The South African business environment in which accountants function and the role of information technology in that environment

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Abstract

South African business organisations operate in an environment that is changing rapidly. One of the key drivers of this change is advances in information technology (IT). Accountants are educated at various tertiary institutions to prepare them to be competent as information and knowledge workers in the South African business environment. This article aims to determine the nature and demands of the South African business and the IT environment in which accountants must function. This analysis identifies the context within which IT skills are applied by accountants by investigating the South African business and IT environment to determine how educational institutions could ensure that the students they deliver possess the critical IT skills they need to be competent in the South African business environment.

Keywords

Accountants in business   *Information Technology*
IT environment   *IT skills*
SA business environment

1 Introduction

Most people would agree that good information is essential to the success of an organisation. Organisations need information both about their internal processes, in order to ensure effectiveness and efficiency, and about their environment, in order to respond and adapt to the actions, attitudes and decisions of external agencies such as governments, competitors and social groups. Both types of information must be put together in a co-ordinated manner so that the actions and decisions of the organisation can be matched closely to its external circumstances (Kaye 1995:5). Information technologies are used by most knowledge and information workers (such as accountants) to assist them in producing and distributing good quality information to all the end-users of their services. Because accountants interact with information systems and use information on a daily basis, they should have a suitable set of skills and be fully competent in using the relevant technology (Wessels 2004).

Students who qualify as accountants have to function in a very specific business environment. This business environment changes constantly and this rapid change continuously places new demands on the accounting profession in terms of the services that accountants are supposed to deliver. To be competitive and add value in this changing environment, students should acquire the knowledge and skills that are relevant to the specific environment in which they are going to operate. Professional accountancy bodies determine the entry requirements for membership by prescribing the knowledge and skills that members should possess if they intend to join that professional body. Professional accountancy bodies therefore have an obligation to ensure that students who enter the profession have acquired the relevant knowledge and skills to be competent and to remain competent in the business environment in which they function.

One of the key drivers of change in the business environment is advances in information technology (IT). These advances have an effect on *what* accountants do and *how* they do it. Accountants require the knowledge and skills to understand and use IT to enable them to function in a business environment that is using IT more and more extensively in all areas of business. The question arises whether students who have completed their formal education and enter the profession as trainee accountants in South Africa possess the knowledge and skills that will enable them to interact with and use IT effectively.

2 Research problem

One of the aims of the accountancy and auditing profession is to deliver accountants that can be regarded as competent to the business environment (IFAC Education Committee 2003:8). Competence is the ability to perform a work role to a defined standard with reference to real working environments (IFAC Education Committee 2003:12). In this case, the work role refers to what an accountant is required to do; the defined standard refers to the level of work that is reasonably expected from accountants; and the working environment refers to the business environment in which accountants function. Professional bodies set qualification standards for granting membership to candidates. As a result, employers and clients usually trust that, if an individual has been granted such membership, it means that such professional bodies are satisfied that their members are competent to work as professional accountants and to offer their services to the public.

To prepare students to be IT-literate by the time they enter the business environment, educational institutions should ensure that their students acquire a relevant set of IT skills (IFAC Education Committee 2003; SAICA 2005a; Wessels 2005). According to research conducted by Wessels (2005), the list of generic IT skills can be divided into a number of categories that designate the specific skills that are required by an accountant to perform his/her job, namely:

- skill in using such technology in performing daily business tasks (using word processors, spreadsheets, presentation software and internet tools) and office tasks (using database software, accounting software and knowledge work systems);
- the ability to conduct assurance testing using technology or evaluating technology (audit automation skills); and
- the ability to interact with new and changing technology as a manager, designer and user of this technology.

Given the rapid changes in IT today, the question arises how educational institutions can deliver students with the requisite skills to the business environment. For educational

institutions to achieve this goal, it is necessary that they understand the demands of the business environment. Such understanding can be gleaned from an analysis of the South African business environment to determine what professional accountants do (in other words, in what business environment they function and what role they fulfil) and the IT environment they will encounter.

The purpose of this article is to determine and describe the nature and demands of the South African business and IT environment in which professional accountants have to function, in order to identify those IT skills that are important to accountancy students who wish to be competent in using IT in the South African business environment. If an understanding is gained of the environment that such a student will encounter on entering the profession as a trainee accountant and as a qualified professional accountant, the IT tools that accountants are likely to use can be determined. These IT tools should be used when students are educated to ensure that they acquire the critical IT skills in an appropriate educational environment to enable them to deal with the actual business environment in which they will eventually work.

3 Research approach

A number of professional accountancy bodies operate in the South African business environment. Their members are employed in various industries and work roles within these business organisations. A profile was compiled of where professional accountants work within the South African business environment (in other words, their work role). An understanding of where they work and what they do is helpful in ascertaining what kinds of IT they interact with and its use.

The data sources that were used consisted of membership information as supplied by the various professional accountancy bodies in South Africa, namely the South African Institute of Chartered Accountants (SAICA), the Chartered Institute of Management Accountants (CIMA) and the Association of Chartered Certified Accountants (ACCA). This information was analysed to compile a profile of where accountants work within the South African business environment.

The South African business environment was investigated to determine the extent to which IT and software applications are used in business organisations. The data sources used included research and survey reports compiled on the South African business and IT environment by reputable research institutions, such as BMI-Techknowledge, Gartner Research, CS Holdings, Accountancy SA and World Wide Worx. These research and survey reports, together with the analysis of where in the South African industry accountants operate, enabled the compilation of a profile of the typical South African business and IT environment that accountants encounter and that they are expected to be competent in interacting with.

Accountants need to function competently in a specific environment. South Africa is regarded as a third-world or emerging economy. This makes other demands of accountants than the ones that would have been made by a first-world economy. This study therefore focused on the IT skills required of professional accountants functioning within the *South African business environment*. A number of professional accountancy bodies operate in the South African business environment (including SAICA, CIMA, the ACCA and the CFA (previously known as the CPA)). As the CFA (South African Institute of Financial Accountants in South Africa) focuses on meeting the need for accounting support staff in

commerce and industry rather than for professional accountants and auditors (CPA, 2006), it was excluded from this study.

