant difference in the perception of the South African and international sample of the extent to which marketing information requirements are met.

Hypotheses 12

There is no significant difference in the perception of the South African and international sample of marketing information quality.

Hypotheses 13

There is no significant difference in the perception of the South African and international sample of the extent to which marketing dominates the marketing information process.

Hypotheses 14

There is no significant difference in the perception of the South African and international sample of the overall quality of market intelligence.

In order to test these hypotheses, the t-test for independent samples is used (see table 70). The t-test table can be explained as follows:

- There are two possible conditions for the test, namely equal and unequal variances. The second column splits the test up both ways to address both situations.
- The column containing the F statistic contains the result of the Levene test for the equality of variances. It is only tested for the scenario where equality of variances is assumed. Since the Levene test significance is higher than 0.05, it can be accepted that the variances are statistically equal.
- The 't' statistic is the test statistic.
- Degrees of freedom are indicated by 'df'.
- The 2-tailed significance, which is used as an indicator of differences in the mean. In the case where the significance for both situations (equal and unequal means) is significantly higher than 0.05 (the cut-off point for 95% level of significance). Therefore, there are no grounds to reject the equality of the means when the significance is higher than 0.05.
- The remaining two columns provide information about the standard error of the differences in the means, and a confidence interval with lower and upper values.

Table 70 Comparison of SA and international means for MKIS factors

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Conf Interval of the Difference	
									Lower	Upper
Overall satisfaction with MI	Equal variances assumed	1.977	0.161	-1.07	231	0.286	-0.14	0.13	-0.39	0.12
	Equal variances not assumed			-1.054	205.485	0.293	-0.14	0.13	-0.4	0.12
Influence of marketing strategy	Equal variances assumed	1.92	0.167	-0.536	231	0.593	-7.98E-02	0.15	-0.37	0.21
	Equal variances not assumed			-0.539	228.379	0.59	-7.98E-02	0.15	-0.37	0.21
Format required	Equal variances assumed	0.245	0.621	0.846	230	0.398	0.12	0.14	-0.16	0.4
	Equal variances not assumed			0.849	223.856	0.397	0.12	0.14	-0.16	0.4
Information technology and decision making	Equal variances assumed	1.634	0.202	-2.441	231	0.015*	-0.33	0.14	-0.6	-6.44E-02
	Equal variances not assumed			-2.468	230.182	0.014*	-0.33	0.14	-0.6	-6.73E-02

There is statistical evidence of significant differences in only one aspect, namely the influence of IT on marketing decision-making. In this regard it would seem that the international sample (with a mean of 3.65 - see table 48) is significantly more confident of the positive role of IT in marketing decision-making. This might be because of the greater availability of IT, public information and

telecommunications technology than in the South African environment (mean of 3.42).

Therefore:

- **Hypothesis 12 is accepted.**
- **Hypotheses 11, 13 and 14 are rejected.**

In addition to comparing the South African sample with the international sample, it is also important to compare the means within the sample. For this, the t-test for paired samples was used (see table 71). Hypotheses 15 to 20 address the paired comparison

Hypothesis 15

There is no significant difference between the perception of South African marketing decision-makers of the level of marketing dominance and overall satisfaction with market intelligence.

Hypothesis 16

There is no significant difference between the perception of South African marketing decision-makers of the level of information quality and overall satisfaction with market intelligence.

Hypothesis 17

There is no significant difference between the perception of South African marketing decision-makers of the level of meeting information requirements and overall satisfaction with market intelligence.

Hypothesis 18

There is no significant difference between the perception of South African marketing decision-makers of the level of marketing dominance and meeting information requirements.

Hypothesis 19

There is no significant difference between the perception of South African marketing decision-makers of the level of marketing dominance and information quality.

Hypothesis 20

There is no significant difference between the perception of South African marketing decision-makers of the level of meeting information requirements and information quality.

Table 71 Comparison of MKIS factors (SA)

		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	Marketing dominance - Overall satisfaction with MI	0.69	1.24	8.12E-02	0.53	0.85	8.49	231	0
Pair 2	Information quality - Overall satisfaction with MI	1.27	1.18	7.77E-02	1.12	1.42	16.356	231	0
Pair 3	Information requirements - Overall satisfaction with MI	0.14	0.99	6.50E-02	1.48E-02	0.27	2.199	230	0.029
Pair 4	Marketing dominance - information requirements	0.55	1.43	9.36E-02	0.37	0.74	5.895	231	0
Pair 5	Marketing dominance - Information quality	-0.59	1.24	8.14E-02	-0.75	-0.43	-7.221	232	0
Pair 6	Information quality - information requirements	1.14	1.36	8.90E-02	0.97	1.32	12.837	231	0

In all of the cases it was determined that there are significant differences at the 95% level of confidence, providing sufficient evidence to accept hypotheses 15 to 20.

This means the following for the South African sample (see table 44 for means):

- Respondents are more positive about the quality of marketing information (3.42), the dominant role of marketing in the information process (2.85) and the extent to which their information needs are addressed (2.70) than they are about the overall quality of market intelligence (2.55).
- They are most positive about the general quality of marketing information (3.42), which includes the positive role of IT and accuracy of intelligence. They are significantly less positive about the dominance of marketing (2.85), and again significantly less positive that their information needs are addressed (2.70).

Apart from the general dissatisfaction with market intelligence in South Africa and abroad, the weakest area is the area of information needs, and to what extent they are addressed. These results are not exceptions to the rule. Jiang *et al* (1997:115-116) have found that 47% of marketing managers expressed dissatisfaction with MKIS. However, the same study identified a positive attitude towards IT in general, similar to the results reported above. What are the possible causes of this seeming generic dissatisfaction with MKIS?

- Marketing managers feel that they have lost control over the firm's information resources. On the other hand, systems are being developed piecemeal and haphazardly, reflecting a lack of proper management of organizational IT systems (Jiang *et al* 1997:15-16).
- Market intelligence-based measurements (for example customer satisfaction measurement) are still regarded as far less important than other key metrics (such as profitability) by most top managers (Meehan 1999:122). This means that there is a lack of top management commitment to MKIS resources. This was also clearly demonstrated in the low levels of organizational commitment identified in the qualitative research (see paragraph 7.2.3). This may mean that MKIS outputs (market intelligence and knowledge) are not fully integrated into customer value-creation processes. A possible result is a vicious circle: marketing decision-makers are dissatisfied because they are not seeing a

bottom-line impact from market intelligence, they relegate the market intelligence organization further into the background, and this leads to more dissatisfaction.

- According to Meehan (1999:125) the success of market intelligence (and the role it plays in organizational success) is dependent on the presence of an organizational structure providing opportunities for customer relationships at all levels of the organization. In addition, a learning culture is required to facilitate the responsiveness to customer needs and competitive actions. However, as Meehan points out, two common mistakes in this regard are to view market intelligence as an end in itself (for example gathering information because everybody does) or to reduce it to 'corporate rhetoric' - in other words lip service. This is supported to a large extent by the work of Wierenga & Oude Ophuis (1997:275-290) and Moorman (1995:318-355) who argue that top management commitment and cultural issues are vital to the success of MDSS and market information processes. Also see chapter 3 for a more extensive discussion on establishing a market orientation culture.

8.6 THE ROLE OF IT IN MKIS IN SOUTH AFRICAN ORGANIZATIONS

South African marketing decision-makers are relatively high users of MKIS technology, as paragraph 7.3.8 suggests. There are some areas where South African marketing decision-makers are even higher adopters of technology than their international counterparts. In general, respondents have agreed (3.42) that IT has a positive influence on marketing decision-making. Section 2.9 has shown that service organizations are relatively high spenders on information technology. However, when it comes to the key drivers of market intelligence quality, namely the availability of the right format and the perception that MKIS is creating a competitive edge, there are relatively low levels of satisfaction (2.70 and 3.13 respectively). What are the possible reasons for this?

- The SA Business Survey (1997) reports that the top 5 applications used by marketing decision makers in South African service organizations are:

- Word processing (85%)
- Spreadsheets (78%)
- Accounting (59%)
- Internet (52%)
- Databases (48%)

This suggests that the focus is still very much on office automation and database querying, and not on decision support. This is in line with the findings reported by Ovans (1999:18) who reports that professional service organizations are not getting the benefit of the IT that they invest in. In a survey of 322 executives, it was found that IT is being used to automate old processes, and not to explore customer data and discover knowledge and strategic insights.

- Respondents have also indicated relative dissatisfaction with the fact that their needs are not taken into consideration when developing MKIS (2.70), and that IT does not understand the information needs of marketing (2.65).

While there is a generally positive influence from IT on marketing decision-makers, this positive influence does not filter through to the market intelligence area. This may be because IT still does not support decision-making as well as it supports office automation and productivity. In addition, this is often due to behavioral factors rather than IT itself.

8.7 THE LINK BETWEEN MKIS AND MARKET ORIENTATION

The theory of market orientation identifies organizational systems as an antecedent of market orientation. It follows logically that MKIS might be one of the antecedents of market orientation. There are two components of market orientation, identified by the factor analysis in paragraph 7.3.9. These are the following:

- Factor 1: 'Responsiveness'. Aspects that reflect the extent to which the organization is responsive to the environment characterize this factor. The following statement from the question bank characterizes this factor: 'several departments get together periodically to plan a response to changes taking place in our business environment'.
- Factor 2: 'Information gathering and processing'. The main drivers of this factor are the extent to which the organization gather and process market intelligence. The variable that stands out in this regard is the extent to which 'end users are surveyed annually to determine product or service quality'.

The driver or possible antecedent from the MKIS point of view would be the overall quality of market intelligence. This relationship is reflected in hypotheses 21 and 22.

Hypothesis 21

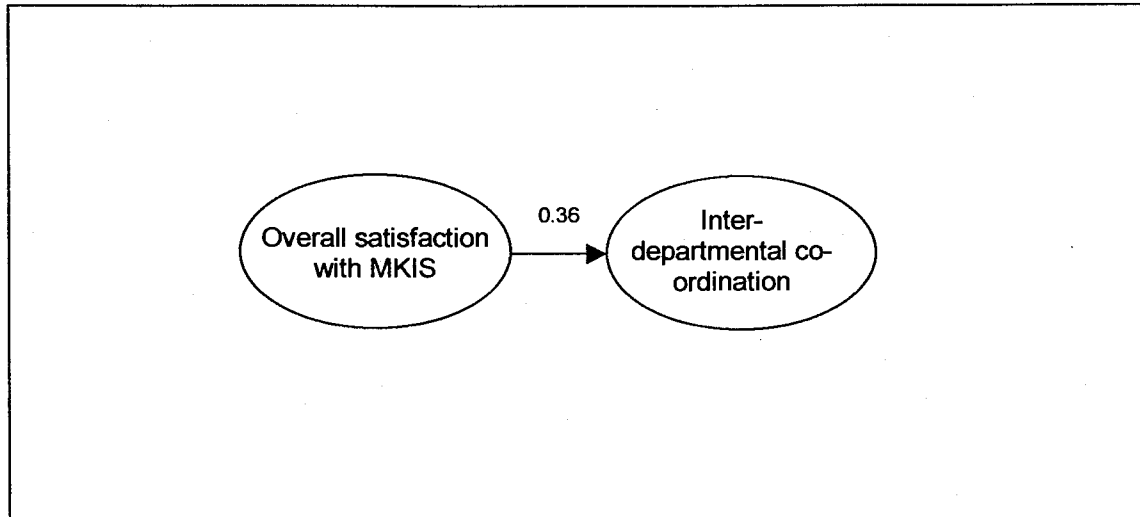
There is a significant link between the perception of South African marketing decision-makers of the overall quality of market intelligence and information gathering and processing.

Hypothesis 22

There is a significant link between the perception of South African marketing decision-makers of the overall quality of market intelligence and responsiveness to customer needs.

In order to test these hypotheses, probit analysis was used (see section 6.8 for a discussion on probit analysis). Figures 42 and 43 contain the probit results for the South African and international samples.

Figure 42 The relationship between MKIS and market orientation for the South African sample (n = 119)



Only one variable had a significant relationship with overall market intelligence quality – the perception that there is good interdepartmental communication in the organization. This result is at the 95% level of confidence, and the Somers' D coefficient for this analysis was 0.43, which is within the acceptable range (Kekre *et al* 1995:1462).

