ADOPTING EMPLOYER-DRIVEN HUMAN RESOURCE DEVELOPMENT AS A STRATEGY IN BRIDGING THE SKILLS GAP IN SOUTH AFRICA

By

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DECLARATION

I declare that "**ADOPTING EMPLOYER-DRIVEN HUMAN RESOURCE DEVELOPMENT AS A STRATEGY IN BRIDGING THE SKILLS GAP IN SOUTH AFRICA"** is the author's original work and has never been submitted by the author or anyone else at any university for a degree. All the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

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ABSTRACT

Skills shortage has been generally and consistently identified as the single most important constraint to accelerated and sustainable economic growth in South Africa. The government is targeting an annual economic growth rate of 7%, but economic analysts and experts have predicted that government may not be able to achieve this objective unless there is a remarkable transformation of the skills profile presently obtainable in the country's labour market. This has necessitated a growing concern that a skill crisis was becoming a 'binding constraints' on development, prompting new government interventions prioritising ways to address skills shortages and mismatches.

The primary objective of this study therefore was to conduct an empirical study in order to determine the contribution of employers and the Sector Education and Training Authorities (SETAs) towards employee training and development. In addition, the study evaluated the impact of affirmative action policy as it affects the shortage and turnover of highly-skilled South Africans. Equally central to this study was the need to establish the degree of misalignment between the skills that are being produced locally by the Higher Education and Training institutions on the one hand, and those skills that are needed for continuous economic growth in the country on the other hand. In order to achieve these objectives, 160 organisations, both in the public and private sectors of the economy were surveyed. A questionnaire, measured on a five-point Likert scale, and also containing some ordinal questions was used to collect primary data from respondents (Training and Development Managers). The data collected was analysed using various statistical methods in order to arrive at a meaningful interpretation and conclusions.

The major findings of the study presented evidence of employees' participation in various training programmes provided by employers and SETAs. However, these training programmes were not conducted within the context of the National Qualifications Framework band. This failure makes certification and national recognition of such training and development outcomes to be difficult. The study further finds that employers were almost equally divided on the extent to which

implementation of the affirmative action policy (through the Employment Equity Act, Act 55 of 1998) in the workplaces has contributed to skills shortages and turnover of highly skilled employees and professionals in South Africa.

Statistical data of bachelor degree graduates from 2005 – 2008 was collected from six comprehensive universities and universities of technology. The data indicates the fields of study by undergraduate bachelor degree graduates. This was done in order to assist in determining the supply-side of skills trajectory. The data was analysed and compared with the demand-side characteristics of skills, which was established through literature review. The result of the analysis shows that there was a significant misalignment between the demand and supply side trajectories. This suggests that the demand for certain skills that are needed for sustainable economic growth far outstrip those currently produced by the Higher Education and Training system. The study made appropriate recommendations to the Education and Labour authorities in South Africa based on the findings of the research. Limitations of the study were identified and possible directions for future research were highlighted.

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DEDICATION

I DEDICATE THIS PROJECT TO MY FAMILY – BOSE, DAMILOLA AND AYODEJI - WHO MISSED MY LOVE AND PRESENCE WHILE THE PROGRAMME LASTED AND TO THE GLORY OF THE ALMIGHTY GOD.

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LIST OF ACRONYMS

1. **ASGISA** – Accelerated and Shared Growth Initiative for South Africa
2. **CDE** - Centre for Development and Enterprise
3. **DoE** – Department of Education (South Africa) before the department was split into two separate departments in 2009.
4. **DoHET** – Department of Higher Education and Training (South Africa). Came into existence after the split of the old DoE in 2009.
5. **DoBE** – Department of Basic Education (South Africa) emerges from the split of the old DoE in 2009.
6. **DoL** – Department of Labour (South Africa)
7. **DHA** – Department of Home Affairs (South Africa)
8. **DTI** – Department of Trade and Industry (South Africa)
9. **DPSA** – Department of Public Services and Administration (South Africa)
10. **DPRU** – Development Policy Research Unit (University of Cape Town)
11. **FETC** - Further Education and Training Colleges
12. **HET** - Higher Education and Training
13. **HRDS** – Human Resource Development Strategy
14. **HSRC** - Human Science Research Council (South Africa)
15. **JIPSA** – Joint Initiative for Priority Skills in South Africa
16. **NQF** - National Qualifications Framework
17. **NSDS** – National Skills Development Strategy
18. **NZ DoL** – New Zealand Department of Labour
19. **SETAs** – Sector Education and Training Authorities

CHAPTER ONE

INTRODUCTION, PROBLEM STATEMENT AND OUTLINE OF THE STUDY

1.1 Introduction

Alluding to the nature and depth of skills problem in the country, the Deputy President of South Africa, Kgalema Motlanthe noted that "there are certain gaps that need to be addressed and the skills that are required by the economy. The critical element we are trying to address is the mismatch of the skills that we are producing now versus the demand from the economy" (Motlanthe, 2010:2). Motlanthe's assertion captures the inherent misalignment in the skills supplied by the institutions that are charged with the responsibility of producing the necessary workforce for the country's economy on the one hand and those skills that are required for sustainable economic growth on the other hand.

The new world of work puts the importance of human capital and indeed human capital development at the centre of organisational success or failure. One of the most important drivers of productivity and sustainable economic growth in developed countries is the skills and technical knowledge of workers. According to Meyer and Orpen (2007:135), "people are the lifeblood of the organisation, and this has provided the impetus for many changes in terms of skills, training and development". This is an undisputable fact of a knowledge economy. Gerber *et al.* (cited in van der Walt, 1999:176) argues that "human resources hold the key to the economic and social problems that South Africa is currently experiencing; South Africa therefore has no alternative but to accelerate development of its people in order to maintain and grow its economy". Reiterating the skills problem in South Africa further, Stokes (2010:17) submits that "while our global peers worry about dwindling order books and a severe slowdown in economic activity, South Africa's private sector executives singled out skills as the biggest obstacles to business growth". This compelling evidence has therefore made it imperative for the labour and education authorities in South Africa to fashion out an appropriate skills development and training strategy that will produce not only the quantity, but most importantly the quality of the

workforce that is required to drive sustainable socio-economic development in the country.

The skills problem in South Africa has been variously and consistently attributed to the legacy of apartheid which created 'Bantu' (inferior) education for the black population thus resulting in a dearth of employable people (Wagner, 2001). With South Africa businesses competing in the global market place after the demise of apartheid, the requisite skills began to change, reflecting the new economy and its appetite for knowledge workers. But for these businesses to compete favourably and indeed gain competitive advantage there must be an adequate supply of the necessary skills to propel this competition. However, empirical studies have shown that South Africa's labour market suffers deeply from a dearth of skilled personnel and a continuous brain drain (Kinnear & Sutherland, 2001).

Supporting Kinnear and Sutherland, Erasmus and Steyn (2002:14) state that "the skills profile of our labour force clearly is poor and uncompetitive in the global economy. There are too few professional and skilled people while a large section of our workforce lacks basic skills, which restricts their employability to only the most menial tasks". This again, according to Erasmus and Steyn is largely attributed to the history of segregation in the provision of formal education – "separate departments of education, separate schools for the different population groups and differentiated expenditure remained central to the South African education system until 1990". The resultant reality today is that demand for certain skills in South Africa exceed supply thus suggesting acute shortage of core skills which could hinder targeted economic growth rate set by the government. Concurring, Harris (2010:15) reports that "key sectors such as finance, engineering, project management and telecommunications always run short of skills, and the critical skills shortage in these sectors has been cited as a potential restraint of the attainment of the government's growth goals".

1.1.1 Skills development and training strategy

South Africa as a developing country in the past decade has undergone a significant transformation in its national human resource development framework. Cunningham, Lynham and Weatherly (2006) contend that a holistic and integrative approach to human resource development must be analysed within the social, political, and

economic context of South Africa. This reinforces the contention that national human resource development must be understood in the context of a country's historical roots, cultural values, education level, political system, and human resource development legislation in combination with its labour profile and economic system and policy (Cunningham *et al*., 2006:64). In order to address the skills problem in South Africa, the government initiated a broad based Human Resource Development Strategy (HRDS) for a period of five years (2005 – 2010). Similarly, The Joint Initiative on Priority Skills Acquisition (JIPSA) was established (in 2006) as a component of the Accelerated and Shared Growth Initiative for South Africa (ASGISA) where government identified six issues which obstruct economic growth. Skill shortage was a prominent impediment identified by ASGISA thus JIPSA was initiated to address this deficiency.

Some of the strategies adopted to deal with skills shortages include special training programmes, persuading South African professionals in the diaspora to return home, making use of retired skilled professionals and importing skilled immigrants where necessary. The JIPSA report for April to December, 2006 identifies professional skills in engineering, science, finance and management, as well as technical and artisan skills as scarce. The report further states that while the economy currently produces about 5 000 artisans annually, research suggests that at least 12 500 artisans should be produced annually over the next four years (2007 – 2011) to meet rising demand. Skills shortages in the construction and engineering industries in particular, unless addressed urgently, risk slowing down South Africa's R400-billion infrastructure programme for the period 2007 to 2009; the report concludes.

Global access and competition are increasing, but there are no skilled workers to fill vacant positions (Wagner, 2001) while the few available talent migrate to outside organisations. Acknowledging the state of skills shortages in the economy, the Department of Labour (2006) contend that the importation of skills by Sasol Company indicates that it is not only job creation that is a fundamental problem in South Africa, but also a shortage of skills. Sasol imported 900 skilled artisans from Asia in 2006 to undertake maintenance work. It is not only Sasol Company that is importing skills from elsewhere. The Department of Health recruited 1,000 medical doctors from Tunisia in 2007 (Simao, 2007) to complement shortages in the various

public hospitals and clinics while the Department of Home Affairs had recently approved 4,000 work permits to enable the Department of Basic Education recruit Mathematics and science subject teachers mainly from Zimbabwe and India to fill vacant positions in the secondary schools (Hindle, 2008). Similarly, the Limpopo Provincial Member of Executive Committee (MEC) for Education (in a SAFM Radio interview of 16 February, 2010) revealed that 600 Zimbabwean teachers had been recruited to teach Mathematics, Sciences and Commerce in secondary schools. Eskom utility is currently planning a R340-billion infrastructure expansion with labour requirement of 1,000 skilled employees annually over the next five years (2007-2011). However, Kleynhans (2007) opines that shortage of skilled personnel could cripple the expansion project since there won't be sufficient qualified South Africans to build and operate the power stations. Kleynhans' opinion is supported by Thulani Gcabashe (former Eskom CEO) as reported by Mantshantsha (2007) who asserted that "our priority is to recruit locally, but we are aware that there is a shortage (of skilled engineers) and everyone is recruiting. We'll look at South Africans abroad and see if we can bring them back and thereafter look at (recruiting) other nationalities".

Retail business is not immune from the skill scourge. Shoprite was restricted from opening 14 new pharmacies because it could not recruit enough pharmacists and cannot import pharmacists because they are required to do community service first (Shevel, 2008:16). In the same vein, Netcare, the country's largest private hospital group identified the biggest shortage areas confronting the organisation as nurse, pharmacists and paramedics with the group having nursing vacancy of 24% (Shevel, 2008:16). It is the reality of the general skills shortages in the country that compelled the Department of Trade (2006) to declare that the dearth of skills in the economy requires that government should do whatever it could to address the problem urgently.

1.1.2 Skills demand and unemployment

A critical paradox facing South Africa is skills shortages in the face of growing unemployment. Given the huge number of unfilled positions and the future skills requirement in the country, it is paradoxical to note that unemployment rate in South Africa is reaching an alarming height of 24.5% (Statistics South Africa, 2009). Reporting Bhorat, Hill (2007) states that there were 200,000 unemployed graduates

in South Africa (in 2005) with 40,000 of them having university degrees. According to Pauw, Oosthuizen and van der Westhuizen (2006), unemployment rate for individuals with tertiary education increased by approximately 55% from 6.6% in 1995 to 9.7% in 2005. In 2005, there were 165 000 unemployed holders of diplomas and certificates with 36 000 having university degrees. Consistent with this report, Laing (2008:3) notes that

> the concentration of unemployment among the youth means that the unemployed have had rising levels of education. Of particular concern has been the rapid increase in unemployment levels for people with tertiary qualifications, especially diplomas.

Other studies (e.g., Moleke, 2005, Oosthuizen, 2006; Oosthuizen & Bhorat, 2005) have documented evidence to support the existence of a pool of unemployed graduates, many of them 'Africans'. Bhorat (2007: 8) attributes graduate unemployment to the type of qualifications they had as well as their fields of study.

Supporting various literature cited above, Gwede Mantashe (cited in Hill, 2007) states that many black students pursue degrees in the arts, while majority of white students pursues degrees in high-demand fields such as engineering. This is also consistent with the assertions made by Mosidi Nhlapo as reported in Hawkey (2010:7) that many African students chose to specialise in the arts and humanities, fields that tended to have lower managerial and professional prospects. This development, Bhorat observes, is responsible for the situation where 85% of unemployed graduates were blacks with one-quarter of all black graduates unable to find work (Hill, 2007). The evidence presented so far can only suggest one reality - misalignment - in the current education system and the workplace demand (demand-supply side interplay). While labour market suggests a high demand for technical graduates such as engineering and technology, health sciences, management, accounting and others, the enrolment reality and graduate outputs in higher institutions of learning reveal that most students (mostly black students) register for courses in the social sciences and humanities fields which are less demanded by the economy. These fields do not prepare them for the professions thereby accounting for their inability to get jobs unlike their counterparts in critical fields of shortage.

1.1.3 The skills debate

Research by the Development Policy Research Unit (DPRU, 2007) shows that universities seem to focus on how many students they can enrol without taking into consideration the relevance of their degrees to the skills demanded by the economy. Furthermore, Barnes (2009:39) argues that

> the problem commonly referred to as a 'skills shortage' in South Africa is itself a nebulous concept, which encapsulates several specific issues – shortages in some cases (e.g., engineering and some technical skills), but skills surpluses in other areas (such as the social sciences).

In other words, there is significant 'mismatch' between the skills sets being generated in local tertiary education institutions and the skills required for business. This has necessitated the approval of a strict enrolment and performance targets by the Department of Education (DoE) for higher education institutions to produce more job-ready graduates. The plan requires most institutions to limit their intake in the humanities – which include arts and social sciences – in favour of fields such as business, engineering and technology (Govender, 2007:8). A sum of R4-billion was injected into higher education institutions to improve infrastructure and increase the number of graduates with a capping in humanities nationally to around 196,000 (Govender, 2007:8).

The total number of social science graduates shot up from 253,431 in 1994 to 548,383 in 2004 (Govender, 2007). Current attempts by the Department of Higher Education to regulate student intake in favour of certain fields of study is therefore a general agreement that the demand for certain skills required to develop the domestic economy is far in excess of current supply. "The skills inappropriateness and inadequacy of the South African workforce has been one of the factors hindering its economic success in the global economy" (Barnes, 2009:39). This, in Barnes' opinion "requires an up to date linkage of education and training to meet the market demands and avoid mis-skilling (imparting skills that are in excess in society when there is a serious lack of skills that are in demand) and consequently unemployment". Barnes therefore concludes that the upgrading of the supply characteristics of the new labour market entrants is pivotal in this context.

However, contrary to the opinions articulated by different authors cited in the foregoing literature, Dias (2005) drawing from statistical figures of unemployed graduates concludes that the problem is not necessarily with the qualifications of graduates being inappropriate, but the labour market's failure to absorb the number of new entrants with tertiary qualifications especially if this is viewed in light of the growth in employment levels by sector and skills categories. Consequently, Dias cautions that improving the education qualifications of the unemployed is not a guarantee for employment as the labour market seems saturated. Supporting Dias, Standing *et al.* (2000:158) posit that "one cannot presume that if all those without secondary schooling were provided with it and if all those without a skills required by the economy were provided with one, that unemployment would fall dramatically".

Similarly, Teichler (1999) argues that all the claims surrounding skills mismatch and skills shortages are not based on systematic evidence. Teichler further argue that the limited empirical evidence regarding graduate unemployment that exists worldwide seems to have four main shortcomings. First, very few studies make it possible to regularly monitor the changes in graduate employment and the impacts of study on subsequent career and work tasks. Second, information is usually limited in countries where the employment prospects of graduates seem to be unsteady. It is for this reason that Matos (1997) declares that employment of higher education graduates in Africa is an area where little data are available with the exception of a handful of studies that are often not comprehensive, not up to date and are conducted over a limited period of time. Therefore, where the developments of the connections between higher education and the world of work are most controversially debated, for example South Africa, information which could rationalise the debate is least available. Teichler contends further that most of the available information on graduate employment is insufficiently scrutinised due to the following reasons:

- Quantitative information on graduate employment is more available in the traditional employment sector, but somewhat less in newly emerging, atypical and informal sector. If focus does not include the informal sector, the available disparate information could reinforce an all too pessimistic view of graduate employment.

- There also seems to be a weakness in terms of the balance between quantitative and qualitative data (Brennan & Kogan, 1993). Quantitative research that focuses on the whereabouts of graduates and their income does not allow for broad conclusions to be drawn while qualitative research focusing on the types of work tasks and more in-depth information is relatively limited.
- Employers' claims regarding the expected qualifications are too easily taken as objective information concerning demand in the employment system.

Teichler (1999) concludes that there appears to be very little information on curricula, graduates' professional rationales, and the impact of degree programmes and conditions of employment. There also appears to be a shortage of information on the links between gender, race and the field of study and the impact that these variables have on graduates' expectations of employment.

Extending the skills shortage debate, Jimmy Manyi, former chairman of the Commission of Employment Equity (cited in Khumalo & Mmope, 2007) and now the Director-General of the Department of Labour and also Chairman of the Black Management Forum (BMF) dismisses the entire argument surrounding skills shortages as an "urban legend based on racism". However, Eddie Durant (also cited in Khumalo & Mmope, 2007) declares Manyi's assertion as an "emotional and absurd outburst". Manyi's position regarding skills shortages has also been opposed by his own constituency, BMF. According to Lot Ndlovu (a past chairman of BMF) in a SAFM Radio interview (on Friday, 1 October, 2010), Manyi's position was out of tune with the reality given the present state of skills shortage and migration of highly skilled people out of the country. Deloitte, a human resource development consultancy, found in a survey on 300 South African companies that an estimated 76% of them are experiencing difficulties in recruiting suitably qualified affirmative action candidates. Says Louise Marx, Deloitte's human capital manager: 'A lot of companies have to train internally because they have quotas to meet. To my mind the skills shortage is not an urban legend' (Mabotja, 2009).

Whichever direction we look at the problem, it will be difficult to justify the arguments of (Dias, 2005; Standing *et al.,* 2000; Jimmy Manyi for example) in the face of

subsisting empirical evidence where certain vacant positions (engineering, medicine, financial management for example) could not be filled due to non-availability of appropriately qualified job candidates whereas we maintain a pool of unemployed graduates in fields such as the social sciences and humanities. Moleke (2005) concludes that the skills mismatch in South Africa is an important part of graduate unemployment. One way of solving the problem, Koen (2003) suggests is through improvements in the responsiveness of labour supply to the characteristics of labour demand.

1.1.4 Policy intervention in undergraduate enrolment

Policy intervention by the Department of Higher Education and Training to regulate admission patterns at institutions of higher learning to reflect the current reality in skills demand is already manifesting some positive results. Pieterse (2009:226) reports progress in shifting the balance of enrolment in HET institutions across the humanities, social sciences and education (HSSE), business, commerce and management (BCM) sciences, and science, engineering and technology (SET), as proposed by the National Plan for Higher Education (DoE, 2001). The National Plan set a target to shift the balance of enrolments between i) humanities, ii) business and commerce, and iii) science, engineering and technology from 49%: 26%: 25% in 2001 to 40%: 30%: 30% respectively by the end of the decade (DoE, 2001:27). However, Kraak (2009:5) contends that the DoE has never been able to test the usefulness of these policy objectives through drawing up detailed correspondences between specific academic programmes at particular higher education institutions and actual sectoral needs located in specific regions of the country. This 'policy gap', Kraak further contends, has had a negative effect, handicapping the ability of education and training institutions to offer courses customised to particular development trajectories or technology platform needs.

The proposal by the National Plan for Higher Education has however seen business, commerce and management graduates more evenly split between the various levels of qualifications. For example, there were 1,864 marketing, 1,416 personnel management, 1,894 other management, 12,267 accounting, 799 administration and 6,998 management graduates in 2005 across various universities and universities of technology, with a significant number of these obtaining postgraduate qualifications

(Pieterse, 2009:226). This trend is also reflected in the graduation growth pattern of higher institutions of learning with concentration gradually shifting from the social sciences and humanities to business, management and commerce. The statistics of bachelor graduates from some of the universities analysed in Tables 1 – 6 from 2005 to 2008 supports this emerging trend. This is, however still far from the projection of at least 270, 000 of the country's estimated 820, 000 students' population at tertiary institutions to register for business and management degrees by 2010 (Govender, 2007:8).

Table 1.1: Number of academic and professional undergraduate bachelor degree graduates at the University of Fort Hare

	Year of graduation and number of graduates				
Faculty	2005	2006	2007	2008	Total
Education	319	354	285	77	1035
Law	-	85	118	131	334
Management & Commerce	229	204	248	313	994
Science & Agriculture	205	177	202	185	769
Social Sciences & Humanities	469	351	318	384	1522

Source: Planning Unit, University of Fort Hare (2009)

Management and Commerce degree offerings at the University of Fort Hare include Industrial Psychology, Accounting, Business Management, Public Administration, Development Studies, Information System and Economics.

Table 1.1.1: 2010 enrolment figures for academic and professional undergraduate bachelor degrees at the University of Fort Hare

Faculty	
Education	941
Law	669
Management & Commerce	2563
Science & Agriculture	1739
Social Sciences & Humanities	2578

Source: Planning Unit, University of Fort Hare (2010)

Table 1.2: Number of bachelor degree graduates at the Rhodes University

	Year of graduation and number of graduates				
Faculty	2005	2006	2007	2008	Total
Education	62	56	62	66	246
Law	57	56	61	54	228
Commerce	313	313	334	310	1,270
Science	254	242	250	243	989
Humanities	536	577	639	552	2,304
Pharmacy	44	69	70	74	257

Source: Data Management Unit, Rhodes University (2010)

The number of graduates includes honours degree while the degrees in the Faculty of Commerce include those in Accountancy, Business Science and Economics. Those in the Faculty of Science include Software Development and Information System while those in the Faculty of Humanities comprise Journalism, Fine Arts, Music and Social Science.

Table 1.3: Number of bachelor degree graduates at the Nelson Mandela Metropolitan University

	Year of graduation and number of graduates				
Faculty	2005	2006	2007	2008	Total
Education	655	528	337	-	1,520
Law	163	102	136	-	401
Business & Economics	596	735	745	-	2,076
Science	230	230	225	-	685
Health Sciences	269	311	212	-	792
Engineering, Built Environ. & IT	200	171	164	-	535
Arts	492	330	322	-	1,144

Source: HEMIS, NMMU (2010)

Degree offering in the Faculty of Health Sciences at the NMMU includes those in Pharmacy, Human Movement Sciences, Social Work, Biomedical Technology and Psychology.

Table 1.4: Number of bachelor degree graduates at the Stellenbosch University

	Year of graduation and number of graduates				
Faculty	2005	2006	2007	2008	Total
Education	407	250	263	251	1,171
Law	132	114	145	144	535
Economic &Management Sciences	1,318	1,444	1,374	1,354	5,490
Science	422	396	535	577	1,930
Engineering	227	267	265	251	1,010
Health Sciences	176	207	239	153	775
Military Sciences	54	77	68	77	276
Agricultural Sciences	131	244	275	257	907
Arts & Social Sciences	836	911	965	925	3,637

Source: Institutional Information Unit, Stellenbosch University (2010)

Graduates in the Faculty of Theology are counted with those from the Faculty of Arts and Social Sciences for the purpose of this research.

Table 1.5: Number of bachelor and honours degree graduates at an anonymous University

	Year of completion and number of graduates				
Faculty	2005	2006	2007	2008	Total
Education	592	554	565	499	2210
Law	267	346	268	305	1186
Management & Commerce	2158	2254	1833	1558	7803
Science & Agriculture	847	867	855	822	3391
Engineering	325	305	331	344	1305
Architectural studies	40	36	62	45	183
Humanities, Development & Social Sciences	1439	1730	1457	1412	6035
Medicine & Surgery	298	202	189	223	912
Health Sciences	245	293	293	291	1122
Pharmacy	62	74	63	61	260

Source: The University's Management Information Unit (2010)

Degree offerings under engineering include property development, construction management, land and quantity surveying and B.Sc. Engineering while health sciences include offerings in nursing, sports, physiotherapy and optometry.

Table 1.6: Number of bachelor degree graduates at the Tshwane University of Technology

	Year of graduation and number of graduates					
Faculty	2005	2006	2007	2008	2009	Total
Engineering & Built Environment	332	376	467	453	544	2172
Economics & Finance	154	168	224	247	268	1061
Management Sciences	315	326	304	330	391	1666
Science	475	443	479	640	580	2617
Information & Communication	132	149	145	122	168	716
Humanities & Arts	1863	1388	999	881	865	5996

Source: Strategic Management Support Unit, TUT (2010)

The emerging shift in the enrolment pattern from the arts and humanities to management and commerce as contemplated by the DoE is also reflected in the career aspirations of prospective university undergraduates. Survey outcome of 12,204 Grade 12 learners in 288 schools across the nine provinces of South Africa by the Research Programme on Human Resources Development (HRD) at the Human Science Research Council (HSRC) in 2001 indicates that vast majority of learners planned to study Business and Commerce at a HET institution (Cosser, 2010:47). For example, 32%, 23%, 15%, 11% and 2% of learners planned to study Business and Commerce, Engineering and other applied sciences, Health Sciences, Natural and Mathematical Sciences and Education respectively (Cosser, 2010:47) while fewer than 10% of learners planned to pursue studies in other fields. Enrolment reality at institutions of higher learning however does not support career ambitions of learners as demonstrated above. In 2002 for example, the profile of headcount enrolments by study field revealed a wide disparity between learner preferences and student enrolments as shown in Table 1.7.

Table 1.7: preference (2001), and enrolment (2002) by field of study

Field of study	DOE targets %	**P** 2001	**E** 2002	**%**
Science, engineering & technology	37.0	149,679	22,479	15
Business & commerce	33.0	100,034	19,673	20
Education		4,415	1,948	44
Social science and humanities	30.0	55,833	17,377	31
Total		309,061	61,477	20

Source: Adapted from Cosser (2010)

As illustrated in Table 1.7, there is a wide margin between the preference rates and actual enrolment in all fields of study except education with 44%. Two reasons can be attributed to this disparity. First, low pass (endorsement) rate in 2001 matriculation examination results. This suggests that out of the 309,061 Grade 12 learners who would want to enter the HET institutions in 2002, only 61,477 (20%) passed with endorsement and actually enrolled at a HET institution. Secondly, vast majority of matriculants who would want to pursue degrees in SET and Business and Commerce, for example, could not as a result of their failure in subjects such as mathematics and science which are basic requirements for enrolment in these fields of study. Preferences and actual enrolment in the field of education (as shown in Table 1.7) is quite worrisome when viewed against increasing demand for educators in the country.

According to the forecast of occupational demand for selected high-skills occupation (2001-2006) by Woolard *et al*. (2003), a total of 354,469 educators would be required to meet new and replacement demand. Similarly, the forecast puts the number of managers that would be required over the same period at 280,298. Since these are the two categories of professionals with the highest number of replacement demand (according to the forecast), Cosser (2010) suggests prioritisation of the recruitment and development of educators and managers by institutions of learning and public and private enterprises. To unblock the current skills shortages in the SET field, Woolard *et al*. (2003) suggest increasing the quality of mathematics and science

education in the schooling system. Such quality enhancement, Woolard and his colleagues reiterates, would, in the short-term, have the effect of limiting the number of SET entrants into HET system, but ultimately ensure that more students who enter SET programmes graduate with SET-related qualifications.

1.1.5 Skills demand and supply characteristics

In a country that annually spends over 20% (e.g., R140.4-billion in 2009/10 budget) of the total government expenditure on education (Verwey *et al.*, 2009) and has 12, 3 million learners (26% of the total population) and more than a million students (2% of the total population) in tertiary institutions, it is difficult to justify such a high rate of skills shortage and low rate of job creation. One possible reason that could be responsible for this reality is the education system's failure to effectively respond to the dynamics of skills demand and supply in the country. Accordingly, Thompson (1981) and Forojalla (1992) both identify mis-skilling as one of the factors contributing to the growing level of educated unemployed. This, according to the human capital development theory, inevitably results in poor education investments as some of the rewards are forfeited. Another factor that could impair the ability of the higher education system to produce sufficient skilled graduates to meet South Africa's needs has been attributed to the high rate of student dropout. According to the DoE (2005), of the 120,000 undergraduates who entered higher education for the first time in the year 2000, half of the cohort dropped out before completing their degrees and only 22% of the total cohort had graduated at the end of their third or fourth year of study.

It is equally important to note that, while considering the number of graduates at South African institutions, a sizeable number of these graduates are foreign students who eventually returns to their countries after graduation and so do not add up to skills that would be available in the South Africa's labour market. The production of students with skills that are less desired by the economy therefore creates a workforce with inappropriate skills and increases the already high rate of graduate unemployment with the attendant socio-economic and psychological consequences. This situation needs to be redressed immediately as the continued inappropriate investments in human capital could seriously constrain the country's prospects for sustainable economic growth.

In the artisan trades, Breier (2009) attributes the massive shortage of artisans to the decline of the apprenticeship system and the failure of the substitute interventions – training through learnerships and the Further Education and Training sector – to eliminate the backlog. A particular concern is that an increasing number of young people who have received some form of artisan training do not find jobs after graduation because they have not had sufficient or appropriate work experience (Breier, 2009). Other factors contributing to the scarcity of certain types of skills might include a) the education and training system does not produce them at all, in sufficient numbers or at acceptable quality – which can be termed a "genuine skills shortage"; b) enterprises under invest in requisite on-the-job training and other learning activities; c) cyclical demand patterns; d) restrictive immigration regimes keep out globally critical skills; and e) uncompetitive salaries and conditions of employment. In the case of the latter, there might be enough individuals that are suitably skilled but they are not prepared to take up positions on offer or if currently employed, are choosing not to continue practicing in these occupations (Breier, 2009).

1.2 The problem statement

A skill shortage is a mismatch between supply of people with particular skills and the demand for people with those skills (Frogner, 2002). Evidence from existing literature shows that skills shortage in South Africa is already reaching a critical height (Govender, 2008; SAICA, 2008; Kinnear & Sutherland, 2001; Harris, 2007; DoL, 2006). A survey report by Jinabhai (2005) reveals paucity of competently skilled black managers and other professionals in South Africa and this trend is likely to reach a critical mass in the 21st century. This report is consistent with projections by the National Skills Authority (as cited in Jinabhai, 2005) which shows that there are only 3-million skilled people in South Africa. According to the Human Sciences Research Council (HSRC) report by Pretorius (1999), 76% of the 273 organisations surveyed did not have adequate skilled human resources. Similarly, 54% of 113 organisations that employs engineers have problems in recruiting professionals – especially mechanical, electrical, civil and industrial engineers. Furthermore, 25% of 65 of the organisations surveyed experienced shortages in engineering technicians. The report also revealed shortages in IT professionals, accountants, economists,

financial analysts, investment specialists, medicine, actuarial practitioners, managers and artisans.

According to Cisco Systems (2006), South Africa compares to nine emerging economies surveyed in the Middle Eastern region and Pakistan. The report of the survey indicates that unless networking skill shortages are addressed urgently, there will be shortage of almost 265,000 skilled people required to help drive economic growth in these economies. The study further reveals that by 2009, demand for the skilled people necessary to develop, build and manage IT systems required to support continued economic growth in these regions will outstrip supply. For example, demand will outstrip supply by 24% (i.e. 35,700) in Israel, 24% (i.e. 113,900) in South Africa and 35% (i.e. 114,800) in other countries surveyed in the Middle East region and Pakistan. South Africa has the highest number of skills shortages in comparison to other countries surveyed. By 2011 South Africa will have an estimated shortfall of 19 000 nurses (McGrath, 2003) and while the country trains enough doctors to serve the population, the problem of a huge shortage of doctors in the public sector will probably not be solved in the near future.

Report by Civil Engineering Bulletin cited in Didiza (2007) states that as many as 90% of South Africa's consulting engineering firms are trying to employ skilled engineers, technologists and technicians but finding it hard to identify prospective candidates. Similarly, a survey by the South African Institute of Architects, in conjunction with the Joint Initiative on Priority Skills Acquisition (JIPSA), shows that 80% of the country's architectural practices have shortages of 40% (Khumalo & Mmope, 2007). Research Development Review, RDR (2008:21) further reports that although there has been a steady increase in the total graduate output, the sciences, engineering and technology share of these graduates in percentage remains at an average of 27.5% per annum. Engineering profession is worse hit by poor percentage turnout of graduates. The graduation rate for construction and engineering students at an undergraduate level at universities and universities of technology were put at 14% in 2004 (Didiza, 2007). Lawless (2006) estimates that a shortage of between 3000 to 6000 civil engineering professionals exists in South Africa while Philip (2006) forecast a shortage of about 40 000 engineers and artisans in South Africa by 2009 and 2010.

Apart from the engineering profession, Deloitte and Touche's National Remuneration Guide Survey (2009) reports that about 81% of organisations experience difficulty in recruiting staff due to a critical skills shortage, most especially in the accounting, IT, sales and marketing, lecturing and science fields (Clark, 2009). The Department of Labour's 2007 National Master Scarce Skills List at the end of 2007 indicates that the ICT sector have been unable to fill 37,565 positions; and in the 2008 IT Web-JCSE Skills Survey, it was found that the skills shortage was either having a major impact on businesses or was affecting their viability (Clark, 2009). Reporting Marius Roodt, a researcher at the South African Institute of Race Relations, Clark (2009) states that "every sector of the economy in South Africa – from healthcare to education and every sector in-between – requires specific skills as a matter of urgency".

Skills shortages is already manifesting in poor service delivery. For example, Kgosana (2008) asserts that the Department of Home Affairs is sitting with hundreds of incompetent senior managers who are unable to perform their duties and whose skills do not match their job descriptions. This is as a result of serious lack of management capacity and issues with management competence. Concurring with Kgosana, Stokes (2010:1) declares that:

> If you want a taste for poor skills you need only to look at the country's public sector. Poor performances at South African Airways, the Land Bank, Eskom and the South African Broadcasting Corporation which can be attributed to management, where individuals are often promoted to levels beyond their competence.

The tertiary institutions that are traditionally responsible for producing highly skilled job candidates are themselves crippled by skills shortages. Govender (2008:16) states that the University of Witwatersrand had difficulty recruiting staff in disciplines that required highly-skilled professionals and academics such as accounting, actuarial science, and the core sciences. Govender (2008:16) further states that the University of the Free State could not find suitable employees for senior posts after advertising the positions for two years.

The core of the matter is a report by Mitropolitski (2009) suggesting that there are over 500,000 vacant positions in the public and private sector organisations in South Africa that remained unfilled because employers could not find appropriately qualified South Africans to fill them. At the same time, Hill (2007) states that there are 200,000 unemployed graduates in South Africa with 40,000 of them having university degrees. This situation brings to the fore the issue of 'misalignment' in the skills demand and supply characteristics. Alluding to this reality and also supporting the DPRU (2007) report, Mark Peters, director of executive education at Wits Business School (cited by Peacock, 2009:11) confirms that: "additional problem to skills shortage was the mismatch of training and job openings. The skills shortage is not being addressed properly because we still have so few people employed". Reiterating the problem of skills mismatch further, Peters asserts that:

> JIPSA is not effectively marrying industry's needs and the training provided. Schools and guidance officers have a big role to play in directing students to opportunities. We see an increase in the number of project-based activities in corporate South Africa, but we're not developing people to cope with that environment.

Having considered the evidence presented by various literature reviewed above, the present study concludes that the skills problem in South Africa is not lack of skills generally, rather, it is lack of certain skills that are necessary to drive sustainable socio-economic development that is in short supply thus resulting in 'structural' shortages.

It is against the background of the problems discussed above that the present study seeks to address the following research questions:

1. To what extent are the skills produced by the Higher Education and Training system related to the skills required by industry?

2. To what extent are employers, in collaboration with SETAs contributing to the training and development of employees?

3. Is the Further Education and Training Colleges achieving the set objective of the Human Resource Development Strategy in relation to securing a supply of skills, especially scarce skills, which anticipate and respond to specific skill needs in society?

4. To what extent, if any, is the affirmative action measure contributing to acute skills shortages in South Africa? and

5. Is affirmative action policy contributing to turnover of highly skilled employees in organisations?

Having stated the research questions, the following procedures were adopted in providing answers to them:

a) In order to resolve research question one, related literature review was conducted in chapter one and graduation profile of graduates obtained from six universities and universities of technology from 2005 – 2008. The literature review indicated the type of skills that are presently required to drive sustainable socio-economic growth (demand - side) while the statistics of graduates from selected universities provided the type of skills being produced (supply - pipeline) by the HET system. These presentations therefore showed the extent of misalignment between the skills required by the industry and those produced by the education system. Chapter three also reviewed the Third National Master Scarce Skills List which specified the quantity and quality of skills required in the country for the purpose of immigration quotas for the importation of foreign skills into the country. Chapter three further reviewed specific skills demand and supply characteristics in selected sectors that are classified as crucial to socio-economic growth of South Africa.

b) Chapter two set out the responsibilities of SETAs and a review of its activities. This provided the platform for the empirical research in order to provide answer to research question two. Sections two, three and four of the research questionnaire (Appendix A) contained questions on employee training and

development initiatives by employers and SETAs. This training initiatives are intended to further develop and up-skill employees. Responses from organisations surveyed were statistically analysed in chapter five to provide answer for the research question number two.

c) In order to provide answer to research question three, chapter three examined, through literature review, the types of skills being produced by the FET colleges as against the objective of the HRDS in relation to securing a supply of skills, especially scarce skills, which anticipate and respond to specific skill needs in society, through state and private sector participation in lifelong learning.

d) Chapter four presented a literature survey on skills migration, talent retention and management. Affirmative action measure was also reviewed as it affects retention and turnover of skilled employees and professionals in South Africa. This provided the foundation for the empirical study on affirmative action policy in relation to skills shortages and turnover of highly skilled employees. Section five of the research questionnaire contained questions that solicits information from employers on the effect of the implementation of AA as it affect skills shortages and turnover in their respective organisations. Information gathered from respondents was statistically analysed in chapter five to provide answers to research question number four and five respectively.

1.3 Objectives of the study

A research objective is the researcher's version of a business problem. Objectives explain the purpose of the research in measurable terms and define standards of what the research should accomplish (Bryman & Bell, 2003:37). In solving the research problem and answering the research questions mentioned previously, this study had the following objectives:

The primary objectives of the study were to:

1. Conduct empirical study in order to answer research questions 2, 4 and 5. That is to:

    a) Determine the contribution of employers and Sector Education and Training Authorities (SETAs) towards employee training and development;
    b) Assess the impact of affirmative action (AA) measures in relation to skills shortage in South Africa; and
    c) Determine whether AA contributes to the turnover of highly-skilled employees in the country.

The primary objectives were achieved through the following secondary objectives:

1. Collect secondary data and review related skills development and shortages literature in order to answer research questions 1 and 3 above. That is to:

    a) Examine misalignment in the workplace skills demand and those produced by the Higher Education and Training system in South Africa; and
    b) Evaluate the skills produced by the Further Education and Training band as it relates to one of the objectives of the Human Resource Development Strategy of securing a supply of skills, especially scarce skills which anticipate and respond to specific skill needs in society.

2. Make appropriate recommendations based on the outcome of the research findings to education and labour authorities in South Africa.

1.4 Research hypotheses

According to Cooper and Schindler (2003:118) a hypothesis refers to possible answers to stated research questions. A hypothesis can be defined as an unproven statement or proposition about a factor or phenomenon that is of interest to the

researcher. A hypothesis is a proposition that is empirically testable. Hypotheses are educated guesses about a problem's solution or expectations about groups in a population expressed in empirically tested form. The hypotheses listed below are in respect of employers' contribution to employee training and development, SETA's skills intervention policies and the impact of AA measure on skills shortage in South Africa. Based on the literature reviewed in chapters two, three and four, the research hypotheses for this study were stated as follows:

- **H1** Public and private sector organisations do not have employee training-related policies.
- **H2** There is no relationship between training offered by employers and NQF accreditation.
- **H3** SETA is not effective in its skills development services.
- **H4** Employers do not agree there is shortage of skills in the economy.
- **H5** There is no relationship between AA and shortage of critical skills in South Africa.
- **H6** There is no relationship between AA and turnover of skilled professionals in South Africa.

1.5 Research methodology

Research methodology describes how something will be done. Ghauri and Gronhaug (2005:108) describe research methodology as "a systematic, focused and orderly collection of data for the purpose of obtaining information from them, to solve or answer a particular research problem or question". They are rules or systems which show how the researcher has obtained his/her findings thereby enabling others to examine and evaluate it. Research methodology is therefore wider in scope and it encompasses the research design. It provides the general direction for the research and a logical conclusion or solution to a research problem. Babbie *et al.* (2006) focuses on the individual steps in the research process and the most objective procedures to be used.

Leedy (1997:5) outlines the process of research methodology as comprising of eight steps, as follows:

- Research originates with a question or problem;
- Research requires clear articulation of a goal;
- Research follows a specific plan of procedure;
- Research usually divides the principal problem into more manageable sub-problems;
- Research is guided by the specific research problem, question, or hypothesis; and
- Research accepts certain critical assumptions; research requires the collection and interpretation of data in attempting to resolve the problem that initiated the research.

In considering the eight steps outlined above, Leedy (1997:9) concludes that research methodology controls the study, dictates the acquisition of data, and arranges them in logical relationships. The raw data is then redefined using appropriate approaches that derive meaning from the data, thus leading to drawing meaningful conclusions that add to the expansion of knowledge. In summary, Leedy (1997:9) states that the two primary functions of research methodology are:

- Controls and dictates the acquisition of data; and
- Allows for the grouping of data after the acquisition thereof and allows for meaningful extractions.

1.5.1 Research design

Research design, according to Babbie *et al.* (2006) is “a plan or a blue print of how a researcher intends to conduct a study”. This involves plans for data collection, the instrument for gathering information, how information gathered would be processed and analysed to give meaning to a research finding. Ghauri and Gronhaug (2005: 56) state that a “research design should be effective in producing the wanted information within the constraints put on the researcher”. Such constraints include time, budget, and skills. Similarly, Terre-Blanche, Durrheim and Painter (2006) define research design as a “strategic framework, a plan that guides research activity to ensure that sound conclusions are reached”.

The essence of a research design is to guide the researcher on the type of data to collect, how to collect, process and analyse them in order to answer the research problem(s). According to Cooper and Schindler (2003:181) a research design provides the glue that holds a research project together. The research design involves plans that promote the systematic management of data collection. It indicates what a researcher needs to answer the research questions. Therefore, the research design is the plan, structure, and strategy of investigation conceived so as to obtain answers to research questions and to control variance. The research design includes an outline of what the researcher will do from writing the hypotheses and their operational implications to the final analysis of the data. It is used to structure the research, to show how all of the major parts of the research project such as sampling, data collection and data analysis will try to address the central research questions. The research design provides answers to questions such as: What techniques will be used to gather data? What sampling techniques will be used? How will time and cost constraints be dealt with?

1.5.1.1 Types of research design

There are three basic types of research design: qualitative, quantitative and a hybrid of the two. According to Zikmund (2003:68) the choice of research design centres on the nature of the research, the setting, the possible limitations and the underlying paradigm that informs the research project.

- Qualitative research

Qualitative research aims to gather an in-depth understanding of human behaviour and the reasons that govern such behaviour. A major strength of the qualitative approach is the depth to which explorations are conducted and descriptions are written, usually resulting in sufficient details. The ultimate aim of qualitative research is to offer a perspective of a situation and provide well-written research reports that reflect the researcher's ability to illustrate or describe the corresponding phenomenon. One of the greatest strengths of the qualitative approach is the richness and depth of explorations and descriptions (Chisnall, 2005:18). Ghauri and Gronhaug (2005:109) posit that qualitative research produces research findings that are not arrived at by statistical summary or analysis and lack quantification altogether. They are most commonly obtained from interviews and observations and

can be used to describe individuals, groups or social movements. Rubin (2005:145) notes that qualitative research allows for in-depth, more open and detailed study of selected issues while quantitative research is more generalised. Follow-up questions can be asked during interviews or focus groups in qualitative research whereas quantitative research does not provide respondents with such an option.

- Quantitative research

Quantitative research, according to Cooper and Schindler (2003:563) is a systematic scientific investigation of quantitative properties and phenomena and their relationship. The objective of quantitative approach is to develop and employ mathematical models, theories and/or hypotheses pertaining to a phenomenon. The provision of measurement is central to quantitative research because it provides the fundamental connection between empirical observation and mathematical expression of quantitative relationships. A quantitative design allows the researcher to answer questions about the relationships among measured variables with the purpose of explaining, predicting and controlling phenomenon. Leedy (2001:67). It also allows for data to be rigorously tested using statistical means thus enhancing reliability. Terre-Blanche *et al*. (2006) state that "quantitative methods begin with a series of predetermined categories, usually embodied in standerdised quantitative measures, and use this data to make broad and generaliseable comparisons". The requirements for quantitative research include:

- The generation of models, theories and hypotheses;
- The development of instruments and methods for measurement;
- Collection of empirical data;
- Modeling and analysis of data; and
- Evaluation of results.

Table 1.8 presents the differences between qualitative and quantitative research.

Table 1.8 Differences between qualitative and quantitative research

Qualitative	Quantitative
The aim is a complete, detailed description.	The aim is to classify features, count them, and construct statistical models in an attempt to explain what is observed
Researcher may only know roughly in advance what he/she is looking for.	Researcher knows clearly in advance what he/she is looking for.
The design emerges as the study unfolds	All aspects of the study are carefully designed before data is collected.
Researcher is the data gathering instrument	Researcher uses tools, such as questionnaires or equipment to collect numerical data.
Data is in the form of words, pictures or objects	Data is in the form of numbers and statistics
Subjective - individuals interpretation of events is important (e.g., uses participant observation, in-depth interviews)	Objective – seeks precise measurement & analysis of target concepts, (e.g., uses surveys, questionnaires)
Qualitative data is more time consuming, and less able to be generalised	Quantitative data is more efficient and able to test hypotheses

Source: Neill (2007)

The present study used the quantitative research design which Ghauri and Gronhaug (2005:204) describe as "studies whose findings are mainly the product of statistical summary and analysis". The main feature of quantitative research is the heavy reliance of the researcher on data analysis to arrive at findings or conclusions. Numbers are assigned to the properties in the phenomena to represent their qualities. In quantitative research, analyses are conducted through the use of diagrams and statistics unlike in qualitative research which uses conceptualisation. The choice of a quantitative research design for this study was informed by its primary strengths because, according to Terre-Blanche *et al.* (2006) "the findings are generaliseable and the data are objective". The choice of quantitative design for the present research was further reinforced by the argument presented by Ghauri and Gronhaug (2005:109) that a quantitative research design is more scientific than a qualitative research design.

1.6 Significance of the study

Studies such as Daniels (2007) present a general literature review of skills shortages without providing a clear-cut solution. The present study will approach skills shortage from demand and supply perspectives in order to highlight the misalignment in the skills produced by the education system and skills demanded for economic growth rather than approaching the problem of skills shortages from the labour market dimension only. This will provide the education and labour authorities with a direction for appropriate intervention.

Furthermore, the debate on the desirability or otherwise of affirmative action measure in the workplace has been on. The debate is located within the context of shortage of essential skills required for continuous economic growth in the country. This has prompted the Deputy President of South Africa, Kgalema Motlanthe to call for a scientific research that will lead to an informed decision regarding the retention or scrapping of the affirmative action policy. The outcome of this study will therefore contribute meaningfully in this direction and assist the authorities in arriving at informed decision on the issue. Apart from filling the gap in literature, the present study will also advance the frontier of knowledge and contribute significantly to existing academic literature in the field of human resource development.

1.7 Description of organisations surveyed

1.7.1 Size of the organisation

The empirical study surveyed 160 organisations cutting across public, private and parastatal sectors of the economy. Most of the organisations surveyed have employee size of between 700 and 1000. As in other organisational settings, the participating organisations have identifiable organisational structure which structured tasks according to departments. This helped in identifying employees who are responsible for training activities in the human resource departments and these employees constituted the research elements in this study.

1.7.2 Type of organisation

The study was limited to selected public, parastatals and private sector organisations that are registered with SETA and with employee strength of 50 and above in the Eastern Cape Province; particularly in Port Elizabeth, East London, King Williams

Town and Bisho. Available literature indicates that skills shortages cut across both public and private sector organisations. These organisations include companies, government departments, Local Government Councils, and tertiary education institutions. Secondary data was collected from both comprehensive and universities of technology respectively across the country.

1.7.3 Geographical demarcation

The primary data for the empirical study was limited to selected organisations in the Eastern Cape Province of South Africa, particularly Port Elizabeth, East London, King Williams Town and Bisho areas. Secondary data was however collected at universities and universities of technology across the country.