The approach to this investigation was not to conduct a detailed study of the South African business environment, but rather to identify the typical environment students will encounter on completion of their formal education and on entering the business environment as trainee accountants. This investigation identified those IT skills that most students need to possess to be competent in using IT in the South African business environment, as well as the IT tools most frequently used in South African organisations.

4   The South African business environment

Accountants apply their skills and knowledge within a specific environment. The education of accounting students in South Africa aims to deliver competent accountants for the South African business environment. The South African business environment is discussed by investigating the professional accountancy profession in South Africa, together with the general business environment in which accountants are most likely to operate.

4.1   *Accountancy profession in South Africa*

As has been stated above, the three main professional accountancy bodies in South Africa are

☐ the South African Institute of Chartered Accountants (SAICA);

☐ the Chartered Institute of Management Accountants (CIMA); and

☐ the Association of Chartered Certified Accountants (ACCA).

The membership (of accountants currently working in South Africa) of the various professional accountancy bodies in South Africa is reflected in Table 1.

**Table 1   Membership statistics of accountancy bodies in South Africa in 2005**

Accountancy body	Membership	Percentage
SAICA	18 142	93%
CIMA	1 170	6%
ACCA	174	1%
TOTAL	**19 486**	**100%**

Sources: ACCA (2005), CIMA (2005) and SAICA (2005b)

From the statistics set out in Table 1, it is evident that SAICA members dominate the accountancy profession in South Africa, as 93% of all professional accountants working in South Africa are members of this professional body. The rest of this section will therefore focus on the profile of SAICA members.

SAICA is the premier accountancy body in South Africa. It was founded in March 1980, but its predecessor, the Institute of Accountants and Auditors, was first established as far back as 1894 (SAICA 2003).

According to SAICA's statistics about where chartered accountants work, 48.1% of all qualified accountants work in industry and commerce as financial accountants, internal auditors, financial managers, general managers and directors, and 25.3% of accountants work in public practice, as indicated in Figure 1 (SAICA, 2005b). The remaining 26.6% of all qualified chartered accountants operate as solo practitioners or are involved in education, the government sector or fulfil diverse other roles.

Figure 1   Work roles of chartered accountants in South Africa in April 2005
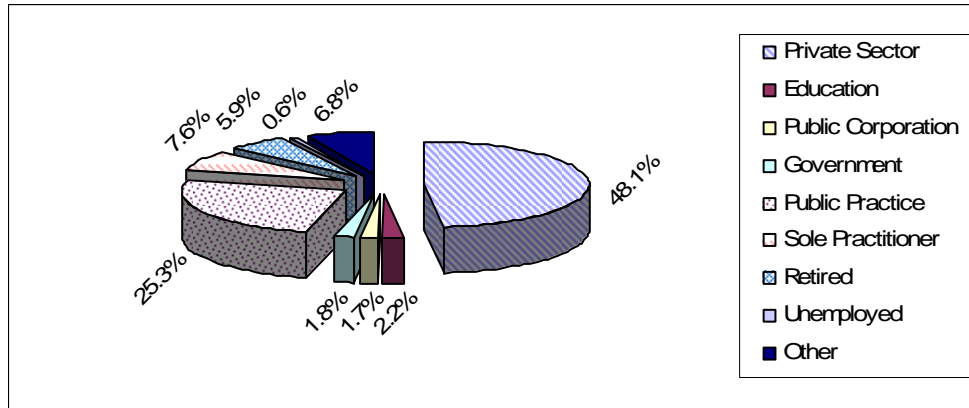
Source: SAICA (2005b)

During the period from January 2002 to April 2005, SAICA noted a 16.9% growth in new chartered accountants working in South Africa. This is quite a substantial growth in the number of CAs working in the public sector. Table 2 gives an indication of the total number of qualified chartered accountants working in the different constituencies in South Africa and highlights the diverse roles accountants perform in the South African business environment.

Table 2   CAs working in South Africa by 5 April 2005

Constituencies of SAICA on 5 April 2005				
Private sector			**8 733**	**48%**
Financial accountant	1 748	9.6%		
Branch accountant	11	0.1%		
Financial support staff	204	1.1%		
General management – Director	1 349	7.4%		
General management – Other	1 133	6.2%		
Internal auditor	385	2.1%		
Management accountant	351	1.9%		
Senior financial manager – Director	1 453	8.0%		
Senior financial manager – other	1 991	11.0%		
Treasury accountant	108	0.6%		
Education			**391**	**2%**
Public corporation and Government			**628**	**3%**
Public practice			**4 598**	**25%**
Partner - large practice	642	3.5%		
Partner - medium practice	408	2.2%		
Partner - small practice	1 030	5.7%		
Employed - large practice	1 640	9.0%		
Employed - medium practice	640	3.5%		
Employed - small practice	238	1.3%		
Sole practitioner			**1 383**	**8%**
Retired			**1 068**	**6%**
Unemployed			**109**	**1%**
Other			**1 232**	**7%**
Total			**18 142**	**100%**

Source: Adapted from SAICA (2005b)

While specific needs and opportunities vary in the different constituencies, as displayed in Table 2, those aspects of IT that are common between the various constituencies needed to be determined. In defining the IT skills required by accountants, those IT elements that all chartered accountants are expected to share were emphasised, while those skills used by only a small percentage of accountants could be downscaled.

In the next section, the general business environment in which accountants operate is discussed.

4.2 *General South African business environment*

The most common types of businesses in South Africa are listed companies, private companies, branches of foreign corporations, close corporations, partnerships, joint ventures and sole proprietorships. As was mentioned in Section 4.1 of this article, 48% of accountants will probably be employed by one of these types of business entity as accountants, while 33% of accountants (working in public practice and as solo practitioners) will be engaged in auditing the accounts of these types of business entities.

