THE HR CHALLENGE OF ATTRACTION AND RETENTION: A SURVEY OF INFORMATION TECHNOLOGY GRADUATES IN INFORMATION COMMUNICATION TECHNOLOGY COMPANIES

by

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DECLARATION

I, Chenay Hackney, declare that the HR Challenge of attraction and retention: A survey of Information Technology graduates in information communication technology companies, is my own unaided work both in content and execution. All the resources I used in this study are cited and referred to in the reference list by means of a comprehensive referencing system. Apart from the normal guidance from my study leaders, I have received no assistance, except as stated in the acknowledgements.

I declare that the content of this thesis has never been used before for any qualification at any tertiary institution.

I, Chenay Hackney, declare that the language in this thesis was edited by Marisa Honey (Professional Language Editor).

C. Hackney   Date: 22 January 2013
Signature

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ABSTRACT

Graduate recruitment is an activity that is practiced by many organisations and HR professionals in South Africa (SAGRA, 2012), yet there is still much to learn about the challenge of what graduates perceive to be the most important factors in attracting and retaining them. In addition, it is generally known that the information and communications technology (ICT) industry is at "war for talent" (McKinsey & Company, 2007) among IT graduates due to the scarcity of the IT skills set (ITWEB, 2008). IT News Africa (2012) reports that South Africa has a growing shortage of skilled workers within the information and communication technology (ICT) field. This can particularly be indicated by the numbers released by South Africa's Department of Home Affairs, which for instance, has issued a detailed list of 7,600 open ICT technical job vacancies (IT News Africa, 2012).

The objectives of the study were: (1) to determine what firstly attracts IT graduates to ICT companies, and (2) to determine what retains these IT graduates. The purpose of this was to assist HR managers to overcome the challenge of attraction and retention within the ICT industry. Data for this study was collected by means of an online survey, namely the IT Graduate Recruitment Survey, on a purposive sample (N = 172) of IT graduates in the South African IT sector.

Descriptive frequency, median, ranking and chi-square statistics revealed significant insight into the IT graduate's perspective of attraction and retention factors. The main findings indicate that the top attraction factors for IT graduates include interest in the prospective organisation's specific products, the services it provides and the employer's brand in the industry; the overall reputation of the employer; career opportunities; security of employment; and to be able to make use of the IT qualification for which they studied.

The two most influential advertising techniques to attract IT graduates are people who already work in the industry, and employer websites. The top retention factors include the availability of opportunities for further study, being supported by the employer and future career opportunities. The findings contribute valuable insight and knowledge to the field of Human Resource Management that can be applied in the recruitment, selection and talent management processes in relation to IT graduates in the ICT industry.

Future research could compare different ethnic, gender and qualification groups – i.e. an IT degree candidate versus a diploma candidate – and their expectations when entering the workplace. The impact of on-boarding and induction can also be investigated in terms of the impact these have on retention. It is also recommended that researchers conduct in-depth qualitative interviews together with the current questionnaire to evaluate IT students' and graduates' perceptions of the viable attraction and retention techniques more critically.

KEY TERMS

Human resource management, graduate recruitment, attraction, retention, information technology (IT) graduates, ICT (information and communications technology), talent management

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CHAPTER 1

1 INTRODUCTION AND BACKGROUND

The age of the knowledge graduate has dawned and, with an "in-demand" skill base, graduates have the intellectual power to allow them to explore whatever attractive offers and roles may arise. The ability to attract and retain competent graduates in organisations has become vital to ensure that the business has the capacity for constant innovation.

Graduate recruitment refers to the process whereby organisations embark on a planned and structured programme of attracting and hiring students who are about to graduate from tertiary educational institutions. Recruitment has become a top priority as organisations continuously struggle to gain a competitive advantage through their employees (Cascio & Aguinis, 2005, p. 259). Moreover, worker retention is important to the sustainable triumph of ICT businesses in particular. From the researcher's own working experience it is evident that managers readily agree that retaining their best employees helps to ensure client satisfaction, increased sales, satisfied co-workers, effective talent management planning, and deeply rooted company knowledge and learning. Organisations need to shift their thinking and focus on engaging their staff, as employees want to be continuously stimulated by their jobs and not merely be retained as employees.

The "War for Talent" was first raised as a key strategic issue for companies by McKinsey, a global management consulting firm, in 1997. Further research conducted by McKinsey & Company in 2007 found that the top two issues preventing talent management programmes from delivering value were that management teams did not spend enough quality time and effort on managing talent; and that direct managers were not adequately committed to their teams' people development. Although graduate recruitment is an area of activity that is beset with difficulties for both employers and career advisors, it is probably the graduates themselves who are faced with the biggest problems. Apart from the obvious anxieties faced by graduates as recruiters make decisions about them at various stages in the selection procedure, they too are required to make decisions. Two particularly important decisions that graduates are expected to make include which

organisations to apply to in the first place, and whether or not to accept particular offers (Keenan & Scott, 1985). This is where investigations of the processes of attraction that influence the acceptance of offers are critical. This study, which is specifically on IT graduates, is critical for the burgeoning ICT industry. The study will also further investigate the current shortages of IT graduates in South Africa, and hence the war for attracting and retaining this talent.

In summary, having talented staff who want to stay and who display a high level of motivation, and hence are retained, is the dilemma facing today's human resource professionals and top management. The literature review to follow below focuses on the attraction and retention factors that play a role in the recruitment of graduates.

1.1   PROBLEM AND PURPOSE STATEMENT

There is a shortage of information technology graduates in South Africa, which creates intense competition to attract and retain these graduates. For this reason, information and communication technology companies need to implement HR plans to meet the need for innovative attraction and retention strategies based on what graduates actually want. Although many academic researchers have acknowledged a need for greater understanding in this area, little is known about how graduates perceive this process. An extensive search of online journal databases further indicates that few studies on the attraction and retention of IT graduates have been conducted in South Africa.

The main rationale for this research study was to identify the attraction and retention challenges faced by human resource management in information communication technology companies in South Africa when recruiting information technology graduates. The second rationale was to provide recommendations on how to address the challenges identified through the literature and a survey of IT graduates on what attracts and in turn retains them in ICT companies.

1.2 RESEARCH OBJECTIVES

The objectives of this research study were to explore the issues that influence graduate retention, attraction and employment in ICT companies and particularly to address the subsequent key research questions:

- To determine why the attraction and retention of IT graduates is one of the key challenges for HR in ICT companies in South Africa by investigating the current shortage of IT graduates in South Africa

- To investigate key innovative elements of attraction and retention strategies through a review of the available literature on this topic

- To determine the relative importance that IT graduates attach to the recruitment process on the basis of the literature and through a small-sample survey

- To determine what firstly attracts IT graduates to ICT companies through a small-sample survey and to determine the main influences on IT graduates' vocation choices

- To determine secondly what retains these IT graduates in ICT companies through a small-sample survey

- To compare retention tips from other industries in the literature versus the ICT industry

- To investigate the extent of supply and demand for IT graduate skills in the ICT industry, and the issues and factors having an impact on this

- To examine the promotional impact of graduate retention, attraction and employment mechanisms, interventions and techniques

1.3 RESEARCH QUESTIONS

A research question inquires about the relationship between variables that a researcher seeks to know. Research questions are commonly used in survey studies and help to state the direction a study will take (Creswell, 2009). The following two research questions were formulated with regard to this study:

- Question 1 – According to IT students and graduates, what are the main reasons they are attracted to work for ICT companies? i.e. Attraction Factors
- Question 2 – According to IT students and graduates, what are the main reasons they will remain in service to an ICT company? i.e. Retention Factors

1.4   UNIT OF ANALYSIS

The unit of analysis of a study is the person or individuals from whom the researcher collects the data. This study aimed specifically to investigate the perceptions of IT graduates and students of the attraction and retention factors most relevant to them. Therefore, the unit of analysis is the individual current information technology student or recent graduate.

1.5   IMPORTANCE AND BENEFITS OF THE STUDY

From an academic perspective, this study makes three valuable contributions to the existing body of theoretical knowledge on the attraction and retention of IT graduates. Firstly, unlike previous studies, which tended to only focus on the outcome of the recruitment process, this study provides a holistic view by investigating the elements involved in initially attracting the graduates. Secondly, as far as could be determined, very few studies specifically focusing on IT graduates in ICT companies have been conducted in South Africa, the exceptions being studies conducted by the South African Graduate Recruiters Association, for example. Thirdly, the movement from the Information Age to the Age of Relationships has identified a dual focus area in the "war for talent", namely attraction and retention, and in the rapidly growing ICT industry. From a practical perspective, the findings should assist ICT companies in South Africa to identify the main attraction and retention strategies that will influence a graduate's decision whether or not to accept particular offers and increase their graduate retention statistics.

1.6   DEFINITION OF KEY TERMS

This study includes a number of key terms, namely those falling under the umbrella of human resource management, and includes recruitment, attraction and retention. The

concepts under the information technology umbrella include IT graduate and ICT industry. The approach by which these key concepts are defined for the purpose of this study is indicated below.

Human resource management is a term that refers to the task within an organisation that focuses on the recruitment and management of, and provision of direction for the individuals who work in the organisation. It involves a number of administrative tasks, including workforce planning, recruitment and selection, orientation and on-boarding, training and development, performance appraisals, motivational aspects and compensation, and the main aim is to develop individuals through work (BusinessDictionary.com, 2009).

Recruitment refers to the procedure of attracting, screening and selecting qualified individuals for a job at a relevant company. Whenever human resources must be expanded or replenished, a recruiting system is established (Cascio & Aguinis, 2005, p. 259).

Attraction entails having the power to allure, invite or engage a candidate with attractive qualities. This refers to how organisations search for potential graduates and influence them to apply for available jobs (Cascio & Aguinis, 2005, p. 259). Organisations need to have innovative attraction strategies in place to attract quality graduates to join their workforce.

Retention has two meanings: "to hold or keep in possession" and "to engage the services of". High-value employees and cutting-edge skills need to be engaged, and not kept (Bussin & Spavins, 2008). Cascio (2003) describes retention as initiatives taken by HR and management to keep employees from leaving the organisation. This would include activities such as rewarding employees for performing their jobs efficiently; ensuring pleasant working relations between employees and managers; and maintaining a safe, healthy work environment.

A graduate is a person who has received a certified academic qualification on completing a course of study through a university, college or school (Wikipedia, 2009). **Information technology (IT) graduates** refers specifically to students with informatics, information

systems, computer science or any computer-related degrees/diplomas and certificates for consulting and software development positions.

ICT (information and communications technology) is a common name for all of the technologies involved in communicating with computers. ICT is "an umbrella phrase that includes any communication device or application, encompassing radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them" (Wikipedia, 2012). The South African ICT sector is defined through the work of the ISETT subsectors namely Information Systems, Electronics and Telecommunication Technologies. The IT definition encompasses computer systems, design, integrated solutions, programming, and hardware and software engineering (Moleke, 2003). ISETT adopted a definition used by the Organisation for Economic Co-operation and Development (OECD), which defines the ICT sector as:

> ... a combination of manufacturing and services industries that capture, transmit and display data and information electronically ... While the production or distribution of ICT products can be found everywhere in the economy, the identification of sectors whose main activity is to produce or distribute ICT products constitutes a first-order approximation of the ICT sector (OECD 2002: 18; SAITIS 2000: 3).

Figure 1.1: ICT Definition

Source: Moleke (2003, p. 636)

Talent management is defined firstly by talent, which relates to individuals who show high potential to contribute to the organisation's performance in the future. Talent management therefore entails the attraction, identification, development, engagement, retention and deployment of these highly valued and talented individuals (CIPD, 2012). Talent management strategies are unique to each business, but broadly include e-recruitment (online web-based recruitment), learning management systems, performance management, succession planning, and compensation management.

The abbreviations summarised in the table below will be used throughout this study:

Table 1.1:   Abbreviations used in this document

Abbreviation	Meaning
DOL	Department of Labour
HR	Human resources
ICT	Information and communications technology
IT	Information technology
ISETT SETA	The Information Systems Electronics Telecommunication Technologies Sector Education Training Authority
JCSE	Johannesburg Centre for Software Engineering
OCQ	Organisational Commitment Questionnaire
RFMS	Retention Factor Measurement Scale
SA	South Africa
SMEs	Small and medium enterprises

1.7   LAYOUT OF RESEARCH

This research study contains five detailed chapters. An outline of the chapters is provided below.

The literature background for the study is provided in Chapter Two, which contains a comprehensive discussion and presentation of the available academic literature with regard to HR challenges in graduate recruitment, attraction and retention trends, skills shortages within the ICT industry and connection to other related concepts.

This is followed by Chapter Three, in which the research approach, design and methodology are discussed. An indication is given of the sample and the respondents identified, as well as of the procedure for collecting and analysing the data obtained. The rationale used in designing and constructing the questionnaire is explained in detail. The ethical considerations of the study are discussed thereafter.

Chapter Four could be considered the most important section of this report, as it contains a detailed presentation and discussion of the results of the survey done for the study.

In Chapter Five the survey findings are consolidated and summarised, and a conclusion is drawn. The limitations and recommendations for future research are provided for the human resources management professionals and organisations within the ICT industry.

CHAPTER 2

2   LITERATURE REVIEW

Information technology (IT) graduates form the largest fresh and rare talent pool within the information communications technology (ICT) industry. The challenge is to recognise who the top calibre graduates are and then contend for those top IT graduates that all ICT companies really want to attract to their business. The successful retention, attraction and utilisation of IT graduates are key components of a number of key talent management plans and strategies within ICT organisations.

It is evident from both the researcher's experience, and a variety of literature, that the two major strategic HR challenges within organisations are, firstly, the constant need to retain talent, therefore the retention and development of key talent within the organisation is a major priority. Secondly, the other key challenge is to continuously improve processes that challenge, grow and develop the organisation's current talent pool, better than the competitors. This is evident in the research on the war for talent done by McKinsey & Company in 2007. The ability to successfully attract and retain top-calibre talent is rapidly becoming one of the key issues for human resource managers and their organisations across the corporate world.

IT graduates tend to face the 'chicken and egg' situation: they are qualified, having obtained the relevant IT qualification, but have no work experience, and no work experience means a smaller quantity of job opportunities. This further adds to the skills shortage in the ICT industry, which is a compelling reason to initiate internship programmes. However, every IT graduate who graduates successfully with a computer-related qualification, whether it is a short course, degree or diploma, can have an impact on overcoming the critical skills scarcity that the ICT industry and the South African economy are experiencing.

It is imperative for organisations in South Africa to understand the perceptions of the target market so as to remain competitive in the global war for top ICT graduate talent.

2.1 GRADUATE RECRUITMENT

According to the researcher, graduate recruitment has a wider variety of key uses and purposes than to bring in brand new talent (particularly key management potential related to succession planning). Graduates also have particular technical competencies, skills and knowledge, and an aptitude to be skilled up or developed into specific roles quite quickly. At a time when, globally, so much is changing so rapidly, it is imperative that ICT companies with a stake in the competitive IT graduate recruitment market gain a close understanding of the pitch within which they operate and compete for talent.

Graduates create a value add in terms of their future potential, adaptability and skills. Companies expect to see a return on their investment within a cycle of 18 months of recruiting and hiring graduates, which could take the form of increased capacity to handle more work, accountability and responsibility (Gilleard, 2002, p. 13). Recruiters within organisations are inclined to define a graduate position as a simple one with a clear career progression plan. It is important to bear in mind that qualification results alone are not the best measure of future employment potential. Universities play a major role in terms of their purpose and in preparing students for the corporate world (Gilleard, 2002).

Companies need, firstly, to establish the reasons for and purpose of recruiting graduates. From there they can then identify the attraction techniques and learning outcomes to be achieved by their graduate programmes, as well as how the graduates will be absorbed into the business and then retained.

2.1.1 Why Recruit Graduates?

There are quite a few compelling justifications for recruiting and investing in the development of qualified graduates that differentiate these graduates from the rest of the labour market (Gilleard, 2006):

• IT graduates embark on at least one to three years' higher tertiary education, during which they gain detailed knowledge, skills, competencies, attributes and an understanding of the IT industry. Equally crucial, graduates learn how to manage

their own learning, which is an absolute necessity in the fast altering world of work, as well as in the ever-changing ICT industry

- Employers seldom recruit on the foundation of a qualification alone. Increasingly they recruit against a set of competencies, skills and abilities or behavioural attributes required to do the job successfully. Studying and at the same time participating in extramural activities/internships helps to develop valuable attributes in students, and students usually have accumulated work experience by the time they complete their qualification. They earn and learn at the same time. Psychometric testing is often used by organisations to evaluate the soft skills, like behavioural attributes and occupational personality types, that are required to fit into the company's corporate culture. Culture fit plays an important role, especially in small companies

- Being at university, especially when away from home, helps emotional as well as intellectual development. This development of additional responsibility, accountability and maturity should help graduates to be clear about the goals they wish to pursue and how to go about achieving these goals

- Most IT graduates are at the starting block of their career path. They are fresh and open to new ideas and methodologies, eager to learn and to prove their capability. They can be shaped into what the organisation requires or modelled with the right skill set

- For business and legislative reasons, many organisations want and need their workforce to be as diverse and equitably representative as possible of the communities they serve. This adds to the country's employment equity status, as well as the organisation's employment equity rating in terms of legislation, which in turn helps to secure business deals

- Building and planning a sturdy pipeline of high-calibre graduates continues to be a crucial part of ICT organisations' future talent pool and recruitment strategy (Sims, 2010). This pipeline often starts with companies interacting with IT students from their first year upwards (BSG, 2012) so as to attract them from day one of starting their studies. This requires dedicated HR staff, as it is a high-engagement strategy

- ICT graduates are equipped with distinctive skills in computational intelligence and fundamental software, and professional values (University of Pretoria, 2009)

According to the Graduate Recruitment Bureau (GRB, 2012), there are seven convincing reasons to recruit graduates:

- They are affordable - graduates earn lower remuneration packages than experienced employees

- They provide proven return on investment (ROI) - fresh ideas and skills sets add value, which adds to profit margins

- They are ready to be moulded into what you need, as they do not arrive with preconceived habits; they are continuously open to learning

- They arrive with a solid core of up-to-date business skills that are freshly developed from their years of studies

- They provide a diversity of new perspectives and ideas and an ability to apply current thinking from academia

- Speedy turnaround time to start adding value - graduates learn quickly, and are resilient, enthusiastic and willing to take on challenges

- A career path can be put in place for them to develop into management levels within the organisation, thereby putting organisational succession plans in place

Graduates in general have a set of transferable competencies and attributes to offer. According to Stewart and Knowles (2001), research has classified these skills into three categories, namely personal, communication and problem-solving attributes. These can be sub-grouped as follows:

- Personal attributes – motivation, organisational ability, teamwork, interpersonal/social skills, leadership (often measured through psychometric testing)

- Communication – written, verbal and non-verbal skills

- Problem solving – initiative, innovation, creativity and decision-making skills (often measured through psychometric testing)

Prospective employers seek a range of these transferable skills and qualities, which students must be able to display and prove during the selection process.

2.1.2   HR Challenges in Graduate Recruitment

A major challenge facing the ICT industry is restricted capital outlay by employers in training and development initiatives, especially for graduates. Many employers point out the excessive time and costs involved in planning and implementing training as key barriers, as well as the difficulty in measuring the return on investment. However, training is imperative in:

- Addressing competency gaps that IT graduates might have when seeking employment

- Offering an attractive set of benefits to attract graduates, especially in terms of a good training scheme and entry graduate programme (Gilleard, 2002)

- Encouraging additional employer investment in graduate training

- Ensuring employability through ongoing learning and development (Sutherland & Jordaan, 2004)

- Maintaining the knowledge base of the organisations' employees in relation to the latest technologies by providing the necessary training (Döckel, 2003)

Professor Barry Dwolatzky, director of the JCSE and head of the School of Electrical and Information Engineering at Wits University, has indicated that one of the suggested solutions is a joint venture between university circles and the ICT industry, offering continuous professional development to individuals who are already working, as well as the training of IT graduates. "South African companies want individuals to be billable from day one and resent having to train graduates. But companies need certain skills that you cannot teach at university. Universities must meet companies half way to help close the gap" (ITWEB, 2008, p. 3).

Internship programmes can vastly improve skills development locally. While this assists to increase resources, the company driving the programme can benefit significantly as well. According to the researcher, internship programmes can assist in providing IT graduates

with working experience, turning them into skilled, competent ICT professionals who can fill the resource gap and skills demand faced by the South African economy. Business Systems Group (BSG, 2012) and Accenture (2012), both ICT companies based in Johannesburg, South Africa, offer vacation internships for IT students who are in their third or fourth (Honours) year of study.

Besides having an aptitude for ICT, which will include an enquiring and analytical mind that enjoys the challenge of solving problems, it is important for newly appointed graduates to be mentored by somebody who can coach, prepare, support and advise them, paving the way for a conversion to an entirely mature ICT professional. This also requires an investment of time and effort (Anon, 2007).

According to the researcher, another challenge is the lack of effectively provided career information, advice and guidance to graduates to allow the creation of a support base. This support needs to be customised to the needs of individual graduates, and advice on all the available career paths should be on offer. It is vital for a communication channel to be established between careers advisors in higher education institutions and local ICT companies so that relationships are developed that will ensure placements, industry visits and work-based education projects, for example internships. IT graduates need education and information about opportunities in the ICT industry. According to the researcher's experience, it is important for graduates to understand that studying one degree does not necessarily mean that they can enter only one job role and company type. Companies need to advertise their possible career path options so as to attract graduates to the variety offered.

Another challenge within the industry is labour turnover; this is commonly classified as either functional or dysfunctional. Functional turnover is characterised by "a situation where high-performance workers remain with the organisation while poor performance workers leave" (Sutherland & Jordaan, 2004, p. 57). Dysfunctional turnover is characterised by "high-performance workers leaving and poor performance workers staying" (Sutherland & Jordaan, 2004, p. 57). Organisations naturally should strive to achieve a high level of functional turnover.