1.7.4 Unit of analysis

The study analysed various skill development policies and institutional frameworks initiated by government in order to enhance skills production in the country. Graduation profile of selected institutions of higher learning in South Africa were also analysed to determine the types of skills they produced in relation to the type of skills presently in demand by the economy. The empirical research was limited to HR department (Training and Development Managers) in the selected organisations. It is assumed that this category of employees is better positioned to provide information regarding skills requirement/shortages and training needs of employees in their respective organisations. It is also part of their responsibility to liaise and render periodic returns to the labour authorities and SETAs.

1.7.5 Subject of evaluation

The subject of evaluation in this study can be broadly divided into the following areas:

- Overview of skills development strategies, framework and models
- Human capital demand, development and supply
- Human Resource intervention to address skills gap.

1.8 Definition of key concepts

Skills – All the skills, competencies, capacities, capabilities, knowledge, attribute and experience that enable people to do their jobs (Frogner, 2002).

Skills shortage – A skill shortage is a mismatch between supply of people with particular skills and the demand for people with those skills (Frogner, 2002).

Scarce skills – is defined by the Department of Labour (DoL, 2006c) as an absolute or relative demand; current or in future, for skilled or qualified and experienced people to fill particular roles, professions, occupations or specialisations in the labour market.

Critical skills - refers to particular capabilities needed within an occupation, for example, general management skills, communication and customer handling skills, team-work skills and communication technology skills (DoL, 2006c).

Human capital - refers to the stock of skills and knowledge embodied in the ability to perform labour so as to produce economic value. It is the skills and knowledge gained by a worker through education and experience (Wikipaedia Online Dictionary).

Human resource development – is concerned with the process whereby the citizens of a nation acquire the knowledge and skills necessary to perform both specific and occupational tasks and social, cultural, intellectual, and political roles in society (Jain & Taggar, 1997:224).

Strategy - According to Web definition, strategies are group of activities to produce outputs required to achieve planned outcomes.

Black people – A generic term which refers to Africans, Coloureds and Indians (Employment Equity Act, Act 55 of 1998).

Designated group – Black people, women and people with disabilities. (Employment Equity Act, 1998 section 1(e).

Affirmative action - Temporary positive measures or intervention aimed at preferential treatment in appointment, promotion, training and development of designated groups (blacks, women & disabled persons) in order to accelerate and

advance them – thus creating equal employment opportunities for all (Idasa cited in Boikhutso, 2005).

1.9 The layout of the study

This section presents a preview of the thesis in the following order:

Chapter one provides an introduction and background of the study. The research problem for investigation, the research questions, research hypotheses, research objectives and significance of the study were presented. The chapter also highlighted the delimitation of the study.

Chapter two reviews various skills development strategies put in place by government, the enabling legislations and institutional frameworks to support these strategies. Skills development models in other economies will be presented while the chapter also provides the theoretical background for the study.

Chapter three examines the Third National Master Scarce Skills List which provides an insight into the demand side of skill. Literature will be reviewed to further provide the skills demanded by the economy. Skills supply pipeline – the educational system – will be reviewed to establish a trend between the two.

Chapter four discusses Human Resource interventions in addressing the problem of skills gap. The problem of skill migration in Africa in general and South Africa in particular. The implication of this phenomenon on skills shortage on the continent and in South Africa will be drawn. Retention strategies put in place by the South African government and corporate organisations to reduce the problem of skill flight will be discussed in this chapter.

Chapter five focuses on the methodology that will be used in conducting the empirical study. The research questionnaire and administration of the questionnaire will be discussed. Statistical analysis and interpretation of research results will be presented in this chapter. Discussion of the research result will also be presented to conclude the chapter.

Chapter six concludes the thesis by revisiting the research questions and research objectives. The research findings will be outlined while recommendations will be made to appropriate skills authorities in South Africa based on the research findings. The limitations of the research will be highlighted and areas for further research will be suggested.

1.10Summary

This chapter provided a general background to the study. The chapter also evaluated the skills paradox – unemployment in the face of skills shortages in the country. Policy intervention in undergraduate enrolment at institutions of higher learning was discussed. The chapter also presented statistics of graduates produced by HET system according to fields of study in selected universities in South Africa. This provided a basis for establishing the existence or otherwise of skills misalignment. An overview of the skills that are presently required for economic growth in the country were identified and articulated in the research problems of the study. The objectives and significance of the study were also stated. Furthermore, the chapter presented an overview of the research layout while definition of key concepts was also undertaken.

The next chapter presents a review of various human capital development strategies, legal and institutional frameworks that supports skills development in South Africa. The chapter also provides the theoretical background of human capital development while skills development models in other countries will be discussed.

CHAPTER TWO

AN OVERVIEW OF SKILLS DEVELOPMENT STRATEGIES, FRAMEWORK AND MODELS

2.1 Introduction

Chapter one has provided a general background to the problem of skills shortages in South Africa highlighting the misalignment in the skills produced by the education and training system and those in demand by the economy. The chapter provided a background for our understanding of the research problem. The chapter also stated the objectives, research questions, research hypotheses and significance of the study. The layout of the study was also presented.

The present chapter is aimed at presenting an overview of existing policies, structures and legislative frameworks that are put in place to facilitate skills development in South Africa. This chapter also provides the theoretical framework for the study. Similarly, skills development models in other countries will be discussed. A critical evaluation of the National Skills Development Strategy will be presented to conclude the chapter.

2.2 Policy initiative and theoretical influences of human capital development

The South African human capital development initiative was facilitated by the following policy and legislative frameworks:

- The Skills Development Act, 1998 (Act 97 of 1998);
- The Skills Development Levies Act, 1999 (Act 9 of 1999);
- The National Skills Development Strategy (2001); and
- Human Resources Development Strategy (2001).

The above listed policy and legislative frameworks will be discussed in detail to supplement the theoretical framework of this study. The Singaporean Skills Development Model will be discussed while Gary Becker's (1964) Human Capital

Theory and the Segmented Labour Market Theory provide the theoretical influences for the present study.

2.2.1Gary Becker's Human Capital Theory

The human capital theory is premised on the economic viewpoint of considering people as capital and claiming a reciprocal relationship between investment in education and future economic gain (Botha, 2009). Essentially, the basis of human capital theory is the analogy between physical capital and human capital. Gary Becker's (1964; 1975) theory of human capital postulates that human capital can be viewed in general terms, such as the ability to read and write, or in specific terms, such as the acquisition of a particular skill. The individual or state can invest in human capital by means of education and training. The return comes in the future in form of higher salaries and better employability on the part of the individual and the availability of skilled workers on the part of the state. This stock of knowledge, skills and ability will help to increase productivity and performance which in turn will result in enhanced economic growth of a nation.

Becker further posits that human capital does not automatically increase productivity. There must be enough demand for the knowledge, skills and abilities in the labour market and, in addition, there must be enough motivation to utilise them. Basic education is usually provided to young people. Basic education is supplemented by adult education and training, then the assumption is that the benefits extend over the whole working life or the whole life. This strategy is called lifelong learning. The adult education and training can fill the observed gaps in degrees, knowledge, skills and abilities. Again the assumption is that the benefits from education and training are thought to be distributed into the future. According to Becker, four difficulties are associated with this assumption. Firstly, it is not easy to know what type of knowledge and which skills and attributes a person needs, say, after 20 years. Secondly, the world is changing so rapidly that much of the knowledge is ageing economically in a shorter or longer time period. Thirdly, the capacity for learning is limited and lastly, the subjective discount rate by which an individual discounts the future benefits to the present values may change. For instance, some young people do not care about the future, which means that their subjective discount rate is very high; because of this, there is no motivation for schooling or training. The difficulties

expressed above therefore suggest that basic education must be supplemented later by adult education and training. This theory therefore provides a basis for our understanding of state intervention in developing the necessary skills that are needed to achieve sustainable socio-economic growth and prosperity.

2.2.2 The Segmented Labour Market Theory

Another school of thought contributing to the theoretical influences of the present study is the 'segmented labour market' theory, adopting the 'Cambridge Labour Market School' as articulated in Kraak (2009). Segmented labour markets are those markets which have been institutionally divided into distinct and separate employment spheres. Workers in each segment experience distinct processes and outcomes. This structural feature of the capitalist labour market has often been reinforced by racial, gender and other forms of social discrimination and exclusion. The central position of the 'segmented labour market school', according to Kraak, is that participation in labour market is shaped by social processes of 'exclusion' and 'inclusion' which arise out of capitalism's historical evolution and through the specific needs of particular economic sectors at various stages of their development.

The Cambridge labour market school focuses on the concepts 'internal', 'occupational' and 'external' labour markets. Internal labour markets are organised around particular workplaces or employers. Jobs above entry levels are generally filled by internal promotion; skills are learned as part of employment and qualifications are of secondary or no importance. The internal labour market incorporates stable and secure jobs with career paths. Workers gain job security through claims upon particular employers rather than through possession of externally recognised skills (Kraak, 2009:321).The thrust of the internal labour markets is about 'insiders' being treated more advantageously than those 'outsiders' who form part of the external labour market. The second important institutional configuration within the capitalist labour market is the 'unstructured' component of the external labour market. This component includes all workers who access employment independently of state support for, or employer sponsorship of, training (Kraak, 2009: 321). A major part of the external labour market, therefore, is characterised by the fact that it provides no structured pathway into employment for workers seeking employment.

The third segment in the capitalist labour market is the highly structured components of the external labour market which are oftened termed ‘occupational labour markets’ in literature. This segment comprises all those institutions which provide workers with structured pathways from education and training into work. Occupational labour markets encourage the mobility of qualified workers amongst employers and work best with a system of standardised vocational qualifications. Workers seek job security not from any particular employer but from the wider labour market, in association with certified skill and knowledge. Apprenticeship training is the classic example of such a pathway into employment. Similarly, organised professions such as engineering, chartered accounting, law, social work and medicine – all of which require the traversing of a highly structured pathway from school, through higher education, followed by an induction into the world of work.

Although the core principles of the Cambridge segmented labour market school remain relevant under contemporary conditions, the conceptualisation of internal and external labour market structures have been altered to take cognisance of the need for greater flexibility in labour markets and the rise of the ‘knowledge economy’ across the globe. The interplay of these dynamics will have to be incorporated into the segmented labour market theory in other to have relevant application in contemporary work study. The section below will examine the various skills development initiatives and legislative framework put in place by the South African government to achieve sustainable economic growth and poverty eradication among its citizens.

2.3 Skills development policy, institutional structure and legislative frameworks

Skills development has been a major accompaniment for growth in countries in East and South-East Asia. According to Palmer (2007), countries in this region take vocational education and training more seriously than countries in South Asia which have some of the weakest vocational training system in the world. The very high growth rates of many countries in East and South-East Asia (1975-2003 average) – e.g. China (8.2%), Malaysia (3.9%), Singapore (4.9%), Thailand (5.1%), the Republic of Korea (6.1%) – combined with the changing nature of work and the challenges and opportunities globalisation presents, means that skills development

requirements are ever shifting and increasing the need for both skills upgrading and skills for competitiveness (UNDP, 2005). For Japan, the focus given to human resources development is underlined by the motto: *Kuni Dukuri, Hito Dukuri,* meaning "The Country's development depends on the Human Resources Development" (Palmer, 2007). It is against this background, and drawing from the successes of these countries, that South Africa initiated various skills development strategies to sustain its economic growth.

The National Human Resource Development Strategy for South Africa (Asmal, 2001: 5) goes beyond the stated constitutional rights to press for "a plan to ensure that people are equipped to participate fully in society, to be able to create work and to benefit fairly from it". Furthermore, Wagner (2001) asserts that South Africa now faces the daunting challenge of not only creating the workforce of the future, but also the workforce of today. It must therefore train and educate its current population while preparing its future workforce. To realise the goals of non-racialism (the advancement of previously disadvantaged groups and a development of a broader skills base), a number of laws relating to education, labour and skills development were promulgated.

The Promotion of Equality and Prevention of Unfair Discrimination Act (2000) was enacted to make the constitution of the Republic of South Africa (1996) more effective in eradicating social and economic inequalities (Wagner, 2001). The Act was equally created to help all South Africans gain access to jobs. But there is a problem with this aspiration; for example, what happens when majority of the previously disadvantaged people whose interest the act was created to protect is either absolutely unskilled or under-skilled? This problem therefore highlights the need to strengthen existing skills development legislations and structures to make them more effective in achieving set objectives. To this end, the National Qualifications Framework (1995), the Skills Development Act (1998), and the Skills Development Levies Act (1999) are meant to operate as building blocks in creating a new South African workforce. This will be discussed in the following section.

2.3.1 The National Qualifications Framework

The National Qualifications Framework (NQF) is a set of principles and guidelines by which records of learner achievements are registered to enable national recognition of acquired skills and knowledge, thereby ensuring an integrated system that encourages lifelong learning (Meyer & Orpen, 2007:16). The NQF in South Africa was established in 1995 as the vehicle for a new, non-discriminatory human resource development strategy that would contribute to national, economic, social, and cultural development of South Africans (DoE & DoL, 2003). The United Kingdom, New Zealand and Australia's experiences with NQFs might have encouraged the promotion of NQF in developing commonwealth countries like Ghana and South Africa (Palmer, 2007). The NQF in South Africa gives employers, employees and learners one point of reference for qualifications. The passage of the South Africa Qualifications Authority (SAQA) Act in 1995 and the establishment of the SAQA Board in 1996 provided a platform for the implementation of the NQF, with SAQA as the overseeing authority (Kgobe, 1997). The underlying rationale of the NQF is that it would open learning and career pathways for all South Africans, irrespective of their previous formal education, training or work experience. The NQF has 8 levels (from pre-school through certificates, diplomas and degrees, masters and doctorates) and 12 major areas of learning that embrace all sectors of the economy (Duckles, 2003).

The Departments of Education and Labour, realising the rapidly changing world economy (from production to knowledge based) found a common objective for the Human Resource Development Strategy (HRDS) and NQF. Accordingly, the Department of Education (DoE) and that of Labour (DoL) states that

> South Africa's learners and workers have to be increasingly well equipped to engage effectively with such changes in their learning and working lives as well as in their personal, social and civic lives. This means enabling them to continually upgrading their knowledge and skills, develop the cognitive capacity to understand their world and the values to guide their conduct, and adapt constructively to rapid change (DoE & DoL, 2003:6). Such an approach to programme design (and qualifications) applies equally to all learning programmes, whether in the workplace or in learning institutions at all levels.

The major thrust of the NQF is to take an integrated approach to education and training in formal learning institutions and in the workplace. This is reflected in the first objective of the NQF; “to create an integrated national framework for learning achievements”. Not only this, NQF is to facilitate access to, and mobility and progression within, education, training and career paths. Also, NQF is to enhance the quality of education and training and accelerate the redressing of past unfair discrimination in education, training and employment. A major feature of the NQF is that qualifications will no longer be the preserve of formal education and training, but may be achieved by full-time, part-time, distance or work-based learning, or by a combination of these, together with the assessment and recognition of prior learning and experience (HSRC, 1995) cited in Kgobe (1997).

With the establishment of the NQF, many South Africa’s workers who could not obtain an adequate formal education in the past have now been recognised for their work experience. The NQF provides the platform for people to learn continuously and help develop skills that will make them employable throughout their lives. On the whole, the framework, Wagner (2001) observes, is a set of principles and guidelines, by which records of learning achievement are registered to enable national recognition of acquired skills and knowledge, ensuring an integrated system that encourages lifelong learning. In other words, accumulated practical experiences, as well as academic qualifications, are included in all skill profiles. In practical terms, workers with work experience but little formal education are encouraged to attend the Adult Basic Education and Training (ABET) programme, after which they can obtain a formally recognised qualification under the NQF which in turn earn them promotion on the career ladder. As the NQF provides for the recognition of alternative routes, it will allow learners who would otherwise be discriminated against by the conventional system of education and training to progress.

The intention and purposes of the NQF as articulated above appear to be what is required many countries as East and South-East Asia are becoming more interested in adopting NQFs which are often seen by governments as a solution to both national and regional skills recognition. However, there is increasing debate in both the policy and academic literature about whether NQFs are suitable for developing countries. The consensus of opinion at the moment suggests that they are not

(Grunwald *et al.* 2004; King & Palmer, 2007; McGrath, Martins, Smith, Cachalia & Kane, 2005; Young, 2005). Meanwhile, having provided a platform for an integrated national qualifications framework through the NQF, the Skills Development Act, 1998 (Act 97 of 1998) was enacted to provide enabling legislative environment for all skills development initiatives in South Africa.

2.3.2 The Skills Development Act, 1998 (Act 97 of 1998)

The Skills Development Act, 1998 (Act 97 of 1998) was enacted primarily to provide an institutional framework to devise and implement national, sector and workplace strategies to develop and improve the skills of South African workforce. Similarly, the act is aimed at integrating those strategies within the NQF contemplated in the South African Qualifications Authority, 1995 and provide for learnerships that lead to recognised occupational qualifications. Also, the act provides for the financing of skills development by means of a levy-grant scheme and a National Skills Fund; provide for and regulate employment services, and provide for matters connected therewith (DoE & DoL, 2003). The purposes of the act, as stipulated in the Skills Development Act,1998 (Act 97 of 1998) document include improving the quality of life of workers, their prospects of work and labour mobility; improve productivity in the workplace and the competitiveness of employers; and improve the delivery of social services and to promote self employment.

Further to the purposes of the Skills Development Act, 1998 (Act 97 of 1998), the Act is meant to encourage employers to increase the levels of investment in education and training in the labour market and to improve the return on that investment. The Act is also designed to encourage employers to use the workplace as an active learning environment; provide employees with the opportunities to acquire new skills, improve the employment prospects of persons that were previously disadvantaged by unfair discrimination and to redress those disadvantages through training and education. Finally, the Act is also aimed at assisting employers to find qualified employees. The purposes of the Skills Development Act, 1998 (Act 97 of 1998) stipulated above are to be achieved through the establishment of institutional and financial framework such as the National Skills Authority (NSA); the National Skills Fund (NSF); Skills Development Levies Act, 1999 (Act 9 of 1999); and Sector Education and Training Authorities (SETAs).

Apart from existing legislations, the Minister of Higher Education and Training, Blade Nzimande, is proposing that companies doing business with government stand to lose out on lucrative tenders if they do not commit to skills development when they apply for government tenders (Ncana, 2010:11). According to the proposal by the minister, stringent conditions would be put in place to force companies that are awarded tenders to go on massive recruitment drives and commit themselves to skills development and transfer of skills – especially to graduates (Ncana, 2010:11). Part of the minister's proposal is that artisans "imported" from other countries to take part in some of South Africa's big projects should be obliged to contribute in the scarce skills transfer programmes. The minister reiterated that "even when we import them we don't attach any apprentices. If you are going to get government money you must also contribute towards meeting the government's objectives – it's in the interests of the private sector in the end" (Ncana, 2010:11).

2.3.3 Skills Development Levies Act, 1999 (Act 9 of 1999)

The Skills Development Levies Act, 1999 (Act 9 of 1999) was established in terms of the Skills Development Act, 1998 (Act 97 of 1998) to provide for the imposition of a skills development levy of 1% (with effect from 1 April, 2000) of employers monthly payroll. According to section 3 of the Act, every employer (with an annual payroll in excess of R500, 000) must pay a skill development levy to SETA through the South African Revenue Services. Employers are compelled by law to submit statement in respect of the amount of levies collected to SETA. Failure to submit such statement or any under-statement of levies due may attract a fine or imprisonment not exceeding one month upon conviction. Upon submission of an Annual Training Report, employers can reclaim 70% of the company's levies on implementation of various training-related structures, interventions and reports, while the remaining 30% goes to the National Skills Fund and utilised by the National Skills Authority to finance training for the unemployed, youths and people who would otherwise have no hope of improving their skills (Duckles, 2003).

Employers have criticised the act as another form of de-facto tax paid by companies which therefore impact negatively on the profitability of the business. Consequently, some employers suggest cutting their internal training budgets in order to make up

for the money paid in levies (Grobler & Warnich, 2005). However, Peters, cited by Peacock (2009) disagrees with employers' argument and argues that "the levy is not just another tax – it's a way to develop scarce skills". In addition, skills legislation is beneficial to employers as it ensures availability of funds for skills development and lifelong learning. Furthermore, organisastions have clear records of workers' skills development profiles thus making quality reviews or audit easier (Meyer & Orpen, 2007). On the long-run, it is recognised that the skilling of employees must go beyond purely legal compliance to asserting specific strategic business objectives. Citing SAQA (2003), Meyer and Orpen (2007:60) state that

> skills development legislation is not only about compliance. While legislative compliance is indeed critical, the challenge is to align the objectives of the legislation with the strategic objectives of the organisation. It is therefore essential to consider the various workplace pressures that may be encountered.

Such pressures include production targets, safety problems and other risks and talent shortages.

2.3.4 Functions of the National Skills Authority

The functions of the National Skills Authority (NSA) include advising the Minister of Labour on a national skills development policy; National Skills Development Strategy (NSDS) and to formulate guidelines on the implementation of the NSDS. The NSA is also responsible for the allocation of subsidies from the National Skills Fund.

2.3.5 Human Resource Development Strategy

Human resource development can be understood as the "processes of organised capability and competence-based learning experiences undertaken within a specific period of time to bring about individual and organisational growth and performance improvement and to enhance national, economic, cultural, and social development" (Lynham & Cunningham, 2004:319). Similarly, Bowmaker-Falconer, Horwitz, Jain, and Taggar (1997:224) indicate that "HRD is concerned with the processes whereby the citizens of a nation acquire the knowledge and skills necessary to perform both

specific occupational tasks and other social, cultural, intellectual, and political roles in a society". The unlocking and development of South Africa's human resources has become a national concern and priority and a resource essential to future national wealth and well-being (Cunningham *et al*., 2006:63*)*. As a result, South Africa has defined and is implementing a national human resource development strategy aimed at maximising its people's power through the acquisition of knowledge, skills and values (Asmal, 2001). The Human Resource Development Strategy (HRDS) for South Africa was established in 2001. The HRDS addresses the vast challenges of ending poverty and promoting economic growth by seeking to deliver an improvement in several of the indices that contribute to South Africa's low ranking on the United Nation Human Development Index (DoE & DoL, 2003). One of the salient observations of the HRDS document is that the "capabilities of people remain a limiting factor in the attainment of social-economic development" (DoE & DoL, 2003:5). Accordingly, the strategy depends on the effective co-ordination of the following objectives:

- Securing a supply of skills, especially scarce skills, within the Further Education and Training bands of the NQF, which anticipate and respond to specific skill needs in society, through state and private sector participation in lifelong learning;
- An articulated demand for skills, generated by the needs of the public and private sectors, including those required for social development opportunities, and development of small business; and
- A vibrant research and innovation sector which supports industrial and employment growth policies.

Given the above objectives of HRDS, a successful HRD strategy, according to DoE and DoL (2003) thus requires the delivery of both sophisticated occupational skills development and highly effective general, further and higher education across the full range of human capability. The document notes the need for South Africans to have the added responsibility of designing opportunities for fellow citizens to redress the unjust denial of education and skills that remain a crippling legacy of decades of racial oppression.

The HRDS 2001 has been revised to provide a more comprehensive skills development strategy and an improvement on the shortcomings of the 2001 document. The revised Human Resource Development Strategy of South Africa (HRDS-SA 2009-2014) has a short-medium-and long-term perspective (1-year, 5-year implementation plan, and 20-year perspective). The long term strategy priority framework of the revised HRDS-SA include ensuring universal access to quality Early Education Development, eradication of adult illiteracy in the population, ensuring that all people remain in the education and training until age 18 years and ensuring that all new entrants into the labour market have access to employment-focused education and training opportunities. Also, the following are to be achieved by the revised HRDS-SA:

- Ensure that education and training outcomes are equitable in terms of race, gender, disability and geographic location;
- Balance of immigration reflects a net positive inflow of people with priority skills required for economic growth and development;
- All adults in the labour market (employed and unemployed) have access to education and training opportunities that will enable them to acquire a minimum qualification at level 4 of the NQF; and
- Ensure progressive improvement in the external efficiency of higher education, Further Education and Training, and the occupational learning system.

In the medium term, the revised HRDS-SA is committed to urgently overcome shortages in the supply of people with the priority skills needed to achieve accelerated and shared economic growth. The strategy to achieve this commitment includes an accelerated training output in the priority areas of design, engineering and artisans that is critical to the manufacturing, construction and cultural industries; increase the supply of skilled personnel in the priority areas mentioned above through net immigration and retraining opportunities in the workplace; and to accelerate the number of new training graduates in priority economic sectors. One salient strategic priority of the revised HRDS-SA is to ensure that skills development programmes are demand-led through substantive and systemic input from employers in the determination of skills demands for the country. This is a reflection

of the Singaporean skills development model which maintains a close link between economic development and the skill content of the skill formation process. The system provides that the expected trade patterns, as interpreted by the Economic Development Board (EDB), form one of the most important considerations for setting skills targets for the education and training system (Sung, 2006). This model enables the Singaporean government to channel new resources towards emerging new skills which would be required in the next stage of economic development. In other words, skills development initiatives are systematically aligned with the skills that would be required for current and future economic development. Successful application of this model in South Africa will see institutions of higher learning in particular aligning degree offerings with the skills required by the economy. In this way, the education system will be restructured to produce graduates in areas such as engineering, construction, financial management more than in the social sciences and humanities as the case is presently particularly in the 'historically black universities'.

Closely related and equally important is the strategic priority to ensure that FET and HET are responsive to the skills demand arising from South Africa's social and economic imperatives. This strategy, together with the demand-led skills development strategy discussed above will adequately address the problem of misalignment in the demand-supply sides of skills development which is one of the cardinal focuses of the present study. Part of the medium- term commitments of the revised HRDS-SA is to ensure that unemployed adults, especially women, have access to skills development programmes that are explicitly designed to promote employment and income-promoting outcomes. Similarly, the strategy will ensure that all unemployed adults have access to training opportunities in Literacy and Adult Basic Education (ABET) and Adult Education.

With the world economy shifting rapidly from production to knowledge - based, the revised HRDS-SA is committed to improving the technological and innovation capability and outcomes within the public and private sectors. It is hoped that would enhance South Africa's competitiveness in the global economy and meet the country's human development priorities. This commitment will be achieved through the increase in the supply of skilled personnel in areas of science, engineering and technology. There will also be an improvement in South Africa's performance in

areas of teaching, research, innovation and the commercial application of high-level science, engineering and technology knowledge. For this to be successful, the involvement and active participation of institutions of higher learning and research will be highly essential.

The reality today, however, is that these institutions of higher learning and research are themselves experiencing capacity problem. For example, Govender (2008:16) reports that the University of Witwatersrand has difficulty recruiting staff in disciplines that required highly skilled professionals and academics such as accounting, actuarial science, science and the humanities. Similarly, the University of the Free State could not find suitable employees for senior posts after advertising the positions for two years. The situation in the lower academic strata is even more critical. Govender (2008:1) reports that South Africa would a shortage of 94 000 teachers by 2015. Of the 433, 280 teaching posts in South Africa's schools, 62, 616 were vacant as at the end of May, 2008 while 31, 949 posts were staffed by under-qualified, temporary teachers (Govender, 2008:1). Having assessed the application of the HRDS so far, Cunningham (2006:72) concludes that how well current HRD policy and practices are addressing the identified problems is debatable. Cunningham also adds that given the reality on ground, the HRDS does not appear to produce the kind of number of persons demanded by a modernising economy. This reality might not be unconnected with the resulting unintended pressures associated with the NHRDS as discussed in the following section.

2.3.5.1 Resulting pressures and imperatives of HRDS implementation

Empirical evidence from most countries indicates significant pressure for rapid industrialisation (Harbison & Myers as cited in Cunningham, 2006). This is also true of South Africa situation. Such pressures, particularly relevant to successful implementation of the NHRD strategy include:

- the drive to increase the national density of research, science, and engineering skills;
- the need to attend to mounting population pressures and concomitant policy dilemmas of, for example, increasing economic efficiency versus reducing high unemployment;

- the difficulty of balancing political and social pressure – balance essential for sustaining a new and still very delicate democracy;
- addressing the critical housing shortage and growing dissatisfaction with ineffective service delivery of basic social services;
- attending to government capacity building including the development of an effective civil society and education of the citizenry for democracy;
- developing the means and methods for reliable data collection crucial to the implementation, accurate assessment and adjustment of national strategy and policy;
- improving the focus on increasing health care needs, particularly that of the HIV/AIDS pandemic; and
- balancing the call for the massification of education with the mounting need for more and improved skills development (quantity versus quality) and establishing outlets other than tertiary education for the development of these skills (Cunningham *et al.*, 2006:78).

Further contextual pressures, according to Cunningham *et al* is about how to deal with inequalities on all fronts, as can be seen in economic ownership and participation, gender inequalities in the workplace and society, and the widening socio-economic gap. Another pressure includes the need for both developed and lead trade partnerships and alliances for regional economic development to enhance international competitiveness, and political stability. Dealing with these pressures and resulting imperatives is no small task (Cunningham *et al*., 2006). The government has, however, put an impressive network of related policy and strategy into effect. With mounting evidence to suggest that steady progress is being made on multiple fronts, a number of factors working for and against successful implementation can be identified in Figure 2.1.

Figure 2.1: Factors working for and against successful NHRDS implementation

Factors for (+)	Factors against (-)
Comprehensive NHRD policy and strategy	Lack of reliable performance indicators for managing and adapting strategy and policy implementation
Policy and strategy support legislation	Lack of governance and delivery capacity
Liberal national constitution	Slowing economic growth and strongly outward-focused economy
Expanding African socioeconomic middle class	Increasing labour and civil society mobilisation
National and regional program agreements	Continued loss of high-level skills to global labour market
Reformulated national education and manpower planning policy and practice	Growing poverty and gap between *haves* and *have nots*

Source: Cunningham *et al*. (2006: 79)

The above pressures, imperatives and factors have implications for both the HRD profession and policy making as briefly highlighted below by Cunningham *et al.* (2006: 79).

2.3.5.2 Implications for the HRD profession and policy making

Key implications of the preceding analyses for the Human Resource Development profession in South Africa include a) practicing and studying HRD from an interdisciplinary perspective and within the national framework of HRD and thrust of skills priorities; b) through the integration of education and human capital planning, balancing theory, research and practice to achieve definable outcomes and simultaneously meeting the need for systemic assessment methods for both short-term and long-term human resource requirements and problems; and c) ensuring that broad estimates of HRD needs are both quantitatively and qualitatively met and that these go beyond scarce-skills identification (Cunningham *et al.,* 2006:79).

In the area of policy implication, the NHRD strategy needs to address internal and external transformation by ensuring that NHRD is contextualised within the prevailing and broader political, social and economic global forces. Similarly, the NHRD strategy must balance current and future capacity needed for internal and external competitiveness moreso given South Africa's status as one of the five emerging

markets in the world economy. It is also important that the NHRD policy makers should device mechanisms to ensure the translation of theory into practice in a way that does not result in the destabilisation of the society. This would ensure a synergistic approach and a carry-through from education to market skills requirements. Finally, the NHRD strategy should ensure that internal and external policies and procedures align with current best practices, thereby addressing the human, social and economic needs of the society (Cunningham *et al.,* 2006:79).

2.3.6 National Skills Development Strategy

The National Skills Development Strategy (NSDS) was established in 2001 as one of the platforms aimed at achieving sustainable economic growth for South Africa through skills development (Duckles, 2003). The major focus of the NSDS is the emphasis on a new approach to education and training that will give people real, practical skills through outcomes-based training. The main objectives of the NSDS as contained in DoL (2005) include the following:

- Prioritising and communicating critical skills for sustainable growth, development and equity;
- Promoting and accelerating quality training for all in the workplace;
- Promoting employability and sustainable livelihoods through skills development;
- Assistibg designated groups, including new entrants to participate in accredited work, integrated learning and work-based programmes to acquire critical skills to enter the labour market and self-employment; and
- Improving the quality and relevance of provisions.

This NSDS, Kraak (2008) observed, is similar in objectives to the 'modern apprenticeship' of the United Kingdom and Australian context, but more ambitious and expansive in scope. This will be achieved through the establishment of national learning standards by all economic sectors through which all learners can be assessed. The strategy envisages an acquisition of skills that will not only make learners valuable contributors to economic growth, but also allow them to find employment, develop their careers, or build their own businesses. The new approach, according to Duckles (2003) is a major departure from the traditional

methods of learning and evaluating learners based on examinations. Accordingly, the new system required candidates to be assessed on what they can do rather than their ability to pass examinations. Legal and operational framework to achieve the new system of education and training include the National Skills Development Act, 1999, NQF, SAQA and the SETAs.

Debate around efficiency and effectiveness informed the drafting of the NSDS II (April 2005 – 2010). NSDS II was implemented in the context of concerns that a skills crisis was becoming a 'binding constraints' on national development. This has prompted a new set of government interventions in the form of prioritising ways to address skills shortages and mismatches (Visser & Kruss, 2009:360). Of particular concern is a critical intermediate-level skills shortage, especiallt the shortages of skilled artisans in critical sectors such as construction (Makora, 2007).

The DoE (2005) cited in Meyer and Orpen (2007) define the objectives of the revised HSDS (2005 – 2010) to include prioritising and communicating critical skills for sustainable growth, development and equity. This involves developing skills to support national and sectoral growth, making information on critical skills widely available to learners. Also, the NSDS is to promote and accelerate quality training for all in the workplace. Consequently, by March 2010, at least 805 of large firms and at least 60% of medium firms' employment equity targets are supported by skills development (Meyer & Orpen, 2007:57). Within this period also, skills development in at least 49% of small levy paying firms is supported and the impact of the support measured. Within the same period also, an estimated 700,000 workers would have achieved at least ABET Level 4. Departments are equally supposed to spend at least 1% of personnel budget on training within this period and the impact of training on service delivery is measured and reported. Given the spate of recent mass protests against poor service delivery in provinces like Gauteng, Mpumalanga, Western Cape and North – West (SABC-FM News, 2009), and spontaneous industrial actions by workers in almost all sectors of the economy, this objective may still be far from being achieved.

The NSDS II contemplates promoting employability and sustainable livelihoods through skills development and suggests that by March 2010, at least 450,000

unemployed people would have been trained and 25% of this number to undergo accredited training. Similarly, 70% of those trained should be placed in employment, self-employment or social development programmes, or should be engaged in further studies (Meyer & Orpen, 2007). Within the targeted period also, not less than 2000 non-levy paying enterprises, Non-Government Organisations (NGOs), and community – based cooperatives would have been supported by skills development with 75% success rate anticipated. In addition, NSDS II is designed to assist designated groups, including new entrants to participate in accredited work, integrated learning and work-based programmes to acquire critical skills to enter the labour market and self-employment. This objective should translate to training not less than 125,000 unemployed people to acquire basic entry, intermediate and critical skills that will make them employable. By March 2010, 50% of this number would have successfully completed their training programmes. All critical skills learners covered by sector agreement with FET and HET institutions should be assisted in gaining work experience locally or abroad with 70% of this number being able to find employment or self-employed.

The revised NSDS places a lot of responsibilities on the SETAs and the success or failure of the skills strategy largely depends on the effectiveness of this education and training authorities, who are expected to install cost-effective mechanisms to collect, analyse and report evidence that quality learning outcomes are achieved. In the words of the Minister for Labour – Mmembathisi Mdladlana, “the NSDS II is no longer just an ambitious vision of the future; it is now a reality for more and more ordinary South Africans” (Meyer & Orpen, 2007:59). However, with high poverty level, growing unemployment rate and increasing spate of protests against poor service delivery in South Africa, the realisation of the objectives of the NSDS II by March 2010 will require significant efforts by all relevant authorities.

2.3.7 Sector Education and Training Authorities (SETAs)

Government established the SETAs with the sole mandate of helping implement the National Skills Development Strategy by ensuring that necessary people learned skills required by employers and communities. A SETA facilitates skills development in an economic sector, for example banking, manufacturing or mining with 23 SETAs covering all the economic sectors in South Africa. The major skills development

function of the SETAs as provided for in the Skills Development Act, 1998 (Act 97 of 1998) includes the development of a Sector Skills Plans within the framework of the National Skills Development Strategy. Also, SETAs are required to implement their skills plans by establishing learnerships, approving workplace skills plans, allocation of grants in the prescribed manner to employers, education and training providers, and workers; and monitoring education and training in the sector. SETAs are also saddled with the responsibility of identifying workplaces for practical work experience, supporting the development of learning materials and improving the facilitation of learning. SETAs equally have the mandate to collect and disburse the skills development levies in their sectors and liaise with the National Skills Development Authority (NSDA).

The 23 SETAs cutting across all the economic sectors of the country are: Agriculture (AGRISETA), Banking (BANKSETA), Chemical Industries (CHIETA), Clothibg, Textiles, Footwear and Leather (CTFLSETA). Others are Construction (CETA), Education, Training and Development Practices (ETDPSETA), Energy Sector (ESETA), Finance and Accounting Services (FASSET), Food and Beverages Manufacturing (FOODBEV SETA), Forest Industries (FIETA). The remaining are: Health and Welfare (HWSETA), Information Systems, Electronics and Telecommunication Technologies (ISETT), Insurance (INSETA), Local Government (LGSETA), Manufacturing, Engineering and Related Services (MARSETA), Media, Advertising, Publishing, Printing and Packaging (MAPPSETA), Mining Qualifications Authority (MQA), Public Services (PSETA), Services (SERVICESETA), Tourism, Hospitality and Sports (THETA), and Wholesale and Retail (WRSETA) (Meyer & Orpen, 2007:363).

The functioning of SETAs could be likened to the Thailand's model which considers that human resource as the nation's main asset and should be continuously developed. Rojvithee (2007) states that the Thai government has a clear policy on human resources development (HRD) and considers that the best strategy to develop a workforce is in the workplace. With this concept in mind, the government of Thailand enacted the Skills Development Promotion Act (2002) to encourage and provide incentives for enterprises to provide training and skills upgrading to employees and non employees (unemployed people). In this way, the Department of

Skills Development in Thailand report that 13,890,000 workers were trained in workplaces between October 2005 and September, 2006 (Rojvithee, 2007).

In South Africa, however, available statistics suggest that many employers and other stake holders believe that SETAs are ineffective in discharging their statutory functions. Blaine (2008:1) citing Kodwa reports that "the SETAs which were established by government as an intervention to provide necessary skills both to workers and the unemployed have collectively failed dismally". In the same vein, Bodibe and Ndungu (2010) state that the Sector Education and Training Authorities (SETAs) which was established to manage the transition of young people from the education system to the world of work by equipping entrants into the labour market with workplace skills has failed dismally, with a few exceptions. Bodibe and Ndungu notes that "placing these institutions under the Ministry of labour was a big mistake which only serves to show that we did not really know what we wanted to do with these bodies. Also, having 27 SETAs in an economy divided into ten broad sectors was a serious waste of resources. Current proposals towards the restructuring of these bodies are a welcome development but this should extend to their rationalisation in order to limit duplication of functions, eliminate turf battles and ensure coherent policy implementation". Bodibe and Ngunu's positions regarding the placement of SETA under the DoL and the proliferation of SETAs has been justified as SETAs have recently been moved from the DoL to Department of Higher Education and Training (DoHET) with 23 setas restructured to 21 (Lund, 2010).

Cunningham (2006) citing the DoL (2003) reports points out that only 15% of employed workforce received some form of training related to their jobs. A comparative analysis by Clarke, Eifert, Habyarimana, Ingram, Kapery, Kaplan, Schwartz and Ramachhandran (2005:60) shows that South Africa recorded the lowest training of skilled workers (45.6%) when compared with other emerging economies such as Brazil (77.3%), China (69.1%), India (55.0%), and Poland (79.9%). The same trend is also obtainable for the unskilled workers. This indicate that despite many years of positive economic growth, combined with the augmentation of the National Skills Development Strategy and National Human Resources Development Strategy, local companies were not responding to

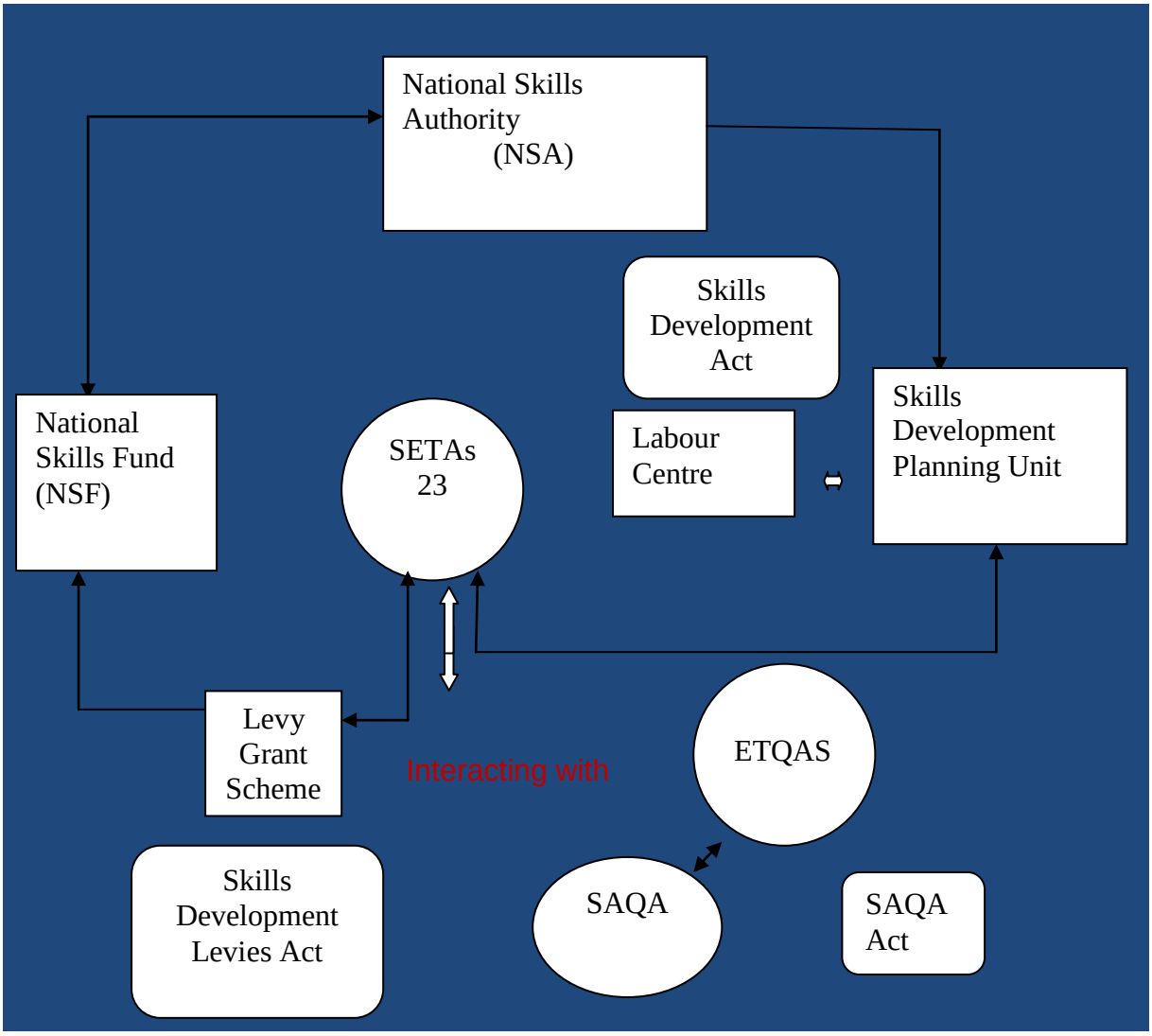
incentives to provide training. This is reflected in the huge amount (R600-million) of unspent budgetary allocation returned to the treasury by SETAs from its annual budget of R5-billion in 2007.

Peacock (2009) reports that the Sectoral Education and Training Authorities (SETA's) have failed to spend R600-million meant to develop the skills of workers and the unemployed across the country. Their expenditure failure comes as government is pondering whether to reduce or close down the 23 SETA's when their terms expire in 2010. Peacock (2009:11) also puts the problem of inadequate training provision on the SETAs rather than business. Citing Mark Peters, Peacock (2009) reports that "business is willing to spend the money and there is a big demand, but corporate South Africa needs to take greater control in the SETAs that they are funding". The biggest problems facing the SETAs, according to Blade Nzimande, Minister for HET, as reported in Ncana (2010:11) "was the lack of accountability, financial mismanagement and alleged corruption".

Consistent with Nzimande's position on the SETAs, Grawitzky (2007), Marock (2007) report public concern about the inefficiency and ineffectiveness of SETAs' performance with high profile cases of corruption and maladministration and unspent budgets in some SETAs leading to calls for a review and restructuring of the system. Similarly, Letsoalo (2007) summarises the widespread claims of corruption and mismanagement by SETAs. Notwithstanding the allegations leveled against SETAs as pointed out above, Marock (2007) finds that there has been systemic progress, and that taken together, SETAs as newly created institutions with a multi-faceted mandate, are on a positive trajectory. Based on a review of SETAs' performance, Marock argues that the considerable problems and difficulties experienced – such as complexities of implementation, lack of capacity in monitoring and evaluation, quality assurance and management information systems – relate primarily to the challenges of building new institutional forms to anchor skills development. Building new institutions, Marock further argues requires time for maturation, a task that is exacerbated by the multi-faceted mandate and potentially conflicting expectations for SETAs' performance.

Daniels (2007:34) identifies two dimensions to availability of skills training as: a) training the unemployed, and b) training the employed – from low-to high-skilled. These two dimensions fall directly within the statutory responsibility of SETA. For the unemployed, Daniels (2007) argues that it is imperative for the SETAs to spend their budgets to develop general and specific training programmes which are part of the social responsibility of the state. If however SETAs are unable to develop suitable programmes for the unemployed people, then one of the most powerful abilities of the SETAs to effect meaningful change in the labour market is compromised (Daniels, 2007:34). These initiatives, Daniels suggests must be well targeted, and this could be better achieved if SETAs pooled their financial resources for this purpose and develop cross-SETA training programmes. However, given the budgetary under-utilisation, financial mis-management and alleged corruption by SETAs' officials as identified by Nzimande, cross-SETA training initiative suggested by Daniels may not be achieved. The structures for implementing the skills development legislation are illustrated in Table 2.2.

Figure 2.2: structures for implementing the skills development legislation



Source: Adapted from Meyer and Orpen (2007:59)

2.4 Critical evaluation of the National Skills Development Strategy

The objectives to achieve sustainable economic growth through skill development strategies as articulated in the National Skills Development Strategy (NSDS) document, which is a platform upon which other skills development initiatives are anchored is, by no means, comprehensive with the potential of providing the needed human resource requirement in South Africa. However, the National Skills Authority saddled with the responsibility of advising the South African Minister of Labour on skills development policy has so far identified certain problems being encountered by the NSDS. For example, the NSA has noted that the quantitative data provided by

some of the SETAs could not be verified and/or validated, resulting in skewed results (DoL, 2006). Furthermore, DoL (2006) states that it is still not easy to trace learners to confirm their employment placement status; and lastly, there is a need to develop an information system that will effectively provide the requisite information at all levels of implementation for all stakeholders to access. The above report by NSA calls for serious concern amongst labour authorities and researchers as well.

Referring to the above report by the NSA, Kraak (2008:10) asserts that "these observations – that many of the performance outputs of the NSDS are difficult to evaluate and verify – is an important governmental admission of a significant weakness in the current system". Some of the successes claimed by NSDS have also been questioned by analysts. For example, Maree (2006) contests the claim by NSDS to have successfully trained a cumulative total of 6,123,937 out of a total workforce of 10.8-million workers over a period of four years as practically unrealistic. Similarly, Baatjes (2008) disagrees with the claim by the NSDS to have trained 899,686 workers in achieving an NQF Level 1 qualification through ABET training across the country in previous years. Baatjes argues that to acquire a full NQF Level 1 qualification in one academic year is highly unusual given the large number of sub-fields – six – that a learner needs to complete. In addition, available statistics from the Independent Examinations Board (IEB) suggest that the registration for examinations in workplace ABET is much lower than that reflected in departmental reports. Baatjes (2008) further argues that in 2003, the IEB administered a total of only 33,291 examinations for all ABET levels with an average pass rate of 50%. With this pass rates in formal ABET classes, the possibility of the workplace training producing 899,686 Level 1 ABET graduates remains doubtful.

One fundamental component of the NSDS is the introduction of a new training system which recognises workplace training conducted by SETAs within the NQF. Researchers (Kraak, 2005; Maree, 2006; Grawitzky, 2006) have variously commented about the poor performance of the new skill regime which they criticise within the following three categories: government's lack of political will to establish the necessary conditions for the success of the new integrated education and training policy framework as promoted in the early education policy documents of the early 1990s, and as promulgated in several government Acts in the mid to late

1990s. Second, the emergence of governance problems that were unforeseen in the initial 'co-determinist' thinking underpinning the NSDS in the mid 1990s; and operational problems that have made the various implementation steps of the NSDS extremely cumbersome, complex, slow and highly contested (Kraak, 2008).

The new education and training provides for a single, unified and integrated regulatory system as provided for in the South African Education Act, 1994, the South African Qualifications Authority Act, 1995 and the Skills Development Act, 1998. The National Qualifications Framework was therefore established to achieve this objective. However, Kraak (2008) argues that the integration of education and training has never occurred in reality. Most government policies in the post apartheid era, Kraak notes could not be achieved mainly due to capacity problems. Young and inexperienced people entered into high positions alongside existing top government officials without sufficient transfer of the tacit knowledge about state governance from the old officials to the new ones (Kraak, 2008). In addition, Kraak (2001) notes that sufficient policy 'adhesion' had not satisfactorily occurred within the state apparatus with significant levels of policy doubt, particularly with regards to certain policy platforms such as an integrated education and training system.