At the beginning of 2004, a total of 426 companies were listed on the Johannesburg Securities Exchange of South Africa (compared to 650 in 1999), with a combined market capitalisation amounting to R1.8 billion (Johannesburg Securities Exchange, 2003:19). As is depicted in Figure 2, the majority of businesses in South Africa (99.9%) are either private companies or close corporations. There were 120 700 private companies and 553 900 close corporations by the end of August 2002 (Department of Trade and Industry, Republic of South Africa 2002:48). No specific statistics are available on the number of partnerships or sole proprietorships, as they are not required to register their business in terms of current legislation.

**Figure 2 Number of businesses per business type**
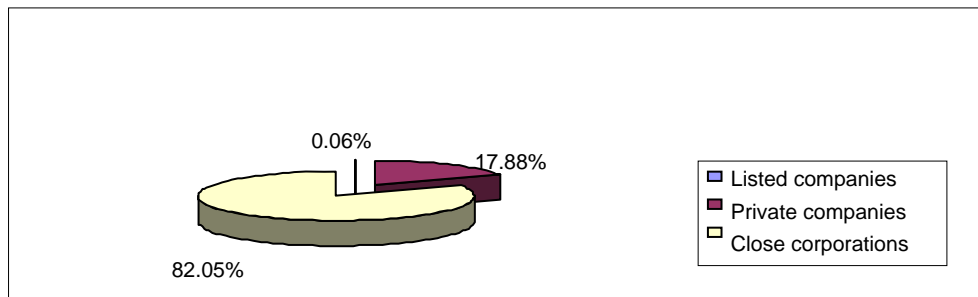
Investment in IT has had a vast impact on the competitiveness of these businesses, as was indicated by a survey conducted in 2003 by World Wide Worx (2003). More than 5 900 small to medium-sized enterprises (SMEs) were interviewed on their investment in IT.

Among the key findings of the survey was that SMEs are spending a higher proportion of their turnover on IT each year. In 2001, 47% of SMEs spent more than 1% of turnover on IT; in 2002 48% did so; and in 2003 no less than 49% expected to spend more than 1% of their turnover. According to a second report (World Wide Worx 2004), the personal computer, along with consumables like ink cartridges, paper and disks, remains the most important item in budgeting for IT purchases among SMEs in South Africa. After personal computers and consumables, software comes in as a close third, followed by servers and

peripherals, such as printers and scanners. Laptops remain a distant priority, in eighth place, ahead of only personal digital assistants (PDAs) and wireless technologies. According to George du Plessis, SMB Segment Manager at Hewlett-Packard South Africa, the "findings confirm international research on the South African market, which shows PCs outselling laptop computers by a ratio of almost 4 to 1. …Laptop sales may be growing faster than any other format, at 73% for the first quarter of this year [2004], but desktop PCs still grew at 51%" (World Wide Worx, 2004).

According to the latest BMI-Techknowledge (2005) survey on SME IT end-user trends, this sector spends more on hardware and software than it spends on IT services, with companies generally spending on IT in line with their rate of growth. Figure 3 contains a comparison of hardware, software and IT services percentage allocations for the SME sector and the corporate sector in 2005. Corporate companies spend a higher percentage of their IT budget on IT services, whilst the SME sector spends a higher percentage on software and hardware.

Figure 3 Comparison of average percentage allocations of IT budget to technology – SME sector vs. corporate sector (2005)
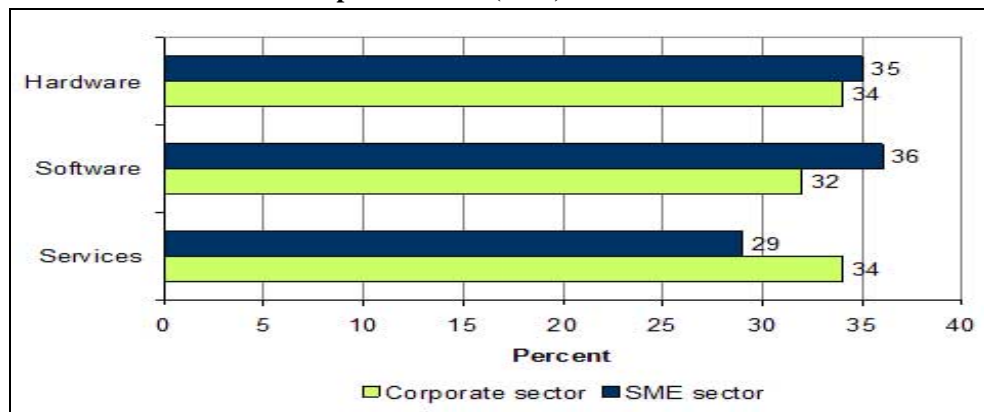
Source: BMI-Techknowledge (2005)

The low ranking of new mobile technologies is an indication of the fact that SMEs operate in the here and now, with budgets oriented almost entirely around practical demands, rather than around the nice-to-haves, unknowns, and cutting edge technologies.

In the absence of more specific research on the number of accountants employed in the various business forms in South Africa, it is assumed on the basis of the discussion in Section 3 of this article that most accountants, when entering the profession (whether working in public practice or for industry and commerce), are likely to work for (or audit) a private company or close corporation that will probably use some form of basic IT in the organisation. This assumption is supported by an analysis of the information in Table 2 (above), which indicates that 62% of accountants in public practice either work for small or medium practices or operate as solo practitioners that will most probably deal with SMEs rather than with listed companies.

In the next section, the South African IT environment is analysed.

5 The South African software application environment

For accountants to be competent in the use of IT, they must apply their IT skills in a relevant business or accounting context. Accountants operate in the South African business environment, whether as financial managers working for a specific business organisation, or as independent auditors evaluating the financial information of other business organisations or advising business organisations on their financial systems. Competencies (or skills) can be defined as the ability to perform a specific action with reference to *real working environments* (IFAC 2003:12-13). It is therefore relevant to investigate the typical working environment in respect of IT that professional accountants are likely to encounter when they have to apply their skills.

5.1 *General office software environment*

The general office software environment refers to the general applications used by an accountant on a daily basis in a South African business environment. This software includes the operating system (and related utility software), communication software (e-mail and internet) as well as office software that helps the accountant to perform his/her job more efficiently and effectively (word processing, spreadsheets, presentation software and database management software).