With reference to the researcher's experience, three major challenges facing HR professionals in South Africa are a lack of ICT skills, making the graduate pool of candidates very limited, the competitiveness among organisations when attracting the top-calibre graduates, and lastly the retention of these top graduates. These topics will be discussed in more detail further on in this report.

Recruiters listed the following as key drivers when questioned about the main reasons for the skills deficits they encountered (SAGRA, 2008, p.14):

Reasons for shortfalls from the employer's perspective:
- Graduate lacks appropriate/correct degree
- Applicant lacks correct skills (graduate has no working experience)
- Change in the business requirements, e.g. restructuring/redeployment
- Limited resources to market the roles, e.g. advertising costs/recruitment agency costs/limited HR staff capacity

Reasons for shortfalls from the applicant's perspective:
- Entry-level salary packages not competitive enough
- Geographical location of the job vacancies not feasible
- Recruitment application and selection process has too many steps and is time consuming
- Training and development not in line with career aspirations

An interesting article written by Schiebe (2010) indicated some of the broad recruitment challenges faced by South African companies, which indicates how important a solid recruitment strategy is for HR professionals. The following were listed:

- Proactively versus reactively recruiting – this means that, rather than following the standard reactive process when an employee resigns, namely to advertise, shortlist and interview, companies should rather plan proactively and build a pipeline of top-calibre candidates
- Attracting top talent needs to be a strategic process of sourcing, selecting and placing top-calibre candidates. This means that the advertising of positions needs to

carefully list skills and competencies, and have attractive benefit mechanisms aligned to the strategic vision, and not just entail plain, straightforward adverts

- Traditional styles of interviewing need to be replaced with marketing opportunities, especially for senior candidates who find a long interview process to be disengaging and a negative experience. It therefore is important to capitalise on marketing the organisation's benefits to the prospective employee during the interview process, rather than undertaking a mundane, stock standard interview

- Managers often tend to search for their clones during the interview process, or for the clones of top performers. This needs to be adjusted to find a best fit to the company's objectives mindset. A diverse team brings with it fresh ideas, new approaches and an opportunity to capitalise on the different strengths of individuals

These challenges listed above indicate how important strategic talent management mechanisms are within organisations in order to counteract the war for talent and thereby increase the retention of employees.

2.1.3   Talent Management

Sims, Bowmaker-Falconer and Sutherland (2006) indicated that talent management and retention have been identified as key strategic business imperatives. However, only 62% of organisations have a budget allocated to talent management initiatives, and only 46% incentivise senior executives to effectively manage the in-house talent pipeline. It is important to note that it is not enough to simply attract high-potential, talented individuals, but retaining them through a planned strategy using development and management techniques is of equal importance, as well as measuring the return on investment of your talent management process (CIPD, 2008).

Talent is defined by the value that is added to the organisation, such as high performance, high potential, the planned business impact of the role/individual, employment equity demographics and hierarchical levels of work. The management of this talent in an organisation therefore relates to bringing out the top performance potential in your talent.

Research conducted by McKinsey & Company more than 10 years ago is still relevant in today's talent management challenges and how these relate back to the retention of staff.

Talent management is even harder now than previously, as it is determined by three external factors – demographic transformation, globalisation and the rise of the knowledge worker. Organisations need to focus on long-term future talent planning and not just on 'today's business'. McKinsey & Company's (2007) study lists the seven key obstacles to good talent management, as illustrated in the figure below:

Seven obstacles

Top 7 obstacles to good talent management, % of respondents
(n = 98 business and human-resources leaders at 46 organizations)

1 Senior managers don't spend enough high-quality time on talent management	59
2 Organization is 'siloed' and does not encourage constructive collaboration, sharing of resources	48
3 Line managers are not sufficiently committed to development of people's capabilities and careers	45
4 Line managers are unwilling to differentiate their people as top-, average-, and underperformers	40
5 CEOs, senior leaders are not sufficiently involved in shaping talent-management strategy	39
6 Senior leaders do not align talent-management strategy with business strategy	37
7 Line managers do not address underperformance effectively, even when chronic	37

Source: Interviews; McKinsey analysis

Figure 2.1: Seven obstacles to good talent management
Source: McKinsey & Company (2007, p. 51)

Sims, Bowmaker-Falconer and Sutherland (2006) conducted investigative research into talent management practices, with a specific focus on the talent pool within the graduate sector, and developed a talent management practices dashboard covering five dimensions, namely:

- Connections and integration into social networks
- Career development paths and learning
- Motivation by way of possibilities to achieve goal aspirations and pursue interests
- Opportunity for lateral growth in order to practise new skills
- Reward and recognition for success

These were investigated from three perspectives, namely the individual, the organisation and management support. This is displayed in the figure below.
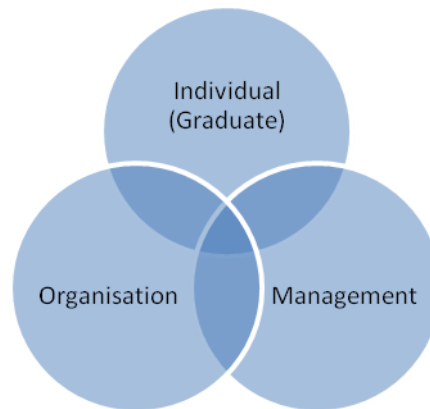
Figure 2.2: Talent management perspectives
Source: Adapted from Sims, Bowmaker-Falconer and Sutherland (2006, p. 1)

Sims, Bowmaker-Falconer and Sutherland (2006) state that, overall, there is alignment between the organisation and graduate scores, with graduates scoring somewhat lower across the five dimensions listed above. Interestingly, the lowest scoring dimension was reward (non-monetary rewards). The three factors on the reward dimension are transparency for the individual (beyond the immediate work environment – 46%), measurement (rewarding managers for managing talent well – 43%) and accountability (managers recognising and rewarding an individual's effort – 48%).

The talent management perspective that scored the lowest average was the individual–manager perspective. This is significant, as managers are the key point of contact between talented individuals and the organisation. From the five dimensions listed above, the key results on the individual-manager perspective were 47% on integration, 49% on development, 48% on motivation, 48% on deployment and 48% on reward and recognition (Sims, Bowmaker-Falconer and Sutherland, 2006).

These research findings also need to be considered in the context of the Y-generation questions and the generation theories that are addressed in the next chapter. Graduates perceive and rate themselves considerably higher than employers do on the following qualities:

- Entrepreneurial (14% higher)
- Wanting increased responsibility and accountability (20% higher)
- Having a get off my back attitude/not been micro-managed (18% higher)

Graduates also describe themselves much lower (38% lower) on a free agent outlook, in other words having a sense of self-management. This is a fascinating contradiction of wanting independence, but not wanting to operate independently (or at risk). What the findings suggest is that there may be a rising attitude of short-term loyalty, i.e. "I will be committed to the goals of the organisation and deliver against a specific set of accountabilities for which I want to be appropriately rewarded. In doing so, I also need to increase my value…and then I am moving on to the next opportunity" (Sims, Bowmaker-Falconer and Sutherland, 2006, p. 2).

2.1.4 Current Trends in the Graduate Marketplace

Some trends in the graduate marketplace pointed out by Gilleard (2006), the Department of Education (2009), Sims (2010) and SAGRA (2009) are the following:

- There are more women than men entering higher education

- After graduating, graduates tend to either enter full-time employment, remain in education or are unable to find suitable employment

- Engineering and IT employers are experiencing major recruitment difficulties

- With the war for talent in full swing, companies are introducing innovative ways to attract and retain the best and brightest graduates to their organisations

- Graduate recruitment initiatives offer graduates the opportunity to enter the organisation through workplace practical training programmes, specifically designed for graduates, which develop their competencies, skills and knowledge with hands-on training and real-life experiences. This also assists to fast-track their professional maturity levels and credibility

- Companies are moving to more technology-driven recruitment campaigns like electronic recruitment (online, web-based, social media)

- Graduate vacancies in South Africa were set to remain constant in 2010, compared to the numbers recruited in 2009

- The median graduate starting salary in 2008 was R88 000, and the median graduate starting salary in 2009 ranged from R115 000 to R290 000, depending on the industry. The median graduate starting salary in 2010 was R186 000. This indicates that entry level salaries were increasingly steeply over this three-year period, higher than the annual inflation rate

- The highest entry level salaries for 2010 were for positions in mining and oil companies, investment banks and fund managers, consulting firms, law firms and engineering and industrial companies, which each have a midpoint entry level salary in higher than R220 000 (Sims, 2010)

- Common fringe benefits for graduates include study leave or funding, training for a professional qualification, medical aid, laptops, subsidised sport and leisure facilities, free or subsidised mobile phone, staff discounts and pension schemes. From a bonusing benefit perspective, scarce-skilled graduates are often offered once-off cash lump sums in the form of a sign-on bonus, relocation allowances and wardrobe allowances. In a research study done by SAGRA (2008), it was indicated that "two-fifths of participating employers provide salary packaging and non-monetary relocation assistance with similar numbers offering paid overtime". Nearly a third had flexitime, while over a quarter had some form of global induction or overseas travel to entice candidates. Share options or schemes and company cars were the least likely additional benefit, with only 16% and 11% respectively providing these options

- In 2008, the median number of graduate vacancies was 24, and of this the graduate vacancies by IT business function was 2.5% (SAGRA, 2008). Graduate vacancies increased by 11.9% in 2009, compared to the numbers recruited in 2008 (SAGRA, 2009). Graduate vacancies were set to increase by 17% in 2011 compared to the number of graduates recruited in 2010 (Sims, 2010)

- Sims (2010) indicated that, in combination, the employers who participated in the 2010 study spent nearly R24 million on graduate marketing activities in 2010. From this total, 17.6% was spent on university careers fairs and 16.1% was spent on the employer's own graduate recruitment literature

- The median spend per annum on each graduate's training was R30 000 (SAGRA, 2010)

- Sims (2006) indicates that a mere 20% of graduates intend to stay with their respective employers for longer than a five-year tenure. Interestingly, African graduates across all industry types see themselves as more mobile than white graduates

- Recent surveys on the use of the Internet for graduate recruitment have shown that around 90% of graduates have browsed for jobs online, and over 95% of graduate employers have used the Internet as part of their recruitment strategy (GRB, 2012)

2.2 THE DEMAND FOR IT GRADUATES AND ICT SKILLS IN SOUTH AFRICA

Research has found that the Department of Labour (DOL) has sorrowfully underestimated by almost half the ICT skills needed in South Africa (ITWEB, 2008). ICT is significant to South Africa's economic and social development future, and the reduced number of ICT graduates successfully qualifying is a serious problem. This is emphasised by the ISETT SETA Draft Skills Plan 2005–2010, which highlighted this alarming movement and called for serious and imperative attention to be paid to this area (ITWEB, 2008).

IT News Africa (2012) indicated that South Africa has a shortage of skilled workers in ICT. This can be demonstrated through statistics released by the South African Department of Home Affairs, which for instance, has issued a detailed listing of open technical jobs in the country. This list points to a need for almost 3,000 software and application programmers, nearly 3,000 project and other managers, and 1,600 information and communications technology support technicians. "Universities are not producing sufficient numbers of graduates with the right levels of technical expertise to enable, grow and competitively position businesses in the African markets" (IT News Africa, 2012, p. 1).

The results of an ICT skills survey conducted by ITWEB and the Johannesburg Centre for Software Engineering (JCSE) revealed the following, according to Adrian Schofield, manager of the Applied Research Unit, JCSE, at Wits University: "The survey suggests the 'real' skills shortage going into 2009 can be as high as 70 000 practitioners – more than 25% of the current labour force." The DOL issued the National Master Scarce Skills list in

April 2008, indicating that the ICT sector needed 37 565 IT professionals to ensure sufficient skills in this industry. The survey found 10% of companies did not have a strategic retention policy in place. The companies that did understand this need to provide incentives to retain staff, most commonly made use of professional progress initiatives and performance-based bonuses (ITWEB, 2008).

In a worldwide survey of chief information officers, compiled by the world's largest information technology (IT) research and advisory company, Gartner, an industry-wide skills shortage emerged as a key concern (Moodley, 2006). The survey indicated that the skills decline in the ICT industry was a distressing global trend.

The state of affairs as far as the current employment ratio in South Africa is concerned does not look positive, thereby impacting on the feed-in of ICT skills. In 2009, due to the economic recession and rising unemployment, the unemployment rate was at 23,6%. By the first quarter of 2012, the unemployment rate (ages 15 to 64 years) was sitting at 25,2%. From a population of 44,8 million according to the census in October 2001, the country's population had increased to a mid-year estimate of 50,59 million by mid-2011 (Statistics South Africa, 2012).

Moleke (2003, p. 636) indicates that the main drivers affecting future demand for ICT-based skills in a national economy can be listed as economic, business, technology and policy drivers.

2.2.1   Skills Gap and Deficiencies

"Most ICT jobs are highly skilled requiring high levels of training, thus formal post-school education institutions, universities and technikons are critical to the training of ICT employees" (Moleke, 2003, p. 645). Professor Barry Dwolatzky, director of the JCSE and head of the School of Electrical and Information Engineering at Wits University, put the shortfall of the education system into perspective when he cited the South African national matric results for 2007. "Of the 565 744 students who did pass matric in 2007, only 85 000 passed with university entrance approval and 25 000 had a higher-grade maths pass. Of

those, only 8 000 received high enough marks to enter science or engineering degree courses" (ITWEB, 2008, p. 3).

To validate this, the Department of Education (2009) pointed out that the overall national matric examination pass rate in 2007 for full-time matric students with six or more subjects was 65.2%. Of these, only 15.1% obtained a pass with university endorsement. There are about 23 top universities in South Africa, which means that each university had an intake potential of around 350 students in science and engineering degree programmes. Some research findings have highlighted that most graduates rated their level of capability weakest in IT skills (Stewart & Knowles, 2001). In 2011, the Matric/National Senior Certificate pass rate increased to 70.2%, a 2.4 percentage point increase from the 2010 pass rate of 67.8%. Of the 70.2% pass rate in 2011, 24.3% of the Grade 12 (Matric) learners qualified for the entry requirements of a Bachelors' studies qualification - an increase from the previous year, when the figure was 23.5%. A total of 104 033 matrics passed mathematics and a further 96 441 passed physical science (Department of Education, 2012).

According to the researcher, some IT market-related issues that have been raised by the lack of ICT skills include:

- Due to competitiveness for skills, the demand forcing ICT companies to compensate with high, unrealistic salary packages has increased, and there tends to be a strong connection between income and qualifications among IT graduates. According to the researcher's working experience, this is a common in two ICT companies, namely Accenture (2010) and BSG (2012)

- Newly recruited IT graduates are encouraged to job-hop as skilled professionals due to the high demand for their skills. These graduates are often headhunted by recruitment agencies

- ICT industry employers end up hiring IT graduates who have fewer competencies than is required, since competency in some skills is regarded as better than no skills

It is noticeable from the trends listed above that there is a mismatch between the IT skills being developed in students and the demands of ICT employers.

A search was run by the researcher on 12 August 2012 on two of the most popular job search websites in South Africa, namely Career Junction and PNet, in order to determine some statistics on current (at that particular point in time) information technology job vacancies.

The search was run using only the industry 'Information Technology' filter, and it revealed the following:

- Career Junction – "Information Technology Jobs (1610)"
- PNet – "6990 Information Technology jobs in South Africa"
- This indicates a total of more than 8600 IT vacancies in South Africa, hence revealing the huge demand for IT skills in the country

When location filters were applied, the following was revealed:

- Career Junction – "Information Technology Jobs in South Africa (1603)"
- PNet – "24 Information Technology jobs in International"

Career Junction offered the option to run a search with the following filters, industry "Information Technology", location "anywhere inside South Africa", job level "junior" for graduate level, and the results of this search were "Junior Information Technology Jobs in South Africa (38)".

No literature indicating the opposite perception, that ICT skills in South Africa may be overflowed in recent years, was found by the researcher. All literature indicates that South Africa has a large skills deficit in high-skilled roles. Most recent statistics as released by Adcorp, one of SA's largest employment-services companies indicate that there are currently as many as 829 800 unfilled positions for high-skilled workers across a wide range of occupations in South Africa. This is one of the findings of the latest Adcorp Employment Index, a monthly survey conducted by JSE-listed human capital management group, Adcorp (Adcorp Holdings, 2012). Moleke (2003, p. 635) however states that patterns of demand and supply need to be understood in terms of time-based shortages in specific skills so as not to over exaggerate ICT 'skills shortages' in general. Moleke (2003, p. 653) indicates how recruitment strategies play a role in the skills shortage with the philosophy of employers niche labour requirements of needing "the right person, with the right skills at the right time", this in turn adds to the challenge of recruiting ICT graduates.

2.2.2   The role of SMEs within the ICT Industry

Previous research has indicated that graduate labour markets are forever shifting, and that there is increasing emphasis on small and medium enterprises (SMEs) within the ICT industry as a source of IT graduate recruitment. Graduates hold massive potential to develop these smaller companies through their schooling, passion and fresh ideas. Many small businesses have recognised the benefits of employing graduates; however, this is no easy task. They are competing with huge global organisations that offer reputable graduate training programmes and have the status of a well-known name. The major challenge within small ICT companies is the limited natural career development opportunities they can offer IT graduates.

This shift within SMEs also places greater importance on the employability and career self-management of graduates. Both of these fundamentals demand a focus on the achievement and development of "transferable skills". This also demands a reaction from tertiary education institutions in the curriculum content and delivery of their learner programmes, aspects which require further research. Small businesses can also offer graduates the opportunity to grow quickly and be treated as individuals.

According to the Graduate Recruitment Bureau (GRB, 2012) in the UK, although SMEs want to benefit from graduates' enthusiasm and fresh ideas, the difficulty is the cost involved to employ and train graduates and then to retain them, as the risk is that they will leave to move to a larger organisation soon after huge training time and cost has been invested in them.

The advantages of employing graduates in SMEs can be listed as follows (GRB, 2012):

- Graduates join as ambitious, intelligent and well-educated employees with no bad working habits, which mean they are trainable; they have the flexibility to voice their own opinions and ideas, to apply innovation and have a greater opportunity to shape and lead the organisation's methodologies, processes and procedures
- Less of a structured hierarchy and role distinction in smaller companies means that graduates are able to redesign their roles and hence can get involved in a wider range of activities and gain a variety of experiences, competencies and skills. They

also tend to take on more accountability and responsibility earlier on in their careers, which has an impact on the organisation's performance

- Working as part of a small team towards a set of shared goals can be extremely rewarding, both personally and professionally. Smaller companies also have more flexible working hours, which is great if employees are still potentially studying further

There are also disadvantages of employing graduates in SMEs (GRB, 2012):

- Graduates may be recruited into low-skilled, entry-level mundane jobs in SMEs, sometimes with very little or no practical application opportunities, which limits their use of their qualifications. This creates a disadvantaged situation of underemployment rather than unemployment
- Expectations of a graduate entering a structured plan of on-the job training versus the organisation expecting graduates to perform from day one and to be billable resources. A lack of aligned expectations and a formal career path could lead to turnover
- Graduates may have a misaligned expectation to be given a high degree of autonomy and responsibility early on, which companies cannot always provide
- Entry-level salaries and benefit options in SMEs are usually less attractive and entail smaller cost-to-company packages than those offered by bigger organisations that recruit graduates on a larger scale

2.2.3 Surveys Conducted Within the ICT Industry

Deloitte's Best Company to Work for Survey

Annually, Deloitte's conducts a survey called the "Best Company to Work For", which covers a range of questions that employees answer to rate their overall satisfaction in working for the participating organisation. The benefits of this survey include benchmarking for the participating industries and providing insight for organisations to optimise the overall employment experience of their most valued stakeholder group – their

employees. In 2010, the following seven companies participated in the Information Technology (IT) category and their industry rankings were as follows (Deloitte, 2010):

Table 2.1: Deloitte's Company Ratings 2010

Company in Information Technology Industry Category	Ranking
Microsoft (SA) (Pty) Ltd	1
BSG (Business Systems Group) (Pty) Ltd	2
Britehouse SSD (Pty) Ltd	3
Tradebridge (Pty) Ltd	4
3fifteen Technology Solutions (Pty) Ltd	5
Automate Dealer Management Systems (Pty) Ltd	6
Gijima	7

Source: Adapted from Deloitte (2010, p. 10)

The survey includes 13 dimensions, with 80 questions rated on a five-point scale (Deloitte, 2010), with the broad definitions summarised below:

- Values and Culture – social responsibility, ethics, honesty and trust within the organisation
- Management Style – accessible managers, clear goals set and resources provided to do job effectively
- Job Satisfaction – proud association, interesting work and expectations aligned
- Change Management – commitment to change, implementation of change and support during change
- HR Policies and Procedures – education and application thereof
- Leadership – clear vision and an approachable management team
- Communication – consultation, information availability and effectiveness
- Diversity and Transformation – fair and equitable treatment
- Innovation – new and better ways of doing things are encouraged
- Training and Development – coaching, mentorship, job-related training available

- Recognition – praise for good work, promotions earned

- Performance Management – regular feedback with a well-structured process

- Rewards – benefits and incentives to attract and retain high performers

The rationale of this survey is to examine retention factors that keep employees at these companies and to discover what makes them loyal and satisfied employees. The reason for the researcher including this is to focus on the company Business Systems Group (BSG), which employs many young IT graduates. The average demographical response for ages less than 25 years was 38.24% (i.e. these are the IT graduates), for the age group 26 to 44 years it was 60.29%, and lastly for ages 45 to 60 years it was only 1.47%.

BSG ranked in first place in 2008, in first place in 2009 and in second place in 2010 for the IT industry small company (SME) rank. BSG's top three rated dimensions in 2010 included Training and Development, Values and Culture, and Diversity and Transformation. How this can be leveraged for graduate retention can be summarised as follows:

- Provide graduates with coaching, formal or informal mentorship programmes and encourage them to take ownership of their own growth and development

- Encourage graduates to be a part of corporate social responsibility initiatives and community-based projects and to foster an ethical teamwork environment

- Fair and equitable treatment regardless of age, race, gender, tenure, etc.