The same analysis was repeated for the international sample. An interesting difference occurred between the South African and international samples. Whereas in the South African sample, the overall satisfaction with MKIS linked significantly to only one factor in the market orientation arena (the perception that there is good interdepartmental communication), in the international sample three factors appear as relatively important (all at 95% level of significance):

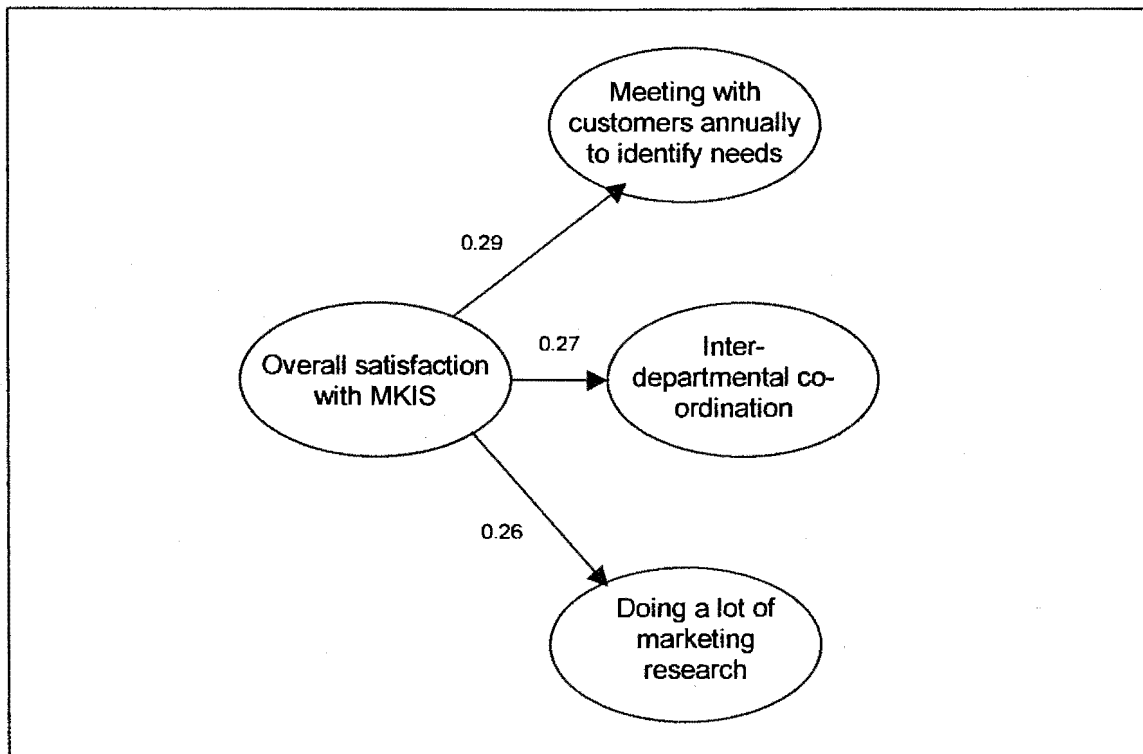
- The perceptions that customers' needs are discussed with them at least annually.
- The perception that there is good interdepartmental co-ordination in the organization.
- The perception that a lot of in-house marketing research is being done.

For this probit analysis, the Somers' D coefficient was 0.503.

The above analysis only contains sufficient evidence to accept hypothesis 22. Hypothesis 21 is rejected.

For the international sample, there is statistical evidence that MKIS has a relationship with both the information gathering and responsiveness dimensions.

Figure 43 The relationship between MKIS and market orientation for the international sample (n = 100)



8.8 STUDY CONCLUSIONS

Study conclusions will also be discussed following the broad outline of the study objectives.

8.8.1 The MKIS model

The findings generally suggest that the model is valid. However, there is little evidence that the model is particular to service organizations. In other words, the model is more successful as a generic MKIS model that can be used by various industry sectors.

The reason for this is that the model is driven by user requirements, which are determined firstly by content requirements. In other words, what types of information are important? Second, there is the question of availability. In other words, to what extent are the types of information required available? Figure 44 is an analysis of the gaps between importance and availability for the three broad categories of information, namely macro-environmental information, market information (competitors and customers) and internal information (see paragraph 7.3.5).

This clearly demonstrates again that users are not getting the information that they want, namely information on competition and customers (also see paragraph 7.3.7) . One possible reason for this is the fact that market information is more expensive to gather and more complex.

Due to scope constraints, the relationships and flow of the information between elements of MKIS were not tested.

Figure 44 Information gaps for broad information categories (SA)

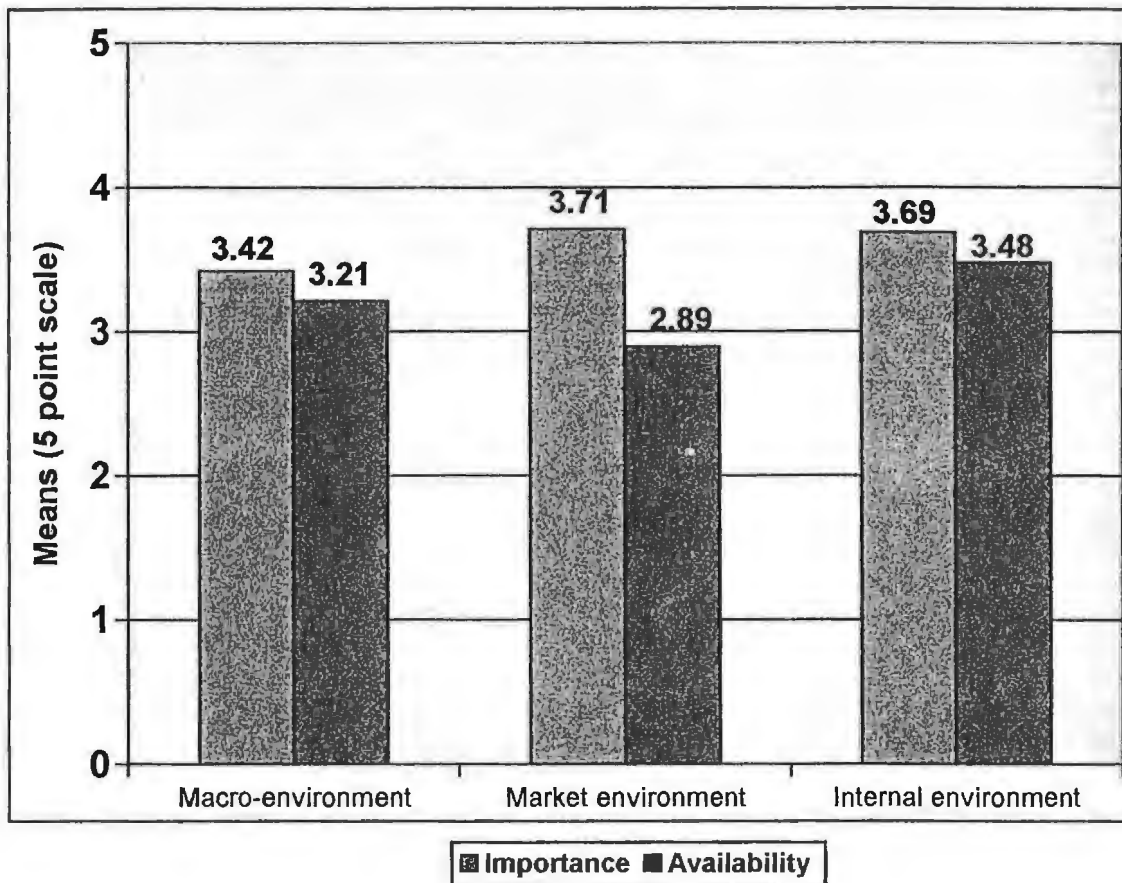
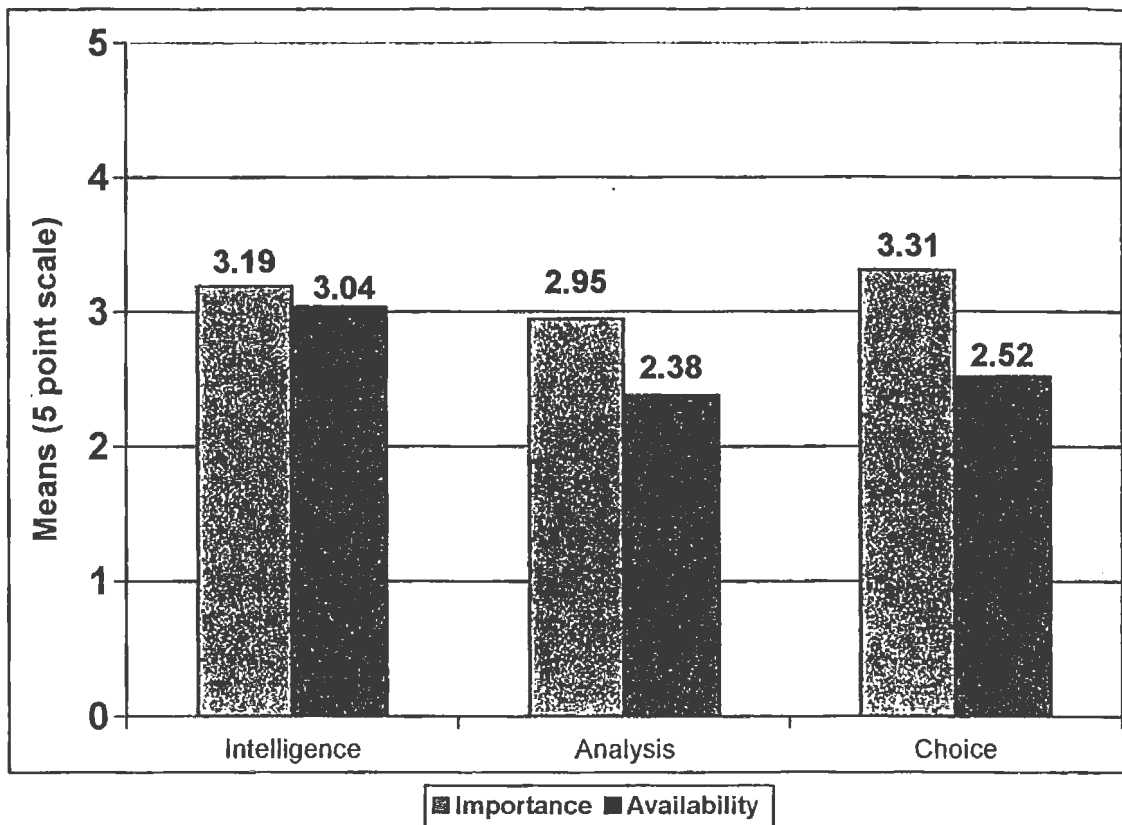


Figure 45 is a similar analysis for information formats, but it uses the decision phases (see section 2.8) as a basis. In this analysis, there is evidence of gaps in the importance and availability of information formats in the areas of analysis and choice, the two phases of decision-making that carry the most risk and uncertainty. However, there is evidence to support Meehan (1999:126) that most organizations accept and are spending a lot of time and effort to gather intelligence, but are failing to use it intelligently.

The usage of technology is to a large degree dependent on the information requirements of the end-users, and the types of information technology defined within the scope of the model (see figure 38) are being used to varying degrees by marketing decision-makers.

Therefore, the conclusion is that the model is a useful one, but as intended it reflects a future desire more than a present reality in the South African business environment.

Figure 45 Gaps in importance and availability of information formats (SA)

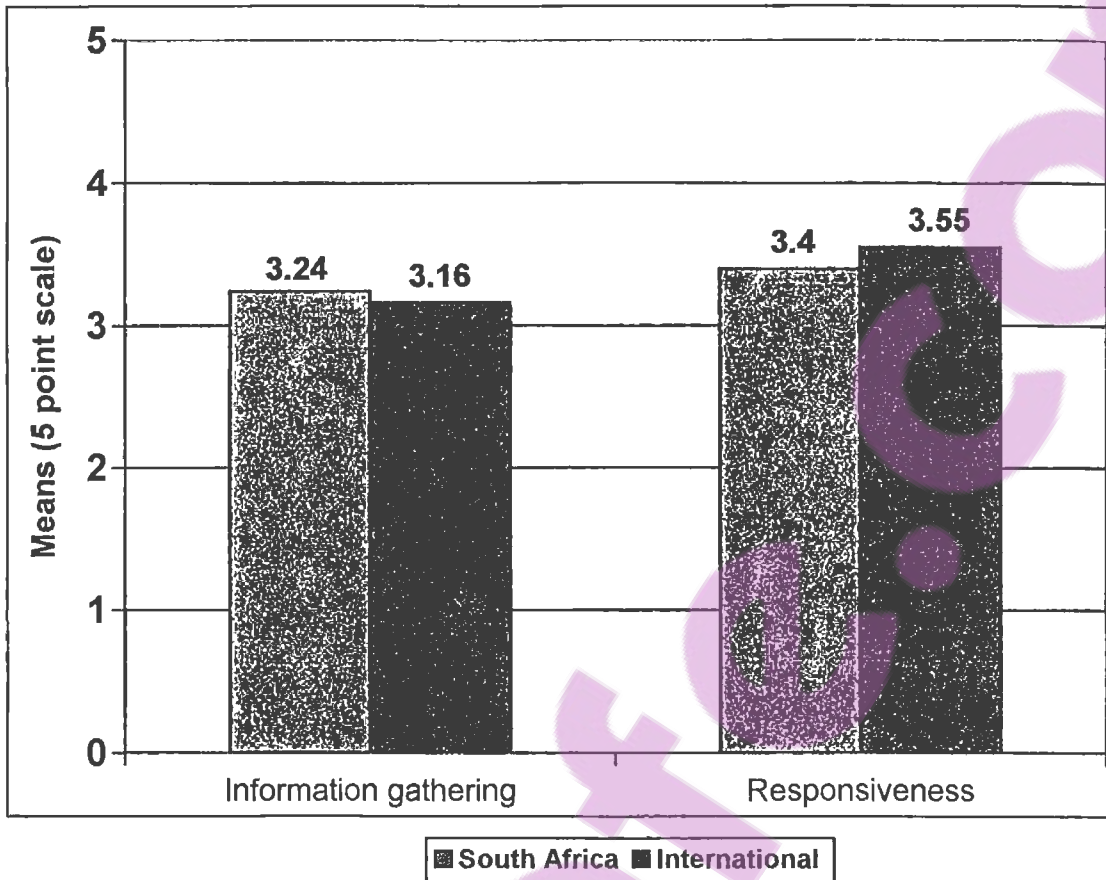


8.8.2 MKIS implementation and development

The overriding finding of the study regarding the objective of understanding the drivers of MKIS is the seemingly generic dissatisfaction with MKIS. However, this is not limited to South African organizations, and is similar to findings in preceding international studies. The conclusion is that the main reasons for the dissatisfaction are:

- The gap between IT and marketing. While IT is often required to implement systems for marketing in a way that is inconsistent with good IT practice, there is little evidence that IT is making a real effort to support marketing and understand and address marketing information requirements.
- The lack of a learning culture in many organizations that stifle the sharing of information across organizational boundaries and reduce market intelligence to lip service. This is often compounded (as Meehan 1999:126 points out) by top management's lack of commitment to MKIS.
- There is a high focus on gathering information, but a lesser focus on using the information to develop knowledge about customers and to respond to customer needs. This is demonstrated by figure 46 which uses the market orientation factors' aggregated means to demonstrate that organizations are more focused on information gathering than on using information. Referring back to the MKIS analysis in section 8.3, MKIS seems to be relatively good at generating information, but does not seem to be good at providing decision support for marketing decision-makers.
- A somewhat surprising finding is that the South African and international sample yielded very similar results in many areas, especially regarding MKIS. This means that most findings and recommendations are possibly applicable to the international environment as well.