5.1.1 *System software*

System software includes the operating systems used on clients' computers, operating systems used on enterprises' servers, and utility software available to end-users.

According to research conducted by Netcraft (2004), the distribution of operating system software was reported at server sites in South Africa in 2001 as depicted in Figure 4 (below).

Figure 4 Operating systems used on servers in South African organisations during 2001
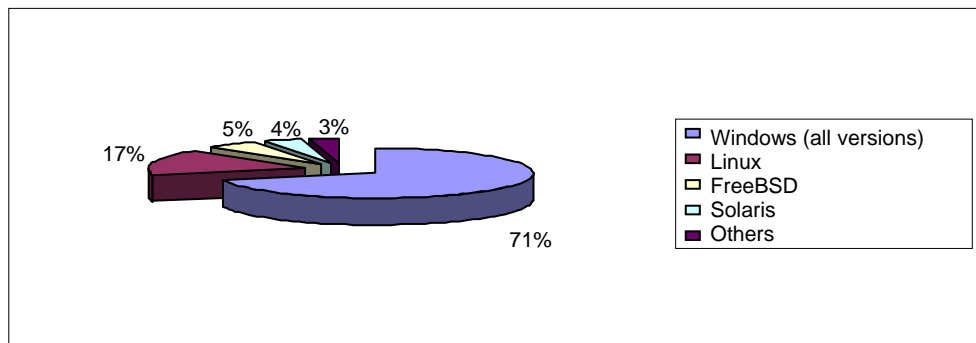
Adapted from source: Netcraft (2004)

Windows operating systems (including all their various versions) dominate the South African market, with a total of 71% of installations, followed by Linux with 17%. The results of this survey were confirmed by a report published by BMI-Techknowledge (2004a), which concluded that, in 2004, Microsoft operating systems had a market share of 77%, and that Linux had a market share of 14% in the server market.

While Linux's popularity on server systems is relatively high (14% to 17%), this operating system does not enjoy the same widespread use on client systems. IDC recently released its numbers for the client market, showing that Windows accounted for 87% of all worldwide sales in 1995 (it was predicted that this percentage would decline to 85% by 2004). Of the 13% of the market that are not buying the Windows operating systems, about 5% have purchased an Apple computer, running the Mac operating system (Miles 2004). According to Gartner Research (2004), the different versions of Windows operating systems are installed on 98% of all computers in Africa, while Linux and Mac OS each has a 1% share of the market. Linux software can be obtained free of charge and be copied and modified, unlike Microsoft's software. A survey conducted by the Yankee Group has found that although there is a growing momentum in Linux software, it would not make a perceptible dent in the worldwide 94% market share of Microsoft between 2004 and 2006 (ITWeb 2004).

5.1.2 *Communication software*

According to the Goldstuck report (2004), a total of 3.1 million South Africans had access to the internet by the end of 2002. With growth in 2003 set at 6%, around 3.28 million South Africans were expected to have access to the internet by the end of 2004. This is a mere 1 in every 13 South Africans. This annual survey included a survey of small, medium and micro enterprise (SMME) usage of the internet in South Africa, with almost half of the surveyed enterprises reporting e-mail as their primary use of the internet, while a third cited banking as their primary online activity. According to BMI-Techknowledge's (2004b) survey on business electronic banking, a high percentage – 85% – of companies surveyed used the internet for, and have confidence in, electronic banking.

According to data compiled by WebSideStory Inc, Microsoft's Internet Explorer has held more than 95% of the world-wide browser market since June 2002 (McMillan 2004).

5.1.3 *Office software*

Gartner's 2003 survey of the relational database management systems (RDBMS) showed that IBM's DB2 package held 35% of the market share, while Oracle held a 36.2% market share and Microsoft's Access had a 9% market share (Computerweekly 2004).

According to BMI-Techkowledge (2004a), Microsoft's Office Suite was used on 95% of all desktops in South Africa, while OpenOffice (a Linux-based application that mimics Microsoft's Office Suite of document, spreadsheet and presentation programs) was used by less than 4%. Microsoft's Office Suite consists of Microsoft Word (for word processing), Microsoft Excel (for spreadsheet processing), Microsoft Powerpoint (for presentations) and Microsoft Access (for database management).

5.2 *Business accounting software environment*

From 2001 to 2003, Accountancy SA in partnership with CS Holdings undertook an extensive survey into the availability and use of accounting software packages in South Africa. In their survey, they established that a large variety of accounting software packages was available in South Africa, ranging from packages ideally suited for SMEs to the large and fully integrated enterprise resource planning (ERP) packages specifically suited to the high-end enterprise market. The survey was divided into three phases, establishing for each

phase the software packages ideally suited for a particular market segment (Accountancy SA 2001), as set out in Figure 5 (below).

Figure 5   Availability and use of software packages per market segment


**High-end
Enterprise
Market**
(Turnover R1b+)

Midrange Market
(Turnover R50m – R1b)

SME Market
(Turnover R1m – R50m)
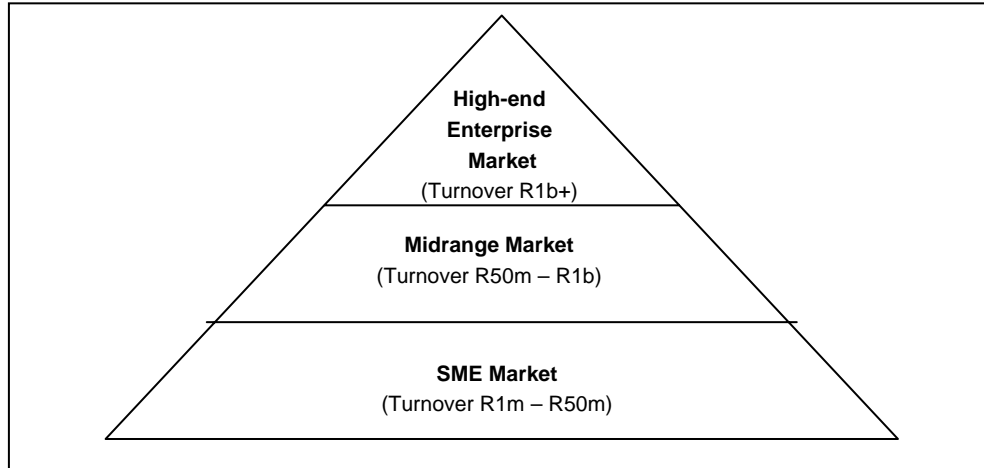
Adapted from source: Accountancy SA (2001)

5.2.1   *Accountancy packages for the SME market*

An investigation into the different accountancy packages used by the SME market was conducted in this survey by identifying the total number of installed sites per package in South Africa. As can be seen in Figure 6, Pastel dominates the SME market, with more than 70% of the market share.