More fundamental is the inability of government to integrate the Departments of Education and Labour (as they existed under apartheid regime) in order to pursue an integrated education and training policy. Furthermore, only few meaningful linkages were established between education, the key economic departments (the Department of Trade and Industry, for example) and the Department of Science and Technology (Kraak, 2008). Indeed, the past decade has witnessed the glaring absence of a coherent set of economic growth, industrial and skills development policies that would have given support to the idea of integrating education and training and its alignment with socio-economic development in the post-apartheid period (Kraak, 2008). This lack of coherence in skills development policies is evident in the disparity between the scarce skills list released in previous years by the Departments of Labour and that of Home Affairs for the purpose of skills importation.

The introduction of the outcomes - based education (OBE) system and its associated 'unit standards' methodology, both of which have been widely used in the

construction of integrated education and training programmes was highly opposed by some section of the education community (Jansen, 1999; Kraak & Young, 2001; Young & Gamble, 2006). Kraak (2008) argues that OBE is a specific assessment technology and is only one (rather limited) of many methods of achieving a more unified and nationally coordinated education and training system. This has resulted in the weak alignment and policy coordination between the key components of the education-employment nexus in South Africa, particularly its education, training, labour market, technology and industrial policies and institutions. The argument of Kraak (2008) is consistent with the views of Lundvall *et al.* (2002), Nelson (2006) when compared with the education and training systems in the Scandinavian, continental Europe and East Asia where systemic alignment of the three types described above is the central policy response to the challenges of globalisation and knowledge economy.

Apart from the weak policy alignment between the departments mentioned above, there is lack of articulation between SETAs, FET colleges and the Higher Education and Training (HET) sector. The implementation of the NSDS requires a sector agreement between these institutions, however, Kraak (2008) notes that only few of such agreements have been signed and operationalised. This, according to Kraak (2008) signals most strongly the failure of a truly integrated commitment to education and training in South Africa. The collaborative agreement between the University of Pretoria and the Tshwane University of Technology, and the Tshwane North and South FET Colleges in relation to the Rosslyn Automotive Supplier Park project is instructive (McGrath, 2004). The project has resulted in a range of collaborative research, education and training initiatives that have sought to strengthen the relationship between the Gauteng Province's public education providers and the automotive industry. The Department of Education (DoE, 2006) reports that by the end of 2005, the 50 FET colleges had established 172 agreements with the 23 SETAs. Kraak (2008) however submits that unlike the Automotive Supplier Park partnership mentioned above, there is little evaluative evidence on how effective these partnerships have been; for example, the extent to which beneficiaries of training sponsored by SETAs and provided by FET colleges have succeeded in acquiring sustainable employment.

At the heart of this discussion is the failure of the NSDS to overcome the apparent misalignment in education and employment opportunities. The most powerful criticism of the old education system that led to the introduction of the new system was that it was 'provider-driven' or 'supply-led' rather than 'demand-driven'. The window of opportunities that opened for Black students after the demise of apartheid regime saw massive enrolment of students for further education but without adequate career guidance. Enrolments were independent of employer sponsorship or employment guarantees. In other words, education and training was not aligned with the skills demand by the economy. Private training providers and the public FET college system responded to this increased interest from students by opening up more and more areas of provision (Kraak, 2008). The universities also were more interested in the number of students they enrolled without considering the after school job prospects of these students. Ironically, this form of provision was termed 'supply-side' or 'provider-driven' in the post 1994 policy texts which necessitated the introduction of the demand-led model through NSDS.

There was a total disconnection between provision in particular fields on the one hand, and employment opportunities in these fields on the other (Kraak, 2008). The 1996 draft Green Paper on Skills Development argues that training systems needed to be closely linked to the requirements of work and need to be of sufficient quality and relevance to support increases in productivity in the workplace (DoL, 1996:21). The Green Paper (Kraak, 2008) report argues that the provider-led model of the past was based purely on colleges offering programmes in areas they could teach in, irrespective of actual labour market demand for skills in those areas. This was the context which the Skills Development Act of 1998 sought to change; unfortunately, nothing has changed given the enrolment reality in institutions of higher learning today.

Another dimension to the problems faced by NSDS is that the institutions established to implement the new training programmes suddenly became mega institutions with several sub-components. For example, a key sub-component of the new institutional environment comprises institutions concerned with the design, registration and quality assurance qualifications, which include 12 National Standards Bodies (NSBs), over 100 Standards Generating Bodies (SGBs), and many Educational and

Training Quality Assurers (Kraak, 2008). The management of all these institutions falls on SAQA whose main functions are to oversee the development of the NQF, to register NSBs and SGBs, accredit ETQAs, and ensure international comparability of standards and qualifications. In addition, the 23 SETAs need to cooperate with all of these bodies in order to execute all of their functions (Kraak, 2008). The resultant effect of this enormous responsibility is capacity problem. It became difficult to find competent people to manage these organisations given the endemic skills problem in the country. The SETA structure, for instance, suffered from high staff turnover, especially at the senior levels, and this affected morale and institutional capacity (Kraak, 2008). This aptly explains why some SETAs have had three or four Chief Executive Officers in the first five years of their existence.

Grawitzky (2006) contends that because of the several nationally-defined performance indicators set by the NSDS for each SETA to meet, certain unforeseen problems arose. For example, Kraak (2008) observes a definite performance indicator 'fatigue' as practitioners within the SETA system concentrate their efforts and attention on meeting targets at the expense of other areas of work. Secondly, Grawitzky (2006) argues that the current mechanisms to measure SETA performance – which are all national targets – could inadvertently have led to a neglect of sectoral needs and activities. SETAs, which are sector-based are required to deliver against the requirements of a national agenda – the NSDS – and are not measured against delivery in their own Sector Skills Plan. The fallout of this over emphasis on the NSDS to the detriment of sector skill needs, Grawitzky (2006) maintains, has shifted SETAs focus on quality of learning to numerical targets thus compromising the quality of training.

The under-performance and other shortcomings of SETAs might have informed the decision of Dr. Blade Nzimande, the Minister for Higher Education and Training to announce that "the SETAs landscape is currently under review ahead of the proposed re-establishment of SETAs on 1 April, 2010". The minister stated further; "there was a need for an intense assessment of the SETAs to ensure greater accountability, improved employment of resources, better management of funds in order that they fulfill their role as a central cog of skills training and job creation machinery" (Khumalo, 2009). It is envisaged that most of the criticisms against the

SETAs will be addressed by the proposed intervention and re-establishment of the organisation by the education authorities in order to make it more effective and responsive in its education and training activities.

2.5 Skills Development Model in other countries

Empirical evidence of strategies such as those initiated by South Africa to address skills shortages and also to identify core skills that will be needed by organisations to drive the economy in future have been successfully implemented by some industrialised economies. Countries such as the United States of America (USA), the United Kingdom (UK), Australia and New Zealand have worked out the generic skills that workers would need to perform well in the workplaces in the future. According to Tan (1998: 2) the USA, for instance initiated the Security of Labour's Commission on Achieving Necessary Skills (SCANS). The SCANS report was submitted in 2000 and the American Society for Training and Development (ASTD) articulated the essential skills employers would need in the future to sustain the economic growth of the USA.

Furthermore, Tan (1998: 2) reports the strategy adopted by the UK – the "work on core skills" which was undertaken under the National Council for Vocational Qualifications (NCVQ) whilst the New Zealand government carved its skills development strategy as part of the development of the National Curriculum. In Australia, the key competencies were developed under the aegis of the Australian Education Council and Ministers for Vocational Education, Employment and Training. These strategies were initiated in the late 1980s and early 1990s. South Korea really planned ahead with regard to skills development needs of South Korean industry as it emerged. Skills development was a strategic element of an overall development strategy that led to rapid and sustained economic growth since the 1970s (Palmer, 2007).

According to Lee (2005:3),

> the evolution of the vocational training system for both small and large enterprises in Korea is characterised by the interaction between the economic development processes, and the demand for and supply of training. The

history of the vocational training system in Korea evolved as an instrument to meet the economy's demand for skilled workers.

These countries have implemented the various skills development programmes successfully and this will provide emerging economies such as South Africa with empirical reference point upon which policies and legislations aimed at addressing core skills development initiatives can be formulated and implemented. The section below will discuss the skills development strategies in Singapore, Ireland, New Zealand, Germany and Alabama State (USA) respectively.

2.5.1 Singaporean Skills Development Model

The Singaporean model makes economic development the focus of education and training. The formal education in Singapore is stratified into two streams. After the first ten years of general education, students are assessed and the 'academically able' students follow the academic route while others follow the technical route. Those following the academic route will be admitted into a junior college and later at a university. Those in technical fields receive education at the Institute of Technical Education. The education and training at both institutions reflects the relative needs of the different occupations in the broad sense and not the immediate need of individuals or employers; but the perceived long-term needs of the economy as a whole. With this model, planning of the future supplies for different occupations is managed at an early stage and this worked much better during the 1970s and early 1980s when Singapore had a 'low-skilled' or 'cost-based' competition strategy.

2.5.2 Vision 2020 in Ireland

According to the Ireland Skills Development Authority, a group of experts was set up in Ireland in 2005 to undertake a research to underpin the development of a national Skills strategy, including the identification of the skills required for Ireland to develop over the period to 2020 as a competitive, innovation-driven, knowledge-based, participative and inclusive economy. The experts thereafter recommended, among other things, the following: The sectoral profile will continue to change for the foreseeable future. The services sector will increase in relative importance while 'traditional' manufacturing and agriculture will continue to decline. This is the direction shift for most developed and developing economies the world over,

including South Africa. This shift to services poses a productivity challenge for policymakers and for enterprise.

The experts further noted that, at occupational level, the greatest increases in employment are expected to occur in the 'professional, 'associate professional' and 'personal and service' groupings. All occupations are becoming more knowledge-intensive, with a corresponding rise in the requirement for qualifications and technical skills. Employees will be required to acquire a range of generic and transferable skills and attitudes. In most cases, work is becoming less routine, with a requirement for flexibility, continuous learning, and individual initiative and judgment. The following, according to the experts, should be included in a generic skills profile:

- Basic/ fundamental skills- such as literacy, numeracy, IT literacy;
- People-related skills - such as communication, inter-personal, team-working and customer-service skills; and
- Conceptual/thinking skills-such as collecting and organising information, problem-solving, planning and organising, learning-to-learn skills, innovation and creativity skills, systemic thinking.

One of the medium term vision of the revised South African Human Resource Development Strategy (2009) is to ensure that all unemployed adults have access to training opportunities in Literacy and Adult Basic education and Training (ABET). Other levels of generic skills in the Ireland model are better acquired at FET and higher education and training levels in South Africa.

Stressing the need for the state to intervene in education and training matters, the Irish experts recommends that "the state is justified in intervening in the market for education and training at certain levels, notably at primary and secondary level, and for certain target groups (e.g. individuals who left formal education without completing a level certificate or equivalent)". This aspect is adequately taken care of in South Africa by the NQF whereas credits can be accumulated by learners within and outside the formal education system. SETAs also have the responsibility of training unemployed youths or those who dropped out of the school system (particularly those from the previously disadvantaged group) with funding provided

by the National Skills Fund. Sustained and enhanced investment in the education and training infrastructure is thus necessary and desirable for the foreseeable future.

The following recommendations of the Irish experts are salient to the present study:

> In the years ahead, labour productivity will be the key determinant of economic growth in developed and developing economies, and increasing productivity will depend, to a large extent, on education and training. A workforce that is better educated and trained can produce higher value goods and services, and is more likely to innovate.

Furthermore, and extremely important to the South African situation is the recognition by the experts that “improved education and training also yields a social dividend – they result in better social cohesion and public health, and mitigate against poverty, crime and social welfare dependency”.

The revised HRDS-SA and related skills development frameworks such as the NSDS and NQF are geared toward achieving the above objectives. Similarly, the Irish experts report that “globalisation requires a flexible workforce”. South Africa, as an emerging economy, must be able to respond rapidly to changes in the world economic and technological environment which can only be achieved with a well educated and adequately trained population. A well educated and highly trained population contributes optimally to a competitive, innovation-driven, knowledge-based, participative and inclusive economy which South Africa aims to achieve through its workforce.

Another area that the South African model should seriously consider is the attraction of skilled migrants to mitigate the effect of current skills shortages and help in achieving its training objectives. The Irish experts recommend the maximisation of the resident population through up -skilling, increasing participation in the workforce, and continually attracting highly skilled migrants. With all the above recommendations in place, the group proposes that, by 2020, Ireland would have achieved:

- 48% of the labour force should have qualifications at NQF levels 6 – 10;
- 45% at NQF 4 – 5; and
- The remaining 7% at 1 – 3 but should aspire to achieve skills at higher levels.

The next section will look at skills development strategy in New Zealand.

2.5.3 Skills Strategy Action Plan for New Zealand

The current New Zealand Skills Strategy was established in 2008 with the main purpose of delivering a unified approach to ensure New Zealand individuals and organisations are able to develop and use the skills needed in the workplaces of the future (www.skillsstrategy.govt.nz). Specifically, the Skills Strategy is to achieve the following goals:

- The effective use and retention of skills to transform work and workplaces;
- Increase in the quality of demand from employers and workers;
- Influence the supply skills and create a more responsive education and training system; and
- A unified approach to defining, valuing and measuring skills.

In achieving the first goal, the Skills Strategy document notes that “retention issues are also a key contributing factor to skills shortages. We therefore need to also consider ways to retain skilled workers by making workplaces more attractive, and ensuring our overall workplace culture helps retain skilled people in New Zealand”. In order to achieve this goal:

- There will be communication, understanding and agreement about the roles and responsibilities of government, industry, individual firms and workers to make sure we use the skills of workers;
- Education and training system will support life-long learning and career development opportunities for individuals;
- The education and training system will support a ‘whole of firm’ approach to skills that takes into account language, literacy and numeracy skills, ‘soft’ skills (e.g. staff development, relationship building, coaching, mentoring) and management and leadership capability development, as well as more

technical skills;

- There will be a national culture shift in approaches to skills development, use and retention to reflect the dynamic link between needs and training so that training will support job redesign as businesses move up the value chain; and
- Industry, government and firms will find ways of retaining skilled people already in New Zealand workplaces, as well as to retain skilled people in New Zealand more generally.

On the second goal, the Skills Strategy notes that employers need to know what skills can help their firms improve productivity, and workers need to be able to voice their ongoing skill needs and take responsibility for their on-going skills development. The tertiary education reforms are designed to ensure that public investment in education and training better meets the needs of industries, employers and students. This work will ultimately only lead to improved investment if industries, businesses and individuals are able to better understand and articulate their skills needs. There is, therefore, the need to identify ways to support industries and firms to take greater ownership of their present and likely future skills needs and develop a better understanding of barriers to workplace learning. Also, there is the need to develop a process that will enable better information about their needs to be used to inform the delivery of tertiary education and training. It will also be important that workers have access to the right information to allow them to make career choices and negotiate opportunities for skills development. The following strategy will be put in place to achieve this goal:

- Firms will be supported to change business models to drive increased productivity through an understanding of current and future skill needs. They will work together within their industries and sectors to make this change;
- Workers will be supported to acquire skills to allow career progression. They will be able to contribute to the design of skill and workplace development programmes, and have an increased awareness of skill development opportunities; and
- Industry training organisations will be supported in their strategic leadership role to assist industry planning. This will lead to a better match between skills supplied through the tertiary education system and what industry needs.

Regarding the third goal, the Strategy document notes the need to work towards the achievement of increasing the quality of demand from employers and workers, it will be important that the tertiary sector responds to changes in demand by delivering education and training products that better meet their needs.

The tertiary education reforms and the Tertiary Education Strategy 2007-12 have put in place the key priorities and processes to help the tertiary education system to respond to the needs of businesses. In particular, one of the specific areas for improved achievement by the Tertiary Education Strategy includes 'building relevant skills and competencies for productivity and innovation'. It notes that the need to rapidly adapt to a tight labour market means that increasing the achievement of advanced trade, technical and professional qualifications is a priority outcome. The Skills Strategy will build on the tertiary reforms, including developing processes and systems that will ensure a better match between supply and demand into the future. In order to achieve this goal:

- Tertiary provision will be aligned with demand and will support skills use and retention;
- Individuals will choose to study for and then work in areas where there is a demand for skills;
- Skills development, use and retention will be improved through a range of mechanisms that meet the changing needs of workers and industry; and
- There will be an agreed set of principles across industry, workers and government on the sustainable resourcing for skills development in New Zealand.

A broader approach to defining, measuring and valuing skills will need to recognise individuals' employability, labour market mobility and experience. The following therefore will be used in achieving a unified skills qualification framework:

- There will be commonly understood terminology that describes what we mean by skills use and retention by employers
- A coherent qualifications system that recognises that skills are gained in many learning environments, e.g. work-based education and training, and through

informal learning

- Common approaches to the measurement and analysis of skills, skills use and retention. This will include ways to measure increased and lifelong return on investment from the acquisition of effective skills for individuals, workplaces and organisations.

The New Zealand Skills Strategy Action Plan (2008) does not remarkably differ from the South African NSDS except for the first goal which has a component of employee retention. Similarly, both the Irish and New Zealand Skills Strategies are not dramatically different from the South African strategy. The three are premised on demand-led education and training system, coordinated and unified skill measuring mechanisms with sufficient state intervention in providing legal and institutional frameworks in achieving the objectives and goals of the various strategies. The success or failure of the various strategies will, however be determined by a combination of factors such as political will on the part of government to implement the strategies, proper policy coordination amongst education, labour and other economic development authorities. Retention and turnover issues in South Africa will be comprehensively discussed in chapter four of this study. Meanwhile, insights between education and labour market from other economies will be presented in the following section.

2.5.4 Education and the Labour Market in Germany

The German's education system presents a good synergy between skills demand and supply. In presenting the model, Osterman (1995) explains that at about age fifteen, learners choose one of approximately four hundred occupational tracks (which include training for everything from auto workers to bank tellers to accountants to electronic technicians). They then spend four days a week employed by a firm and receiving training, and one day a week in school. The training they receive is carefully standardised nationally and is provided by specially trained and certified firm employees. At the end of this training period, learners take examinations, again nationally standardised and administered by a local business organisation. This system is widely accepted by all segments of the German society, and all actors in the labor market – firms, unions, and government – jointly

participate in administering and supervising it. Occupational content and curriculum are continually reviewed through a series of joint consultative meetings. The German model, which appears novel is however facing the same challenges like those in South Africa. Such challenges include imbalances between occupations trained for and those demanded by the economy, and the sometimes slow response to technical change in updating curriculum (Howard, 1995).

2.5.5 Education and the Labour Market in Alabama State (USA)

Education is one of the entities that benefits from the state's resources in the USA. In order to justify the huge education budget, the State of Alabama, USA carefully aligned the higher education system with the labour market demand. Rosenthal and Collier (2001:2) state that in order to strike a balance between the labour market demands and the public, some state-level higher education agencies took steps to link occupational trends to balance programme priorities based on: the connection between higher education and the economy; the current focus on meeting student and employer demands for jobs and skills training; the need for public institutions of higher education to respond to state policy directives and demonstrate wise stewardship of public resources; and the benefits of academic programme planning and review in a state-wide context.

The connection between the higher education institutions and the labour market in Alabama is enhanced by the understanding that an institution "that responds to the economic base in its region will remain competitive and be better positioned to obtain financial support from donors and legislators" (Rosenthal & Collier, 2001:2). This understanding is further entrenched in the belief that higher education institutions should not exist for their own sake, hence the move from a producer-dominated enterprise to one fully sensitive to and focused on the consumer (Mingle, 1998:6). Mingle advocates for the consumer focused education and training on the basis that the American labor market is very diverse and dynamic hence it is difficult to generalise about the knowledge and skills graduates need. It further complicates predictions about the future demand for specific occupations. However, through employers and external advisory groups' surveys and interviews, many higher education institutions stay closely tuned to this changing job market. This information is shaping and aligning their programmes to the labour market demands.

The recommendations of the 1996 Joint Commission on Accountability is also instructive. Rosenthal and Collier (2001:3) report that institutions of higher education are required to survey graduates and report placement rates. Placement, however, only indicates current employment and does not show future employability nor does it identify the appropriateness of graduate production in terms of its relevance, quantity and quality. For this reason, the Alabama Commission on Higher Education (1999) recommended that the State-level coordinating agencies should explore market analysis to determine the needs of the labour market. This was also informed by the disequilibrium between the supply and demand for workers especially information and technology workers which manifested itself through "high job vacancy rate, low unemployment, projected demand out-stripping supply, higher than average salary increases, and demand for foreign workers" *(*Rosenthal & Collier, 2001:3).

In order to reduce skills over/under-supply in America, many states require that academic programmes go through a review and approval process. In the State of Alabama, this is regulated through the Program Viability Act of 1996 which requires academic programmes in all public institutions to meet minimum graduation rates or be terminated. Most criteria for programme review require employer needs analysis that indicates whether new or existing programmes respond to employment needs. Academic programme planning and review is done on a state-wide basis because individual institutions do not take into consideration what other institutions in and out of state are doing to meet the skills demand. The state wide approach helps to eliminate problems such as duplication of programmes and market over/under-supply. This is because the purpose of investing public funds in education is to achieve increased economic development through increased economic activity, tax base and revenue.

In other states of the United States of America, Rosenthal and Collier (2001) also observe that education and training response to changing labour market demands is equally effective. States like Florida, Ohio, California, North Carolina, Texas and Washington equally pursue similar graduate tracking programmes which inform government about the placement and average earnings of the graduate products. The tracking programmes, however, provide little information on whether graduates

are being trained in the fields most needed by the employers. Ohio further uses “an industry-occupation matrix combined with occupational projections to identify industries likely to provide future entry level and advanced training jobs as a way to reprioritise job training programmes (Rosenthal & Collier, 2001). The Illinois State Board of Higher Education, Rosenthal and Collier (2001) report, also u*ses* the labour market information it shares with other state agencies to undergo a state - wide analysis by field of study and comparison of employment projections with graduate survey data. At Wisconsin, the University of Wisconsin System supports a market research unit that works with universities to identify needed programmes in their region by looking at the demand from employers and students.

2.6 Summary

Becker’s (1964) human capital theory and the segmented labour market theory provides the theoretical background for our understanding of the relationship between state’s investment in education and training and availability of skills to drive sustainable economic growth. The labour authorities in South Africa have established skills development strategies with appropriate institutional and legislative frameworks put in place to achieve set objectives. Such skills development initiatives include the NSDS, the HRDS, the NSA, SAQA, NQF, SETAs, Skills Development Act, 1998 and Skills Development Levies Act, 1999. All these institutional and legislative approaches are aimed at enhancing skills development of workers in South Africa through the education and training system and enterprise training and to provide a coordinated, standardised and unified method of measuring skills, funding training and harmonising qualifications. In order to provide an empirical reference point, skills development strategies in Ireland and New Zealand were also examined.

A careful study of the skills development strategies in the countries examined does not present a remarkable difference from that of South Africa in terms of vision and scope. Having operationalised the NSDS and observed the performance of the institutional frameworks after the first four years (2001 – 2005), a critical evaluation of the concept was done. The feedback suggest that a lot still need to be done in

terms of performance, policy cohesion and coordination between related departments and capacity building within enterprise training institutions.

The next chapter will review the Third National Master Scarce Skill lists prepared by the Department of Labour for the purpose of giving directions to education and training providers in terms of what priority skills to produce and which skill migrants to encourage into the country by the Department of Home Affairs through the expatriate quota system. Furthermore, the chapter will consider the demand – supply characteristics of skills utilisation and development and in turn, determine the extent of match/mismatch between the skills produced by the education system and enterprise training institutions and those demanded by the economy. The chapter will also discuss skills importation as an interventionist approach to mitigate skills shortages in South Africa.

CHAPTER THREE

HUMAN RESOURCE DEMAND, DEVELOPMENT AND SUPPLY

3.1Introduction

In chapter two, some theoretical perspectives which have bearing on the present study were discussed. Skills development model in selected countries was presented. The chapter also discussed the institutional and legal frameworks that were established in order to achieve the vision, objectives and goals of the NSDS. These frameworks articulated and defined strategies and means with which to develop the requisite skills that will sustain economic and social development of South Africa. A critical assessment of the NSDS and performance of related institutional establishments was done. Education and labour market literature in selected countries was presented to provide a reference point for South Africa.

The present chapter will review the scarce skill lists prepared by the Department of Labour. This will assist in giving the basis for discussion of the demand and supply characteristics of priority skills. This chapter will further look at the skills supply pipeline - that is, the general education system, the learnerships programme and other training institutions. The appropriateness and desirability of the skills produced and supplied to the economy in relation to demand will be evaluated. Skills importation as a short-term intervention strategy to skills shortages will also be discussed.

3.2 Review of the National Master Scarce Skills List

The Third National Master Scarce Skills List covers the period between 2008 to 2010 with the broad objective of identifying trends in the labour market and applying appropriate intervention strategy. The scarce skills list was prepared having taken into comprehensive account the skills that lie at the heart of the ‘binding constraints’ on economic growth and development of the country (DoL, 2006c). The list reflects the skills that are most needed in South Africa which need to be acquired or developed. The current list, according to the Department of Labour (DoL, 2006c) is a product of coordinated labour market demand and collaboration between

government and economic sector operators. In preparing the list, a consensus was reached between the Department of Labour on the one hand, and the Departments of Education, Home Affairs, Public Enterprises, Science and Technology, and Trade and Industry (DoL, 2006c) on the other hand. Inputs from employers form the data presented by the SETA Sector Skills Plan. This will be discussed followed by the concept of scarce and critical skills.

3.2.1 Definition of scarce skill

The Department of Labour (DoL, 2006c) defines ascarce skill as an "absolute or relative demand; current or in future, for skilled or qualified and experienced people to fill particular roles, professions, occupations or specialisations in the labour market". Scarce skills are usually measured in terms of occupation or qualification. On the other hand, critical skills refer to "particular capabilities needed within an occupation" (DoL, 2006c). For example, when a firm experiences technological change or reorganises production methods or shortage of specialist professionals (e.g. oncologists, aeronautic engineers, experts in maritime law, etc.). Also, critical shortage involves generic skills such as problem solving skills, general management skills, communication and customer handling skills, team-work skills and communication technology skills. These definitions have introduced some terminologies which need to be explained.

Absolute scarcity, according to DoL (2006c) refers to suitably skilled people who are not available in the labour market. Absolute scarcity may arise in a situation where a new or emerging occupation exists with only a few people or nobody in the country posses the requisite skills. Also, there is absolute scarcity where organisations, sectors and even the national economy are unable to implement planned growth strategies because productivity, service delivery and quality problems are directly attributable to a lack of skilled people. Lastly, replacement demand would reflect an absolute scarcity where there are no people enrolled or engaged in the process of acquiring skills that need to be replaced. This usually takes place (due to retirement, resignation). This relates closely to what the New Zealand Department of Labour (NZ DoL) defines as a "genuine skill shortage which occurs when employers have considerable difficulty filling job vacancies simply because there are insufficient job seekers with the required skills" (NZ DoL, 2006).

Relative scarcity, as explained by the DoL (2006c),

> reflects a situation where suitably skilled people are available in the labour market but they do not exhibit other employment criteria; for example, high-level work experience, e.g. project management of large construction sites such as dams or power plants.

Similarly, relative scarcity exist where such skilled people are unwilling to work outside a geographical location, like an urban areas; and equity considerations. Equity consideration reflects a situation where there are few, if any, candidates with the requisite skills from specific groups (e.g. previously disadvantaged group) available to meet the skills requirements of firms and enterprises.

According to the New Zealand Department of Labour, recruitment and retention difficulties occur when there is a considerable supply of individuals with the required skills in the potential labour market but they are unwilling to take up employment at current levels of remuneration and conditions of employment (NZ DoL, 2006). Retention problems are often a major contributor to this condition. Replacement demand would reflect a relative scarcity if there are people in education and training (formal and work-place) who are in the process of acquiring the necessary skills (qualification and experience) but where the lead time will mean that they are not available in the short term to meet replacement demand.

3.2.2 Purpose of the scarce skills list

The scarce skills list is therefore intended to serve the following purposes:

- Provide a set of indicators for skills development intervention by the Department of Labour and its statutory skills development intermediaries;
- Provide indicators for the Departments of Education and public education and training institutions for course development and career guidance for learners and communities including schools, FET Colleges, universities, universities of technology and learners across these institutions;

- Provide basis for the Department of Home Affairs for the establishment of Work Permit Quota list and for evaluating employer-sponsored applications for work permit; and
- Provide a platform for National Government and national initiatives such as JIPSA for targeted interventions and the development of mechanisms to monitor and evaluate both success and impact of measures aimed at redressing particular scarcities.

3.2.3 Critical review of the scarce skills list

Drawing from the Third National Master Scarce Skills list (available on www.nq.org.za/siteimgs/NSDS), the following occupational groups appeared, amongst others, with varying degree of scarcity: specialist managers (e.g., advertising, marketing and sales managers, finance and audit managers), engineering, technology and construction, accountants, human resource practitioners, supply/distribution/logistics, training and development professionals. The list also includes medical and allied professions, agricultural forestry scientists, pharmacists, professional nurses, social workers, lecturers and educators and artisans of various categories. The list is comprehensive and cannot be mentioned in detail here for space reason. However, the following section will review some aspects of the master list.

It is curious to note in the scarce skills list that South Africa will only need about 750 lecturers in the universities and universities of technology despite the current high increase in the number of student enrolment in institutions of higher learning. Of similar curiosity is the number of school teachers (about 31,500) required between 2008 and 2010 to teach at both foundation and secondary school levels. The following literature aptly describes the reality in the education sector. Govender (2008:1) reports that South Africa faces a shortage of 94,000 teachers by 2015. Of the 433,280 teaching posts in South African schools, 62,616 were vacant as at the end of May, 2008 while 31,949 posts were staffed by under-qualified, temporary teachers. Govender (2008) equally reports that a total of 600 vacant positions for professors and lecturers could not be filled in 5 (out of 23) universities. It will therefore be statistically incorrect to project that the country's universities will only

require 750 lecturers between 2008 and 2010 as projected by the current scarce skills list by the Department of Labour.

Furthermore, the number of accountants required in the country, according to the third scarce skills list is only 2,455. However, the South African Institute of Chartered Accountants (SAICA), the body that is statutorily responsible for monitoring and regulating accounting profession practice and training in South Africa state that the economy is currently having a shortage of 22,030 qualified accountants in the financial management and auditing sector (SAICA, 2008). In the same vein, Ellappa (2008) asserts that shortage of Information and Communication Technology (ICT) professionals in South Africa has reach a crisis proportion; yet the scarce skills list put the number of ICT practitioners required at about 13,880. This number will certainly not amount to a crisis proportion referred to by Ellappa (2008).

To drive home Ellappa's assertion was a study by CISCO System (2006) which reveals that South Africa would require 114,800 IT professionals in order to be able to develop, build and manage IT systems required to support continued economic growth. Du Toit (2008) puts the number of ICT professionals needed in the country at 37,565. The situation is further demonstrated by Mengel (2001:32) who reports that more than half of IT organisations in South Africa carry over unfilled IT vacant positions from one year to another in respect of Information Technology professionals. The IT professionals, after acquiring some work experience, leave South Africa for more lucrative jobs overseas; Mengel (2001:32) declares.

The magnitude of shortages reported in the health sector by the scarce skills list, particularly in respect of professional nurses and midwives (about 400) appear to be far from reality. Empirical studies such as Schalkwijk (2000:5) finds that the South African health sector, particularly the nursing profession, is badly affected by employee turnover as scores of professional nurses seek alternative employment or leave the country in search of lucrative work overseas. A study conducted by the Centre for Health Policy at the University of the Witwatersrand, South Africa, in April, 2005 gave an estimated vacancy rates for nurses in public hospitals and clinics in the Limpopo Province at 22.6% and 26.5%, respectively. Ponn-Kekana, Blaauw, Tint, Monareng and Chege (2005: 54) report that a high percentage of nurses

working in public hospitals in South Africa are demotivated and already considering quitting their jobs.

The scarce skills situation described above regarding professional nurses and midwives may persist for some time to come as statistics from the South African Nursing Council (1999 – 2005) as reported in Mokoka (2007) shows that completion rate of nursing students across the country's nursing training institutions and universities has declined by 42%. Kimball and O'Neil also cited in Mokoka (2007) describes shortage of nurses in South Africa as not only being worse than expected previously, but also different, more complex and is projected to intensify in the future. One of the reasons identified by Kimball and O'Neil for this shortages is the progressive decline in number of student enrolment in nursing training institutions and the fact that younger generations do not find nursing profession attractive (Mokoka, 2007).

The medical profession is not faring better. Masondo *et al.* (2009) report that at least 1,000 general surgeons were needed to cope with the existing work load with tertiary institutions training at least 120 surgeons a year, but only 30 surgeons were being produced annually. This has resulted in South Africa lagging behind the international norm of one specialist to every 5,000 people. According to Prof. Mike James (head of anaesthesiology at Groote Schuur Hospital in Cape Town) cited by Masondo *et al.* (2009), has resulted in about 50% of all surgical anaesthetics being administered by general practitioners rather than specialist anaesthetists. This poses serious implication for the health care system in the country and indeed the entire citizenry. Given the revelations from existing literature, the number of shortages projected in the third scarce skills list by the Department of Labour appears to have been grossly underestimated and does not seems to reflect the reality in the health sector.

The labour authorities (Third Master Scarce Skills List) listed general clerical skills (5,625) amongst the scarce skills in the country while highly technical and apparently scarce professionals such as pilots and related skills did not make the list. Given the low-level of skill and training required to perform general clerical duties, it is rather surprising that the country will be experiencing shortages of about 5,625 clerks while about 600,000 Grade 12 matriculants between 1994 – 1999 remained unemployed

(Cunningham, 2006); and only about a third of FET diplomats were able to find work (Patel, cited in Roux, 2007). Rather than improving, the unemployment rate among matriculants and FET college graduates continue to escalate in recent years thereby foreclosing the probable shortage of this category of graduates who are suitable for employment as clerks.

Similarly, the 2007 scarce skills list presented by the Department of Labour (DoL, 2006) suggests that Crop Farm Workers who perform routine tasks in producing crops such as fruit, nut, grain and vegetables were the most scarce workers with the magnitude of shortages reaching 180,000. This figure far exceeds that of Accountants (3,655), Actuaries, Mathematicians and Statisticians (170), Chemical and Materials Engineers and Technologists (240), Civil Engineering Professionals (2,720), Electrical Engineers (640), Electronics Engineer (105), Industrial, Mechanical and Production Engineers (6,220) and Mining Engineers (780) all put together. It is difficult to explain how Crop Farm Workers could be so scarce considering that this occupation requires minimal levels of formal education, if any at all.

With the scarce skills list at the background to provide direction and guide for education and training providers on priority skills and the Department of Home Affairs on foreign skills that needs to be attracted through the quota work permit, the sections below will examine the demand and supply characteristics of skills development in South Africa.

3.3 Skills demand by South Africa organisations

Bernisten (2007:1) reporting research findings by the Centre for Development and Enterprise (CDE, 2007) submits that “shortages of skills is one of the most costly and troublesome issue affecting the management of South African businesses over the last two years”. In analysing the Natural Enterprise (1998) and World Bank (1999) surveys, Bhorat and Lundal (2002) found that 35% of all firms (894) surveyed in the manufacturing sector in South Africa identified inadequate skills as the most important reason for poor productivity. Again, survey by the Human Sciences Research Council (HRSC) cited by Pretorius (1999:1) shows that 76% of the 273 organisations surveyed did not have adequate skilled personnel.

Further to the above, 54% of the 113 organisations that employs engineers have problems in recruiting professionals – especially mechanical, electrical, civil and industrial engineers. The HRSC report also reveals shortages in IT professionals, accountants, economists, financial analysts, investment specialists, medicine, actuarial practitioners, managers and artisans. Concurring, Vicki Marais-Swanepoel, Managing Director of PAG (Harris, 2010) believes South Africa's skills shortage will determine the jobs of the future. Swanepoel reiterates that "key sectors such as finance, engineering, project management and telecommunications always run short of skills, and the critical skills shortage in these sectors has been cited as a potential restraint of the attainment of the government's growth goals." Swanepoel further asserts that there will not be completely new positions: instead, existing jobs will be in even greater demand. These jobs include the following:

- Engineers and project managers - across all disciplines, all of which would require a degree and professional registration with the Engineering Council of South Africa;
- Accountants - specifically CAs, which require students to obtain a B.Com, B.Com Hons. and a CA(SA);
- ICT specialists – specifically development skills, requiring a diploma or degree; and
- Artisans - trade-tested artisans. This is a key shortage as the practice of apprenticeship has fallen away (Harris, 2010).

One way of finding a long term solution to skills shortages is by evolving a strategic skills development programme through education and training in FET colleges, HET institutions and enterprise training structures. However, the education system itself suffers from skills shortages. Research findings by the Organisation for Economic Co-operation and Development (OECD) and reported by .Govender (2008:1) shows that while 20,000 new teachers are needed every year for the past two years (2006-2008), only 6,000 have qualified. Out of the 6,000 that qualified, only 4,000 entered the educational system while the rest leave South Africa to teach in UK, New Zealand, Australia and Dubai.

The Department of Education, in the face of shortage of teachers, has hired a recruitment agency to hire foreign teachers to mitigate the shortages. The strategy is however not yielding the desired results yet. According to Govender (2008:1), Limpopo Province, which desperately needs 1,600 mathematics and science teachers, has only succeeded in attracting 300 Zimbabwean teachers so far. The National Professional Teachers' Organisation of South Africa (NAPTOSA) contends that the education department needs 10,000 more teachers every year for Grade 1 alone in order to reduce class sizes from 40 to 30 pupils in that grade (Govender, 2008:1). In summarising the depth of skills shortages in the education system, SETA report (Govender, 2008) describes shortages of teachers in the country as "nothing less than a crisis".

Skills shortages at the tertiary education level (a level saddled with the responsibility of producing high level skills) - are not very much different from that in the lower stratum of the education and training system. A Sunday Times survey report by Govender (2008:13) reveals that there are 600 vacant posts for professors and lecturers in five universities. For example, University of Johannesburg needs 142 lecturers and 28 associate and professors. University of Pretoria could not fill 127 posts since January, 2008. University of Cape Town has 75 academic vacancies while the University of Zululand needs 31 lecturers and 14 professors in commerce, law, science and education. The University of Limpopo is not faring better with vacancies for 182 academic staff in optometry, dentistry, pharmacy and accounting. All the academic disciplines where vacancies exist at the universities reflect professions where scarce skills are more pronounced in the economy.

For South Africa to maximise productivity and sustainable economic growth, Nel, Gerber, Haasbroek, Schultz, Sano and Werner (2001:58) argue that the workforce must be trained and developed. Nel *et al.* (2001:58) further argue that South Africa faces a human resource crisis with the shortage of skilled employees; a situation that is compounded by the high rate of unemployment among unskilled workers. The blacks (Africans and Coloureds) constitute the highest number of the unskilled and the unemployed. There is therefore an urgent need for the South African government and various organisations to intensify the education, training and development of this

previously disadvantaged group who constitutes the largest economically productive population of the workforce.

Concurring with Nel *et al.* (2001), Jinabhai (2005:26) citing Schuttle reports the severe skills shortages and the need to address the deficit by training more black workers who are in the main, semi- skilled, unskilled or unemployed. The report further highlights acute shortage of supervisory and middle managers among the blacks who accounted for 1.64% of the position in the category. Furthermore, in the accounting profession, statistics by Human Research Development Review, HRDR (2008: 420) record the percentage of chartered accountants in South Africa as at 2004 as follows: Whites 90.3%, Africans 2.1%, Indians 6.00%, Coloureds 1.4% and others 0.2%. This shows acute shortage amongst the blacks who are presently positioned by the affirmative action policy of the government to occupy key positions in the economy. While firms, policy makers and government acknowledged that skills shortages are probably the most important obstacle to accelerated economic growth in South Africa, the nature of skills shortages must be understood in the context of the need to have the necessary training and development of the appropriate skills required by the economy.

Having looked at the demand-side characteristics of skills shortages, the next section presents the supply-side characteristics and this will be examined within the context of the education system – i.e. secondary, intermediate (FET) and tertiary education levels and those of the enterprise education and training structures.

3.4 The skills supply pipeline

In analysing the skills supply-side indicators, Havenga (2009:179) notes that supply-side challenges manifest themselves to a large extent in the mismatch of skills, in so far as the characteristics of the available pool of potential employees do not satisfy labour demand regarding specific qualifications and skills. Havenga (2009) attributes this to the quality of training institutions and teaching capital, incorrect and/or inappropriate fields of study offered by training institutions, the lack and/or incompleteness of over-arching management information on the labour market, the inability of learners to make the transition from school to further education and training (FET) facilities, universities and universities of technology, as well as

insufficient communication and collaboration between enterprises and training institutions. While approximately 25% of South Africa's budget is allocated to education, Havenga (2009:179), citing The Presidency (2007), reveals that some schools still lack basic services, learning materials and teachers. According to the Democratic Alliance (DA, 2006) report, a substantial number of South Africa's public school teachers are under-qualified and only 12% have a postgraduate degrees. It is against the background of the above revelations that the following section discusses skills supply-side indicators in South Africa.

3.4.1 The South Africa formal education system

Formal education in South Africa is categorised according to three levels – General Education and Training (GET), Further Education and Training (FET) and Higher Education and Training (HET). According to Burger (2009) the GET band consists of the Reception Year (Grade R) and learners up to Grade 9, as well as an equivalent Adult Basic Education and Training (ABET) qualification. The FET band consists of grades 10 to 12 in schools and all education and training from the National Qualifications Framework (NQF) levels 2 to 4 (equivalent to grades 10 to 12 in schools), and the N1 to N6 in FET colleges. The HET band consists of a range of degrees, diplomas and certificates up to and including postdoctoral degrees. These levels are integrated within the NQF provided by the South African Qualifications Authority (SAQA) Act, 1995 (Act 58 of 1995). The next section will evaluate each band (except the GET) of the education system in relation to their skills development and supply output in the South African context.

3.4.1.1 Secondary School Education

Secondary School Education is divided into junior and senior phases. According to (DoE, 2001), Senior Secondary School offers general knowledge which broadens and deepens students' understanding and skills in various academic subjects in order to prepare them for their choice of career or for further education. In addition to studying languages (normally two to three per student), students choose a minimum of four subjects from the following mainstream areas: general studies, commercial studies, natural sciences, technical studies, the arts, and agriculture and domestic sciences (DoE, 2001). In Grade 12, learners take a qualifying examination at higher

grade which endorse successful candidates for admission to tertiary institutions for further studies. Education Encyclopedia (DoE, 2001) however reports that as a result of poor preparation, many students, particularly students from educationally disadvantaged backgrounds record high rate of failure, reaching the 50% mark.

Citing Professor Brian Augustine (a Fulbright Scholar at the University of KwaZulu - Natal), Groves (2009:9) states that secondary school education set the students up to fail. “It’s like we are giving people a chance, but what we’ve given them is an opportunity to fail”. Reporting Augustine further, Groves (2009:9) reiterates, “the root of the problem is that South African high schools are not producing university-caliber students, schools have given them good enough grades to get into university, but not a good enough education to succeed at university”. For these students to succeed, Augustine (in Groves, 2009) suggests the introduction of an entrance examination for students hoping to study, for example, courses like chemistry. Furthermore, students who are identified as needing catch-up help could start a five –year degree, with the first two years focusing on secondary school level science, mathematics and basic academic literary skills such as how to read a journal article or how to write a laboratory report while the last three years is supplemented with English language (Groves, 2009:9).

- **Grade 12 matriculation pass rate**

A report by the Institute for Futures Research (Cunningham *et al*., 2006) shows that out of the 533,561 candidates who wrote the full National Senior Certificate Examination and were resulted in 2008, 333,604 were successful resulting in a pass rate of 62.5%. 107,462 out of the 333,604 successful candidates achieved passes that qualified them for admission into a degree programme at tertiary institutions. This represents a marginal improvement over the 2000 figure which shows that only 14% of matriculants obtained endorsement pass to institutions of higher learning with only 65% of them registered for higher education immediately (Education in South Africa, 2001) cited in Cunningham *et* al. (2006). In this gap, the DoE (2001) reports that “mathematical and scientific literacy are extremely poor in the entire schooling system”. Didiza (2007) concurs and puts the overall national university entrance pass rate in Mathematics and Science for the higher grade in 2004 at about 3%

whereas students require high grade in Mathematics and Science to be able to enroll in construction and engineering programmes at higher education level.

Didiza (2007) contends that many matriculatant (i.e., Grade 12 students) do not even offer Science and Mathematics, thus making the skills shortages in the Science, Engineering, and Technology areas particularly acute. According to Augustine cited in Groves (2009:9), "….50% of the students I teach don't have the basic Science, Mathematics and literary skills needed to compete at university level; they lacked basic skills in algebra, problem-solving and numeracy". Supporting Augustine, Professor Sarah Howie, also cited in Groves (2009), traces the problem to mismanagement, over-crowded classrooms, ill-discipline and lack of content knowledge of some mathematics and science teachers.

The various sentiments expressed above regarding the failure rates of first year undergraduates at institutions of higher learning might have informed the decision of some universities in South Africa to raise their admission requirements effective from 2011 academic year. In a snap survey recently conducted by the Sunday Times, Govender (2010:1) reports that "the high failure rate among first year university students has prompted several institutions to tighten their admission requirements next year (i.e., 2011)". For example, the University of the Western Cape will no longer accept mathematics literacy for admission to science degrees because students were not coping with demands of the course, while students who have their sights on the University of Cape Town will have to write national tests in mathematics, academic literacy and quantitative literacy (Govender, 2010). In addition, other universities that have increased their entry requirements include Rhodes University, University of the Free State, University of Witwatersrand, University of Stellenbosch, University of Pretoria and Nelson Mandela Metropolitan University.

Part of the reasons for the increase in admission criteria by universities is the low pass rate and staff shortages. Consistent with this report is the assertion by Prof. Cheryl Foxcroft, Senior Director for Higher Education Access and Development Studies at the Nelson Mandela Metropolitan University that "the drop in pass rates were partly attributable to universities setting their admission criteria too low"

(Govender, 2010:1). Dr. Theuns Eloff, Vice- Chancellor of North West University, said “about 20% of first year students across the country dropped out, either before or at the end of their first year” (Govender, 2010:1). The reasons, according to Dr. Eloff, are finance, not coping with university life and not being able to make it academically.

For the school system to play an important role in the production of high-level skills required by the economy, it must produce sufficient numbers of suitably qualified school leavers who qualify to enter higher education - that is, those who pass the SCE examination with endorsement. Empirical evidence however shows that endorsement rates in the SCE are still low. The Presidency (2007) reiterates that the low learner skill levels caused by poor teaching skills are a bigger concern, and the actual number of learners who have passed mathematics decreased from 1995 to 2005, to very low levels. Report by the DoL however suggests otherwise. Accordingly, the DoL (2006) contends that science, engineering and technology (SET) pass rates are better, and higher-grade pass rates have improved from 15% to 25%, which means that the actual number of SET graduates increased from under 4,000 in 2001 to over 11,000 in 2005. Table 3.1 shows the SCE pass and endorsement rates for year 2000 to 2005.

Table 3.1 Senior Certificate Results, 2000 to 2005

Year	Number of candidates	Total candidates passing	Candidates passing with endorsement	% of total candidates passing	% of total candidates passing with endorsement
2000	489 941	283 294	68 626	57.8	14.0
2001	449 371	277 206	67 707	61.7	15.1
2002	443 821	305 774	75 048	68.9	16.9
2003	440 267	322 492	82 010	73.2	18.6
2004	461 985	330 717	85 117	70.7	18.2
2005	508 363	347 184	86 531	68.3	17.0

Source: DoE, 2005c and 2005d (amended)

The subjects which learners offer at school provide a foundation for their future career. The level at which learners take these passes in certain key subjects, particularly mathematics and physical science, are often the minimum requirement for entry into certain study programmes at higher education, especially in engineering, technology and the natural sciences. The 2009 matriculation results showed that out of the 551,940 who wrote matriculation examinations, only 334,609 (60.6%) passed with 109,697 of this number achieving university entrance (Makhanya, 2010). Makhanya reports further that only 46% and 37% passed mathematics and physical sciences respectively which is "disastrous for a nation that aspires to play in the top league of the world's economies". The implication of this pass rates is that fewer matriculants will be able to pursue degrees in fields such as engineering, medicine, business and economic management which are in high demand by the economy. Table 3.2 shows the enrolment and pass rates of total and higher-grade candidates in mathematics and physical science for 2001 to 2005.