Figure 46 Comparing information gathering and responsiveness (SA versus international)



8.8.3 MKIS and information technology

The main conclusion in this regard is that the mere presence of IT does very little for MKIS. As was discussed previously in section 8.6, IT is often used to automate existing processes or to improve office production, and not to develop knowledge and insights and to share it. In the case of service organizations, there is little evidence that IT is being used to develop customer relationships in South African service organizations. Nonetheless, the infrastructure exists in many organizations (for example 66% adoption of Intranet, 46% adoption of Data Warehouses), which indicates that it may be a cultural and behavioral change that needs to be made rather than new investments in technology.

8.8.4 MKIS and market orientation

Market orientation has been proven to contribute to the success of organizations. As Nel *et al* (1996:4-5) have shown, responsiveness is the aspect that contributes the most to organizational success. This corresponds closely with the findings of Meehan (1999:126). In turn, MKIS has been shown to contribute significantly to responsiveness to customer needs within the market orientation construct.

Therefore, the conclusion is that successful MKIS can contribute to more successful South African service organizations.

The next topic of discussion is the recommendations on the basis of the conclusions reached above.

8.8.5 Summary of conclusions

To summarize the conclusions, it would be useful to revisit the broad hypotheses set in chapter 1 (section 1.9).

Hypothesis: *Marketing decision-makers in service organizations have a higher requirement for decision-support information on the market environment (customers and competitors) than other marketing decision-makers.*

As was seen from the research and the results from section 8.3, all marketing decision-makers have a high requirement for this type of information and information formats. It is not limited to service organizations.

Hypothesis: *Timely, accurate and relevant information in the right format will result in high satisfaction with the quality of marketing information.*

These traditional quality drivers did not seem to have a significant effect on the satisfaction with marketing intelligence quality. From figure 39, it was seen that the format and the perception that market intelligence is used to derive a competitive advantage were important drivers of satisfaction.

Hypothesis: *Marketing decision-makers in South African service organizations have a higher usage of high-level decision support technology than other marketing decision-makers.*

From the results in section 8.3, there is only evidence of one area (Intranet) where service organizations have higher usage of information technology.

Hypothesis: *The higher the level of satisfaction with marketing information quality, the more market oriented marketing decision-makers will be.*

There is only evidence of a relationship between market intelligence quality and the perception that departments in the organization are well coordinated.

Hypothesis: *American and European marketing decision-makers are more advanced in their use of information technology and is therefore more satisfied with the quality of marketing information available to them.*

Throughout the study, there were remarkable similarities between the results for the South African and international samples. International respondents were more satisfied with only one aspect of MKIS, namely the perceived quality of marketing information (such as accuracy and timeliness).

8.9 RECOMMENDATIONS

As identified above, IT is not the solution to MKIS problems, but rather an enabler. In that sense, it is more useful to focus on the information quality issues and behavioral issues affecting MKIS success.

A prime shortcoming is that there is simply not sufficient 'content' in the form of information on customers and competitors in South Africa.

Therefore market intelligence programs should address the shortcoming by developing customer and competitive intelligence programs based on user requirements. Encourage the proactive gathering and analysis of information, using specific needs of users as a guidelines.

Information formats are also not available at the level required by marketing decision-makers. It would seem that the shortcoming here is that value is not added to the 'raw' market intelligence. In other words, sufficient intelligence is gathered, but tools and processes have to be developed to assist marketing decision-makers in developing alternative decisions and assess possible outcomes. The rift between IT and marketing is a particular problem in this regard.

To address this, there should be an evolution towards a central 'intelligence organization', combining both IT and business experts, responsible for the flow of information in the organization. Decision-makers should be closely involved in the development process of all information systems. The establishment of a position for a Chief Intelligence/ information Officer (CIO) may facilitate this process.

All organizations believe in the importance of market intelligence as indicated by the results, yet the qualitative research and participant observation have shown that few seem willing to allocate the resources to it and many seemingly regard it as a 'fringe' activity.

To address this, redesign the market intelligence organization to bring it closer to its clients and empower it by allocating the required resources.

One of the prime behavioral areas that is often a shortcoming is identified by writers like Meehan (1999:126) and Wierenga & Oude Ophuis (1997:285), namely management commitment to MKIS.

Some of the actions that should be taken to garner top management support are:

- **Identify a top management 'sponsor' of MKIS to rally support for MKIS at higher levels in the organization.**
- **Communicate the successes of MKIS to top management - in other words try to establish the perception that MKIS is creating a competitive edge for the organization.**
- **Deliver results (in other words useful information) to top management, in the format that they require.**

In addition to top management commitment, creating the right culture is an important key to the success of MKIS.

The following actions may assist in establishing an information culture:

- **Top management should advocate the use of information in decision-making and should demonstrate openly how they use information in decision-making.**
- **Reward employees for the intelligent use of information and particularly for sharing information. In other words, information sharing becomes a critical success factor for every marketing staff member.**
- **Information-based measures rather than just financial measures should become prime organization objectives (such as customer satisfaction).**
- **Conduct an information audit to ascertain the current information position of the organization and the decision-making processes used. Use the results of the audit to start the development of a comprehensive information infrastructure and organization.**
- **Establish and reward all managers for the extent to which their activities put them in touch with the market. For example, expect management to spend significant time with customers.**
- **Make the MKIS adaptable to individual user needs, rather than standard 'one size fits all' systems.**

- ***Understand what the quality issues are for management in the organizations. What format do they want information? How often, when do they want information? What is the level of accuracy they require?***
- ***At the same time, the results have shown that managers do not necessarily understand their own decision-making roles. Clarify what the level of decision-making should be at executive and middle management levels, and what information is required to support that.***

The research has indicated that there are relatively few differences between the information needs of service organizations and other organizations. Are there specific recommendations that service organizations can follow?

There are two sides to the information in service organizations, namely technical quality of service, and the customers' perceptions of service. For every service organization, it is important to understand the drivers of service perception, the relationship between technical quality of service and customer perceptions and the drivers of customer decisions. This should provide the basis for the focus of internal and market information gathering and analysis.

8.10 FUTURE AREAS OF STUDY

Because of the scope of the study, not all areas could be addressed in detail. Therefore, there are many areas that lend itself to further research. Of these, five areas have been identified as important future areas of research.

- First, the study has shown that behavioral aspects of MKIS implementation are of supreme importance, and not technology or even content. Behavioral research on the use of market intelligence and the success of MKIS therefore provides a rich future area of study.
- The study did not address the interrelationships between model elements, and this provides a potential future topic for research.
- Another area of concern in the study has proven to be the 'disconnect' between IT and marketing in the organization. A possible area of further study

may therefore be the implementation process of MKIS. In other words, under what circumstances will MKIS be optimally implemented, accepted and used? In this regard, the work of Wierenga & Oude Ophuis (1997) provides a useful point of departure.

- Thirdly there were surprising findings in the area of information required by decision-makers. Not many differences were identified, contrary to an extensive body of theory that still depend on the 'hierarchical' nature of information. This implies that something is changing in the way that marketers make decisions, or in the marketers that make the decisions in South Africa. This opens up a valuable field of study in the marketing decision-making processes. How do marketers make decisions, and how do they interact with information and technology in the process?
- Lastly a glaring gap in the information available to decision-makers has been identified as the gap between the importance of market information and the availability of market information. The areas that are especially affected are competitive intelligence and customer feedback. This identifies a research opportunity to identify specific information requirements and possible market intelligence programs to bridge the gap successfully.

8.11 CONCLUSION

The study addressed a relatively wide number of issues, and in that regard a possible shortcoming of the study was its scope. However, the fact that very few South African research studies exist addressing the issues identified here should make it a valuable contribution.

In that regard, the study delivered some surprising results, which led to useful conclusions and ultimately useful recommendations. There are also ample opportunities to further explore the conclusion and further research areas identified by this study. Using that as a basis, the study did achieve the study objectives set out in chapter one and tested in chapter 8.

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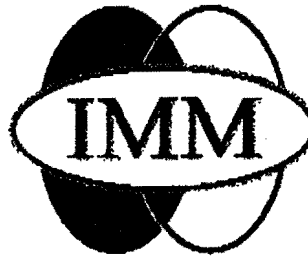
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APPENDIX A

**COVER LETTER AND QUESTIONNAIRE USED FOR THE
SOUTH AFRICAN SAMPLE (IMM AND TELKOM)**

Bestpractice.com

April 1999



**INSTITUTE OF
MARKETING
MANAGEMENT**

Dear IMM Member

Marketing means business

MARKETING INTELLIGENCE SURVEY

With the meteoric rise of information technology and the Internet, the importance of information and information technology in marketing has been highlighted like never before. There is also no end in sight to this phenomenon, as the pace of change in information technology seems to be ever increasing. The effects of these changes are influencing every sphere of marketing profoundly.

Currently we are co-operating in the conducting of a doctoral survey on the use of marketing intelligence by marketing decision makers, in conjunction with the University of South Africa. Our inputs into this survey are vital for us to get an indication of the future actions required to optimize the use of marketing intelligence.

Please assist us by:

- completing the questionnaire on the following Internet web site:
<http://www.home.intekom.com/marketSurvey>
- OR**
- completing the attached questionnaire and returning it direct to us using the FREEPOST address:

**IMM
FREEPOST JHZ4488
P O Box 91820
AUCKLAND PARK
2006**

Once the research has been completed, the IMM will provide feedback on the results through an article in its official publication, *"The SA Journal of Marketing & Sales"*. Results will also be presented at a breakfast seminar.

Thank you in advance for your co-operation.

Yours sincerely

**JAMES McLUCKIE
CHIEF EXECUTIVE OFFICER**

PS: If you need assistance in completing the questionnaire, please contact Peet Venter at 082-5644522 or via e-mail at venterpl@telkom.co.za

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Related to:

EMC European Marketing Confederation

Asia Pacific Marketing Federation

MARKETING INTELLIGENCE SURVEY

SECTION 1: INFORMATION REQUIREMENTS

QUESTION 1: How important is each of the following information categories to you in your marketing decision making?

	Not important	Somewhat important	Important	Very important	Critical
Economic indicators	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Technological developments	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Social trends	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Industry regulation	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Customer demographics and lifestyle	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Direct customer feedback	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Competitor strategies	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Sales forecasts	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Internal company financial information	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

QUESTION 2: How important is each of the following information formats to you in your marketing decision making?

	Not important	Somewhat important	Important	Very important	Critical
Status reports	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Trend reports	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Exception reports	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Ad hoc information on request	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Marketing decision models	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Analytical marketing decision support tools	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Information on alternative courses of action	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Answers to "what if?" questions	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

QUESTION 3: Please rate the level of your marketing information requirements. Example: if you require "very up-to-date" information most of the time, mark the box closest to this statement. If you require a mix of both types of information, the middle box would be most appropriate.

The information I require for my marketing decisions is generally;

1 2 3 4 5

- | | | | | | | |
|-----------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Very up-to-date | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Relatively old |
| Standard | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Customised |
| Internal | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | External |
| On computer | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | On computer and on paper |
| Accurate | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Relatively inaccurate |
| Detailed | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Summarised |
| Fixed format | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Flexible |
| Historically oriented | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Future oriented |
| Routinely circulated | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Ad hoc or unique |

SECTION 2: AVAILABILITY OF INFORMATION

QUESTION 4: Please rate the availability of each of the following information categories in your organisation:

	Poor	Fair	Good	Very good	Excellent	Don't know
Economic indicators	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Technological developments	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Social trends	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Industry regulation	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Customer demographics and lifestyle	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Direct customer feedback	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Competitor strategies	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Sales forecasts	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Internal company financial information	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6

QUESTION 5: Please rate the availability of each of the following information formats in your organisation:

	Poor	Fair	Good	Very good	Excellent	Don't know
Status reports	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Trend reports	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Exception reports	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Ad hoc information on request	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Marketing decision models	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Analytical marketing decision support tools	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Information on alternative courses of action	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Answers to "what if?" questions	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6

QUESTION 6: Which sources of information does your organisation use to gather competitive intelligence? (tick all options you are aware of)

- Press clipping services
- Annual reports of competitors
- Salesperson reports
- Purchased industry or market information
- Internet
- Other (please specify)

QUESTION 7: Which of the following information types of information does your organisation maintain electronically? (tick all options you are aware of)

- Potential customers
- Competitor profiles
- Industry information (e.g. regulation)
- National economic indicators
- Customer demographics
- Market research reports

QUESTION 8: Please indicate your agreement or disagreement with the following statements on marketing intelligence in your organisation.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I have a single point of contact in the organisation for all the marketing intelligence I require	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Our marketing strategy influences our organisation's information technology strategy	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Information technology assists me in making better marketing decisions	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Marketing intelligence I receive for decision making is generally accurate	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
It is easy for me to obtain marketing intelligence in the format I require	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
As a user of marketing intelligence my requirements are always taken into account when marketing information systems are designed	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Information technology makes it easy to get access to the right marketing intelligence	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
In our organisation, the information technology department really understand the information needs of marketing	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Information is usually available to me by the time I need it	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
I often have to process marketing intelligence before I can make decisions	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
I routinely receive market intelligence relevant to my responsibilities without asking for it	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Our organisation uses marketing intelligence to create a competitive edge in the industry	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
I often feel as if I am swamped by useless information	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

QUESTION 9: Please rate the overall quality of marketing intelligence available to you:

Poor Fair Good Very good Excellent

QUESTION 10: Please rate your organisation's market orientation by indicating to what extent you agree or disagree with each statement.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
In this organisation, we meet with customers at least once a year to find out what products or services they would need in future	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
In this organisation, we do a lot of in-house market research	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
We are slow to detect changes in our customers' product preferences	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
We survey end users at least once a year to assess the quality of our products and services	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
We periodically review the likely effect of changes in our environment (e.g. regulation) on customers	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
We have interdepartmental meetings at least once a quarter to discuss market trends and developments	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Marketing personnel in our organisation spend time discussing customers' future needs with other functional divisions	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Several departments get together periodically to plan a response to changes taking place in our business environment	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
If a major competitor were to launch an intensive campaign targeted at our customers, we would implement a response immediately	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The activities of the different divisions in this organisation are well co-ordinated	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

QUESTION 11: Do you personally use the following for marketing decision making?

