The Organization of Electronic Information in Selected Small, Medium and Micro Enterprises (SMMEs) in South Africa

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ABSTRACT: This article reports on an empirical investigation into the information needs and information organization practices of small business enterprises in South Africa. The purpose of the investigation was to determine what information should be taken into account when designing systems for organizing information in such businesses, and how these businesses actually organize their electronic documents. The investigation of the systems in use also presented the opportunity to gather business concepts that were used to construct a generic classification scheme for the purpose of information organization in small enterprises. Data were gathered from 24 small businesses located in three different provinces by means of personal interviews with owners/managers, guided by a questionnaire, and through on-site observation of the information organization systems used. The results of the survey show what information is regarded as critically important in small businesses, and give insight into the current situation with regard to information organization in the businesses. Recommendations are made for improving information organization in small businesses.

1. Introduction

Every business generates internal information through business processes such as planning, financial management, human resources management, production, marketing and customer relationship management. If analyzed properly this internal information can play an important role in the decision-making process in a business, e.g., by providing an early warning about a problem that is developing or by pointing out opportunities for growth. Businesses also need information about the external environment, especially for the purpose of strategic planning, and this information is gathered by using external resources such as the Internet, online information services and government and industry organizations. The infor-

mation created internally and gathered externally can relate to customers, suppliers, products, services, government policies, legislation, economic and social trends, etc. If managed and used effectively this information can make a significant contribution to the success and competitiveness of a business (Kaye, 1995; Lowe, 1999: 3-4).

A perennial information management problem that businesses have to face is how to store and retrieve the information that they create and acquire. Many systems and techniques for information storage and retrieval are available and described in the literature. However, not all of these are necessarily appropriate and affordable for small businesses. In the literature about information organization that was surveyed for this research project nothing was found that explicitly addressed the needs of this group of businesses. Even the literature on information management in general does not refer to small businesses. The systems, procedures and issues are usually described in the context of large organizations, and information organization is usually treated very superficially, if at all. It is therefore difficult for managers of small businesses to find appropriate guidelines in the literature for organizing the information in their businesses. Furthermore, information organization in the institutional context can be regarded as a highly specialized activity, normally carried out by information professionals not available in small businesses. One of the purposes of the research project reported here was therefore to identify or develop, if necessary, appropriate and affordable systems and tools for organizing information in small businesses.

To achieve this purpose it was deemed necessary to investigate existing information organization practices in small businesses. In addition to possibly identifying best practices, such an investigation would give the investigators a feel for the real information needs of these businesses, so that recommendations of existing systems and tools, or the development of new ones, could be based on a marriage of the theoretical knowledge gained from the literature and insights about actual operational situations. The results of this investigation is the topic of the present article.

A further purpose of the empirical investigation was to gather business concepts from systems in small enterprises that could be used as the basis of a generic classification scheme for organizing information in these businesses. (A separate article by Van der Walt in this issue of *Knowledge Organization* deals with the classification scheme.)

Information organization is seen here within the framework of the larger process of information management in organizations, which also includes determining information needs, information acquisition, the delivery of information products and services, information distribution and information use (Choo, 2002, p.24). Information organization not only allows for the systematic storage of information, but also the retrieval, sharing and use of information (Choo, 2002, p.33). The field of information organization as defined for this project includes topics such as information retrieval systems, metadata, indexing and classification (see e.g., Rowley & Farrow, 2000; Taylor, 1999).

Both manual and electronic systems for information organization were investigated in the project. However, in this article the focus is mainly on electronic information. Only a very brief account of the manual systems is included. A further restriction is that the investigation focused on the organization of computer files of all kinds as *complete entities*, e.g., word processing documents, spreadsheets, graphics and sound files, email messages, addresses of Internet sites, database files, etc. The organization of data within transactional and other databases (record structures, etc.) was not covered.

The investigation reported here formed part of a larger project in which various aspects of organizing information in SMMEs in developed as well as developing communities were covered (Denner, 2003; Magagula, 2002). A preliminary report on aspects of the project was given at the ISKO Conference in Granada, Spain (Van der Walt, 2002).

2 Small, Medium and Micro Enterprises (SMMEs)

The focus of the research project on which this article reports was on SMMEs because, in the opinion of the research team, the need for advice and assistance in organizing business information is the greatest in this sector. Many large corporations recognize the importance of information/knowledge as a resource, make provision for its efficient management by appointing professionally trained and dedicated people as information/knowledge managers, and use sophisticated, expensive corporate information systems such as document management systems, intranets and portals. Medium, and especially small and micro enterprises, however, usually cannot afford such luxuries. In many cases we have also informally observed a lack of awareness at management level of the importance of information as a resource, and a lack

of knowledge about the technology and procedures that can be used to organize it. This situation leads to the development of filing systems and databases according to the preferences of individual workers. Where formal information systems are used they are often developed in a piecemeal fashion for the purposes of individual business processes or units such as finance, customer relations management or human resources management. These unintegrated, decentralized and individualized systems (or lack of systems), are obviously not conducive to the full utilization of information resources for the benefit of the company.

A further reason for focusing on SMMEs is that this sector plays an increasingly important role in the South African economy in general and in developing communities in particular. In 1997 the high figure of 96.5% of all business enterprises in South Africa were located in the SMME sector, and these businesses contributed 32.7% to the GDP (Martins & Tustin, 1999, p.47). By 2002 the GDP contribution has increased to 42% (*SA: an overview*, 2002). It is also generally acknowledged that SMMEs make an important contribution to job creation, the redistribution of wealth and improvement of the competitiveness of local industries in the global economy (e.g., Martins & Tustin, 1999, 1; Rogerson, 1997, p.5-7). It should also be noted that in developing communities nearly all businesses fall in the SMME sector. If information can, indeed, be organized in a way that supports business processes it would indirectly contribute to the survival and success of SMMEs and to economic development in South Africa.

It should be pointed out that there is a divergence of opinion as to which enterprises fall into the SMME sector. A number of criteria to be used in defining SMMEs are suggested in the literature: number of employees, annual turnover, credit requested from banks, total value of assets and annual balance-sheet total. The most generally applied criteria seem to be the *number of employees* and *annual turnover*. The SMME sector in South Africa is defined by the National Small Business Act (Act 102 of 1996) in qualitative and quantitative terms. The qualitative criterion states that to qualify as an SMME the business must be "a separate and distinct business entity … managed by one owner or more …". Therefore, the business should not be a branch or part of a larger organization, but a business in its own right with elements such as customers, suppliers and products. The owner(s) should also be the manager(s). A business that is part of a franchise group, but that is owned by the person in charge and has its own local systems would, therefore, also qualify as an SMME. On the basis of quantitative criteria (employees, turnover and total gross-asset value) the Act distinguishes four categories of enterprises, namely micro, very small, small and medium. Rogerson (1997, p.2) and Martins and Tustin (1999, p.26-27) add survivalist enterprises as a fifth category, hawking and subsistence farming being examples. It can be assumed that survivalist enterprises generate and acquire very few if any information resources that would need organizing.