A copy of the Deloitte Best Company To Work for Survey 2012 Employee Questionnaire was obtained. The broad range of 10 categories included in the questionnaire is listed below (Deloitte, 2012):

- Sense of confidence in the organisation (long-term stability)

- Ethics and integrity of the organisation (values, fairness)

- Operational effectiveness (knowledge and skills base)

- Management support (feedback, motivation)

- Sense of inclusion (policies, strategy)

- Job satisfaction (challenged and motivated)

- Career development (training, career paths)

- Work-life balance (personal and family accommodation)
- Performance and recognition (fair assessment, praise)
- Remuneration (salary alignment)

SAGRA Surveys

The South African Graduate Recruiters Association is "an expert body committed to connecting and advancing the graduate recruitment industry. SAGRA is the hub of the industry, making use of synergies, resourcefulness and insights to bring global best practice to our members, and elevate the profession" (SAGRA, 2012). Annual surveys are conducted from both the candidates' and employers' perspectives.

The SAGRA Candidate Survey

In 2012, the survey was done online and had a response rate of 1 689 new or future employees. Interestingly, the results showed that, while the candidates made a significant number of applications, three-fifths were successful in receiving more than one job offer, thus indicating the war for this talent. A quarter had work experience (internships) with their new employer prior to joining. More than a third of the candidates used social networking sites as part of their job hunting, and the average number of applications made was 6.1, which is similar to the 2011 results. The graduates indicated that employers' own websites and university careers fairs were the most greatly used sources of information when searching for a job. However, more than a third used Facebook specifically to help with their job hunt. The training and development, overall reputation and long-term career prospects were the three most important factors when deciding where to apply to (attraction), and which job offer to accept (SAGRA, 2012).

The SAGRA Employer Survey

In 2012, the survey results indicated that employers expected graduate vacancies to increase by 5% in 2013. The median number of vacancies in 2012 was 20, of which the median graduate starting salary was R134 000. Three-quarters of employers expect to increase graduate salaries in 2013, and no organisation in the survey was planning to

reduce graduate salaries. Behavioural-based interviews were the most used selection method for assessing candidates, used by 79% of employers. Panel interviews were used by 69% of employers. In 2011, the median number of applications received by employers was 1 500, and the median number of applications per vacancy was 65. Employers continue to look for new, stimulating ways to engage with candidates in an effort to create a connection with students and to help them understand the opportunities on offer. One outcome of this is an increased presence on social media sites, which has led to more than a third of candidates in this year's survey using social media as a component of their job exploration (SAGRA, 2012).

2.3   GRADUATE ATTRACTION

Attracting suitable IT graduates is central to recruiting, as ICT companies establish a pool of graduates who are both attractive to the organisation in terms of their skill set and at the same time are attracted to the organisation in terms of what the organisation has to offer them. In the graduate recruitment market, companies invest both large sums of time and money to draw applications from top university graduates for management apprentice, professional and technical roles. Graduate attraction is central to targeted recruitment campaigns.

The graduate recruitment method usually begins with the ICT company communicating its values and image, the employer brand, through campaign exposure and advertising. Prospective graduate applicants then appraise their understanding of the company and weigh up a decision to apply or move on to other prospects. As organisations are normally particularly selective with applicants, they need to catch the attention of a large enough pool of applications at an early introductory point to ensure a diverse selection option. If knowledgeable ICT companies can implement a proactive hiring process, this will enable them to obtain and retain the best IT talent longer than their less prepared competitors. According to the annual report survey from the CIPD (2008, p. 2), "Recruitment agencies (78%), followed by using the organisation's own corporate website (75%) and local newspaper advertisements (74%) are the most common methods being used to attract the attention of graduates." It is important to note that IT graduates will more likely be drawn to

electronic online application processes, since this online web-based technology is their area of expertise and interest.

A survey done by Gilleard (2006) showed that over three-quarters of respondents found that making decisions on where to advertise was more complicated as a result of the assortment of possible advertising media available. According to Phillips (2008, p. 20), "while the number of graduates using university careers services varies widely by institution, overall only a quarter of graduates surveyed utilised the careers services offered by their university. Around 35% found their first job by scanning adverts in the media, more than 20% used recruitment agencies and just fewer than 20% scanned employer websites".

The GRB (2012) indicates that drawing graduates in has become a costly, structured and competitive practice, particularly in some of the top larger organisations, which expect to attract the graduates who are the cream of the crop. These organisations are often willing to pay large salaries and, in doing so, hope to find employees whose long tenure will show some return on investment. Common techniques used to attract graduates, is to offer remuneration, reward or benefits based on the following (GRB, 2012):

- More competitive entry-level salaries
- Golden handshakes intended to aid relocation expenses, also known as sign-on bonuses
- Annual bonuses depending on individual and business performance to recognise and reward individual accomplishments
- Strikingly high annual leave entitlements (for example, 25 days' annual leave per annum versus the South African Basic Conditions of Employment Act, which requires 15 days per annum)
- Pension, life and medical aid schemes
- Free or subsidised gym memberships
- Flexible working hours and structures (i.e. working from home)
- Enticing discounts on personal computers, cellular phones and other products/services

According to the GRB (2012), research has demonstrated that, while these "salary related tools may have some early and immediate attraction impact, they are not sufficient to ultimately affect retention". The reason for this is that graduates are becoming increasingly more sophisticated when job hunting. They are more aware of and proceed to make planned comparisons between different job vacancies and companies and regularly browse for other, related employment opportunities. From surveys administered by the GRB, it has been found that it is not unusual for graduates to have their curriculum vitae or other personal and experience details registered with a number of different online recruitment sites, even though they are satisfied and content in their current roles. Examples of these sites in South Africa are PNet, JobMail and Career Junction. It is important to note that salary-related benefits are often minimal when compared to valuable leadership direction and guidance, learning development opportunities and a work environment and culture that is aligned to the graduate's expectations by offering ongoing challenges and the chance to practise different skills.

The graduate recruitment industry uses six main types of attracting techniques (Gilleard, 2006):

- University relationship-based campaigns

- Employment/recruitment agencies

- Corporate websites and job search engines or graduate directories

- Head-hunters for executive and professional recruitment

- National newspaper advertising

- In-house recruitment campaigns

Among the recommendations by Cuny and Aspray (2000) and Gilleard (2002) for attracting more suitable IT graduates are:

- Expand the recruitment pool beyond students with the ideal undergraduate Computer Science and Information System majors: the potential of such students can be judged on academic records, complexity of elective subjects, successful research experiences and research papers, student leadership roles, involvement in extramural computing-like activities in their employment or volunteer efforts, and internship experiences

- Highlight future career prospects on offer; this includes the possibility of early responsibility and more future autonomy, as well as implementing a good graduate training scheme and internal mentoring scheme

- Broaden and be flexible with the criteria used in application and admissions short listing. This does not mean the recruitment standards need to be lowered; it simply means that it is not always necessary to focus exclusively on practical and technical skills. Factors such as intellectual accomplishments, leadership, motivation, communication skills, breadth of ability and experience, and social commitment can be included. These factors contribute to innovation and a broader application of technology and are valued by employers

- Encourage re-entry students, as they can be very successful as they often have a superior level of maturity, focus, independence and commitment than conventional students. They are more likely to bring a wider range of experiences to their vocation. Some kind of bursary policy can assist re-entry students, for example if they have discontinued their studies because of financial constraints, which according to the researcher's experience is a very common situation in the SA economy

- Providing bridging opportunities to incoming graduate students can provide measurement or self-assessment exams for all entering students, along with suggested mechanisms for filling competency gaps in their qualification background

- Openly include diversity consideration in the recruitment process. Ensure that the interview panel is well educated in diversity management and understanding, for example, in relation to gender discrimination it is necessary to be aware that highly qualified women may well have qualifications and experiences that look quite unlike those of their male counterparts, thus there should be awareness of stereotypes. The SA labour market is strongly focused on employment equity recruitment to meet legislative requirements, which means that there is a keen focus on the recruitment of candidates from the previously disadvantaged designated groups of graduates (Employment Equity Act, No. 55 of 1998)

- Be proactive in making recruitment connections. This includes building relationships with recruitment agencies, universities, training institutions and advertising agents, and networking. Attendance at university careers fairs or exhibitions is considered a valuable means of on-campus employer brand building. Having practical work or

internship experience with a certain company or knowing a current employee/referral who works for the company can be considered as having a leading impact on drawing graduates' attention. This will ensure you have the first choice to select top talent

- It is vital to actively counteract the negative stereotypes and misperceptions of computer-related fields of study and careers. Some of the common misperceptions to be aware of include (Cuny & Aspray, 2000):

    - All IT people are nerds

    - Graduates must not be considered a source of low-cost labour and should be fairly compensated for the skills and services they render (GRB, 2012)

    - All IT professionals work 24-7-365, i.e. very long, demanding working hours

    - "You cannot be successful in university unless you are highly competitive and clever in Mathematics" (Cuny & Aspray, 2000)

    - Women are not good in computing fields

    - All successful IT students have a single-minded focus on computing

    - University is extremely costly

    - There is no time for a life outside of studies, i.e. no work-life balance

    - Working with people (soft skills) and working with computers (technical skills) are not compatible

    - Going to university to study further cannot match the exhilaration of working in a start-up company or the commencement of an industry-related job, especially when earning your own money and gaining financial independence from your parents

    - All applications and fields of computing are in science or engineering vocations

Sims and SAGRA (2006) conducted a study on graduates' ratings of job factors, and found that the two most popular factors for graduates were employability (developing competencies, product knowledge and skills that are marketable and transferable within and beyond current employment), and a healthy work–life balance. Compensation and benefits were rated least important in significance. Hence, when attracting graduates, SAGRA (2006) recommends that companies advertise using the following top five items:

- Possible advancement opportunities for career growth and development

- Ways to develop new knowledge and lateral skills growth

- An open and transparent communication and networking environment

- Challenging and meaningful work

- Flexibility of role, working hours, etc.

Some additional recommendations for attracting top IT graduates by Devlin (2009) include:

- ICT companies should research what IT graduates are looking for in employment and consider how they can market their company to appeal to the graduates

- The role IT graduates are required to fill and the additional competencies referred to as knowledge, skills and attributes that are needed should be identified so as to attract the right people. This means that a potentially ideal person-job match is made

- It is important to be honest about what the company can really offer so as to ensure that expectations are aligned, as this in turn impacts on retention

- Consider how many IT graduates to recruit and budget accordingly, referring to correct headcount planning, as graduates will require more time from senior staff and managers for coaching and job guidance, which means that this will have on impact on the capacity of the tenured senior staff. Budgeting in this aspect also relates back to adequate skills development ISETT SETA legislation around workplace skills plans and training budgets allocated to graduates

- Be creative and innovative in the company's marketing strategy so as to stand out from competitors

- Keep in regular contact with relevant university IT departments — make sure they know and understand the company and build valuable relationships. If employers wish to identify and draw top IT talent to ensure that they sustain their competitive edge, then this requires full university involvement in terms of internships, recruitment and awareness campaigns by targeting specific IT faculties within the university

- Consider offering work experience in the form of internships to students to build relationships and spark interest. Internships can take place either while on vacation during studies, or after full degree/relevant course is complete

- Update company website: posting vacancies on own site is a free way of advertising

- Outsourcing to specialist recruitment agencies can be a good option. They will have the time, resources and contacts you may be lacking

- Encourage word-of-mouth promotion and internal referrals

2.3.1 Employer Branding

Employer branding is not only important as a marketing strategy, but is also the start of a perception of the two-way services rendered relationship, as first impressions are lasting. As discussed in this research, in the climate of high unemployment, skills shortages in the IT sector and the intense war for the best talent, companies need to stand out from their competitors. It is important to have both an excellent recruitment process and a company image that is attractive when seen through the eyes of prospective recruits. As the possible vocational choices that graduates have in the industry increase, and as globalisation continuously looms, employer branding strategies prove vital in drawing the attention of graduates in the competitive war for talent. Employer brands act as a psychological trigger in the candidates' heads (GRB, 2012). These are very influential triggers in the job market and can play a significant role in a candidate's job-picking strategy.

Employer brand is the voice and image of the communication that organisations implement to draw in and keep employees through loyalty and continuously developing commitment. Brands attempt to take "the choice out of choosing" by being known as the Employer of Choice (GRB, 2012). It is critical that a compelling story is developed for potential recruits.

According to the GRB (2012), the attractiveness of the employer's brand is defined by three stages: reputation (emotional), career offer (rational) and corporate culture (emotional). The key messages, according to the GRB (2012), are:

- Reputation, for example to demonstrate a successful international company and growth industry popular in a home country
- Career offer, to demonstrate that the organisation offers challenging work, international opportunities, career development opportunities, good salary structures
- Corporate culture, to promote the organisation's strengths in fair, open, non-hierarchical, inspiring people

Graduates are attracted by an influential company brand. This is fundamentally a subset of the general corporate brand, encompassing the organisation's values, vision and mission, systems, methodologies, policies and behaviours with a view to drawing the attention of prospective employees, motivating them and keeping talent. The aim is to express the personality and culture of the organisation so that external candidates can develop a perception and sense of what it might be like to work for the organisation (GRB, 2012).

2.3.2   Graduate Marketing Strategies

SAGRA (2008) reveals how organisations budget for and spend their marketing and advertising budgets so as to communicate and promote their available graduate roles. They also show which universities are targeted in order to increase the number of ideal graduate applicants with the right skills sets. The main marketing techniques reviewed were employers' graduate advertising mechanisms, recruitment narratives, in-house graduate recruitment websites, online promotions, the turnout at graduate careers fairs, and on-campus presentations. Various organisations create comprehensive brochures with pull-outs and tabbing, while other employers print straightforward flyers and smaller promotional material. A larger sum of money is invested in promotional sponsorship gifts and marketing freebies than on general advertising in career directories, trade journals, university vocation guides or undergraduate newspapers. In summary, the organisations use the following tactics to promote graduate vacancies (SAGRA, 2008):

- Organisations' individual recruitment literature and case studies
- On-campus vocation as well as regional career fairs
- Free marketing sponsorship items/gifts

- Employer's in-house recruitment websites

- Advertising in South African nationwide press as well as local student newspapers

- Skills training events or commerce games

- Campus presentations

- University campus career booklets or newsletters

- Publicity on business-related and relevant university websites

- Subject prizes (e.g. top student in Informatics/Computer Science)

- Advertising in careers directories

- Promotional email communications

- Supporting student forums either financially or through a form of mentorship or guidance

- Trade journals or professional magazines

The GRB (2012) indicates that organisations must strengthen their employer brand throughout the recruitment process by initially showcasing constant, optimistic and reinforcing messages, information and images about the culture inside the organisation, whether through promotional advertising materials, recruitment presentations, or the interview cycle.

The SAGRA employer survey research conducted in 2008 shows that organisations spent over R34 million on graduate marketing activities in that year. A split of spending showed that these organisations spent an average of R40 000 on their own recruitment literature and a further R15 000 on their in-house graduate websites. A further median amount of R29 500 was spent on online promotions in 2008. Graduate recruitment advertising (for example in careers directories, newspapers, and journals) had a median spend of R72 500. R49 200 was the median spend on careers fairs, with an additional R73 500 being spent by employers on their own campus presentations and promotions (SAGRA, 2008).

The GRB (2012) indicates that industry-leading organisations spend large sums of money on securing university campus marketing rights, sponsorships, access to students' email addresses and personal information, and nationwide on-campus promotional tours so as to build a sense of brand preference and loyalty. It is important to not only use creative,

original methods of reaching students directly on university campuses and getting the organisation's message out, but the unique culture of students, namely what graduates value, their attitudes, needs and behaviours, also need to be identified. Gaining insight into the unique culture of undergraduates at universities offers graduate recruiters the necessary awareness to ensure the relevance of their techniques for marketing their employer brand and effective communication strategies to ensure that students are equipped with a list of persuasive reasons to apply to and join their organisation, rather than that of their competitors. The GRB (2012) indicates seven strategies to follow in relation to the unique culture of graduates:

- Communication of lifestyle, career aspirations promoting a work–life balance and socialisation not limited to their age, but rather linked to the organisation's brand
- Attachment of the organisation's name to latest trends, for example activities, events, products and networks that have earned street credit in the student market, and thus appeals to them emotionally
- Appeal to students' emotional needs for empowerment, privilege and status through goods and services that empower them as consumers and individuals. Examples include the Internet, mobile phones, MP3 players, etc.
- Do not oversell the organisation, as graduates know they are in demand. Focus on educating students about the recruitment process and their various choices and the unique person–job match relevant to them as individuals
- Approach undergraduates at key transitional periods like the start of the year, graduation or vacations, especially if you wish to provide sponsorship items
- Become an authentic brand through trust, not trying too hard to persuade graduates to join, and continuous delivery of value
- Consistent display of straightforward, ethical and honest communication and business trade

All the above factors played a vital role in this study in terms of streamlining attraction techniques used by companies and what the graduates actually want so as to attract the top IT graduates ahead of global ICT competitors and the war for talent. The organisations that leverage all the available techniques will be able to secure the applicants' preference

for them and probably also loyalty to the organisation, both as undergraduates and postgraduates.

2.4 GRADUATE SELECTION

The stages in recruitment are quite standard and include sourcing candidates through various advertising mechanisms, screening and selection of candidates who match the required competencies using tests or interviews. All of these processes are completed before a successful candidate is hired and on-boarding takes place. The turnaround time on this process is difficult to standardise, as each company has a different strategy and spends longer periods on either the advertising phase or the interviewing and on-boarding phase.

Graduates do not have detailed curricula vitae filled with experience and proven ability; they only have academic transcripts to prove their competence, hence more time is required during the screening and interviewing stages. According to the CIPD (2008, p. 2), the most commonly used selection procedures consist of "interviews based on the contents of the limited curriculum vitae and application form information (72%), followed by competency-based interviews (65%)". Graduate candidate interviews are structured differently from experienced candidate interviews. Another survey by SAGRA (2009, p. 2) showed that, among the sampled employers, "behavioural-based interviews were the most popular selection technique for assessing candidates (89%) and aptitude testing was used by 76% of employers". In 2010, the SAGRA study showed that "behavioural-based interviews were still the most popular selection technique for assessing candidates (85%) and aptitude testing was used by 73% of employers" (Sims, 2010, p. 2).

An example of the stages of selection and short-listing process within a small ICT company in Gauteng (BSG, 2009) is as follows:

• Online application with graduate-related questions about degree studied

• Virtual online interview (web-based)

• Psychometric assessment to assess behavioural attributes

- First interview (competency-based questions)

- Final panel interview (technical-related questions)

- Offer is made if successful or regret letter sent if unsuccessful

These steps allow for detailed screening and short-listing to attract and ensure the retention of top IT graduates.

2.5 GRADUATE RETENTION

Graduate attraction and retention go hand in hand. The ability to attract and retain strong IT graduate talent indicates the need for high-performance ICT organisations to constantly outperform their competitors on a range of human resource elements, inclusive of the level of teamwork and openness among colleagues, the training and development opportunities on offer to staff, and the extent of proactive HR forecasting. Building this capability begins with the realisation that valuable, well-organised staff management is key to the competitiveness of organisations in the global war for talent. The retention of highly skilled IT employees and their employer loyalty appear to be of strategic significance to high technology organisations, largely because of the potential long-term financial returns as well as their earning capacity (Döckel, 2003).

Retention factors aid the actual stay or exit of employees, as well as the decision to leave or stay, depending on the perceived direction of an individual's priorities. Retention impacts on the following, according to Van Dyk (2011):

- Increased job performance
- Lower voluntary turnover
- Higher intention to stay/lower intention to leave
- Lower absenteeism

2.5.1 Retention Factors

Döckel (2003) identified six important factors that require consideration when looking to retain skilled technology workers: compensation (basic salary); job description (skill variety and autonomy); training and development opportunities; top management support; career opportunities; and work/life policies. These are discussed below:

- Compensation: pure cash a main driving force used to entice IT professionals

- Job description/characteristics: High technology professionals desire to do interesting, challenging work in order to use all their skills, knowledge and abilities. This is linked to a term referred to as job variety

- Training and development opportunities: It is critical for ICT companies to gain a competitive advantage by ensuring their employees are well trained and kept up to date in the latest IT industry technologies

- Top management support: In terms of constant innovation, rewards and recognition

- Career opportunities: By investing in employees and promoting internally, it creates a sense of value among employees

- Work and life balance policies: These include individualised flexible working hours and leave allowances

2.5.2   Organisational Commitment

Retention is closely linked to organisational commitment, a term studied several times before. Retention factors have a considerable influence in the development of organisational commitment among complex technology employees (Döckel, 2003). Organisational commitment is defined by Döckel (2003, p. 20) as having an attitudinal, behavioural and motivational perspective as it relates to individuals' mindsets about the specific organisation. Döckel (2003, p. 20) also describes commitment as a "psychological state that binds the individual to the organisation".