Marketing decision support systems (e.g. to model "what if?" scenarios). Example: by how much will sales increase if I increase adspend by 10%?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Marketing expert systems (software making marketing decisions on your behalf) Example: using software to determine if a customer qualifies for credit	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Internet	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Intranet	Yes <input type="checkbox"/>	No <input type="checkbox"/>
A physical marketing library	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Data warehouse	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Geographic information systems	Yes <input type="checkbox"/>	No <input type="checkbox"/>

QUESTION 12: What, if any, suggestions would you make to improve your organisation's use of marketing information?

SECTION 4: COMPANY AND PERSONAL INFORMATION

Our company headquarters are situated in:

- North America
- Europe or United Kingdom
- Australasia
- Africa
- Asia or Far East
- South America

The main business activity of my company is:

- Telecommunications (full service)
- Mobile telecommunications
- Retail or wholesale
- Financial services
- Information technology services
- Public utility
- Other services

What best describes your management function?

- Product management
- Product development
- Market or business development
- Market research/intelligence
- Advertising and promotions
- Strategic market planning
- Channel management
- Other marketing support function

Which best describes your level in the organisation?

- Marketing executive
- Marketing middle management
- Marketing junior management
- Marketing specialist

Total number of full time employees working for company (best estimate):

How often do you use a personal computer at work? Daily 2-4 times per week Weekly Less than weekly

SECTION 5: PERSONAL INFORMATION

PLEASE NOTE: ONLY SUBMIT YOUR NAME AND E-MAIL ADDRESS IF YOU WOULD LIKE TO RECEIVE THE MANAGEMENT SUMMARY!

To send back the questionnaire:

- 1. Go to the "File" option on the toolbar and save your answer. The dialog box will tell you where the file 'mkintel.ppg' was saved (generally it is saved in 'c:\windows\temp')**
- 2. Go to the original e-mail**
- 3. Reply to the e-mail and attach the 'mkintel.ppg' file to the e-mail**

Name:

E-mail address:

THANK YOU FOR COMPLETING THE QUESTIONNAIRE!!

You will receive your copy of the management report before 31 May 1999.

APPENDIX B

DISCUSSION GUIDE USED FOR QUALITATIVE DISCUSSIONS WITH SOUTH AFRICAN SERVICE ORGANIZATIONS

DISCUSSION GUIDE FOR IN-DEPTH INTERVIEW ON MARKETING INFORMATION SYSTEMS

1. Describe the process a marketing decision maker would go through to get decision support information in your organisation
2. What categories of information do you provide?
3. Describe your marketing information organisation
4. What are your information sources?
5. What information technologies do you use to disseminate marketing information?
6. What information technologies do you use to support marketing decision making?
7. Describe the flow of marketing information in your organisation from source to end user
8. Who in your organisation benefits the most from marketing information systems
9. What are your frustrations regarding the provision of marketing information?
10. What are the benefits you reap from marketing information systems?
11. Would you regard marketing information systems as important? Why?
12. What suggestions would you make to your management to improve the use of marketing information?

APPENDIX C

**COVER LETTER AND QUESTIONNAIRE USED FOR THE
INTERNATIONAL SAMPLE (THE BENCHMARKING
EXCHANGE)**

Bestprfe.com

From: "TBESurveyor@benchnet.com" <tbe@benchnet.com>
To: <VENTERP1@telkom.co.za>
Date: Fri, Aug 27, 1999 11:39 PM
Subject: Best Practice / Benchmarking Survey Invitation #603

Dear Business Professional,

You are invited to participate in a Global Benchmarking Survey. TBE's service, The Surveyor(sm) has chosen you to be a potential participant in the following survey. If you are not the appropriate person to respond to this survey, it would be greatly appreciated if you would PLEASE FORWARD this invitation to someone inside or outside your organization who may be interested in participating. Once the survey has completed its run, as a participant you will receive a report of the study results.

Survey Subject: Team-based Improvement Best Practices

Time to complete: 5 - 10 minutes

Results shared: Participants only

Start Date: Today

Audience: All Public Invited

Sponsor: CDI Corporation

How to participate: Visit homepage www.industrymetrics.com then click on LIST OF SURVEYS. Then select from the Menu. Or, if your E-mail reader supports hyper-linking, click the following line:

<http://benchdb.com/Surveys/cdi1/start.htm>

Every day we hear from business professionals seeking those ever elusive "metrics". It's been virtually impossible to obtain accurate and current quantifiable data on any process. Until now that is. With the launch of the TBE Surveyor, we're receiving fresh metrics by the minute!

Your participation in these business process surveys is invaluable and greatly appreciated by the entire TBE and global benchmarking network of organizations. Please feel free to contact us at 1-831-662-9800 or 1-800-662-9800 (tollfree North America) if you have any questions or comments you have regarding this invitation.

If you would like to learn more about how to run a survey for your organization, visit or click here:

<http://www.benchnet.com/surveysabout.htm>

We look forward to continuing to bring state-of-the-art technology to your desk.

P.S. Just SOME of the many surveys / studies IN PROGRESS at <http://www.industrymetrics.com> are:

- Benchmarking for Best Practice
- Manufacturing Best Practice
- Order Fulfillment
- Human Error Issues on Info Security
- Customer Service
- Purchasing Performance Metrics
- Quality Improvement Councils
- Human Errors and Security Issues
- Warehouse Best Practices
- Total Quality Management
- Concept Development
- Product Problem Management
- Key Purchasing Performance
- Financial Services
- Employee Satisfaction
- Organizing for Reengineering
- Project & Change Management
- Imaging, Indexing & Electronic Records

- Outsourcing Desktop Services
- Field Services Study
- Environmental Best Practices
- Marketing Intelligence
- Facility Management
- Employee Benefits
- Customer Service

Sometimes our list of potentially interested people is either out of date or we simply missed the mark altogether. We do our best to keep our records up to date and apologize for any inconvenience.

If you wish to be removed from this automated survey service, please reply to this email with a subject of STOP . If you received this request in error, we truly apologize and promise to omit you from future distribution once we receive your reply of STOP.

If you reply with:

STOP - you will no longer be notified of ANY and ALL FUTURE surveys.

Marketing Intelligence Benchmarking Survey

Total Number of Responses: 117

1. Please indicate your agreement or disagreement with the following statements on the use of marketing information in your organization:

	Total Number of Responses				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
a. I have a single point of contact in the organization for all the marketing intelligence I require	15	24	15	48	15
b. Our marketing strategy influences our organization's information technology strategy	11	47	28	24	7
c. Information technology assists me in making better marketing decisions	43	46	21	5	2
d. Marketing intelligence I receive for decision making is generally accurate	9	55	38	11	3
e. It is easy for me to obtain marketing intelligence in the format I require	5	25	35	40	11
f. As a user of marketing intelligence my requirements are always taken into account when marketing information systems are designed	5	33	29	42	8
g. Information technology makes it easy to get access to the right marketing information	22	51	28	13	3
h. In our organization, the information technology department really understands the information needs of marketing	5	20	33	44	14
i. Information is usually available to me by the time I need it	2	32	29	47	7
j. I often have to process marketing intelligence before I can make decisions	16	66	25	8	1
k. I routinely receive marketing intelligence relevant to my responsibilities without asking for it	7	25	24	40	20
l. Our organization uses marketing intelligence to create a competitive edge in the industry	16	48	24	23	5
m. I often feel as if I am swamped by useless information	13	36	35	24	8

2. Please rate the quality of marketing intelligence available to you:

	Total Number of Responses
Excellent	6
Very Good	19
Good	41
Fair	36
Poor	13

3. Please rate your organization's market orientation by indicating to what extent you agree or disagree with each statement:

	Total Number of Responses				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
a. In this organization, we meet with customers at least once a year to find out what products or services they would need in future	46	37	10	15	7
b. In this organization, we do a lot of in-house market research	22	42	23	20	9
c. We are slow to detect changes in our customers' product preferences	7	39	30	32	8
d. We survey end users at least once a year to assess the quality of our products and services	36	38	18	15	8
e. We periodically review the likely effect of changes in our environment (e.g. regulation) on customers	18	44	24	25	4
f. We have interdepartmental meetings at least once a quarter to discuss market trends and developments	20	39	18	26	13
g. Marketing personnel in our organization spend time discussing customers' future needs with other functional divisions	13	41	29	24	9
h. Several departments get together periodically to plan a response to changes taking place in our business environment	20	44	19	22	11
i. If a major competitor were to launch an intensive campaign targeted at our customers, we would implement a response immediately	21	43	23	16	13
j. The activities of the different divisions in this organisations are well coordinated	7	27	31	35	15

4. In performing your job, which types of competitive information are important to your management?

	Total Number of Responses				
	Critical	Very Important	Important	Somewhat important	Not important
a. Competitive strategies	43	36	25	11	1
b. Political / cultural information	11	41	30	26	8
c. Manufacturing costs / capacity	22	36	28	18	11
d. R&D / product plans	25	42	22	20	7
e. Core competencies	41	36	30	8	1
f. Legal / regulatory information	26	30	35	18	7
g. Market position / shares	22	41	29	14	10
h. Organisation structure	12	34	36	26	6
i. Organisation changes	21	36	33	21	5
j. Customer information	61	35	16	2	2
k. Financial information	33	46	22	13	2
l. Promotional plans	22	30	34	22	8
m. Sales activities	26	45	30	12	3
n. Pricing	50	31	27	6	2
o. Product information	45	37	29	4	0

5. Which sources of information does your organization use to gather competitive intelligence? (select all that apply)

	Total Number of Responses
Annual reports of competitors	79
Industry contacts	101
Internet	96
Press clipping services	68
Primary market research	64
Purchased industry or market information	47
Salesperson reports	70
Trade shows or exhibitions	70
Other	18

6. What do you do with the competitive information you gather? (select all that apply)

	Total Number of Responses
Analysis of core competencies	74
Investment planning	22
Market positioning	83
Marketing/ advertising promotions	54
Product development/ R & D	68
Sales tactics	74
Other	9

7. When you need one of the following types of information, who do you turn to first?

	Total Number of Responses				
	Marketing intelligence organisation	I do it myself	I use a vendor	Advertising agency	My own industry contacts
a. Competitor activities	27	41	10	1	35
b. Customer satisfaction	29	63	12	1	9
c. Advertising effectiveness	21	36	15	19	13
d. Employee satisfaction	19	75	8	2	5
e. Market research	39	46	16	2	10
f. Desktop research	14	86	6	0	4
g. Data mining	20	69	7	2	7

8. Do you personally use the following for marketing decision making?

	Total Number of Responses	
	Yes	No
a. Marketing decision support systems (e.g. to model "what if" scenarios)	55	61
b. Marketing expert systems (software making marketing decisions on your behalf)	15	99
c. Internet	106	9
d. Intranet	69	43

e. A physical marketing library	46	62
f. Data warehouse	44	66
g. Geographic Information Systems (GIS)	21	87

9. Which of the following are included in your customer satisfaction measurement? (select all that apply)

	Total Number of Responses
Competitors (who are also customers)	49
Customers that recently had contact with the company	101
Customers with no contact for a year or longer	39
Employee satisfaction	57
Internal service delivery	41
Potential customers	49
Stakeholders (e.g. shareholders)	33

10. What is the overall level of customer satisfaction for your company? (based on top two box scores)

	Total Number of Responses
Higher than 75%	54
Between 50 and 75%	38
Less than 50%	3
Don't know	16

11. Our company headquarters are situated in:

	Total Number of Responses
Africa	2
Asia or Far East	16
Australasia	14
Europe or United Kingdom	21
North America	61
South America	2

12. The main business activity of my company is:

	Total Number of Responses
Agriculture, forestry and fishing	0
Community, social and personal services	5
Construction	2
Electricity, gas and water	5
Financial services	6
Information technology services	15
Manufacturing	30
Mining	0
Retail or wholesale	4
Telecommunications	6
Transport, storage and communication	4
Other	39

13. What best describes your group's activities in the organisation?

	Total Number of Responses
Financial management	4
Human resource management	4
Information technology management	7
Marketing	21
Operations/ production	14
Procurement	1
Sales/ business development, channel management or customer relations	18
Strategic planning	26
Other	21

14. Which best describes your level in the organisation?

	Total Number of Responses
Top Management	38
Middle Management	52
Junior Management	9
Specialist	17

15. Since this was a free-form answer, there will not be a composite score available.

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APPENDIX D

FREQUENCY TABLES FOR THE SOUTH AFRICAN SAMPLE (TOTAL SAMPLE SIZE 128)