Figure 6   Installed sites for SME market in South Africa

13%   3%   2%   5%   4%

73%

- Accfinity
- Brilliant
- IQ
- Pastel
- Quickbooks
- Other
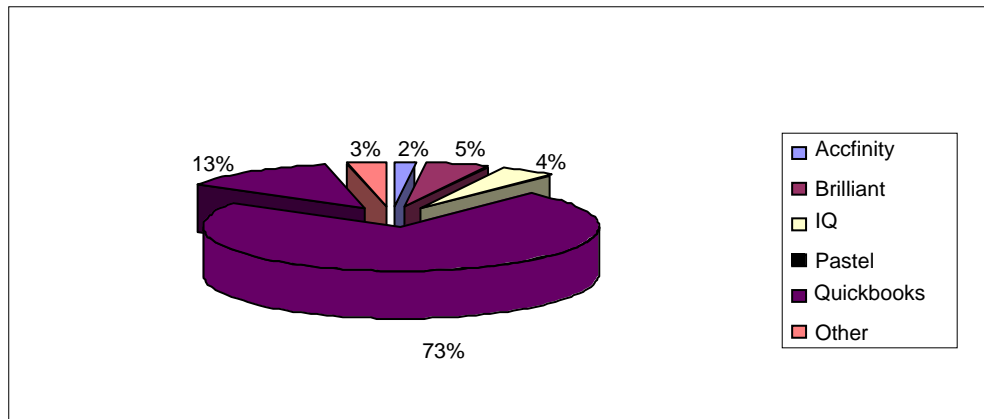
Source: Adapted from Accountancy SA (2001)

The survey concluded that the choice as the ideal product for the South African SME market is Pastel Accounting. Pastel has the majority market share in South Africa and is accepted by most trade sectors in the industry (Accountancy SA 2001.)

5.2.2 *Accountancy packages for the midrange market*

On the basis of the criteria below, the panel selected the following packages for their survey: Ability, Accpac, BMS, Impact, Microsoft Great Plains, Navision Attain, Omnix, Sage and SunSystems. They were chosen because

☐ these are software packages specifically designed for and targeting the midrange market;

☐ of their installed base and market share in the South African market; and

☐ the number of years in business.

Figure 7 contains a summary of the total number of sites installed in South Africa. As is evident from this graph, Accpac had the largest overall market share of 86%. Impact had a 10% market share. The other packages all had fewer than 200 sites installed in South Africa (Accountancy SA 2002).

Figure 7 Installed sites for the midrange market sector in South Africa 2002
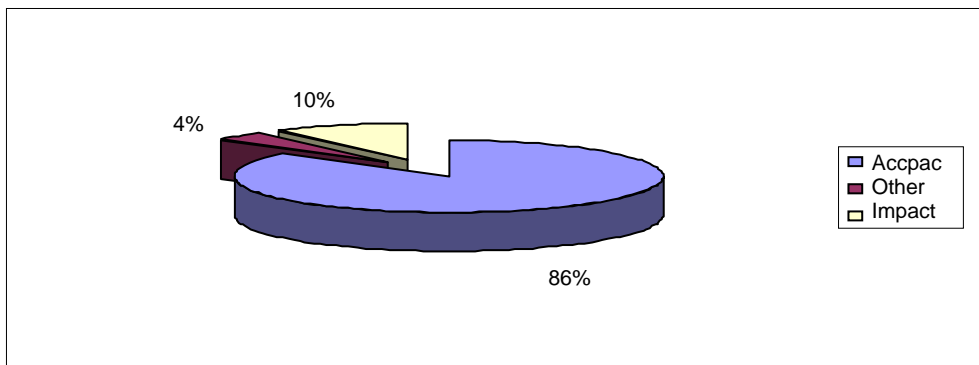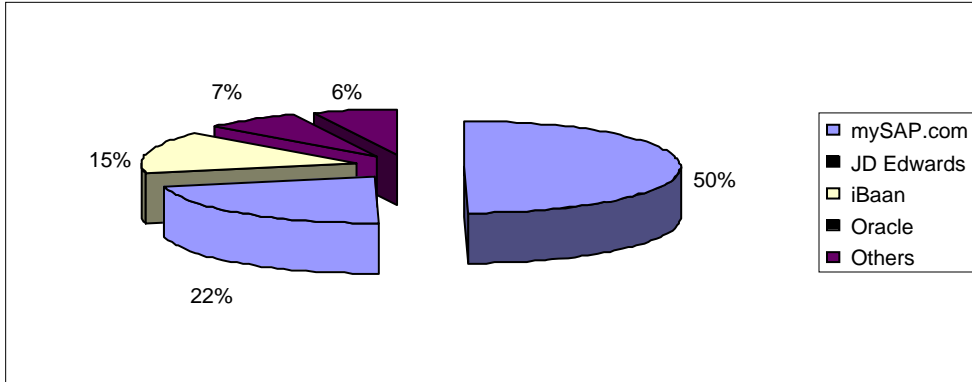

Source: Adapted from Accountancy SA (2002)

Most of the software packages that were evaluated require a fairly high level of expertise in computer literacy and financial accounting skills from consultants and users. The survey concluded that all the financial accounting software products in the midrange market offer excellent flexibility and functionality.