In a study conducted by Bakalis and Joiner (2006), it was found that a combination of personal, job-related and job involvement characteristics all have an impact on organisational commitment. These are summarised in the diagram below:
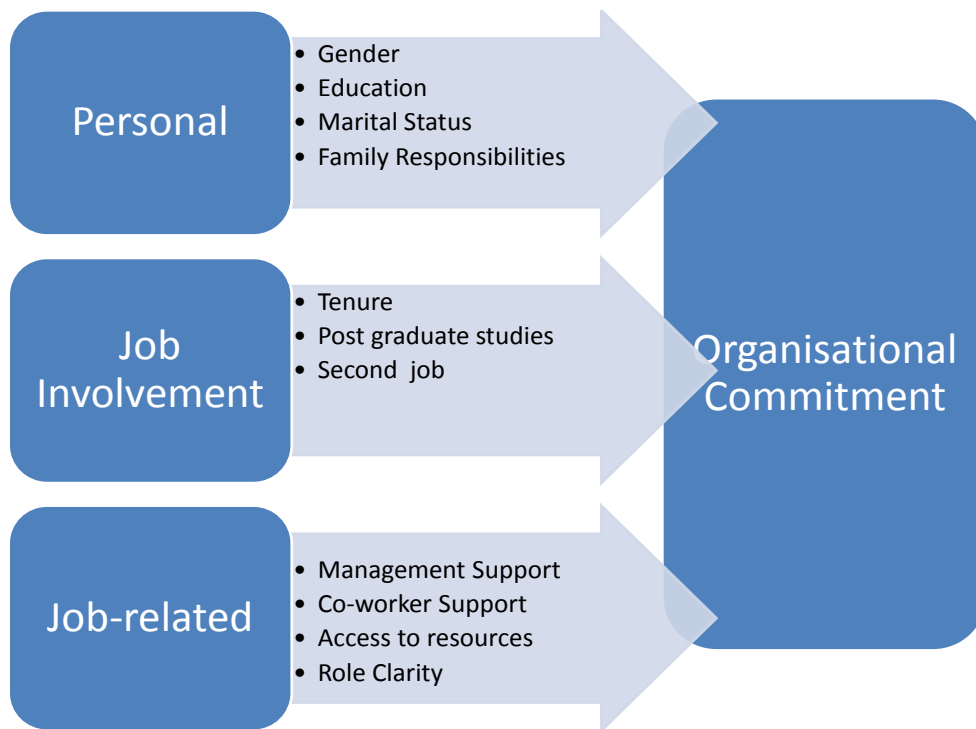
Figure 2.3: Organisational commitment

Source: Adapted from Bakalis & Joiner (2006, p. 440)

Meyer and Allen (1984) point out that organisational commitment can be further broken down into three types, namely:

- Affective commitment – positive feelings that help employees to form a bond with and participate in the organisation. This is based on the exchange principle, which indicates that employees commit themselves to the organisation in return for the rewards received or the punishments avoided where expectations are aligned (Meyer & Allen, 1997)

- Continuance commitment – the extent to which workers experience commitments to their organisation, by virtue of the expenses, loss of benefits or advantages that they feel are linked with leaving. This includes benefits like a pension fund, medical aid scheme and bonusing, which may not be offered by alternative employers

- Normative commitment – a sense of obligation to stay with the company (Meyer, Allen & Gellatly, 1990). This develops as a result of beliefs that are internalised through socialisation processes, both family-based and culturally, that occur both

before and after entry into the organisation, and have an impact on loyalty. Examples are special friendships built and mentoring relationships (Meyer & Allen, 1997)

Van Dyk (2011) summarises organisational commitment as depicted in Table 2.2:

Table 2.2: Types of organisational commitment

Type of Organisational Commitment	Meaning
Affective	"Want to" stay with company
Continuance	"Need to" stay with company
Normative	"Should" stay with company

Source: Adapted from Van Dyk (2011, p. 25)

These terms are relevant to this study, as they may have an impact on graduates' feelings of connection to, duty to stay and responsibility toward the organisation. When studying organisational commitment it is important to study the differences related to demographical categories, which may influence retention factors (Van Dyk, 2011):

- Age in years – IT graduates are younger, with a median age of 20 years
- Race groups – referring to nationality
- Gender – male or female
- Marital status – single, married, etc.
- Scarce skills – referred to in this study as information technology (IT) skills
- Tenure – has a positive relation to organisational commitment; more specifically, tenure and affective commitment are related (Döckel, 2003).

It is assumed that a high level of organisational commitment can reduce desertion behaviours, which for example include poor punctuality, absconding and high turnover (Van Dyk, 2011).

2.5.3   Current Retention Techniques

Some current techniques used to increase IT graduate retention (Gilleard, 2006) are:

- Attractive and competitive remuneration

- Developing incentive schemes to retain IT skills, including suitable benefit and bonus structures and recognition awards

- Increased learning and development opportunities and better approach to career management

- Implementing a proper induction process in order to realistically manage graduate expectations

- Improved line management relationships

- Promotion of work–life balance and employee well-being

- Improved employee involvement in decision making within the organisation

- Coaching and mentoring programmes

- Offering secondments and sabbatical policies that are usually in line with overseas opportunities or those in different geographical locations

- Sponsorship for further part-time studies

- Excellent company reputation and culture

- A redesigned job to make work more satisfying, as well as ensuring that work is interesting and meaningful

- Opportunity for creative innovative thinking, which is especially relevant to IT graduates who are in the system development field (writing of code and programmes)

- Improved physical working conditions, including flexible work hours, and being able to live and work in a location that is enjoyable and safe

- Effective HR recruitment planning, which refers to the "mating theory", meaning the matching of job search success and recruitment success. Basically, this means that, while prospective graduates seek out companies, so the companies are seeking prospective graduates (Cascio & Aguinis, 2005, p. 260)

- In order to retain graduates, some companies offer graduate development schemes for a duration of one or two years, which means a portion of study and a portion of practical on-the-job experience. Deferred and alternative start dates are also an option, which means that there is no specification of only one start date per year. This offers graduates flexibility (SAGRA, 2008)

- Rotational graduate programmes increase tenure, as graduates are offered exposure to different aspects of the job function, which gives them a sense of lateral skills growth and career development pathing opportunities

It is important to increase graduates' awareness of opportunity and to establish a realistic outlook of their future career expectations. In a research study undertaken in South Africa in 2001, JPC International acknowledged the subsequent criteria used by knowledge workers in search of employment in evaluating prospective employers, ranked in order of significance (JPC International, 2009). The attributes are listed in Table 2.3 below.

Table 2.3: Attributes of organisations

Rank	Attribute
1	Benefits – salary, perks, fringe benefits
2	Innovative and dynamic – open minded, willing to experiment
3	Career growth – opportunities for growth
4	People are valued – investment in employees
5	Personal development – learning experience
6	Company reputation – well known, good name
7	Global player – international, world class
8	Work environment – flexible hours, working conditions
9	Likes the work – interesting work, exciting, job satisfaction
10	Opportunity to travel – work overseas, see the world
11	Likes the industry – leading-edge technologies
12	Successful company – industry leader, world leader
13	Company culture – ethos, work ethic
14	Strong brand – positive brand, good professional image
15	Training – good training schemes, staff well trained

Source: JPC International (2009, p. 11).

The main consideration for the respondents surveyed in the above research study was that they would receive fair remuneration. This consideration can be applied equally to retention criteria for IT graduates.

2.5.4 Retaining Younger Employees

According to the Graduate Recruitment Bureau (GRB, 2012), building awareness around understanding how to recruit and retain starts with identifying "who is in your organisation, who you want to attract to your organisation and what motivates them". A starting point is to understand the generations working within your organisation. Each generation group has its own unique and diverse set of values, view of authority, world view, sense of loyalty and commitment, and expectations of their leadership and employment environment. A brief description of the generation theories is listed in the table below, adapted from GRB (2012), Healey (2008) and Wikipedia (2012). A generation is an aggregate of people born every 20 years.

Table 2.4: Generation theories

Generation	Summary of Key Qualities	Broad Born-Year Category
Veterans	Tend to be dedicated, adhere to rules and are hard working	1920-1940
Baby Boomers	Workaholics, goal driven and thrive on personal gratification	1940-1960
Generation X	Techno-literacy and individualism	1960-1980
Generation Y, also referred to as Millennials	Optimistic, confident, are overloaded by media and entertainment	1980-2000
Generation Z, also referred to as the Internet generation. Often overlaps with Gen Y	Technology gurus, have grown up in a world that is all about connecting through technology and the World Wide Web – social media	1999 – present 2000's

Most current graduates (2006–2012) fit into the Gen Y or Gen Z categories. Graduates in the year 2012 are referred to as Gen Y and Z, which means that strategies need to change to align to their expectations of employment in order to firstly attract and then retain them.

The GRB (2012) suggests that Generation Y graduates study further after school, tend to enjoy travelling, and hence are more open to relocation, are able to gain access to a wealth of information due to the World Wide Web, and have a high aptitude for technology and tend to 'think outside the box' more often. These graduates persistently want to learn new skills, to be challenged mentally and professionally and to continue to accomplish great things. Channelling this originality and energetic force, as well building an understanding of what value these graduates can add to any organisation, is vital in today's war for talent (GRB, 2012).

Healey (2008) conducted a study that compares some interesting facts about what Gen Xers and Gen Yers believe when it comes to retaining them:

- Gen Xers and Gen Yers will progress on to other organisations, as they will reach a ceiling in their role; the winning factor is that you want them to be promoters for your business so that they will refer friends and family to work for you
- They want to give input, so keep providing opportunities for this, as well as training and learning opportunities so as to retain their interest
- 97% describe allegiance to an organisation as making a contribution and adding value during the time they render service
- 79% anticipate having a role that allows for innovative ideas and creative thinking
- 78% define accomplishment as enjoying increasing responsibility and autonomy and being given due recognition
- 30% consider that shifting jobs repeatedly will damage their career history, as they will appear to be job hoppers, which negatively could be regarded as money chasing
- Both groups want to care about the product, vision and mission of their company; this keeps them motivated
- Both groups respond well to effective team work, especially with competent, talented and highly motivated, optimistic colleagues. Being surrounded by brilliance and team members who genuinely care about the accomplishment of high-quality

work reinforces that they made a wise decision to join the employer. On the other hand, one bad apple can dishearten the entire team, hence it is important to deal with underperformers promptly so that they do not drag the entire team down with them (Healey, 2008)

In comparison, the Baby Boomers and Veterans commonly describe loyalty by tenure, expect improved stable remuneration packages and label their achievement relevant to this. A high 81% of them believe that shifting jobs and employers often will harm their career, compared to the 30% above.

In order to retain only Gen Xers, it has to be borne in mind that they expect the following:

- Detailed constructive and regular feedback in order to confirm their progress, successes and areas of development. This builds their confidence; they are more productive and motivated when receiving feedback
- They value having the most modern equipment and technology; this is especially true for IT graduates, who show a keen interest in this field
- Gen Xers enjoy collaborative relationships and friendships, and also enjoy participating in brainstorming ideas

According to the Graduate Recruitment Bureau (GRB, 2012), when questioned, most graduates they deal with indicated that the two key elements they look for in their ideal working environments are:

- Innovation, creativity and entrepreneurship
- Respect and management support in terms of the above (accessible, approachable and inspirational leaders)

The GRB (2012) indicates that graduates are the future leaders in companies and the following tactics should be used to retain younger employees:

- Foster a continuous learning cycle with relevant training and bursary schemes for studying further specialised credentials

- Job redesign, which creates an opportunity for workers to move between teams, apply different skill sets, and gain exposure to different management styles and projects to satisfy short- and long-term goals
- Relocation options to move between offices, locations and projects, and even international assignments, as youth tend to enjoy travel
- Sabbatical-type policies that allow and promote top performers to return to the organisation subsequent, for example, to extended travel and family or study commitments. Maintaining good alumni networks assists in encouraging staff who resigned previously to rejoin at a later date, thus bringing additional exposure and competency value into the organisation
- Coaching and mentoring programmes to develop young employees
- Top management support, also by leading by example so as to be a role model to younger employees

Overall, the attraction techniques implemented need to demonstrate to a young graduate employee, or potential new recruit, that the organisation is willing to invest time, money and effort in them. By understanding the specific graduate characteristics and needs, giving them the space to grow and develop, effective retention can occur.

2.6   SOME CONCLUDING COMMENTS

Many ICT companies are concerned with improving their capability to contend for the scarce number of IT graduates who are applying for jobs. What is essential is a combined endeavour by all global companies to boost the total number of graduates in computing-related graduate qualifications and programmes nationwide. It is crucial to increase the associations between government, the ICT industry and universities, to develop innovative partnerships and to generate original solutions to overcoming the ICT skills predicament (ITWEB, 2008).

Students should take every opportunity to develop the skills of independence and autonomy that will be needed for the future world of work. There are quite a few suggestions for graduates, which include increasing their self-awareness and making a

knowledgeable decision about what, how and where to study. Students should try to gain relevant work experience and develop skills for the actual place of work, and networking and exploring alternative career options is also important.

Graduates are seen as the upcoming leaders in business, therefore the attraction, management and retention of this group is of the upmost importance (GRB, 2012). Future graduate attraction and retention strategies should be formed by the expected additional changes in graduate supply due to progressing problems expected in recruiting the skills of science, engineering and technology graduates. This is due to the declining number of students pursuing these degree subjects at the various universities in South Africa. There also is concern about the increasing global mobility of graduates, and also a larger international pool of potential recruits. This will require better evaluation than is currently available in pre-screening graduates. There are also elevated expectations among graduates about the career development opportunities available, and about innovative and diverse learning mechanisms. These factors need to be considered when planning graduate recruitment activities, as graduates perceptions increasingly affect the success thereof.

CHAPTER 3

3   RESEARCH DESIGN AND METHODS

This chapter provides details of the design, research participants, the questionnaire used for the empirical research process and statistical procedures that were employed in this study.

3.1   DESCRIPTION OF INQUIRY STRATEGY AND BROAD RESEARCH DESIGN

The study followed a descriptive, quantitative research design by means of an empirical, non-experimental research approach, as the researcher collected and analysed primary data to address the research question. The aim of this basic research was to increase academic knowledge and the study was undertaken purely to understand recruitment attraction and retention processes and their outcomes as a result of an academic agenda regarding IT graduates in the ICT industry.

3.1.1   The Survey Design

Survey research involves acquiring information about one or more groups of people – in this study specifically IT graduate opinions and perceptions of ICT job attraction and retention – by asking questions and tabulating their answers through descriptive frequencies.

A survey design was used for this study, which followed a quantitative research methodology with the aim to provide a broad overview of a representative sample of IT graduates from a population of global IT graduates. The purpose of survey research is to generalise from a sample to a population so that inferences can be made about the sample's perceptions.

This method was used to gain descriptive and inferential numerical data and statistics regarding the perspectives of IT graduates on attraction and retention within the ICT

industry. This choice is supported by previous studies that have also used quantitative approaches to study this topic (Terjesen, Vinnicombe & Freeman, 2007). This study seeks to understand what graduates look for after graduating, and what the key elements of attraction and retention are.

In quantitative research, the researcher wants to produce factually descriptive information to contribute toward answering the research questions. Quantitative research tests objective theories by examining the relationship among variables, typically on an instrument. The results will assist in potential decision making within an organisation, as the research conducted can be seen as explanatory. Explanatory studies establish a relationship between variables by focusing on studying the problem (Saunders, Lewis & Thornhill, 2007, p. 598).

The survey method was the preferred type of data collection for this study as it allowed for the easy collection and analysis of data. It is an economic design and has a rapid turnaround time in data collection. The survey is quite simple in design, as the researcher poses questions to willing participants, summarises their responses with statistical indexes and then draws inferences about a particular population based on the sample responses (Leedy & Ormond, 2005, p. 184). Questionnaires also allow for a high measurement of reliability and validity if they have been properly constructed and standardised, and factor analysis can been done on the items where possible.

This study was a cross-sectional research study because each participant completed the survey only once and the data collected represented an overview of data at one point in time.

Data was collected by means of a self-administered questionnaire. An electronic survey was chosen as the most appropriate option for this study, due to the nature of the IT industry; more participants had access to the internet rather than the paper-based alternative. The likely advantages include convenience of data collection, minimal cost implications and easy access. A tool called Lime Survey was used to create the survey electronically.

The intention of the survey was for graduates' to rate the top attraction and retention techniques, and this was done by use of descriptive questions and Likert-type scale ratings. In the survey, the respondents rated the attributes according to personal importance. The students also provided their perceptions of what they would look for when applying for a job.

Possible survey research limitations include:

- A low return rate on questionnaires (Leedy & Ormond, 2005, p. 185)

- Research found in one sample population at one particular time cannot be accepted for all time as a constant (Leedy & Ormond, 2005, p. 184)

- There is a reliance on self-report data, which raises a concern if answers given are true or are given due to wanting to create a favourable impression

The graduate sample used was current students and recent graduates (within the last four years). This sample comprises future applicants and the study is scoped to focus on those at the applicant attraction stage, therefore it was essential to ensure a high-quality, targeted questionnaire to guarantee the collection of exact data. If the questionnaire was not adapted appropriately, it may result in skew outcomes.

3.2   SAMPLING

To sample is to select in a scientific or non-scientific manner a group or subgroup that is reflective of a larger population (Saunders et al., 2007).

3.2.1   The population of the study

The population consisted of Information Technology graduates in all provinces of South Africa who had recently successfully completed (within the preceding four years) or were nearing completion of a computer/IT-related qualification.

3.2.2 The sample

The sample consisted of 172 Information Technology students who had recently graduated or were about to graduate and were enrolled for an Information Systems, Informatics or Computer Science, or Information Technology-related course/qualification at universities and educational institutions in South Africa offering the course in the 2008, 2009, 2010, 2011 and 2012 academic years. Only 157 of the 172 responses were used to collate the results, as 15 responses were partial and could not be used.

Although the population was selected according to a set of prescribed criteria, the sample strategy utilised for this study was a sample of convenience (non-probability sampling). A non-probability sample in this sense can be described as involving respondents (ICT graduates) who are available to complete the questionnaire at a specific point of time. The respondents were not randomly selected, but all who met the criteria of an IT qualification and were available were included. The researcher distributed 300 questionnaire links so as to accommodate for unreturned questionnaires.

3.3 DATA COLLECTION INSTRUMENT

A specific targeted questionnaire had to be developed for this study. However, the researcher made use of questions that had already been developed and pilot tested by two sources.

One of the survey instruments used to collect the required data was a questionnaire designed, modified and developed by Döckel (2003). Döckel (2003) identified two measuring instruments, namely the Organisational Commitment Questionnaire (OCQ), developed originally by Meyer et al. (1990), and a retention factor measurement scale developed by Döckel (2003), from which the researcher used certain relevant questions for this study.

The second instrument used to source relevant questions was the SAGRA (South African Graduate Recruiters Association) candidate survey. The survey methodology used to develop this survey can be detailed as follows: research for the SAGRA Graduate

Recruitment Survey 2008 took place in May 2008, using an electronic web-based survey accessed via the SAGRA website. The questionnaire used thirty-five questions about employers' graduate recruitment activities during the 2008 season, focusing on graduate vacancies and salaries, graduate recruitment marketing and advertising, graduate assessment and selection, graduate development and retention, and challenges in the marketplace. Questions were intentionally designed so that the survey results could purposively be analysed by the employers' industries or business sectors, and by the vocation area or business function into which their graduates were hired (SAGRA, 2012). A company called High Flyers administers the survey on behalf of SAGRA.

A section collecting demographical data was included in the questionnaire and used to obtain personal details of the participants. The demographics collected included gender, race, age and verification that the respondent had studied for an IT qualification. This data was used for comparative analysis. Questions 2 to 9 of the survey covered demographical data.

3.3.1   Questionnaire construction and design

The literature assisted by providing guidance on developing questions to be included to address attraction and retention factors. The majority of the questions were taken from Döckel's study and from the SAGRA Candidate Survey. A survey should be concise, short and relevant to the study. The items included in this survey were closed-ended questions so as to elicit a standardised set of responses from all the respondents to allow for comparative data. The scale format applied was very simple in nature, using close-ended yes/no questions for frequency purposes, as well as a 3- and 4-point Likert scale in certain questions.

The questionnaire is included in Appendix A (p. 120). The reason for choosing existing instruments was because they allow for a discussion of the established validity and reliability of the instruments' questions. The composition of the questionnaire will now be discussed.

3.3.2 Developing the Questions

The Information Technology (IT) Graduate Recruitment Survey questionnaire consists of a total of 28 questions broken down as detailed below.

The first question is a consent-based question to indicate voluntary participation in the study. The following questions were developed and used to assess demographical and relevant frequency data in the sample group of IT students or recent graduates (Questions 2 to 9):

- Demographic: Please identify your gender, race and age group in years?
- Are you currently studying toward or have you already completed within the last four years an Information Technology-related qualification? (This refers to IT, Computer Science, Information Systems, Informatics, etc.)
- Are you currently employed within the ICT industry?
- Did you or do you plan to apply for a graduate position directly related to your IT qualification?
- Did you or do you plan to apply for any graduate positions that are not directly related to your IT qualification?
- Have you identified an Information Communication Technology (ICT) employer of choice you wish to work for in the immediate future?

3.3.3 Döckel's OCQ and RFMS Questionnaire

Döckel (2003) reported the OCQ to hold "internal consistency reliability estimates (Cronbach's alphas) for affective commitment (0.82), continuance commitment (0.74) and normative commitment (0.83). Responses are made on a 7-point scale (1=strongly disagree and 7=strongly agree) and are averaged to yield composite commitment scores for each respondent".

The RFMS questionnaire consists of 35 items and is "presented in the form of a five-point Likert scale" (Döckel, 2003, p. 72) ranging from strongly disagree (1) to strongly agree (5). The RFMS was developed by using items that originated from questionnaires that were

designed to measure "compensation, job characteristics, training and development opportunities, supervisor support, career opportunities and work/life policies" (Döckel, 2003, p. 72). A factor analysis on the RFMS conducted by Döckel (2003) confirmed the construct validity of the questionnaire.

Döckel's (2003) questionnaire covers the following categorical factors:

- Compensation: Thirteen items regarding compensation factors pertaining to level, benefits, raises and structure were selected from the Pay Satisfaction Questionnaire, which reported results showing "high internal consistency reliabilities for the four scales" (Döckel, 2003, p. 75)

- Job characteristics: "The Job Diagnostic Survey was used with two items comprising each dimension, namely skill variety and job autonomy. A meta-analysis reported a Cronbach's alpha coefficient in the range of 0.20 to 0.94" (Döckel, 2003, p. 76)

- Training and development opportunities: Six items were selected and used in the RFMS. Döckel (2003, p. 77) "reported a Cronbach's alpha coefficient of 0.77 to 0.87 for training and development opportunities"

- Supervisor support: Six items were selected. A "Cronbach's alpha coefficient of 0.68 was reported for the scale" Döckel (2003, p. 77)

- Career opportunities: Four items on perceived ease of movement and perceived organisational policy of filling vacancies from within were selected

- Work/life policies: Four items on the work/life policies scale were selected. A "Cronbach's alpha coefficient of 0.87" was reported for the scale Döckel (2003, p. 78)

The questionnaire was adapted slightly and only certain questions were selected to accommodate graduates who are entering the workforce. Permission was obtained from the supervising professor, Prof. J.S. Basson, to make use of this questionnaire.