South African sample - frequencies

Statistics

		Internet @ home	Internet @ work	Count-net	Economic Indicators	Technology
N	Valid	94	104	49	127	127
	Missing	34	24	79	1	1
	Mean	1.46	1.09	2.0000	3.41	3.61
	Std. Deviation	.50	.28	.0000	.99	.90

Statistics

		Social trends	Regulation	Customer demographics	Direct customer feedback	Competitor strategies
N	Valid	128	127	127	128	127
	Missing	0	1	1	0	1
	Mean	3.02	3.64	3.28	3.87	4.02
	Std. Deviation	1.14	1.04	1.31	.94	.79

Statistics

		Sales forecasts	Company financial information	Status reports	Trend reports	Exception reports
N	Valid	128	128	127	127	124
	Missing	0	0	1	1	4
	Mean	3.62	3.78	3.15	3.39	2.93
	Std. Deviation	1.00	1.00	.98	.97	1.04

Statistics

		Ad hoc information	Marketing decision models	Marketing decision support tools	Alternative courses of action	Answers to 'what if?'
N	Valid	125	128	128	127	128
	Missing	3	0	0	1	0
	Mean	3.30	2.91	2.98	3.35	3.27
	Std. Deviation	.87	1.03	1.04	.82	.94

Statistics

		Currency of information	Level of customisation	Internal vs. external	Level of computerisation	Levels of accuracy
N	Valid	127	126	127	128	128
	Missing	1	2	1	0	0
Mean		1.98	3.67	3.33	3.29	2.08
Std. Deviation		.84	1.07	.98	1.34	.99

Statistics

		Levels of detail	Level of rigidity	Historical vs. future orientation	Level of uniqueness	Economic indicators
N	Valid	128	128	125	126	121
	Missing	0	0	3	2	7
Mean		2.77	3.54	3.35	3.40	3.18
Std. Deviation		1.16	.92	1.03	1.02	1.06

Statistics

		Technology indicators	Social trends	Industry regulation	Customer demographics	Direct customer feedback
N	Valid	128	125	127	124	126
	Missing	0	3	1	4	2
Mean		3.33	2.80	3.51	2.86	3.08
Std. Deviation		1.22	1.09	1.11	1.23	1.22

Statistics

		Competitor strategies	Sales forecasts	Financial information	Status reports	Trend reports
N	Valid	128	127	128	128	127
	Missing	0	1	0	0	1
Mean		2.71	3.26	3.63	3.16	2.83
Std. Deviation		1.10	1.07	1.18	1.06	1.15

Statistics

		Exception reports	Ad hoc information	Marketing decision models	Marketing decision support tools	Alternative courses of action
N	Valid	118	127	125	127	125
	Missing	10	1	3	1	3
Mean		2.86	3.06	2.39	2.30	2.43
Std. Deviation		1.16	1.01	1.12	1.12	1.05

Statistics

		Answers to 'what if?' questions	Press clipping service	Annual reports	Salesperson reports	Purchased information
N	Valid	124	123	123	122	122
	Missing	4	5	5	6	6
Mean		2.49	1.20	1.50	1.25	1.44
Std. Deviation		1.08	.40	.50	.43	.50

Statistics

		Internet	Other	Other	Other (additional)	Potential customers
N	Valid	121	114	34	2	123
	Missing	7	14	94	126	5
Mean		1.39	1.73	2.50	1.50	1.41
Std. Deviation		.49	.45	1.19	.71	.49

Statistics

		Competitor profiles	Industry regulation	National economic indicators	Customer demographics	Market research reports
N	Valid	123	123	123	123	123
	Missing	5	5	5	5	5
Mean		1.72	1.53	1.72	1.58	1.67
Std. Deviation		.45	.50	.45	.50	.47

Statistics

		Single point of contact	Influence of marketing strategy	Information technology and decision making	Accuracy of marketing intelligence	Format required
N	Valid	127	127	127	127	127
	Missing	1	1	1	1	1
Mean		2.43	3.26	3.73	3.46	2.80
Std. Deviation		1.24	1.17	1.09	.79	1.08

Statistics

		User needs are taken into account	Easy to get access to MI	IT understands marketing information needs	Information is available to me by the time I need it	Need to process marketing intelligence
N	Valid	126	127	126	127	127
	Missing	2	1	2	1	1
Mean		2.71	3.37	2.65	2.84	2.45
Std. Deviation		1.05	.92	1.15	1.01	1.04

Statistics

		Proactive distribution of marketing intelligence	Creating a competitive edge with MI	Swamped by useless information	Overall satisfaction with MI	meet with customers once a year
N	Valid	127	127	126	128	126
	Missing	1	1	2	0	2
Mean		2.53	3.13	2.87	2.55	3.55
Std. Deviation		1.08	1.10	1.10	.91	1.42

Statistics

		Lot of in-house market research	Slow to detect changes in customer preference	Survey end users at least once a year	Review effect of environmental changes
N	Valid	126	126	126	126
	Missing	2	2	2	2
Mean		3.17	3.20	3.37	3.54
Std. Deviation		1.18	1.16	1.26	.97

Statistics

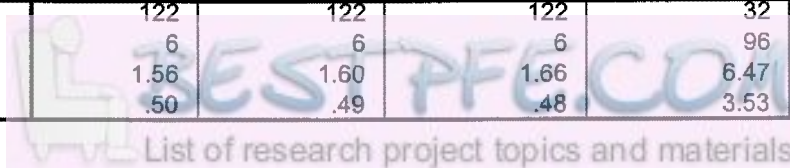
		Interdepartmental meetings to discuss impact of market trends	Discuss customers future needs with other divisions	Planning response to environmental changes	response to competitive actions
N	Valid	126	126	126	123
	Missing	2	2	2	5
Mean		3.38	3.19	3.26	3.37
Std. Deviation		1.19	1.09	1.15	1.30

Statistics

		Activities are well coordinated	Marketing decision support systems	Marketing expert systems	Internet	Intranet
N	Valid	125	123	120	123	122
	Missing	3	5	8	5	6
Mean		2.98	1.68	1.74	1.26	1.55
Std. Deviation		1.08	.47	.44	.44	.50

Statistics

		Marketing library	Data warehouse	Geographical Information Systems	Open suggestions 1	Open question 2
N	Valid	122	122	122	32	0
	Missing	6	6	6	96	128
Mean		1.56	1.60	1.66	6.47	
Std. Deviation		.50	.49	.48	3.53	



 List of research project topics and materials

Statistics

		Open question 3	Where are you headquarters situated?	Main business	Your main function	Open question 3
N	Valid	0	126	121	114	124
	Missing	128	2	7	14	4
Mean			3.55	5.40	4.18	1.63
Std. Deviation			1.00	1.94	2.12	.95

Statistics

		EMPLOYEE	How often do you use a PC?	empl1	REGR factor score 1 for analysis 1	REGR factor score 2 for analysis 1
N	Valid	122	128	122	123	123
	Missing	6	0	6	5	5
Mean		4586.11	1.23	2.0410	-1.04704E-16	3.429957E-17
Std. Deviation		13152.74	.70	.8371	1.0000000	1.0000000

Statistics

		REGR factor score 3 for analysis 1	REGR factor score 1 for analysis 2	REGR factor score 2 for analysis 2	REGR factor score 3 for analysis 2	nethome = 1 + network = 1 (FILTER)
N	Valid	123	123	123	123	92
	Missing	5	5	5	5	36
Mean		-1.08314E-16	-3.97153E-17	1.696926E-16	-2.05797E-16	.37
Std. Deviation		1.0000000	1.0000000	1.0000000	1.0000000	.49

Statistics

		NTILES of EMPLOYEE	newbus	NTILES of EMPLOYEE	size
N	Valid	122	121	122	122
	Missing	6	7	6	6
Mean		2.48	2.77	2.01	2.04
Std. Deviation		1.12	1.35	.82	.84

Frequency Table

Internet @ home

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	51	39.8	54.3	54.3
	No	43	33.6	45.7	100.0
	Total	94	73.4	100.0	
Missing	System	34	26.6		
Total		128	100.0		

Internet @ work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	95	74.2	91.3	91.3
	No	9	7.0	8.7	100.0
	Total	104	81.3	100.0	
Missing	System	24	18.8		
Total		128	100.0		

Count-net

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	49	38.3	100.0	100.0
Missing	System	79	61.7		
Total		128	100.0		

Economic Indicators

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	3	2.3	2.4	2.4
	Somewhat important	22	17.2	17.3	19.7
	Important	38	29.7	29.9	49.6
	Very important	48	37.5	37.8	87.4
	Critical	16	12.5	12.6	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Technology

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	2	1.6	1.6	1.6
	Somewhat important	10	7.8	7.9	9.4
	Important	44	34.4	34.6	44.1
	Very important	51	39.8	40.2	84.3
	Critical	20	15.6	15.7	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Social trends

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	15	11.7	11.7	11.7
	Somewhat important	23	18.0	18.0	29.7
	Important	47	36.7	36.7	66.4
	Very important	30	23.4	23.4	89.8
	Critical	13	10.2	10.2	100.0
	Total	128	100.0	100.0	

Regulation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	4	3.1	3.1	3.1
	Somewhat important	12	9.4	9.4	12.6
	Important	39	30.5	30.7	43.3
	Very important	43	33.6	33.9	77.2
	Critical	29	22.7	22.8	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Customer demographics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	16	12.5	12.6	12.6
	Somewhat important	19	14.8	15.0	27.6
	Important	33	25.8	26.0	53.5
	Very important	31	24.2	24.4	78.0
	Critical	28	21.9	22.0	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Direct customer feedback

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	3	2.3	2.3	2.3
	Somewhat important	6	4.7	4.7	7.0
	Important	30	23.4	23.4	30.5
	Very important	55	43.0	43.0	73.4
	Critical	34	26.6	26.6	100.0
	Total	128	100.0	100.0	

Competitor strategies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat important	5	3.9	3.9	3.9
	Important	23	18.0	18.1	22.0
	Very important	64	50.0	50.4	72.4
	Critical	35	27.3	27.6	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Sales forecasts

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	4	3.1	3.1	3.1
	Somewhat important	13	10.2	10.2	13.3
	Important	35	27.3	27.3	40.6
	Very important	52	40.6	40.6	81.3
	Critical	24	18.8	18.8	100.0
	Total	128	100.0	100.0	

Company financial information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	4	3.1	3.1	3.1
	Somewhat important	6	4.7	4.7	7.8
	Important	39	30.5	30.5	38.3
	Very important	44	34.4	34.4	72.7
	Critical	35	27.3	27.3	100.0
	Total	128	100.0	100.0	

Status reports

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	8	6.3	6.3	6.3
	Somewhat important	21	16.4	16.5	22.8
	Important	49	38.3	38.6	61.4
	Very important	42	32.8	33.1	94.5
	Critical	7	5.5	5.5	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Trend reports

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	4	3.1	3.1	3.1
	Somewhat important	19	14.8	15.0	18.1
	Important	40	31.3	31.5	49.6
	Very important	51	39.8	40.2	89.8
	Critical	13	10.2	10.2	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Exception reports

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	7	5.5	5.6	5.6
	Somewhat important	40	31.3	32.3	37.9
	Important	42	32.8	33.9	71.8
	Very important	25	19.5	20.2	91.9
	Critical	10	7.8	8.1	100.0
	Total	124	96.9	100.0	
Missing	System	4	3.1		
Total		128	100.0		

Ad hoc information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	2	1.6	1.6	1.6
	Somewhat important	20	15.6	16.0	17.6
	Important	49	38.3	39.2	56.8
	Very important	46	35.9	36.8	93.6
	Critical	8	6.3	6.4	100.0
	Total	125	97.7	100.0	
Missing	System	3	2.3		
Total		128	100.0		

Marketing decision models

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	14	10.9	10.9	10.9
	Somewhat important	28	21.9	21.9	32.8
	Important	46	35.9	35.9	68.8
	Very important	36	28.1	28.1	96.9
	Critical	4	3.1	3.1	100.0
	Total	128	100.0	100.0	

Marketing decision support tools

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	10	7.8	7.8	7.8
	Somewhat important	31	24.2	24.2	32.0
	Important	48	37.5	37.5	69.5
	Very important	30	23.4	23.4	93.0
	Critical	9	7.0	7.0	100.0
	Total	128	100.0	100.0	

Alternative courses of action

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	2	1.6	1.6	1.6
	Somewhat important	12	9.4	9.4	11.0
	Important	63	49.2	49.6	60.6
	Very important	40	31.3	31.5	92.1
	Critical	10	7.8	7.9	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Answers to 'what if?'