For the purposes of this project enterprises were categorized according to the number of employees as *micro* (including the category of very small) (1-9 employees), *small* (10-49 employees) and *medium* (50-99 employees). Taking one or more of the financial criteria mentioned above into account would complicate the categorization of enterprises because a business might fall into one category according to the number of employees and into another according to annual turnover, for example. Another consideration is that financial information is regarded as confidential and some managers might, therefore, be reluctant to divulge the information needed to determine the category of SMME into which the company should fall. It can also be argued that the financial criteria are not very relevant with regard to a company's needs for information organization, although finances will of course determine the technology (hardware and software) that the company can afford. On the other hand, the number of employees can play a significant role in the amount and diversity of information resources that have to be organized, and in the need for centralized and integrated information systems.

In this article the term *small business* (or *small enterprise*) will be used as a synonym for SMME, denoting the whole group of enterprises, unless it is clear from the context that the specific subgroup identified by the Act is intended. Although the concept of SMME normally applies to businesses only, from the point of view of information organization one could probably expand its meaning to include small organizations in the public sector, such as schools and small local authorities, and not-for-profit organizations in the private sector, such as non-governmental organizations, welfare organizations and churches.

3 Methodology

3.1 Research questions

The following two research questions were formulated to ensure that the objectives of the study were reached:

1. What information is regarded as business-critical in small enterprises?

To understand *how* information is being organized in small businesses at present, and to be able to design new systems for information organization, it is clearly necessary to know *what* information has to be organized, and especially what is regarded as important by the businesses. In the business literature some authors refer to the concept of "business-critical information," meaning information that the business cannot do without, and that is therefore critical to the survival of the business (e.g., Duncan, Beckett & Marsh, 1998). Unfortunately, the literature is not very specific about what information should be regarded as business-critical – usually just a few examples are given rather than an exhaustive survey of types and topics. It was, therefore, decided to establish in detail what the managers of the businesses surveyed consider as the most important information, so that this could be taken into account in the construction of a classification system for business information, e.g., for determining main classes and for establishing the citation order in the case of compound subjects.

2. What is the current situation with regard to information organization and retrieval systems and practices in the businesses?

This question deals with the primary focus of the investigation and includes determining which electronic systems are being used and how computer files, email messages and Internet addresses are stored in folders. Attention was also given to the tools and techniques used to retrieve the stored documents, and who is/should be responsible for information organization in the enterprise.

3.2 Selection of the businesses

Twenty-four businesses in four towns, situated in three different provinces were selected in order to get a wide geographical spread of businesses, thereby avoiding any possible geographical bias in the sample. The towns and provinces involved were Upington in the Northern Cape (8 businesses), Makhado (previously Louis Trichardt) in Limpopo (previously Northern Province) (10 businesses) and Stellenbosch and Kuilsriver in the Western Cape (6 businesses). The choice of these specific locations and the number of businesses were determined by practicalities such as the budget and time, contact persons and accommodation available to the researchers. It is not suggested that the businesses in these towns are necessarily representative of all SMMEs in the specific provinces or in South Africa as a whole. However, on the grounds of informal observation and discussions with business people we have reason to believe that the situation with regard to computerization and information organization found in these companies is typical of many small businesses in the country.

The specific businesses selected for the empirical investigation were identified with help from contact persons in the different areas. They approached candidate businesses and briefly explained the nature of the project as set out in a letter of introduction provided by the researchers. Lists with the names and contact details of businesses where the owner/manager expressed willingness to provide the required information were compiled for each town. The researchers then selected businesses from these lists with the specific intention to include businesses from a wide range of industry sectors. The final selection of businesses was, to a limited extent, influenced by the availability of the owner/manager when the business was contacted to arrange an appointment.

The rationale for selecting diverse enterprises was to gather data that would make it possible to identify common practices and concepts that would enable the researchers to develop generic systems for organizing information in any type of SMME, and not limited to a specific industry sector. It was also envisaged that analysis of the data would indicate differences in approach to information organization between widely different types of business, e.g., butcheries and architects. Although the data gathered suggest that such differences do exist, the number of businesses of each type or category covered by the survey does not warrant statistical analysis to determine the nature and extent of these differences.

The personal approach in identifying and initially contacting enterprises to participate in the project was deemed necessary to get their cooperation. The investigation required a substantial amount of time from the owner/managers, and in some cases also

from other staff members involved in maintaining information systems. The investigators were also in the position to gain access to possibly confidential information in the course of observing the systems used. In this situation random selection of businesses without any form of prior personal contact would perhaps not have been appropriate.

3.3 Methods of data collection

Data were gathered by means of personal interviews with the owner/managers of the businesses (sometimes assisted by other staff members) and on-site observation of the systems used for organizing company information. A questionnaire (Appendix A) was designed to provide structure to the interviews, and to obtain quantitative as well as qualitative data regarding the research questions formulated above. These interviews and observations took place during June and July 2002.

Using interviews to fill in the questionnaire provided the possibility of eliminating disadvantages that could result from using questionnaires only. Personal contact with respondents was maintained and a good response rate was ensured. Any uncertainties about questions could immediately be cleared up and further investigation into specific aspects was possible. A disadvantage of using interviews was that only a small number of businesses could be visited.

All appointments for interviews were made by phone at least two days in advance. When the appointment was made a short description of the study was given. This gave the respondents time to reflect on their businesses and systems, which greatly increased the accuracy of the data. The interviews were conducted at the business premises during a workday. This provided the opportunity for observation of the daily flow of information that could possibly influence the availability and organization of information. The duration of the visits was generally between an hour and one and a half hours each, with a few extending to two hours.

The questions in the questionnaire can be grouped into four sections:

1. Section 1: Questions 1-3 make provision for the description and categorization of the businesses. In addition to specifying the specific type of business, respondents were asked to categorize the business according to *size* in terms of the South African government's distinction between micro, very small, small and medium enterprises, and in terms of *industry sectors*. The list of industry sectors was based on the sectors identified on the website Portals by Industry (http://www.portalsbyindustry.com).
2. Section 2: Questions 4-7 focus on the use of computers in the businesses. These questions were necessary to contextualize the questions regarding information organization in electronic systems in section 4 of the questionnaire, but the data gathered are not directly relevant to the issues addressed in the present article and will therefore not be reported here. It should just be noted that three of the 24 businesses did not use computers at all. Results relating to the organization of *electronic* information, reported below, are therefore based on the responses of 21 businesses. In the case of questions where it is immaterial whether computers are used or not, the responses of all 24 businesses are given.
3. Section 3: Questions 8-13 focus on the importance of different types of information, information resources and communication channels. The purpose with these questions was to determine which information is regarded as business-critical so that the researchers could take this into account when designing a system for information organization. To determine importance a 5-point scale was used. The scale starts at 1 (no importance) and ends at 5 (critical importance). The rating of "critical importance" was derived from the concept of business-critical information (see paragraph 3 above). To ensure the validity of the responses a "not applicable" response (0) was added to the scale.
4. Section 4: Questions 14-29 focus on information organization in the business. Aspects covered include the importance of information organization in general, the need for integration of internal and external information into one system, an evaluation of the present state of information organization in the business, the computer programs and systems used for storing, retrieving and analyzing information, methods for storing and retrieving computer files generally, and, more specifically, email messages and attachments and Internet addresses (favorites/bookmarks) and downloads. Although the purpose of the investigation was to gather data about the organization of *electronic* information, for the sake of comprehensiveness, question 25 addressed the use of *manual* systems. Questions 26 and 27 focused on subject headings and classification schemes designed for the or-

ganization of business documentation. The last two questions (28 and 29) elicited responses with regard to the responsibility for information organization in the business and the possible need for external consultants.