Table 3.2 SCE examination results in mathematics and physical science, 2001 and 2005

Subjects	Year	Total number of candidates writing subject	Candidates passing subject	Percentage pass rate %	Candidates passing on higher grade	Percentage of higher grade pass rate %
Mathematics	2001	263 945	123 149	46.7	19 504	7.4
	2005	303 152	169 001	55.7	32 112	10.6
Physical science	2001	153 847	105 552	68.6	24 280	15.8
	2005	181 828	129 358	71.1	45 652	25.1

Source: Shindler, 2004, DoE 2005d

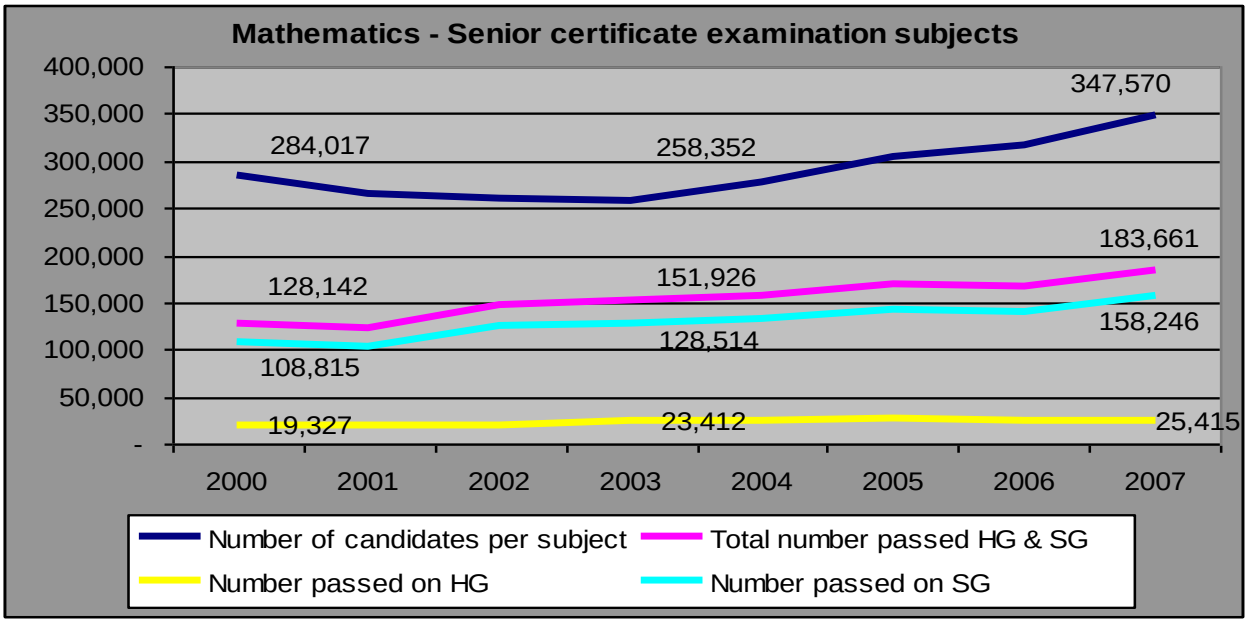
- **Pass rate in Senior Certificate Examination – Mathematics and Science**

The biggest problem regarding the skills crisis lies in the South African education system. Currently, matriculation results are a big disappointment. South Africa spends an enormous amount of money on education (expenditure on education as a percentage of GDP in 2006 was 5,4%, while the average expenditure for 190 other countries was 4,7%), without corresponding outcome in terms of the right quality of

students (Hermann, 2008). South Africa just does not produce enough students with Mathematics and Science on high grade (HG) to study further in critical scarce occupations like Engineering, Medicine, Accounting etc. In 2006, only 4,77% students (overall) passed Mathematics on HG, and 5,63% Science on HG. In 2007 these figures declined further to 4,50% for students who passed Mathematics on HG and 4,98% for Science on HG (Hermann, 2008).

A look at the students who passed Mathematics and Science on HG out of the total number of students who had Mathematics and Science on HG shows the following: students who passed Mathematics on HG declined from 7,2% in 2006 to 6,9% in 2007, while the students who passed Science on HG declined from 15% in 2006 to 13% in 2007. A closer look at the results of Grade 12 pupils who took Mathematics (Higher Grade and Standard Grade) between 2000 and 2007 shows the following performance as graphically depicted in Figure 3.1: The pass rate for the number of higher grade mathematics students in 2007 was 7% (i.e. only 25 415 students passed higher grade Mathematics in 2007) and for standard grade mathematic students 46% (i.e. only 158 246 students passed standard grade mathematics in 2007) of the total number of students who had Mathematics as a subject.

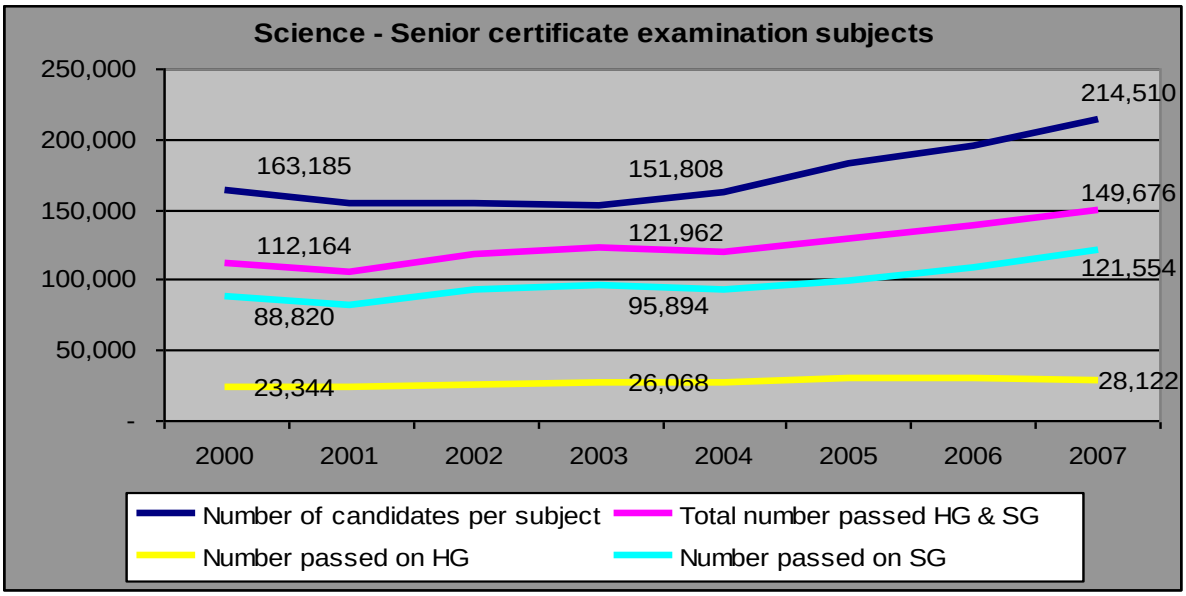
Figure 3.1: Pass rate in mathematics at Senior Certificate Examinations



Source: Hermann (2008)

Matriculation pupils who took the subject science (Higher Grade and Standard Grade) between 2000 and 2007 shows the following performance as depicted in Figure 3.2:

Figure 3.2: **Pass rate in Science at Senior Certificate Examination**



Source: Hermann (2008)

The pass rate for the number of higher grade science students in 2007 was 13% (i.e., only 28 122 students passed higher grade science in 2007) and for standard grade science students 57% (i.e., only 121 554 students passed standard grade science in 2007) of the total number of students who had science as a subject. The poor performance rate of matriculants must have informed the remarks of the former Science and Technology Minister, Mosibudi Mangena at a technology conference organised by Telkom in September, 2008 where he states that: "schools and universities are failing to provide the training that would allow South Africa to start filling the estimated 30 000 hi-tech positions that are vacant; we are not doing well at all at school or university level" (Hermann, 2008). The Minister further stated that schools were not producing enough students with the right knowledge to study subjects such as Mathematics, Physics and Chemistry at university level. In the Minister's words, "they (students) don't have the skills to enter those arenas. We need to get the schools right first."

- **Shortage of educators at secondary school level**

One of the major factors responsible for poor performance of learners at matriculation level is shortage of qualified educators. Apart from the actual and projected demand for educators reported in Govender (2008:1) and cited earlier in this chapter, earlier projections similarly revealed shortage of educators at secondary school level. Available data suggest that in the post-2004 period, South Africa is likely to face increasing shortages of educators due to resignations, death and age-based retirement (Education Labour Relation Council) (ELRC, 2005). The extent of shortfall will depend on the success of policy intervention to attract and retain educators. The report by the HSRC researchers also predicts a shortage of possibly 15,000 to 33,000 educators in 2008. The shortages seem likely to be more pronounced in certain secondary teaching qualifications as well as in remote and rural locations and difficult-to-staff metropolitan schools. The reality of this projection can be confirmed in the further shortages of educators reported in Govender (2008) already referred to above.

A major challenge for the education authorities in the next decade will be the need to attract and retain educators, either new graduates or older persons with teaching qualifications (ELRC, 2005). These challenges, the report further noted, will particularly be the retention of the right types of educators, for example, those with particular specialisations or abilities such as Mathematics, Accounting and Natural Science. This suggests a need for greater collaboration between university education faculties and education-labour authorities to ensure that the supply of educators reflect employment needs (ELRC, 2005:91). Attracting and retaining high-quality educators is influenced by factors of job satisfaction. Educator School Survey (Shisana *et al.,* 2005) reveal that variables such as inadequate salary, lack of promotion and career development, job insecurity were some of the issues creating job dissatisfaction among teachers. In a related research, Rangraje *et al.* (2005) points out that related job satisfaction variables such as recognition and career development, remuneration and benefits, classroom environment and job conditions as reasons responsible for attrition among educators.

Empirical research (e.g., Saari & Judge, 2004; Riggio, 2003) has established a direct relationship between job satisfaction and employee turnover. In recognition of these

factors and in a bid to enhance the retention of educators, the DoE (2004a) prioritise recognition and career development as an integral part of the introduction of curriculum revisions between 2004 and 2008. In-service educator training programme was introduced based on 1% of the payroll skills levy on provincial departments. All the provincial departments are required to use this levy for the development of employees (Hindle, 2003). There will be further discussion of general employee retention is further discussed in chapter four of this study.

3.4.1.2 Further Education and Training colleges

A second and equally important component of the South Africa's skills supply base is determined by the Further Education and Training (FET) colleges. FET colleges are regarded as another avenue for technical skills development at the intermediate level, with the former Minister of Education, Nanedi Pandor describing them as having taken a central role in the delivery of priority skills needed in South Africa (Pandor, 2007).The main objectives of the FET colleges, according to Cosser and du Toit (2002) include:

- Address the broad socio-economic issues of unemployment, income inequality and poverty alleviation by creating opportunities for young people and adults to further their education and consequently become employable;
- Create a vibrant, accessible and high quality education system that imparts the kind of skills and knowledge needed by South Africans to be productive and keep abreast with modern technology, that meets the country's pressing human resource needs; and
- Encourages lifelong learning and contributes towards development" (MacGregor, 2006:39).

Gamble (2004:173) states that the FET sector in South Africa is touted as a major contributor to the reduction of intermediate skills shortages. Intermediate level knowledge and skills are best described as skills held by workers in the craft and artisanal trades (Gamble, 2004:174) where knowledge is a combination of theory and practice, and the emphasis is on the practical rather than the conceptual.

Research by the Skills Development Planning Unit (SDPU) of the Department of Labour (2003:18) indicates that the FET colleges have experienced a radical transformation with a significant growth in the number of learners and in the distribution of learners by population group. Data provided by the FET Management Information System (DoE, 2003) indicate that out of the 356,049 learners who enrolled at the FET colleges in year 2001, 269,922 were Africans while the Coloureds had 23,731. Indians and Whites had enrolment figures of 5,541 and 43,480 respectively. Others (unknown race) had 13,374 students. The data further reveal that out of the total enrolment figure of 356,049, 184,306 were enrolled in the field of engineering which is one of the sectors where acute skills shortage is more pronounced. SDPU (2001) report that FET sector is supporting skills development in areas that are in short supply, such as those associated with programmes of study in the fields of business studies and engineering.

- **Alignment of courses and skills demand**

One of the objectives of the HRDS is to secure

> a supply of skills, especially scarce skills, within the Further Education and Training bands of the NQF, which anticipate and respond to specific skill needs in society, through state and private sector participation in lifelong learning (DoE & DoL, 2003).

However, one of the problems confronting the FET colleges is their inability to align course offerings with the demand of industry (Mukora, 2009). Unlike universities and universities of technology, where there are advisory boards with industry representation, there is no communication between the FET colleges and industry. As a result, skills produced by these institutions are not aligned with industry needs.

Mukora (2009) notes that enrolment figures at the FET colleges suggest that enough artisans-type skills are being produced. Nonetheless, employers continue to report a shortage of qualified artisans. The explanation is that employers perceive FET outputs as not providing the kind of skills that they require in industry. The FET college problem, Mukora (2009) opines, arises because many learners who are currently undertaking college studies within the priority areas do so with insufficient

or no access to workplace experience. With only limited opportunity or none at all for access to workplace experience, these learners learn theory as theory, mainly for examination purposes and access to further studies (Young & Gamble, 2006). Supporting Young and Gamble (2006), Mukora (2009) contends that the current FET colleges' learning outcomes are not aligned with industry needs, stressing that the quality of FET graduates is not what is required in the workplace.

- **Vocational education**

Similar to the Singaporean Model, learners who do not show academic prospect are being encouraged to pursue vocational education at FET colleges after completing Grade 9. The thinking of government along this direction is to replace, as from January 2007, the National Technical Education (NATED) courses (N1- 3) with the National Certificate (Vocational) (Roux, 2007). The National Certificate (Vocational) is a new and modern qualification at levels 2, 3 and 4 of the NQF which is designed to give Grade 9 learners a vocational alternative to an academic Grade 10 – 12. The programme design is industry-focusedand is intended to provide both practical and theory (Roux, 2007). Accordingly, the practical component of the study may be offered in a real workplace environment or in a simulated workplace environment (like the German education system discussed in chapter two of the present study) while the FET colleges provide theoretical component.

The NC (Vocational) will be introduced at FET colleges and implemented in phases starting with NQF Level 2 in 2007, Level 3 in 2008 and Level 4 in 2009. The qualification, apart from providing learners with the opportunity to experience work situation, will also provide them with an opportunity to enter higher education to study appropriate academic discipline (Roux, 2007). To facilitate access to the new NC (Vocational) qualification, the DoE has set aside R600-million over the next three years (2008-2010) for bursaries which will also be supplemented by FET colleges Financial Aid Scheme administered by the National student Financial Aid Scheme on behalf of the DoE (Burger, 2009).

Notwithstanding the seemingly innovative idea behind the introduction of the NC (Vocational) programme, Mukora (2009) does not appear to view the programme in the same way with those of the education authorities. Mukora assert that

the NC(V) which the DoE describes as providing a solution to the lack of artisan development in South Africa does not have a workplace training component thus making it difficult to make an assessment of the actual contribution of the FET colleges to artisan development. This has led to a further blurring and confusion as to what the training routes or pathways are to becoming an artisan. The situation has also been further complicated by the fact that the introduction of the NC(V) and the phasing out of the NATED programme (N1 & N2) negates the traditional path to becoming an artisan (Mukora, 2009).

- **Shortage of educators at FET colleges**

The FET colleges which were established primarily to produce intermediate skills through programmes of study that are intended to respond directly to the priority skills demands of the economy are, like other institutions, faced with capacity problems. According to Kraak (2008), the public FET colleges as an important partner in the new skills development initiatives; especially in the area of curriculum development and training of learners are equally under-performing. Badroodien and Kraak (2006) observe that the curriculum development of learnerships is often out-sourced to private curriculum consultants and companies. Perhaps, the FET colleges are having capacity problems because the process of delivering learnerships in the colleges is generally regarded as time-consuming and challenging. This practice of out-sourcing curriculum development by the colleges could be counter-productive.

According to Kraak (2008), the new curriculum activity should be integrated into the everyday workings of the college. Knowledge and experience developed in this area of academic exercise should contribute immensely to the in-house capacity building in the colleges instead of losing them out to outside consultants. In addition, report from the DoE (2004) indicates that 8% of all teaching staff at FET colleges has less than a diploma (Brown, 2007). Of this percentage, there are 27% engineering staff with trade certificates (i.e. engineering & utility studies), 55% with engineering trade certificate while another 27% had utility trade certificate (Brown, 2007). This indication has caused industry to raise concerns about the quality and relevance of both the practical and theoretical training that learners receive at FET colleges, citing

both the qualifications and workplace experience of the teaching staff as a concern (Didiza, 2007).

Grawitzky (2007) reveals that a shortage of qualified technical instructors has emerged as an impediment to increasing training capacity. The same is also true for workplace assessors and mentors. It is increasingly becoming difficult to find trainers while assessors are poorly trained with training becoming too theoretical (Brown, 2007; Peacock, 2009 citing CDE). This, Brown (2007) notes, has resulted in 50% under-utilisation of state owned enterprises' (e.g. Transnet, Eskom, and Metrorail) training facilities. In order for the FET colleges to fulfill its central vision of becoming a seamless interface between basic schooling and workplace learning, and a bridge to higher learning, Hensley, cited in Brown (2007) recommends that trainers in the industry and colleges require expertise in teaching and learning methodologies in addition to their professional qualifications.

One way of assisting the FET colleges to fulfil their mandate effectively is the initiative that is being facilitated by the National Building Institute (NBI). Under the arrangement, private companies will assist the FET colleges in learner recruitment and selection, recruitment and in-service development of lecturing staff, procurement of equipment and consumables, external assessment of students and placement for students who complete the programme (Didiza, 2007). In addition, the companies will assist students with bursaries and opportunities for experiential training during the three year course. The FET colleges will, in turn be responsible for developing their sites and staff to offer the high-level programme. This arrangement, if properly implemented, will assist the FET colleges to improve the standard and quality of their learners thereby reposing the confidence of the industry in their graduates. However, the problem of low quality teaching staff in the colleges may be a stumbling block in this direction.

3.4.1.2.1 Enrolment, throughputs and outputs in FET colleges

Alhough there has been a phenomenal increase in the enrolment figures at the FET colleges at all levels of the theoretical courses (N1 to N6) offered in them, there has not been a systematic progression from one level to the next. Maree, Lundall and Godfrey (2009) report inconsistent increase in the number of individuals participating

in engineering programmes at FET colleges for all levels between 1996 and 2005. The report shows improvement in the student retention and passes rates in engineering courses, especially from the N1 to N4 levels. However, pass rates at N5 and N6 levels showed pronounced declines. The data presented by Maree *et al.* (2009:100) suggests that the FET system does not convey the same group of learners from the lower levels to the upper levels. Enrolment progression from N1 to N2 is relatively steady but shrinks to slightly less than one-fifth at N3 and further down at N4 to N5 levels and drastically declined by more than half at N6 level (Maree *et al.,* 2009).

The pattern of inconsistencies recorded at various levels of the FET can be attributed to the quality of entry level education possessed by individuals participating in various programmes. For example, Maree *et al*. (2009) report that majority of enrolled learners at the N1 and N2 levels are made up of individuals who have fallen out of the school system or passed with poor symbols that do not allow them access to higher education system. Many of this category of learners do not continue beyond N2 level because they cannot cope with the standards demanded by FET institutions. Enrolments at N4 level and beyond come from throughputs from N3, the return of previous dropouts, the admission of matriculated school-leavers, and learners transferring, either temporarily or permanently, from the HET system (Maree *et al.,* 2009). The return of dropouts, according to Maree *et al.* (2009) is generated by the demand by employers for prospective apprentices to have higher educational qualifications while dropouts from the HET system attempt to remedy their academic deficiencies through the levels N5 and N6 FET certificates which enables them to continue their studies at higher education and training level. As a result of the diversified background of individuals admitted to various levels of study at the FET institutions, particularly those in the engineering programmes, Maree *et al.* (2009) observe that the FET system do not build up a coherent cadre of intermediate technical and production-related certification outputs. Until these challenges are overcomed, Maree *et al.* (2009) concludes that the FET system will be perceived as a stop-gap measure that will have low credibility.

3.4.1.3 Higher Education and Training band

Higher education institutions play a major role in developing the higher level skills and knowledge base of the labour force that is essential for an innovative and growing economy like that of South Africa. Incentives for the allocation of strategic human capital are seen in enrolments at higher education and technical colleges and new government programmes and legislation designed to promote equity in society (Cunningham *et al*., 2006:74). Accordingly, higher education in South Africa is being restructured to

> meet the needs of an increasingly technologically oriented economy: to deliver … research, highly trained people, and knowledge to equip … society with the capacity to address national needs; and to participate in a rapidly changing and competitive global context (Badsha, 1999:39).

The role of HET in the South Africa's education system, according to Burger (2009) is three-fold:

- Human Resource Development: mobilising human talent and potential through lifelong learning to contribute to the social, economic, cultural and intellectual life of a rapidly changing society.
- High-level skills training: training and providing person-power to strengthen the country's enterprises, services and infrastructure. This requires the development of professionals with globally equivalent skills, but who are socially responsible and conscious of their role in contributing to the national development effort and social transformation.
- Producing, acquiring and applying new knowledge: national growth and competitiveness depend on continuous technological improvement and innovation, driven by a research and development system that integrates the research and training capacity of HET with the needs of industry and of social reconstruction.

The most important contribution that higher education institutions makes to the pool of skills in the labour market is the number of graduates they produce. In this regard, DoE (2001:12) reports that the institutions of higher learning are becoming

responsive to the human resources development needs of the country and are producing more and more individuals with the skills and knowledge necessary to enter the labour market. The problem however, is the quality and demand for such skills and knowledge by the economy. Stressing this further, Mantashe (2009) asserts that “unless higher education adapts to the economic needs of the country, skills shortages will remain in the country”. Mantashe (2009) further states that, not one of the former black universities has an engineering faculty; therefore, the education infrastructure is such that generates a surplus of social scientists. The implication of this is that skills shortages will persist in areas such as engineering and technology because the education and training institutions do not generate sufficient skills in very critical areas.

- **Under-production of educators**

A study by the Human Sciences Research Council (HSRC) reported by Cosser (2009:1) state that only 3% of matriculation learners are interested in teaching as a profession. This poses serious concerns around the teaching profession as it means the country will run out of teachers in the next ten years. The report is consistent with Metcalfe cited in Govender (2008:1) who assert that “we are not producing enough teachers although there is capacity in the system to do so”. Hindle (2008) did not however concur with the positions presented by Govender. Hindle asserts that “there is enormous demand for the government’s bursary scheme, suggesting that more teachers are being currently trained thus resulting in increase in the number of teachers in the near future”. But an integrated report prepared by a consortium of experts for the Education Labour Relation Council (2005:17) notes that “there has been a decline in students taking the Initial Professional Education of Teachers (IPET) qualifications, namely undergraduate Bachelor of Education (B.Ed) and the Post Graduate Certificate in Education (PDCE)”. The report further notes that “self-reported data from the Deans’ Forum in 2004 indicated that education institutions are producing at best approximately 9,000 graduates of whom at least about 3,000 may already be practicing educators”. Perhaps, the problem with Hindle’s position may then lie with the graduation rate of these bursary beneficiaries - many of whom may have dropped out of school while some may have changed from teaching to other professional courses.

Very little is available on the destination of new education graduates. In a tracer study of 300 education graduates conducted by Ramrathan (1999) from the Faculty of Education at the University of KwaZulu-Natal, it was discovered that 89% found employment as educators in their first year of graduation while 11% did not enter the teaching profession. Also, in a survey of 84 education graduates by Geyser and Wolhuter (2001) from a list of graduates from 1968 to 1998 from the Faculty of Education at the University of Johannesburg, it was found that 29 (34.5%) were still practicing as educators, 6% never practiced as educators while 59.5% had left teaching after an average of 9.5 teaching years.

Further to the above, in KwaZulu-Natal province, for example, it is estimated that the provincial tertiary institutions manage to produce only 500 to 800 new educators every year (HSRC, 2005). This outcome is not totally different in the Eastern Cape Province. In a study of higher education conducted by the Partnership for Higher Education in Africa and cited in a study by the HSRC (2005), it was reported that that in 2000, only 15% of all the students that enrolled for undergraduate studies at universities and universities of technology in the Eastern Cape Province completed their education. Of the 15% that completed, 1% immediately enrolled for further studies while 14% entered the labour market. These are worrying trends that suggest a high drop-out at tertiary levels, further decreasing the expected pool of graduates and prospective pool of lecturers at tertiary level. The report further notes that the entrance requirements for universities tend to be higher than those of colleges and this might also have an impact on the ability of the system to continue supplying the required number of educators each year. Perhaps the problem might not be with the entrance requirement of universities, but the poor quality of teaching and under - preparedness of learners at secondary school level which manifest in poor matriculation results as previously discussed in the preceding section of this chapter. To lower the entry requirement by universities may compromise the standard of education and quality of graduates produced by the system and this may have negative impact on the overall quality of the labour force.

- **Under-production of engineering and construction graduates**

It is not only professional teachers that are being under-produced as noted by Govender (2008); there is gross under-production of construction and engineering

graduates. According to Didiza (2007), the quality of learners entering construction and engineering programmes is also recognised as a challenge to skills development. Academic institutions point to the critical skills and attitudes of matriculants, irrespective of their matriculation passes, as often being unsuitable for the rigour required in engineering studies. This mismatch, Didiza (2007) notes, results in high drop-out rates, where students change their studies mid-stream, which subsequently translates into low turnout rates of engineering graduates.

Apart from the attitudinal factor on the side of learners, Didiza (2007) also assert that the capability and extent of preparedness of academic staff to instruct a new generation of learners is also a factor impacting on the production rate of engineers. Equally of concern is the quality and state of repair of teaching infrastructure at some of the institutions which influences the performance of learners with limited prior exposure to technological infrastructure (Didiza, 2007). There is also a systemic dimension to the problem of acute shortage of practicing engineers. Didiza (2007) observes that some engineering programmes accredited by the Higher Education Quality Council (HEQC) are not accredited by Engineering Council of South Africa (ECSA) resulting in some universities and universities of technology offering non-ECSA accredited programmes to learners. The implication of this scenario is that graduates of ECSA non-accredited programmes cannot practice or register as professionals in the field resulting in wastage for the learners and the higher education system as a whole. Table 3.3 shows the number of engineering graduates from universities and universities of technology between 1996 to 2005.

Table 3.3: Number of graduates per field of study 1996 - 2005

	Number of graduates									
Field of study	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Mechanical engineering	872	853	766	631	577	706	695	718	765	856
Marine engineering	13	7	26	17	13	25	36	49	51	50
Civil engineering	817	747	767	787	731	811	901	886	1043	1036
Chemical engineering	554	463	523	351	520	596	575	615	737	738
Other	244	210	130	392	353	272	421	364	397	413

Source: DoE 2007 as presented by Kraak (2009).

Table 3.3 shows that the growth rates for all fields (except for marine engineering, growing fast from a low base) are unacceptable, and for many disciplines, they are lower than the growth rate of the economy over the same period. In summary, Havenga (2009:181) concludes that supply-side analysis suggests that all growth indicators in the production of engineering graduates, in relation to the economy, are declining. Grade 12 teaching inputs are poor and mathematics pass rates are still unacceptable. Numbers of engineering graduates at higher education and training institutions are far below what is needed in the economy and the gap between current growth, required growth and what is actually being delivered is widening (Havenga, 2009: 181).

Another impediment to skills supply by the HET institutions is the difficulty of attracting and retaining highly qualified but poorly remunerated academic staff. This makes it increasingly difficult to effect a radical improvement in graduation rates. Didiza (2007) puts the average graduation rate at universities and universities of technology at 14% for undergraduate engineering programmes in 2004.

- **Under-production of qualified and chartered accountants**

The demand for and supply of qualified and professional accountants have equally assumed a disproportionate dimension; a situation that is also not helped by shortage of qualified academic staff. Temkin (2008) citing Ignatius Sehoole, the Chief Executive Officer of the South African Institute of Chartered Accountants (SAICA) reports that

> SAICA conducted a lengthy study of the accounting programme at the University of Witwatersrand this year (i.e., 2008) and concluded after a monitoring visit to the University in August (2008) that the programmes did not comply with its standards and that steps would be taken to withdraw its accreditation.

SAICA regulates the accounting profession and the quality of South African accounting system is often cited as one of the main reasons foreigners invest in the South Africa's economy.

Some of the reasons attributed to the withdrawal threat by SAICA, according to Temkin (2008) include: shortage of academic staff, particularly in the core disciplines of taxation, financial management and accounting. Another reason given by SAICA is that the school has an acting head (Barnard) who has little background in accounting matters. Other reasons include loss of a number of senior staff members over the last few years; challenges in attracting and retaining staff; a large number of staff appear to be demoralised; and the pass rates for black students are considerably lower than for white students, with the number decreasing significantly from the first to the fourth year. There are currently 27,047 chartered accountants in South Africa and the country is in a dire need of accountants amidst skills crisis; the profession that is arguably the most fundamental to the economic success of South Africa (Temkin, 2008).

Critical to the problem of scarce skills is the continued misalignment in the skills supplied into the economy by the HET band and the skills required by the economy for sustainable economic growth. This problem was reflected in a memorandum of understanding (MOU) signed in 2006 between the Cape Higher Education Consortium (CHEC), comprising of Vice-Chancellors of all the universities and universities of technology in the Western Cape Province and the Provincial Government of the Western Cape, represented by the Premier. The MOU states inter-alia:

> There is currently misalignment with South Africa's further, higher and continuing education sector and market demand. This has resulted in the paradoxes of proposal to attract skilled foreign labour to a country with unacceptably high levels of unemployment, and the failure to fill graduate-level jobs in key sectors in the face of a rising levels of overall graduate unemployment.

In order to overcome the problem, the MOU provided a framework for facilitating alignment between the demand for scarce skills in the medium to long-term and the supply of graduates particularly in relation to identified growth areas. Furthermore, the MOU was to establish strategic partnerships to support the provision of continuing education courses to address critical skills shortages in the short-term.

The reality on ground today (i.e., continued misalignment in skills demand and supply) does not; however suggests that the MOU has achieved the desired results.

The recent agreement between the University of Fort Hare and the Banking Sector Education and Training Authority (BankSeta) to collaborate in the education and training of economic students is very instructive. According to information made available on the University Intranet, the University of Fort Hare and BankSeta have signed a Memorandum of Understanding (MOU) in East London in October, 2009. The thrust of the MOU is to address the shortage of skills within the Banking sector by enhancing the capacity of a critical Higher Education Institute within the Eastern Cape Province, the East London Campus of the University of Fort Hare – in the critical field of Economics (Financial Markets). Under the agreement, once students have finished their studies, BankSeta will assist with learner-ships. BankSeta will provide the university with a computer laboratory which will facilitate close working relationship with the University of Toronto which also has on-line training schools.

The University of Toronto has agreed to work with the University of Fort Hare under the project. BankSeta would also fund the cost of taking students to Toronto or would bring specialist to the University of Fort Hare to assist with the programme. The project is generally aimed at enhancing and improving the skills available and capacity building within the country. This type of collaborative arrangement will not only provide learners with adequate funding and necessary exposure to international standard, but also provide the much needed practical experience through the learnership component of the programme. This will, in turn, prepare University of Fort Hare graduates adequately for challenges in the workplace.

3.4.1.4 The learnerships system

There is a general consensus that in order to achieve growth and development, South Africa requires a multi-pronged skills development strategy that targets high, intermediate and low-level skills development simultaneously in a differentiated manner (Kraak; Kraak *et al*.; McGrath *et al*.; Ashton; Young, cited in Visser & Kruss, 2009:357). The point of divergent however is whether a single intervention

mechanism can provide such a multi-pronged strategy on its own, functioning as a demand-led formal labour market tool to fill the need for critical and scarce-high- and intermediate-level skills, and simultaneously, as an employment-creation mechanism at the low-and intermediate-skills levels (Fuller & Unwin, 2003). Arising from this consensus between government, organised labour and organised business was the establishment of learnerships as a new skills development system in South Africa.

The learnerships system was implemented in South Africa in 2001 as a key component of a NSDS and as an accredited work-integrated learning programme aimed at providing workplace learning in a structured form, linked to multiple sites of work experience, and culminating in a nationally recognised qualification (DoL, 1997, 1999a). The learnerships system was aimed at providing a quality learning experience by integrating theoretical education and work-based skills training linked to qualifications at a NQF levels (Visser & Kruss, 2009). One of the key objectives of the learnership system is to foster skills development in the formal economy, as well as assist (young) entrants into the employment world (DoL, 1999a, 2002, 2005b). In order to facilitate and make this objective to be effective, the government has allocated the sum of R1-billion in the 2010/11 fiscal policy to subsidise the cost of new (young) people entering into employments.

The learnerships system is administered and managed by SETA in order to respond to specific sectoral skills priorities. The learnerships was introduced to replace the outdated apprenticeship system, and to halt the steady decline in enterprise training experienced in the 1980s and early 1990s (Badroodien, 2004; Kraak, 2004) and to stem the decline and poor quality of technological education at the intermediate level (Kraak, 2005). Apart from these intentions, the learnerships was initially identified as a policy instrument (DoL, 1997; Kraak, 2008) that would shift away from the provider-driven training system of the past, to a system aligned with and driven by skills needs in specific sectors. The learnerships system and skills development in general, are well funded by a compulsory national levy-grant system administered by SETAs as provided for in the Skills Development Act, 1998 (Act 97 of 1998).

The initial design and intention of the learnerships system was similar, to a large extent, to the German and Singaporean skills development models discussed in chapter two of this thesis. The German system requires learners to spend four days

a week in the employement by a firm in order to receive practical training, and one day a week in school for theory. The training the learners received is carefully standardised nationally and is provided by specially trained and certified employees in the firm of employers. In Singapore, the technical education stream structures training according to economic needs. However, with time the target group of the learnerships system began to change due to socio-political considerations. For example, the system initially focused strongly on up-skilling the employed. The targets for the unemployed were later emphasised during a tripartite Growth and Development Summit (DoL, 2003) between government, business and labour (Kraak, 2008). The summit (Visser & Kruss, 2009) pressurised SETAs to make commitments in terms of the numbers of unemployed youth under 35 to be engaged in learnerships. With this, the demand-led formal labour-market intervention strategy of the system was altered to modify learnerships as an employment-creation and social-inclusion mechanism more strongly (Visser & Kruss, 2009). An unintended consequence is that learnership programmes were increasingly perceived to be initiated from the supply-side, by private training providers establishing programmes that could attract potential learners (Marock, 2007; Grawitzky, 2007; Kraak, 2008).

The learnerships system may not achieve the original intended results due to the shift in operational focus – that is, from up-skilling employees on sectoral bases to providing general skill programmes for the unemployed. This may prompt SETAs to develop greater capacity to steer demand-led skills development in relation to critical and scarce skills, as they mature (Visser & Kruss, 2009:371) as it has not been possible to maintain a balance of expectations in the face of a de-facto shift in the learnership system to cater primarily for the young unemployed people. The prioritisation of the learnerships system as a means of social inclusion and employment creation may exacerbate the systemic mismatch between skills supply and demand in specific sectors of the economy. Also of concern is the possibility that the learnership system can meet the demand for upgrading scarce and critical skills at the intermediate and high levels adequately (Visser & Kruss, 2009:372).

A serious concern expressed by Visser and Kruss is the adequacy of the learnership system to meet the needs of its majority beneficiaries – unemployed people – whose learnership qualifications may not be aligned sufficiently with labour-market demand,

or may be at too low a level to impart core competences and skills that allow for employment flexibility, which may devalue their labour-market exchange value. The tendency to perceive learnership qualifications as a low-status, low-skills qualifications route for marginalised young people who are unable to access further and higher education is also of concern (Visser & Kruss, 2009). Visser and Kruss conclude by suggesting a future debate as to the best mechanisms for skills upgrading, on the one hand, and for training to enhance employability on the other hand. “It may be desirable, but it is not yet possible for SETAs to manage and realise the multiple expectations of the learnership system” (Visser & Kruss, 2009:372).

3.4.1.5 Private sector training initiatives

In order to meet the massive demand for skills required by the economy, South Africa’s private sector initiatives have been activated to address the issue of skills shortages. Gopal (2007:18) reports that the ongoing shortage of skills in South Africa’s commercial and industrial property industry has prompted the South Africa Property Owners Association (SAPOA) to take proactive step through the association’s education and training programmes. The overall challenge of this programme is to align human resources needs to the demands of the future by attracting and training young black professionals into the industry. To achieve this, Gopal (2007) reveals that SAPOA awards bursary and trust funds for training at schools and universities. SAPOA, through its training institutions are also collaborating with universities in joint venture agreements to run courses and develop course contents for school leavers and graduates who are interested in taking up careers in the property market.

Apart from SAPOA, the Steel and Engineering Industries Federation of South Africa (SEIFSA) in collaboration with Fundi Training Centre in the East Rand developed a vocational training model whereby apprentices are trained to become artisans. According to Roux (2007), learners who have completed theoretical training at FET colleges are admitted to be trained in specific industry-focused trade for 80 weeks. Upon admittance, apprentices undergo a 24 week ‘institutional training at Fundi Training Centre, followed by a company indenture of 26 weeks. After 80 weeks of training, apprentices then proceed to take their respective trade tests after which they become artisans upon passing the prescribed tests (Roux, 2007). From 2005 to

date (2007), 69 artisans have been trained in scarce skills such as boilmaker, electrician, fitter and turner machinist, millwright and tool-jig and dye-making. Majority of these artisans are from previously disadvantaged group (Roux, 2007). South Africa is the world largest producer of ferrochrome, a product mainly used as an addictive to stainless steel to prevent corrosion. This has led to a major demand for artisans who are skilled in chrome production (Ntshingila, 2007).

The small pool of available artisans, Ntshingila reports, gets routinely poached and shifted from one place to another. The scarcity is excercabated by the lack of certified technical training colleges at which young people can be trained (Ntshingila, 2007). However, Tata Steel Company in Kwa-Zulu Natal has taken the initiative by training its own artisans, who will be ready to put their skills into practice as soon as the company's new R700-million chrome plant in Richards Bay is completed (Ntshingila, 2007). This will provide training and job opportunities for matriculants with passes in mathematics and sciences to get technical training as fitters, boiler-makers and process operators. The company has, up to date invested R2-million to train 42 young people at N6 qualification level (Ntshingila, 2007).

Satisfied with the success achieved by SEIFSA – Fundi Training Centre accelerated training model, Roux (2007) reports that the DoL, through the National Skills Fund has provided the sum of R3.2-million for the training of 132 young people in scarce skills trades. Drawing from the success achieved by the collaborative training of artisans by SEIFSA/Fundi, the Manufacturing Engineering and Related Services Education and Training Authority (MERSETA) has adopted the model and is funding a pilot project to train 650 artisans in 14 metal and engineering trades and another 650 in automotive trades (Roux, 2007). Roux (2007) further reports that MERSETA will be committing R150-million to the project. In order to expand the project to accommodate 3000 and 4000 artisans, MERSETA is proposing an allocation of surplus funds from the DoL surplus budget. With improved funding of up to R700-million a year, MERSETA will be able to train 13,000 artisans (Roux, 2007). In a related development, Eskom, the electricity giant, is set to initiate training programme to training artisans in order to mitigate skills scarcity in the energy sector. According to a SABC news report (SABC news 13 February, 2007), Eskom will spend R800-million per year in running its own tertiary institution in the hope of

reducing its skills shortage. Lack of skills at the utility has been partly blamed for the country's electricity crisis. Eskom's Mpho Letlape told SABC news: "we just didn't want to miss any training that we ought to be doing, that we might not be doing, and assuming that it's happening in the business (sector). That is why we went out and started... the Eskom University."

Similarly, a non government organisation, the Medical Education for South African Blacks (MESAB) located in the United States of America was initiated to provide financial aid, training, and education for the development of South Africa black health care professionals. According to Moran (2005:4), MESAB has sponsored 6,841 black South Africans in health sciences and 2,128 in medicine. Establishment of similar organisations by professional associations to provide training and education to previously disadvantaged individuals will go a long way in complementing government efforts aimed at confronting skills shortages in the economy.

3.5 Skills importation

Importation of foreign skills to augment the local content provides a good supply-side alternative to mitigate shortages. One major advantage of this approach is the quality of skills supply since the foreigners attracted are those with the needed skills thus eliminating misalignment in demand and supply unlike the skills produced locally. One of the purposes of the National Master Scarce Skills List is to serve as a major tool to attract skilled people from abroad through the Department of Home Affairs. However, Philp and Rank (2008) report that South Africa's master plan to attract thousands of skilled foreign workers has failed with the country managing to attract less than 4% of the 35,000 "critical" foreigners needed in 2007.

Internal report by the Department of Home Affairs (DHA) and cited in Philp and Rank (2008) shows that only 1,123 foreigners were issued with "quota work permits" out of the 35,200 jobs which the government declared were needed in 2007 to achieve 6% growth that will eradicate poverty. This report is however inconsistent with a statement from the Deputy Director-General of DHA, Rochelle Reyneke also reported in Philp and Rank (2008) that more than 5,000 foreigners with skills defined as "critical" were issued with permits to come to South Africa. In addition, the report claimed that more than 17,000 foreigners were issued with work permits of various

types in 2007, although not all in the critical skills category. Whichever way we look at it, the figures still fall short of the 35,200 foreigners required in the critical skills category.

The under-performance in attracting foreign skills was blamed on lack of understanding of the system by DHA officials most of whom Kgosana (2008) describes as incompetent to perform their duties. Of the 500 foreign aeronautical engineers needed in 2007, the country netted zero on its quota system (Philp & Rank, 2008). This category of professionals is not included in the current scarce skills list. In the same vein, the DHA could not recruit any clinical and biological engineers and technologists needed (Philp & Rank, 2008); rather, only 307 out of 4,150 manufacturing and construction engineers were recruited. Reporting further, Philp and Rank (2008) asserts that only one foreigner was recruited out of the 800 jobs needed in the field of astronomy, astrophysics and space science to support South Africa's giant – telescope projects, including its imminent bid for the R7-billion Square Kilometer Array radio telescope.

Reporting Prof. Roy Marcus (Vice-President of South African Academy of Engineering) and a member of JIPSA, Philp and Rank (2008) state that South Africa would require 50,000 to 70,000 additional artisans and 10,000 additional engineers by 2010 – about half of whom would need to be sourced from abroad via the quota work permit. This means that the DHA will have to quadruple its total output of permits in the last five years. The problem, however is that the National Master Scarce Skills List prepared by the DoL which is supposed to give direction to the DHA does not provide for such magnitude of scarce skills. Although Marcus notes the progress made by JIPSA's efforts at boosting training of scarce skills by the education and training structures, "the strategy to attract foreign skills is in chaos". It will require the DHA to intensify its efforts at attracting foreign skills by promoting the scarce skills list through the South African embassies abroad since countries in the entire Europe, Canada, New Zealand and Australia are equally recruiting foreigners with the same skills.

One other problem leading to the failure of government to attract foreign skills is lack of coordination among the relevant departments and agencies to harmonise the skill

needs of the country. SETAs are required to identify scarce and critical skills in their Sector Skills Plans (SSP), and to analyse current and future demand and supply of skills in their sectors and set out intervention mechanisms to address these skills shortages. The DoL in turn uses the data prepared by SETAs through the SSPs to develop a National Scarce Skills List. The scarce skills list prepared by the DoL is used by the DHA as a basis for publishing the quotas in terms of the Immigration Act, 2002 (Act 13 of 2002) (DHA, 2007). However, there are vast discrepancies in the scarce skill lists prepared by the DoL and those published by the DHA. The quota list of 2007, for example, mentions only 'research and development pharmacologists' and specifies that 300 are needed (Breier, 2009). Yet the National Scarce Skills List (NSSL) that informed these quotas (DoL, 2006) specifies a total of 25,895 health professionals needed, including 24,716 specified by the Health and Welfare SETA (HWSETA). The list also includes more than 10,000 registered nurses and more than 4,000 primary health care nurses. Furthermore, the NSSL (DoL, 2006) identifies 57,865 managers needed across various SETAs. Nonetheless, the immigration quota list (DHA, 2007) specifies only 'call/contact centre managers', the category which has the second-highest need according to the list. In general, while the NSSL of 2006 specifies shortages amounting to 205,307 people, the subsequent DHA quota list stops at 24,100 (Breier, 2009).

Notwithstanding the need to bridge skills gap through importation, the long term solution nonetheless lies in the ability of the country to produce, through the further education and enterprise training systems, the required skills to drive sustainable economic growth. Concurring, Keevy and Coetzee (2006) argue that the solution to the shortage of critical skills may, at least in the short term, lie in foreign recruitment, but that this does not offer a sustainable solution to the problem. The solution to critical skills, Keevy and Coetzee (2006) suggest, should be found in the country and not outside it. Supporting Keevy and Coetzee, Daniels (2007:35) states that the major way to address skills shortage in the country is through the SETAs and the general education system (closed-economy solutions) which, if optimally administered, can solve the problem in the medium to long- term. In order to speed up the process, there is the need to import skills (open-economy solution). Daniels recommends both the open-and closed-economy solutions to the problem of skills shortage in South Africa. However, "at the moment, the DHA is actively undermining

(explicitly or implicitly) the potentials of firms to import scarce skills" (Daniels, 2007:35).

The following section will attempt a sectoral analysis of skills demand and supply, with a view to highlight the extent of shortages in those sectors. This may be useful in guiding the skills development initiatives by the HET, FET clusters and the SETA.

3.6 Evaluation of Sector - specific skills demand and supply

This section will analyse skills demand and supply issues in selected economic sectors prioritised by government in its ASGISA (PCAS, 2006) (Policy Coordination and Advisory Services) and the National Industrial Policy Framework (DTI, 2007) (Department of Trade and Industry) policy documents.

3.6.1 The automotive industry

The automotive and component industry in South Africa represents one of the most important sub-sectors in the manufacturing sector. The industry has witnessed phenomenal growth over time with industry analysts projecting favourable future production growth. This anticipated expansion will have definite implications for skills demand. Apart from the traditional skills required in the industry, and as a result of interrelatedness of activities such as logistics, industrial relations and occupational health and safety standard issues, diverse skills requirement has become imperative thus necessitating demand for various professionals in the industry. Having taken into consideration variables such as the present employment level, recent employment growth rate, employee turnover trend in the South Africa's automotive industry, Barnes (2009:34) presents the skills demand requirement for management and professionals employed in the industry from 2006 – 2010 and 2006 – 2015. The breakdown is presented in Table 3.4.

Table 3.4: Management and professional skills profiles for 2006, 2010 and 2015: total demand calculations for 2006 – 2010 and 2006 – 2015

	Skills profile			Demand	
	2006	2010	2015	2006-2010	2006-2015
Engineering –related qualifications	2023	2225	2505	495	1183
Financial-related qualifications	260	286	322	64	152
Business-related qualifications	1057	1162	1308	258	618
Social science/Humanities degrees	462	508	571	113	270
Management diplomas	260	286	322	64	152
Production diplomas	173	190	214	42	101
Trade certificates	1050	1154	1300	257	614
Other diplomas & degrees	865	951	1070	211	505
Total	6149	6761	7613	1503	3594

Source: Based on firm-level interviews as presented in Barnes (2009: 34)

Table 3.4 revealed that the automotive industry will require an aggregate demand of 1,183 new positions (to 2015) in respect of management professionals with engineering qualifications. In addition, 618 positions will be opened for management and professionals with business degrees and 614 new positions for management and professionals with trade qualifications. The projection further revealed that 453 and 554 artisans qualified as electricians and fitters and turners respectively would be required in the industry within the projected period.

On the supply side, Barnes (2009:34) notes that the South African auto components industry is fortunate to have a number of well established, credible tertiary education institutions (TEIs) and further education and training (FET) institutions providing it with technically and professionally skilled personnel. For example, the Automotive Industry Development Centre (AIDC) has a mandate to further the skills development and training delivery for the local automotive industry (Kraak, 2009: 343). Currently, the AIDC has a strong partnership with the Nelson Mandela Metropolitan University (NMMU) to offer automotive related courses. Barnes (2008) reports that NMMU equally boasts a number of industry-supporting research centres, which have the stated aims of promoting technology transfer and innovation institutions, including the Institute for Advanced Manufacturing and Engineering

Research, the Automotive Components Technology Station, the Manufacturing Technology Research Centre and the Advanced Mechatronics Technology Centre. However, the credibility of a number of these skills providing institutions has come under questioning by manufacturers. Thus, the key issues confronting the domestic industry, according to Barnes (2009:34) does not appear to be the ability of good institutions to provide skilled graduates, but rather the growing gap between the absolute number of good graduates produced and the industry's growing skills demands – due to high attrition rates, industry growth and the advancing technological complexity of vehicle manufacture. For example, the number of graduates in public TEIs in 2004 was 115,801(DoE, 2007a). Of this total, only 31,328 were science, technology and engineering (STE) graduates and a further 29,002 business and management graduates. Barnes (2009: 35) however contends that the DoL figures were overstated and too broad to be reliable. In Barnes analysis and adjustments of the DoL figures, he submits that if all 692 STE graduates available to the automotive components industry held engineering-specific qualifications, then there would be no existing or future skills problems confronting the industry, but this is clearly not the case (Barnes, 2009:35).

Regarding the FET institutions, a similar problem emerges when considering the number of graduates from these institutions. Whilst there may be a large number of graduates from South Africa's various FET institutions, the majority of the qualifications are either entirely irrelevant to manufacturers, since they focus primarily on the automotive service industry, or of an insufficient standard to meet the exact technical requirements of the automotive components industry (Barnes, 2009:36). For example, whilst 9,726 graduates emerged from the South African FET institutions in automotive-related fields in 2005, this qualification field comprises almost exclusively automotive service qualifications (Barnes, 2009) with vast majority of the graduates at an extremely low technical level (NQF level 1 or 2). Barnes (2009) declares further that of the 9,726 graduates in 2005, 7,104 comprised 'Motor Trade Theory' – an exclusively automotive services qualification; and of these total only 4 graduates were at Level 4 (Motor Vehicle Science), with 4,186 at Level 1 and 2,083 at level 2. Concluding, Barnes (2009:36) submits that "graduation levels from FET institutions are therefore highly misleading in respect of the infusion of technical skills into the South African automotive components industry".