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	5	3.9	3.9	3.9
	Somewhat important	17	13.3	13.3	17.2
	Important	57	44.5	44.5	61.7
	Very important	37	28.9	28.9	90.6
	Critical	12	9.4	9.4	100.0
	Total	128	100.0	100.0	

Currency of information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very up to date	41	32.0	32.3	32.3
	More up-to-date than old	51	39.8	40.2	72.4
	Both up-to-date and relatively old	31	24.2	24.4	96.9
	Somewhat old	4	3.1	3.1	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Level of customisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Standard	2	1.6	1.6	1.6
	More standard than custom	18	14.1	14.3	15.9
	Both standard and custom	33	25.8	26.2	42.1
	More custom than standard	40	31.3	31.7	73.8
	Custom	33	25.8	26.2	100.0
	Total	126	98.4	100.0	
Missing	System	2	1.6		
Total		128	100.0		

Internal vs. external

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Internal	6	4.7	4.7	4.7
	More internal than external	12	9.4	9.4	14.2
	Both internal and external	60	46.9	47.2	61.4
	More external than internal	32	25.0	25.2	86.6
	External	17	13.3	13.4	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Level of computerisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Computerised	15	11.7	11.7	11.7
	Mostly computerised	24	18.8	18.8	30.5
	Equally on computer and hard copy	30	23.4	23.4	53.9
	Computer and hard copy	27	21.1	21.1	75.0
	Computer and hard copy	32	25.0	25.0	100.0
	Total	128	100.0	100.0	

Levels of accuracy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Accurate	43	33.6	33.6	33.6
	High level of accuracy	45	35.2	35.2	68.8
	Mix of accurate and inaccurate	29	22.7	22.7	91.4
	More inaccurate than accurate	9	7.0	7.0	98.4
	Relatively inaccurate	2	1.6	1.6	100.0
	Total	128	100.0	100.0	

Levels of detail

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Detail	22	17.2	17.2	17.2
	Relatively detail	32	25.0	25.0	42.2
	Mix of detail and aggregate	34	26.6	26.6	68.8
	More aggregate	34	26.6	26.6	95.3
	Summarised	6	4.7	4.7	100.0
	Total	128	100.0	100.0	

Level of rigidity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fixed format	1	.8	.8	.8
	More fixed	16	12.5	12.5	13.3
	Mix of fixed and flexible formats	43	33.6	33.6	46.9
	More flexible	49	38.3	38.3	85.2
	Flexible	19	14.8	14.8	100.0
	Total	128	100.0	100.0	

Historical vs. future orientation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Historically oriented	5	3.9	4.0	4.0
	More historical than futuristic	16	12.5	12.8	16.8
	Mix of historical and futuristic	55	43.0	44.0	60.8
	More futuristic than historical	28	21.9	22.4	83.2
	Future oriented	21	16.4	16.8	100.0
	Total	125	97.7	100.0	
Missing	System	3	2.3		
Total		128	100.0		

Level of uniqueness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Routine	5	3.9	4.0	4.0
	More routine than unique	15	11.7	11.9	15.9
	Mix of unique and routine	51	39.8	40.5	56.3
	More unique than routine	35	27.3	27.8	84.1
	Unique	20	15.6	15.9	100.0
	Total	126	98.4	100.0	
Missing	System	2	1.6		
Total		128	100.0		

Economic indicators

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	6	4.7	5.0	5.0
	Fair	27	21.1	22.3	27.3
	Good	41	32.0	33.9	61.2
	Very good	33	25.8	27.3	88.4
	Excellent	14	10.9	11.6	100.0
	Total	121	94.5	100.0	
Missing	0	1	.8		
	System	6	4.7		
	Total	7	5.5		
Total		128	100.0		

Technology indicators

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	10	7.8	7.8	7.8
	Fair	24	18.8	18.8	26.6
	Good	35	27.3	27.3	53.9
	Very good	32	25.0	25.0	78.9
	Excellent	27	21.1	21.1	100.0
	Total	128	100.0	100.0	

Social trends

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	13	10.2	10.4	10.4
	Fair	40	31.3	32.0	42.4
	Good	41	32.0	32.8	75.2
	Very good	21	16.4	16.8	92.0
	Excellent	10	7.8	8.0	100.0
	Total	125	97.7	100.0	
Missing	System	3	2.3		
Total		128	100.0		

Industry regulation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	4	3.1	3.1	3.1
	Fair	20	15.6	15.7	18.9
	Good	40	31.3	31.5	50.4
	Very good	33	25.8	26.0	76.4
	Excellent	30	23.4	23.6	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Customer demographics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	19	14.8	15.3	15.3
	Fair	28	21.9	22.6	37.9
	Good	45	35.2	36.3	74.2
	Very good	15	11.7	12.1	86.3
	Excellent	17	13.3	13.7	100.0
	Total	124	96.9	100.0	
Missing	System	4	3.1		
Total		128	100.0		

Direct customer feedback

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	11	8.6	8.7	8.7
	Fair	35	27.3	27.8	36.5
	Good	33	25.8	26.2	62.7
	Very good	27	21.1	21.4	84.1
	Excellent	20	15.6	15.9	100.0
	Total	126	98.4	100.0	
Missing	System	2	1.6		
Total		128	100.0		

Competitor strategies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	18	14.1	14.1	14.1
	Fair	40	31.3	31.3	45.3
	Good	38	29.7	29.7	75.0
	Very good	25	19.5	19.5	94.5
	Excellent	7	5.5	5.5	100.0
	Total	128	100.0	100.0	

Sales forecasts

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	8	6.3	6.3	6.3
	Fair	20	15.6	15.7	22.0
	Good	46	35.9	36.2	58.3
	Very good	37	28.9	29.1	87.4
	Excellent	16	12.5	12.6	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Financial information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	8	6.3	6.3	6.3
	Fair	12	9.4	9.4	15.6
	Good	36	28.1	28.1	43.8
	Very good	35	27.3	27.3	71.1
	Excellent	37	28.9	28.9	100.0
	Total	128	100.0	100.0	

Status reports

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	7	5.5	5.5	5.5
	Fair	27	21.1	21.1	26.6
	Good	47	36.7	36.7	63.3
	Very good	32	25.0	25.0	88.3
	Excellent	15	11.7	11.7	100.0
	Total	128	100.0	100.0	

Trend reports

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	17	13.3	13.4	13.4
	Fair	36	28.1	28.3	41.7
	Good	34	26.6	26.8	68.5
	Very good	31	24.2	24.4	92.9
	Excellent	9	7.0	7.1	100.0
	Total	127	99.2	100.0	
Missing	0	1	.8		
Total		128	100.0		

Exception reports

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	12	9.4	10.2	10.2
	Fair	40	31.3	33.9	44.1
	Good	30	23.4	25.4	69.5
	Very good	24	18.8	20.3	89.8
	Excellent	12	9.4	10.2	100.0
	Total	118	92.2	100.0	
Missing	0	1	.8		
	System	9	7.0		
	Total	10	7.8		
Total		128	100.0		

Ad hoc information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	10	7.8	7.9	7.9
	Fair	21	16.4	16.5	24.4
	Good	57	44.5	44.9	69.3
	Very good	29	22.7	22.8	92.1
	Excellent	10	7.8	7.9	100.0
	Total	127	99.2	100.0	
Missing	0	1	.8		
Total		128	100.0		

Marketing decision models

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	33	25.8	26.4	26.4
	Fair	36	28.1	28.8	55.2
	Good	34	26.6	27.2	82.4
	Very good	18	14.1	14.4	96.8
	Excellent	4	3.1	3.2	100.0
	Total	125	97.7	100.0	
Missing	System	3	2.3		
Total		128	100.0		

Marketing decision support tools

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	35	27.3	27.6	27.6
	Fair	45	35.2	35.4	63.0
	Good	26	20.3	20.5	83.5
	Very good	16	12.5	12.6	96.1
	Excellent	5	3.9	3.9	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Alternative courses of action

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	26	20.3	20.8	20.8
	Fair	42	32.8	33.6	54.4
	Good	38	29.7	30.4	84.8
	Very good	15	11.7	12.0	96.8
	Excellent	4	3.1	3.2	100.0
	Total	125	97.7	100.0	
Missing	System	3	2.3		
Total		128	100.0		

Answers to 'what if?' questions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	27	21.1	21.8	21.8
	Fair	35	27.3	28.2	50.0
	Good	39	30.5	31.5	81.5
	Very good	20	15.6	16.1	97.6
	Excellent	3	2.3	2.4	100.0
	Total	124	96.9	100.0	
Missing	System	4	3.1		
Total		128	100.0		

Press clipping service

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	99	77.3	80.5	80.5
	2	24	18.8	19.5	100.0
	Total	123	96.1	100.0	
Missing	System	5	3.9		
Total		128	100.0		

Annual reports

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	62	48.4	50.4	50.4
	2	61	47.7	49.6	100.0
	Total	123	96.1	100.0	
Missing	System	5	3.9		
Total		128	100.0		

Salesperson reports

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	92	71.9	75.4	75.4
	2	30	23.4	24.6	100.0
	Total	122	95.3	100.0	
Missing	System	6	4.7		
Total		128	100.0		

Purchased information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	68	53.1	55.7	55.7
	2	54	42.2	44.3	100.0
	Total	122	95.3	100.0	
Missing	System	6	4.7		
Total		128	100.0		

Internet

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	74	57.8	61.2	61.2
	2	47	36.7	38.8	100.0
	Total	121	94.5	100.0	
Missing	System	7	5.5		
Total		128	100.0		

Other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	31	24.2	27.2	27.2
	2	83	64.8	72.8	100.0
	Total	114	89.1	100.0	
Missing	System	14	10.9		
Total		128	100.0		

Other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Research - internal	2	1.6	5.9	5.9
	External research	23	18.0	67.6	73.5
	3	4	3.1	11.8	85.3
	4	2	1.6	5.9	91.2
	5	1	.8	2.9	94.1
	6	2	1.6	5.9	100.0
	Total	34	26.6	100.0	
Missing	System	94	73.4		
Total		128	100.0		

Other (additional)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	External research	1	.8	50.0	50.0
	2	1	.8	50.0	100.0
	Total	2	1.6	100.0	
Missing	System	126	98.4		
Total		128	100.0		

Potential customers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	72	56.3	58.5	58.5
	2	51	39.8	41.5	100.0
	Total	123	96.1	100.0	
Missing	System	5	3.9		
Total		128	100.0		

Competitor profiles

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	34	26.6	27.6	27.6
	2	89	69.5	72.4	100.0
	Total	123	96.1	100.0	
Missing	System	5	3.9		
Total		128	100.0		

Industry regulation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	58	45.3	47.2	47.2
	2	65	50.8	52.8	100.0
	Total	123	96.1	100.0	
Missing	System	5	3.9		
Total		128	100.0		

National economic indicators

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	35	27.3	28.5	28.5
	2	88	68.8	71.5	100.0
	Total	123	96.1	100.0	
Missing	System	5	3.9		
Total		128	100.0		

Customer demographics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	52	40.6	42.3	42.3
	2	71	55.5	57.7	100.0
	Total	123	96.1	100.0	
Missing	System	5	3.9		
Total		128	100.0		

Market research reports

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	41	32.0	33.3	33.3
	2	82	64.1	66.7	100.0
	Total	123	96.1	100.0	
Missing	System	5	3.9		
Total		128	100.0		

Single point of contact

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	31	24.2	24.4	24.4
	Disagree	51	39.8	40.2	64.6
	Undecided	13	10.2	10.2	74.8
	Agree	23	18.0	18.1	92.9
	Strongly agree	9	7.0	7.1	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Influence of marketing strategy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	9	7.0	7.1	7.1
	Disagree	31	24.2	24.4	31.5
	Undecided	21	16.4	16.5	48.0
	Agree	50	39.1	39.4	87.4
	Strongly agree	16	12.5	12.6	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Information technology and decision making

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	8	6.3	6.3	6.3
	Disagree	12	9.4	9.4	15.7
	Undecided	13	10.2	10.2	26.0
	Agree	67	52.3	52.8	78.7
	Strongly agree	27	21.1	21.3	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Accuracy of marketing intelligence

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	.8	.8	.8
	Disagree	18	14.1	14.2	15.0
	Undecided	32	25.0	25.2	40.2
	Agree	73	57.0	57.5	97.6
	Strongly agree	3	2.3	2.4	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Format required

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	14	10.9	11.0	11.0
	Disagree	42	32.8	33.1	44.1
	Undecided	32	25.0	25.2	69.3
	Agree	34	26.6	26.8	96.1
	Strongly agree	5	3.9	3.9	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

User needs are taken into account

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	16	12.5	12.7	12.7
	Disagree	40	31.3	31.7	44.4
	Undecided	38	29.7	30.2	74.6
	Agree	28	21.9	22.2	96.8
	Strongly agree	4	3.1	3.2	100.0
	Total	126	98.4	100.0	
Missing	System	2	1.6		
Total		128	100.0		

Easy to get access to MI

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	2.3	2.4	2.4
	Disagree	22	17.2	17.3	19.7
	Undecided	35	27.3	27.6	47.2
	Agree	59	46.1	46.5	93.7
	Strongly agree	8	6.3	6.3	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

IT understands marketing information needs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	21	16.4	16.7	16.7
	Disagree	41	32.0	32.5	49.2
	Undecided	33	25.8	26.2	75.4
	Agree	23	18.0	18.3	93.7
	Strongly agree	8	6.3	6.3	100.0
	Total	126	98.4	100.0	
Missing	System	2	1.6		
Total		128	100.0		

Information is available to me by the time I need it

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	10	7.8	7.9	7.9
	Disagree	44	34.4	34.6	42.5
	Undecided	31	24.2	24.4	66.9
	Agree	40	31.3	31.5	98.4
	Strongly agree	2	1.6	1.6	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Need to process marketing intelligence

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	18	14.1	14.2	14.2
	Disagree	64	50.0	50.4	64.6
	Undecided	19	14.8	15.0	79.5
	Agree	22	17.2	17.3	96.9
	Strongly agree	4	3.1	3.1	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Proactive distribution of marketing intelligence

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	20	15.6	15.7	15.7
	Disagree	54	42.2	42.5	58.3
	Undecided	22	17.2	17.3	75.6
	Agree	28	21.9	22.0	97.6
	Strongly agree	3	2.3	2.4	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Creating a competitive edge with MI

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	7	5.5	5.5	5.5
	Disagree	39	30.5	30.7	36.2
	Undecided	20	15.6	15.7	52.0
	Agree	52	40.6	40.9	92.9
	Strongly agree	9	7.0	7.1	100.0
	Total	127	99.2	100.0	
Missing	System	1	.8		
Total		128	100.0		

Swamped by useless information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	12	9.4	9.5	9.5
	Disagree	43	33.6	34.1	43.7
	Undecided	26	20.3	20.6	64.3
	Agree	39	30.5	31.0	95.2
	Strongly agree	6	4.7	4.8	100.0
	Total	126	98.4	100.0	
Missing	System	2	1.6		
Total		128	100.0		