The questions are mostly closed-ended questions where respondents had to choose between alternatives. In Part 4 of the questionnaire, however, a number of open-ended questions are included. The reason for this is that there are many systems available for SMMEs to use and they could not all be listed. Certain aspects of the systems that had to be included in the answer guided the answers of the respondents. This made the analysis of the open-ended questions easier. Ample opportunity was given to respondents to expand on the fixed answers if further explanations or additional responses were necessary.

On-site observation was used to gather more detailed information about the systems covered in Part 4 of the questionnaire. The respondents demonstrated and explained the manual and electronic systems, for example folder structures used. Screen shots of electronic folder systems and photocopies and printed or handwritten versions of manual systems were obtained for later analysis.

Very few problems were encountered during the data collection phase. Some of the respondents were initially reluctant to share the financial information needed for the classification of the business as micro, very small, small or medium, but after assurance of confidentiality was given, they did share this information. Some of the respondents did not understand some concepts, for example online databases, and sometimes, even after clarification, they still seemed uncertain. Conducting the interviews on the premises of the businesses created opportunities for further observation, but in some cases the interview was interrupted, and it sometimes proved difficult to continue because the rapport with the respondent had to be re-established.

4 Categorization of the businesses

Participants were asked in question 1 to describe the type of business in specific terms. These answers were used to help with the identification of the appropriate industry sector that the business should be classified under (see question 3). Specific enterprises included in the survey were an architect, an auditor, a butchery, a computer shop/Internet café (2), a furniture store (3), a graphical design company (2), a company that sells pumping equipment, a roof construction company, a school, a stationery and gift shop, a timber merchant, a training company (2), a florist, a nursery, a law firm, a paint store, an electrician, a gymnasium and an independent newspaper.

In question 2, participants were requested to categorize the business as either a micro, very small, small or medium enterprise. The question was formulated using two of the criteria specified by the South African government, namely, number of employees and annual turnover. However, the use of two criteria to determine in which size category a business falls proved to be problematic. Only eight of the businesses could actually be classified using both criteria simultaneously. The other 16 businesses either had more employees with a smaller annual turnover or a larger annual turnover and fewer employees required to be classified as a certain type of SMME. Information organization can be seen as a human function that is influenced more by the number of employees than the annual turnover or other financial criteria. It was, therefore, decided to use only the number of employees to categorize the businesses according to size. The results of this categorization are reflected in Table 1. The size of a business does seem to play a role in how critically important certain categories of information are rated and in certain information organization practices, and this role is pointed out where applicable in the discussion of the results below.

Table 1: Categorization of enterprises by size

Enterprises by size	Number	Percentage
Micro enterprises (1-5 employees)	10	41%
Very small enterprises (6-10 employees)	5	21%
Small enterprises (11-50 employees)	9	38%
Medium enterprises (51-100 employees)	0	0%
Total:	24	100%

Question 3 required of respondents to indicate in which *one* of the list of twenty industry sectors their businesses were to be categorized. Some businesses could be placed into more than one sector, because of a diversified product mix. These businesses were placed in the sector that reflected their dominant business activities. The businesses in the study fell into 11 of the sectors, as indicated in Table 2.

Table 2: Categorization of enterprises by industry sector

Industry sectors	SMMEs in sector
Building, construction & architecture	4
Information and publishing	3
Furniture & décor	3
Education and training	3
Services	2
Art, curios & gifts	2
Agriculture, forestry & fisheries	2
Computers & accessories	2
Financial services	1
Health and medical services	1
Food and drink	1
Total:	24

As stated in paragraph 3.2 above, the numbers of businesses in each of these categories and in each specific type identified in question 1 do not warrant generalizations with regard to the role of business type/category in information needs and information organization practices. However, although the data were not analyzed statistically to investigate the role of this variable, the observations in the field suggest that significant differences do exist between types of businesses, especially information-intensive businesses like architects and auditors and others such as butcheries and furniture shops. It would be interesting to explore these differences in a more extensive survey or in surveys focusing on specific types of businesses.

5 What information is regarded as business-critical for small businesses?

In this section of the questionnaire respondents were asked to rate the importance of information in general, and information about specific topics and in specific formats, on the five-point scale described in paragraph 3.3 above. As these opinions are not dependent on whether a business uses computers or not, the responses of all 24 businesses are included in these results. The implications of these results for information organization in small businesses are pointed out.

In question 8 information is defined as any data that have been captured, packaged, stored and used by the business. The respondents were asked to rate the general importance of information for their businesses, bearing this definition in mind. The average importance rating was 4.83 on the 5-point scale. Twenty-one (88%) of the businesses said that information is of critical importance for the business, i.e., they cannot function without information. Two (8%) said that information is very important and only one enterprise (4%) said that information is of average importance. This confirms statements in the literature to the effect that information is needed on a daily basis to ensure the survival of a business (Matthee, 1994:13).

5.1 Information and business processes

Question 9 focuses on the importance of information for the successful execution of the major business processes (see Table 3).

Table 3: Importance of information for major business processes

Business processes	Average rating
Financial management	4.7
Production/Service delivery	4.3
Marketing & Sales	3.9
Purchasing	3.8
Strategic management	3.3
Personnel management	3.1

Information for the purposes of financial management is clearly regarded as the most important. Many of the respondents cited the reasons for the importance of financial management as tax related issues, and said that without proper financial management the business would not be able to survive. Information on how to become and stay financially sound is, therefore, regarded as critical.

The business process where information is of least importance for the sample businesses was personnel management. This can be explained by the fact that 62% of the enterprises surveyed fall into the categories of very small and micro, which means that they have between 1 and 10 staff members. Because many of the businesses have very few staff members, maybe only one or two, these often being family members, information for personnel management is not of a critical nature. The larger enterprises with more employees regard information about labour legislation, performance evaluation and other personnel management information as very important.

It should be noted that, although information for some business processes is clearly regarded as more important than others, all the processes received an above average rating, 3 being interpreted as average on the rating scale. Therefore, none of these processes can be disregarded from the point of view of organizing the information.

5.2 Internal and external information

Business information originates from both the external and the internal environment. Information from the internal environment is any information created within the enterprise, for example production figures, transaction data and correspondence. External information is any information that comes from outside the enterprise, for example economic, social and supplier information (Lowe, 1999: 2-3). Question 10 asked the respondents to state how important, in general, information from these two environments is to the business. The *internal environment* received an average rating of 4.5 and the *external environment* an average rating of 4.3. This shows that information from both these environments is regarded as very important to SMMEs.

The slightly higher rating of the internal information may indicate that the respondents see a more direct relationship between information generated internally and the well-being of the business than information from outside the company. Information from the external environment is seen by some as just rules and regulations that they should follow or take into account, but not having this information would not necessarily have a negative impact on the business or change the status quo. Disregarding external information could mean, however, that they miss opportunities to improve the business or could even lead to legal proceedings if certain regulations or legislation are not followed. When designing an information organization system both internal and external information therefore have to be accommodated.

Question 11 was aimed at determining the importance of information about specific aspects of the internal and external environment. Twenty-six aspects were identified through the literature study, of which 14 can be seen as aspects of the internal environment and 12 as aspects of the external environment (see Table 4).