The growing skills deficiency in the automotive components industry may persists for some time to come. Whilst a number of firms are proactively responding to the skills crisis by spending more of their own resources on training and development, the overall firm-level response in South Africa remains lethargic in comparison to international competitors based in Central and Western Europe, Latin America and India (Barnes, 2009:36). Institutionally, Barnes (2009) declares that the TEIs appear to be failing the industry, either in respect of not providing sufficient numbers of graduates or producing graduates who are not sufficiently skilled to be employed in the industry. The broader skills shortages is badly affecting the automotive components sector as skilled employees migrates abroad thus massively depriving the labour market for skilled personnel. Recruitment and retention of available skills has therefore become incredibly difficult and expensive for firms – forcing sub-optimal firm-level responses, which often have negative competitiveness implications for the industry (Barnes, 2009).

3.6.2 The energy sector

The importance of the energy sector, particularly the electricity sub-sector to economic growth and employment generation in South Africa cannot be over-emphasised. Research (Lomey & McNamara, 2009) indicates that, as of 2005, the electricity sector in South Africa formally employed 114,726 people cutting across diverse managerial and professional disciplines. Eskom, the organisation that is responsible for electricity generation and distribution in South Africa is currently executing a R340-billion infrastructure expansion with an estimated labour requirement of 1,000 skilled employees annually over the next five years (2007 - 2011). However, Kleynhans (2007) argues that shortage of skilled personnel could cripple the expansion project since there won't be sufficient qualified South Africans to build and operate the power stations.

Reports from the Department of Labour is however not consistent with the arguments of kleynhans (2007). Figures from the DoL cited in Lomey and McNamara (2009:164) shows that at NQF Levels 0-3, between 1996 and 2005, the low-level pre-matriculation output of engineering studies saw a steady increase in electrical theory qualifications, almost doubling from 12,688 to 21,097. Similarly, at NQF Levels 4 to 6, engineering studies have been dominated by industrial electronics and

engineering science, with an output of approximately 14,000 qualifications per annum. Graduate output of electrical engineers and technologists from the HET institutions (NQF Levels 6 – 8) has shown an encouraging upward trend since 2001, particularly with regard to the National Diploma qualification, which in 2005 produced 1,179 graduates (Lomey & McNamara, 2009:164). In the same manner, Lomey and McNamara (2009: 164) report that the HET system produced 264 and 185 graduates with the Bachelor of Technology and master's degrees respectively in 2005. It is pertinent to know that over 65% of National Diploma graduates in Electrical Engineering and Technology in 2005 were Africans.

The evidence presented above regarding the increase in the production of electrical engineering and technology professionals does not however suggest sufficient supply of skills in the energy sector. The country is presently under-producing skills in the area of renewable energy and nuclear options and with the infrastructural expansion programme by Eskom, more professionals are still required in the energy sector. In order to achieve this, Kraak (2007) suggests a need for better co-ordination between the DoL and the DoE, together with improved alignment between the SETAs, local and provincial governments and employers. Kraak's suggestion is supported by Daniels (2007) and acknowledged by the National Industrial Policy framework released by the Department of Trade and Industry (DTI, 2007) which emphasises the need for greater co-ordination between the development and implementation of sector strategies and the corresponding SETAs. The Energy Sector Education and Training Authority (ESETA) had been listed among the lowest training rates of all the SETAs. According to McGrath and Paterson (2007), only 13% of workers in the energy sector underwent training in 2003/2004. Furthermore, only 28% of companies in the ESETA claimed training grants in 2002/2003 which was below the national average of 41%.

3.6.3 The Agro-processing sector

The agro-processing sub-sector could play an important role in supporting economic development with a large capacity for employment. The food sub-sector is recorded as the largest employer within the agro-processing sector. The sector contributes 1.4% and 11.5% to the total manufacturing employment respectively (Pieterse, 2009). The skills pattern in the agro-processing sector indicates that semi-skilled and

unskilled labour represents the highest number of employees in the sector; however, that does not suggest that the sector do not suffer shortage of highly skilled professionals.

According to Pieterse (2009:225), there were no FET graduates in food trades work in 2005 with 2,834 graduates in the textile, clothing and footwear trades. The two occupational fields experienced a decline in FET graduates from 2000 to 2005 of 30% and 13% respectively. Pieterse (2009) further report no production of certificate, diploma or Bachelor of Technology (B.Tech) graduates in agricultural food technology by the universities and universities of technology, except those who obtained bachelor's degrees. Graduates were mostly Whites with no coloured graduate in 2005. This has implication for employment equity. Similarly, there were very few graduates in agricultural engineering and technology which are most relevant to the intermediate skills required by these prioritised sub-sectors in the form of trade workers (Pieterse, 2009:226). Given that skills are demanded at the higher NQF levels, Pieterse (2009) suggests that HET institutions in particular should introduce more courses that are related to food technology and chemistry, and companies should promote on-the-job coaching, mentoring and guidance to address the graduates' lack of experience.

In addition, the graduates in agricultural engineering and technology were split between higher qualification levels, that is, professional bachelor's degree and master's qualifications, highlighting the fact that this qualification is often designed for specialist agricultural programmes (such as the viticulture programme for winemakers at the Stellenbosch University). In contrast, graduates in manufacturing engineering and technology obtained national diplomas, which are intermediate qualifications required by the prioritised sub-sectors (Pieterse, 2009). The number of diploma graduates (16) in 2005 cannot however meet demand in the sub-sector. Pieterse (2009) further notes that the current supply from tertiary institutions does not provide adequate skill sets to meet the requirements of the food and beverages sub-sector. Many HR managers, Pieterse submits, have indicated that many graduates, particularly African graduates, lack the 'soft skills', such as communication and writing skills, required in the work environment. In this regard, "courses could be jointly designed by employers, FET and HET institutions and

professional bodies and funded through the National Skills Development Strategy or bursary schemes to deal with any skill deficiency evident amongst graduates, in particular, those graduates who are currently unemployed" (Pieterse, 2009:229). Finally, Pieterse recommends the provision of work orientation and life skills programmes should be introduced by employers to address the lack of 'soft skills'.

3.6.4 Information and communication technology (ICT) sector

Paterson and Roodt (2009:274) report that the ICT sector constitutes a sub-component of the national economy which influences and is influenced by the changing shape and size of the larger economy generating a large share of Gross Domestic Product (GDP) sustaining the fastest growing share of employment through the period 1996-2005. To demonstrate the importance of ICT to economic growth and employment, Paterson and Roodt (2009) show that over the decade, managers, professionals and associate professionals together constituted 39.2%, 49% and 71.6% of all employment in the manufacturing, telecommunications and IT services sub-sectors respectively.

Paterson and Roodt (2009) further report that the number of Computer Science and Data Processing graduates grew substantially between 1996 to 2005 from 1,645 in 1996 to 4,449 in 2005, yielding an annual average increase of 11.7%. These figures, however, differ slightly from those presented by the DoE which were (1,674 & 4,589 respectively). The landmark of this growth, Paterson and Roodt (2009) notes, was the significant increase in the number of African graduates exceeding those of White graduates for the first time in 2003. However, the share of White graduates peaked in 2002 and declined over the ensuing years. ICT cognate fields include the following: Computer Science and Data Processing; Computer Engineering and Technology; Electrical Engineering and Technology; Mathematical Sciences; Business Data Systems; Administrative and Office Services; and Graphic Arts.

Drawing from a recent survey of vacancies conducted by the Human Sciences Research Council (HSRC), Paterson and Roodt (2009) present some tentative hypotheses about labour shortages in the computer professional occupation fields for the period between 2005 – 2007 which suggests the following: Vacancies among ICT professionals are likely to continue rising; difficulty in filling certain vacant ICT

positions with the quality of the pool of applicants, though often large, but weaker than employers might desire. This hypothesis is supported by Harris (2009b) who, reporting Ross Mengel asserts that “the match between what employers, individuals and governments seek and what respective education and training systems provide appears ill-fitting…”

Table 3.5: Share of graduate numbers in Computer Science and Data Processing, by qualification level, 1996 and 2005

Qualification	1996		2005	
	N	%	N	%
Certificate/diploma	854	51.0	1 580	34.5
Degree	516	30.8	2 139	46.6
Postgraduate	304	18.2	870	19.0
Total	1 674	100.0	4 589	100.0

Source: DoE 1996- 2005 as presented by Paterson and Roodt (2009: 291)

Apart from the projected shortage of computer professionals and computer associate professionals (CPAPs) in the labour market between 2000 and 2005 by Paterson and Roodt (2009), they also predicts a shortfall in graduate production from higher education between 2005 and 2015 in the study fields of Computer Science and Data Processing, thus suggesting a general trend of relative skills scarcity in computing occupations – as long as current positions persist unchanged. Paterson and Roodt (2009) project a total demand of 93,452 CPAPs by 2015 to cover losses due to retirement, mortality, emigration and new demand. Given the moderating effect of supply of graduates from higher institutions, a shortage of 29,027 CPAPs is predicted by 2015; and with the exclusion of ICT managers, a shortage of 9,679 CPAPs is predicted by 2015 (Paterson & Roodt, 2009). These predictions are shown in Table 3.6.

Table 3.6: Output of new graduates needed to address demand for CPAPs, 2005 – 2015

Scenario 1 (including manager demand)		Year	N
A	ICT workers (including managers)	2005	62 388
B	ICT workers (including managers)	2015	64 811
C (B-A)	Growth in demand for ICT workers		2 423
D	Demand arising from death and retirement		69 685
E	Demand arising from emigration		21 344
F (C+D+E)	Total number of positions that need filling		93 452
	Total number of new graduates		64 425
	Shortage		29 027
Scenario 2 (only CPAP demand)		Year	N
A	ICT workers (excluding managers)	2005	49 688
B	ICT workers (excluding managers)	2015	51 618
C (B-A)	Growth in demand for ICT workers		1 930
D	Demand arising from death and retirement		55 174
E	Demand arising from emigration		16 999
F (C+D+E)	Total number of positions that need filling		74 103
	Total number of new graduates		64 425
	Shortage		9 679

Source: Adapted from Paterson & Roodt (2009: 295)

Paterson and Roodt (2009:299) argue that the inability of higher education institutions to produce enough graduates to meet the demand of ICT sector will continue unless the government makes coherent plans regarding sector support measures, such as skills development strategies to target particular ICT economic activities. Without such a specification, realistic skills supply and demand analysis cannot be undertaken in the ICT sector (Paterson & Roodt, 2009:299). On the way forward, Harris (2009b) citing Ross Mengel states that “to address the skills shortage in the IT industry, we need to make a concerted, proactive effort to inspire and motivate graduates to stay in South Africa and further enhance our industry”.

3.7 Summary

This chapter has critically reviewed the third scarce skills master list which shows some discrepancies in the scarce and critical skills required by the economy and those contained in the list. The demand and supply sides of skills pipeline were also considered and placed in perspective. Organisations in South Africa are still finding it

difficult to fill some important positions due to scarcity of such skilled professionals in the country. This situation could negatively impact on productivity and quality service delivery. The skills supply channels still remain inadequate and misaligned. The failure rate amongst matriculants remains high especially in Mathematics and Science which are pivotal to sthe kills development in technical professions such as engineering and technology where the country is presently experiencing relative scarcity. The FET colleges which were established primarily to supply intermediate skills to the economy are themselves having capacity problems with inadequate instructors and under-qualified instructors.

The HET band of the education system which is supposed to produce highly skilled professionals through demand-driven academic programmes remains ineffective in its main obligation of producing appropriately qualified job candidates for the economy. Enrolment at various universities and universities of technology remain skewed towards the arts and social sciences which are not in high demand as against technical courses thus explaining the paradox in skills shortages and graduate unemployment. Skills development initiatives by private sector professional organisations and non-government organisations were also highlighted in the chapter. Importation of skills to mitigate shortages on a short-term basis was equally considered. The chapter also considered sector-specific skills demand and supply characteristics in selected economic sectors of the country.

The next chapter will provide a general overview of skills migration across the African continent followed by the South African perspective. The concept of talent management with particular attention to retention of skilled people across organisations and country levels will be examined. The chapter will further discuss the implementation of the affirmative action policy and the Employment Equity Act, 1998 (Act 55 of 1998) in relation to the general skills shortage and retention of highly skilled South African professionals.

CHAPTER FOUR

HUMAN RESOURCE INTERVENTIONS TO ADDRESS SKILLS GAPS

4.1 Introduction

The previous chapter provided a review and critique of the third National Scarce Skills List provided by the Department of Labour which was articulated to provide direction for the FET and HET bands on priority skills to produce. The list was also meant to guide the Department of Home Affairs in the administration of expatriate quota applications. The chapter also examined the three bands in the South Africa's education system which constitutes a major component of the skills supply channels. The chapter further presents skills importation as an important bridge to skills shortages in the short-term.

The present chapter will present a general overview of brain-drain as a contributory factor to skills shortages on the African continent in general and South Africa in particular. Retention of talent is crucial to skills development and utilisation literature. To this end, the present chapter examines organisation factors as they impact on the retention and turnover of talent. Similarly, the chapter examines the implementation of the affirmative action measures as implemented through the Employment Equity Act, 1998 (Act 55 of 1998) as it relates to the retention, motivation and turnover of highly skilled South Africans, especially the previously advantaged group.

4.2 General overview of skills migration

The 'brain drain' (migration of skilled people across borders) has become a major concern for both developing and industrialised countries. But developing countries are under particular pressure to find effective ways to manage this escalating phenomenon. Tettey (2003) reports that in Africa the loss of highly-skilled professionals to the developed world has assumed serious proportions that it has elicited unprecedented national, regional, and continent-wide concerns. The absolute loss of skilled labour varies from one country to another. In 1990, South Africa and Egypt accounted for three-quarters of professional Africans in Organisation for Economic Co-operation and Development (OECD) countries. Currently, about 30%

of all highly educated Ghanaians and Sierra - Leoneans live abroad. In total, 7% of Africa's tertiary-educated population is living in OECD countries – a massive drain for a continent already lacking human resources. The problem is however receiving serious attention from Africa's leaders. For example, the New Partnership for Africa's Development (NEPAD) – the most current and comprehensive initiative aimed at facilitating the region's socio-economic and political progress – explicitly mentions a need to "reverse the brain drain" in its framework document (Tettey, 2003). This recognition among African leaders underscores the magnitude of the problem and why addressing it is crucial to the continent's development.

The migration of highly skilled professionals is costly and destructive to socio-economic development. It is difficult to calculate the financial cost of the brain drain in terms of the value of lost human capital. A World Bank study presented in Tettey (2003) estimates that between 1994 and 1997 South Africa lost about R8.4-billion in tax earnings and R285, 000 in GDP, due to emigration of its professionals. Supporting Tettey (2003), McClelland (2002:167) states that South African brain drain is costing the government about US$5-billion annually and this need to be urgently addressed. The Arab League figures suggest that brain drain from the region it covers amounts to over US$200-million in material costs. In some cases, raw numbers of migrants speak for themselves. For example, Tettey (2003) states that more than 300 South African specialist nurses are thought to leave the country every month, while Zambia has seen its pool of doctors diminish four-fold in the past few years. Similarly, 45,000 Egyptian scientists in a variety of fields – including 600 in rare specialisations – have emigrated over the last 50 years. Estimates such as these are a rough guide to the direct cost of the brain drain.

But the emigration of highly educated individuals has important knock-on effects. By 2000 the University of Ghana's medical school had lost about half of its teaching staff. Not only is the country's health care system suffering from a lack of skilled physicians, but the affected faculty is also unable to train sufficient numbers of future medical officers (Tettey, 2003). Horn (2007) suggests main three strategies to deal with the problem of brain drain as retention, return and diaspora options. These options will be evaluated and the motivations and mechanisms behind each of these

options, and their feasibility in an African context will be discussed in the next section.

4.2.1 The retention strategy

Retention is a voluntary move by an organisation to create an environment which engages employees for long term. According to Chaminade (2007), this attachment relationship should be durable and constant and link the employee to the organisation by common values and by the way in which the organisation responds to the needs of the employees. The main purpose of retention is to prevent the loss of competent employees from the organisation, which could have an adverse effect on productivity and service delivery. When articulated in a broader context as a national concept, retention option as a strategy will thus aim at ensuring that highly-skilled professionals do not leave their home country in search of a 'greener pasture' abroad. While there are instances of non-voluntary retention – for example, some professionals are bonded to serve their country or organisation for a period of time after graduation – like offering incentive packages (such as bursaries, scholarships, etc.) designed to neutralise the factors that make professionals decide to emigrate.

Competitive financial rewards can be used to counter the lure of more attractive economic prospects in the industrialised world. This, combined with conducive working environments, will give individuals the professional fulfillment that they crave for. These incentive packages, Horn (2007) observes, have seen a reasonable degree of success. For example, a survey of information technology (IT) specialists in South Africa in 2002 revealed a 10 per cent drop in the number of those considering emigration over the previous year's figures, due mainly to increased salaries in the country. In a similar way, Nigeria has been able to address its outflow of university lecturers. In Morocco, however, the IT exodus appears to be continuing unabated (Horn, 2007).

Some African countries, including South Africa, Senegal, Tanzania, Egypt, and Morocco, have national research grants schemes that enable professionals to pursue careers in their chosen field without having to leave the country. Establishment of endowed chairs – through state, private, bilateral, or multilateral partnerships – can also help to keep some top African experts in their countries, and

even to attract those currently elsewhere. However, Horn (2007) admits that there are obvious difficulties with an extensive implementation of the retention option in Africa, at least in the foreseeable future. Most African countries do not have the capability, within the global economic system, to arrest the downturn in their economies that has led citizens to seek opportunities elsewhere. Additionally, although the current wind of democratic change augurs well, particularly in terms of easing constraints on open criticism of governments, it is not enough to reverse the outward flow of skilled professionals.

4.2.2 The return option strategy

The return option, which involves measures to attract professionals abroad back to their countries of origin, has, according to Horn (2007) been used successfully in Taiwan and South Korea. Such schemes go beyond verbal appeals to patriotism; rather, it encompasses recruitment drives as well as concrete measures to provide attractive conditions for those who return. In Africa, the International Organisation for Migration's 'Return of Qualified African Nationals' programme encouraged about 100 nationals to return to their countries of origin every year between 1983 and 1999 (Horn, 2007).

The motivation behind the return option is laudable; but its success partly hinges on bringing back sufficient skilled personnel to make an impact on national development. The problem however, is that many of the factors that drove people out in the first place still persist in much of the continent. Consequently, some returnees actually move back to the industrialised world, thereby defeating the purpose of the return option. Furthermore, return programmes tend to target the 'most urgently needed' professionals. But it is difficult for such returnees, on their own, to have any far-reaching impact on development. Another noticeable problem by Horn (2007) with the return option is that incentives can also serve to undermine those who stay at home. They feel that their loyalty goes unrewarded while returnees are offered lucrative packages. Logically, it makes better sense to leave the country rather than remain. Ironically, therefore, the return option has the potential to fuel further brain drain (Horn, 2007).

For the return option to succeed, Horn (2007) suggests that a key requirement will be to create an economic and professional climate that offers adequate remuneration and living conditions. Korea's success at wooing back its citizens from abroad relies precisely on this approach. The country's (Korea) current economic crisis, however, has inspired resurgence in the outflow of skilled labour, reiterating the importance of an attractive economic environment. One of the main obstacles preventing members of the diaspora from returning is that – for a variety of reasons – a number of African countries do not allow dual-citizenship (e.g. Botswana). This discourages Africans from coming home to "test the waters" prior to relocation, particularly as industrialised countries tend to limit the length of absence for their permanent residents. Finally, many Diaspora Africans – for family and other reasons – are simply unwilling to relocate to Africa, and so their skills can never be captured with the return option (Horn, 2007). Although Horn admits that pursuit of the retention and return options clearly involves significant challenges; this should not discourage governments from forging ahead with such efforts. In fact, these two options should be pursued in concert as medium and long-term strategies. This is because the Diaspora option does not guarantee a solution to the problem.

4.2.3. The Diaspora option strategy

The Diaspora option emerged in the early 1990s in response to limitations of the retention and return options. It advocates making use of nationals abroad – for example, through collaborative research projects – without requiring these professionals to relocate back to their home countries (Horn, 2007). This approach is based on the premise that individuals thrive in an environment that enables them to develop their capabilities further, and from contact with vibrant intellectual networks. Industrialised countries tend to provide such an environment, thereby adding value to the 'human capital' of the Diaspora in ways that their home countries cannot. From this perspective, the brain drain can be viewed as a potential asset rather than a liability. The challenge is to devise ways to tap into the pool of nationals abroad.

Some African governments have realised the potential contributions of the Diaspora towards their country's development and have adopted mechanisms to tap into this resource. Much more, however, needs to be done. Diplomatic missions are key to this process, and the first hurdle is to convince Africans that their overseas missions

can provide a valuable service. A second challenge is to improve the information-generating and management capacity of state institutions, so that Diasporic communities can access the information they need to make decisions on how and when they might contribute to national development. In this regard, Tettey (2003) suggests that African experts in the Diaspora can build networks of expertise that can then be called upon for research and consultancy services. In this instance, the Internet is an ideal tool for creating such communities, in a cost-effective way, and without the limitations of physical distance.

Furthermore, these communities can facilitate regular discussions about issues, plans and projects, and help build trust between Diaspora and local researchers, thereby enhancing the success of collaborative schemes. Members of the Diaspora may also be in a position to assist local colleagues with Internet subscriptions or even hardware and software costs, enabling the latter to engage with their peers abroad for mutual, and national, benefit. Several initiatives have already started in this regard. Tettey (2003) report that the Ghana Cyber group, for example, has provided books – and is helping to expand Internet connectivity – to the country's universities. In the same vein, the South African Network of Citizens Abroad (SANSA) is engaged in efforts to link professionals abroad with their counterparts at home, and to draw on the former for development projects in the country. Other groups pursuing similar objectives include "Knowledge and Development", a group of Moroccan professionals in France, and the Ethiopian North American Health Professionals Association.

Information technology, Tettey (2003) contends, also opens up exciting opportunities in the field of distance education, helping to alleviate the impact of the departure of skilled professionals. Through multilateral programmes such as the "African Virtual University" or institutional partners in Africa, intellectuals abroad may be able to provide coordinated teaching and research expertise. In addition to such "virtual" contributions, members of the Diaspora may also wish to arrange short visits to their countries of origin. However, persuading individuals to run, or even be members, of such initiatives may not be easy, (Tettey, 2003) notes. Those engaged in "cutting edge" research may feel that their work is not directly relevant to their home country. But coupling such expertise with knowledge of the African situation can yield

valuable results. In fact, such intellectual engagement may actually encourage some experts in diaspora to return home.

The Diaspora option is not without its own problems, however. The circumstances that forced some professionals, especially political exiles, to leave home were unpleasant, engendering resentment towards their countries. For example, Peter Abrahams, a renowned South African poet, writer and journalist who fled the country during apartheid regime to take up Jamaican citizenship will not return home despite the demise of apartheid regime in South Africa (SABC news.or.za). Similarly, some Diasporas are not inclined to return particularly if the regimes that drove them out are still in place, like in the case of Zimbabwe.

In addition, professionals quickly get used to the relative ease of access to resources needed for job performance and the certainty that characterises processes in their host countries. They may become frustrated when working in or with colleagues in their home countries where such conditions do not exist, and may be unwilling to participate in future endeavours. The difference in professional values between Diaspora and local experts can also create tensions in collaborative efforts, culminating in unsuccessful partnerships. Finally, Tettey (2003) argues that the success of the diaspora option depends on other conditions that are not always guaranteed. These include a coincidence of interests between home countries and professionals abroad; high levels of commitment and mutual trust within the Diaspora; the extent of flexibility allowed by current obligations abroad; and home governments' political will to engage with compatriots in the diaspora. These factors will determine the feasibility of the diaspora option not only across countries, but across professions as well.

Meanwhile, it is imperative to have knowledge of the factors that are responsible for the massive emigration of African professionals abroad. This, perhaps, may be part of the solutions needed by African leaders who are interested in resolving skill crises, which have hindered accelerated and sustainable socio – economic development and growth of the entire continent.

4.3 Reasons for the mass emigration of professionals from Africa

Africa's brain drain, according to Tettey (2003) is the product of various factors, both economic and political. Without doubt, a major factor in many professionals' decision to emigrate – despite regional differences – is economic. The Chairman of the Kenya Medical Association cited in Tettey (2003) notes that "working conditions and poor remuneration of healthcare workers is not good and has led to brain drain and very poor working morale in health institutions". Poor pay combines with another significant, though under-articulated is aspect lack of job satisfaction. With the exception of South Africa and some North African countries – particularly Tunisia and Morocco – this psychological factor stems largely from the absence of proper facilities and limited professional mobility. This can lead to frustration and, ultimately, a move to more conducive environments abroad. The absence of adequate facilities for post-graduate education also compels students to go abroad, with many African graduates choosing to stay on in OECD countries after graduation.

On the political side, some academics have been pushed out by the authoritarian climate present in many African countries. Those unwilling to tone down their critical views can find themselves intimidated and harassed, and may seek refuge elsewhere. It is estimated that the United States is home to about 10,000 "exiled Nigerian academics" who fled the country during military regimes, particularly between 1993 – 1998.

Devastating civil wars have also contributed to the erosion of Africa's intellectual capital. Over the last five years alone, about 20 (e.g., Somalia, Democratic Republic of Congo, Liberia, Cote-de Voire, etc) countries have been plagued with civil war, forcing many citizens to flee, including highly qualified professionals. For example, 30 per cent of engineers, 20 per cent of university lecturers and 17% of doctors have now left Sudan in search of safer havens. Finally, a recent study by the University of South Africa (UNISA) states that "violent crime is the reason why 60 per cent of emigrants leave (South Africa)," though this does not appear to be a significant cause of the exodus from most countries (Tettey, 2003). The crime theory reported by the UNISA study is supported by Masondo *et al.* (2009) who, reporting Prof. Mike James attributes migration of South African anaesthetics specialists abroad due to

appalling salaries in the public sector while those in the private sector leaves because of crime.

Supporting the crime and poor salary theory for the migration of professionals further, Shavel and Boyle (2008:16) reporting David Wilcocks, states that “the highly skilled see no promotion prospects. A lot want to do better financially, but have hit the ceiling. And they are sitting with the crime problem”. According to Dawn Raphaely as cited in Shavel and Boyle (2008:16), “the crime and education possibilities in the country are the number one factor for migration”. Raphaely stress further that “this new wave of emigration is, I strongly believe, not going to stop. It isn’t any longer just middle-class whites, it is their elderly parents, it is their children in their late teens and early 20s, their coloured neighbours and the Indian family living across the road” (Shavel & Boyle, 2008:16).

4.3.1 Skills migration and management in South Africa

No country is untouched by the forces of globalisation (Fancourt Commonwealth Declaration, 1999) cited in Fegan and Field (2009) which has created a myriad of opportunities for highly skilled professionals by facilitating their swift and dynamic movement across national borders. South Africa has, after the demise of apartheid in 1994 emerged from a position of isolation and begun participating actively in the global labour market, but is already losing workers in critical fields. As a developing country, South Africa is not in a unique position, as many developing countries are faced with similar challenge of addressing the migration of homebred professionals to developed countries (Fegan & Field, 2009). This has resulted in acute shortages of core skills. But South Africa is striving to address the problem of skills shortages by initiating and committing huge amount of resources to broad - based and well articulated sustainable socio-economic growth programmes such as ASGISA and JIPSA with various skills development strategies and structures initiated in order to achieve good results. These strategies include policy, legal and institutional frameworks such as the NSDS, HRDS, SDA, 1998, SDLA, 1999, SAQA, NQF, SETAs which placed emphasis on education and training of both employed and unemployed citizens.

However, ‘brain drain’ remain a very big problem as existing literature suggest that South Africa is finding it difficult retaining its best and brightest after successfully developing them with a lot of resources. Harris (2007) reports that South Africa has a reputation for being an excellent place for nurturing talent, so its managerial ranks are constantly being poached by the world’s leading organisations. As a result, a number of corporate leaders have gone from South Africa to top jobs in large international organisations such as BMW, Daimler-Chrysler, Unilever, Siemens and many others. This report is consistent with Jackson (2009:11) who asserts that “South Africa is one of the biggest losers in the global race for skills, which underlines the essential need for organisations to retain their talent”. Supporting Jackson (2009:11), Ferreira (2009:1) citing Duxbury (2009) reports that

> the developed world is hungry for talent; South Africa is going to lose the people who can really make the difference. South Africa is making the problem worse with employment equity policies that alienated skilled whites and make them all the more receptive to overtures from overseas recruiters.

As a result of South Africa’s competitiveness in the international market, Vil-Nkomo (2007) observes that its human capital is highly internationally mobile in the scientific, medical, management, accounting, corporate law, and corporate business, technology, and agriculture fields. These are highly demanded fields in the world and have compelled a significant proportion of South Africa’s human capital to be in the Diaspora. Reports by the DoE (2001) as cited in Cunningham *et al.* (2006) indicates that 82,811 skilled South Africans left the country between 1989 and 1997 to emigrate to the UK, USA, Canada, Australia, and New Zealand. However, comparable figures from these countries show that 233,609 professionals actually emigrated from South Africa. Lephalala (2006) cited in Mokoka (2007) shows that between 1998 – 2001, an estimated 5,259 South African nurses were recruited by the UK alone with the number increasing every year. Concurring, Samuel (2008) reports that 1,460 migrating South African nurses were officially registered between 1999 – 2000 with the figure for 2000 – 2001 very much higher.

A number of South African professional nurses also migrated to Australia, New Zealand, Canada and the Middle-East countries. World Health Report (2006) report

that 7% of South Africa's total nurses and midwives are working in OECD countries, compared to 1% of Angola's and 34% of Zimbabwe's nurses and midwives (Samuel, 2008). Going by Hall and Erasmus (2003:542) projections, "the exodus of nurses will continue at an annual rate of between 1 and 2%". The Engineering Council of South Africa estimates that one qualified engineer is leaving the country almost every day (Shevel & Boyle, 2007:16) while the Southern African Migration Project survey shows that nearly half of the 1,700 health professionals surveyed would migrate within five years.

The country's public healthcare system has suffered significantly due to emigration of medical practitioners. According to Masondo, Prince and Mthethwa (2009:4), surgical services at South African state hospitals are in crisis due to a dire shortage of anaesthetists and general surgeons. The South African Society of Anaesthesiologists (SASA) said there are a mere 800 anaesthetists and 450 general surgeons in the country with more than 400 specialist anaesthesiologists leaving the country since the beginning of year 2008 – with as many as 40 leaving within one month (Masondo *et al.,* 2009:4). In 1996, there were 56 doctors per 100,000 people (The World Guide, 2004), or 0.6 per 1,000 persons (Maher, 2004), compared to 25 per 100,000 by 2003. The implication of this on the health system is that "people could wait up to 10 years for operations".

The education system is not immune to mass movement of professionals abroad. Apparently there is aggressive recruitment of South African teachers (Samuel, 2008) and those from other commonwealth countries by foreign governments, especially the UK, which has resulted in emigration of qualified South African teachers. In an earlier report, an integrated report prepared for the Education Labour Relation by consortium of experts and cited in Xaba (2003) confirms that "a large number of South African educators have been recruited by overseas countries such as UK, Canada, Australia and New Zealand". Pillay (cited in Xaba, 2003) reports that British agencies are aggressively poaching South Africans to address severe local educator shortages, with 4,702 South African educators leaving for Britain between 2001 and 2003. The majority of these are experienced Mathematics and Science educators. These are the hardest group to replace. While there are no reliable figures from the DoE as to the number of teachers who left South African education system for

foreign countries, research such as (Appleton *et al.*, 2006; De Villiers, 2007; Manik, 2007; Morgan *et al.,* 2006) suggest that qualified educators have been steadily migrating to other countries, with sometimes devastating effects on the classrooms they leave behind.

Again, within South Africa, human capital distribution is divided into the public and private sector. There is a perception that the public sector is largely for black South Africans and invariably the private sector and the scientific sector is largely dominated by white South Africans (Vil-Nkomo, 2007). White South Africans tend to lose human capital more to global competition. For example, Vil-Nkomo (2007) estimates that there are close to 1-million South Africans who are employed in Britain, a number of other millions in New Zealand, Australia and a significant portion in the USA. One may attribute this phenomenon to the implementation of the affirmative action policy which became effective in 1994 and which put white South African males at a disadvantage in terms of the Employment Equity Act, 1998 (Act 55 of 1998). Because of the difficulty encountered by white males in getting employment in South Africa as a result of their equity status, international job offerings became the best attraction. In specific terms, the Human Resource Development Strategy for South Africa (South Africa Department of Education, 2001) report that 82,811 skilled South Africans left the country between 1989 and 1997 to emigrate to the United Kingdom, Canada, the USA, New Zealand, and Australia. Comparable data from these countries indicate that 233,609 followed this trend (Cunningham *et al*., 2006).

With the skills crises facing South Africa, Horn (2007) opines that the big debate should be on how to retain available talent. For example many organisations, Horn (2007) asserts, are having unresolved problems with SETAs (a major skills education and training facilitator) as a result of frequent turnover of top employees. While skills shortages have a global impact, research report by CompTIA and Center for Strategic Research (cited in Horn, 2007) establish that South Africa and India are among the countries under the most pressure. The research report further establishes that 72% of emerging markets (e.g. South Africa, Brazil, China, and India) believe that higher salaries and improved benefits would be the answer. This is clearly not the case. 51% of established markets (USA, UK, and Germany)

suggest that recruitment, together with skills maintenance is the answer. The research recommends the need to increase skills development training. More than 80% of South African IT managers surveyed in the research indicated that skills development is imperative, with soft skills being identified as the most lacking.

In a bid to reduce the shortage of highly skilled professionals in the essential service sector of the economy, Simao (2007) reports that plan are underway by the South African government to recruit back South African doctors and nurses who migrated to Britain and Canada by persuading these professionals to return home. In a World Guide (2004) report cited in Cunningham *et al*. (2006), there was a ratio of 56 medical doctors per 100,000 people in 1996, but this dropped to 25 medical doctors to 100,000 people in 2003 due to emigration. Under the "occupation-specific dispensation" (OSD) policy of the government, about R5.3-billion has been set aside for salary increment and recruitment of another 3,000 health employees over the next three years. About R4.5-billion of this amount is for better pay as one of the reasons cited for skill migration from South Africa is poor pay. According to the Department of Public Services and Administration (2007), one of the objectives of OSD is to improve government's ability to attract and retain skilled employees, through improved remuneration. Currently, employees in the public service are remunerated by a single salary structure. This does not adequately address the diverse needs of occupational categories in the public service. Implementation of the OSD is however fraught with inconsistencies and administrative bottlenecks resulting in the recent protracted medical doctors' strikes in most provinces of South Africa.

Apart from the OSD, other strategy adopted by South Africa to address the problem of skills shortages is to recall retired professionals whose skills are in scarce or critical category to active service. Similarly, return of the Diaspora as discussed earlier in this chapter is also one of the strategies to boost skills supply in the country. The problem with this strategy, however, is the equity status of these professionals who are mostly white male South Africans considered to be previously advantaged and therefore not favoured by the Employment Equity Act, 1998 (Act 55 of 1998).

4.4 Talent management in South Africa

The bottom-line of all skills development initiatives by the government is to provide sufficiently skilled people to drive sustainable economic growth. Without a carefully planned retention strategy put in place, government will only succeed in growing skilled people that will be attracted by other economies. A review of the Human Resource Development Strategy, for example, revealed that the public sector organisations continues to struggle with retaining effective managers and employees with scarce skills and these retention problems are perceived to be worsening (kock & Burke, 2008). In view of the foregoing, there will be a contextualised discussion of the retention and turnover in the following section.

4.4.1 Definition and management of talent in South Africa

Talented employees, according to Berger and Berger (2003:4) are:

> A very small group of individuals, who have demonstrated superior accomplishments, have inspired others to attain superior accomplishments, and who embody the core competencies and values of the organisation. Their loss or absence severely retards organisations growth because of their disproportionately powerful impact on current and future organisational performance. Gaps in replacement activity for key positions are highly disruptive, costly, and distracting to the organisation.

Similarly, Morton (2004:6) describes talent as individuals who have the capability to make a significant difference to the current and future performance of the organisation. The above definitions attribute so much importance to the talent phenomenon in organisations such that retention of their services has become a compelling task for managers and HR researchers.

It is a workplace fact that lifetime employment with a single employer is no longer guaranteed; while in the past the workforce faced the problem of job scarcity, organisations nowadays are dealing with the issue of talent scarcity. What has been described as a ‘war for talent’ in the western world, according to Tornow (cited in D’Amato & Herzfeldt, 2008) has brought retention to the forefront as an increasingly critical human resource issue. Recently, Kock and Burke (2008) assert that South

Africa's public sector departments have been looking toward retention strategies to hold on to talented individuals in scarce-skills categories. The loss of experienced employees has a severe impact on remaining employees in terms of increased workload and reduced efficiency and morale, as well as on the organisation in terms of interruptions of service provision and development, difficulties in finding qualified staff, and disrupted organisational relations. It is important, therefore, to incorporate retention efforts into an integrated, holistic talent management programme to ensure that the right calibre of people are available at the right time and that those people are able to achieve public service strategic objectives.

The retention of talent has however become a major challenge to human resource practitioners since; according to Harris (2007:2) talented job candidates in the global skills market have the luxury of choice. This is affecting South African organisations since they have to compete not only with one another, but with organisations abroad. The situation has tremendously increased competition for talent in South Africa with many organisations going to great length to retain their best employees. Competition has therefore put skilled employees who are already in short supply under pressure as they are being attracted by more than one organisation at a time with various kinds of incentives. According to Doke (2008:26) many newly qualified South African graduates are drawn to foreign shores with the promise of better remuneration, wider scope and more opportunities, leaving organisations hard pressed to fill their vacancies with the right candidates. Concurring with Doke, Litheko (2008:26) states that “migration of suitably qualified South Africans abroad is making recruitment an onerous task in South Africa, because the majority of job candidates are perceived to be unsuitable for the majority of vacancies at professional and technical levels”. Research findings by Hale as reported in Ramlall (2003:63) reveals that almost all public and private sector employers in South Africa are experiencing difficulty in attracting and retaining new employees. This difficulty in attracting and retaining talent could be attributed, apart from the general skills shortages, to the changing psychological contract between employers and employees, particularly the new generation of employees.

Friedman, Hatch and Walker (cited in Aron, 2001:15) reports that the notion of a permanent employee has become a thing of the past. In the changing world of work;

Lee (2001:8) asserts that the psychological contract between employer and employee has changed fundamentally and long term commitment to an organisation is no longer guaranteed by either party. This change in the psychological work contract, Gabriel (cited in D'Amato & Herzfeldt, 2008) observe, has resulted in employees feeling less loyalty to their organisations and therefore being more willing to leave for another organisation. In order to maintain a competitive advantage and meet demands of business, Albrecht and Clarey (2007) argue that organisations need to identify, select and develop their employees in a way that both supports the company's business goals and provides employees with a clear career path. In other words, organisations must become deliberate and strategic in their programmes for managing talent.

One important way of managing talent is by putting in place retention initiatives that encourages talented employees to remain and help their organisations to achieve set goals and objectives. Retention of talented employees continues to be a big problem for a large number of employers thereby constantly challenging human resource (HR) practitioners to formulate innovative strategies that will not only attract talent, but equally retain them in order for these employees to help in achieving organisational goals and objectives. According to a study of HR professionals in the United States of America (reported by Mello, 2006:572), over 75% of those surveyed reported that retention of talented employees was the top human resource problem they confronted. Similarly, Harris (2008:22) states that the biggest challenge facing the South African Bureau of Standards is the retention of critical skills. Schreuder and Theron (2001:28) contend that the retention of talented employees by employers is imperative because the organisation's competitive advantage is often dependent on the specialised knowledge and skills possessed by these employees. Given the high mobility nature of talented employees, retaining them becomes a matter of concern to employers since, in the views of Arkin (2001:28), Buckingham (2000:45), their leaving means a loss to the organisation of its intellectual capital or intangible assets.

The evidence presented in the above literature has made it compelling for human resource practitioners to device strategies that will assist them in attracting talent to their organisations and position such organisations as employers of first choice.

Organisations can adopt a variety of tactics to retain their talent. These, according to (Kupperschmidt in D'Amato & Herzfeldt, 2008) include increasing compensation and benefits, promotions, opportunities to learn, special assignments, and status incentives (for example, official cars). There are other non-monetary rewards that organisations often employ to retain valued employees. This includes increased flexibility in work-at-home options, control over their schedules, and additional opportunities to develop skills and knowledge during work time or through employer-funded educational programmes. These variables are organisational factors which employers can manipulate to enhance retention of talented employees. These factors will be discussed in detail in the sections below.

4.4.2 Retention and turnover dynamics in South Africa

Retention of talent has long been identified as one of the biggest challenges for HR managers. In a 2005 survey by Deloitte (cited in Hughes & Rog, 2006:746), of over 1,396 HR practitioners from over 60 different countries found that the ability to retain new talent were perceived as being the most critical people management issues facing their various organisations. The survey report is consistent with a similar survey by Deloitte and Touché Human Capital survey (as cited in Bennett, 2003:1) of major South African organisations. The survey report shows that human resources managers reported three major challenges that confront HR practice. These challenges include dealing with the new role of HR, the performance of their organisations, and employee retention. The report specifically mentioned retention as the biggest single concern confronting HR practice in South Africa.

Talent turnover is facilitated in South Africa by two major factors. First, the large scale emigration of highly skilled professionals (commonly referred to as "brain drain") as a result of perceived increasing macro-social problems. According to a survey report by P-E Corporate Services (2000), the high crime rate in South Africa and the perceived declining standards in certain social services are some of the factors that encourage the present above average levels of emigration of highly skilled employees. Deloitte and Touché (as cited in Bennett, 2003:1) reveal that 21% of the turnover of executives in various organisations surveyed in South Africa was as a result of emigration. The second factor, according to the report by Bennett (2003:1) is the implementation of the Employment Equity Act, 1998 (Act 55 of 1998),

which was introduced in terms of the Affirmative Action measure. This aspect will be considered later in this study.

Employee turnover rate in South Africa has been on the increase in the recent past. A report by P-E Corporate Services (2001:15) indicates that "key employee turnover is running at a historically high level in South Africa with the turnover rate rising from 7% in 1997 to 14% in 2001" and is now estimated at 15%. Research findings by the Hay Group, as reported by Sherman, Alper and Wolfson (2006:22) confirm this trend, stating that employee turnover has been on the increase in South Africa with the turnover rate surging by more than 25% in the last five years. This increase in turnover has resulted in the loss of high performing employees and this has put intolerable strain on workflow management in various organisations. Apart from incapacitating organisations from competing favourably and gaining competitive advantage, Harris (2007:7) attributes the present poor service delivery by public sector organisations to a shortage of high performing employees who have either migrated abroad or has been poached by private sector organisations. Kock and Burke (2008) confirm that public sector departments operate in an increasingly competitive environment when it comes to acquiring talent in a range of scarce-skills categories.

Senior managers and high-level professional positions have been identified as pivotal in the delivery of public services. To professionalise this important layer of national civil servants, a distinct Senior Management Service (SMS) was established within the public service to ensure the uniform application of HRM norms and standards. In spite of such determined efforts, an analysis of the vacancy rates (skills demands) in 2006 shows that the highest vacancy rate is within the SMS band. Kock and Burke (2008) further confirm that 35% of all unfilled public service posts are between levels 13 and 16, which is the highly skilled and senior management band. The 59% vacancy rate at deputy director-general level is particularly disturbing, as is the 42% vacancy rate in middle management. Six out of every ten deputy director-general positions remain vacant. These statistics are very worrying since senior managers provide strategic direction and are directly accountable for service delivery. Public Service departments need to find innovative ways to feed their technical and leadership talent pipelines.

The inability of organisations to retain successfully developed talent comes with serious consequences. Survey respondents in the Deloitte (2005) study identified the primary consequences of failing to adequately address an organisation's retention issues. These consequences, according to the survey, include: constraint on organisational productivity and efficiency, constraints on innovation, and constraints on the organisation's ability to meet production requirements and customer demands. These consequences are those that are generally perceived as capable of impairing organisation's competitive advantage criteria. These consequences can, however be addressed by management through internal mechanism of talent management. Consequently, the Deloitte (2005) study identifies the need to increase investment in a variety of strategies associated with talent management including learning and development, internal communications, cultural enhancements, and mentoring and coaching. Furthermore, the Government of Alberta, Human Resources and Employment (2003:8) publication identifies the following factors as crucial to talent retention: being treated with respect, doing interesting work, a feeling of accomplishment and good communication among co-employees.

The factors identified by Deloitte (2005) as crucial to retention of talent are similar to those generated by Towers Perin (2005:17) study. The study identifies ten top retention drivers for Canadian workers and they include: organisation's success at retaining others with needed skills, opportunities to learn and develop new skills, base salary, manager's understanding of individual employee's motivations, satisfaction with organisation's people decisions, retirement benefits, senior management acts to ensure organisation's long-term success, fairly compensated compared to others doing similar work in organisations, appropriate amount of decision-making authority to do job well and reputation of organisation as a good employer. Retention strategies found to be important in other countries include: inspiring enthusiasm (Brazil, France, and Netherlands), treating people with respect (Japan), conducting effective performance reviews (Italy) and holding people accountable for performance goals (South Korea).

Literature such as Hughes and Rog (2006:744) contend that differential treatment of employees identified as having exceptional talent (i.e. high potential or high

performing employees) is a crucial retention strategy. This HR practice, according to Hughes and Rog (2006:744) will increase productivity, sales and profits, and give organisations competitive advantage. However, Buckingham and Vosburg (2001:17) disagree with preferential treatment of talent. They argue that the objective of the human resource management (HRM) function is to "maximise the talent of all employees or the talent inherent in each employee, one individual at a time". Supporting Buckingham and Vosburg (2001:17), Pfeffer (2001) argues that an exclusive focus on the external recruitment and retention of "high talent" senior executives could have unintended internal competition thus undermining teamwork; the creation of a self-fulfilling prophecy of declining competence, whereby training and development resources are redirected from struggling employees to those most able; a focus on bringing in new talent instead of fixing cultural and other systemic issues that serves as barriers to employee performance. This could lead to the development of a culture of organisational arrogance or invincibility, potentially leading to poor decision making.

Based on insufficient empirical research evidence, Lewis and Heckman (2006:141) criticise the positions of Handfield-Jones *et al.* (2001), Buckingham and Vosburg (2000), and Pfeffer (2001), contending that argument in favour of one position or the other are largely based on "compelling anecdotes" since little rigorous data is available to support either perspectives. Lewis and Heckman (2006:141) conclude that talent management "is not well grounded in research, not distinct from traditional HR practices or disciplines, and is supported mainly by anecdote". Concurring with the positions of Lewis and Heckman (2006), Hughes and Rog (2006:745) submit that many of the policies and practices underlying talent management are synonymous with various components of HRM (e.g. recruitment, selection, compensation, performance management, succession planning).

Notwithstanding the various positions canvassed by the above literature, it is important that while organisations should not create an atmosphere of inferiority complex amongst employees, there should be a management mechanism that supports and encourages innovative thinking, exceptional performance, above board productivity and a reward system that does not promote mediocrity if organisations

are to survive in today's competitive business environment. Specific motivational variables that influence talent retention and turnover will be discussed next.

4.4.3 Factors influencing talent retention and turnover

The following section discusses some of the factors that can be used by organisations to influence retention of employees whose services and expertise are crucial to organisational success. Some of these factors, if not properly applied, can equally facilitate turnover of these employees.

4.4.3.1 Goal setting technique

Davidson (2001:5) asserts that one of the strategies adopted by leading organisations in the area of top employee retention include instituting goal setting, performance measurement, and skill development programmes to ensure that employees always know where they stand. According to Latham (1984), Locke (1968) cited in Staw (2001:54), goal setting is the idea of assigning employees with a specific amount of work to be accomplished - a specific task, a quota, a performance standard, an objective, or a deadline. This will enable an employee to know his/her level of contribution to organisational goals. Riggio (2003:193), Staw (2001:54) argue that for employees to be motivated, goals must be clear, specific, attainable, and wherever possible, quantified. Goals should have two main characteristics - they should be specific and not vague. For example, 'increase sales by 10%' rather than 'try to increase sales'. Secondly, there should be a time limit for goal accomplishment, like 'cut costs by 3% in the next six months'. Riggio (2003:194) while concurring with Staw (2001:54) contends that goals should also be challenging and yet, attainable. If accepted, difficult goals lead to better performance than easy goals.

Furthermore, Staw (2001:54) states that whether goals are set participatively or assigned, the support of the supervisor is crucial. Supervisors must assist subordinates to achieve tasks with the necessary expertise and the needed technology. Supportive supervisors do not use goals to threaten subordinates. Employees get feelings of pride and satisfaction from the experience of reaching a

challenging but fair performance goal. Staw (2001:62) posits that success in attaining a goal also reinforces acceptance of future goals and assist in retention.