5.2.3 *Accountancy packages for the high-end enterprise sector*

There is a variety of accounting software packages available in South Africa that target the high-end enterprise market. The following packages were included in the survey that was conducted in 2003: Arelon/Elevon Financials, iBaan, JD Edwards, Lawson, Oracle eBusiness Suite, PeopleSoft, mySAP.com (Accountancy SA 2003).

Figure 8 indicates the number of installed sites in South Africa. From this figure it is clear that mySAP.com is the industry leader, with 50% of the market share, followed by JD Edwards, iBaan and Oracle.

**Figure 8   Installed sites for the high-end market in South Africa 2003**

Source: Adapted from Accountancy SA (2003)

A decision by a high-end enterprise to purchase an accounting software package has ramifications that extend beyond the finance function. Large enterprises are increasingly looking beyond pure transaction processing to additional functionality that adds value to the finance function, including budgeting, planning, forecasting, activity-based costing and management. Enterprise resource planning solutions can also provide industry-specific functionality. The existence of industry solutions enables these packages to meet industry-specific requirements, which accelerates implementation with minimum customisation.

5.2.4   *Summary of accountancy packages*

The accountancy package(s) that future trainee accountants are most likely to encounter in future depends largely on the number of installed sites per accountancy package. Figure 9 compares all the installed software packages in South Africa.

Figure 9   Total installed sites of accountancy packages in South Africa
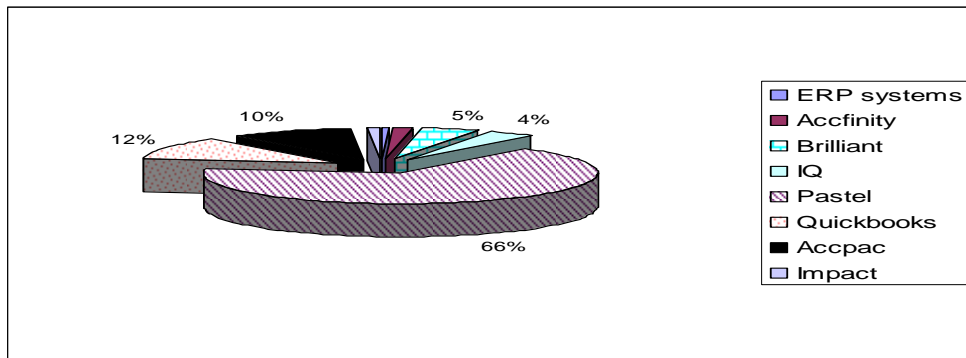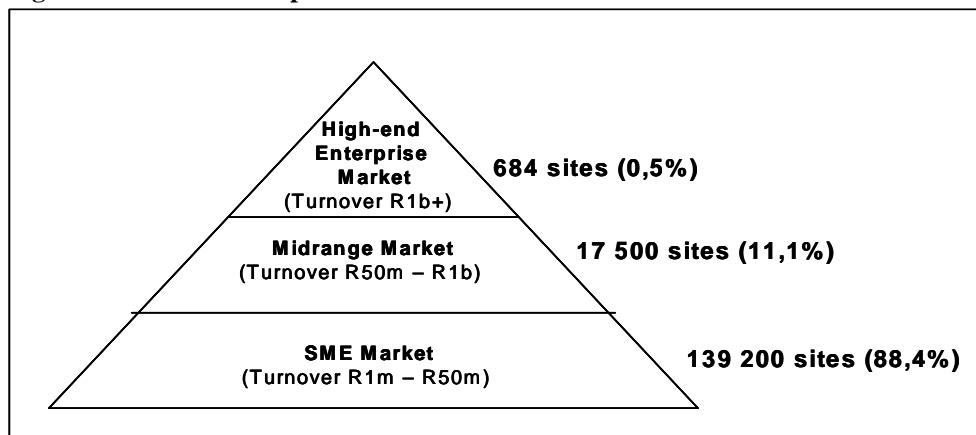

Source: Adapted from Accountancy SA (2001, 2002, 2003)

From Figure 9 it is evident that Pastel dominates the accountancy software market in South Africa, with 66% of all installed sites. Quickbooks (with 12%) and AccPac (with 10%) follow Pastel. All the enterprise resource planning systems together account for less than 0.5% of the total number of accountancy packages installed in South Africa. In order to

ensure that future professional accountants have the required competencies in using, auditing and consulting on computerised accounting systems, it would therefore be beneficial to use Pastel as the main accountancy package when training students. The number of installed sites per market sector is also a reflection of the spread of business forms in South Africa.

Figure 10 combines the total number of installed sites with the business market in South Africa.

**Figure 10 Installed sites per market sector**

Source: Adapted from Accountancy SA (2001, 2002, 2003)

If the majority of accountants are most likely going to operate in the midrange and SME market in South Africa, the prominent business accounting software that is used in this market is Pastel. In providing accountants with the skill to be competitive in the South African environment, their training in business accounting software could use Pastel (or Quickbooks) as the tool.

6 Importance of analysing the business environment

Advances in IT have been identified as one of the key drivers that affect the business environment and therefore also affect the competencies required from future accountants. Figure 11 illustrates why the goal of delivering accountants who are competent in using information technology may not be reached.