Table 4: Importance of information about aspects of the environment

Internal environment	Average rating of importance	External environment	Average rating of importance
Debtors	4.8	Special needs/requests of customers	4.4
Creditors	4.8	Customers/Potential customers	4.3
Sales figures	4.2	Suppliers	4.3
Production costs	4.0	Marketing strategies	4.1
Product design	4.0	Technology	4.1
Employment conditions & benefits	3.9	Competition	4.0
Product information for marketing	3.8	Legislation & government policy	3.7
Activities of sales representatives	3.8	The economy	3.5
Production figures	3.7	Strategic planning	3.3
Personnel training	3.5	Social & cultural factors	2.9
Stock levels	3.5	Political developments	2.4
Knowledge & skills of staff	3.2	Ecological issues	2.2
Job descriptions and analysis	3.2		
Performance evaluation	3.0		

With regard to the internal environment, it is clear that information about financial matters and product design is regarded as highly important. The position of the top four aspects in Table 4 corresponds with the top rating of financial management generally in Table 3. With the exception of conditions and benefits of employment, information about human resources issues is regarded as the least important. This also corresponds with the position of human resources management in Table 3.

In general, information about the external environment seems to play a slightly less important role than information about the internal environment (corresponding to the results of question 10), although information about individual aspects such as customers and their needs, suppliers, marketing strategies, technology and competitors are rated quite highly. The importance of customer information indicates that a customer relationship manage-

ment system should be part of the information systems in a small business, and that customers as a concept should feature prominently in any system for organizing business information.

It is also clear that information on what can be described as the macro-environment of a company, i.e., the social, technological, economic, ecological and political (STEEP) aspects of the external environment (Fleisher & Bensoussan, 2003, p.269), was generally regarded as less important by the respondents, with the exception of technology. Information on these topics is usually needed for the purposes of strategic planning. This finding, therefore, corresponds to the relatively low rating of information for strategic management (Table 3). The relative lack of interest in the wider external environment can perhaps also be ascribed to time constraints in finding information from outside the business, possible costs involved and the sheer volume of information available. Some respondents said that information about new technologies that can make the business more efficient, or certain tasks easier, is very important.

5.3 Types of information resources and communication channels

Information can be received in different formats and types of resources and through a variety of communication channels. Question 12 identified three broad categories of information formats namely printed, electronic and oral. In the businesses surveyed it is clear that hard copy and electronic documents are regarded as the most important formats for information as both received high ratings of 4.2, while the oral format received a rating of 3.6. It can be expected that the importance of electronic formats will increase in future. Three of the businesses in the sample did not use computers at all, while a number of others only started using computers recently. Even in the case of those that do use computers, some of the businesses with which they have dealings (e.g., suppliers and service providers) do not use computers, so that correspondence and sharing of information with these businesses have to be in printed format. Some respondents said that they do not trust computers and, therefore, keep printed copies of information originally created or received in electronic form. For the time being, at least, information organization systems should provide for both electronic and printed documents in equal measure.

Question 13 deals with the importance of various specific printed, electronic and oral information resources and communication channels. The results are given in Table 5.

Table 5: The importance of communication channels and information resources in SMMEs

Channel/Resource	**Average rating**
Talking to personnel, clients & suppliers	4.4
Telephone calls	4.3
Faxes	4.0
Product catalogues	3.9
E-mail	3.7
Internet	3.4
Journals, newspapers & newsletters	3.3
Meetings	3.2
Books	2.9
Conferences, workshops & seminars	2.8
Reports	2.7
Government publications	2.6
Online databases	2.5
State departments	2.5
CD-ROM databases	2.5
Radio & television	2.5
Patents & Standards	2.3
Business and Trade Associations	2.3

It is quite interesting to note that, notwithstanding the lower rating of oral information compared to electronic and printed information found in the responses to question 10, the two top rated items in Table 5 are oral in nature. A possible explanation for this apparent discrepancy in the results is that individually, certain types of oral information are of critical importance to the respondents, but when all the oral formats, as a whole, are weighed against the importance of the printed and electronic formats, they are seen as less important. A problem with oral communication is that it is not so easily stored for later retrieval. This affects the overall importance of oral information.

Table 5 shows that sophisticated resources such as online databases and CD-ROM databases have low average ratings. Most of the respondents did not even know what online databases were. CD-ROM databases can be very expensive and do not necessarily cover the subject area of interest to the business. Due to the time-lag involved in CD-ROM publishing and distribution the information is slightly outdated and, therefore, not so useful when decisions have to be taken or problems solved with accurate recent information. The other resources that received low ratings also come from the external environment, for example state departments, radio and

TV, and usually provide information about aspects of the external environment. The low rating of these resources could be attributed to the fact that information for strategic management and information about aspects of the external environment are not seen as very important (see Tables 3 and 4), and, therefore, the resources and channels that carry this information are not seen as important either.

5.4 Implications of the results regarding business-critical information for the organization of the information

To conclude this section we summarize the main implications of the results of questions 8-13 (regarding the importance of information) for information organization in small businesses:

- Information needed about, or for the support of, all major business processes is important enough to warrant a prominent place for these processes in a system for storing business documentation.
- With a few exceptions information about all the specific topics subordinate to the major business processes, that were listed in the questionnaire, received above average importance ratings. These topics should therefore be provided for in an information organization system.
- An information organization system should make provision for information from or about both the internal and external environment.
- Financial information (internal environment) and customer information (external environment) are regarded as the most important categories and should therefore feature prominently in the information organization system.
- For the foreseeable future both printed and electronic documents should be regarded as important categories for which provision has to be made when designing systems for document storage. Methods for capturing and storing important oral information, e.g., recording telephone conversations, may also have to be considered.

6 Information organization systems and practices in small businesses

6.1 General observations about information organization

Question 14 asked respondents to indicate the importance of integrating internal and external information in one information system. The average rating of these responses was 3.93, but it should be pointed out that there was a large non-response rate (41%) to this question, indicating uncertainty as to whether integrating internal and external information is really a good idea. Most of the businesses are used to their information being spread across different systems, e.g., an accounting system and a customer database. The changes needed to implement an integrated system can cause apprehension with owner/managers who are averse to change.

In question 15 participants had to rate the importance of information organization *in general* for the business. All the respondents rated the organization of information as critical, i.e., 5 on the importance scale, which is even higher than the rating of the importance of information as such (question 8). This very high rating of information organization can perhaps be ascribed to respondents trying to please the interviewer, knowing that this was the central focus of the survey, but it was clear from the interviews that the managers are very aware of the necessity of organizing the information to enable them to retrieve it again when needed.

The average rating of the current state of information organization in the businesses was 3.92 which is just below "good" on the scale provided (question 16). Only four respondents rated the information organization in their businesses as "very good," 14 as "good" and six as "average." Various reasons were given for the lower rating of the actual situation, as opposed to the high importance rating of information organization in question 15: staff not following procedures or instructions, negligence, computer illiteracy, too little information to be organized, too little time to organize information, and staff with no or little knowledge of information organization practices. These reasons indicate a need for training in and creating awareness of available information organization practices, techniques and tools.