However, DeCenzo and Robin (2007:256) argue that employees resist goals for lack of confidence, ability and knowledge. Similarly, employees resist goals when there are no internal benefits such as personal pride, or external rewards like money, promotion, or recognition in attaining a goal. In order to overcome the factors identified by DeCenzo and Robin (2007:256) regarding goal resistance by employees, Staw (2001:63) suggests that organisations should conduct training to raise employee's level of skill and self confidence. It is also important to allow subordinates to participate in goal setting and offer monetary bonuses or promotion, recognition, and time-off for reaching goals. This is consistent with the position of Ramlall (2004:52) who proposes that supervisors must introduce support elements such as money, equipment, time, help as well as freedom to their subordinates in order to attain goals. Managers must ensure that organisational policies do not impede goal attainment. Employees must equally be provided with feedback on the degree to which they are attaining or falling short of their goal in order to adjust the level of effort or strategy accordingly. Goal attainment should be a critical aspect of the performance appraisal system.

According to DeCenzo and Robin (2007:256) performance appraisal must convey to employees how well they have performed on established goals. It is also desirable to have these goals and performance measures mutually set between the employee and the supervisor. Without proper two-way feedback about an employee's effort and its effect on performance, management runs the risk of decreasing the employee's motivation. It is envisaged that goal setting techniques, when combined with other motivational strategies such as those discussed below will provide organisations with a good mix retention strategy.

4.4.3.2 Training, education and development opportunities

In today's competitive global market, Wan (2007:297) argues that the only strategy for organisations to improve workforce productivity radically and enhance retention is to seek to optimise their workforce through comprehensive training and development programmes. To accomplish this undertaking, organisations will have to invest vast

resources to ensure that employees have the information, skills, and competencies they need to work effectively in a rapidly changing and complex work environment. Wan (2007:298) therefore suggests that it is important for organisations to invest in their human resource or human capital development, which, in general terms, is the process of helping employees become better at their tasks, their knowledge, their experiences, and add value to their lives. The main method of achieving this is through training, education, and development.

Citing Smith, Wan (2007:298) defines training as "a planned process to modify attitudes, knowledge or skill behaviour through learning experience to achieve effective performance in an activity or range of activities". The Web Online dictionary defines training as "activities or deliverables designed to enable an end user to learn and use new processes, procedures, systems and other tools effectively and efficiently in the performance of their work". According to Schermerhorn, Hunt and Osborn (2004:109), training is a set of activities that provides the opportunity to acquire and improve job-related skills. In addition to initial training, training to improve employees' skills is important in order to enhance employees' performance in the organisation. The purpose of training in the work context is to develop the abilities of the individual and to satisfy the current and future manpower needs of the organisation.

Wan (2007:298) defines development as the growth of realisation of a person's ability, through conscious or unconscious learning; while education is the "activities which are aimed at developing the knowledge, skills, moral values and understanding required in all aspects of life, rather than a knowledge and skill relating to only a limited field of activity". Employees consider training, education and development as crucial to their overall career growth and goal attainment and will be motivated to remain and build a career path in an organisation that offers them such opportunity.

Training comes in different dimensions and can take the form of on or off- the job methods. On-the job (internal) training techniques include mentoring, self-learning, and attaching an employee to learn a new skill under a colleague or a superior. Organisations also organise in-house training for their employees where they are

specifically trained on the job requirements peculiar to the organisation. Off-the job (external) training techniques include seminars, workshops, lectures, and case studies that are conducted outside the premises of the organisation. Many organisations encourage their employees to add value to themselves through acquisition of additional education by approving study leaves with or without pay or through part-time studies. Such programmes are usually conducted by institutions of higher learning. Thomas, Lashley and Eaglen (2000:336) report that low levels of training give rise to high levels of employee turnover and that the provision of good training has a positive effect on employee retention. This assertion might have informed the decision of the Old Mutual Investment Group in South Africa to provide a variety of skills, leadership and personal development programmes to its employees. According to the organisation's 2002 Annual Report, R89-million was spent on training, representing 6.7% of payroll. Specific training programmes are also put in place by the organisation to grow actuarial and accounting skills among black employees.

Organisations enrich their Human Capital asset and the quality of their operations through training and development. Studies by Pate and Martin (2000:150) and Oosterbeck (1998: 266) show that organisations that are committed to employee training are realising the rewards of increased skill-sets, motivation, higher productivity and knowledge transfer of their employees. In particular, Acton and Golden (2003: 138) note that job-related training increases an employee's ability to perform job-related tasks. Banakus, Yavas, Karatepe and Avci (2003:278) report that organisations that provide training send a strong signal to employees regarding management commitment to their retention and customer service. Training employees has also been found, in studies by Strasser, Cotton and Tittle (cited in Choo & Bowley, 2007:341), to result in facilitating the updating of skills, increasing professionalism and increasing employee commitment and satisfaction.

A related study by Burke (1995) also (cited in Choo & Bowley, 2007:341) found that participation in internal and external training is beneficial to organisations and their employees, and these make employees feel better about remaining in the organisation. Research by Choo and Bowley (2007:341) reveals that training and development ranks amongst the highest retention factors mentioned by employees.

The research also confirms that opportunities for training and development improve employee skills to work with up-to-date technologies. Lack of job-related skills and out dated technologies will jeopardise efficiency and result in early turnover. Providing employees with quality training through external programmes will equip them with new skills required to operate the latest technology or simply an opportunity to refresh existing skills.

While internal training is important and can be valuable in some areas of development, external training can add interest and promote interpersonal relationship among employees across the industry and beyond. In today's employee-driven labour market, the provision of training is important in order to retain existing employees as well as attract new recruits. Managers have the responsibility of providing assistance to help their subordinates identify the training and development needs. Training and development should be a continuous process with periodic review and managers giving employees the necessary feedback. Choo and Bowley (2007:316) state that a thorough understanding of the job scope and career path is necessary to help managers and employees identify human capital development needs that are essential for career advancement within the organisation. These are instrumental in keeping employees on the right track in the development of their careers. This, according to Choo and Bowley (2007:316) will not only reduce turnover, but will also help in succession planning, as employees would stay if there is a well defined career progression within the organisation.

4.4.3.3 Career growth and promotion opportunities

Career-minded employees consider career growth and development as a crucial deciding factor in their decision to remain in an organisation or leave. Where career growth and development cannot be guaranteed, employees leave for alternative employment. Choo and Bowley (2007:315) argue that providing employees with internal job opportunities is a means of demonstrating that they can realise their career goals inside rather than outside of the organisation. Choo and Bowley (2007: 315) further argue that career growth help employees to plan for the future and to be better equipped with the right skills in order to remain competitive. In a related literature, Agho (1998:1007) states that opportunities for mobility within organisations are determinants of employee satisfaction. As vacancies occur, employees must be

given equal opportunity and necessary encouragement to apply alongside external candidates for higher positions within the organisation.

When employees have the opportunity to be promoted, they tend to build their career life around the organisation because they know that they can achieve their career goals within the organisation and this can inform their decision to remain. Managers should also focus on helping employees progress in their career and encourage their professional development. Inexperienced young employees who are unable to get on with their jobs are likely to leave the organisation for another job which they consider offers better prospects. This would be a loss to the organisation as these young employees may have the potential to make significant contributions to the organisation in the long run.

An emerging concept in career development is the mentor-mentee system. Orpen (1997:53) defines mentoring "as the process whereby managers provide informal assistance and support to particular subordinates on an individual basis, to help them in their efforts to be successful within the organisation". Successful professionals who have made their marks in their various careers are encouraged to adopt young and up-coming professionals as mentees in order to groom and help them build and achieve their career goals. This practice is common in some of the organisations that have been mentioned in the past as organisations of choice in South Africa. They include organisations like Accenture, Deloitte and Trouche, Coronation Managers, Alexander Forbes and others. Young professionals are attached to more experienced managers who help them develop realistic career goals and motivate them through guidance, counseling as well as putting the mentees through the technical aspects of the job. Mentor–mentee development programmes foster good working and interpersonal relationships and motivate the mentee to remain with his/her mentor in the organisation. These successful mentees eventually adopt the management styles of their mentors and this often leads to successful management succession.

4.4.3.4 Management style

One of the critical roles of management is to create a work environment that will endear the organisation to employees. It also includes influencing these employees'

decision to be committed and remain with the organisation even when other job opportunities exist outside the organisation. Studies by Maertz *et al.* (2003:111), Maertz and Griffeth (2004: 668) emphasise the importance of pay, work organisation and work conditions in shaping job satisfaction and retention. Taplin and Winterton (2007:6) pursue in detail the specific role of managers who influence employees' attitudes directly and indirectly through work structure. Managers have the responsibility to structure the workplace and provide employees with an environment that enables them to resist external attractions such as higher pay in other organisations.

Apart from providing an exciting working environment, Taplin and Winterton (2007:8) further submit that the salient feature of a low turnover organisation in an industry where high turnover rates are the norm is a style of management that is considerate of work/family issues. Such a management style also provides requisite levels of training and support for employees to meet their performance (and earnings potential) and is based upon open communication. All these facilitate employee attachment to their leaders and the organisation as a whole.

One retention strategy that engages management attention is work autonomy. In contemporary organisations, Amar (2004:97) observes that managers are busy removing controls in the form of organisational policies that create hurdles, obstacles, and barriers in the way of employees' creativity in their jobs. While it is true that management has to place controls to guide and monitor activities in the organisation, Amar (1998:98) contends that management must also recognise that controls can, and mostly do go against motivation and impede creativity. This is consistent with the position of Kinnear and Sutherland (2001:17) who emphasise the need for skilled employees to be given space to act independently and freedom to plan and execute work the way they choose. The removal of structures and bureaucracies which hinder employee freedom can help retention practice in organisations with high turnover resulting from the application of rigid organisational policy. Amar (2004:97) submits that reduced, or a lack of control can free employees and give them a sense of empowerment. For instance, the biggest motivator of the younger generation of employees, according to Amar (2004:97) is a lack of control on them. This frees their minds and allows them to engage in activities that bring

about innovation. In some organisations, management extends the lack of control concept to dress and behaviour codes (Hays, 1999:46) which also extends to work flexibility.

A study by Taplin and Winterton (2007:8) reveals reasons why most employees remain with their various organisations despite better employment opportunities elsewhere. The study observes that it is imperative for management to introduce initiatives that ease work/family conflicts (flexible working hours, ignoring occasional lateness, providing transportation for employees) and systematic attempts to solicit information from employees about potential domestic concerns. The study further notes that management should maintain open communication in order to identify problems before they disrupt operation and result in avoidable turnover. Cross-training of employee is crucial to enable other employees stand in for absent colleagues. These management behaviours are considered a commitment to employees by management.

Managers have the responsibility of stimulating the work environment to achieve efficiency and create attraction for employees. Taplin and Winterton (2007:8) show in their research the importance of management responding appropriately to employee's needs and complaints. The research also reveals that many employees remain with their organisations as a result of the pleasant social atmosphere that exists in the organisation. This social atmosphere includes a friendly and happy environment reminiscent of a family. Most employees find such work environment and management disposition attractive and this makes it difficult for them to leave. This is supported by Cappelli (2000: 108), Mitchell, Holtom and Lee (2001:98) who argue that social friendships at work act as drivers for employee retention. In support of this argument, Ferreira (2008:76) posits that a fat salary is down the list of things that the modern employees are looking for. "The things that make people really are not money and short-lived experiences of happiness; the most important things are engagement, relationships with other people and finding purpose and meaning in one's life". In reporting the reaction of employees during their research, Taplin and Winterton (2007:8) found that the management was always there whenever the employees had problems thus enhancing the employees' commitment to the organisation. Employees in the study agreed that they were satisfied with their jobs

and described their work as generally interesting, challenging, and of high standard that demanded a whole range of skills.

Similarly, in a Deloitte and Trouche survey, Ferreira (2008:78) reports that the single most important factor that elongates employee's stay in an organisation is management style – "the quality of the relationship an employee has with his or her immediate manager". Sherman *et al*. (2006:8) also found in their research that the majority of employees in the organisations surveyed planned to remain with their organisations at least for the next five years because of the prevailing culture of management care. In today's supply-constrained labour environment, as presently witnessed in South Africa, it is important for managers to integrate employees' work and family life and create a sustainable social environment in the organisation that will bond employees and management together. This contemporary management style is fast replacing the autocratic style of management which sees employees as mere economic tools that must be exploited to achieve organisational goals.

Empirical evidence by Taplin and Winterton (2007:11) shows that managers in high turnover organisations believe that employees are not to be trusted; that they are expendable and therefore turnover is somewhat inevitable. Management in these organisations is always reluctant to invest in new employees other than minimal training assistance and do not place any importance on the work/family life of employees. In a study by Sherman *et al*. (2006:8), between 60% and 70% of the workforce believed that their managers did not assist them in developing their career ambitions. This neglect on the part of management was found to be driving employees to quit in their thousands, and this cost organisations millions of rands per year (turnover costs).

Given the huge costs associated with turnover, it is important for HR practitioners to adopt a pro-active managerial approach that views turnover as a costly, disruptive but avoidable work phenomenon that impact negatively on service delivery and profitability. Management should recognise retention practices that structure work to facilitate maximum earnings for employees, especially new ones who should also be extensively trained and motivated in order to get their commitment to the organisation. This will reduce turnover intentions. Managers should identify each

employee's potential and skill and assign them jobs that are commensurate with their skills and potentials in order to make work pleasurable. Top management should evolve policies and practices that encourage employees to approach their supervisors freely whenever they run into problems, whether work or family related.

It is imperative for managers to establish a good working relationship with employees in order to create room for effective two-way communication. This, according to Taplin and Winterton (2007:14) is a good retention strategy that must be encouraged by managers. Such approachable management, combined with sympathetic supervision and good interpersonal relationsips would clearly help in labour retention. Behaviours such as this by management reflects genuine concern for creating an effective work environment based on information sharing, incentive pay, training and skill development, and relative job security. Most of these factors according to Taplin and Winterton (2007:14) are sources of sustained competitive advantage through people. Good management practices also entail that salary and other financial benefits for employees are set at market or above market values in order to gain a competitive advantage. These are discussed in the section that follows.

4.4.3.5 Compensation and other financial packages

The remark of Kinnear and Sutherland (2001:17) that employers should not be deceived that money doesn't matter in retention strategy any longer is very instructive. This remark emphasises the importance of money in attracting, motivating and retaining quality employees in the organisation. Kinnear and Sutherland (2001:17) further remark that skilled employees in South Africa are achievement oriented and want their achievements rewarded with money. Locke (1980) cited in Tietjen and Myers (1998:227) reviewed four methods of motivating employees toward improved performance as money, goal-setting, participation in decision making, and job redesign. Locke (1968) found that money was overwhelmingly the most important motivator. Meudell and Rodham (1998:128) suggests that money can be considered to act as both a "scorecard" which enables employees to assess the value the organisation places on them in comparison to others, and as a medium of exchange in that an individual can purchase whatever

he/she needs. However, a lot of controversies have surrounded the use of money as the utmost variable in employee motivation and retention.

In a comparative analysis, organisational practitioners observe that in organisations experiencing turnover, compensation was the most common reason given for leaving. However, in organisations with low turnover, compensation was not the reason for staying, instead, most employees stayed because of intrinsic reasons such as job satisfaction and good relationships with their managers and other employees (Samuel, 2008). This suggests that the cause of dissatisfaction is not the same thing that determines satisfaction on the job. This assertion is consistent with both Herzberg's and Maslow's theories of motivation, which propose that compensation and other financial benefits satisfy only lower level needs, but motivation and satisfaction result from higher needs being met.

Amar (2004:96) argues that money has not remained as good a motivator as it was in the past. The efficiency of money as a motivator of skilled employees is quite low. Hays (1999:48) advises that if managers reward performance with only money, they will be losing the substance of retention because there are other more powerful ways of motivating quality employees and these include freedom and flexibility in the organisation. It can be argued that the use of money as a motivator in the skilled labour environment would depend on how it is deployed. For employees to be effectively motivated, Karp, Sirias and Arnold (1999:45) propose that the bulk of rewards that organisations offer their employees should be expanded to include non-financial incentives. These incentives should include issues such as work/life benefits, training and development opportunities, promotion and autonomy.

Birt, Wallis and Winternitz (2004:29) disclose that challenging and meaningful work, advancement opportunities, high manager integrity, and new opportunities/challenges rank among the highest variables that are considered important to the retention of South African talents. These are intrinsic rather than extrinsic factor thus supporting Herzberg's (1968) theory of motivation which states that motivation is internally-generated, and not externally-stimulated. It is upon this distinction that Herzberg restated the utility of his earlier theory where he classified money as a dissatisfier. In their own argument, Kohn, Lee and Lawrence (cited in

Meudell & Rodham, 1998:128) conclude that pay schemes produce only temporary compliance and are ineffective at producing long-term attitudinal and behavioural changes. They stress further that rewards merely motivate individuals to seek more rewards and can undermine intrinsic interest in the job which is then perceived as being merely a means to an end – an expensive and short-term motivator.

Amar (2004:96) contends that the practice of using money to motivate performance and redirect behaviour appears to have limited application in contemporary retention practice. However, while money cannot be totally discountenanced as a motivator, the attention of managers should be redirected at rewarding performance using commissions, performance bonuses, merit pay, incentive schemes, and others rather than raising salaries across the board. In designing retention programmes, managers should, therefore, identify the needs of individual employees and tailor a compensation package towards those needs rather than applying or imposing a package that will not be valued by employees no matter how costly it may appear.

The above section has articulated a practical working relationship between various motivational strategies that can assist in retention and turnover management. There is no one motivational strategy that can sustain any meaningful retention practice. It is therefore imperative for top management, HR practitioners and line managers to consider a combined strategy that will produce a comprehensive and effective retention initiative. Organisations should focus their attention on intrinsic rather than extrinsic factors in designing and implementing retention policies since motivation comes from within and not from outside. This however does not suggest that extrinsic factors such as money should not be given serious consideration in the motivation and retention mix.

The retention drivers discussed thus far are organisation-based which can be addressed through an effective and well articulated talent management strategy. However, there are other factors that facilitate turnover of employees which are outside the control of organisations but which they must, nevertheless have to contend with. These factors include socio-economic (e.g., crime) and legal-political (e.g., Labour Acts, Affirmative Action policy). Affirmative action and Employment Equity Act, 1998 (Act 55 of 1998) as they relate to retention and turnover of highly

skilled people and professionals in South Africa will be considered in the next section.

4.5 Overview of affirmative action measures in South Africa

The subsistent skills shortage in South Africa has been variously attributed to apartheid rule which discriminated against the education, training and employment of black people (Wagner, 2001; Erasmus & Steyn, 2002). It therefore became imperative for the post-apartheid government in South Africa to initiate programmes and policies that would redress past injustices, promote social justice and eradicate inequalities amongst the citizenry. Some of these policy and programme interventions were specifically aimed at preventing discrimination at workplaces and to promote accelerated employment and advancement of the previously disadvantaged group (Africans, Indians, disabled persons and white females).

One of the policy intervention mechanisms was the introduction of the affirmative action (AA) measure in 1994 (Bandix, 2001). AA refers to the purposeful and planned placement or development of competent or potentially competent persons in or to positions from which they were barred in the past, in an attempt to redress past disadvantages and render the workplace more representative of the population (Bandix, 2001). The definition by Idasa as cited in Boikhutso (2005) is more descriptive of the intent and purposes of AA as it relates to employment. Thus, AA

> consist of temporary positive measures or intervention aimed at preferential treatment in appointment, promotion, training and development of designated groups (blacks, women & disabled persons) in order to accelerate and advance them – thus creating equal employment opportunities for all (Boikhutso, 2005:53).

Affirmative action policy has come under severe criticism by some sections in South Africa (particularly the Afrikaner and White communities) which described the policy as discriminatory and racially based. Concurring, Dr. Temba Masilela (cited in Nxumalo, 2010:53) states that

> AA is characteristically complex and controversial, conceived as race-based,

quota-driven, and preferential treatment of historically disadvantaged groups. AA contradicts fundamental principles of liberal ideology by prioritising group or collective rights over the individual as the beneficiary of rights.

In order for the AA to be effective and functional, the Employment Equity Act, 1998 (Act 55 of 1998) was enacted to give legal backing to the AA measure and ensure compliance by employers of labour. The Act sought, among other things, to eliminate all forms of discriminations as well as the establishment of specific measures to accelerate and advance the employment of persons from the designated group (Coetzee, 2005). The controversies and problems surrounding AA seem to arise not from the principle, but from the manner in which it is implemented. For example, Bendix (2001) asserts that implementation of AA leads to the appointment of persons (from designated groups) to fill "AA" positions without due consideration of their suitability for such positions or the possibility of support and development. This, according to Bendix (2001), leaves other employees (previously advantaged) dissatisfied and at the same time unfair to the AA appointees since they are placed in meaningless positions or cannot function efficiently in the positions they have been placed due to lack of experience.

Both situations described above may lead to frustration and ultimately translate to turnover of the affected employees as a result of perceived organisational injustice on the part of the 'previously advantaged' employee and job dissatisfaction suffered by the 'AA employee'. This argument is theoretically rooted in Adams (1964) equity theory which postulates that individuals who perceive themselves as either under-rewarded or over-rewarded will experience distress, and that this leads to efforts to restore equity within the organisation. Failing to find any, Hellriegel, Jackson, Slocum, Staude, Amos, Klopper, Louw and Oosthuizen (2008:276) argue that they may behave in ways that harm the organisation. For example, they may quit, and when high performers leave the organisation, the company loses its productive talent and the capacity to gain competitive edge. If dissatisfied employees stay, they may react by withholding effort in order to restrict output or lower quality, or embark on deliberate sabotage of equipment. This may also put the organisation at competitive disadvantage. An under-rewarded employee tend to show feelings of hostility to the organisation and perhaps their co-employees which may lead to reduced productivity

and this may impair the overall performance of the organisation especially when a high performing employee is involved. Furthermore, Adam (1965) in Spector (2008) posits that guilt is induced with over-payment as the person who gets too much may feel guilty or same while the person who gets too little may feel angry or humiliated.

Implementation of AA appears to be a contributory factor to the problem of skills shortages presently suffered by South African organisations. Breier (2009) remarks that one of the effects of AA has been the depletion of senior professionals and trade workers who might be able to mentor new-comers. Any new graduate needs induction into the workplace, but the need is particularly great for those who gained little or no work experience in the course of their training. Furthermore, Coetzee (2005) states that one of the most problematic aspects of AA is the acute shortage of suitably qualified persons from the designated group to fill vacant top positions. This has led to the constant poaching by other organisations thus leaving many top positions (particularly in public sector organisations) unfilled. Supporting this assertion are Coetzee (2005), Maisela (2001:53) who confirms that many South African organisations are experiencing a high turnover of black executives who are constantly poached by competitor organisations.

The Employment Equity Act, 1998 (Act 55 of 1998) (EEA) which was enacted in terms of the AA compelled employers to give preferential treatment to employees from the previously disadvantaged race/groups (i.e., blacks, Indians, coloureds, disabled persons and white women) in terms of recruitment and selection. This measure creates a lot of vacant positions for black professionals, who are already in short supply. Bennett (2003:1), Maisela (2001:53) also adds that many South African organisations are experiencing a high turnover of black executives who are constantly poached by competitor organisations. These black executives are often used to win tenders from government departments and parastatals. Also concurring, empirical research by Thomas (2000) and cited in Jain; Sloane and Horwitz (2003) found that black employees frequently move from one organisation to another for higher salaries and related perks due to their inability to fit into historically established corporate cultures. van As (2001:43) points out that the implementation of the Employment Equity Act, 1998 (Act 55 of 1998) has forced organisations to balance their employment portfolio in a manner that enables skilled black

professionals the opportunity to hop from one job to another thus making their retention difficult.

4.5.1 The Employment Equity Act, 1998 (Act 55 of 1998)

The Employment Equity Act, 1998 (Act 55 of 1998) (EEA) was established to achieve equity in the workplace by a) promoting equal opportunity and fair treatment in employment through the elimination of unfair discrimination; and b) implementing affirmative action measures to redress the injustice in employment experienced by designated groups, and to ensure their equitable representation in all occupational categories and levels in the workforce. The Act requires that employers give due consideration to "suitably qualified persons" in their recruitment of designated groups. This means such a designated person may not possess the requisite qualifications to occupy a position, but such a person may be deemed to be qualified once he/she has formal educations, prior training, relevant experience, or capacity to acquire – within reasonable time – the ability to do the job (Jain, Sloane & Horwitz, 2003). The perceived injustices (e.g., arbitrary appointment and promotion of equity candidates to fill 'AA' positions) that is inherent in the implementation of AA and EEA can, in the view of Coetzee (2005:3) results into dislike for a job and indeed an organisation therefore prompting a high performing employee to voluntarily quit.

Expressing a similar view to that of Coetzee, Breier (2009) citing Marius Fransman, asserts that "one of the unintended consequences of employment equity is the 'leakage' from the economy of white graduates with scarce skills. While EE is a strategy to redress historical imbalances, our country cannot afford to lose too many engineers. The question of a possible moratorium on employment equity (EE) needs to be thoroughly and maturely debated, based on research into the loss of scarce skills professionals within the context of 'binding constraints' on economic growth and the consequent lack of service delivery to the poor". Fransman concluded by noting that "the existence of a 'second economy trap' is arguably the most important historical imbalance that needs to be redressed in South Africa currently".

Dr. Mamphele Ramphele, former Vice-Chancellor and former managing director of the World Bank concurs with Fransman. Accordingly, Ramphele (cited in Breier, 2009) declares that "given the many concerns expressed across the board, and the

tough global skills market, it is surprising we are not examining the impact of employment equity on our performance as a nation". It will be inappropriate to put an unskilled or inexperienced person in a position in which performance is impossible. Ramphele further argues that the government needs to acknowledge that mistakes have been made in the implementation of EEA. Other authors have, however disagreed with Fransman and Ramphele. For example, the then Deputy President of South Africa, Phumzile Mlambo-Ngcuka was reported as saying that AA has come to stay, at least until the imbalances of the past are reversed (Breier, 2009). Mlambo-Nguka further suggests that AA should indeed be called "corrective action" because there were still too many formerly disadvantaged people, especially women and the disabled people who had not benefited from the government EE policy (Breier, 2009:17). Reacting to Fransman's suggestion, the then Minister of Labour, Membathisi Mdladlana was reported to have labelled Fransman 'a dreamer' for calling for a moratorium on AA (Breier, 2009). Implementation of AA equally poses recruitment difficulty in respect of successfully developed talent (mostly white males) who could not enter the labour market because of their equity status. These include fresh graduates with innovative ideas and ability to make the difference in the workplaces.

Employers, especially from the private sector has often criticised AA as an imposition of unqualified employees on them at the expense of more qualified white male candidates (Coetzee, 2005). They argued that if organisations appoint people from the previously disadvantaged groups merely for the sake of meeting employment equity targets without considering the value they bring to the organisation, such appointments could, in the long term, lead to increased labour costs, reduced profits, retrenchment of workers or even business closure (Coetzee, 2005:8). This practice has been perceived to undermine and violate the concept of organisational fairness (procedural and distributive justice perceptions) which is an antecedent to employee intention to quit (Gilliland, 1993). The implication of the implementation of AA policy has therefore been regarded as a contributory factor to the present skills shortage being experienced in South Africa as many highly competent employees from the previously advantaged group left the country to take up appointments abroad as a result of perceived injustice and discrimination inherent in the implementation of AA policy.

In a report by Bosman (2007), some Afrikaners declared that “both the Constitution and the Freedom Charter are clear about equal rights for all, and that South Africa belongs to all who live in it, black and white. In practice, however, this ideal is nullified by the policies of affirmative action and employment equity”. These policies have severe implications for government, its course of action and service delivery. The vacancy rate in government departments is estimated at 30% of staff, while the acceptable norm is about 5%. There are similarly high vacancy rates in provincial and local governments. In the Department of Land Affairs alone there are 1 000 vacancies. This is the lead agency tasked with ensuring the success of land reform and the transfer of 30% agricultural land by 2014. But with an acute shortage of skilled personnel this target will remain a pipe dream. It is no use blaming white farmers for the slow pace of land reform when the department cannot cope with the demands of its own targets (Bosman, 2007).

4.5.2 Affirmative action policy and skills shortage

The effect of AA on skills shortage has become so critical that Gwede Manthase, General Secretary of the African National Congress (ANC) (the ruling political party in South Africa) declared that “affirmative action and employment equity policies will not be allowed to stand in the way of municipalities and local authorities hard hit by skills shortages” (Nxumalo, 2008:1). Mantashe further reiterate that

> there were at least 70 municipal authorities in the country without a single engineer or artisan. South Africa is running so short of skills that affirmative action cannot realistically be considered an issue. Important statistics show that unless we produce at least 2400 engineers and artisans a year we are not going to cope with the skills shortages in the country.

Concurring with Mantashe, Dawid Botha, the Executive Director of the South African Institute of Civil Engineers (SAICE), said “the shortage of engineers and technicians is a national problem heading for disaster”. Allyson Lawless, a former president of SAICE, said “there are currently less than three civil engineers for every 100 000 people in South Africa”. A survey conducted by Lawless shows that 79 of the country’s 231 local Municipalities do not have civil engineers, technologists or

technicians. Botha confirms this and maintains that there are more than 1 000 vacancies for these skills at municipalities country-wide (Hermann, 2008). Mantashe further states that “compounding the skills crisis in South Africa today was that the country was saddled with a rapidly ageing artisan population with an average age of 54 years and practically no decent national programmes of training younger people are in place” (Nxumalo, 2008:1).

Consistent with Mantashe’s view, Dr. Temba Masilela (cited in Nxumalo, 2010:3) asserts that “while AA remains government’s policy, some new ideas are beginning to emerge that calls for flexibility to help South Africa build a skills base”. In an address to the Afrikaner Union Solidarity, President Jacob Zuma admitted that AA should be flexible enough to enable the country to tackle skills shortages” (Nxumalo, 2010:3). Proffering a solution to the skills problem (that is, barring AA), the president of the Afrikaans Handelsintitut (AHI), Venete Klein, states that the organisation had a broad range of hard skills that could contribute directly in alleviating the skills and business management crisis in most municipalities in the country. “We have got a lot of skills that could add a lot of value in the areas of housing, healthcare, finance and many other critical areas, if we join hands and work together, success will be to the benefit of all South Africans” (Nxumalo, 2008: 1).

One other major concern articulated for skills shortages by Breier (2009) is the loss of senior capacity, largely as a result of AA, which has led to many experienced (white) professionals leaving their posts and often also the country. The lack of senior capacity is hampering the ability of the workforce to absorb young entrants – one of the reasons for the existence of shortages alongside a pool of unemployed graduates. Finally, Breier (2009) contends that there are shortages that are associated with poor working conditions, particularly in the health sector. Like the education system, the public health sector has been historically under-funded and neglected, with rural facilities mostly affected. The education system is still struggling to overcome decades of ‘neglect and dysfunction’ under apartheid (Adler, 2007:7) when the education of black people (particularly Africans) was under-funded and of poor quality. The effect is that there is still a very small pool of matriculants who, Breier (2009) notes, have the necessary grades and subjects to access programmes like engineering, medicine and accounting. Furthermore, there are particularly few

African and coloured students in this pool, and this contributes a very severe limitation at a time when programmes like these are required to achieve a more representative student population and their professions are required to meet employment equity criteria.

4.5.3 Affirmative action policy in other countries

The next section will present affirmative action in selected countries in order to understand its implementation and implications in other economies.

4.5.3.1 Affirmative action policy in the United States of America.

The United States of America's (USA) implementation of AA is of particular importance to South Africa given the similarities in the historical background of the major beneficiaries of AA in the two countries. The black component of the AA in America was based on the recognition of the African-Americans who suffered historically from racial discriminations, as well as other minorities such as the Hispanic-Americans who were also subjected to unfair labour practices. Affirmative action policy was initially introduced in America in the 1960s (Agocs & Burr, 1996) for the advancement of African-Americans but was later extended to cover other minority groups such as American-Indians, Hispanics, Asians, women and later, the disabled persons. Women came to be regarded as a disadvantaged group and potential beneficiaries of AA measures for the first time following the emergence of the Women's Liberation Movement in 1960 (Boikhutso, 2005). The disabled people became a further focus of AA in the aftermath of the Vietnam War in 1975. The similarities in the implementation of AA measures in America and South Africa lies in the beneficiaries – i.e., the minority groups (blacks), women and the disabled persons.

While there has been progress in the implementation of AA in America, the argument has been that it is relatively slow, with business, employee recruitment and promotion remaining largely restrictive with little or no discernible advancement for blacks, women and disabled persons (Boikhutso, 2005). The failure of AA in America has implications for South Africa. For instance, AA legislation in America was not known to have significantly advanced the employment and promotion of the previously disadvantaged groups. Agcos and Burr (1996), Johnson (1998), Lattimer

(1994) note the progress that has been made in the representation of formerly disadvantaged groups in the US workplace. However, even with this apparent success, almost half the states in the USA are moving to abolish affirmative action due to the view that, after 30 years, this policy has become counter-productive and has outlived its usefulness (Johnson, 1998). One of the shortcomings of affirmative action in the USA is that the focus of affirmative action has been on numbers, with no due regard being paid to training and development of selected candidates. This has consequently led to little investment in human capital (Roberts, 1997).

4.5.3.2 Affirmative Action in Zimbabwe

Although job discrimination was not legislated in Zimbabwe, as the case is in South Africa, racial discrimination was entrenched in a range of statutory provisions for many decades. For example, the Masters and Servants Acts (1901), Land Appointment Actions (1930) and the Industrial Conciliation Action (1930) represent such discriminative legislations which resulted in huge disparities between black and white Zimbabweans in terms of income, employment and land ownership. As in South Africa, blacks in Zimbabwe were offered inferior education thus making it difficult for them to advance occupationally at the same rate with their white counterparts (Thomas, 2002). A high level of unemployment amongst blacks was a structural feature of the pre-independence economy, while white Rhodesians (Zimbabweans) attained almost full employment (Hofmeyr and Whata, cited in Boikhutso, 2005). The consequences of under-education for the black Zimbabweans manifested after the Zimbabwean independence in 1980. With a population of six million people (with less than 300,000 whites), white males were heavily over represented in managerial positions in both the public and private sector organisations and in all skilled occupational categories (Boikhutso, 2005).

After independence in 1980, one of the major priorities of the ZANU (PF) government was to redress decades of overt and covert racial discriminations and to enhance the economic and political authority of black people. One way to achieve this was to replace white civil servants with black Zimbabweans in the public service (Strachan, 1993). This came in form of a presidential directive on black advancement and the establishment of the Public Service Commission to recruit employees to all grades in the public service in such a manner that brought about a balanced

representation of elements that made up Zimbabwe's population. This is reminiscent of the Employment Equity Act (Act 55) of 1998 in South Africa, except that the Zimbabwe's situation has no legal mechanism for implementation. Rapid advancement was to be given to suitably qualified black Zimbabweans in appointments and promotions (Charlton & van Niekerk, 1994). This presidential directive encouraged many white civil servants to voluntarily retire from service by offering generous retirement packages. Many white civil servants took advantage of this and retired voluntarily to take up appointments in the private sector or leave the country altogether (Thomas, 2002). By 1989, 95% of the public service population were black Zimbabweans with women generally occupying lower ranks.

The rapid growth in the size of the civil service in Zimbabwe from 40,000 in 1980 to 90,000 in 1989 facilitated black occupational advancement but adversely affected the efficiency and effectiveness of the civil service (Boikhutso, 2005). The civil service, according to Bennell and Strachan (1992), Gatherer and Erickson (1993) is today characterised by nepotism, fraud, corruption, mismanagement and gross inefficiency. One of the reasons why government did not want to compel the private sector to adopt AA through legislation was the fear that skilled white people might leave the country en masse as the case was in neighbouring Mozambique. However, it became politically expedient and it makes business sense for private sector organisations to appoint black Zimbabweans to elevated positions in order to win government tenders (Gatherer & Erickson, 1993) thus suggesting apparent lack of management commitment to true black advancement.

Some conclusions can be drawn from the implementation of AA measures in Zimbabwe. According to Castle (1995), although AA was helpful, legislation was not the best way of redressing all forms of injustices suffered by the previously disadvantaged groups in the society. It is important for black executives who are appointed into positions to consider their appointments to be based on qualifications and ability rather than AA consideration; otherwise, they may suffer some form of inferiority complex. Furthermore, AA policies tend to favour the already privileged sections of the society (like the Black Economic Empowerment programme in South Africa). Business decisions should be based on business principles rather than political considerations. A well planned strategy of AA should be followed in order to

resist pressure from the society so that government do not implement unfavourable policies. Lastly, Castle (1995) recommends that a high standard of general education is required for AA to succeed.

4.5.3.3 Affirmative action in Namibia

The Namibia experience of colonial occupation and exploitation dated back to 1884 when the territory was known as the German Protectorate of South West Africa (Boikhutso, 2005). In the post World War 1settlement of 1919, Germany renounced its colonial rights and Namibia became a British Mandate under the League of Nations, and later the United Nations. The British government delegated its mandate to the Union of South Africa, and although the mandate was formally terminated by the United Nations in 1966, apartheid South Africa continued to occupy and effectively ruled Namibia until 1990 (Boikhutso, 2005) when it attained independence.

Up until Namibia's independence in 1990, the South Africa state retained a monopoly of power in a weak civil society (Thomas, 2002). Namibia's monetary financial and commercial sectors were dominated by South African institutions, which were themselves vulnerable to external shocks and crises.

Like Zimbabwe following independence, Namibia became dependent on expatriate 'experts' and organisations in order to improve and run its educational system and the economy. Again, like in Zimbabwe, at independence the human resources of Namibia were characterised by the dominance of white males in decision making and occupation of skilled positions in both the public and private sectors of the economy. Boikhtuso (2005) notes that the relative lack of productive and entrepreneurial skills amongst the black population were as a consequence of deliberate neglect and exclusion by the colonial governments, including the period after the Second World War when the apartheid system became entrenched. The situation regarding the socio-economic conditions of the blacks in Namibia were the same as those in South Africa. The economy was dominated by the colonial masters (whites), widespread poverty amongst the indigenous population, widespread and structured unemployment amongst the blacks, skewed allocation of resources and services in favour of the urban elites (Thomas, 2002). At independence in 1990,

majority of whites left the country while many indigenous exiles, including returning soldiers and political party supporters returned to Namibia and became dependent on the government (Boikhutso, 2005).

Article 10 of the Namibian independence constitution guaranteed equality of all persons before the law and prohibits all forms of racial, economic and other forms of discriminations. To give effect to Article 10, Article 23 of the constitution empowered parliament to enact AA to advance persons within Namibia who have been socially, economically or educationally disadvantaged by past discriminatory laws or practices. Further to Article 23, the Affirmative Action (Employment) Act, 1998 (Act 29 0f 1998) was published in Government Gazette No. 1962 of 24 September, 1998 (van Royen, 2000). The Act required both the public and private sector organisations to take actions to eliminate, reverse or amend discriminatory employment practices.

One way to achieve this, according to the legislation, was through the provision of special training programmes by organisations employing over 50 persons to ensure that employees in designated groups acquired skills and qualifications for their advancement. The Act also mandated organisations to give preferential recruitment and promotion to suitably qualified persons in designated groups in order to ensure their equitable representation in various positions of employment. Employers were also required to set numerical goals, timetable and objectives for AA. The AA legislations provided assistance to disadvantaged groups, determined by gender and socio-economic criteria rather than racial or ethnic considerations. For example, inadequate education or poor living conditions were recognised criteria to benefit from AA (van Royen, 2000). It was also recognised that not all people were qualified for AA intervention based on the colour of their skin.

At independence in 1990, white civil servants in Namibia were guaranteed security of tenure in order to promote peace and reconciliation by the new South West Africa People's Organisation (SWAPO). A policy of inclusion of blacks, rather than exclusion of whites guided the development of the civil service. However, openings for blacks were limited until the size of the civil service was increased (from 57,000) at independence to (63,000) in 1993 (Boikhutso, 2005). As in Zimbabwe, the state became the largest employer of labour in Namibia. Although AA has not been declared as failed in Namibia, as in the United States of America, it has become

imperative to ensure that discriminatory employment practices are revised and amended (Castle, 1994; Swanepoel, 1992). Similarly, a sound educational system should be built while AA strategies should be integrated with business needs rather than simply be a numerical exercise. Furthermore, Castle (1994), Swanepoel (1992) suggest that AA should not be at the expense of business effectiveness and efficiency, but should rather support it. Persons appointed to management positions should be empowered to succeed and given responsibility and not merely appointed to fill AA quota. It is of outmost importance that all stakeholders be consulted in the decision making process in order to ensure that no group is marginalised (Castle, 1994; Swanepoel, 1992).

4.5.4 Affirmative action lessons from the global perspective

A number of lessons from practices in some countries where affirmative action is operationalised can be drawn upon to address the optimal implementation of employment equity in the South African context. The argument has been that, particularly at operational levels, certain aspects of implementation warrant ongoing concern. From the experiences of some countries where AA is practiced, the following emerge as major areas that warrant attention (Thomas, 2002):

Unlike in India, the relative success that the implementation of employment equity has enjoyed in Malaysia, argue Charlton and van Niekerk (1994), is due to the relative political stability in the country coupled to which there has been economic growth. The aforementioned problems related to the uncompetitive nature of South Africa, its low growth rate, high level of unemployment and political unrest are all factors that mitigate against the effective implementation of employment equity. Horwitz *et al.* (1996) report that since 1981 the South African economy has averaged a one per cent real growth in GDP while the population has increased annually by an average of 2.5 per cent. Official figures of unemployment stand at approximately 26 per cent (Horwitz *et al.*, 1996).

The lack of job creation has, in many cases, resulted in white males subtly sabotaging progress towards employment equity for designated groups as a response to the protection of promotional opportunities that have thus far favoured a white minority. Regular strike action evident in the country has also contributed to a

lack of economic growth and international investment has been hampered by political uncertainty and escalating crime rates. While there are no easy solutions to these broader macro issues, it is argued that the addressing of historical inequalities in the workplace would be facilitated if all citizens of the country could envisage an inclusive future in an expanding business domain.

A plethora of labour legislation exists in the country that governs unfair discrimination and regulates fair employment practices. The most notable of these Acts are the Labour Relations Act (Republic of South Africa, 1995), the Basic Conditions of Employment Act (Republic of South Africa, 1997) and the Skills Development Act (Republic of South Africa, 1998b). Employers have expressed concern regarding the stringent legislative requirements within which companies are compelled to operate. However, unlike in Britain, a single Act governs practices relating to employment equity. To some degree, South Africa appears to have learned from the British experience that a multiplicity of legislation dealing with employment equity is confusing and unlikely to be adhered to, due to the gaps and loopholes that tend to exist when separate Acts govern different beneficiaries or areas of practice.

From the experiences in India, the South African government did apparently appreciate the importance of engaging in an active and consultative process with organised business and labour in order to formulate legislation and policy governing such legislation. Prior to the enactment by Parliament of the Employment Equity Act, extensive consultation was undertaken by government with groups such as the National African Federated Chamber of Commerce, the Black Management Forum, the Congress of South African Trade Unions, the South African Chamber of Business and the tripartite grouping of business, labour and government, the National Economic Development and Labour Council.

While consensus has not prevailed on all aspects of the legislation, this consultative process did achieve greater support for the implementation of the legislation than, it is argued, would otherwise have occurred. The debate with such stakeholders culminated in compromise in the area of target setting (as opposed to quotas), time frames for affirmative action strategies, and a definition of the companies and organisations that are required to comply with the provisions of the Act. In this regard, the Malaysian practice was followed by negotiating the implementation of

policies and practices governing employment equity and which does provide business with a degree of flexibility within parameters that also encompass measures for government monitoring and control (Thomas, 2002).

As is the case in the experiences of Malaysia, India, Canada and Zimbabwe, the South African legislation does allow for the possibility of exploitation by the more advantaged of a disadvantaged group. Like Zimbabwe, a cause for concern has arisen in South Africa where jobs are subtly reserved, in some cases, by black African managers for “friends in the struggle against apartheid” and where business has capitalised upon the recruitment of black Africans who were trained abroad during the apartheid era. Similarly, there is growing concern, even amongst the blacks that major beneficiaries under the Black Economic Empowerment (BEE) programes were those close to people occupying high political offices in the country.

In addition to the above concern, it is common practice in South African companies, as in Zimbabwe, to recruit blacks into senior positions in order to secure government or parastatal contracts (Thomas, 2002). A further problem exists in South Africa, in that companies have focused upon recruitment and promotional strategies that are argued by some to favour black Africans at the expense of Coloureds and Indians. These practices are setting up schisms in companies where a view is expressed that under apartheid Coloureds and Indians were not white enough – now they are not black enough. Valentine (1995) notes this phenomenon to constitute “hierarchies of oppression” where different disadvantaged groups vie with each other for resources, as noted in India. Such practices demand that structures are set up to clearly define the beneficiaries of affirmative action and a constant evaluation to ensure that affirmative action does not simply benefit an elite group or result in the practice of tokenism. A more focused approach to ensure that the most deserving individuals benefit, would be a preferable one.

From the Canadian and British experiences, it can be seen that the monitoring of progress by a credible authority is important, and that while codes of good practice are important, they are not sufficient to ensure compliance. The monitoring of issues such as policies and practices, systemic discrimination and the creation of organisational cultures that are free of unfair discrimination are essential components to complement target setting. The experience from the USA illustrates

that such monitoring should also ensure that strategies to achieve employment equity remain relevant and do not become counter-productive. The South African Department of Labour has conducted studies on best practice upon which a code of best practice has been developed to assist companies in implementing employment equity strategies (Department of Labour, 1998b).

Numerical target setting is essential, as shown by the experience in the USA where research, based on almost 69,000 federal contractors from 1974 to 1980 indicates that an affirmative action goal is the single best predictor of the subsequent employment of women and minorities (Jain, 1999). Jain (1999:3) further states that "… set goals were not fulfilled with the rigidity one would expect of quotas. It also highlighted that, while employers promise more than they deliver, the ones that promise (that is, set specific goals) does deliver more than those who do not". The South African Department of Labour has legislated that negotiated targets between management and employees are set between one and five years. It is believed that this practice will also, to some degree, ensure that token appointments are not effected purely to achieve set quotas.

From experience in the USA, Canada, Britain and Zimbabwe, it can be seen that employment equity must necessarily be embarked upon as a holistic process. There must be a focus beyond numbers to issues relating to training and development, mentoring and coaching, competence transfer for those recruited into companies. Simply outlawing discriminatory selection, recruitment and promotion practices is insufficient in the long term if companies and countries wish to be competitive. From the experience in Zimbabwe, the lesson should be learnt that a pitfall exists when race only (or any other demographic issue) is the only factor taken into account in recruitment and promotions. Strachan (1993) advocates that a new and holistic operational structure must be devised that would take into account transparency of practice, quality of service, accountability to stakeholders, training and merit-based promotions.

From the British and Zimbabwean experiences, it is evident that top management commitment to employment equity must be present. This, perhaps, is one of the most difficult practices to address. The British practice of securing agreement between management and employees appears not to have worked optimally. This

calls into question the entire philosophy of “voluntarism” and begs the question “can one rely on the good faith of employers?” The British experience seems to illustrate that while legislation can provide a foundation to prevent the occurrence of overt discrimination, the law, by itself, without enforced compliance, is not sufficient to remove discrimination. However, compliance is one thing; actual effective utilisation of those recruited through affirmative action strategies is quite another. Katz (1982) has illustrated the tendency of established groups to prefer the status quo and to experience selective perception, while other research has highlighted the propensity of people to select and include those who evidence attributes similar to themselves, be it in terms of demographics (Michel & Hambrick, 1992; Tsui *et al.*, 1992, Wiersema & Bantel, 1992), age (Stangor *et al.*, 1992), and educational level (Tajfel &Turner, 1986). Ultimately, it may be the breaking of the code of the “old boy’s network” as noted by Clarke (1998) and Coulson-Thomas (1994) that has ensured that the dominant group in the South African case – white males – succeed in business.

A closer study of implementation of AA policies in other countries discussed above shows that the South African version of AA is not remarkably different from what is obtained in those countries. It is therefore important that South Africa draws from the pitfalls and successes (as the case may be) of AA in these countries for a continuous and successful implementation of the policy. Furthermore, South African organisations are compelled to comply with the provisions of the Employment Equity Act. Perhaps lessons from abroad can assist in the circumvention of pitfalls encountered by other countries, particularly in the areas of sound monitoring of progress towards employment equity, taking proactive measures to ensure that the majority of previously disadvantaged groups benefit from the legislation and the introduction of holistic human resources practices that complement target setting. The macro economic issues are more complex and need to command prime attention of government to ensure, amongst other things, that employment equity and the diversity that it creates within organisations works towards the competitiveness of the country and that racial and ethnic divisiveness is not created. The challenge also exists on the operational level to identify sound business reasons for the diversity created by strategies to achieve employment equity.

4.6 Summary

Issues relating to migration of African professionals abroad with the attendant consequences on the skills landscape of the continent, with particular reference to South Africa were discussed in this chapter. The chapter also presents possible options that are available in attracting these professionals back, or benefitting from their expertise through collaborative efforts with their counterparts at home. Apart from the challenges posed by brain drain in relation to skills shortages, the chapter explored the importance of retention management by organisations using motivational variables. Specific motivational variables which organisations could use to influence retention of their high performing employees were equally highlighted. Affirmative action measures were introduced in South Africa in order to address past injustices suffered by the previously disadvantaged people especially in terms of employment. The chapter discussed affirmative action measure in terms of the employment equity act and its implication for skills supply in the country. Affirmative action in selected countries was also discussed in the chapter. The next chapter presents the methods used in carrying out the present research.