The following questions were taken from Döckel's study and focus on the retention factors of graduate perceptions (Questions 19 to 28):

- How long do you expect to stay with the organisation you have joined, or will be joining?

- What factors would lead you to stay longer with the organisation you have joined, or will be joining?

- Which of the following is most important to you when choosing to stay with an organisation?

- How important would you rate the following in terms of staying with an organisation?

- How important is the following when considering staying with an organisation in relation to your compensation?

- How important is the following when considering staying with an organisation in relation to the job you perform?

- How important is the following when considering staying with an organisation in relation to your development?

- How important is the following when considering staying with an organisation in relation to the management support you receive?

- How important is the following when considering staying with an organisation in relation to your personal career development?

- How important is the following when considering staying with an organisation in relation to your balance between work and life?

A three-point Likert rating scale was used for the respondents to indicate their rating of importance between Very Important (3), Quite Important (2) and Not Important (1). Chi-square tests were applied to these questions in the data analysis.

3.3.4   SAGRA High Flyers Survey

High Flyers, an organisation that administers the SAGRA survey on their behalf, gave permission to the researcher to use their survey tool in this study. High Flyers was unable to provide the researcher with tested reliability and validity scores for the survey, as it was used mainly for descriptive statistics at business level and not for scientific academic research. The following questions were taken from the SAGRA Survey and focused on the attraction factors of the graduates' perceptions (Questions 10 to 18):

- How long have you aspired to work for this employer?

- What is your main reason for aspiring to work for this employer?

- Did your employer of choice offer you one the following?

- Is your current location or the option of relocation more important to you when deciding which company to apply to?

- What were your three main reasons for applying to work in the industry you are currently in or have chosen to work in?

- How influential did you find the following while conducting your job search?

- When you were deciding which employers to apply to and join, how important were the following?

- Do you make use of social networking sites (e.g. Facebook, MySpace and Twitter)?

- What do you think about employers using social networking sites for the following purposes?

Most of the questions asked for a close-ended answer of yes/no for frequency purposes, as well as the selection of the most relevant response to the individual, also for frequency and ranking purposes. A four-point Likert rating scale was used in two questions for the respondents to indicate their rating of influence as "Did not use (0), Not influential (1), Quite influential (2) and Very Influential (3)".

3.3.5   Pre-testing of the IT Graduate Recruitment Survey

No formal pilot study was conducted; however, the researcher did consult with a range of employees within ICT and academic professions who did not participate in the study or form part of the sample group. The rationale of these consultations was to determine the face validity of the survey, the suitability of the items contained therein, as well as the amount of time taken to complete the survey. After two revisions, the questionnaire was finalised for the planned study. The survey takes approximately 10 to 15 minutes to complete. However, this is likely to vary among individuals. It is important to note that the IT Graduate Recruitment Survey is not a psychometric instrument, thus the questionnaire did not require administration under supervision.

3.4   DATA COLLECTION

The collection of data was done as follows: the researcher made use of an electronic survey, and the steps for administering the survey were as follows:

- An email was sent with a covering letter explaining the purpose of the study and the assurance that all information would be used for research purposes only, that all questionnaires would be answered anonymously and that participation in the study was voluntary. The email contained a web link to the electronic Lime Survey Tool, where participants had to enter the specific instrument called "IT Graduate Recruitment Survey"

- The email was sent to a database of 300 graduates that was available to the researcher

- The link was also displayed and sent out by lecturers at the University of Pretoria and the University of the Witwatersrand to their internal email distribution lists, and was also available on the intranet, where it was called ClickUp

- The researcher made use of the network of social media to gain respondents by doing wall posts on Facebook to IT students making use of the social networking tool

- The researcher made use of all contacts at various universities and organisations within the ICT industry to gain respondents

There was only one data collector, namely the researcher involved in this study, and a period of three weeks was allowed for the required data to be collected once the survey had been sent out, thereby allowing a reasonable time frame due to the nature of the industry.

3.5   DATA ANALYSIS

The data analysis for this research study was carried out with the aid of Microsoft Excel and Statistical Analysis System (SAS). Descriptive statistics of means, frequencies and rankings were used, as well as chi-square tests to analyse the data. Descriptive statistics were generated to describe the sample and generalise the information to the population.

The data was recorded on the researcher's personal laptop, as well as on a backup flash-drive. The information was stored in a safe place in the researcher's personal premises. Saunders et al. (2007) describes data analysis as the ability to break down information and explain the nature of the component parts as well as the relationships between them.

3.5.1   Computerisation and Coding of the Data

The survey was closed on 28 August 2012 and 172 responses were collected, of which 157 were full responses and 15 were partial responses, meaning that some questions had not been answered by the respondents. As a result, only 157 responses were used for the data analysis. Data was exported from the Lime Survey tool to a Microsoft Excel spreadsheet format for data analysis. The researcher then coded the responses appropriately in MS Excel so that they could be sent to a statistician in a suitable format to assist with the statistical analysis.

3.5.2   Statistical Methods used in Data Processing

A program called Statistical Analysis System (SAS) was used to run analyses on the data. The following descriptive statistics were produced:

- The frequency procedure – number of times an item was chosen by the respondent
- Chi-square (likelihood ratio and Mantel-Haenszel) on two-way tables. This is used to determine an association between the row variable and the column variable. The Pearson chi-square statistic for two-way tables uses the differences between the observed and expected frequencies, and the expected frequencies are computed under the null hypothesis of independence (SAS, 2012)
- Fisher's exact test is the probability of observing a table that gives at least as much evidence of association as the one actually observed, given that the null hypothesis is true (SAS, 2012). In addition, it is necessary to make known the statistical significance level (for example, the one percent ($\rho \leq 0.01$) or five percent ($\rho \leq 0.05$) levels), and to calculate the meaning of the effect sizes (r)
- Means – the average of the sample

- Rankings – to list from highest to lowest or lowest to highest

3.6 ASSESSING AND DEMONSTRATING THE QUALITY AND RIGOUR OF THE RESEARCH DESIGN

3.6.1 Reliability

Reliability refers to whether scores on items in an instrument are internally consistent and stable over time, and whether there was consistency in test administration and scoring to allow for transparency in how sense was made of the raw data (Saunders et al., 2007, p. 609).

Reliability is concerned with the degree of consistency or agreement between two sets of independently derived scores; the measure most used for this is the reliability coefficient (correlation). Reliability, according to Gregory (1996), refers to consistency in measurement, providing a measure to determine how repeatable the results are. Reliability refers to the accuracy of an instrument; to be interpretable; a test must be reliable (Kerlinger, 1992).

Reliability is important due to the fact that decisions cannot be based on results that cannot be repeated. The result of the reliability analysis is a reliability coefficient (r), where 0 indicates a completely unreliable test and 1 indicates a completely reliable test. Cronbach's alpha measures how well a set of items (or variables) measures a single unit-dimensional latent construct.

It is believed that a pre-existing questionnaire already has an established validity and reliability (Saunders et al., 2007). The statistician, Rina Owen, indicated that reliability in this study could not be measured, as Likert seven-point scales were not used. Due to the simplicity of the close-ended questions, the reliability appears high, but it cannot be measured statistically.

3.6.2 Validity

Validity refers to whether one can draw meaningful and useful inferences from scores on particular instruments. A vital consideration of any test is, should the test be used for that purpose and does it measure what it is supposed to measure (Saunders et al., 2007, p. 614).

Validity encompasses two very important areas; firstly, validity questions the controls enforced to ensure that the conclusions drawn are truly reflected by the data and, secondly, it questions if we can draw a generalisable conclusion about the population from the initial sample group drawn (Leedy & Ormrod, 2005). Validity is the accuracy, meaningfulness and credibility of a research project as a whole.

The validity of this study was high, as the questions used were specifically for the purpose of measuring attraction and retention factors as seen through the eyes of an IT graduate or student. The survey measures what it is supposed to measure in terms of the 2 critical factors related to this study however further studies could be run to measure statistical factor analysis:

- Questions 9 to 18 of the survey cover attraction factors
- Questions 19 to 28 of the survey cover retention factors

3.6.3 Bias

According to Leedy and Ormrod (2005, p. 208), bias represents a contamination of criteria; a biasing factor may be defined as any variable producing a deviation of an obtained criterion score from a hypothetical true criterion score. It is clear that the researcher should employ self-awareness and monitoring, as the data could be prone to manipulation by various influences.

3.6.4 Participation

Participation in the study was voluntary and anonymous and the participants could withdraw at any time. It is essential when conducting research to abide by ethical

guidelines. The researcher included an introductory section in the beginning of the survey around the voluntary participation element and a question was included to obtain an informed consent from the volunteering participants. Both the researcher and the participants had a clear understanding regarding the confidentiality of the results and the findings of the study.

3.7   RESEARCH ETHICS

According to Saunders *et al.* (2007, p. 610), research ethics is the appropriateness of the researcher's behaviour in relation to the rights of those who become the subjects of a research project, or who are affected by it.

The following ethical considerations were taken into consideration:

- Each participant was asked to participate on a voluntary basis and was informed that he/she had the right to withdraw from the study at any point without negative consequences

- Participation would remain anonymous, as no names will or have been mentioned in the study

- An informed consent question was included with a brief informed consent description at the start of the survey; this description covered the purpose of the questionnaire, and highlighted the uses of the information gathered and the confidentiality of data collected. The following responses regarding consent were obtained from the 157 participants: the sample (N = 4) who answered "No" still completed the full questionnaire, so the data was available for use anonymously

Table 3.1: Consent

Question: Do you give your consent to participate in this study on a voluntary basis?		
Consent	Frequency	Percent
Yes	153	97.45%
No	4	2.55%

- No financial/non-financial incentives were used to encourage participation

- The participants were not harmed physically or psychologically in any way

- The data was recorded on the researcher's personal laptop as well as on a backup flash-drive. The information was stored in a safe place in the researcher's personal premises

- The researcher undertook to remain objective and honest and to maintain a high level of integrity

- No fabrication or falsification of data, or misleading or false reporting of the research findings, took place to the best of the researchers' ability

- The document has been checked by TurnItIn and revealed a low plagiarism index

CHAPTER 4

4 DISCUSSION OF RESULTS

4.1 INTRODUCTION

In this chapter, the results obtained in the research study are discussed and visually represented according to the main data analysis methods discussed in Chapter 3. This includes the descriptive statistical results from the SAS program, including frequencies, medians, rankings and chi-square tests. The purpose of this study was to examine the attraction and retention perceptions that IT graduates have. The data used in this study was obtained from an electronic questionnaire that was administered online. The questionnaire contained quantitative data.

4.2 DEMOGRAPHICAL INFORMATION

The first part of the questionnaire requested the respondents to complete demographical information, which provided the researcher with personal data about the sample. Saunders et al. (2007) suggest that the purpose of the demographical section is to enhance the opportunity to make the sample as representative as possible of the whole population. The demographics of the sample of 157 respondents are represented below by means of descriptive statistics.

4.2.1 Gender distribution

The frequency procedure was run in the SAS program. Table 4.1 indicates the gender distribution of the respondents in the study. According to the table, the sample comprised 34.39% women (N = 54) and 65.61% men (N = 103). An assumption by the researcher can be drawn that Information Technology is a male-dominated industry; however this assumption would require further research.

Table 4.1: Gender distribution

Gender	Frequency	Percent
Female	54	34.39
Male	103	65.61

4.2.2 Race distribution

Table 4.2 indicates the race distribution of the respondents in the study. According to the table, the sample comprised a majority of white students (N=79; 50.32%). This is further illustrated in Figure 4.1.

Table 4.2: Race distribution

Race	Frequency	Percent
White	79	50.32
Black	51	32.48
Indian	18	11.46
Coloured	8	5.1
Other	1	0.64
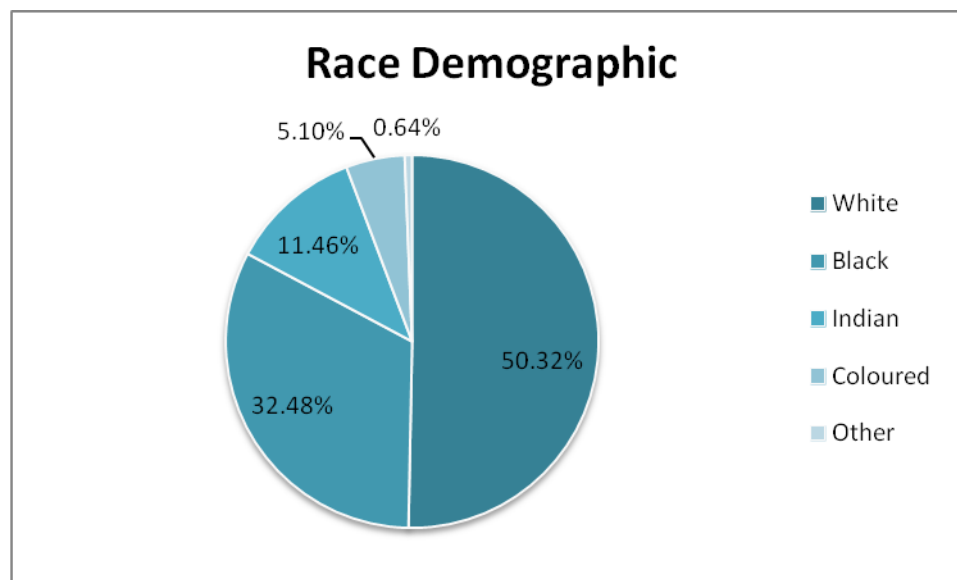
Figure 4.1: Race distribution

These findings could be attributed to a historic affordability issue, as previously disadvantaged race groups in South Africa often did not have the financial means/ability to

pursue tertiary education. Quality of basic educational systems and access to tertiary education could also be further explored as a contributing factor.

4.2.3 Age distribution

Table 4.3 indicates the age distribution of the respondents in the study. According to the table, the sample was comprised mostly of students between the ages of 21 and 23 years (N = 73; 46.50%). This is to be expected, since most degree courses are three years long, which means that students enter the field of study after matriculation when they are about 19 years old, and they would be nearing graduation around the age of 21 to 23 years old.

Table 4.3: Age distribution

Age	Frequency	Percent
18-20 years old	30	19.11
21-23 years old	73	46.5
24-26 years old	31	19.75
27-29 years old	11	7.01
30 plus years old	12	7.64

4.3 INFORMATION TECHNOLOGY FREQUENCY DISTRIBUTIONS

The following frequency distributions are included to provide information about the targeted sample of Information Technology (IT) students and graduates.

4.3.1 IT qualification distribution

This question was included to ensure the accuracy of the targeted sample. The question was aimed to indicate if the respondent was currently studying or had recently, within the previous four years, graduated with an Information Technology (IT) qualification. Only five of the 157 respondents (3.18%) indicated that they had not graduated with an IT qualification within the previous four years. It is unknown to the researcher why they completed the survey, which was targeted at IT students/graduates only. The accuracy of the sample can be concluded to be 96.82%.

Table 4.4: IT qualification distribution

IT qualification	Frequency	Percent
No	5	3.18
Yes	152	96.82

4.3.2 ICT industry distribution

This question was aimed at determining how many of the sample was already employed within the Information Communications Technology industry. The result indicated that only 35.67% (N = 56) were currently employed in a company with relevance to their current field of study, and this can be attributed to the fact that the majority of the sample were still studying.

Table 4.5: ICT industry distribution

Currently employed within ICT industry?	Frequency	Percent
No	101	64.33
Yes	56	35.67

4.3.3 Alignment of IT field of study with ICT industry career distribution

A question was posed to determine if the students/graduates planned to apply to and work in the field related to their IT qualification. A total of 89.17% of the respondents (N = 140) indicated that they planned to apply for a graduate position directly related to their IT qualification. A further 10.83% (N = 17) indicated that they did not plan to apply for a graduate position directly related to their IT qualification.

A similar question was asked to determine whether the students/graduates planned to apply and work in a field that was not directly related to their IT qualification. Interestingly, 37.58% (N = 59) indicated that they would apply for jobs not related to their IT qualification, which should be cause for concern, as ICT companies are losing potential employees despite the IT skills shortage and war for talent in South Africa. Of the respondents,

62.42% (N = 98) indicated that they would only apply for jobs related to their qualification, which leads to the conclusion that they have chosen their career path in IT and plan to pursue that only.

4.4 ATTRACTION FACTORS

4.4.1 Employer of choice indentified

This is an important question to kick start the retention section of this study. The question was aimed at identifying if the sample had identified an ICT employer of choice that they wished to work for in the immediate future. Of the sample, 75.80% (N = 119) indicated that they had indeed identified an employer of choice, which indicates how attractive these employers must have been to have such an impact on the sample.

Table 4.6: Employer of choice distribution

Identified ICT employer of choice	Frequency	Percent
No	38	24.2
Yes	119	75.8

A further question was posed on how long they had aspired to work for this employer of choice, which indicated that they were most aspirationally influenced while at university (36.94%, N = 58) and since commencing the search for a graduate position (36.31%, N = 57).

How long have you aspired to work for this employer?

- None of the above
- Since high school or before
- Since being at university
- Since commencing the search for a graduate position
- Since leaving university
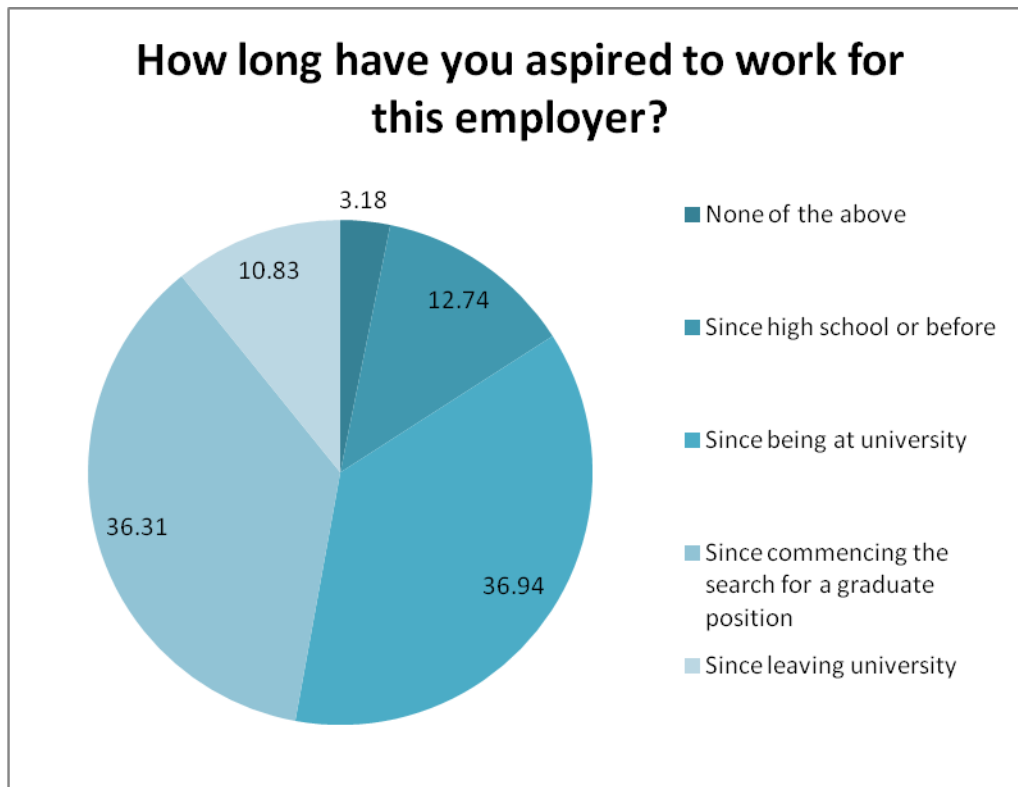
Figure 4.2: Employer of choice distribution

4.4.2   Main reasons for aspiring to work for this employer

The following table shows the spread in terms of the techniques that attract students/graduates to employers. The data has been ranked from most common reason to least common reason, based on their frequencies. The two highest ranked reasons why the students/graduates aspired to work for their employer of choice was because of the appeal of the employer's product, service or brand (29.94%, N = 47), and the overall reputation of the employer (28.66%, N = 45). The lowest ranked and least important reason for aspiring to work for an employer of choice was the number of vacancies the employer had on offer (0.64%, N = 1). This indicates that competition for limited vacancies is not important to this sample of graduates.

Table 4.7: Main reason for aspiring to work for employer of choice

Main reason	Frequency	Percent	Ranking (highest to lowest)
Appeal of employer's product, services or brand	47	29.94	1
Overall reputation of employer	45	28.66	2
Quality of graduate jobs offered by employer	26	16.56	3
Starting salaries for graduates	15	9.55	4
Because it is a multinational company	11	7.01	5
Employer's profile at the university	7	4.46	6
None of the above	5	3.18	7
Number of graduate vacancies at employer	1	0.64	8

4.4.3 Work experience and location offered

This question was aimed at understanding if the employer of choice of the students/graduates offered them a form of work experience and whether this may have had an influence on their being attracted to work for this employer. It is interesting to note that full-time work had the second highest frequency, of 28.03% (N = 44). The highest frequency was 49.04% (N = 77), who indicated that the employer of choice of the students/graduates had not offered them any form of employment, hence this was not a very important factor in attracting graduates.