6.2 Electronic information organization systems

A number of questions (18-27) deal with the methods used to store and retrieve various types of electronic and hard-copy documents. In this section only the responses of the 21 businesses using computers are reported. The electronic document types covered were computer files generated by means of office automation programs such as Microsoft Office, financial programs such as Pastel, graphics design programs such as Corel Draw, etc., email messages sent

and received, attachments to email messages, Internet addresses (favorites/bookmarks) and Internet downloads. Manual systems (question 25) are briefly dealt with in section 6.3.

Computer programs and systems:
Software packages used for the creation and organization of electronic information were investigated through question 18. This question required participants to provide a list of all the software packages used for the storage, retrieval and analysis of information. The identified software packages were divided into six different types of systems, namely financial programs, graphical design programs, design programs, communication systems, administrative programs and multi-tasking programs.

Eighteen (85.7%) of the businesses reported the use of a financial program, thus supporting the high rating of importance for financial information in questions 9 and 10. Of the 19 different financial programs identified, Pastel was the most widely used (10 of the businesses). IQ, Ulti-sales and Pastel Payroll were used by two businesses each, with all other programs, such as Microsoft Money and Quick Books, reported by only one business each. Although these programs were used primarily for financial information, a number of businesses used them also to store other information: customer information (11 businesses), inventory control information (9) and personnel information (7).

Graphical design programs were found at only eight of the businesses, but these programs are specific to certain businesses that utilize them to develop products such as advertisements, logos and designs on T-shirts. Corel Draw was the most widely used of these programs and was found at seven of the SMMEs. These programs were exclusively used for product information. Other design programs, such as PageMaker and FrontPage, were found at only five of the businesses and were also exclusively used to create and store product information.

Outlook Express was used by 18 of the businesses as an email communication system. Only one other communication system, Aristel, was identified. Administration programs were used by only four of the enterprises and most of these programs are designed for specific businesses, e.g., Microscope for schools. Multi-tasking programs, i.e., programs that can handle diverse types of information, were also investigated. Of these programs, Microsoft Word (13 businesses) and Excel (11) were the most widely used. It is interesting to note that none of the businesses were using the database programme Microsoft Access or any other general database programme. The multi-tasking programs were used to create and store a variety of information: administrative (13 businesses), financial (11), customer (6), correspondence (4), inventory control (3) and personnel (1).

One can conclude that information is created and stored in a variety of non-integrated computer programs and systems in small businesses. Although in many cases there is probably no great need for, or even sense in, creating enterprise-wide systems incorporating all the above-mentioned systems, it should be pointed out that often similar or related information is stored in different systems, e.g., customer and personnel information in a financial system as well as in a spreadsheet or a list in a document produced with a word processor. Similar information is also found in email systems and word-processed documents. This duplication and scattering of information in different places creates problems for information retrieval, for the integrity of the stored data, and for the analysis of the data/information to support decision-making. Where appropriate businesses should give consideration to the use of systems that make provision for integrating related information, e.g., relational databases and office suites of programs.

Folder systems:
Most of the packages available for specific tasks, such as financial management and email communication, or specific businesses, such as Microscope, store information automatically in sets of folders provided as part of the program. In the other packages, especially the multi-tasking programs, such as Microsoft Word and Excel, information organization is the responsibility of the user and this is usually achieved through the use of a self-designed hierarchically structured folder system. Businesses with networked computers have the option of storing information centrally on the network server or decentralized on the desktop computers of individual staff members.

Question 19 asked participants to indicate which methods they used in the business to store the computer files created with the programs covered by question 18 (see Table 6). This question excludes email messages and Internet resources, which are covered by separate questions (see below).

It is clear that the necessity of designing a system of folders for computer files generated internally is realized by the majority of the businesses. Most of

Table 6: Methods used by SMMEs to store computer files

Storage methods	Number of SMMEs
Self-designed system of folders and sub-folders	12
Folders on computers of individual staff members	9
Folders on a central network server	8
Folders associated with specific computer programs	5
One folder without subdivisions, e.g., My Documents	4

the businesses reported the use of more than one of the methods listed in Table 6. Examination of the folder systems revealed that three of the businesses have a very limited number of folders (less than 10), but nine of the 21 (43%) have extensive folder systems, ranging from about 20 to more than a hundred folders. In most cases subdivision of folders is taken only to the second or third level, but in a few instances subdivision to the fifth level was observed. Some of the businesses use Microsoft's *My Documents* folder as the starting point for their own folder systems, but others tend to group together documents created with a specific program such as Microsoft Word, Excel and Pastel.

Analysis of the nature of the folder hierarchies and discussion with the respondents revealed that most of the systems were not planned systematically and that folders are created when needed. There was no evidence that the systems were based on any recognized principles of information organization, other than the intuitive broader-narrower sequence implied by a hierarchical folder structure. Repetition of folders occurs in different places, such as more than one project folder in the system used by the architect; therefore similar documents can be stored in more than one place, obviously leading to confusion amongst the users of the system. (A more detailed analysis of the concepts and structures found in the folder systems forms part of the separate article by Van der Walt.)

The relatively low percentage of businesses using a folder system on a central server for storing their documents can be ascribed to the fact that the majority of the businesses fall into the very small and micro categories. Seven of the nine small businesses in the sample reported local area networks as opposed to only four of the 12 businesses in the very small and micro group. Small and medium businesses often do have LANs and can therefore be expected to use central folder systems to a greater extent than suggested by this study. Obviously, the need for a standardized classification system for folders will be greater in an environment where many people are sharing the same system, as opposed to stand-alone computers used mainly by individuals. However, even in the case of stand-alone computers, standardization is desirable, because when a staff member is ill, on leave or resigns the manager or someone else has to be able to make sense of the folder structure used by the individual when important documents have to be retrieved.

Folder systems for email and Internet resources:
Questions 20 and 21 investigated the storage of email messages and email attachments respectively (see Tables 7 and 8). Folder systems used for storing these documents were much less sophisticated than those used for internally produced computer files. The majority of businesses simply use the standard folders provided by the email program, e.g., Inbox, Outbox, Sent items and Deleted items, without any subfolders. This practice of using only the built-in folder system leads to the development of long lists of emails, making it difficult and time-consuming to search for a specific message.

Table 7: Methods used to store e-mail messages

Storage methods	Number of SMMEs
Folders provided by email program	11
Self-designed system of folders	3
Store only printed version of message	2

A number of respondents indicated that they simply delete emails after reading, while a few print the messages that they want to keep and then delete the message. It became clear from the interviews that most businesses only started using email quite recently and, therefore, had a very limited number of messages to store. As the use of email expands and the number of messages to be retained in electronic form grows, the businesses will experience a greater need for an appropriate system of folders in which messages can be stored in a logical way for later retrieval.

Table 8: Methods used to store email attachments

Storage methods	Number of SMMEs
With email message	7
In document folder system	5
Store only printed version	2

The tendency to store email attachments with the messages might indicate that a folder system for emails should follow the same pattern as the system for other computer files. Using the same classification system for both groups of documents will promote consistency in the selection of folders for storing documents on similar topics. Ten of the SMMEs do not keep email attachments at all. Discarding attachments can lead to the loss of important information or the waste of time trying to obtain the documents again from the original source.