CHAPTER FIVE

RESEARCH METHODOLOGY, DATA ANALYSIS, INTERPRETATION AND DISCUSSIONS OF RESULTS

5.1. Introduction

In chapter four, factors that influence migration of skilled professionals from Africa generally, and particularly South Africa were examined by providing insights into the negative effects of brain drain on the economy of the continent. There was also a suggestion of possible return options of these professionals to Africa. At organisational level, the retention of high performing employees has, over the years presented a difficult challenge to HR practitioners and researchers given the increasing high rate of employee turnover. The preceding chapter also explored various organisational factors that are responsible for talent turnover and retention mechanisms that organisations could adopt in order to reduce the rate migration rate of skilled employees. The affirmative action measure was also discussed and the effects of its implementation on recruitment and retention of talent (especially those from the previously advantaged group) were examined.

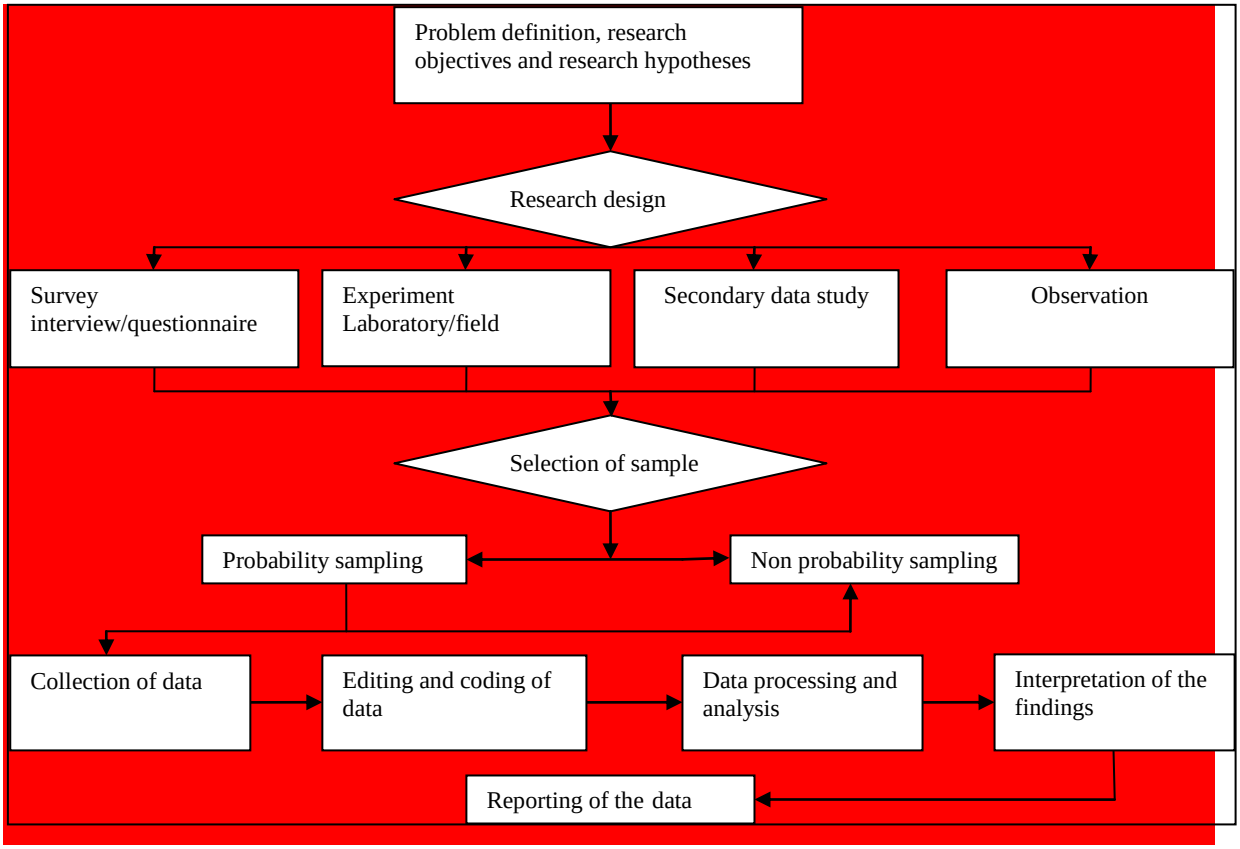
The aim of the present chapter is to explain the research methodology that was followed in this study. Cooper and Schindler (2003:663), Wheather and Cook (2000:195) describe research methodology as the way in which data are gathered for a research project. It is the blueprint for the collection, measurement, and analysis of data in order to achieve the objectives of a research project. The research methodology used for this study followed a research process. The research process is presented. If both data analysis and interpretation are not carried out properly, the success of the study cannot be assured (Proctor, 2000:273). Therefore, the purpose of the present chapter is to: 1) systematically present the descriptive findings of the research study, 2) interpret the significance of these findings based on the data analysis and, 3) discussed the findings of the research. The data will be analysed using descriptive statistics, Spearman correlation coefficient, Chi-square test for independence, t-test, and factor analysis. Because of the huge volume of

data analysis, only the summary results are presented in this chapter. The full data analysis is presented in appendixes C and D respectively.

5.2 The business research process

The research methodology follows a process termed the research process. The business research process is defined as the ordered set of activities focused on the systematic collection of information using accepted methods of analysis as a basis for drawing conclusions (Cooper & Schindler, 2003:64). The business research process can also be described as a sequence of steps in the systematic collection and analysis of business data. The steps stipulated in the business research process (Table 5.1) provided a practical guide in the conceptualisation of the research and during the field work in the present study.

Figure 5.1: Steps in the business research process



Source: Adapted from Zikmund (2003:61)

5.3 Description of the research questionnaire

A survey questionnaire was used to collect data from respondents in the present study. Salkind (2000:137) recommends that researchers should carefully consider the format, structure and types of questions that could be included in a questionnaire. These, according to Salkind (2000:137), include closed-ended questions (pre-coded), open-ended questions, multiple-choice questions, checklists, dichotomous questions that require a 'yes' or 'no' answer, ranking questions and scaled-response questions. The survey questionnaire used for this research was constructed to include most of the types mentioned above after consultation with a statistician.

The questionnaire was divided into six sections comprising of thirty-seven questions as follow:

- Section 1 required respondents to provide biographical information and organisational profile. Pre-coded and open-ended questions were used.

- Section 2 solicits information on actual training provided by employers in the year ended 2008/2009. The five point – Likert scale questions were used to gather information on the types and duration of training provided by employers. Question 2.4 was broken down into 6 sub-questions to reflect the training methods used by organisations.

- Section 3 comprised of questions that are related to training services rendered to organisations by SETA. Similarly, the five-point Likert scale questionnaire was developed to solicit response from respondents. Again, question 3.3 was structured into 8 distinct questions to capture different categories of services provided by SETA to organisations.

- Section 4 deals with training infrastructure and opportunities available to employees to improve on their skills. Dichotomous ('yes or no') questions were asked to provide information by respondents. Question 4.2 described various types of training infrastructures and incentives offered by organisations to facilitate training of their employees. This was categorised

into 8 varieties requiring respondents to indicate those facilities that are applicable in their respective organisations.

- Section 5 sought for information regarding the implementation of the affirmative action policy. Dichotomous questions were also asked about the relationship between AA and shortage of critical skills and the continued retention or otherwise of the AA as a political intervention mechanism at the workplaces.

- Section 6 comprises of general questions that sought the opinion of respondents regarding skills shortage, suitability or otherwise of available skills against the requirement of industry and possible causes of shortage of the necessary skills required by the economy. Respondents were required to choose between alternative answers suggested by the researcher. Analysis of this section will assist in making recommendations to the skills development authorities in South Africa.

The questions were developed by the researcher based on reviewed literature. The questions were short and simple to understand in line with the recommendations of Terre-Blanche *et al*. (2006) that a short and simple questionnaire is preferred because it yields a high response rate. Special care was also taken in the design of the questionnaire as this contributes to the reliability and validity of the data collecting instrument.

5.3.1 Validity and reliability of the questionnaire

Design problems in research include a variety of issues that can threaten the confidence a researcher has in the research findings if the research data measuring instrument is unable to accurately measure what it is intended to measure. Therefore, it is important for a researcher to report the extent of accuracy and precision of the measuring instrument. This assertion is consistent with Salkind (2000:105) that researchers more often than not formulate questions that, at face value appear sound but are neither valid nor reliable. Similarly, Green, Tull and Albaum (2008) argue that success of the research endeavour depends on the accuracy of the measuring instrument. The accuracy of the measuring instrument not

only influences the accuracy of results but also the conclusions drawn and generalisations made from the study. This further suggests that measuring instruments that are not valid and reliable will produce invalid and unreliable results and generalisations based on such results can cause misleading inferences.

5.3.1.1 Validity

Parasuraman, Grewal and Krishnan (2004:113) describe validity as the extent to which the rating scale fully captures all aspects of the construct to be measured. Joppe (2000) cited in Golafshani (2003:600) assert that validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are. Researchers generally determine validity by asking a series of questions, and will often look for the answers in the research of others. Salkind (2000:113) notes that validity should be interpreted in terms of the results of the study and whether the results are understood within the context of the researcher's purpose. Jacobs (2009:63) suggests that researchers should not think of validity of an instrument, but validities. This is because validity refers to the degree to which an instrument is measuring what it is intended to measure – and an instrument may have several purposes which vary in number, kind and scope. Struwig and Stead (2001), de Vos *et al*. (2006), Saunders *et al*. (2003), Parasuraman *et al.* (1991), Sekaran (1992: 143) variously describe various forms of validity to be considered to include the following:

- Content validity, which is also referred to as face validity, refers to how representative the scale or instrument is of the universe of the content of the property or characteristic that is being measured. Rubin and Babbie (2001) assert that content validity is established on the basis of judgments; that is, researchers or other experts making judgments about whether the measure covers the universe of facets that make up the concept. The research instrument used in this study was subjected to 'jury opinion' using three academics in the field of Industrial Psychology and two training and development experts to evaluate the instrument.

- Criterion related validity, also referred to as instrumental validity, is used to demonstrate the accuracy of a measure or procedure by comparing it with

another measure or procedure which has been demonstrated to be valid (Gerber-Nel *et al*., 2005:30). It is established when the measure or instrument differentiates individuals on a criterion it is expected to predict. This is done by establishing concurrent or predictive validity (Saunders *et al.,* 2003). Concurrent validity on the other hand is established when the scale distinguishes individuals who are known to be different. Predictive validity refers to the capacity of the instrument to differentiate among individuals on a future criterion.

- Construct validity refers to the degree to which an instrument measures the theoretical construct or abstract variable it was intended to measure. It also refers to how well the results obtained from the use of the instrument fits the theories around which it was designed. Wainer and Braun (1998) describe construct as the initial construct, notion, question or hypothesis that determines which data to be gathered and how it is to be gathered. Convergent, discriminant and nomological validity shed more light on construct validity. Convergent validity is realised when an instrument is shown to relate reasonably well to other instruments that are considered to measure the same or similar constructs. Discriminant validity is achieved when based on theory and there is no statistical relationship between two measures that reflect different constructs. Nomological validity involves relating measurements to a theoretical model that leads to further deductions, interpretations and tests that allow constructs to be systematically interrelated.

- Internal validity refers to the freedom of researcher bias in forming conclusions in the view of data collected. That is, the degree to which changes in the independent variable is indeed due to the independent variable rather than to something else.

- External validity refers to the extent that conclusions made by the research can be generalised to the broader population, different settings, and times and not merely applied to the sample studied.

Green *et al.* (2008) emphasise that ultimately researchers should strive to achieve construct validity which, they however noted, is seldom achieved and that content and criterion validity are more often the only types of validity that can be established.

5.3.1.2 Reliability

In the abstract, reliability is a matter of whether a particular measuring instrument, applied repeatedly to the same object, yields the same results each time (Babbie, 2007:143). Parasuraman *et al*. (1991) state that a measuring instrument is reliable when it consistently yields the same results when administered under the same conditions at different times. This is consistent with the definition provided by Joppe (2000) as cited in Golafshani (2003:598) who defines reliability as "the extent to which results are consistent over time and an accurate representation of the total population under study. This definition is again supported by Shaughnessy and Zechmeister (1997:127) who refer to reliability as "the ability of an instrument to produce similar results at different times with the same group of respondents". If the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable. According to Parasuraman *et al.* (1991), the two measures used for measuring reliability are test-retest and split-half reliability.

- **Test-retest reliability**: The test-retest reliability method compares the results of two administrations of the measuring instrument to the same group of respondents at two (or more) different times. Joppe (2000) cited in Golsfshani (2003:599) however noted that the problem with the test-retest method which may make it unreliable is that it may sensitize the respondent to the subject matter, and hence, influence the responses given. Furthermore, Golafshani (2003:599) note that when a respondent answer a set of test items, the score obtained represents only a limited sample behavior. As a result, the scores may change due to some characteristic of the respondent, which may lead to errors of measurement. These kinds of errors will reduce the accuracy and consistency of the instrument and the test scores.

- **Split-half reliability**: The split-half reliability method measures the degree of consistency across items within a scale and can only be assessed for multiple-item scales. This involves dividing the items in the instrument into two, say odd

and even numbers to come out with two 'half instruments'. The scores on these separate 'half instruments' are then compared by means of a correlation coefficient.

- **Internal reliability**: This is also called internal consistency, is the measure of the degree of similarity among items in an instrument meant to measure a certain construct. The measure that is used to determine internal reliability of an instrument is called Cronbach's alpha coefficieny (*r*). It is a statistical procedure that determines the relationship or correlations of each item in the instrument with the other. If the items are strongly correlated with each other, their internal consistency is high and the alpha coefficient will be close to one. If, on the other hand, the items are poorly formulated and do not correlate strongly, the alpha coefficient will be close to zero.

The Cronbach's alpha coefficient (r) was used to further measure the reliability of the questionnaire in this study. Struwig and Stead (2001:133) describe Cronbach's alpha coefficient as a measurement of how well a set of items measure a single one-dimensional talent construct. When data have a one-dimensional structure, Cronbach's alpha coefficient will usually be low. According to Nunnally (in Struwig & Stead, 2001:133), for consistency to be present, the alpha must be above 0.7, but not higher than 0.9. The Cronbach's alpha result for the questionnaire used in collecting data for the present study was 0.82 thus confirming the internal reliability of the data measuring instrument.

- **Sensitivity**

The ability of an instrument to detect subtle differences in the attitudes being measured is often overlooked by researchers. Denscombe (2007) contends that questionnaires that are not reliable will make it difficult for the researcher to determine whether the scores obtained reflect real differences or merely random fluctuations. What this entails is that measuring instruments must be reliable first so that they become sensitive variations in responses that seem difficult to detect. In the construction of the data gathering instrument for this study, care was taken to ensure compliance with the requirements of validity, reliability and sensitivity concepts as explained above.

5.3.1.3 Questionnaire covering letter

Most self-administered questionnaires are accompanied by a covering letter. This letters represent the first contact with the respondent. The purpose of the covering letter is to win the co-operation of the respondent by explaining the purpose of the survey. Leedy (1997) states that the purpose of a covering letter is to address respondent's concerns and conveying a sense of authority for the research project. Thus, some respondents may ignore the covering letter, while others may use it to decide whether to answer the accompanying questionnaire or not (Saunders *et al*., 2003). Dillman (2000) opines that the messages contained in the self-administered questionnaire's covering letter can affect the response rate. Hence, he suggests that the following guidelines be considered when designing the covering letter of a research questionnaire:

- Good quality paper with letter head which makes it official;
- Full date or mentioning of the final stages of the research;
- Address the letter to the respondent, where necessary;
- State the purpose of the research and why it is useful;
- Indicate how long it will take to complete the questionnaire;
- Confidentiality must be indicated and how this will be maintained;
- Provide the name of a person to contact if there are any queries;
- Thank respondent for his/her willingness to participate and participation in the survey; and
- Both the researcher and supervisor must sign the covering letter (s).

The supervisor's signature provides further credibility and/or authority to the research project.

Saunders *et al.* (2003) point out that for some research projects, the researcher may have to send a letter prior to administering the questionnaire. This will be used as a means of getting access to the respondent. The covering letter used in the present study was part of the questionnaire taking into consideration the suggestions of Saunders and others as enumerated above.

5.3.1.4 Pre-testing the questionnaire to ensure validity

Green *et al.* (2008) regard pretesting of questionnaire as a necessity in an attempt to remove ambiguity and correct design mistakes. However, Parasuraman *et al.* (1991) observe that despite the effort of a researcher to remove errors in the design of the questionnaire, some mistakes can only be detected by an external evaluation. Pretesting will therefore assist the researcher in removing or reconstructing items that may confuse or obstruct respondents' understanding and interpretation of some questions. The questionnaire in this research was pretested using the following procedures:

- The initial questionnaire was given to three academics in the Department of Industrial Psychology and two HR practitioners and the Staff Training and Development Manager in the organisation for evaluation and necessary corrections.
- A copy of the questionnaire was also sent to the statistician (who provided the statistical analysis in this study) for evaluation and comments.
- The initial questionnaire was then corrected using the feedback from the experts mentioned above.
- Thereafter, the amended questionnaire was given to the supervisor of this research project for comments and observation.
- The final questionnaire was then validated and administered to the respondents.
- Lastly, the questionnaire was constructed by keeping open-ended questions to the minimum; and by devising response scales that are likely to increase the variability of responses thereby ensuring higher statistical value from the data by using a large sample size;

5.3.1.5 Administration of the questionnaire

Different methods of administering questionnaires are open to a researcher. According to Shaughnessy and Zechmeister (1997:141) questionnaires can be administered through postal mail, telephone interviews, internet or self – administered. Whatever method the researcher uses places a responsibility on the researcher who bears the costs of getting the questionnaires across to the respondents. Each of these methods also has its strengths and weaknesses.

- **Postal mail**

Postal mail entails sending data collection instruments to respondents by postal services. Shaughnessy and Zechmeister (1997:141) give some of the disadvantages of the postal mail to include a low response rate because some respondents may be too busy or not interested enough in the study to return a completed questionnaire. The questionnaire must be completely self explanatory because the respondent may not be able to seek clarifications from the researcher. As a result of response bias, the typical return rate estimated by Shaughnessy and Zechmeister (1997:144) is only 30%. Costs of postage can also be a problem to the researcher.

- **Telephone**

This is a situation where the researcher has discussed the requirements of the questionnaire through telephone calls to individual respondents. In telephone administration, a possible selection bias exists as respondents are limited to those who have a telephone. Apart from this, there is a limit to how long respondents are willing to stay on the phone and respondents may respond differently when they are talking to a faceless interviewer. There is also the problem of costs especially for a student researcher.

- **Self-administered questionnaire**

For self-administered questionnaire, the researcher personally, or through research assistants, delivers the questionnaire to individual respondents in their various locations. The Self-administered questionnaire which is the most popular amongst student researchers requires the respondent to be literate. It also requires some form of reasoning as the researcher may not be available to make clarifications when respondents are responding to the questionnaires (Shaughnessy & Zechmeister, 1997).

However, self – administered questionnaires are known to have a high return rate since the researcher, in some instances, personally distributes the questionnaire to respondents. In some instances also, the researcher can distribute the questionnaires through a responsible unit of the organisation (e.g. the Human

Resources Department). In either of the cases, the researcher or the HR employee can follow up constantly to make sure respondents return the questionnaires.

- **Electronic administration**

The computer assisted electronic method of administering questionnaire is fast becoming popular among researchers. Questionnaires are sent electronically (through email addresses) to respondents using computers. The major setback of this method is a response bias as respondents will be limited to people who have access to computers and are computer literate. Internet facilities are available mainly in urban areas and many people who have access to internet facilities may not want to spend their money responding to questionnaires more especially when there are no direct benefits to be derived. The method is however fast and anonymity of respondent is better assured. This encourages respondents to be as honest as possible when responding to the questions. Internet method enables the researcher to collect information from any part of the world within a short time and limited costs (Shaughnessy & Zechmeister, 1997).

5.3.1.6 Personal contact with respondents

The questionnaire for this study was self- administered. Questionnaires were administered to HR practitioners who are responsible for employee training and development (Training and Development Managers). This category of employees has access to information required in completing the questionnaire by virtue of their position and responsibility in the organisation. Similarly, they make significant input in the formulation of training policies and training programmes in their organisations. They also liaise and collaborate with SETAs in executing training programmes.

After the initial trip to Port Elizabeth where we have concentration of private sector organisations in the Eastern Cape, a friend, who acted as a research assistant was appointed to follow-up and collect completed questionnaires on behalf of the researcher. This was done in order to have a regular check on respondents and also reduce travelling expenses since the researcher lives in Alice. Several visits were made to Bisho (Headquarters of the Eastern Cape Province) where most of the questionnaire for public sector organisations was distributed. Follow-up trips were

also made to East London and King Williams Town where questionnaire was administered on private sector organisations and Local Governments.

Several follow-up telephone calls were made by the researcher to the respondents in order to facilitate completion and return of the questionnaires. A total of 250 questionnaires were administered to Training and Development Managers in the organisations earlier identified in the sample. One hundred and sixty (160) out of the 250 questionnaires were completed and returned after a number of personal and telephone calls to the respondents. A total of ninety (90) questionnaires were not returned by respondents due to various reasons. Some of the respondents went on leave while others did not have enough time to complete the questionnaires.

Controversy among researchers centers on what constitutes an acceptable percentage of response rate. Babbie (2007:262) reports that a view of published social research literature suggests that a response rate of 50 percent is adequate for analysis and reporting, 60 percent is good, and a response rate of 70 percent is very good. Shaughnessy and Zechmeister (1997:144) recommend a return rate of 30 percent for postal questionnaire. However, the present research achieved a return rate of 64 percent. The return rate of 64 percent achieved in the present study is therefore considered adequate in view of the recommended return rates suggested by the authorities cited above.

Missing values

According to Allison (2001:172) a missing value may represent or is a product of an unknown value. In surveys, respondents may not answer certain questions. It is very important for the researcher to manage missing values efficiently. If the missing values are not handled properly by the researcher, then he/she may end up drawing an inaccurate inference about the data. Due to improper handling of missing values, the result obtained by the researcher will differ from ones where the missing values are present. In addition, Graham (2009:550), points out that a researcher must fully understand the concept of missing values. Item in non-response occurs when the respondent does not respond to certain questions due to stress, fatigue or lack of knowledge. Sometimes the respondent does not respond because some questions are sensitive. This leads to missing values. There is no fixed rule about the proper

handling of missing values. The researcher may leave the data or do data imputation to replace the missing values. It entirely depends upon the researcher's experience in dealing with missing values.

Graham (2009:551) further notes that there are three basic options when dealing with missing values. The first option is to do nothing. Leave the data as is, with the missing values in place. This is the most frequent approach, for a few reasons. First, the numbers of missing values are typically small. Second, missing values are typically non-random. However, if a researcher chooses the first option, he must keep in mind how SAS software will treat the missing values. SAS will either use listwise deletion or pairwise deletion of the missing values. The researcher can elect to use any of them when conducting each test in SAS.

- Listwise deletion

Under listwise deletion, SAS software v9.2 will not include cases (subjects) that have missing values on the variable(s) under analysis. If only one variable is been analysed, listwise deletion simply analyses the existing data. If multiple variables are being analysed, listwise deletion removes cases (subjects) if there is a missing value on any of the variables. The disadvantage is a loss of data because you are removing all data from subjects who may have answered some of the questions, but not others (e.g., the missing data).

- Pairwise deletion

With pairwise deletion, SAS software v9.2 will include all available data. Unlike listwise deletion which removes cases (subjects) that have missing values on any of the variables under analysis, pairwise deletion only removes the specific missing values from the analysis (not the entire case). In other words, all available data is included. Pairwise deletion is useful when sample size is small.

The second option is to delete cases with missing values. For every missing value in the dataset, the researcher can delete the subjects with those missing values. This means that the researcher is left with complete data for all subjects. The disadvantage of this approach is that the simple size is reduced. The third option used in order to replace missing values is imputation. This could be done by mean

substitution or regression substitution. Mean substitution replaces the missing value with the mean of the variable. Regression substitution uses regression analysis to replace the missing value. Regression analysis is designed to predict one variable based upon another variable, so it can be used to predict the missing value based upon the subject's answer to another variable.

Missing values presented a problem that had to be addressed in this research before evaluation could proceed. There were only three cases of missing values in this study and pairwise deletion method under SAS software 9.2 was used to treat the missing items.

5.4 Statistical data analysis

The main objective of data analysis is to, according to Terre-Blanche *et al*. (2006) transform information (data) into a meaningful form in order to answer the original research question(s). Data analysis procedure can be divided into two: quantitative and qualitative techniques. Qualitative data analysis uses subjective judgment based on non-quantifiable information like the intuition of the researcher. On the other hand, quantitative data analysis relies exclusively on the analysis of numerical or quantifiable data (Cooper & Schindler, 2003). Terre-Blanche *et al.* (2006) state that a quantitative data analysis transforms data statistically to help the researcher to describe the data more succinctly and make conclusions about the characteristics of populations on the basis of data from samples. A quantitative data analysis technique was used for the present study since the research design was quantitative.

Data analysis usually involves the reduction of accumulated data to a manageable size, developing summaries, looking for patterns and applying statistical techniques. It also includes the interpretation of research findings in the light of the research questions, and determines if the results are consistent with the research hypotheses and theories. Data analysis is a process of gathering, modeling, and transforming data with the goal of highlighting useful information, suggesting conclusions, and supporting decision making. Data analysis has multiple facets and approaches, encompassing diverse techniques under a variety of names, in different business, science, and social science domains. (Cooper & Schindler, 2003:87).

According to Gerber-Nel *et al.* (2005:204) the purpose of analytic methods is to convert data into information needed to make decisions. The choice of the methods of statistical analysis depends on:

- the type of question to be answered;
- the number of variables; and
- the scale of measurement.

The type of question the researcher is attempting to answer is a consideration in the choice of statistical technique. Based on this factor, the researcher may be concerned about the central tendency of a variable or the distribution of that variable. The number of variables is also considered to determine whether the statistical techniques applied should be the univariate data analysis, the bivariate data analysis or the multivariate data analysis. The scale of measurement on which the data are based or the type of measurement reflected in the data determines the permissible statistical technique and whether the appropriate empirical operation may be performed.

After collecting the questionnaires, a professional statistician was commissioned to provide statistical analysis. The researcher was taken through data coding and analysis processes. The knowledge gained in this regard provided a useful guide in the interpretation of statistical results.

- **Descriptive statistics**

Descriptive statistics are used to describe the basic features of the data in a study. Descriptive statistics are used to describe the main features of a collection of data in quantitative terms. They provide simple summary about the sample and the measures. Together with simple graphics analysis, they form the basis of virtually every quantitative analysis of data. Descriptive Statistics are used to present quantitative descriptions in a manageable form. In a research study one may have a lot of measures. Descriptive statistics help us to simplify large amounts of data in a sensible way. Each descriptive statistic reduces a lot of data into a simpler summary (Gerber-Nel *et al.*, 2005:204).

The purpose of collecting the data for this study was to determine the extent of the contribution of employers and SETA towards training and development of employees and the nature of the possible relationship between affirmative action and skills shortage. Besides these two central issues, it was also interesting to determine if the answers to these questions are related to business characteristics. The variables in the dataset were predominantly classificatory and the descriptive exploratory analysis was carried out using frequency distribution tables and the tests for association were carried out using the Chi-square test for independence. Some of the variables had to be derived from a number of items. The derivation was done based on internal consistency assessed using a combination of reliability analysis and variable cluster analysis. In such cases, the derived variables (constructs) would be a linear combination of at least two items and in this case the arithmetic mean was chosen as the appropriate form of a linear combination. The resultant construct value would be any number in the (1; 5) interval, since the items are on a five point Likert scale. For the binary cases the values would lie in the (1; 2) interval. For these variables means/medians were used for the descriptive exploratory analysis and analysis of variance for comparing them over more than two categories and t-tests, if otherwise.

- **Bivariate data analysis**

Cooper and Schinder (2003:531) define the bivariate data analysis as data analysis and hypothesis testing when the investigation concerns simultaneous investigation of two variables using tests of differences or measures of association between two variables at a time. The Bivariate data analysis used for this research was primarily correlation. The data were analysed using the Statistical Analysis System (SAS) software v9.2 and all tests were carried out at a 5% level of significance. According to the Accounting Dictionary, the SAS package aids in extensive statistical analyses, including descriptive statistics, Regression Analysis, and data graphing of statistical information. SAS software v9.2 is among the most widely used programmes for statistical analysis in business and the social sciences. SAS is a complete statistical package that is based on a point and click interface. SAS has almost all statistical features available and is widely used by researchers to perform quantitative analysis. Statistics included in the SAS software include:

- Descriptive statistics: cross tabulation and frequencies;
- Bivariate statistics: means, t-test, ANOVA, and correlation;
- Prediction for numerical outcomes: linear regression
- Prediction for identifying groups: principal component analysis, cluster analysis and discriminant analysis.

5.5 Empirical findings

5.4.1 Response rate

Table 5.1 presents the response rates of the sectors surveyed - private, public and parastatals.

Table 5.1: Response rate by sectors

Sectors	No. of questionnaires sent out	No. Returned	Response rate
Private	90	46	51%
Public	125	93	74%
Parastatals	35	21	60%
Total	250	160	64%

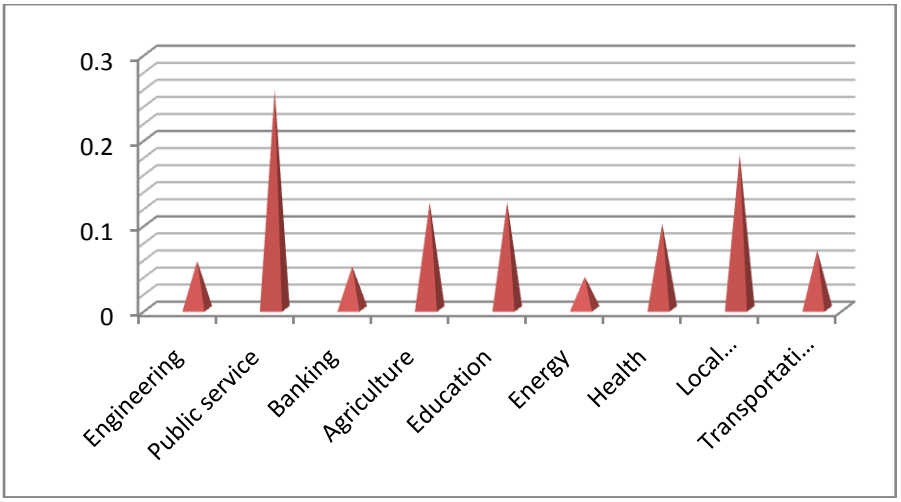
The response rate as indicated in Table 5.1shows that the response rate from the public sector is higher than those from both the private and parastatals. The public sector organisations and parastatals are more opened and accessible to public enquiries than the private sector organisations. Response rates from private sector organisations are usually low (especially financial sector) due to the nature of their businesses. According to Reitan and Waago (2002), response rate from commercial banks is usually low because of the sensitivity of commercial banks to making information available to the public.

5.5.2 Sample description

A total of 160 organisations, classified as private, public and parastatal, took part in the study. The organisations surveyed cut across nine economic sectors as follows: engineering and manufacturing, 1); public services, 2); banking, 3); agriculture, 4);

construction, 5); education, 6); energy, 7); wholesale and retail, 8); health, 9); local government, 10); hospitality and tourism, 11); and transport, 12). The categories not represented were wholesale and retail, construction and transport. Those represented are indicated in Figure 5.2.

Figure 5.2 Sector descriptions of respondents

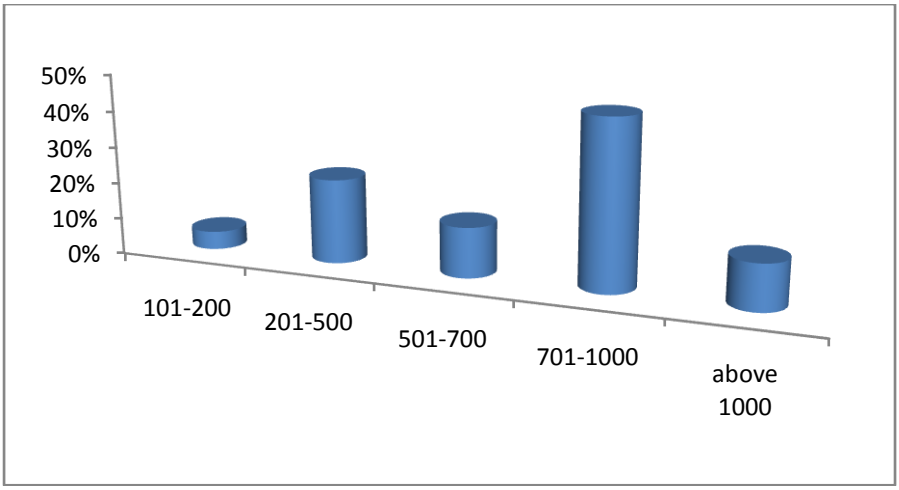


Sector distributions of respondents (%)

5.5.3 Numerical strength of employees in respondent organisations

The participating organisations had at least more than 100 employees. About 46% of the organisations surveyed employed between 700 and 1000 employees and this was the modal workforce size while 12.5% of the organisations employed at least 1000 employees. This gives about 60% of the organisations having at least 700 employees as depicted in Figure 5.3.

Figure 5.3 Workforce distributions of respondents



Workforce distributions of respondents

5.5.4 Demographics

The demographic variables for which data was collected and information obtained included gender, educational qualification, and experience of respondents. The visual distributions of the demographic variables are presented in figures below.

5.5.4.1 Gender distribution of respondents

Table 5.2 indicates the gender of the respondents for all the sectors.

Table 5.2 Gender distribution of respondents

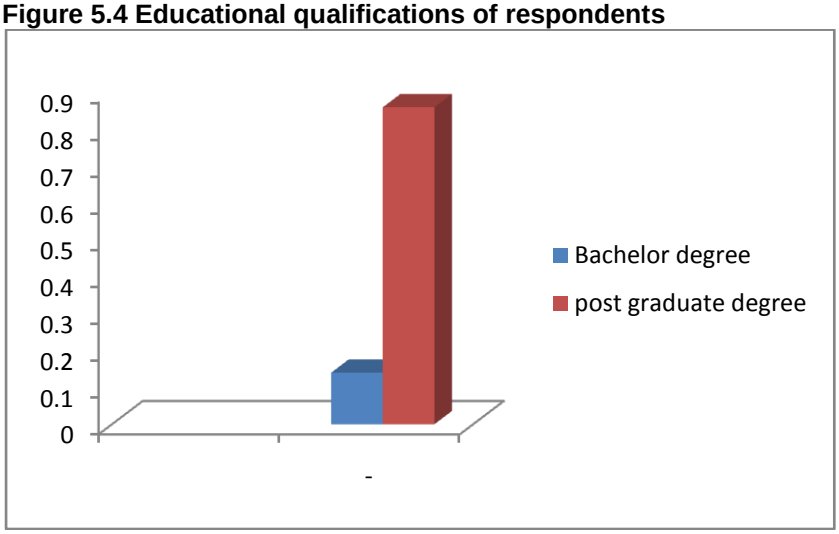
	Private sector		**Public sector**		**Parastatals**		
Gender	Frequency	%	Frequency	%	Frequency	%	Total
Male	38	58	47	64	16	76	101
Female	28	42	26	36	5	24	59
Total	66	100	73	100	21	100	160

The gender distributions of respondents from all the sectors showed that more males (63%) participated in the survey than their female (37%) counterparts.

5.5.4.2 Educational qualification of respondents

Figure 5.4 presents the educational qualifications of respondents from both the private and public sectors and the parastatals.

Figure 5.4 Educational qualifications of respondents



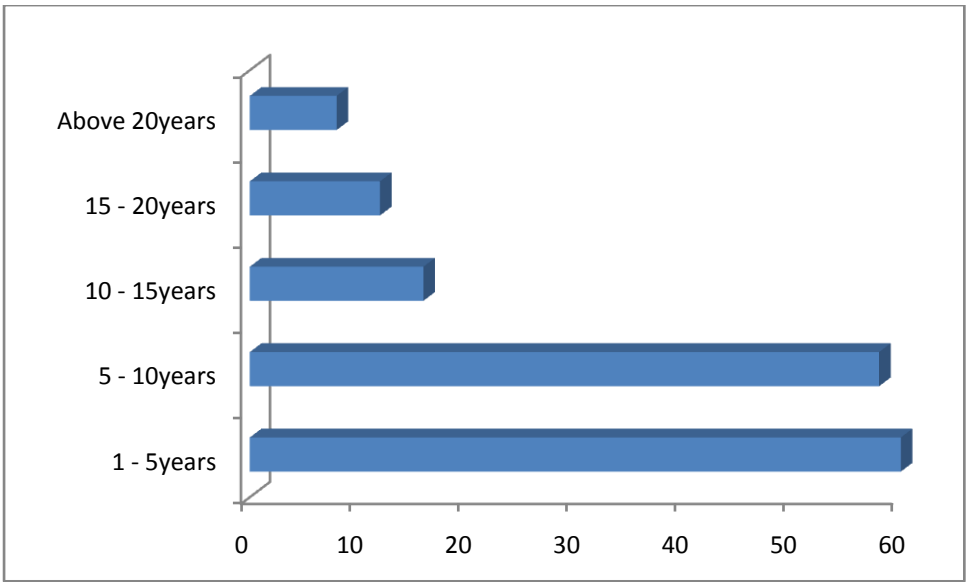
Educational distribution of respondents (%)

Result in Figure 5.4 shows that most of the respondents had postgraduate qualifications (86%) while the remaining (14%) had bachelor degrees or equivalent. This indicates that that the respondents were sufficiently educated to understand the meaning and requirements of the questions asked in the questionnaire.

5.5.4.3 Experience of respondents on the job

Figure 5.5 shows the number of years the respondents have served in their various positions.

Figure 5.5 Respondent's length of service



Work experience of respondents

Results in Figure 5.5 indicate that on the average, the respondents have had 10 years working experience on the job. This suggests that they are well experienced on the job and were able to provide informed responses to the questionnaire items.

5.5.5 Questionnaire reliability

The questionnaire was tested for reliability before the analysis. The analysis was carried out through assessing its internal consistency using the Cronbach's alpha coefficient. Due to the fact that not all items are measured on the same scale, separate analyses had to be carried out for the five-point Likert scale and the binary variables. Items in sections 2 and 3 were measured on a five-point Likert scale. The overall consistency of these sections was high with a Cronbach's alpha coefficient of 0.82 as shown in Table 6.3. This suggests that items in these sections consistently measure the same construct, namely, skills development as carried out by the employers and SETA. However, separate reliability analyses of these sections gave a Cronbach's alpha coefficient of 0.76 for section 2 and 0.88 for section 3. This shows that the items in section 3 are consistently measuring the same construct, namely, SETA contribution while section 2 items are measuring more than one construct (e.g., frequency of training programmes, relationships between training and job performance, rating of SETA services, SETA effectiveness).

Table 5.3. Cronbach's alpha coefficient for sections of the questionnaire

Section 2	0.76
Section 3	0.88
Overall	**0.82**

A closer reliability analysis of section 2 was carried out and it showed that the variables - mentorship, on the job training and internship consistently measure the same construct (Cronbach's alpha=0.69), namely, in-house training, while external training and skills programmes came out as stand alone variables. This suggests that the extent of mentorship, on the job training and internship training in the organisations were related and can be classified as a single construct (in-house training) while external training and skills programmes still stands as individual constructs..

Table 5.4 Cronbach's alpha coefficient for items in section 2 of the questionnaire

Mentorship	0.691
On the job training	0.689
Internships	0.693
Mean	**0.69**
External training	**0.858**
Skills programmes	**0.745**

5.5.6 The normality of the data

According to Coakes (2005:35) the normality of the data can be determined by using the Kolmogorov-Smirnov test (if the sample size is above 100) and the Shapiro-Wilks test (if the sample size is below 100). If the significance level is greater than 0.05 using either of the two tests, then normality is assumed. This study used the Kolmogorov-Smirnov test to determine the normality of the data because the sample sizes were more than 100. The significance of the Kolmogorov-Smirnov test was

greater than 0.05 in all the tests. This implies that the normality of the data can be assumed.

5.5.7 Statistical report

The purpose of collecting the data for this study was to determine the extent of the contribution of employers and SETAs towards training and development of employees. Secondly, to determine the nature of the possible relationship between affirmative action measures and skills shortages. Besides these two central issues, it was also imperative to determine if the answers to these questions are related to the business characteristics (sectors).

The variables in the dataset were predominantly classificatory and the descriptive exploratory analysis was carried out using frequency distribution tables and charts.

5.5.7.1 Employee training

Of the 160 organisations surveyed, 66.9% offer employee training often while 25.6% do it very often and the rest (7.5%) do not have a training record. This shows that employers are providing some forms of training for their employees. The extent of training participation by each category of employees is presented in Table 6.5.

Table 5.5 Training participation by employee category

Employee category	**%**
Clerical and administrative	49.4
Professionals	35.6
Technical	3.7
Drivers	0

Table 5.5 shows that clerical and administrative employees (49.4%) participated most in the training conducted by organisations are clerical and administrative employees. This category of employees is followed by the professional employees (35.6%) and the lowest being technical employees (3.7%). In most organisations, fresh Grade 12 (secondary school leavers) is recruited into the clerical and administrative positions. This category of employees requires orientation and

beginner programmes that will induct and prepare them for the job. This reason must have therefore accounted for the large number of employees who received organisational-based training in the organisations surveyed. On the other hand, professionals require further and regular training in order to bring them up to date with developments (especially technological and management techniques) around their various professions. Drivers and operators were not represented at all in all the training provided by organisations. This probably could be attributed to the nature of business/operations of the organisations surveyed particularly when sectors such as construction and transportation that requires specialist drivers in their operations were not represented in the survey.

All organisations surveyed have benefited from SETAs organised training with 32.5% of them seldom receiving such training, about 36.9% often benefiting and 15% benefiting very often while the rest are not sure. About 52.5% of the organisations surveyed considered the training received as relevant to their work to a very large extent and a further 6.9% believed the training relates, to a large extent, to their work while 35.6 are not sure about the link between the training they received and their present work. From this, one can conclude that the SETAs - organised training is acceptably accessible to all organisations and that it relates quite reasonably to the work need of the employees.

5.5.7.2 Training approach

The training approach was measured using six items addressing issues such as:

- External training agencies,
- In-house training,
- Mentorships,
- Internships,
- On the job training and
- Other skills development programmes.

Pairwise correlations of these items were determined to get an idea of a possible variable grouping. Based on the Spearman's correlation coefficients, it was found that use of external training agencies has a significant positive correlation with in-

house training (r=0.42, p<0.0001). This suggests that use of external training agencies goes hand in hand with in-house training programmes. However, such organisations tend to have significantly less of mentorships, internships and on the job training. This is suggested by the negative correlations that these variables have with external training agencies and in-house training. While all correlations with the use of external agency are significant, on the job training has a significant negative correlation with in-house training. This suggests that once an organisation has an in-house training programme, it is less likely to have on the job training programme. The correlation analysis suggests that there are probably three groups of variables, one with external training agencies alone, another with in-house training alone and a third group with the rest of the variables. The correlation matrix for these variables is shown in Table 5.6.

Table 5.6 Correlation matrix of training methods used by organisations.

Spearman correlation coefficients (n = 160) of employee participation						
	External training	**In-house training**	**Mentoring**	**On the job training**	**Internship**	**Skills programs**
External training	1	0.42105 <.0001	-0.57901 <.0001	-0.44585 <.0001	-0.62126 <.0001	-0.18488 0.0193
In-housetraining	0.42105 <.0001	1	-0.07184 0.3666	-0.36201 <.0001	-0.03673 0.6447	-0.16139 0.0415
Mentoring	-0.57901 <.0001	-0.07184 0.3666	1	0.44503 <.0001	0.47606 <.0001	0.2573 0.001
On the job training	-0.44585 <.0001	-0.36201 <.0001	0.44503 <.0001	1	0.34823 <.0001	0.30336 <.0001
Internship	-0.62126 <.0001	-0.03673 0.6447	0.47606 <.0001	0.34823 <.0001	1	0.13309 0.0934
Skills programs	-0.18488 0.0193	-0.16139 0.0415	0.2573 0.001	0.30336 <.0001	0.13309 0.0934	1

5.6 Factor analysis

Cooper and Schindler (2003:591) describe factor analysis as a multivariate statistical method used to describe variability among observed variables in terms of fewer unobserved variables called factors. Factor analysis is a statistical approach that can be used to analyse inter-relationships among a large number of variables and to explain these variables in terms of their common underlying dimensions (factors).

The statistical approach involves finding a way of condensing the information contained in a number of original variables into a smaller set of dimensions (factors) with a minimum loss of information. Factor analysis could be used to verify a construct of interest. Factor analysis has two main purposes. Firstly, it is used for data reduction and secondly for detection of structure (underlying dimensions) in a set of variables. Factor analysis also helps to confirm the validity and reliability of the measuring instruments. Factor analysis was used in this study to enhance the reliability and validity of the measuring instrument, as well as for data reduction. Factor analysis also assists in classifying the variables and in developing and refining research questions.

Factor analysis was used to determine the possible variable groupings. Variable cluster analysis puts all highly correlated variables in one group such that these variables are not correlated with the variables in another group. These groupings are called clusters, hence the name cluster analysis. In most cases this procedure produces the same results as factor analysis, especially where possible factors are clearly natural. In fact, cluster analysis serves the same purpose as factor analysis only that this procedure yields more intuitive and easy to interpret clusters. On the other hand, factor analysis can yield uninterpretable factors that would require some rotations to figure them out. This procedure suggested two variable clusters, one with in-house training alone and the other with the rest of the variables. The factor analysis procedure was also used as a confirmatory procedure and it also identified two factors, one in which in-house training loads heavily alone and another in which all the others load heavily except in-house training as shown in the factor pattern in Table 5.7.

Table 5.7 Factor pattern for employee participation in training.

Factor pattern for employee participation in training		
	Factor1 (internal training)	**Factor2(other training)**
External training		0.29500
In-housetraining	**0.96290**	
Mentoring	0.36116	
On-thejob training	-0.05174	
Internship	0.17464	
Skills programs		-0.09704

The factor pattern in Table 6.7 derived two loading patterns named internal training (Factor 1) and other training (Factor 2). Factor 1, named internal training consists of training methods such as in-house training, mentoring, on the job training and internship while Factor 2, named other training consists of external training and skills programmes.

KMO and BTS

To ensure the use of factor analysis, the Barlett Test of Sphericity (BTS) and Kaiser-Meyer-Olkin (KMO) test of appropriateness were carried out accordingly. The results of the two tests for both commercial banks and trade creditors are presented in Table 6.8.

Table 5.8: KMO and BTS tests

Variables	Public sector	Private sector
KMO	0.780	0.812
BTS	498.065	557.161
Sig.	0.001	0.003

Sig. at 0.05 (2-tailed)

The results (BTS = 498.065; sig. =0.001for public sector) and (BTS = 557.161; sig. =0.003 for private sector) indicated that the data were appropriate for the purpose of factor analysis. Statistically, this means that there exists relationships between the variables and that they can be appropriately included in the factor analysis. The result of the KMO measure of sampling adequacy was 0.780 and 0.812 for commercial banks and trade creditors. The results indicate that there are sufficient items for each factor. The two tests support the appropriateness of the factor analysis technique.

5.6.1 Reliability test

A reliability analysis of the five variables put in the same cluster gave an even lower Cronbach's alpha coefficient of 0.12, suggesting these five items measure at least two different aspects among themselves. Noting that external training is significantly negatively correlated to the other four items in the cluster, and this variable was

taken out of the cluster and a reliability analysis ran on the remaining four items. That analysis gave a Cronbach's alpha coefficient of 0.64, which suggests that the four variables consistently measure the same aspect of employee participation in training.

A reliability analysis of in-house and external training was carried out and it gave a Cronbach's alpha coefficient of 0.45 which was rather low to justify combining these two into one construct. Based on the results of cluster and factor analyses, the six items were reduced to three, with four in the same cluster and the others forming individual clusters of their own. A new variable (internal training) representing mentorships, internships, on the job training and other skills programmes defined as the arithmetic mean of the four items was derived.

5.6.2 Hypotheses testing

Six hypotheses were formulated for this study based on literature review. The six hypotheses as formulated in chapter five will be tested using Chi-square test of independence and T-test.

Hypothesis 1: Public and private sector organisations do not have employee training-related policies.

Research results showed that all the organisations surveyed have employee training and development policy, training budget, training records and a workplace skills plan. All the organisations also complied with the employment equity regulations. About 68.8% have a performance management policy, 68.8% a bursary scheme and 58.1% have a moderately equipped training venue. Most employees who received further education and training principally achieved it through a presumably unpaid study leave (48.6%) or subsidy from employer (46.1%) while very few employers offer scholarships (4.4%). Majority of the organisations surveyed do not have a bursary scheme for students in institutions of tertiary education (68.8%), while (77.5%) do not have in-house sponsored training for inexperienced employees. However, all of them very often sponsored their employees to attend professional conferences and workshops but do not pay for their annual subscriptions for

membership of professional organisations (73.2%) and 51.9% do not have any training collaboration with institutions of higher learning.