Table 4.8: Work experience offered

Offered	Frequency	Percent
Vacation work	5	3.18
Internship	30	19.11
Full-time work	44	28.03
Part-time or casual work	0	0
Volunteer work	1	0.64
None of the above	77	49.04

The IT students were asked whether current location or the option of relocation was more important to them when deciding which company to apply to. It was evident that current location was most important and influential (58.6%, N = 92) to the IT students/graduates when deciding which company to apply to, as illustrated below.
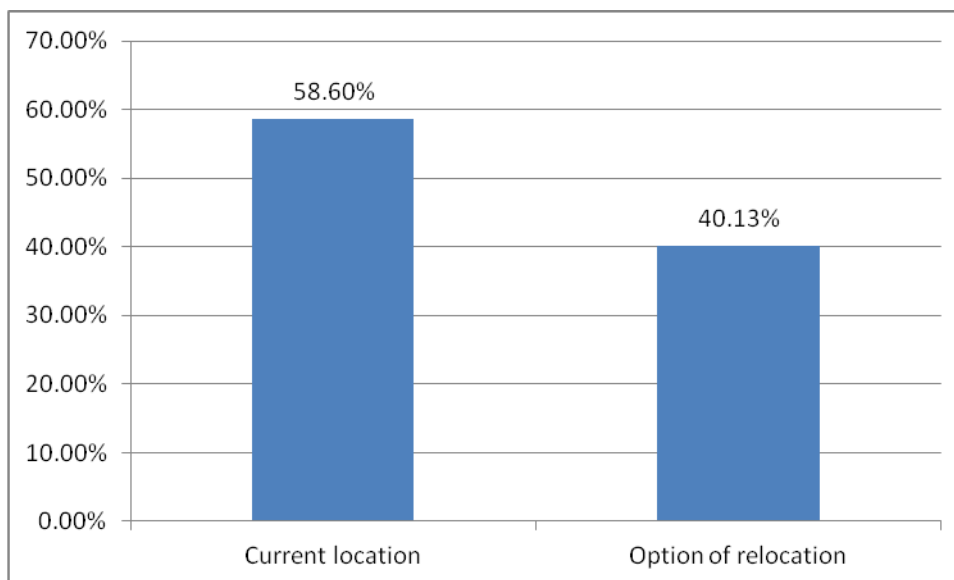
Figure 4.3: Location influence/importance

4.4.4   Main reasons for applying or choosing to work in IT industry

The respondents were asked to select their three main reasons for applying to work in the industry they currently were in or had chosen to work in. The top three reasons selected most often were as follows:

- To use the degree subject they studied, in this case Information Technology – 42.68%
- The starting salaries and benefits offered within the IT industry – 38.85%
- The desire to work toward a professional IT-related qualification/career path – 37.58%

Table 4.9: Main reasons to apply/work in industry

Main reasons to apply/chosen to work	Number of times item selected		Number of times item not selected		
	Frequency	Percentage	Frequency	Percentage	Ranking
Using the degree subject you studied	67	42.68	90	57.32	1
Starting salary and additional benefits	61	38.85	96	61.15	2
Working towards a professional qualification (e.g. developer, business analyst, etc.)	59	37.58	98	62.42	3
Opportunity for overseas experiences	49	31.21	108	68.79	4
Quality of training and development programme	42	26.75	115	73.25	5
Content of work	40	25.48	117	74.52	6
Work–life balance	26	16.56	131	83.44	7
Chance for further studies	26	16.56	131	83.44	8
Start a 'real job' straight away	25	15.92	132	84.08	9
Having a job that allows you to 'give something back' to the community	18	11.46	139	88.54	10
Joining a structured graduate programme	15	9.55	142	90.45	11
Location of jobs	13	8.28	144	91.72	12
Early contact with clients or customers	4	2.55	153	97.45	13

The three reasons selected least often were as follows:

- The opportunity of early contact with clients or customers – 2.55%
- Location of jobs – 8.28%. This is particularly interesting when relating the findings back to Section 4.4.3, where it was indicated that, for 58.6% (N = 92) of the respondents, current location was the most important and influential when deciding which company to apply to. This is a contradictory outcome from this question
- The offer of joining a structured graduate programme is not a key element when deciding on which company to apply to or work for – 9.55%

4.4.5   Influential advertising factors while searching for a job

The purpose of this question was to identify how influential the attraction is of the advertising techniques commonly used by many organisations from the perspective of an

IT graduate/student who is looking for a job. The frequency percentages are indicated in the table below.

Table 4.10: Influential advertising factors in job search

Job search attraction mechanisms	Did not use	Not influential	Quite influential	Very influential
University careers service	46.5	12.74	31.21	9.55
University careers service website or job board	52.87	17.83	22.29	7.01
University careers fairs	28.66	10.83	40.13	20.38
Employer brochures	24.2	18.47	41.4	15.92
Employer websites	12.1	10.19	45.22	32.48
Employer's giveaways/freebies	29.94	43.31	19.75	7.01
Employer presentations or events	20.38	10.83	38.22	30.57
Commercial career websites (e.g. Career Junction, Bizcommunity)	31.85	18.47	30.57	19.11
National newspapers	51.59	21.02	18.47	8.92
Family and friends	21.66	16.56	42.04	19.75
Social networking sites (e.g. Facebook, LinkedIn)	39.49	26.11	26.75	7.64
People who already work in the industry	16.56	5.73	42.04	35.67
Commercial recruitment directories (e.g. Grad X, Financial Mail, Careers SA)	43.31	18.47	22.93	15.29

When the data is ranked, it appears that the four most influential attraction factors in relation to advertising are as follows:

- People who already work in the industry (35.67%)
- Employer websites (32.48%)
- Employer presentations or events (30.57%)
- University careers fairs (20.38%)

The two least influential advertising factors are:

- University careers service website or job board (52.87%)
- National newspapers (51.59%)

This question had a scale, as follows: Did not use (0), Not influential (1), Quite influential (2) and Very influential (3). The SAS statistical model also produced a ranking of the mean rating for each response item, from highest to lowest:

Table 4.11: Influential advertising factors in job search – mean rankings

Rank	Job search mechanisms	Mean
1	Employer websites	1.9809
2	People who already work in the industry	1.9682
3	Employer presentations or events	1.7898
4	Family and friends	1.5987
5	University careers fairs	1.5223
6	Employer brochures	1.4905
7	Commercial career websites (e.g. Career Junction, Bizcommunity)	1.3694
8	Commercial recruitment directories (e.g. Grad X, Financial Mail, Careers SA)	1.1019
9	University careers service	1.0382
10	Employer's giveaways/freebies	1.0382
11	Social networking sites (e.g.: Facebook, LinkedIn)	1.0255
12	National newspapers	0.8471
13	University careers service website or job board	0.8344

Again, it can be shown that employer websites (mean of 1.9809 and standard deviation of 0.9572352) are one of the most influential advertising attraction factors with the highest mean rating average, and that the least influential factor is university careers service websites or job boards (mean of 0.8344 and standard deviation of 1.0054157). This means that the data correlates with the frequency data.

It therefore can be concluded that organisations should strive to make use of displaying successful people's career paths and spreading this by word of mouth to attract graduates, and spend less time advertising in newspapers. The interesting thing is that it costs no money to use people in the industry to influence graduates, and sometimes costs a lot of money to advertise in newspapers. The money spent on advertising should rather be

invested in bettering the website offering, which was shown to be the second most influential attraction technique.

4.4.6   Influential factors when deciding to apply and join an employer

The purpose of this question was to identify how influential these attraction techniques commonly used by many organisations are from the perspective of an IT graduate/student when deciding which organisation they wish to apply to and potentially join. The frequency percentages are indicated in the table below, ranked from highest to lowest.

Table 4.12: Influential factors in applying and joining

Attraction mechanisms	Did not use	Not influential	Quite influential	Very influential *Ranked*
Long-term career prospects	7.01	6.37	29.94	56.69
Security of employment	6.37	6.37	30.57	56.69
Overall reputation (ethical, environmental, corporate social responsibility, etc.)	5.73	8.92	36.94	48.41
Content of work	4.46	5.73	45.86	43.95
Opportunity to study for professional qualification or postgraduate qualification	11.46	10.19	36.31	42.04
Training and development	8.92	3.18	46.5	41.4
Work–life balance	7.64	8.92	42.68	40.76
International opportunities	15.29	20.38	28.03	36.31
Remuneration package	10.19	10.83	49.04	29.94
Flexible working options (e.g. flexitime, purchased leave, part-time work, etc.)	9.55	18.47	42.68	29.3
Mentoring	26.11	14.01	33.12	26.75
Company representatives whom you have met	18.47	18.47	40.76	22.29
Employers' website and recruitment publications	15.29	15.92	46.5	22.29
Previous experience with employer through vacation or internship work	43.31	18.47	21.66	16.56
Family's opinions	23.57	25.48	36.31	14.65
Rotational graduate programme	31.85	20.38	35.03	12.74
Friends' opinions	24.2	28.66	37.58	9.55

The data has been ranked from highest to lowest in the "Very influential" column; this indicates that the three most influential attraction factors are as follows:

- Security of employment, referring to the stability of the company and a low risk of retrenchment or financial liquidation (56.69%)

- Long-term career prospects, which can be defined as a set career path/ development plan (56.69%)

- The overall reputation of the organisation, referring to their ethical principles, values, environmental drives, corporate social responsibility initiatives, etc. (48.41%)

When the data is ranked around the least influential mechanisms, the following factors appear as the lowest frequency in the "Very influential" column, as well as the highest frequency in the "Did not use" column. The match of the data shows a nice correlation with regard to the consistency of responses given by the sample group.

- Previous experience with employer through vacation or internship work (43.31%) This also links back nicely to Section 4.3.3 and again proves that this is not a very important factor in attracting graduates

- Rotational graduate programme (31.85%)

- Friends' opinions and family's opinions (24.2% and 23.57% respectively)

This question made use of a scale, as follows: Did not use (0), Not influential (1), Quite influential (2) and Very influential (3). The SAS statistical model also produced a ranking of the mean rating for each response item from highest to lowest:

Table 4.13: Influential factors in applying and joining – mean rankings

Rank	Attraction mechanisms	Mean
1	Security of employment	2.3758
2	Long-term career prospects	2.3631
3	Content of work	2.293
4	Overall reputation (ethical, environmental, corporate social responsibility, etc.)	2.2803
5	Training and development	2.2038
6	Work–life balance	2.1656

7	Opportunity to study for professional qualification or postgraduate qualification	2.0892
8	Remuneration package	1.9873
9	Flexible working options (e.g. flexitime, purchased leave, part-time work, etc.)	1.9172
10	International opportunities	1.8535
11	Employers' website and recruitment publications	1.758
12	Company representatives whom you have met	1.6688
13	Mentoring	1.6051
14	Family's opinions	1.4204
15	Friends' opinions	1.3248
16	Rotational graduate programme	1.2866
17	Previous experience with employer through vacation or internship work	1.1147

Again it can be shown that security of employment (mean of 2.3758 and standard deviation of 0.8653887) is one of most influential attraction factors, with the highest mean rating average, when IT graduates are deciding which organisations to apply to and join. The least influential factor is previous experience with employer through vacation or internship work (mean of 1.1147 and standard deviation of 1.1433652). This mean data correlates with the frequency data.

The importance of talent management is proven here in that it is critical for organisations to ensure that long-term career prospects and plans are in place for graduates entering the organisation, as this is a top attraction factor. Retention and organisational commitment can also be influenced by this data, in that ICT organisations should note the importance of job stability and industry reputation, and the relative importance of these factors to IT graduates.

4.4.7 Social networking

As far as their use of social networking is concerned, 68.79% (N = 108) of the IT students/graduates make use of social networking sites like Facebook, Twitter, MySpace, etc., and 31.21% (N = 49) do not.

Social media play a large part in the competitive digital marketing strategies of ICT organisations; therefore it is important to understand the thoughts of IT graduates on social media and the use thereof, as well as the relative importance these media play in attracting the attention of graduates in the global war for talent.
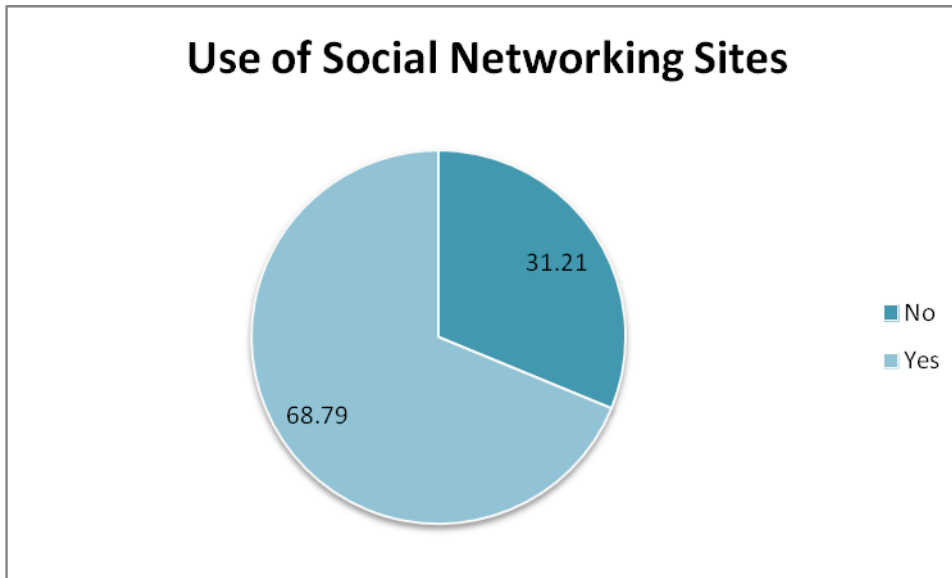
Figure 4.4: Use of social networking sites

The sample was then asked to indicate how they felt about organisations making use of social networking sites for a variety of reasons. The data indicated the following:

Table 4.14: Social networking uses

Options	Acceptable		Not acceptable	
	N	%	N	%
Promoting their graduate opportunities	145	92.4	12	7.64
Publicising local recruitment events	142	90.5	15	9.55
Contacting students who are looking for jobs	116	73.9	41	26.11
Putting students in touch with graduates already at their organisation	131	83.4	26	16.56
Looking up personal profiles of students who've made job applications	71	45.2	86	54.78
Providing groups for newly recruited graduates	134	85.4	23	14.65

The sample felt it acceptable to use social networking for most recruitment activities (acceptable frequency percentages, all above 73.9%), but most importantly that it was not acceptable for "looking up personal profiles of students who've made job applications". This element had the highest not acceptable rating, of 54.78% (N = 86). Making use of social networking sites in this way could be interpreted as an invasion of privacy and organisations using an unfair selection process based on data that may be visible to the employer which will have an influence on their recruitment decision. This topic also opens the doors to discrimination, which could be a further topic to be explored in future research.

4.5   RETENTION FACTORS

The section on retention was opened by asking the sample of students/graduates how long they expected to stay with the organisation they had either already joined or would be joining. This would give an indication of expected job tenure, defined as the length of time a worker stays in their current position and organisation.

The sample revealed that 29.3% (N = 46) expected to stay for more than five years, indicating good tenure and long-term organisational commitment. The second highest expected tenure was between two and three years (N = 39), showing a frequency percentage of 24.84%. Only 4.46% of the sample (N = 7) expected to stay for less than one year, which is a positive outcome, as most companies hope their staff will stay this long due to the investment made through recruitment and training costs. It is also evident, and can be assumed, that if IT graduates have selected their employer of choice, they will stay in service for longer, so the correlation between attraction and retention is highly dependent.

Table 4.15: Expected tenure

Expected tenure	Frequency	Percent
Less than a year	7	4.46
1-2 years	11	7.01
2-3 years	39	24.84
3-4 years	24	15.29
4-5 years	30	19.11
More than 5 years	46	29.3

4.5.1 Factors that influence tenure with an organisation

The respondents were asked to select the three most applicable reasons/factors that would lead them to stay with the organisation they had joined or would be joining. The frequencies were ranked from highest to lowest to provide the following interesting insight.

The most appealing factor to increase retention would be if the employer provided opportunities for further study, along with support (41.4%, N = 65), as well as career advancement opportunities in the form of promotions or lateral growth (41.4%, N = 65). The focus here is on long-term career pathing and upskilling as the third highest ranked factor. The ability to move around to work in different areas of the organisation (33.12%, N = 52) is also related to this category.

Table 4.16: Retention factors

Retention factors	Frequency	Percent	Ranking
Availability of further study, supported by your employer	65	41.4	1
Promotion or career advancement	65	41.4	2
Ability to move around the organisation to work in different areas	52	33.12	3
International opportunities	49	31.21	4
Remuneration offered	44	28.03	5
Content of work	34	21.66	6
Training and development on offer	32	20.38	7
Work–life balance	30	19.11	8
Very good organisational culture	25	15.92	9
Security of employment	17	10.83	10
Flexible working options	16	10.19	11

Reputation of the employer	13	8.28	12
Working for aspirational leaders	8	5.1	13
Career break or sabbatical	3	1.91	14

The two least influential retention factors were career breaks or sabbaticals, with a low frequency percentage of only 1.91% (N = 3), and working for inspirational leaders, which scored 5.1% (N = 8). This is cause for concern, as it would appear as an assumption by the researcher, that graduates do not have much faith in the possibility of there being inspirational leaders left within organisations, or they potentially have not yet had exposure to these leaders. This is another area for potential future research. It is interesting to note that security of employment was ranked lower as a retention factor but was high as an attraction factor, an assumption could be drawn that initially stability is critical to gain experience but in the long-term career growth and further education is more important, hence employee tenure may range within different organisations.

4.5.2   Most important retention factor

Döckel (2003) identified six important factors that require consideration when looking to retain skilled technology workers: compensation (basic salary); job description (skill variety and autonomy); training and development opportunities; top management support; career opportunities; and work/life policies. The sample of IT graduates/students indicated that the most important retention factor for them was career opportunities, at 40.76% (N = 64). The retention factor with the lowest importance was top management support, at 1.91% (N = 3).

- Highest rated – Career opportunities: by investing in employees and promoting internally, it creates a sense of value among employees

- Lowest rated – Top management support: in terms of constant innovation, rewards and recognition

Main retention factor
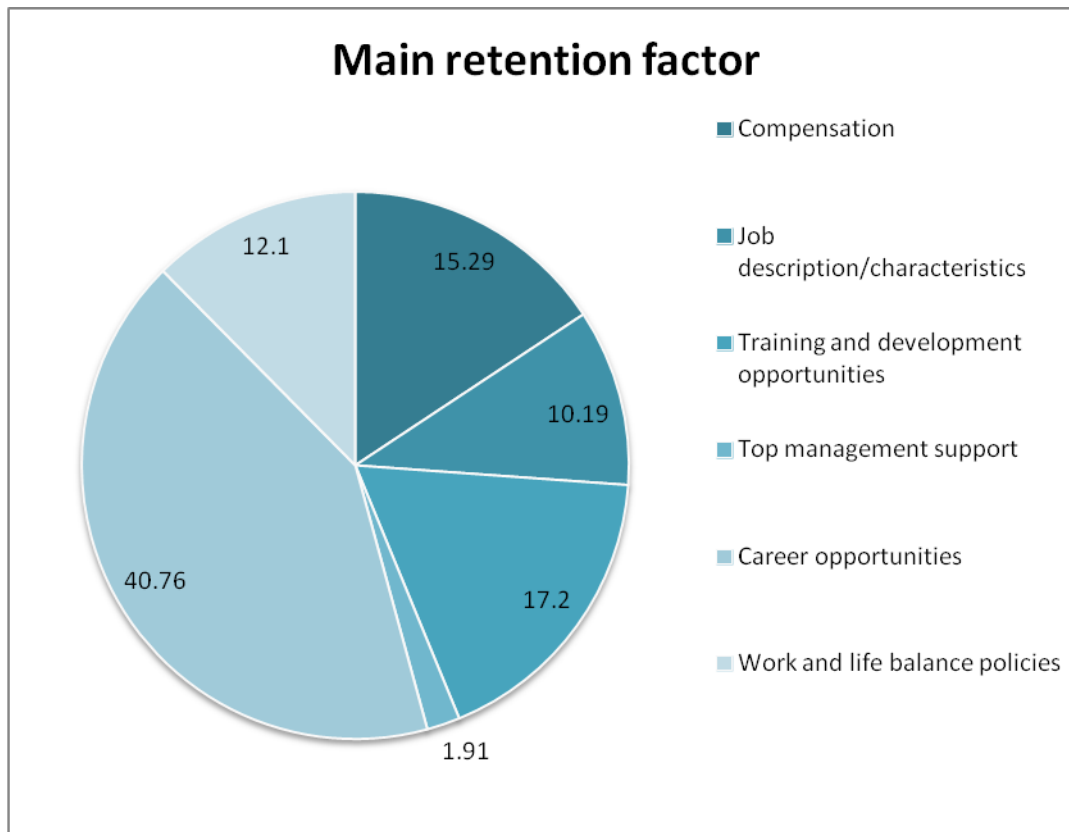
Figure 4.5: Retention factors

4.5.3 Importance of overall sense of belonging

The IT students and graduates were asked to rank the importance of topics related to their sense of belonging. The frequencies are summarised in the table below. The highest frequency was attached to the importance of a strong sense of belonging within the organisation (63%, N = 99). This can be linked to Maslow's hierarchy of needs, where level 3 specifically refers to "belonging". People need to feel that they belong and are accepted, whether this feeling comes from being part of a large social group, office culture or professional organisation or arises as a result of small social connections (mentors or close colleagues) in the workplace (Wikipedia, 2012). This question made use of a scale, as follows: Not important (1), Quite important (2), and Very important (3).

Table 4.17: Sense of belonging frequencies

Sense of belonging	Not important	Quite important	Very important
Feeling like "part of the family" within the organisation	7.64	31.21	61.15
A strong "sense of belonging" within the organisation	7.01	29.94	63.06
A fit to my personal values and ethics	8.28	36.31	55.41
A sense of loyalty and obligation to stay	19.75	38.85	41.4

4.5.4 Compensation factor

Financial rewards are monetary in value and refer to what the employee receives in return for services rendered to the organisation. These involve base salary, incentives, commission and bonus structures (Döckel, 2003). Benefit packages are also offered by organisations as an attractive retention mechanism, for example leave entitlements, pension funds and risk cover/insurance policies. The respondents were asked to indicate the importance of compensation elements when considering staying with an organisation. The frequencies are summarised in the table below. This question had a scale as follows: Not important (1), Quite important (2), and Very important (3).