In question 22 and 23 the organization of URLs (Uniform Resource Locators) and Internet downloads was investigated (see Tables 9 and 10). At the time of the survey only two of the 21 businesses did not have an Internet connection. Folder systems for Internet addresses showed the same rudimentary stage as those for emails, with most businesses simply using the folder provided by the Internet browser (Favorites) without any further subdivision. The reason for this situation is the same as for emails – a small number of URLs stored due to the recent introduction of the Internet as a tool for finding information related to the businesses in question. It can also be expected that the businesses' need for suitable folder systems for Internet addresses will expand in the near future.

Table 9: Methods used to store URLs

Storage methods	Number of SMMEs
Favorites/Bookmarks folder	11
Self-designed system of folders	3

Only a limited amount of downloading from the Internet was reported, with the folder system used for internal documents being the most frequently used to store downloaded documents. The use of the "Downloads" folder provided by Windows does not seem very useful for documents that the business intend to keep for a lengthy period of time. One can assume that downloaded documents contain information needed in the normal business processes and, therefore, should be accommodated in the normal system of folders for company documents.

Table 10: Methods used to store Internet downloads

Storage methods	Number of SMMEs
In document folder system	5
In "Downloads" folder	3
Store only printed version	2

Information retrieval:
Once computer files have been stored within a system of folders one must be able to retrieve them. Question 24 of the survey asked the participants to indicate which methods they used to search for stored computer files (see Table 11).

Table 11: Methods used to search for stored computer files

Search methods	Number of SMMEs
Browsing in folders using Windows Explorer, etc.	14
Windows search facility	12
No method used	3
"Find Fast" in Windows	1
Program functions	1
Windows Commander	1
Metadata in file "Properties"	0
MSOffice search facility	0

Most of the respondents reported browsing through folders by means of Windows Explorer or My Computer as their primary approach to searching for specific files. The Windows search facility was also used, but mostly only when the requested file could not be found through browsing. These two methods are widely known while other readily available methods, such as "Find fast," searching by using the file properties information and the Microsoft Office search facility, which is much more sophisticated than the Windows search facility, were completely unknown to the respondents. Unsophisticated folder systems combined with unfamiliarity with sophisticated search techniques is a recipe for failure in retrieving electronic information.

Although not specifically covered by the questionnaire, it also became clear in the interviews that most of the respondents have very limited knowledge of search techniques and strategies to be used for effective searching on the Internet when looking for external information.

6.3 Manual systems for information organization

Question 25 in the survey asked participants to name all the manual systems used to organize information. Manual systems are methods used for the organization of information available in printed or handwritten format.

Four types of manual systems (filing cabinets, ring binders, card systems and pamphlet boxes) were listed in the questionnaire, and during the course of

the study another four types were discovered at a few of the enterprises. The results are given in Table 12.

Table 12: Manual systems

Type of system	Number of SMMEs
Ring binders	19
Filing cabinets	13
Card systems	4
Books	4
Pamphlet boxes	3
Boxes	3
Binding	1
Pigeon-holes	1

Ring binders were mostly used to store financial information, organized chronologically according to date. The other uses of ring binders include the storage of personnel or customer information, usually organized alphabetically according to the name of the staff member or customer.

Filing cabinets were used mainly to store customer and personnel information organized alphabetically according to the customer's or staff member's name. Two businesses made use of an "order of importance" when organizing their filing cabinets, placing the most important/used information at the front of the cabinet drawers and the least important/used at the back. Filing cabinets were also used by some businesses for inventory control, but card systems or pamphlet boxes were mostly used to store this category of documentation or information.

Card systems were usually organized alphabetically according to the name of the customer or the product. Pamphlet boxes were mostly used to store old or large amounts of inventory information, and also customer, financial and personnel information. The information was mostly organized alphabetically according to the name of the customer or staff member and chronologically by date.

The other systems that were identified during the study (books, boxes, binding and pigeon-holes) were mainly used to store financial information organized chronologically according to date, month or even year.

Most businesses use a combination of these manual systems to organize the different types of information. It should be possible to use the same basic classification structure for the organization of documents in ring binders, filing cabinets and pamphlet boxes. The structure used in manual systems could also coincide with the folder structure used for electronic documents, so that the same structure is used throughout the business, thereby simplifying the procedure for storing and retrieving documents. This situation was, however, found in only one of the participating businesses, using the same folder names for organizing the documents and information in the computer and in the filing cabinet. Inconsistency between different manual systems and between the manual and the electronic systems, can lead to the loss of documents and information and result in time-consuming searches for or re-creation of the needed documents and information that could not be retrieved.

6.4 Alphabetical or classified arrangement

Questions 26 and 27 were aimed at establishing whether an alphabetical subject heading approach or a classified approach was used to organize information sources in any of the systems (electronic and manual) covered by the preceding questions. Only five of the respondents indicated that alphabetical subject categories were used, and only four were using some form of classified system to organize information resources. Although only five respondents gave a positive answer to question 26, in actual fact, the folders in all the systems covered by questions 19-23 were arranged alphabetically, because this happens automatically when folders are created. The low response to question 26 probably indicates that respondents misunderstood the question and thought only in terms of alphabetical lists of subjects that existed separately from the folder systems.

The systematic systems, identified in question 27, were mainly used to organize financial information, specifically information used in budgets, and a product list in one case. These classifications were used within specific computer programs and not in the folder systems. All of the systems consist of at most two levels of categories with no indication of general main categories, such as those found in the Dewey Decimal Classification, or a notation allocated to the classes. The respondents did not develop the systematic systems themselves, but made use of either legacy systems or categories found in demonstration versions of computer programs. The subdivision of folders creating a hierarchy of subfolders can, of course, also be regarded as a form of systematic arrangement, but this was not recognized by the respondents as such. The arrangement at each level was alphabetical, as indicated in the preceding paragraph – none of the folder systems made use of a notation to maintain a systematic structure.

Many of the respondents did not use an alphabetical or systematic system, but only a numerical list. This practice was observed in the manual systems, especially the ring binders. Each ring binder is given a number and in each of these a specific category of documents is stored. The categories are not placed in any recognizable order (alphabetical or systematic). When a new category arises the next number in the list is given to that category and a file created. This practice could increase the difficulty of organizing and finding information.

6.5 Responsibility for organizing information

Questions 28 and 29 investigated the responsibility of information organization in the SMMEs. In question 28 the participants were asked to indicate who is responsible for information organization in the business. The investigation revealed that there are a number of different role players that have information organization as a responsibility. In most of the businesses (54%) the overall responsibility was that of the owner/manager. In addition, individual staff members were responsible for organizing the information that they handle as part of their daily tasks in 54% of the businesses. One designated staff member, sometimes with a job title such as filing clerk, was responsible for information organization in 33% of the businesses and none of the participants made use of an external information consultant.

Question 29 investigated the need for an external information consultant in the organization of information in SMMEs. It was found that most of the businesses would prefer an information consultant to give advice or teach staff how to organize information effectively. It is not important to the participants to have an external information consultant who organizes documents and information on a contract basis. Most of the businesses stated that this would be a nice service to make use of, but the costs involved and the limited amount of information available would not warrant the expense. The confidential nature of much of the internal information also precludes the use of an external information consultant. The rating of all three options provided in this question (giving advice, providing training and contract work) were below average, indicating a very limited need for these services.