Figure 11 Link between outputs and needs of constituents
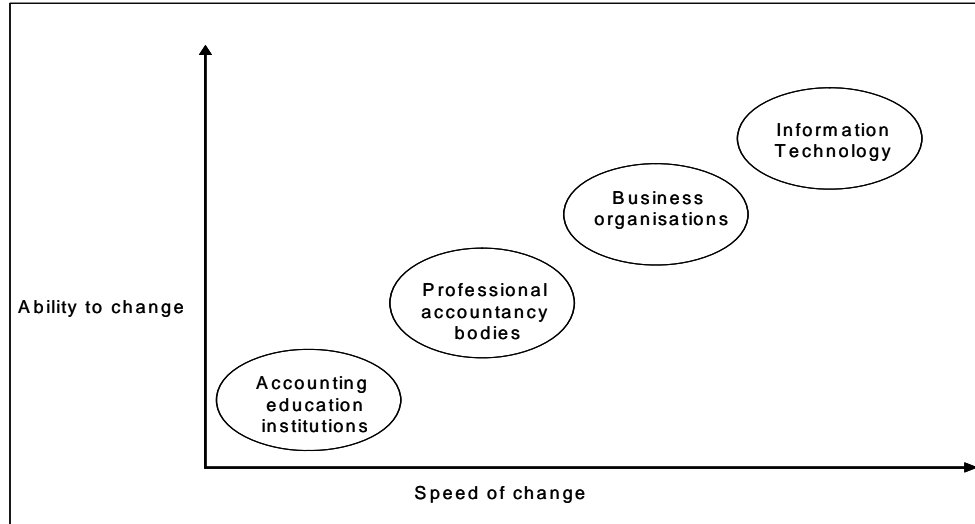
IT changes at a rapid pace. Organisations have to adapt to and incorporate these changes in IT to remain competitive, although the speed at which organisations adapt to these changes may differ in various business environments, as well as between individual organisations. Professional accountancy bodies should define the standards for the education of their members by continually incorporating the needs of the business environment that their members are engaged into the syllabi that they prescribe. Universities (responsible for the formal education of students) adhere to education guidelines (in the form of syllabi prescribed by professional accountancy bodies) and need to adapt their teaching and curricula to changes in the syllabi. If the outputs of the various constituents, as illustrated in Figure 11, are not aligned, a gap between the competencies acquired by students during their formal education and the competencies required by business organisations may result. This possible misalignment can be ascribed to the fact that over *time* business organisations change due to changes in their business environment, but the ability to adapt to these changes in timeously varies between the constituents.

7 Deductions and conclusion

To obtain an understanding of the South African business environment that accountants operate in, the general business environment and the forms of IT used by South African organisations were researched.

The accountancy profession in South Africa was analysed to determine the role accountants play in the business environment (that is, what accountants do). The study has shown that 93% of professional accountants are members of SAICA, and that 48% of these members were employed in the private sector and 25% were working in public practice. It was therefore important to ensure that the IT skills required of accountants incorporate the needs of accountants working in the private sector, as well as of those in public practice.

The general South African business environment was analysed to determine the typical types of business entity that accountants are likely to be involved in, as well as the use of IT within these types of business. On the basis of the research it was concluded that the majority of business types in South Africa (99.9%) were either private companies or close corporations. The spread of these business types is indicative of emerging economies and differs from the business environment one would expect to encounter in first world economies. A typical South African organisation spends, on average, 1% of its annual turnover on IT products, with the emphasis on basic IT components (like personal computers and peripheral devices). New and emerging technologies mostly do not play an important role in the current South African business environment. The IT skills relating to new and emerging technologies are therefore not critical for accountants to possess in the current South African business environment.

The research also investigated the IT applications (software) used by typical South African organisations. The aim was to identify those IT tools that are important within the South African environment and that accountants should be able to use to function effectively within this environment. In this study, it was determined that most South African organisations use the Microsoft range of products (operating systems, office suite, web browsers and e-mail) for the general automation of the office environment. Pastel is used as the dominant software package used for recording and reporting the financial transactions of the organisation.

The list of IT skills, as compiled by Wessels (2005:87-104), can be expanded to indicate which IT skills are critical for accountants, as well as which IT tools educators can use to ensure that accountants acquire those skills (see Table 3, below).

Table 3   Critical IT skills

Accountant as a user of IT: Business automation skills				
Element	**Capability**	**Level**	**Knowledge and understanding**	**Tools**
Operating systems	Apply operating systems and utility software in a business/accounting context	Ability	Giving instructions using icons, mouse, pull-down menus Creating and managing folders Copying, deleting and moving folders	Windows Explorer
Word processing	Apply word processing software in a relevant accounting/business context	Ability	Formatting a report Managing a report Integrating tables/graphs into report Communicating report (e-mail)	MS Word Outlook
Spreadsheets	Apply spreadsheet software in a relevant accounting/business context	Proficiency	Designing financial spreadsheet models Operating financial spreadsheet models	MS Excel
Presentation software	Apply presentation software in a relevant accounting/business context	Ability	Designing a presentation Presenting a presentation	Powerpoint
Internet tools	Apply internet tools in a relevant accounting/business context	Ability	Electronic communication and sending file attachments Accessing the internet	Outlook Internet Explorer
Research tools	Apply professional research tools in a relevant accounting/business context	Ability	Searching for specific information on the internet	Search engines (e.g. Google)

continued

Accountant as a user of IT: Office management skills				
Element	**Capability**	**Level**	**Knowledge and understanding**	**Tools**
Database software	Ability to design and use database systems	Proficiency	Designing data tables Entering, deleting, editing records Updating records Changing table structure	MS Excel or MS Access
Database search and retrieval	Ability to search and retrieve data from a database	Proficiency	Importing a database into Excel Sorting the data Using data query tools (filter) Retrieving specific information (filter, lookup) Performing calculations Summarising information according to specific criteria (d-functions, data tables, graphs)	MS Excel
Accounting software	Ability to understand workings of an accounting package	Ability	Installation and set-up Recording transactions Extracting reports Periodic processing Exporting data Programmed controls	Pastel/
Tax return preparation software	Ability to use tax return preparation software to capture and record relevant information	Ability	Identifying sources of income and deductions Calculating tax using tables and schedules Filing completed return	MS Excel
Time management and billing systems	Ability to use time management and billing systems in capturing, managing, billing and reporting time spent on professional duties	Ability	Capturing information about activity and time Extracting/compiling billing report	MS Excel
Accountant as a user & evaluator of IT: Audit automation skills				
Element	**Capability**	**Level**	**Knowledge and understanding**	**Tools**
Electronic working paper	Ability to use software that can generate trial balances and lead schedules for the recording of evidence in the audit	Ability	Developing a spreadsheet model to extract trial balance and financial statements and record adjusting journal entries	MS Excel
Audit software	Ability to use audit software to access client computer files, extract relevant data and perform audit functions	Proficiency	Accessing and exporting data files to audit software Manipulating the data using audit techniques; performing calculations Compiling and printing reports	MS Excel
Test data	Ability to generate and use test data to test a computer application	Ability	Generating a set of test data Entering test data in application program Compiling working papers Evaluating results Using integrated test facility	MS Excel/ Pastel
Simulation software	Ability to understand the workings of simulation modules in order to evaluate the logic of a computer application	Awareness	Creating a simulated version of an aspect of the program Using test data to evaluate the simulation and application	MS Excel/ Pastel
Flow charting/data modelling	Ability to use software that uses the source code version of an application to produce flow charts of the program logic	Ability	Using software to create flow chart of the logic of an application	MS Excel

continued

Accountant as a manager, evaluator and designer of new technology				
Element	**Capability**	**Level**	**Knowledge and understanding**	**Tools**
Client/server environment	Ability to function in a co-operative client/server environment using local area networks	Ability	Logging onto the network Requesting services from the 'server'	Local LAN Share files over network