Table 4.18: Compensation frequencies

Compensation factor	Not important	Quite important	Very important
Total salary package (base pay, benefits and incentives)	3.82	28.03	68.15
Benefits offered (i.e. medical aid, pension, life cover)	5.1	43.31	51.59
Incentives (i.e. rewards, bonusing)	6.37	43.95	49.68
The competitiveness of my total salary package (base pay, benefits and incentives)	5.1	33.12	61.78
Increases linked to my performance	4.46	26.11	69.43

It can be concluded that the compensation elements have a majority "very important" rating by IT graduates, with financial increases linked to work performance being the most

important at 69.43% (N = 109), as well as the total cost to company package offered by an organisation, which scored 68.15% (N = 107) in the rating of its importance.

4.5.5   Job description factor

Döckel (2003) refers to this factor as the employees' opportunity to use and challenge their various skills and talents independently. The respondents were asked to rate the importance on two elements, namely job/skills variety and autonomy. It can be concluded that IT graduates find the autonomy element (67.52%, N = 106) to be more important than the skill variety element (56.69%, N = 89). This question had the following scale: Not important (1), Quite important (2), and Very important (3).

Table 4.19: Job characteristic frequencies

Job characteristics factor	Not important	Quite important	Very important
The job requires me to use a number of complex or high-level skills	3.18	40.13	56.69
The job gives me considerable opportunity for independence and freedom in how I do the work	2.55	29.94	67.52

It is illustrated in the figure below that the overall job characteristic and description factor of retention is skewed, with a high importance rating attached to (3) Very important.
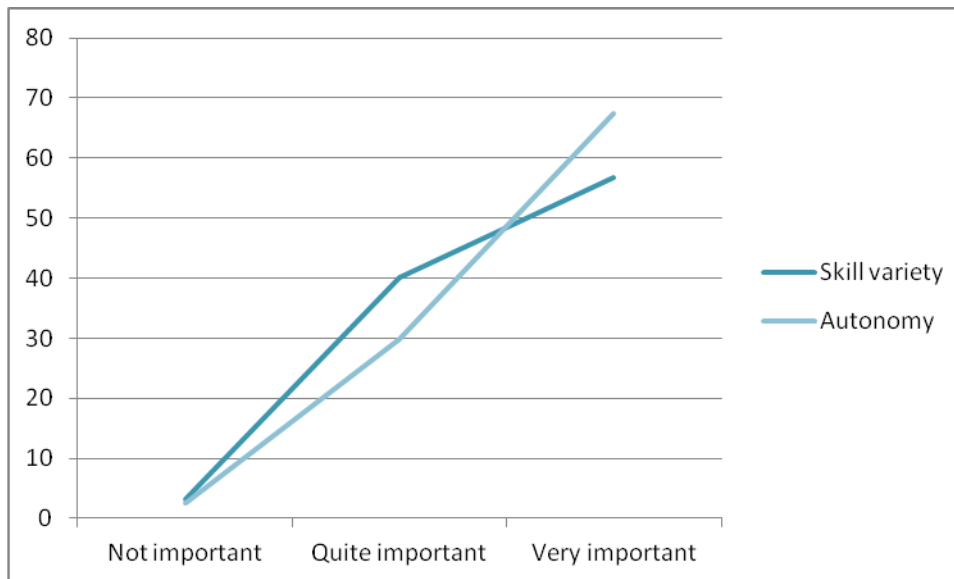
Figure 4.6: Job characteristics

4.5.6   Development factor

A top priority for an IT graduate to be marketable is to constantly be and remain upskilled, especially in the age of the knowledge and technology worker (Döckel, 2003). ICT technology is changing rapidly and it is a fast paced industry, therefore the IT graduates placed great importance on constant job training and development opportunities. This is shown with the high rating of importance of 83.44% (N = 106) given to the point that IT graduates will stay with an organisation if the organisation provides them with enough development opportunities, as well as with job-specific training (58.6%, N = 89).

Table 4.20: Development frequencies

Development factor	Not important	Quite important	Very important
The company provides me with job-specific training	3.18	38.22	58.6
There are enough development opportunities for me in this company	4.46	12.1	83.44

According to Döckel (2003, p. 21), the difficulty of retaining qualified IT employees cannot be underestimated, as they have "higher growth needs"; this again illustrates the importance of training and development opportunities in the latest technologies in order to

retain IT employees. Constant development in the form of learning and the ability to apply newly learnt skills are important factors in the motivation and retention of IT graduates.

4.5.7   Management support factor

Management support has an influence on an employee's sense of empowerment (Döckel, 2003). This is linked to the motivations around the influence managers have on their employees work, room for innovation, due recognition and adequate performance feedback. It is interesting to see that IT graduates do not hold this as important as the factors discussed above, namely compensation, autonomy and development opportunities. The importance rating of the management support factor was lower than those factors described above, with the frequency being spread more equally in the "Quite important" rating (40.13%, N = 63) and the "Very important" rating (40.76%, N = 64) on the element of praise and recognition.

This can also be linked back to question 21 of the survey, on the choice of the most important retention factor, where the lowest rated factor was "Top management support: In terms of constant innovation, rewards and recognition". This scored a mere 1.91% (N = 3).

Table 4.21: Management support frequencies

Management support factor	Not important	Quite important	Very important
A supervisor who looks for opportunities to praise my positive performance, both privately and in front of others	19.11	40.13	40.76
A supervisor who often lets me know how well he thinks I am performing the job	10.19	36.94	52.87

4.5.8   Career opportunities factor

Labour market trends and the war for talent have continued to present increased career opportunities and with this comes the increased challenge for ICT organisations to attract, hire and retain IT workers (Döckel, 2003). The IT graduates placed a high rating of importance on promotional opportunities (66.88%, N = 105) and internal career

opportunities within the company they join (75.16%, N = 118). Internal career movements could include both lateral skills growth and the building of various competencies, or entering a managerial route in which leadership competencies are developed.

Table 4.22: Career development frequencies

Career development factor	Not important	Quite important	Very important
My chances for being promoted are good	3.82	29.3	66.88
There are enough career opportunities for me in this organisation	3.82	21.02	75.16

4.5.9   Work and life balance factor

According to Döckel (2003), methods and policies for amending the conflict between working and raising families are praised for their popularity. These policies can be seen as positive for attracting and retaining a dedicated workforce, and allow employees to have time off to attend to personal family matters and child care, etc.

For young IT graduates who often do not yet have their own families it is not such a major attraction factor; however, as their family lives develop, this is key for retention. IT graduates may also need the balance between work and study life if they are still pursuing further tertiary education and professional qualifications, therefore an organisation that supports future study is critical.

This links back to Question 20 of the survey, which asked about the factors that would lead IT graduates to stay with an organisation for longer. The score in this field was high, with the most appealing factor that would increase retention, ranked first in importance, being if the employer provided opportunities for further study, with support (41.4%, N = 65). The words "with support" are critical in this instance, as it means that the manager and the ICT organisation allow time off for study leave.

Table 4.23: Work/life factor frequencies

Work/life factor	Not important	Quite important	Very important
My work schedule must not conflict with my personal life	17.83	44.59	37.58
An organisation that allows me the flexibility to achieve personal goals	3.82	31.21	64.97

As can be seen in the table above, IT graduates rated the importance of an ICT organisation that allowed them the flexibility to achieve personal goals very highly, with 64.97% (N = 102). The overall balance between work and personal life was rated as quite important, with 44.59% (N = 70).

4.6   CHI-SQUARE TESTS ON MAIN RETENTION FACTORS

The six main retention factors identified by Döckel (2003) are compensation, job description, training and development opportunities, top management support, career opportunities and work and life balance policies. The factors were listed in Question 21 of the survey, with questions 23 through to 28 linking back to each of these factors respectively. The SAS statistical program was then used to run a chi-square test on the two-way tables to identify any association between the row variable and the column variable. If the chi-square test indicated that the cell frequencies were too small and the test might not be valid, a Fisher's exact test was used (SAS, 2012). It is necessary to make known the statistical significance level (for example, the one percent ($\rho \leq 0.01$) or five percent ($\rho \leq 0.05$) levels).

4.6.1   Compensation

It can be seen in the table below that the compensation factor and the item "Total salary package (base pay, benefits and incentives)" have a significance level of 0.0003, with the item "Incentives (i.e. rewards, bonusing)" having a significance level of 0.0442. This is due to the values being less than $\rho \leq 0.05$, which indicates a level of significance.

Table 4.24: Compensation chi-square test

Table of q21 by q23								
Q21	**q23_1(q23_1)**							
	1	**2**	**3**	**Total**	**Statistic**	**DF**	**Value**	**Prob**
Compensation	0	1	23	24	**Chi-square**	10	32.9334	0.0003
	0	0.65	15.03	15.69				
	0	4.17	95.83					
	0	2.27	21.7		*Level of significance			
Q21	**q23_2(q23_2)**							
	1	**2**	**3**	**Total**	**Statistic**	**DF**	**Value**	**Prob**
Compensation	1	6	17	24	**Chi-square**	10	6.8218	0.7422
	0.65	3.92	11.11	15.69				
	4.17	25	70.83					
	20	8.82	21.25		*None			
Q21	**q23_3(q23_3)**							
	1	**2**	**3**	**Total**	**Statistic**	**DF**	**Value**	**Prob**
Compensation	0	4	20	24	**Chi-square**	10	18.7053	0.0442
	0	2.61	13.07	15.69				
	0	16.67	83.33					
	0	5.8	25.97		*Level of significance			
Q21	**q23_4(q23_4)**							
	1	**2**	**3**	**Total**	**Statistic**	**DF**	**Value**	**Prob**
Compensation	0	4	20	24	**Chi-square**	10	10.5095	0.397
	0	2.61	13.07	15.69				
	0	16.67	83.33					
	0	7.69	20.83		*None			
Q21	**q23_5(q23_5)**							
	1	**2**	**3**	**Total**	**Statistic**	**DF**	**Value**	**Prob**
Compensation	1	6	17	24	**Chi-square**	10	10.6083	0.3888
	0.65	3.92	11.11	15.69				
	4.17	25	70.83					
	25	14.63	15.74		*None			

For the two that showed a level of significance, a Fisher's exact test was run, which showed the following results:

Table 4.25: Statistics for table of q21 by q23_1

Fisher's exact test	
Pr ≤ P	0.0012

Table 4.26: Statistics for table of q21 by q23_3

Fisher's exact test	
Pr ≤ P	0.0182

4.6.2   Job description

No level of significance was indicated, as per the table below.

Table 4.27: Job description chi-square test

Table of q21 by q24								
q21	**q24_1(q24_1)**							
	1	**2**	**3**	**Total**	**Statistic**	**DF**	**Value**	**Prob**
Job description / characteristics	0	6	10	16	**Chi-square**	10	14.1449	0.1665
	0	3.92	6.54	10.46				
	0	37.5	62.5					
	0	9.52	11.36			*None		
q21	**q24_2(q24_2)**							
	1	**2**	**3**	**Total**	**Statistic**	**DF**	**Value**	**Prob**
Job description / characteristics	0	5	11	16	**Chi-square**	10	6.6108	0.7616
	0	3.27	7.19	10.46				
	0	31.25	68.75			*None		
	0	10.64	10.48					

4.6.3   Training and development opportunities

No level of significance was indicated, as per the table below. The Fisher's exact test was also run, also showing no level of significance (0.1400).

Table 4.28: Training and development chi-square test

Table of q21 by q25								
q21	**q25_1(q25_1)**							
	1	**2**	**3**	**Total**	**Statistic**	**DF**	**Value**	**Prob**
Training and development opportunities	0	9	18	27	**Chi-square**	10	14.022	0.172
	0	5.88	11.76	17.65				
	0	33.33	66.67					
	0	15	19.78		*None			
q21	**q21(q21)**	**q25_2(q25_2)**						
		1	**2**	**3**	**Statistic**	**DF**	**Value**	**Prob**
Training and development opportunities	1	1	25	27	**Chi-square**	10	17.3903	0.0662
	0.65	0.65	16.34	17.65				
	3.7	3.7	92.59		*None			
	25	5.26	19.23					

4.6.4   Management support

The table below indicates a 0.0345 level of significance between the factor top management support and the related item, "A supervisor who often lets me know how well he thinks I am performing the job". The Fisher's exact test was also run, revealing a significant result of 0.0327. However this cannot be regarded as highly valuable, since the sample for Factor 3 (top management support) was only N = 3, a mere 1.91% frequency.

Table 4.29: Management support chi-square test

Table of q21 by q26								
q21	**q26_1(q26_1)**							
	1	**2**	**3**	**Total**	**Statistic**	**DF**	**Value**	**Prob**
Top management support	1	1	1	3	**Chi-square**	10	10.6957	0.3817
	0.65	0.65	0.65	1.96				
	33.33	33.33	33.33					
	3.7	1.59	1.59		*None			
q21	**q26_2(q26_2)**							
	1	**2**	**3**	**Total**	**Statistic**	**DF**	**Value**	**Prob**
Top management support	1	1	1	3	**Chi-square**	10	19.4884	0.0345
	0.65	0.65	0.65	1.96				
	33.33	33.33	33.33		*Level of significance			
	7.69	1.72	1.22					

4.6.5 Career opportunities

The table below indicates a 0.0013 level of significance between the factor personal career development and the related item, "There are enough career opportunities for me in this organisation".

Table 4.30: Career opportunities chi-square test

Table of q21 by q27								
q21	**q27_1(q27_1)**							
	1	**2**	**3**	**Total**	**Statistic**	**DF**	**Value**	**Prob**
Personal career development	1	15	48	64	**Chi-square**	10	8.187	0.6106
	0.65	9.8	31.37	41.83	*None			
	1.56	23.44	75					
	33.33	32.61	46.15					
q21	**q27_2(q27_2)**							
	1	**2**	**3**	**Total**	**Statistic**	**DF**	**Value**	**Prob**
Personal career development	0	10	54	64	**Chi-square**	10	28.9762	0.0013
	0	6.54	35.29	41.83	*Level of significance			
	0	15.63	84.38					
	0	30.3	46.15					

For the result that showed a level of significance, a Fisher's exact test was run and showed the following results:

Table 4.31: Statistics for table of q21 by q27_2

Fisher's exact test	
Pr $\leq$ P	0.0376

4.6.6 Work and life balance

The table below indicates a 0.0258 level of significance between the factor work life balance and the related item, "An organisation that allows me the flexibility to achieve personal goals".

Table 4.32: Work–life balance chi-square test

Table of q21 by q28								
q21	**q28_1(q28_1)**							
	1	**2**	**3**	**Total**	**Statistic**	**DF**	**Value**	**Prob**
Work and life balance	1	6	12	19	**Chi-square**	10	20.3866	0.0258
	0.65	3.92	7.84	12.42	*Level of significance			
	5.26	31.58	63.16					
	4	8.57	20.69					
q21	**q28_2(q28_2)**							
	1	**2**	**3**	**Total**	**Statistic**	**DF**	**Value**	**Prob**
Work and life balance	0	1	18	19	**Chi-square**	10	15.9611	0.1008
	0	0.65	11.76	12.42	*None			
	0	5.26	94.74					
	0	2.04	17.82					

4.7   CONCLUSION

This chapter reported the results of the questionnaire and the statistical analysis of the data that was acquired. There were a total of 157 participants. The perceptions of IT graduates on graduate recruitment attraction and retention factors were analysed and reported. A summary of the key findings and their link to the research questions follow in Chapter Five.

CHAPTER 5

5   CONCLUSION, LIMITATIONS AND RECOMMENDATIONS

This chapter concludes the study with a summary of the findings and a discussion of the limitations of the study, and recommendations are made for HR professionals as well as for future research.

5.1   SUMMARY OF FINDINGS

5.1.1   Demographical summary

The sample group comprised of 34.39% women (N = 54) and 65.61% men (N = 103), thus indicating that Information Technology is a male-dominated industry. The race distribution of the respondents in the study indicated that the sample comprised mainly of white students (50.32%; N = 79), followed by black students (32.48%; N = 51). The dominant age group of the sample of IT students and graduates was between the ages of 21 and 23 (46.50%; N = 73). Of the same group, 96.82% indicated that they had completed or currently were completing an IT qualification.

Only 35.67% (N = 56) of the sample was employed within an ICT company at the time, indicating that the majority of the sample were still studying. A total of 89.17% of the respondents (N = 140) indicated that they planned to apply for a graduate position directly related to their IT qualification, while it was interesting to note that 37.58% (N = 59) indicated that they would apply for jobs not related to their IT qualification. This loss of skills is cause for concern for ICT companies, especially in the light of the IT skills shortage and the war for talent in South Africa.

5.1.2   Research Question 1 – Attraction Factors

Question 1 – According to IT students and graduates, what are the main reasons they are attracted to work for ICT companies? The answers to this question are summarised below.

A large percentage of the IT graduates and students (75.80%; N = 119) indicated that they had indeed identified an employer of choice, which indicates how attractive these employers must have been to have such an impact on the sample. The two highest ranked reasons why the students/graduates aspired to work for their employer of choice was because of the appeal of the employer's product, service or brand (29.94%; N = 47) and the overall reputation of employer (28.66%; N = 45).

The most popular and appealing attraction mechanisms are summarised in the diagrams below.
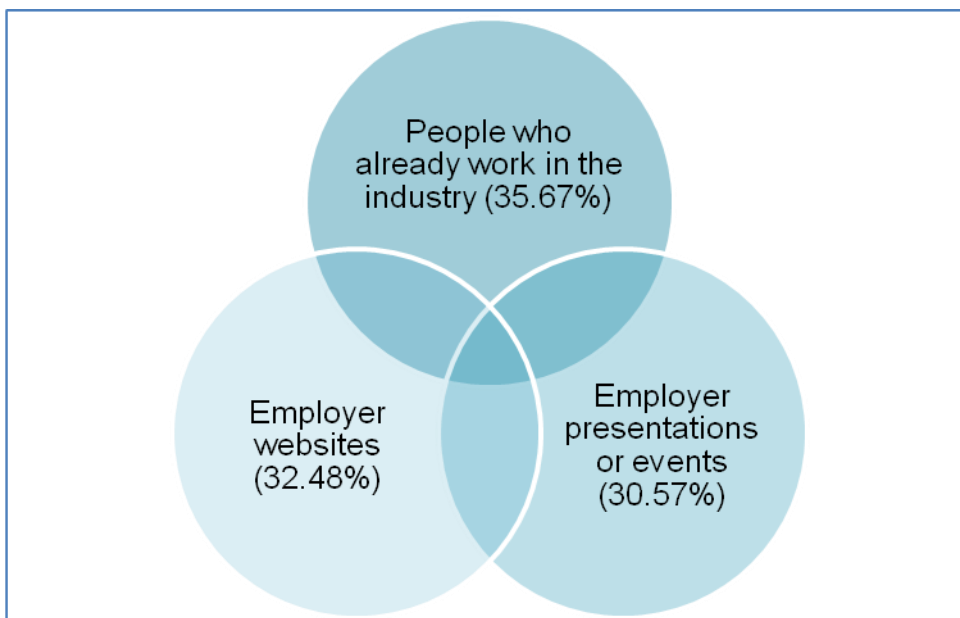

Figure 5.1: Most appealing attraction mechanisms for IT graduates

These findings relate back to the literature discussed in the preceding chapters regarding how important the concept of employer branding is and the importance of an employer's in-house recruitment website (SAGRA, 2008). It also explains why companies were spending a median of R15 000.00 on their in-house graduate websites and R73 500 on campus presentations and promotions (SAGRA, 2008). The findings also agree with the literature from the CIPD (2008, p. 2), which states that using the organisation's own corporate website is the most common method being used to attract the attention of graduates.

There is not much literature focusing on using people who already work in the industry as an attraction mechanism; it therefore is recommended that ICT organisations include this in their attraction strategies. Such efforts could be incorporated into websites, using biographies of successful employees, and using these individuals to do presentations at universities to tell students their success stories.

Social networking and media are used by 68.79% (N = 108) of the IT students/graduates, and they indicated that they found it acceptable for employers to use social media for the following reasons: to promote their graduate opportunities and to publicise local recruitment events.

The sample of IT students indicated that the issue of job and organisation location was important when deciding which company to apply to, with current location being the most important and influential (58.6%, N = 92).