Overall satisfaction with MI

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	14	10.9	10.9	10.9
	Fair	52	40.6	40.6	51.6
	Good	41	32.0	32.0	83.6
	Very good	20	15.6	15.6	99.2
	Excellent	1	.8	.8	100.0
	Total	128	100.0	100.0	

meet with customers once a year

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	16	12.5	12.7	12.7
	Disagree	22	17.2	17.5	30.2
	Undecided	5	3.9	4.0	34.1
	Agree	43	33.6	34.1	68.3
	Strongly agree	40	31.3	31.7	100.0
	Total	126	98.4	100.0	
Missing	System	2	1.6		
Total		128	100.0		

Lot of in-house market research

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	12	9.4	9.5	9.5
	Disagree	30	23.4	23.8	33.3
	Undecided	22	17.2	17.5	50.8
	Agree	49	38.3	38.9	89.7
	Strongly agree	13	10.2	10.3	100.0
	Total	126	98.4	100.0	
Missing	System	2	1.6		
Total		128	100.0		

Slow to detect changes in customer preference

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	3.1	3.2	3.2
	Disagree	44	34.4	34.9	38.1
	Undecided	19	14.8	15.1	53.2
	Agree	41	32.0	32.5	85.7
	Strongly agree	18	14.1	14.3	100.0
	Total	126	98.4	100.0	
Missing	System	2	1.6		
Total		128	100.0		

Survey end users at least once a year

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	12	9.4	9.5	9.5
	Disagree	27	21.1	21.4	31.0
	Undecided	11	8.6	8.7	39.7
	Agree	54	42.2	42.9	82.5
	Strongly agree	22	17.2	17.5	100.0
	Total	126	98.4	100.0	
Missing	System	2	1.6		
Total		128	100.0		

Review effect of environmental changes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	.8	.8	.8
	Disagree	26	20.3	20.6	21.4
	Undecided	17	13.3	13.5	34.9
	Agree	68	53.1	54.0	88.9
	Strongly agree	14	10.9	11.1	100.0
	Total	126	98.4	100.0	
Missing	System	2	1.6		
Total		128	100.0		

Interdepartmental meetings to discuss impact of market trends

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	10	7.8	7.9	7.9
	Disagree	26	20.3	20.6	28.6
	Undecided	13	10.2	10.3	38.9
	Agree	60	46.9	47.6	86.5
	Strongly agree	17	13.3	13.5	100.0
	Total	126	98.4	100.0	
Missing	System	2	1.6		
Total		128	100.0		

Discuss customers future needs with other divisions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	9	7.0	7.1	7.1
	Disagree	30	23.4	23.8	31.0
	Undecided	23	18.0	18.3	49.2
	Agree	56	43.8	44.4	93.7
	Strongly agree	8	6.3	6.3	100.0
	Total	126	98.4	100.0	
Missing	System	2	1.6		
Total		128	100.0		

Planning response to environmental changes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	13	10.2	10.3	10.3
	Disagree	23	18.0	18.3	28.6
	Undecided	17	13.3	13.5	42.1
	Agree	64	50.0	50.8	92.9
	Strongly agree	9	7.0	7.1	100.0
	Total	126	98.4	100.0	
Missing	System	2	1.6		
Total		128	100.0		

response to competitive actions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	14	10.9	11.4	11.4
	Disagree	21	16.4	17.1	28.5
	Undecided	18	14.1	14.6	43.1
	Agree	45	35.2	36.6	79.7
	Strongly agree	25	19.5	20.3	100.0
	Total	123	96.1	100.0	
Missing	System	5	3.9		
Total		128	100.0		

Activities are well coordinated

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	12	9.4	9.6	9.6
	Disagree	33	25.8	26.4	36.0
	Undecided	29	22.7	23.2	59.2
	Agree	47	36.7	37.6	96.8
	Strongly agree	4	3.1	3.2	100.0
	Total	125	97.7	100.0	
Missing	System	3	2.3		
Total		128	100.0		

Marketing decision support systems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	39	30.5	31.7	31.7
	No	84	65.6	68.3	100.0
	Total	123	96.1	100.0	
Missing	System	5	3.9		
Total		128	100.0		

Marketing expert systems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	31	24.2	25.8	25.8
	No	89	69.5	74.2	100.0
	Total	120	93.8	100.0	
Missing	System	8	6.3		
Total		128	100.0		

Internet

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	91	71.1	74.0	74.0
	No	32	25.0	26.0	100.0
	Total	123	96.1	100.0	
Missing	System	5	3.9		
Total		128	100.0		

Intranet

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	55	43.0	45.1	45.1
	No	67	52.3	54.9	100.0
	Total	122	95.3	100.0	
Missing	System	6	4.7		
Total		128	100.0		

Marketing library

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	54	42.2	44.3	44.3
	No	68	53.1	55.7	100.0
	Total	122	95.3	100.0	
Missing	System	6	4.7		
Total		128	100.0		

Data warehouse

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	49	38.3	40.2	40.2
	No	73	57.0	59.8	100.0
	Total	122	95.3	100.0	
Missing	System	6	4.7		
Total		128	100.0		

Geographical Information Systems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	42	32.8	34.4	34.4
	No	80	62.5	65.6	100.0
	Total	122	95.3	100.0	
Missing	System	6	4.7		
Total		128	100.0		

Where are you headquarters situated?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	North America	9	7.0	7.1	7.1
	Europe or United Kingdom	16	12.5	12.7	19.8
	Australasia	1	.8	.8	20.6
	Africa	98	76.6	77.8	98.4
	Asia or Far East	1	.8	.8	99.2
	South America	1	.8	.8	100.0
	Total	126	98.4	100.0	
	Missing	System	2	1.6	
Total		128	100.0		

Main business

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Telecommunications	6	4.7	5.0	5.0
	Mobile telecommunications	1	.8	.8	5.8
	Retail or wholesale	22	17.2	18.2	24.0
	Financial services	16	12.5	13.2	37.2
	IT services	5	3.9	4.1	41.3
	Public utility	7	5.5	5.8	47.1
	Other services	64	50.0	52.9	100.0
	Total	121	94.5	100.0	
Missing	System	7	5.5		
Total		128	100.0		

Your main function

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Product management	11	8.6	9.6	9.6
	Product development	2	1.6	1.8	11.4
	Market or business development	54	42.2	47.4	58.8
	Marketing intelligence	4	3.1	3.5	62.3
	Advertising and promotions	8	6.3	7.0	69.3
	Strategic market planning	17	13.3	14.9	84.2
	Channel management	2	1.6	1.8	86.0
	Other marketing support	16	12.5	14.0	100.0
	Total	114	89.1	100.0	
Missing	System	14	10.9		
Total		128	100.0		

Open question 3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Executive	76	59.4	61.3	61.3
	Middle management	29	22.7	23.4	84.7
	Junior management	8	6.3	6.5	91.1
	Specialist	11	8.6	8.9	100.0
	Total	124	96.9	100.0	
Missing	System	4	3.1		
Total		128	100.0		

How often do you use a PC?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	112	87.5	87.5	87.5
	2-4 times per week	8	6.3	6.3	93.8
	Weekly	2	1.6	1.6	95.3
	Less than weekly	6	4.7	4.7	100.0
	Total	128	100.0	100.0	

empl1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	40	31.3	32.8	32.8
	2.00	37	28.9	30.3	63.1
	3.00	45	35.2	36.9	100.0
	Total	122	95.3	100.0	
Missing	System	6	4.7		
Total		128	100.0		

newbus

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Services	35	27.3	28.9	28.9
	Retail and wholesale	22	17.2	18.2	47.1
	'Other'	64	50.0	52.9	100.0
	Total	121	94.5	100.0	
Missing	System	7	5.5		
Total		128	100.0		

size

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	40	31.3	32.8	32.8
	2	37	28.9	30.3	63.1
	3	45	35.2	36.9	100.0
	Total	122	95.3	100.0	
Missing	System	6	4.7		
Total		128	100.0		

APPENDIX E

FREQUENCY TABLES FOR THE INTERNATIONAL SAMPLE (TOTAL SAMPLE SIZE 106)

International sample - frequencies

Statistics

		q1a	q1b	q1c	q1d	q1e	q1f
N	Valid	106	106	106	106	105	106
	Missing	0	0	0	0	1	0
Mean		2.74	3.34	4.07	3.47	2.68	2.86
Std. Deviation		1.32	1.09	.97	.90	1.05	1.05

Statistics

		q1g	q1h	q1i	q1j	q1k	q1l
N	Valid	106	106	106	106	106	106
	Missing	0	0	0	0	0	0
Mean		3.63	2.62	2.72	3.75	2.60	3.36
Std. Deviation		1.00	1.07	.94	.84	1.17	1.12

Statistics

		q1m	q2	q3a	q3b	q3c	q3d
N	Valid	106	105	105	106	106	105
	Missing	0	1	1	0	0	1
Mean		3.19	2.69	3.83	3.33	3.07	3.63
Std. Deviation		1.10	1.07	1.26	1.20	1.05	1.26

Statistics

		q3e	q3f	q3g	q3h	q3i	q3j
N	Valid	105	106	106	106	106	105
	Missing	1	0	0	0	0	1
Mean		3.39	3.23	3.20	3.31	3.31	2.76
Std. Deviation		1.09	1.27	1.13	1.26	1.25	1.14

Statistics

		Q8A	Q8B	Q8C	Q8D	Q8E	Q8F
N	Valid	106	106	106	106	106	106
	Missing	0	0	0	0	0	0
Mean							
Std. Deviation							

Statistics

		Q8G	NAME	q4a	q4b	q4c	q4d
N	Valid	106	106	106	106	105	106
	Missing	0	0	0	0	1	0
Mean				3.92	3.23	3.33	3.44
Std. Deviation				1.02	1.10	1.25	1.20

Statistics

		q4e	q4f	q4g	q4h	q4i	q4j
N	Valid	106	106	106	104	106	106
	Missing	0	0	0	2	0	0
Mean		3.96	3.45	3.38	3.20	3.44	4.32
Std. Deviation		.95	1.19	1.20	1.08	1.12	.91

Statistics

		q4k	q4l	q4m	q4n	q4o	Q5A
N	Valid	106	106	106	106	105	106
	Missing	0	0	0	0	1	0
Mean		3.84	3.34	3.71	3.99	4.04	
Std. Deviation		1.03	1.19	1.00	1.06	.90	

Statistics

		Q5B	Q5C	Q5D	Q5E	Q5F	Q5G
N	Valid	106	106	106	106	106	106
	Missing	0	0	0	0	0	0
Mean							
Std. Deviation							

Statistics

		Q5H	Q5I	Q5OTHER	Q6A	Q6B	Q6C
N	Valid	106	106	106	106	106	106
	Missing	0	0	0	0	0	0
Mean							
Std. Deviation							

Statistics

		Q6D	Q6E	Q6F	Q6G	Q6OTHER	Q7A
N	Valid	106	106	106	106	106	106
	Missing	0	0	0	0	0	0
Mean							
Std. Deviation							

Statistics

		Q7B	Q7C	Q7D	Q7E	Q7F	Q7G
N	Valid	106	106	106	106	106	106
	Missing	0	0	0	0	0	0
Mean							
Std. Deviation							

Statistics

		Q9A	Q9B	Q9C	Q9D	Q9E	Q9F
N	Valid	106	106	106	106	106	106
	Missing	0	0	0	0	0	0
Mean							
Std. Deviation							

Statistics

		Q9G	Q10	Q11	Q12	Q13	Q14
N	Valid	106	106	106	106	106	106
	Missing	0	0	0	0	0	0
Mean							1.91
Std. Deviation							.75

Statistics

		RECNUM	DATEENT	ORG	EMAIL	REGR factor score 1 for analysis 1
N	Valid	106	93	106	106	105
	Missing	0	13	0	0	1
Mean		63.1132	*****			-2.57995E-16
Std. Deviation		35.5277	*****			1.0000000

Statistics

		REGR factor score 2 for analysis 1	REGR factor score 3 for analysis 1	REGR factor score 4 for analysis 1	REGR factor score 1 for analysis 2	REGR factor score 2 for analysis 2
N	Valid	105	105	105	105	105
	Missing	1	1	1	1	1
Mean		3.214360E-16	1.141944E-16	-2.96059E-17	-2.57995E-16	3.214360E-16
Std. Deviation		1.0000000	1.0000000	1.0000000	1.0000000	1.0000000

Statistics

		REGR factor score 3 for analysis 2	REGR factor score 4 for analysis 2	REGR factor score 1 for analysis 3	REGR factor score 2 for analysis 3
N	Valid	105	105	102	102
	Missing	1	1	4	4
Mean		1.141944E-16	-2.96059E-17	3.918434E-17	-1.13199E-16
Std. Deviation		1.0000000	1.0000000	1.0000000	1.0000000

Statistics

		newbus	empl1
N	Valid	106	91
	Missing	0	15
Mean		2.5000	2.25
Std. Deviation		1.3111	.82