7 Conclusion and recommendations

This investigation established that the owner/managers of the sample of SMMEs are sufficiently aware of the importance of information for their businesses, but that retrieving the necessary internal as well as external information is a problem. Most of the staff in these businesses lack the expertise to search effectively for information in the internal systems as well as on the Internet, and have limited or no knowledge of resources such as CD-ROM and online databases and journal indexes that are also available. Even where people are aware of these sources the cost involved in using them is an obstacle to access. Personnel also do not have the time to search for information on a daily basis and get frustrated if they cannot find what they are looking for.

Satisfying information needs of SMMEs through searching is just one side of the problem. The actual organization of business information within the enterprise in such a way that it can be retrieved without difficulty, is another problem. Even though there was general agreement amongst respondents that organizing information is critically important for running their businesses, the current situation with information organization was judged to be not ideal in the majority of cases. Computer systems are in general not integrated, leading to duplication of information in different systems. Folder systems for internally created computer files do not have a well-planned structure based on information organization principles and are created as needed, without taking into account the information needs of and the information use in the business. Folder systems for email and Internet resources were found to be very rudimentary, with most businesses using only the built-in folders provided with the programs used. Staff members mostly do not have the necessary knowledge and skills to organize information. They do not have knowledge of retrieval tools such as classification systems, indexing languages and catalogues, and also do not have the necessary training or guidance in the literature to develop or utilize such systems. Manual and electronic systems that store the same type of information are not organized in the same way, creating confusion, with no clear indication of where information should be filed. For most staff members information organization is an additional duty and is done when there is time available.

Although staff members are often aware of the problems identified above, especially when they cannot find the document they are searching for, the

cause of the problems is not given serious thought. Most businesses have not realized that poorly designed information organization systems are the reason for the difficulties experienced in retrieving information. Those that have realized that these systems may be the problem do not know what to do about it. Information organization was cited as critically important by all the respondents in the sample, and the problems identified must therefore be solved to ensure that information can make a significant contribution to the success and competitiveness of these enterprises in the knowledge-based economy.

Based on the results of this investigation the following recommendations are made for improving information organization in small businesses:

- More sophisticated and extensive folder systems, based on recognized information organization principles, should be designed for storing electronic documents. Especially in the case of email messages and Internet resources the need for such systems can be expected to become greater in the near future.
- Attention should be given to integrating information in enterprise-wide systems in order to avoid duplication of data, ensure data integrity and enhance the possibilities of analyzing the data for the purposes of decision-making. This recommendation implies greater use of relational databases and the storing of documents centrally on a network server.
- Where different collections of documents have to be formed, e.g., in manual and electronic systems, and emails, Internet resources and other computer files, the same system of organization should be used as far as possible. Even individual members of staff should be encouraged to base the organization of documents stored on their desktop computers and in office filing cabinets on the same system that is used for centrally stored company documentation.
- Information organization tools such as classification systems and alphabetical indexing languages, that can be used for example to standardize folder names and database indexing, should be developed to address the specific needs of small businesses. In the selection of terminology and structuring of these tools cognizance should be taken of the conclusions reached in paragraph 5.4 above, regarding the implications of the importance rating of various categories of information, information sources and communication channels. One such tool, a classification system for small businesses, is described in a separate article in *Knowledge Organization*.
- Small businesses should consider using an information consultant to give advice about the construction of their information organization systems and to provide training to staff in this regard as well as about effective search techniques.

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Appendix A: Questionnaire

Date: _____ Name of business: _____

Name of respondent: _____

Postal address: _____

_____

Telephone: _____ Fax: _____ E-mail: _____

Business desires feedback? Y N

1. Describe the type of business (e.g., pharmacy, furniture store, lawyer, butchery)

   _____

2. Select a category in each of **A** and **B** that classifies the business.

A	**Number of employees**	1 – 5	6 – 10	11 – 50	51 – 100	101 – 200
B	**Annual turnover**	≤ R0.3m.	R0.3m–R5m	R5m–R25m	R25m-R40m	

3. In which of the following industry sectors would you place the business?

☐ Accommodation *(e.g., guest houses, hotels)*
☐ Building, construction and architecture
☐ Services *(e.g., legal services)*
☐ Financial services and investments *(e.g., auditors, accountants)*
☐ Health and medical services
☐ Engineers
☐ Information and publication *(e.g., publishers, bookstores, newspapers)*
☐ Art, curios and gifts
☐ Agriculture, forestry, fisheries
☐ Furniture and decor
☐ Fashion and accessories *(e.g., clothing stores)*
☐ Automobile sales, parts and repairs
☐ Education and training
☐ Computers, software and accessories
☐ Restaurants
☐ Tourism
☐ Transportation

- ☐ TV, radio and telecommunication
- ☐ Production
- ☐ Food and drink *(e.g., butcheries, distributors)*
- ☐ Other (please specify) _____

4. Does the business use computers? Y N

If **No**, why not? _____

5. How many computers are used by the business?

- ☐ 1
- ☐ 2-4
- ☐ 5-9
- ☐ 10-14
- ☐ 15-20
- ☐ more than 20

6. Are the computers connected in any of the following ways?

- ☐ Computers are not connected
- ☐ A local area network (LAN) *(network only available in the business)*
- ☐ A wide area network (WAN) *(network is larger, e.g., more than one business)*
- ☐ An Intranet
- ☐ Connected to the Internet
- ☐ Other (please specify) _____

Please use the following scale to answer questions 7-15:

0	1	2	3	4	5
Not applicable	Of no importance	Somewhat important	Of average importance	Very important	Of critical importance

7. How important are **computers** for the following applications in the business?

- ☐ Creation and storage of business data / records *(e.g., transactions, finances, personnel, customers)*
- ☐ Analysis of business data for use in decision-making *(e.g., financial reports, statistics, charts)*
- ☐ Creation and storage of documentation *(e.g., letters, contracts)*
- ☐ Searching for information *(e.g., Internet, databases)*
- ☐ Communication *(e.g., email, fax)*
- ☐ Design/development of products *(e.g., graphic design)*
- ☐ Delivery of services *(e.g., consultation, training)*
- ☐ Project management *(e.g., research projects)*
- ☐ Electronic banking *(e.g., transfers, bank statements, payment of accounts)*
- ☐ E-commerce *(e.g., orders, client payments)*
- ☐ Other (please specify) _____

8. How important is **information** in general for the business?
(Information can be described as any data that are captured, manipulated, stored and used, and any form of document: printed, microform or electronic).

_____

9. How important is information for the execution of each of the following business processes?

- ☐ Strategic planning _____
- ☐ Production / delivery of services _____
- ☐ Marketing and sales _____
- ☐ Purchasing _____
- ☐ Financial management _____
- ☐ Personnel management _____
- ☐ Other processes (please specify) _____

_____

10. Businesses obtain information from the internal and the external environment. (The **external environment** contains those factors which are outside the control of the business; for example: the economy, politics etc. The **internal environment** is that which the business can control; for example: finances, personnel, products and services etc.)

How important is information from/about each of these environments for the business?

☐ External environment
☐ Internal environment

11. Indicate how important **information on** each of the following aspects of the internal or external environments is for the business.