From this research, it was evident that the South African business environment makes specific demands in terms of the IT skills required of accountants. When students enter the profession as trainee accountants, the emphasis should be on ensuring that students have mastered the basic IT skills necessary to function within a typical South African organisation rather than on attempting to deliver students who are experts on all aspects of IT. The aim of imparting IT skills in the course of formal education should be to enable students to use basic IT effectively to support the work functions they perform at the trainee accountant level. Students can decide while they are completing their practical training and after having completed that training to specialise in other areas of IT (for example, in enterprise resource planning systems, electronic commerce, wireless communications, etc.).

When IT curricula for students in South Africa are designed, a typical South African business environment (as described earlier) should be considered when selecting the appropriate software (tool) to be prescribed in a particular curriculum. It is important to note that a skill can only be acquired if students are able to apply that skill in a relevant business context. For accountants to be regarded as competent in their use of IT, they should be able to apply their skills in a typical South African business environment (context) as described in this article.

Bibliography

Accountancy SA. 2001. The Accounting software review for the small and medium enterprise market. Software Supplement. November/December. Johannesburg: SAICA.

Accountancy SA. 2002. The Accounting software review for the midrange market. Software Supplement. June. Johannesburg: SAICA.

Accountancy SA. 2003. Accounting software review for the high-end enterprise market. Software Supplement. May. Johannesburg: SAICA.

Association of Chartered Certified Accountants (ACCA). 2005. ACCA Directories online. https://www.acca-business.org/dom/. Accessed: 25 July 2005.

BMI-Techknowledge. 2004a. South African commercial systems and servers 2004-2008: Forecast and 2003 vendor shares. Johannesburg: BMI-Techknowledge.

BMI-Techknowledge. 2004b. South African business electronic banking report: 2004. Johannesburg: BMI-Techknowledge.

BMI-Techknowledge. 2005. SME IT end user trends and market forecast. Johannesburg: BMI-Techknowledge.

Chartered Institute of Management Accountants (CIMA). 2005. List of members. https://ws2.intr.cimaglobal.com/eevents/start.swe?SWECmd=GotoView&SWEView=C

IMA%20ER3%20List%20Of%20Members%20View&SWRF=1&SWECount=1. Accessed 25 July 2005.

Computerweekly, 2004. IBM heads database market. Friday 28 May 2004. http://www.computerweekly.com/articles. Accessed 17 September 2004.

Department of Trade & Industry, Republic of South Africa. 2002. Answer to question (no 1236) by Dr RT Rhoda. Publication on SMMEs. Johannesburg: Government Printer.

Gartner Research. 2004. Hype cycles. http://www4.gartner.com/research/special_reports/hype_cycle. Accessed 9 September 2004.

Goldstuck, A. 2004. The Goldstuck Report: Internet access in South Africa 2004. http://www.theworx.biz/access04.htm. Accessed 25 August 2004.

International Federation of Accountants (IFAC). 2003. International Education Standards for Professional Accountants (IES 1-6), October. New York: IFAC.

International Federation of Accountants, Education Committee (IFAC Education Committee). 2003. International Education Guideline 11: Information Technology for Professional Accountants. New York: IFAC.

Institute of Certified Public Accountants in South Africa (CPA). http://www.cfa-sa.co.za/p/profile/profile.asp. Accessed 22 February 2006.

ITWeb. 2004. Survey: Linux unlikely to unseat Windows soon. http://www.itweb.co.za/sections/software/2004. Accessed 21 September 2004.

Johannesburg Securities Exchange. 2003. Annual Report for 2003. Johannesburg: JSE.

Kaye, D. 1995. The importance of information. Management Decision, 33(5):5-12.

McMillan, R. 2004. IE loses market share as trend reverses. IDG News Service. http://www.inforworld.com/article/04/07/12/ Hnielosesshare_1.html. Accessed 13 September 2004.

Miles, S. 2004. Linux closing in on Microsoft market share, study says. CNET News.com. http://www.inforworld.com. Accessed 12 August 2004.

Netcraft. 2004. Operating Systems Software used at Sites in South Africa (2001). http://www.netcraft.com/surveys/analysis/https/2001/ Jan/Cmatch/Coscnt_za.html. Accessed 3 September 2004.

South African Institute of Chartered Accountants (SAICA). 2003. About SAICA: History of SAICA. http://www.saica.co.za. Accessed 21 February 2004.

South African Institute of Chartered Accountants (SAICA). 2005a. The education requirements of the South African Institute of Chartered Accountants for entry into Part I of the qualifying examination. Johannesburg: SAICA.

South African Institute of Chartered Accountants (SAICA). 2005b. Statistics. http://www.saica.co.za/documents/Constit2005.pdf. Accessed 31 May 2005.

Wessels, P.L. 2004. Information technology and the education of professional accountants. *Meditari Accountancy Research,* 12(1):219-234.

Wessels, P.L. 2005. Critical information and communication technology (ICT) skills for professional accountants. *Meditari Accountancy Research,* 13(1):87-104.

World Wide Worx. 2003. *SME Survey 2003 – IT having major impact on SMEs.* http://www.theworx.biz/sme04.htm. Accessed 1 June 2004.

World Wide Worx. 2004. *SME Survey 2004*. http://www.theworx.biz/sme04b.htm. Accessed 12 August 2004.

www.manaraa.com