Frequency Table

q1a

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	17	16.0	16.0	16.0
	2	43	40.6	40.6	56.6
	3	12	11.3	11.3	67.9
	4	19	17.9	17.9	85.8
	5	15	14.2	14.2	100.0
	Total	106	100.0	100.0	

q1b

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	6.6	6.6	6.6
	2	18	17.0	17.0	23.6
	3	24	22.6	22.6	46.2
	4	46	43.4	43.4	89.6
	5	11	10.4	10.4	100.0
	Total	106	100.0	100.0	

q1c

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	3	2.8	2.8	2.8
2	4	3.8	3.8	6.6
3	16	15.1	15.1	21.7
4	43	40.6	40.6	62.3
5	40	37.7	37.7	100.0
Total	106	100.0	100.0	

q1d

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	4	3.8	3.8	3.8
2	9	8.5	8.5	12.3
3	34	32.1	32.1	44.3
4	51	48.1	48.1	92.5
5	8	7.5	7.5	100.0
Total	106	100.0	100.0	

q1e

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	12	11.3	11.4	11.4
2	39	36.8	37.1	48.6
3	30	28.3	28.6	77.1
4	19	17.9	18.1	95.2
5	5	4.7	4.8	100.0
Total	105	99.1	100.0	
Missing System	1	.9		
Total	106	100.0		

q1f

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	8	7.5	7.5	7.5
2	37	34.9	34.9	42.5
3	28	26.4	26.4	68.9
4	28	26.4	26.4	95.3
5	5	4.7	4.7	100.0
Total	106	100.0	100.0	

q1g

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	3	2.8	2.8	2.8
2	12	11.3	11.3	14.2
3	25	23.6	23.6	37.7
4	47	44.3	44.3	82.1
5	19	17.9	17.9	100.0
Total	106	100.0	100.0	

q1h

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	15	14.2	14.2	14.2
2	38	35.8	35.8	50.0
3	30	28.3	28.3	78.3
4	18	17.0	17.0	95.3
5	5	4.7	4.7	100.0
Total	106	100.0	100.0	

q1i

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	7	6.6	6.6	6.6
2	44	41.5	41.5	48.1
3	28	26.4	26.4	74.5
4	26	24.5	24.5	99.1
5	1	.9	.9	100.0
Total	106	100.0	100.0	

q1j

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	1	.9	.9	.9
2	8	7.5	7.5	8.5
3	23	21.7	21.7	30.2
4	58	54.7	54.7	84.9
5	16	15.1	15.1	100.0
Total	106	100.0	100.0	

q1k

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	20	18.9	18.9	18.9
2	36	34.0	34.0	52.8
3	21	19.8	19.8	72.6
4	24	22.6	22.6	95.3
5	5	4.7	4.7	100.0
Total	106	100.0	100.0	

q1l

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	6	5.7	5.7	5.7
2	21	19.8	19.8	25.5
3	23	21.7	21.7	47.2
4	41	38.7	38.7	85.8
5	15	14.2	14.2	100.0
Total	106	100.0	100.0	

q1m

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	8	7.5	7.5	7.5
2	20	18.9	18.9	26.4
3	33	31.1	31.1	57.5
4	34	32.1	32.1	89.6
5	11	10.4	10.4	100.0
Total	106	100.0	100.0	

q2

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	14	13.2	13.3	13.3
2	33	31.1	31.4	44.8
3	36	34.0	34.3	79.0
4	16	15.1	15.2	94.3
5	6	5.7	5.7	100.0
Total	105	99.1	100.0	
Missing System	1	.9		
Total	106	100.0		

q3a

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	7	6.6	6.7	6.7
2	14	13.2	13.3	20.0
3	9	8.5	8.6	28.6
4	35	33.0	33.3	61.9
5	40	37.7	38.1	100.0
Total	105	99.1	100.0	
Missing System	1	.9		
Total	106	100.0		

q3b

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	9	8.5	8.5	8.5
2	19	17.9	17.9	26.4
3	24	22.6	22.6	49.1
4	36	34.0	34.0	83.0
5	18	17.0	17.0	100.0
Total	106	100.0	100.0	

q3c

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	7	6.6	6.6	6.6
2	28	26.4	26.4	33.0
3	28	26.4	26.4	59.4
4	37	34.9	34.9	94.3
5	6	5.7	5.7	100.0
Total	106	100.0	100.0	

q3d

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	8	7.5	7.6	7.6
2	15	14.2	14.3	21.9
3	16	15.1	15.2	37.1
4	35	33.0	33.3	70.5
5	31	29.2	29.5	100.0
Total	105	99.1	100.0	
Missing System	1	.9		
Total	106	100.0		

q3e

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	4	3.8	3.8	3.8
2	22	20.8	21.0	24.8
3	23	21.7	21.9	46.7
4	41	38.7	39.0	85.7
5	15	14.2	14.3	100.0
Total	105	99.1	100.0	
Missing System	1	.9		
Total	106	100.0		

q3f

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	12	11.3	11.3	11.3
2	23	21.7	21.7	33.0
3	17	16.0	16.0	49.1
4	37	34.9	34.9	84.0
5	17	16.0	16.0	100.0
Total	106	100.0	100.0	

q3g

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	9	8.5	8.5	8.5
2	22	20.8	20.8	29.2
3	24	22.6	22.6	51.9
4	41	38.7	38.7	90.6
5	10	9.4	9.4	100.0
Total	106	100.0	100.0	

q3h

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	11	10.4	10.4	10.4
2	21	19.8	19.8	30.2
3	16	15.1	15.1	45.3
4	40	37.7	37.7	83.0
5	18	17.0	17.0	100.0
Total	106	100.0	100.0	

q3i

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	13	12.3	12.3	12.3
2	15	14.2	14.2	26.4
3	21	19.8	19.8	46.2
4	40	37.7	37.7	84.0
5	17	16.0	16.0	100.0
Total	106	100.0	100.0	

q3j

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	15	14.2	14.3	14.3
2	31	29.2	29.5	43.8
3	30	28.3	28.6	72.4
4	22	20.8	21.0	93.3
5	7	6.6	6.7	100.0
Total	105	99.1	100.0	
Missing System	1	.9		
Total	106	100.0		

Q8A

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	48	45.3	45.3	45.3
2	58	54.7	54.7	100.0
Total	106	100.0	100.0	

Q8B

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	1	.9	.9	.9
2	93	87.7	87.7	100.0
Total	106	100.0	100.0	

Q8C

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	98	92.5	92.5	92.5
2	8	7.5	7.5	100.0
Total	106	100.0	100.0	

Q8D

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	4	3.8	3.8	3.8
2	59	55.7	55.7	59.4
Total	106	100.0	100.0	

Q8E

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	7	6.6	6.6	6.6
1	40	37.7	37.7	44.3
2	59	55.7	55.7	100.0
Total	106	100.0	100.0	

Q8F

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5	4.7	4.7	4.7
1	37	34.9	34.9	39.6
2	64	60.4	60.4	100.0
Total	106	100.0	100.0	

Q8G

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	7	6.6	6.6	6.6
1	18	17.0	17.0	23.6
2	81	76.4	76.4	100.0
Total	106	100.0	100.0	

Q11

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Africa	2	1.9	1.9	1.9
Asia or Far East	15	14.2	14.2	16.0
Australasia	13	12.3	12.3	28.3
Europe or United	20	18.9	18.9	47.2
North America	54	50.9	50.9	98.1
South America	2	1.9	1.9	100.0
Total	106	100.0	100.0	

Q12

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Community, social persona	1	.9	.9	.9
Community, social personal serv	4	3.8	3.8	4.7
Construction	2	1.9	1.9	6.6
Electricity, gas and water	5	4.7	4.7	11.3
Financial services	6	5.7	5.7	17.0
Information technology se	1	.9	.9	17.9
Information technology services	15	14.2	14.2	32.1
Manufacturing	23	21.7	21.7	53.8
Other	35	33.0	33.0	86.8
Retail or wholesale	4	3.8	3.8	90.6
Telecommunications	6	5.7	5.7	96.2
Transport, storage and communic	4	3.8	3.8	100.0
Total	106	100.0	100.0	

Q13

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Financial management	3	2.8	2.8	2.8
	Human resource managem	4	3.8	3.8	6.6
	Information technol	1	.9	.9	7.5
	Information technology	6	5.7	5.7	13.2
	Marketing	19	17.9	17.9	31.1
	Operations/ product	3	2.8	2.8	34.0
	Operations/ production	9	8.5	8.5	42.5
	Other	21	19.8	19.8	62.3
	Procurement	1	.9	.9	63.2
	Sales	17	16.0	16.0	79.2
	Strategic planning	22	20.8	20.8	100.0
	Total	106	100.0	100.0	

Q14

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	35	33.0	33.0	33.0
	2	46	43.4	43.4	76.4
	3	25	23.6	23.6	100.0
	Total	106	100.0	100.0	

newbus

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	42	39.6	39.6	39.6
	2.00	4	3.8	3.8	43.4
	3.00	25	23.6	23.6	67.0
	4.00	35	33.0	33.0	100.0
	Total	106	100.0	100.0	

empl1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	22	20.8	24.2	24.2
	2	24	22.6	26.4	50.5
	3	45	42.5	49.5	100.0
	Total	91	85.8	100.0	
Missing	System	15	14.2		
Total		106	100.0		

APPENDIX F

PROBIT ANALYSES USED TO DETERMINE RELATIONSHIPS BETWEEN VARIABLES FOR ORDINAL DATA

The LOGISTIC Procedure

Data Set: WORK.ONE
Response Variable: OVERALL
Response Levels: 5
Number of Observations: 100
Link Function: Normit

Response Profile

Ordered Value	OVERALL	Count
1	5	4
2	4	16
3	3	35
4	2	32
5	1	13

Score Test for the Equal Slopes Assumption

Chi-Square = 43.1982 with 39 DF (p=0.2966)

The LOGISTIC Procedure

Data Set: WORK.ANTE
 Response Variable: OVERALL
 Response Levels: 5
 Number of Observations: 99
 Link Function: Normit

Response Profile

Ordered Value	OVERALL	Count
1	5	1
2	4	18
3	3	30
4	2	39
5	1	11

Score Test for the Equal Slopes Assumption

Chi-Square = 40.7301 with 36 DF (p=0.2701)

Model Fitting Information and Testing Global Null Hypothesis BETA=0

Criterion	Intercept Only	Intercept and Covariates	Chi-Square for Covariates
AIC	271.197	241.419	.
SC	281.577	282.941	.
-2 LOG L	263.197	209.419	53.778 with 12 DF (p=0.0001)
Score	.	.	41.529 with 12 DF (p=0.0001)

The LOGISTIC Procedure

Analysis of Maximum Likelihood Estimates

Variable	DF	Parameter Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square	Standardized Estimate
INTERCP1	1	-4.3218	1.1489	14.1502	0.0002	.
INTERCP2	1	-2.3343	1.0362	5.0751	0.0243	.
INTERCP3	1	-1.1579	1.0190	1.2913	0.2558	.
INTERCP4	1	0.5362	1.0209	0.2759	0.5994	.
ECHAV	1	0.1975	0.0991	3.9766	0.0461	0.247049
SOCVAV	1	0.1404	0.1189	1.3933	0.2378	0.154885
SALAV	1	-0.1960	0.1316	2.2182	0.1364	-0.196190
EXPTAV	1	0.2537	0.1530	2.7489	0.0973	0.291383
MDMAV	1	0.2510	0.1582	2.5194	0.1125	0.285359
ADHOAV	1	0.0633	0.1505	0.1768	0.6742	0.060955
ALTAV	1	0.2714	0.1641	2.7342	0.0982	0.291076
INTERN	1	-0.4725	0.2745	2.9618	0.0853	-0.208983
INTRAN	1	-0.2952	0.2613	1.2767	0.2585	-0.136372
LIBRAR	1	0.2281	0.2472	0.8510	0.3563	0.114131
GIS	1	-0.6187	0.2584	5.7348	0.0166	-0.306319
NEWBUS	1	0.2188	0.2736	0.6395	0.4239	0.104432

Association of Predicted Probabilities and Observed Responses

Concordant = 52.9%	Somers' D = 0.425
Discordant = 10.4%	Gamma = 0.673
Tied = 36.7%	Tau-a = 0.304
(3467 pairs)	c = 0.713

The LOGISTIC Procedure

Association of Predicted Probabilities and Observed Responses

Concordant = 68.5%	Somers' D = 0.593
Discordant = 9.2%	Gamma = 0.764
Tied = 22.4%	Tau-a = 0.438
(3655 pairs)	c = 0.797

The LOGISTIC Procedure

Model Fitting Information and Testing Global Null Hypothesis BETA=0

Criterion	Intercept Only	Intercept and Covariates	Chi-Square for Covariates
AIC	291.851	214.501	.
SC	302.271	258.788	.
-2 LOG L Score	283.851	180.501	103.350 with 13 DF (p=0.0001) 62.815 with 13 DF (p=0.0001)

Analysis of Maximum Likelihood Estimates

Variable	DF	Parameter Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square	Standardized Estimate
INTERCP1	1	-11.3366	1.4106	64.5939	0.0001	.
INTERCP2	1	-9.8358	1.3189	55.6133	0.0001	.
INTERCP3	1	-8.2206	1.2397	43.9717	0.0001	.
INTERCP4	1	-6.1860	1.1227	30.3576	0.0001	.
I1	1	0.1187	0.1043	1.2949	0.2552	0.157968
I2	1	0.0887	0.1441	0.3792	0.5381	0.096443
I3	1	0.3434	0.1697	4.0949	0.0430	0.339503
I4	1	0.5673	0.1831	9.5992	0.0019	0.506620
I5	1	0.1830	0.1554	1.3862	0.2390	0.187646
I6	1	-0.2101	0.1454	2.0868	0.1486	-0.219562
I7	1	0.1044	0.1496	0.4875	0.4851	0.104603
I8	1	-0.0429	0.1370	0.0980	0.7542	-0.046477
I9	1	0.3530	0.1762	4.0128	0.0452	0.325375
I10	1	0.1259	0.1559	0.6524	0.4193	0.106453
I11	1	0.1942	0.1355	2.0549	0.1517	0.224839
I12	1	0.6201	0.1561	15.7876	0.0001	0.681429
I13	1	0.0399	0.1161	0.1180	0.7312	0.044164