☐ Political developments *(e.g., political stability & ideologies)*
☐ Legislation *(e.g., new labour or tax laws, the smoking policy)*
☐ The economy *(e.g., economic growth, inflation, stock markets, sources of capital)*
☐ Socio-cultural factors *(e.g., demographics, lifestyle)*
☐ Ecological issues *(e.g., pollution, climate, biological)*
☐ Technology *(e.g., new technology that can be used in production, administration, communication, information systems)*
☐ Competition *(e.g., who they are, their products, services, prices and strategies)*
☐ Suppliers *(e.g., contact information, products, price lists)*
☐ Customers / potential customers *(e.g., contact information, needs, satisfaction, complaints)*
☐ Special needs or requests from customers
☐ How to plan strategies *(e.g., procedures, models)*
☐ Creditors *(e.g., names, amounts, payment dates)*
☐ Debtors *(e.g., names, amounts, payment dates)*
☐ Marketing strategies
☐ Sales figures of own products / services *(e.g., number of items, monetary value)*
☐ Activities of sales representatives *(e.g., customer visits, success rate)*
☐ Product design *(e.g., information on materials, apparatus needed)*
☐ Product information for marketing *(description of own products and services, price lists, catalogues)*
☐ Stock levels *(number of products in stock)*
☐ Production costs *(costs associated with production)*
☐ Production figures *(number of items produced)*
☐ Conditions of service and benefits of personnel
☐ Job descriptions and analysis (personnel)
☐ Training of personnel *(e.g., training material, methods)*
☐ Information on the knowledge and skills of personnel *(e.g., registers of expertise, CVs)*
☐ Performance evaluation *(e.g., criteria, methods)*
☐ Other (please specify) _____

_____

12. Information appears in many formats. How important is each of the following formats for the business?

☐ Electronic (computer) format
☐ Printed format
☐ Verbal (oral) communication

13. All information used is obtained through certain channels of communication and from certain information sources. How important is each of the following as channels and sources of information for the business?

☐ Internet
☐ Online databases
☐ Databases on CD-ROM
☐ Email
☐ Fax messages
☐ Periodicals, newspapers and newsletters
☐ Books *(e.g., reference works, textbooks)*
☐ Government publications (local and national)
☐ Reports *(e.g., research reports, annual reports of competitors)*
☐ Patents and standards
☐ Catalogues of products and materials
☐ Telephone calls
☐ Meetings (including agendas, discussions, etc.)
☐ Conversations with personnel, clients and distributors

☐ Conferences, workshops and seminars
☐ Career or trade associations *(e.g., chamber of commerce)*
☐ Government departments and other governing bodies
☐ Radio and television
☐ Other (please specify) _____

14. How important is it for all the **electronic information** obtained from the different **internal** and **external** sources and channels to be **integrated** into one information system?

_____

15. How important is it for the execution of business processes that the business's information (electronic and printed) be **organized**?

_____

16. How well is the business's information **currently** organized?
(Make use of the following scale).

1 very poor	**2** poor	**3** average	**4** good	**5** very good

17. If 1, 2 or 3 was marked in question 16, what are the most important reasons why information is **not** organized properly?

_____

_____

18. In the following table, provide information on the **computer programs and systems** used to store, retrieve and analyze information in the business. Indicate:

(a) Which **programme or system** *(e.g., Pastel, Corel Draw, MS Word, MS Excel, MS Project, Outlook Express, Internet Explorer)*
(b) What **sort of information or applications** the programme is used for *(e.g., finances, contact information of customers/suppliers, stock control, personnel records, project management, email, Internet searches, design, management information, decision support)*
(c) **How effectively** does the system work according to the following scale

1 Not at all	**2** Somewhat	**3** Average	**4** Very	**5** Highly

(d) What **problems** (if any) you experience with the system.

(a) Program / System	(b) Information / Applications	(c) Eval	(d) Problems

19. How are the computer folders created / received by means of the above-mentioned systems stored? *(more than one may be indicated)*

☐ In folders on a central server (in the case of network systems)
☐ In folders on individual staff members' computers
☐ In folders associated with specific programs *(e.g., Excel-folders together, Word-folders together, Pastel-folders together)*
☐ A variety of files **without subdivision** under **My Documents** (or a similar folder)
☐ In a system of **self-created subfolders** under My Documents (or elsewhere) **(OBTAIN A COPY OF THE DIVISION OF FOLDERS)**
☐ Other (please specify) _____

20. How are email messages stored?

☐ In the folders provided by the e-mail system *(e.g., Inbox, Sent items)*
☐ In a system of **self-created subfolders** within the e-mail programme **(OBTAIN A COPY OF THE DIVISION OF FOLDERS)**

☐ Other (please specify) _____

21. How are email attachments stored?

☐ With the email message in the email system's folders
☐ Separate from the email in folders with other similar documents *(see question 19)*
☐ Other (please specify) _____

22. How are the addresses of Internet resources (URLs) stored?

☐ Without subdivision in the browser's Favorites / Bookmarks folder
☐ In a system of self-created subfolders under Favorites / Bookmarks **(OBTAIN A COPY OF THE DIVISION OF FOLDERS)**
☐ Other (please specify) _____

23. How are files downloaded from the Internet stored?

☐ In a special folder for downloads
☐ In the usual folder system *(e.g., under My Documents)* with other similar documents *(see question 19)*
☐ Other (please specify) _____

24. Which of the following methods / aids are used to find specific computer files?

☐ Browse in folders *(with Windows Explorer, My Computer or <File> <Open> in the application programme, e.g., MS Word)*
☐ Windows Explorer's search facility *(<Explorer> <Tools> <Find> <Files & Folders> or <Start> <Find> <Files & Folders>)*
☐ MS Office's search facility *(<Office> <Tools> <Find>)*
☐ Windows' "Find Fast" facility *(Control Panel)*
☐ Filling in of information in the Properties page of documents
☐ Other (please specify) _____

25. In the following table, provide information on the **manual systems** used by the business to store information. Indicate:

a) The **type of system** (e.g., filing cabinets, pamphlet boxes, ring binders, card systems)
b) **The type of information sources** or applications the system is used for (e.g., quotations, orders, invoices, accounts, receipts, bank statements, contact information of customers/suppliers, stock control, personnel records)
c) How the **information is organized** (e.g., alphabetically according to client or personnel member or subject, or chronologically according to date, or numerically according to a series number or a code number, or systematically according to a classification system)

System	Information / Applications	Method of Organization

25. Are information sources in any of the systems (computer or manual) organized or classified **alphabetically according to specific subjects or broad categories** (e.g., categories of expenses, customers, products, services, personnel members or types of documents such as letters, contracts etc.)?

☐ Yes **IF YES, PLEASE PROVIDE A COPY OF THE LIST(S)**
☐ No

27. Are information sources in any of the systems (computer or manual) organized systematically or classified according to a designed **classification system**?

☐ Yes **IF YES, PLEASE PROVIDE A COPY OF THE SYSTEM**
☐ No

28. Please indicate who is responsible for the organization of information within the business *(more than one may be indicated)*

☐ The owner/manager
☐ Individual personnel member responsible for all information *(e.g., librarian or filing clerk)* Job description: _____

☐ Each personnel member organizes the information with which he/she works
☐ An external information consultant
☐ Other (please specify) _____

_____

29. Is there a need for an external information consultant for one or more of the following services? *(Indicate using the following scale)*

1 No need	**2** Some need	**3** Average need	**4** Great need	**5** Very great need

☐ Advice for personnel members on the organization of information
☐ Training of personnel in how to organize information
☐ The organization of information in the business on a contract basis
☐ Other (please specify) _____

_____

_____