The most important attraction factors that IT graduates take into consideration when applying for jobs and making career decisions regarding which ICT organisation they will join are illustrated in the figure below:
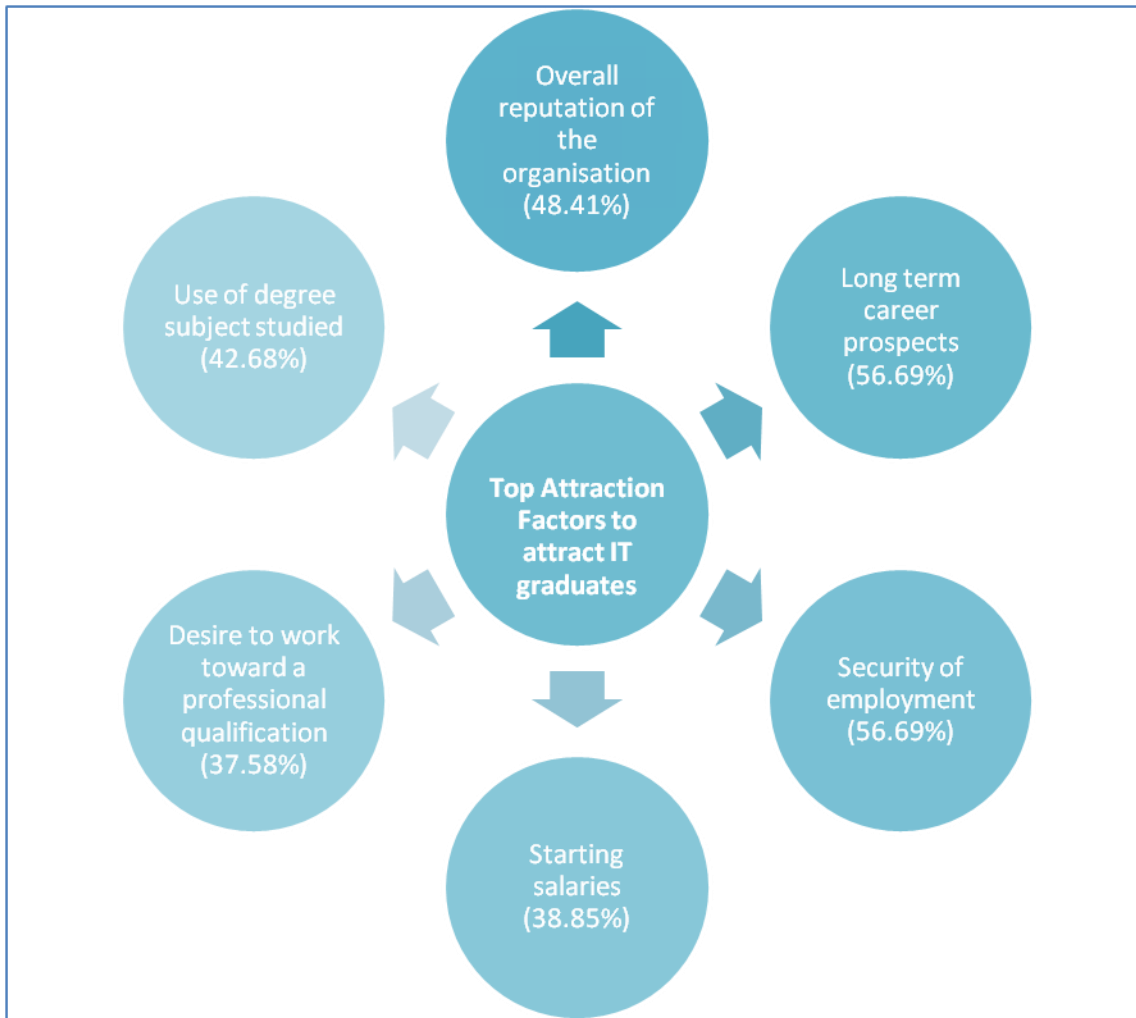
Figure 5.2: Main factors to attract IT graduates

These findings agree with the literature (GRB, 2012) that the most common graduate recruitment techniques are competitive entry level salaries, the employers' brand in relation to the emotional connection of reputation, and lastly career opportunity offerings. It is recommended that the element of job security be a focus area for ICT companies to attract potential IT graduates.

5.1.3   Research Question 2 - Retention Factors

Question 2 – According to the IT students and graduates, what are the main reasons they will remain in service to an ICT company?

Retention is defined as initiatives and techniques used by organisations to prevent workers from handing in their resignation and to increase their tenure. The findings of this study in relation to the most important retention factors relevant to IT graduates are summarised below. The sample revealed that 29.3% (N = 46) of the respondents expected to stay for more than five years, indicating good tenure and long-term organisational commitment. The second highest expected tenure was from two to three years (N = 39; 24.84%).

The most applicable reasons that would lead graduates to stay with the organisation they had joined or would be joining are indicated in the diagram below. The IT graduate/student sample indicated that the most important retention factor overall from those identified by Döckel (2003) was career opportunities (40.76%; N = 64), which correlates with the answers reflected in the diagram below.
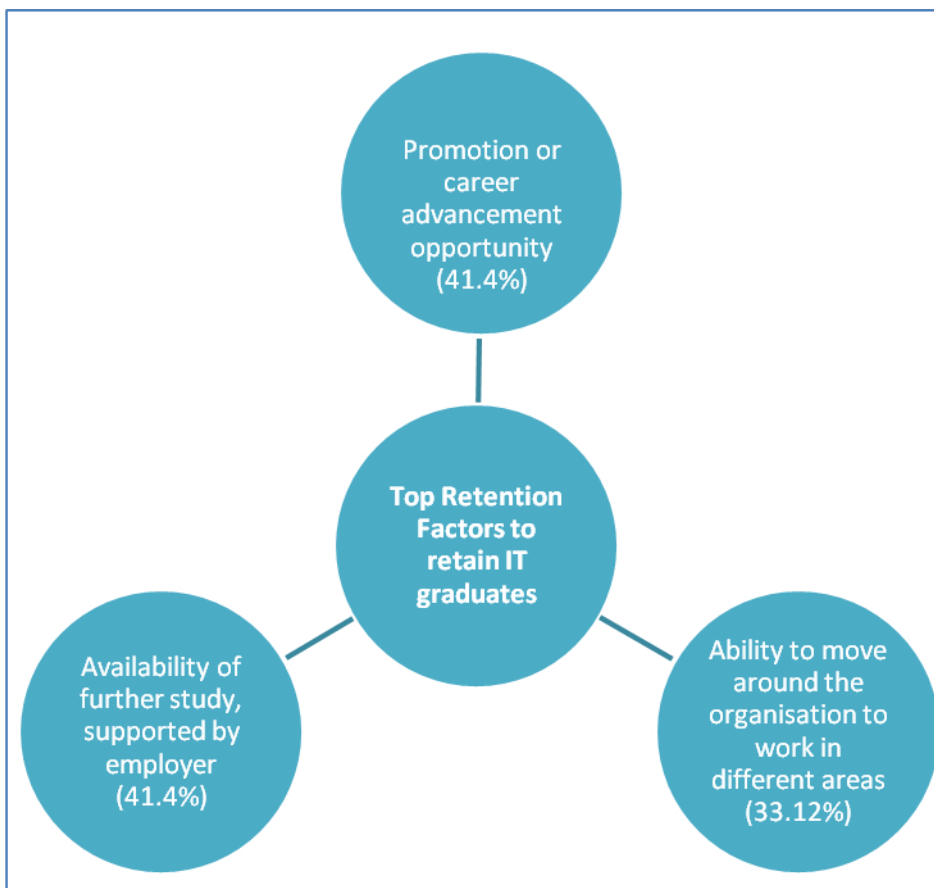

Figure 5.3: Main retention factors among IT graduates

The six factors identified by Döckel (2003), namely compensation, job description, training and development opportunities, top management support, career opportunities and

work/life policies were investigated in depth to reveal the level of importance IT graduates attach to each of these factors. The sample indicated the importance of a strong sense of belonging within the organisation (63%, N = 99). The frequency averages of the rating of importance for each factor are illustrated below.
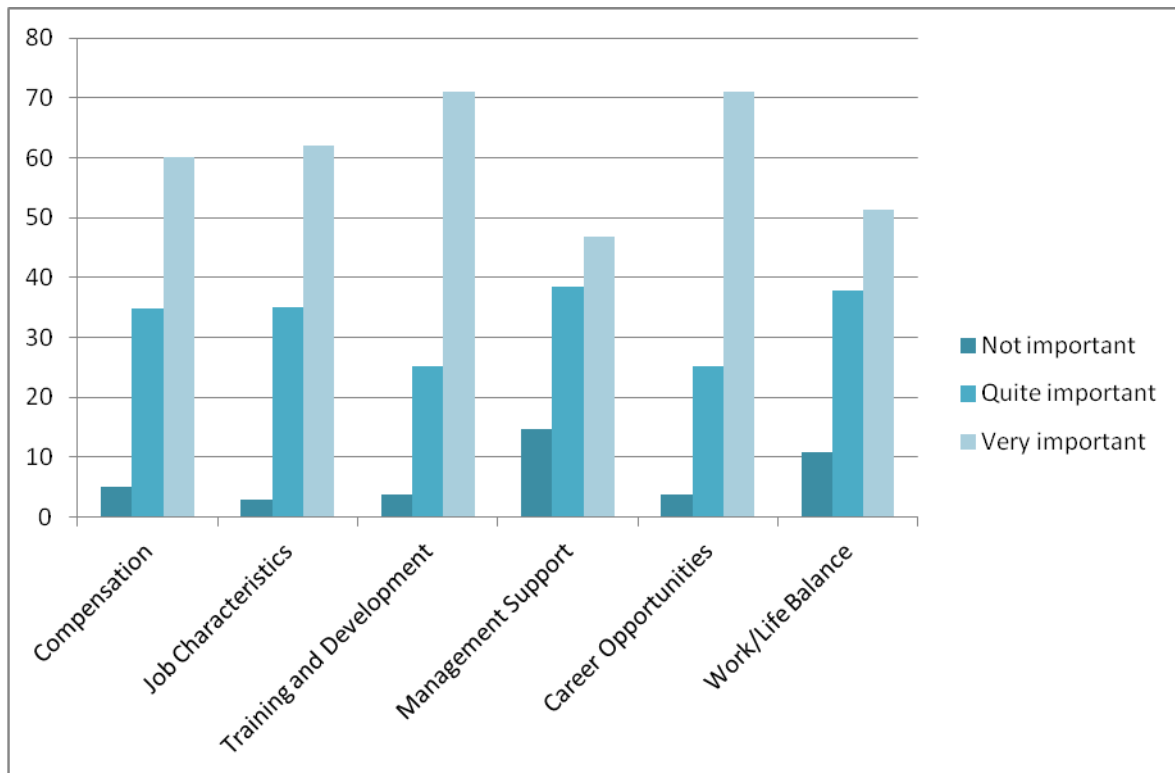

Figure 5.4: Frequency average summary – IT graduates' retention factors

From the literature it can be seen that the organisational commitment "job involvement" characteristic as identified by Bakalis & Joiner (2006) is of the highest importance to IT graduates. This element includes job characteristics, training and development, and career opportunities. These elements can be summarised as affective commitment, meaning that IT graduates will "want to" stay with an organisation if these retention factors are met and prioritised by ICT organisations (Van Dyk, 2011).

The literature discussed demonstrates many popular retention techniques (Dockel, 2003; Gilleard, 2006; JPC International, 2009), but it is recommended that ICT companies recruiting IT graduates focus on career growth opportunities, further study opportunities and lateral skills development/job redesign (GRB, 2012) within the organisation in order to

retain IT graduates. Overall, the career growth factor is the most important to IT graduates in order to retain them.

5.2   RESEARCH LIMITATIONS AND ASSUMPTIONS

5.2.1   Limitations

The study has several limitations related to the context, constructs and theoretical perspectives of the study.

Firstly, the study was limited to the context of ICT companies in South Africa. As such, the study did not consider the role of multiple international organisations that compete to attract and retain IT graduates. Similarly, the study examined only one aspect of successful recruitment from the graduate's perspective, and not any other aspects such as the organisation's policy, reputation and perspective.

Secondly, the study focused on graduate attraction and retention criteria; therefore the full recruitment and selection procedure was not examined.

Thirdly, the sample consisted only of Information Technology students from South African institutions who had graduated in 2008, 2009, 2010 and 2011, or would have graduated in 2012. Therefore, students who studied at international institutions and completed their studies in earlier years were not examined.

Finally, the study's literature review is limited primarily to literature from the discipline of graduate recruitment with a focus on attraction and retention. Literature from related disciplines, such as the greater human resources and strategic management category, was only consulted in passing.

5.2.2 Assumptions

An assumption is "a condition that is taken for granted, without which the research project would be pointless" (Leedy & Ormrod, 2005, p. 5). The research is based on a number of basic assumptions:

Firstly, the study assumes that there will be an ongoing shortage of IT graduates in South Africa.

The second assumption is that the critical need for IT graduates within ICT companies will continue.

The third assumption is that attracting and retaining scarce IT skills within ICT companies will continue to be an HR challenge.

The fourth assumption is that the IT graduates participating in the study provided correct and truthful answers to the questions asked.

The fifth assumption is that the survey questionnaire gathered the needed descriptive data from graduates with regard to the perceptions they have of the effectiveness of attraction and retention strategies.

The last assumption is that attraction and retention strategies can take a variety of forms and have varying levels of value.

5.3 RECOMMENDATIONS

The study can be concluded by providing a few recommendations to HR practitioners and organisations to overcome the challenge posed by the war for talent and to retain graduates in their recruited roles. These recommendations include:

- Organisations must develop an attractive employee value proposition. This means offering the graduate something that is perceived as valuable to them. It is important

that companies understand what makes them attractive to potential graduate recruits, whether it be branding as employer of choice or strategies and policies that are in place to retain employees. The best marketers can be said to be the employees who are already employed by the organisation, who become promoters and spread positive word-of-mouth validations for why it is the best company to work for

- Implementing a remuneration, reward and recognition structure that includes more than just pure monetary compensation for services rendered. This involves a high level of employee engagement so that the employees feel they have the opportunity to contribute and make a valuable contribution within the company thereby achieving personal goals aligned to those of the organisation. It is important to remember that money is only a short-term retention factor

- Regular performance feedback is imperative, meaning that organisations and HR practitioners need to ensure that a structured and regular performance management system is in place, as this yields many advantages. Among these are understanding and developing competency gaps, knowing where you stand, a formal feedback mechanism and credible career discussions, which all help to increase retention

- Work–life balance policies are important, as they play a big role in the employee value proposition. Such policies would include flexible and innovative ways of working to meet the elements of output, productivity and quality

- An employee engagement strategy that encourages a sense of team work, which allows for connections and networking among employees, will have an impact on loyalty and retention. Graduates place great value on relationships with colleagues, i.e. the social element

- A well-trained management team goes a long way in overcoming the "employees leave managers, not companies" theory. Organisations have to ensure that managers are provided with the correct tools to effectively manage their staff and create an environment of trust, fairness, commitment, care and respect. If these values are lived out by top management, organisations will have a competitive advantage over others in retaining their employees

5.4 RECOMMENDATIONS FOR FUTURE RESEARCH

This study focused on IT graduates only, and hence the results cannot be generalised to all graduates in other industries. The following are areas that are recommended for future research:

- The perceptions of graduates in other industries on graduate recruitment attraction and retention mechanisms and techniques
- A comparative analysis of demographical data could be conducted on the data obtained. Future research could compare different ethnic, gender and qualification groups – i.e. an IT degree candidate versus a diploma candidate and their expectations when entering the workplace
- Since no literature was consulted regarding the impact of the graduate recruitment cycle and graduate programmes on IT graduates, it is unclear what the results were. This would be a further area for investigation specific to IT graduates
- The impact of on-boarding and induction could also be investigated in terms of the impact they have on the retention of graduates
- Using in-depth qualitative interviews together with the current questionnaire to evaluate the perceptions of IT students and graduates on viable attraction and retention techniques more critically

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APPENDIX A

- Data collection instrument -

HR RESEARCH

Information Technology (IT) Graduate Recruitment Survey

Please note the following:

Your participation in this study is very important to us. You may, however, choose not to participate and you may also stop participating at any time without any negative consequences. Please answer the questions in the attached questionnaire as completely and honestly as possible. This should not take more than 15 minutes of your time. The results of the study will be used for academic purposes only and may be published in an academic journal. We will provide you with a summary of our findings on request.

You are invited to participate in an academic research study conducted by Chenay Hackney, a Master's student from the Department of Human Resource Management at the University of Pretoria. The purpose of the study is to identify attraction and retention challenges faced by Human Resource management within Information Communication Technology companies in South Africa when recruiting Information Technology graduates. There are 28 questions in this survey.

Target Audience - IT Students and Recent Graduates

1. Do you give your consent to participate in this study on a voluntary basis? Please choose only one of the following:

Yes
No

2. Demographics: Please identify your gender. Please choose only one of the following:

Female
Male

3. Demographics: Please identify your race. Please choose at most one answer:

White
Black
Indian
Coloured
Other

4. Demographics: Please identify your age group in years. Please choose at most one answer:

18-20
21-23
24-26
27-29
30 plus

5. Are you currently studying toward or have you already completed within the last four years an Information Technology-related qualification? (This refers to IT, Computer Science, Information Systems, and Informatics etc.) Please choose only one of the following:

Yes
No

6. Are you currently employed within the ICT industry? Please choose only one of the following:

Yes
No

7. Have you or do you plan to apply for a graduate position directly related to your IT qualification? Please choose only one of the following:

Yes
No

8. Have you or do you plan to apply for any graduate positions that are not directly related to your IT qualification? Please choose only one of the following:

Yes
No

9. Have you identified an Information Communication Technology (ICT) employer of choice you wish to work for in the immediate future? Please choose only one of the following:

Yes
No

10. How long have you aspired to work for this employer? Please choose at most one answer:

Since high school or before
Since being at university
Since commencing the search for a graduate position
Since leaving university

11. What is your main reason for aspiring to work for this employer? Please choose at most one answer:

Employer's profile at the university
Quality of graduate jobs offered by employer
Number of graduate vacancies at employer
Starting salaries for graduates
Appeal of employer's product, services or brand
Overall reputation of employer
Because it is a multinational company

12. Did your employer of choice offer you one the following? Please choose at most one answer:

Vacation work
Internship
Full-time work
Part-time or casual work
Volunteer work
None of the above

13. Is your current location or the option of relocation more important to you when deciding which company to apply to? Please choose at most one answer:

Current location
Relocation option

14. What were your three main reasons for applying to work in the industry you are currently in or have chosen to work in? Please choose at most three answers:

Using the degree subject you studied
Early contact with clients or customers
Quality of training and development programme
Content of work
Working towards a professional qualification (e.g. developer, business analyst, etc.)
Having a job that allows you to 'give something back' to the community
Starting salary and additional benefits
Location of jobs
Start a 'real job' straight away
Joining a structured graduate programme
Work–life balance
Chance for further studies
Opportunity for overseas experiences

15. How influential did you find the following while conducting your job search? Please choose the appropriate response for each item:

Options	Did not use	Not influential	Quite influential	Very influential
University careers service				
University careers service website or job board				
University careers fairs				
Employer brochures				
Employer websites				
Employer's giveaways/freebies				
Employer presentations or events				
Commercial career websites (e.g. Career Junction, Bizcommunity)				
National newspapers				
Family and friends				
Social networking sites (e.g. Facebook, LinkedIn)				
People who already work in the industry				
Commercial recruitment directories (e.g. Grad X, Financial Mail, Careers SA)				

16. When you were deciding which employers to apply to and join, how important were the following? Please choose the appropriate response for each item:

Options	Did not use	Not influential	Quite influential	Very influential
Training and development				
Opportunity to study for professional qualification or postgraduate qualification				
International opportunities				
Overall reputation (ethical, environmental, corporate social responsibility, etc.)				
Work–life balance				
Flexible working options (e.g. flexitime, purchased leave, part-time work, etc.)				
Remuneration package				
Company representatives that you have met				
Previous experience with employer through vacation or internship work				
Friends' opinions				
Family's opinions				
Content of work				
Employer's website and recruitment publications				
Rotational graduate programme				
Mentoring				
Long-term career prospects				
Security of employment				

17. Do you make use of social networking sites (e.g. Facebook, MySpace and Twitter)? Please choose only one of the following:

Yes
No

18. What do you think about employers using social networking sites for the following purposes? Please choose the appropriate response for each item:

Options	Acceptable	Not Acceptable
Promoting their graduate opportunities		
Publicising local recruitment events		
Contacting students who are looking for jobs		
Putting students in touch with graduates already at their organisation		
Looking up personal profiles of students who've made job applications		
Providing groups for newly recruited graduates		

19. How long do you expect to stay with the organisation you have joined, or will be joining? Please choose at most one answer:

Less than a year
1-2 years
2-3 years
3-4 years
4-5 years
More than 5 years

20. What factors would lead you to stay longer with the organisation you have joined, or will be joining? Please choose at most three answers:

Availability of further study, supported by your employer
Ability to move around the organisation to work in different areas
International opportunities
Training and development on offer
Reputation of the employer
Work–life balance
Flexible working options
Remuneration offered
Content of work
Promotion or career advancement
Career break or sabbatical
Security of employment
Working for aspirational leaders
Very good organisational culture

21. Which of the following is most important to you when choosing to stay with an organisation? Please choose at most one answer:

Compensation
Job description/characteristics
Training and development opportunities
Top management support
Career opportunities
Work and life balance policies

22. How important would you rate the following in terms of staying with an organisation? Please choose the appropriate response for each item:

Option	Very important	Quite important	Not important
Feeling like "part of the family" within the organisation			
A strong "sense of belonging" within the organisation			
A fit to my personal values and ethics			
A sense of loyalty and obligation to stay			

23. How important is the following when considering staying with an organisation in relation to your compensation? Please choose the appropriate response for each item:

Option	Very important	Quite important	Not important
Total salary package (base pay, benefits and incentives)			
Benefits offered (i.e. medical aid, pension, life cover)			
Incentives (i.e. rewards, bonusing)			
The competitiveness of my total salary package (base pay, benefits and incentives)			
Increases linked to my performance			

24. How important is the following when considering staying with an organisation in relation to the job you perform? Please choose the appropriate response for each item:

Option	Very important	Quite important	Not important
The job requires me to use a number of complex or high-level skills			
The job gives me considerable opportunity for independence and freedom in how I do the work			

25. How important is the following when considering staying with an organisation in relation to your development? Please choose the appropriate response for each item:

Option	Very important	Quite important	Not important
The company provides me with job-specific training			
There are enough development opportunities for me in this company			

26. How important is the following when considering staying with an organisation in relation to the management support you receive? Please choose the appropriate response for each item:

Option	Very important	Quite important	Not important
A supervisor who looks for opportunities to praise my positive performance, both privately and in front of others			
A supervisor who often lets me know how well he thinks I am performing the job			

27. How important is the following when considering staying with an organisation in relation to your personal career development? Please choose the appropriate response for each item:

Option	Very important	Quite important	Not important
My chances for being promoted are good			
There are enough career opportunities for me in this organisation			

28. How important is the following when considering staying with an organisation in relation to your balance between work and life? Please choose the appropriate response for each item:

Option	Very important	Quite important	Not important
My work schedule must not conflict with my personal life			
An organisation that allows me the flexibility to achieve personal goals			

Thank you for completing this survey.