Table 5.9 Training policies used by organisations

Training policy used	%
Performance management policy	68.8%
Bursary scheme	68.8%
Equipped training venue	58.1%
Unpaid study leave	48.6%
Study subsidy	46.1%
Scholarships	4.4%

Research result showed a significant association between sectors and training policies. For example, the Chi-square value for overall training and development policy is t=5.18 with an associated p-value of 0.02 with the following breakdown of different methods of training used by various organisations:

Table 5.10 Chi-square value for methods of training in organisations

Methods of training	Chi-square value	p-value
External training	57.14	<004
In-house training	72.29	<001
Mentoring	58.39	<003
On the job training	47.61	<003
Internships	74.98	<005
Skills programmes	30.50	<002

On the whole, the statistical evidence presented above does not support the hypothesis as stated.

Research result provided evidence to support presence of some form of training in almost all the organisations surveyed. This is a departure from the position of Gwede Mantashe (cited in Theunissen, 2007) that “the majority of South African companies are investing nothing in skills development other than the mandatory 1% skills levy.

Any economy that is serious about skills development should be spending at least 4% of its payroll costs on skills development." The present research result indicates that one of the significant skills intervention initiatives in the NSDS – 2 (2005 – 2010) could be achieved. The NSDS – 2 proposed the broadening of support of learners, not only in leanerships, but other skills development programmes such as apprenticeships, internships, bursaries, workplace experiential learning and unit standards based skills programmes (Grawitsky, 2006). One of the objectives of the NSDS – 2 includes a target of 80% of government departments spending 1% of personnel budget on training by March, 2010. The attainment of this objective have, however not been supported by any statistical evidence so far.

Hypothesis 2: There is no relationship between training offered by employers and NQF accreditation.

Only 24% of the respondents said most or all the training provided by employers are NQF-accredited while about 49% agreed only some of the training provided are accredited. This suggests that most of the training provided by employers is not accredited and this may inhibit employees' job mobility prospect since the training acquired are organisation-specific and not nationally recognised. In relation to sector, the Chi-Square test for individual between NQF accreditation and sector showed no statistically significant association between the two (Chi-square = 4.69; p = 0.1954). Thus, most of the training provided by employers, irrespective of sector, is not accredited by NQF. The hypothesis is therefore accepted as stated.

This research finding regarding non-accreditation of most of the training provided by employers negates the core objective of the National Training Strategy Initiative (NTSI) which represents a new training reform strategy. The NTSI was a product of negotiation between labour authorities and business in 1994 in order to create some form of integration between education and training offered by employers and the NQF (Grawitsky, 2006). The idea was for the NQF to recognise all qualifications from vocational (occupation based) through professional and higher education. This means that work experiences (including organisational-based education and training) acquired by workers would be integrated into the formal educational certification

system. The implication of this is that employees' job mobility will be enhanced since their work experiences have been integrated into the NQF. This initiative is consistent with one of the objectives of the Skills Development Act (1998) which was enacted to encourage employers to use the workplace as a learning environment in order to improve workers quality of life, prospects of work and mobility (Grawitsky, 2006). The present research finding is consistent with Cunningham (2006) who reports that only 15% of employed workforce received some form of training related to their jobs.

Hypothesis 3: SETA is not effective in its skills development services.

Some of the blame for the steady decline in training is placed at the door of the SETAs, which was tasked by the Skills Development Act and the Skills Levy Act to provide training under the learnership system, which replaced apprenticeships (Consulting Engineers South Africa, CESA, 2007). Some of the SETAs have failed dismally, while others have achieved mixed successes. This failure has necessitated the placement of four non- performing SETAs under administration by the Minister of Higher Education and Training (Blade Nzimande). These Setas, according to Lund (2010) include the Public Service Sector Education and Training Authority (Pseta), the Construction Education and Training Authority (Ceta), the Media, Advertising, Publishing, Printing and Packaging Sector Education and Training Authority (Mapppseta), and the Energy Sector Education and Training Authority (Eseta). Moreover, prolonged economic decline across many industries has negatively affected the requirement and capacity of many companies to train artisans, technologists and engineers.

SETA services can be split into two groups as explained in the variable derivation section. These services can be classified as internet related and non-internet related services. Internet services are captured in one categorical variable while the non internet ones are a score derived from seven items as explained earlier. About 45% of the respondents evaluates the Internet related SETAs services as moderate/average and the rest were almost equally distributed between poor and good.

A significant association was detected between the Internet services and sector (Chi-square=106.8; p<0.0001). The non-Internet services score was compared using the two independent samples t-test. The results shows that the mean scores significantly differs with sector (t=-13.4; p<0.0001) with the public sector having a higher mean of 3.1 compared to 1.9 for the private sector. Only about 23% feels that the SETAs training has an effect and 52% are not so sure about the effect and the rest feels that the effect is minimal to none. About 52% feel that the SETAs training needs to be reorganised while 20% feels that it should be kept as it is and the rest equally feel that it should be scrapped or merged. These opinions were significantly associated with sector as evidenced by the Chi-square test of 31.8 and 119 for effectiveness of SETAs and future of SETAs respectively. The p-values for these tests were both less than 0.0001.

Rating of SETA training

Eight items were used to assess the SETA training. All items were significantly correlated except for the Internet services and responsiveness to queries (r=-0.14, p=0.0694). Another observation from these correlations is that all variables were significantly negatively correlated with Internet services while they were significantly positively correlated among themselves as shown in Table 5.11.

Table 5.11 Correlation amongst items used in ranking SETA training

Spearman Correlation Coefficients, N = 160								
	Quality assurance	**Internet services**	**Payment of grants**	**Information on training**	**Information on grants**	**Sector skills plan**	**Free training**	**Answer query**
Quality assurance	1.00000	-0.32235 <.0001	0.75337 <.0001	0.54877 <.0001	0.45634 <.0001	0.54302 <.0001	0.41571 <.0001	0.22289 0.0046
Internet services	-0.32235 <.0001	1.00000	-0.32901 <.0001	-0.43294 <.0001	-0.24741 0.0016	-0.47875 <.0001	-0.36408 <.0001	-0.14395 0.0694
Payment of grants	0.75337 <.0001	**-0.32901** **<.0001**	1.00000	0.50504 <.0001	0.54814 <.0001	0.50751 <.0001	0.39397 <.0001	0.35245 <.0001
Information on training	0.54877 <.0001	**-0.43294** **<.0001**	0.50504 <.0001	1.00000	0.48619 <.0001	0.73155 <.0001	0.70504 <.0001	0.62288 <.0001
Information on grants	0.45634 <.0001	**-0.24741** **0.0016**	0.54814 <.0001	0.48619 <.0001	1.00000	0.68832 <.0001	0.54183 <.0001	0.46760 <.0001
Sectoral skills plan	0.54302 <.0001	**-0.47875** **<.0001**	0.50751 <.0001	0.73155 <.0001	0.68832 <.0001	1.00000	0.73005 <.0001	0.53578 <.0001
Free training	0.41571 <.0001	**-0.36408** **<.0001**	0.39397 <.0001	0.70504 <.0001	0.54183 <.0001	0.73005 <.0001	1.00000	0.50291 <.0001
Answer query	0.22289 0.0046	-0.14395 0.0694	0.35245 <.0001	0.62288 <.0001	0.46760 <.0001	0.53578 <.0001	0.50291 <.0001	1.00000

The Cronbach's alpha coefficient for these items was 0.80, which strongly suggests that these items consistently measure the same aspect of rating of the SETA service. Variable cluster analysis and factor analysis were used to determine any possible variable groupings and they both detected a single grouping of these variables. This confirms what the reliability analysis had suggested based on the high Cronbach's alpha coefficient.

Table 5.12: Factor pattern for services provided by SETA

Factor Pattern	
	Factor1
Quality assurance	0.78662
Internet services	-0.46361
Payment of grants	0.74629
Information on training	0.89910
Information on grants	0.72577
Sectoral skills plan	0.90465
Free training	0.81090
Answer queries	0.65055

The factor pattern in Table 5.12 shows that all the other items load equally heavily on the factor. Note that Internet services has a negative loading, this means the single factor identified is a contrast of Internet services and the rest of the variables. For simpler interpretation, the eight items were split into two groups, one with Internet services alone and the other with all the other items. A reliability analysis on the seven grouped items produced a Cronbach's alpha coefficient of 0.90, which is stronger evidence that these items consistently measure the same aspect. A new variable (NOINTERNET) defined as the arithmetic mean of the seven items was derived.

Hypothesis 4: Employers do not agree there is shortage of skills in the economy.

Most organisations surveyed agreed that there is a skills shortage (89.7%) and they attributed this to inappropriateness of qualifications (84.5%) thus rejecting the hypothesis as stated. All respondents also agreed that institutions of higher education are not producing enough graduates for the different skills areas which are

needed for sustainable economic growth in the country while 76.3% believed that fresh graduates do not possess the required work experience demanded by employers. Respondents (76.4%) attributed this to lack of practical training before graduation from various institutions of learning. Part of the problem of skills development, according to respondents (61.9%), lies in the inability of learners to get funding for their education and training. The research result showed a Chi-square value of t=14.017 with an associated p value of 0.004, thus showing a strong association between employers' opinions and skills shortages.

The present research finding is supported by existing literature on skills shortage. A survey by the Centre for Development and Enterprise (CDE) (2007) confirms that shortages of skills is one of the most costly and troublesome issues affecting the management of South African businesses over the last two years. According to Ann Bernstein (Director of CDE):

> In order to confront the full reality of our skills crisis, we have to face the fact that South African education and training is in deep trouble. Fixing this will take a generation. But the question no one wants to deal with in the current discussion on the skills shortage is: What do we do in the meantime? While we are grappling with fixing our struggling education and training system, Bernstein argues, immediate responses available are the speedy restoration of the apprentice system, opening up of immigration and a government re-think on the pressures for employment equity.

Furthermore, the survey report reveals that "the most significant finding of the report was that the skills shortage was primarily driven by the failure of the public education system at all levels to deliver quality - consistently and in enough quantity". The CDE maintains further that: "Business in South Africa recognises that it has a role to play in developing skills. Skills shortages are, however, costly and difficult to remedy when the educational system does not provide a good platform for skills development as is the case in South Africa today." In this regards, Bernstein concludes that - "Unless there is strong leadership to recruit, retain and utilise all the skills available to us in the domestic as well as the global markets, the private sector will struggle to expand capacity and the South African economy will be held back". The CDE survey's finding also reveals that formal technical qualifications are not the

only skills in short supply. For the majority of businesses in the sample, the greatest shortfall is in experience and breadth of judgment, as well as people and social skills.

Hypothesis 5: There is no relationship between AA and shortage of critical skills in South Africa.

Respondents were almost equally divided over the contribution of affirmative action to skills shortage with about 52% disagreeing that implementation of affirmative action results in skills loss with 60.6% refuting the claim that AA leads to compromising of qualifications for certain positions. However, about 26% of respondents suggested that affirmative action measure should be discontinued forthwith. This is supported with a Chi-square values of t=2.28 with an associated p-value of 0.131 for AA and skills shortages and t=117.39 with an associated p-value of <0001 for AA and its desirability in the workplaces. The hypothesis is therefore neither accepted nor rejected.

Supporting the findings that AA contributes to shortage of critical skills in the economy, research survey by the CDE (2007) suggests that “government's insistence on ambitious transformation goals is constricting the skills market further, driving competition for skilled black staff in a situation where whites - the largest available pool of skilled people - are no longer freely employable." The survey also reports difficulties in recruiting skilled black employees, including problems of poaching, along with the salary premium required to retain skilled black personnel. Due to the problems identified in the report, it can be concluded that the skills shortage is being driven, in part, by the unintended consequences of empowerment policies, the survey report concluded. Similarly, Consulting Engineers South Africa (CESA, 2007) notes that some factors identified by business as contributing to the current skills shortage in South Africa are crime, emigration, affirmative action, more lucrative pay packages abroad and a dearth of matriculants who have passed Mathematics and Science on the higher grade, which is compulsory for studying tertiary engineering courses.

Hypothesis 6: There is no relationship between AA and turnover of skilled professionals in South Africa.

About 82% of the organisations surveyed conformed to affirmative action measures with 66.9% receiving employment applications from candidates from previously disadvantaged population groups. There is a strong agreement that affirmative action measure is necessary (70%) with 66.9% feeling that it should be retained. About 73% of respondents do not belief they are losing their skilled employees as a result of AA. The hypothesis is therefore rejected. This finding is inconsistent with the view of Breier (2009) who attributes skills shortages in South Africa to the loss of senior capacity, largely as a result of AA, which has led to many experienced (white) professionals leaving their posts and in most cases, some would leave the country for better opportunities in overseas.

Supporting Breier, however, is a report by Nxumalo (2008). Nxumalo (2008:1) quotes one of the white professionals working abroad as follows:

> As a previously advantaged resident and a skilled artisan I had to find work overseas to support my family. While in South Africa unemployed, each time I applied for a vacant position, I was told that most of the positions were for affirmative candidates. South Africa needs to think about this; they keep lowering the standards of education and training to fast track the transition. This is only to the detriment of the country. They would have to do a lot to make me want to come back to work in South Africa.

In a similar manner, another South African mechanical engineer working in the United Kingdom asserts that “every time I go on holidays I can see the need for skills in our country but I will not go back soon because of poor salary and the affirmative action policies in the country” (Nxumalo, 2008). Succinctly put, Mabotja (2009) asserts that:

> The best approach is to look at the skills shortage and its attendant 'fatal' constraints more soberly and as it obtains, without any politicisation of the issue. Where under-utilisation and measures to subterfuge the promotion of

affirmative action are manifest, it is best to caution the perpetrators and implement the requisite corrective actions expeditiously.

However, continued retention of AA may further accelerate emigration of white professionals from the country. According to a study report by the South African Institute of Race Relations, one million of white South Africans left the country between 1996 and 2006 due to crime and AA (van Aardt, 2006). The report further states that “because the crime figures are not going to decline rapidly and AA is to continue, more whites are going to leave the country”.

The present research finding indicates that virtually all the organisations surveyed subjects their recruitment policy to the relevant provision of the AA policy. However, some professionals argued that AA's aim was to attempt to create equality of the workforce of South Africa as a whole by enforcing the advantaging of the previously disadvantaged and the disadvantaging of the previously advantaged (Coetzee, 2005). This results in businesses having to consider the social background of any potential applicant instead of making decisions purely based on qualifications and experience (News Daily, May 24, 2004). Instead of using this type of policy, it has been suggested by critics that a policy of qualification equality should be used. This would allow businesses to focus on employing the person with the highest qualifications, the most experience candidate and with the best recommendations. To allow previously disadvantaged individuals to achieve these qualifications and experience, critics suggest that the government should place more emphasis on the secondary and tertiary education, as well as subsidise companies wishing to employ entry level applicants.

5.6.3Tests for significance of associations with sectors

5.6.3.1 Different training approaches in relation to sectors

Training approach is defined by three variables, namely, in-house, external and other. Other training is as defined in the training approach section. The specific hypotheses of interest are that each of the approaches is independent of sector. In-house and externaltraining approaches are categorical variables and their associations with sector were tested using the Chi-square test for independence.

The test shows that the use of these approaches significantly depends on a sector with Chi-square statistic values of 57.1 and 72.2 for external and in-house training respectively. The p-values for both variables were less than 0.0001, which shows high statistical significance.

Other training is a derived variable and therefore not categorical. To compare the sectors with these variables, the two independent samples t-test and its nonparametric counterpart, the Mann-Whitney test, were used. The results show that the use of other training does significantly differ between the two sectors. The private sector has a significantly higher mean more than other training approaches used in the public sector ($t=10.1$; $p<0.0001$).

5.6.3.2 Skills development policies in the organisations

Table 5.13 shows the results of tests for association of sector and skills development policies, affirmative action and skills shortage. For each variable, the table shows the value of the Chi-square statistic, the corresponding p-value, the odds ratio estimates and their corresponding 95% confidence intervals. Odds ratios less than 1 suggest that the private sector is less likely to give a response when compared to the public sector, and those greater than 1 suggest that the private sector is more likely to give a response when compared to the public sector. In addition, while odds ratios equal to 1 suggests that the possibility that the two sectors would respond are equal. The significance of an odds ratio estimate is tested through their confidence intervals. An estimate whose confidence interval contains 1 suggests that the estimate is not statistically significantly different from 1 and therefore, there is no association.

All the red variables were not statistically significantly associated with sector. It should be noted that, for these variables, the 95% confidence interval of the odds ratio contains 1. This means the odds ratios have a possibility of being equal to 1, which is the same as saying the variables have a good chance of being independent of the sector. Therefore, for those variables, there is no statistical evidence to suggest an association with sector.

For the rest of the variables the associations detected by the chi-square test were also confirmed by the 95% confidence intervals of the odds ratios. It should be noted

that, for those variables, both 95% confidence limits are either less than 1 (blue) or both greater than 1 (black) for less likelihood and more likelihood of a positive response in the private sector respectively.

This means that the private sector is significantly less likely to have a performance policy, a training venue, a recruitment policy, a good response from previously disadvantaged candidates, compromise qualification to Employment Equity requirements, consider affirmative action as a desirable intervention, advocate for the retention of affirmative action and to blame lack of educational financial assistance for the skills shortage compared to the public sector. The private sector, which feels that graduates are ill-prepared for the workplace, will less likely attribute this to lack of education but rather, to lack of practical training.

Table 5.13 Sector test of association and skills policies, AA and skills shortages

VARIABLE	t-value	p-value	OR	95% CI
PERFMANCE POLICY	94.9	0.0001	0.014	(0.01;0.04)
BURSARY POLICY	5.18	0.0229	1.28	(0.69;2.39)
TRAINING VENUE	14.1	0.0002	0.26	(0.14;0.50)
METHOD OF FET	43.2	0.0001	1.61	(0.89;2.91)
STDENT BURSARY	75.4	0.0001	35.5	(14.7;85.8)
IN-HOUSE TRAINING	6.9	0.0083	3.64	(1.89;6.99)
PAY SUBSCRIPIONS	33.4	0.0001	9.6	(4.68;19.81)
INDUSTRIAL ATTACHMENT	1.4	0.2369	1.5	(0.80;2.79)
RECRUITMENT POLICY	60.6	0.0001	0.05	(0.02;0.12)
RESPONSE TO ADVERT	36.9	0.0001	0.09	(0.05;0.20)
MEET EE ACT	60.7	0.0001	0.09	(0.05;0.20)
SKILLOSSAA	2.3	0.1309	1.65	(0.88;3.09)
AA NECESSARY	117.4	0.0001	0.01	(0.002;0.02)
FUTURE OF AA	110.1	0.0001	0.01	(0.003;0.02)
EXPERIENCE OF GRADUATE	16	0.0003	1.67	(0.91;3.07)
REASON FOR LACK OF EXP.	69.2	0.0001	0.05	(0.02;0.11)
SKILLS SHORTAGE	14	0.0009	0.5	(0.27;0.92)
REASONS FOR SHORTAGE	20.3	0.0001	0.17	(0.08;0.34)
AA CONTRIBUTE TO SKILLS SHT	75.2	0.0001	31	(12.96;74.36)
IMPEDIMENT TO SKILL DEV	48.9	0.0001	0.07	(0.03;0.15)

On the other hand, the private sector was found to be more likely to be associated with student bursary schemes, more likely to have in-house assistance programmes for new employees, more likely to pay membership subscriptions to professional

bodies and more likely to attribute skills shortage to affirmative action compared to the public sector.

5.7 Summary

This chapter examined aspects of research methodology for this study. The concepts of research generally and the process of research in business were defined and described. The steps in the business research process were identified. The steps were followed in the present research. The two major types of research design - qualitative and quantitative were explained. The motivation for using quantitative research for the study was discussed. The chapter also discussed the four major types of survey - personal interviews, telephone surveys, mail surveys and self-administered surveys. The motivation for using the self-administered survey was emphasised. The questionnaire was used as the data collection instrument. The questionnaire contained a mixture of open-ended questions, close ended questions and Likert scale questions. The questionnaire was pretested using experts in the field of Industrial Psychology, Training and Development and Statistics. This helped to refine the research questions and modify the questionnaire.

Validity and reliability are two important characteristics of a sound measurement instrument. The four types of validity, internal, criterion-related, content and construct were discussed as well as the methods for ensuring validity. The Cronbach's alpha was used as a measure of reliability for the questionnaire. A missing value may represent or is a product of an unknown value. In surveys, respondents may not answer certain questions. It is very important for the researcher to manage missing values efficiently. Missing values present a problem that must to be addressed in a research before evaluation could proceed. The pairwise deletion method under SAS software v9.2 was used. Data analysis usually involves the reduction of accumulated data to a manageable size, developing summaries, looking for patterns and applying statistical techniques. The data collected for this study was analysed using descriptive statistics, factor analysis, Spearman correlation coefficient, Chi-Square, and Analysis of Variance (Anova). The final step in the research process concerns

the analysis of results of the empirical study. This will be presented in the next chapter.

This chapter also presented the empirical findings of the study. The normality of the data was tested using the Koglomorov-Smirnov test. Various statistical tests (descriptive exploratory analysis, Chi-square test for independence, Anova and Spearman correlation coefficient) were performed on the data collected. The research data collection instrument was tested for its reliability using the Cronbach's alpha coefficient. The Cronbach's alpha coefficient for the questionnaire was found to be high, thus confirming the reliability of the questionnaire. The 160 organisations surveyed were classified into three sectors: private, public and parastatals with 33.1%, 63.1% and 3.8% participating from each of the sectors respectively.

The survey results shows that all the organisations surveyed provided training and development programmes for their employees. SETAs were also found to compliment training activities in all the organisations. Training methods such as using external training agencies, in-house, mentorship, internship and on the job training methods were used in conducting training by the organisations. However, the research found a significant positive relationship between external training and in-house training, suggesting that most of the training activities in the organisations were conducted using various external agencies. This finding was supported by the weak Cronbach's alpha correlation coefficient of these variables (internal training methods).

Factor analysis procedure classified all the training methods into two clusters as: external and in-house training. All the four variables under internal training (i.e., mentorship, internship, on the job training and skills programmes) were classified into one group as in-house training and then external training as the second group. The clustering of the four internal training variables under one factor (in-house training) was supported by a high Cronbach's alpha coefficient of 0.64, which suggested that the four variables consistently measured the same aspect of employee participation in training. The chapter further tested the six hypotheses of the study using the Chi-square test for independence. Hypotheses 1 and 4 were rejected as stated, hypotheses 2 and 3 were accepted while hypothesis 5 was neither rejected nor accepted.

The next chapter will examine the conclusions and recommendations of the study. In addition, the achievement of the objectives of the study will be presented. Furthermore, the limitations of the study and areas for further study will be discussed to conclude the chapter.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1Introduction

In the previous chapter, the analysis, interpretations and discussions of the empirical research results were presented. The response rates were presented using descriptive statistics while other data were analysed using Chi-square test for independence, Spearman correlation coefficient, ANOVA, and descriptive factor analysis. The present chapter concludes the study that was undertaken to determine an effective human capital development strategy that will bridge the skills gap in South Africa. Evidence from available literature suggests shortage of skills which are required for sustainable socio-economic development of South Africa. The argument of the study therefore was that various skills development initiatives should be demand, rather than supply-driven. This argument is premised on the finding that there is availability of skills generally in South Africa, but there is shortage of certain skills that are required to drive and sustain rapid economic growth. In order to identify areas of surpluses and shortages, it was important to evaluate the demand and supply characteristics of skills in the country.

In this final chapter, the research findings and the recommendations will be discussed. In addition, the limitations of the study and the areas for future research will be stated. This chapter proceeds as follows. Section 6.2 of this chapter presents a brief summary of each chapter including the findings. Section 6.3 will highlight the recommendations. Section 6.4 discusses the achievement of objectives. Section 6.5 will examine the limitations of the study and section 6.6 will highlight the areas for further study. Finally, section 6.7 will conclude the study.

6.2 Overview of chapters

This thesis is made up of six chapters. An overview of the chapters is presented in sections 6.2.1 to 6.2.6 below.

6.2.1 Chapter One: Introduction, problem statement and outline of the study

The primary focus of this thesis was to examine the demand and supply characteristics of skills in South Africa in order to determine the nature of skills shortage in the economy. The thesis also focuses on the contribution of employers of labour and skills development agencies such as the SETAs in the training and development of employees. Specifically, the thesis investigated the types of skills produced by the HET institutions in South Africa and the type of skills demanded by employers. This is against the backdrop of existence of huge number of vacant positions that could not be filled by employers due to shortage of appropriately qualified South Africans on the one hand, and a large pool of unemployed South African graduates on the other hand. Secondary data was collected and analysed from six universities – both comprehensive and universities of technology.

The analysis showed that the universities produced far more graduates in the fields of Humanities and Social Sciences than in Science, Engineering and Technology. There is a documented evidence that the South African economy presently requires more technical skills as against skills in the arts and social sciences thus accounting for the inability of graduates in this field (Humanities and Social Sciences) to get employment whereas there are vacant positions in fields such as engineering, ICT, medicine, accounting etc that remained unfilled due to non availability of qualified South Africans. The summary of this analysis therefore is that, there is misalignment in the skills demand and supply trajectory.

Based on the introduction and the background of the study, the research questions and objectives of the study were stated. The research questions of the study were stated as follows:

- To what extent are the skills produced by the Higher Education and Training system related to the skills required by industry?

- To what extent are employers, in collaboration with SETA contributing to the training and development of employees?

- Is the Further Education and Training Colleges achieving the set objective of the Human Resource Development Strategy in relation to securing a supply of skills, especially scarce skills, which anticipate and respond to specific skill needs in society, through state and private sector participation in lifelong learning? And

- To what extent, if any, is the affirmative action measure contributing to acute skills shortages in South Africa?

- Is affirmative action policy contributing to turnover of highly skilled employees in the organisations?

In order to provide answers to these questions, it was necessary to first perform a general review of the literature. The objectives of the research were divided into primary and secondary as follows:

1. Conduct empirical study in order to answer research questions 2, 4 and 5. That is to:

    - Determine the contribution of employers and SETAs towards employee training and development;
    - Assess the impact of affirmative action measures in relation to skills shortage in South Africa; and
    - Determine whether AA contributes to the turnover of highly skilled employees in the country.

The primary objectives were achieved through the following secondary objectives:

- Collect secondary data and review related skills development and shortages literature in order to answer research questions 1 and 3 above. That is to:
- Examine misalignment in the workplace skills demand and those produced by the Higher Education and Training system in South Africa;

- Evaluate the skills produced by the Further Education and Training band as it relates to one of the objectives of the Human Resource Development Strategy.
- Make appropriate recommendations based on the outcome of the research findings to education and labour authorities in South Africa.

6.2.2 Chapter two: An overview of skills development strategies, framework and models

Chapter two of this thesis provided a literature review of the various skills development programmes and initiatives by the education and labour authorities in South Africa to bridge the skills gap in the economy. While putting in place policies and programmes that could facilitate skills development, it is equally important to erect enabling structures and enact appropriate legislations that will give effect to these policies and programmes. While skills development policies such as the National Skills Development Strategy (2001) and Human Resource Development Strategy (2001) were reviewed, skills development legislation such as the Skills Development Act, 1998 (Act 55 of 1998) and the Skills Development Levies Act, 1999 (Act 97 of 1999) were also discussed. The importance of theory cannot be overemphasised in any scientific study; to this effect, two theories of human capital development were discussed to provide the necessary theoretical influence to the study. Gary Becker's Human Capital Theory and the Segmented Labour Market Theory, using the Cambridge Labour Market School of Thought (as articulated in Kraak, 2009) provided the theoretical framework for the present study.

The National Qualifications Framework (NQF) is a set of principles and guidelines by which records of learner achievements are registered to enable national recognition of acquired skills and knowledge, thereby ensuring an integrated system that encourages lifelong learning (Meyer & Orpen, 2007:16). The NQF in South Africa was established in 1995 as the vehicle for a new, non-discriminatory human resource development strategy that would contribute to national, economic, social, and cultural development of South Africans (DoE & DoL, 2003). The NQF was discussed in this chapter as one of the skills development structures that were erected to facilitate skills development in the country. Other structures discussed in the chapter include the Government's established SETAs which are saddled with the

sole mandate of helping implement the National Skills Development Strategy by ensuring that necessary people learned skills required by employers and communities.

A SETA facilitates skills development in an economic sector, for example banking, manufacturing or mining with 23 SETAs covering all the economic sectors in South Africa. The major skills development function of the SETAs as provided for in the Skills Development Act, 1998 (Act 55 of 1998) includes the development of a Sector Skills Plans within the framework of the National Skills Development Strategy. Also, SETAs are required to implement its skills plans by establishing learnerships, approving workplace skills plans, allocation of grants in the prescribed manner to employers, education and training providers, and workers; and monitoring education and training in their sectors. SETAs are also saddled with the responsibility of identifying workplaces for practical work experience, supporting the development of learning materials and improving the facilitation of learning. SETAs equally have the mandate to collect and disburse the skills development levies in their sectors and liaise with the National Skills Development Authority (NSDA).

In order to have insights from skills development programmes in other economies, and to provide a basis for comparison, the chapter discussed skills development models from countries such as Australia, New Zealand, USA, the United Kingdom, Germany, Singapore and the Republic of Ireland to conclude the chapter.

6.2.3 Chapter three: Human capital demand, development and supply

This chapter provided a critical review of the third National Master Scarce Skills List which covers a period between 2008 to 2010 with the broad objective of identifying trends in the labour market and applying appropriate intervention strategy. The scarce skills list was prepared having taken into comprehensive account the skills that lie at the heart of the 'binding constraints' on economic growth and development of the country (DoL, 2006c). The list reflects the skills that are most needed in the country, and which need to be acquired or developed. Majority of the skills contained in the list are mostly in the fields of engineering, technology, ICT, accounting, business and marketing management, medicine and science. One way of finding a long term solution to skills shortages is by evolving a strategic skills development

programmes through education and training in FET colleges, HET institutions and enterprise training structures. However, the education system itself suffers from skills shortages.

The skills supply pipeline comprises of the educational system – Secondary School, FET colleges, the Universities and the Learnership programme. The Secondary Schools are to serve as a feeder to the tertiary institutions by conducting the matriculation examinations that would provide learners with the necessary entry requirements to universities and FET colleges. The present study has however established (through literature review) that the performance of learners at this level of education has been disappointing especially in the area of mathematics and science. The implication of this for skills development is that fewer learners are qualified to study at tertiary levels; and majority of the few that are qualified for tertiary education (especially Africans) enrolled for degrees in the humanities and social sciences, which are not presently in high demand by the economy. One of the reasons attributed for the poor performance of learners at this level of education is shortage and poor quality of educators.

The FET colleges were established with the main objective of providing intermediate skills especially in the scarce skill category. However, this education band, like in the Secondary School band, is experiencing shortage of educators and instructors. Quality of the products of FET colleges have been described as poor by employers of labour because they are deficient in practical training thereby having difficulty or unable to fit into the workplace. Another problem confronting the FET colleges is their inability to align course offerings with the demand of industry (Mukora, 2009). Unlike universities and universities of technology, where there are advisory boards with industry representation, there is no communication between the FET colleges and industry. As a result, skills produced by these institutions are not aligned with industry needs.

The main contribution of the universities and universities of technology is the production of high level skills for the labour market. In this regard, this research established that the institutions of higher learning are becoming responsive to the human resources development needs of the country and producing more and more

individuals with the skills and knowledge necessary to enter the labour market. The problem however, is the quality and demand for such skills and knowledge by the economy. According to Mantashe (2009), “unless higher education adapts to the economic needs of the country, skills shortages will remain in the country”. Sector specific analysis of skills was undertaken and the conclusion was that, all the sectors are experiencing various degrees of skills shortages especially in the scarce and critical skill category.

6.2.4 Chapter four: Human Resource intervention to address skills gaps

Migration of highly skilled professionals from Africa to developed economies has posed a lot of economic challenges and has been cited as a contributory factor to skills shortages on the continent. Chapter four addresses the problem of brain drain as it affects South Africa. A number of South African professionals are known to have left South Africa to work in more developed countries such as Australia, New Zealand, Britain, Canada and the USA. Harris (2007) reports that South Africa has a reputation for being an excellent place for nurturing talent, so its managerial ranks are constantly being poached by the world’s leading organisations. As a result, a number of corporate leaders have gone from South Africa to top jobs in large international organisations such as BMW, Daimler-Chrysler, Unilever, Siemens and many others.

Literature suggests that “South Africa is making the problem of skill migration worse with employment equity policies that alienated skilled whites and make them all the more receptive to overtures from overseas recruiters”. With the skills crises facing South Africa, Horn (2008) opines that the big debate should be on how to retain available talent. This has therefore brought retention of skilled workers into the fore. The country and indeed individual organisations have developed retention strategies that will help in retaining skilled people in various organisations and the country at large. This has seen organisations using all forms of motivational variables such as competitive salary and other financial packages, training and development, job security and improved workplace conditions (among others) to attract and retain skilled people.

6.2.5 Chapter five: Research methodology, data analysis, interpretation and discussions

In chapter five, the method used in carrying out the research was stated. The chapter examined aspects of the data collection instrument. The data was collected through the use of self-administered questionnaires. The data collected was transformed into more suitable format for analysis by using Excel Software. After the data processing, the Statistical Analysis System (SAS) was utilised for data analysis. Statistical techniques used in this study included descriptive statistics. Other statistical analysis techniques such as factor analysis, correlation, Chi-square and ANOVA were used in the study. The empirical findings of the research were presented through the data analysis, interpretation and discussion of results. The measuring instrument was tested for its consistency and internal validity using the Cronbach's alpha coefficient. All sections of the instrument were found to be reliable and consistent with high Cronbach's alpha coefficient. About 46% of the organisations surveyed employed between 700 and 1000 employees while about 12,5% employed over 1000 employees. Most of the organisations surveyed provided employees with training using different training approaches such as external, in-house, mentorship, internship, and on the job training methods. The research hypotheses were tested using Chi-square test for independence. The empirical findings in this chapter and chapter one form the basis for the research findings and the conclusions presented in section 6.3 of chapter six.

6.3 Summary of research findings and conclusions

The research of this study indicated that:

- There is misalignment in the skills produced by the higher education and training system and those skills required for sustainable socio-economic development of South Africa.
- Further Education and Training colleges are not producing the quality and quantity of intermediate scarce skills that are required by the economy.
- There was evidence of training, to a large extent, in all the organisations surveyed; suggesting that employers, in collaboration with SETAs are contributing significantly to the training and development of employees.

- Organisations have employee training-related policies using training and development incentives such as bursary, study leave, education subsidy, sponsored professional conferences and workshops as mechanism for enhancing further training and development of employees.
- Most of the training provided by employers was not aligned to the formal education system; that is, they are not NQF accredited.
- Most employers agreed that SETA's training-related services are not effective.
- Majority of employers agreed that SETA should be reorganised for better efficiency rather than be scrapped.
- Employers generally agreed that there is shortage of specific skills required by industry.
- Employers attributed shortage of skills required by industry to the failure of the HET system to produce enough graduates for the different skills areas that are required for sustainable socio-economic development of the country.
- Employers generally believed that fresh graduates do not possess the requisite practical experience required to perform at the workplaces.
- Employers were almost equally divided over the contribution of affirmative action policy to skills shortages in the country.
- Majority of the employers did not consider affirmative action policy as responsible for turnover of highly skilled employees.
- Employers generally believed that AA policy should be retained in the workplaces.

6.4 Recommendations

South Africa skills shortages are widely regarded as key factors preventing achievement of the country's targeted economic growth rate. On the local front, many of the high-level skill shortages in South Africa are blamed on the education system (Alder, 2002). There is still a small pool of matriculants who have the necessary grades and subjects to access programmes like engineering, medicine and accounting, especially among Africans. This constitutes a limitation at a time when programmes like these are required to achieve more representative student participation and their professions are required to meet employment equity criteria.

In the artisan trades, the massive shortage of artisans is largely attributed to the decline of the apprenticeship system and the failure of the substitute intervention – training through learnerships and the FET sector – to eliminate the backlog. A particular concern (Breier, 2009) is that an increasing number of young people who have received some form of artisan training do not find jobs after graduation because they have not had sufficient or appropriate experience. A major concern is the loss of senior capacity, largely as a result of affirmative action policy, which has led to many experienced white professionals leaving their posts and often the country. The lack of senior capacity is hampering the ability of the workforce to absorb young entrants – one of the reasons for the existence of shortages alongside a pool of unemployed graduates (Breier, 2009).

It is on the basis of the present research findings, as enumerated in section 6. 3 and supported by the foregoing literature that the following recommendations are made to the skills development authorities in South Africa, particularly the Departments of Basic Education, Higher Education and Training and Labour. This is with the view that these recommendations will assist the authorities in formulating policies and implementing strategies that will accelerate and enhance the production of the skills that are needed for sustainable socio-economic development of the country. These recommendations are also intended to provide a guide for the review and improvement of existing skills development institutions and structures.

1. It is not just sufficient for the HET system to turn out large number of graduates at each graduation ceremony, it is more important to ensure that there is an immediate return on investment by various stake holders in the education and training of these graduates. This can only be possible if the system produces job candidates whose skills and expertise are presently required and immediately absorbed by the economy. In other words, there should be alignment between the skills produced by the tertiary education and training institutions and those skills that are presently required by the industry so that these graduates can be employed upon graduation. Analysis of sectoral skills demand shows that each sector of the economy requires customised skills development strategies to meet specific sectoral conditions. The reality in the skills produced by the HET band however does not meet this

expectation. This places widely diverging demands on the education and training system and that, in turn, necessitate far greater levels of alignment between skills development and industry requirement. It is on the strength of this finding that this study recommends **a demand (employer) - driven human resource development strategy** in order to effectively address the skills gap occasioned mainly by mismatches in the skills demand and supply pipelines.

2. There should be greater involvement and stronger partnership between the universities and FET colleges on the one hand, and the industry on the other hand, in the design and implementation of study programmes (especially those that are technically oriented). This is essential in order to provide undergraduates with a practical knowledge of the workplace requirements by way of experiential learning. This will enrich the practical component of academic programmes run by these institutions so that learners can have a proper blend of both theory and practical. This also will greatly improve the level of job opportunities of these graduates. The FET colleges should be strengthened and refocused to concentrate on the production of intermediate skills, especially those in the scarce category rather than enrolling students in great numbers in generic studies that are not presently in demand by the economy. In this regard, the Department of HET and that of Labour should provide a platform to facilitate (through persuasion and if necessary, legislative intervention) an effective working relationship between tertiary education institutions and industry players in order to properly align education and training to the demand of the economy. This will drastically reduce the growing pool of unemployed graduates in the face of skills shortages. This, by extension will reduce the level of poverty in the country.

3. Although employers provided employees with various forms of training, however, most of these training are not registered under the National Qualification Framework (NQF). The implication of this is that the skills so acquired lack standardisation and cannot be objectively evaluated by other employers. This can inhibit employee job mobility and placement. One of the objectives of the HRDS is to encourage the use of the workplace as a learning

centre. This is against research findings that knowledge, skills and expertise required for competent practice of occupations and professions is best acquired by an active engagement with fellow workers in the work situation under expert guidance. Employers should therefore align their internal training activities with the requirements of the NQF so that workers can be appropriately certificated by the South African Qualifications Authority (SAQA). This they must do by ensuring that "learners attain competence under the tutelage of qualified education and training practitioners who will take the worker through the application of skills in specific occupational contexts and solving of problems under real time pressures and constraints in the face of real world complexities". This will enable workers to be assessed by accredited skills development practitioners against registered national, industry or professional competency standards or qualifications unique to the workplace or industry.

4. The inefficiency and ineffectiveness of the SETAs performance has come under severe criticisms from different stakeholders, including employers and some officials of the Department of Higher Education and Training (DoHET). Part of the problems identified as responsible for SETAs' underperformance is lack of competent employees, rapid turnover of Chief Executive Officers, accountability, financial mismanagement and alleged corruption by employees. It is important that the SETAs collaborate with the universities and research institutions in order to improve its human resource capacity, especially in the design and implementation of training programmes. SETAs should take advantage of their removal from the Department of Labour to that of Higher Education and Training to achieve this recommendation. Through the merger, the DoHET has responsibility for colleges and the universities as well as the training functions and institutions that fell previously under Labour, such as the National Skills Authority, the SETAs and the National Qualifications Framework. The internal financial control mechanisms at the SETAs must be tightened in order to check misappropriation of funds and curb corruption in the system. Highly qualified and competent people should be recruited to positions of responsibility at the SETAs. The recent merger of

SETAs with the DoHET has set the pace for the needed reorganisation, and it is recommended that the reorganisation exercise should cut across all the operations of the skills training authority.

5. There is a general agreement among employers regarding scarcity of certain skills that are required for sustainable economic growth. The Department of Higher Education and Training should incorporate the scarce skills master list as an admission policy guide for institutions of higher learning. More importantly, the Department of Basic Education, through career counselling, should direct learners towards these scarce skill areas. Many learners entered into higher education without career focus; and they end up obtaining degrees that do not guarantee them employment nor prepare them for self employment. The scarce skills master list should guide career counsellors in shaping the career prospect of learners right from secondary school level. It must however be emphasised that the Department of Basic Education should, by all means possible, improve the quality of teaching and learning in subject areas such as mathematics, science and commerce. High endorsement rate in these subjects will enhance enrolment of learners in the scarce skills degrees at HET institutions. Similarly, preferential bursary regime can also be used to sway and encourage learners to enrol for degrees in the scarce skill areas. In order to improve the study of technical oriented courses such as engineering and construction by African students, the DoHET, in collaboration with the relevant private sector organisations and research institutions, should establish a well funded engineering faculty in the predominantly black universities such as University of Fort Hare, Walter Sisulu University, University of Venda, University of Zululand, University of Limpopo for example. These institutions are known to attract learners mostly from the catchment rural communities.

6. It is somewhat curious to see supposedly specialised institutions operating like comprehensive universities. Universities of technology are supposed to offer specialised technical programmes in areas such as engineering, technology, construction and related courses such as architecture, surveying, ICT and others with greater emphasis on the practical aspect of the discipline.

This will adequately equip and prepare graduates of these institutions for the workplace experience. This does not in any way suggest that theoretical aspect of the disciplines should be treated with less importance. The reality in these institutions however is a clear departure from this theory. There is no demarcation in their course offerings and those offered by comprehensive universities, and in some cases, these specialised universities enrolled more learners in the arts and social sciences than the regular institutions. This could impact negatively on adequate funding of their traditional programmes. Furthermore, more specialised universities such as universities of Agriculture and Education should be established to produce more professionals in the area of agriculture and teaching.

7. The desirability or otherwise of the affirmative action measure in the workplace has generated a lot of controversy. This perhaps might help to explain the evenly divided opinion amongst employers in this study regarding AA and its effects on skills shortages. It is however instructive to note that majority of the respondents did not attribute turnover of skilled employees to AA measures. To this extent, and given the skewed nature of highly skilled people available in the South Africa's labour market (especially in the scarce and critical skills category), it will seem appropriate for employers (public and private sectors) to give priority to business imperatives and service delivery efficiency in appointing people to positions of responsibilities. Economic growth and social development will suffer serious setback if, for instance, prospective foreign investors could not come to invest in the economy because they may be required to appoint people based on some other criteria different from qualifications and excellence. It was revealed that over 70 Local Governments in the country do not have a single engineer. This, to a large extent will affect service delivery, especially in areas such as provision of portable water, sanitation, rural electrification, road construction and housing. These services are central to the socio-economic development and well-being of the rural communities. While AA remains a necessary political intervention at the workplace to redress past injustices in employment suffered by the historically disadvantaged groups, it must be implemented with some degree

of flexibility and in such a manner that does not affect economic growth and social development of the country.

6.5 Achievement of objectives

This section evaluates the success of the study against the research objectives as formulated in section 1.3 of this study.

The primary objective of this study was to conduct empirical study in order to:

- Determine the contribution of employers and SETAs towards employee training and development ; and
- Evaluate the impact of affirmative action measures in relation to shortage and turnover of critical skills in the country.

The attainment of the primary objective was dependent upon the realisation of the secondary objectives as listed below.

- Review related skills development and shortages literature;
- Collect secondary data from universities regarding degree profile of graduates in order to determine whether there is misalignment in the workplace skills demand and those produced by the Higher Education and Training system in South Africa; and
- Evaluate the skills produced by the Further Education and Training band as it relates to one of the objectives of the Human Resource Development Strategy of securing a supply of skills, especially scarce skills which anticipate and respond to specific skill needs in society.

Achievement of both objectives mentioned above will provide the basis for the actualisation of the last objective; that is, make appropriate recommendations based on the outcome of the research findings to education and labour authorities in South Africa.

The first aim of the primary objective of this study was to empirically investigate the contribution of employers and SETAs towards employee training and development.

This objective was achieved through chapter five of the study. Chapter five focused on the research methodology used for the empirical study. The chapter presented analysis of data, interpretation and discussion of results. The primary data collection instrument was described and the motivation for the use of self-administered questionnaire was established. The data was analysed using SAS software. The statistical tests include descriptive statistics, factor analysis, Chi-square, ANOVA and Spearman correlation.

The second aspect of the primary objective was to empirically evaluate the impact of affirmative action measures in relation to shortage and turnover of critical skills in the country. This objective (like the first objective) was achieved through chapter five of the study.

The third objective was to review related skills development and shortages literature. This objective was achieved through literature review in chapters two, three and four. Chapter two provided an overview of skills development policies and strategies, institutional and legal frameworks for achieving these strategies and skills development models in other economies in the world. This review revealed that South Africa's skills development model is not totally different from those used in other countries such as New Zealand, the United Kingdom and Australia. Chapter three presented the demand and supply characteristics of skills in South Africa. Through this chapter, we were able to determine (through the scarce skills master list and insights from employers) the skills that are presently in demand by the economy. The chapter also reviewed the educational system in South Africa and the contribution of each band of the system to skills supply. Chapter four reviewed the brain drain syndrome in Africa generally and how this syndrome impacts negatively on skills shortage in South Africa.

The fourth objective was to collect secondary data from universities regarding degree profile of graduates. This was to assist in determining the quantity of graduates produced by the universities and most importantly, their fields of study. Data was collected from six universities and analysed in chapter one. The result of the analysis revealed some degree of misalignment in the skills produced by the universities and those demanded by industry. While the universities produced

surplus graduates in the humanities and social sciences, there was an underproduction of graduates in the technical fields such as engineering, ICT, accounting, medicine and the sciences.

The fifth objective was to evaluate the skills produced by the Further Education and Training band as it relates to one of the objectives of the Human Resource Development Strategy. That objective was for the FET colleges to secure a supply of skills, especially scarce skills, which anticipate and respond to specific skill needs in society, through state and private sector participation in lifelong learning. However, review of the training and learning activities at FET colleges in chapter three suggest that the FET band is not meeting this objective. Literature revealed that the current FET colleges' learning outcomes are not aligned with industry needs, stressing that the quality of FET graduates is not what is required in the workplace.

The last objective, which was to make appropriate recommendations based on the outcome of the research findings to education and labour authorities in South Africa, was also achieved in section 6. 4 of this thesis.

Based on the achievement of all the secondary objectives, it can be concluded that the primary objective of this study was achieved.

6.6 Limitations of the study

It is important to recognise the inherent limitations of the scope and approach of the study. The study analysed data from six universities and universities of technology out of the 23 public universities in South Africa. Adequate coverage of all the universities would have enhanced the generaliseability of the research finding regarding the disciplines of graduates produced by the HET system. Secondly, The data collection instrument did not take into consideration racial affiliation of respondents thus making it difficult to rule out response biases in respect of questions relating to affirmative action measures in the workplaces. Lastly, the research was limited to selected organisations that are registered with SETAs in the Eastern Cape Province thus making the research to be more of a regional study in outlook. In view of the aforementioned limitations, care should be exercised in the

interpretation and the application of the results of this study and the generalisation of the findings to the whole of South Africa.

6.7 Suggestions for further research

Eastern Cape Province is known to have high population of blacks (beneficiaries of AA policy), and this is reflected at the workplaces. The AA aspect of this study can be replicated in another province with a large concentration of white (AA disadvantaged group) working population (e.g., Western Cape Province). The research outcome will provide a basis for comparison and further dictate the direction of the on-going skills debate and affirmative action policy.

The whole literature on skills shortages can be conceptualised and integrated into a model and empirically tested to determine the extent and nature of relationship between identified dependent variables (e.g., endorsement rate, field of study, availability of funding, labour laws, recruitment policies, skills migration, skills importation) and the independent variable (skills shortage). This will assist policy makers in formulating direct and specific intervention strategies that will effectively reduce shortage of essential skills in the economy.

6.8 Summary

In this chapter, the conclusions, recommendations, achievement of objectives, limitations and suggested areas for further study were given. The chapter started by presenting an overview of all the chapters that made up the thesis in order to have a brief recapitulation of issues that were discussed in each of the chapters. The study concluded by summarising the various findings of the research. Appropriate recommendations were made to the education and labour authorities in South Africa based on the findings of the study. This is with the hope that these recommendations will provide the authorities a platform to view the complexities surrounding skills shortages in the country. In addition, it will assist in providing information that could be used in improving existing skills development strategies and in the formulation of future skills development policies and strategies. Some factors were found to have limited the scope of the study. These factors were highlighted in order to provide a methodological guide for future researchers. The ways and methods used in

achieving the objectives of the study were discussed while the study provided suggestions on areas that could be researched in future.

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APPENDIX A – MEASURING INSTRUMENT

University of Fort Hare
Together in Excellence

SKILLS SHORTAGES AND TRAINING NEEDS QUESTIONNAIRE

"South Africa's organisations now compete in the global market place. But for these organisations to favourably compete and indeed gain competitive advantage there must be sufficient supply of the necessary skills to drive this competition. However, empirical studies have shown that South Africa's labour market suffers deeply from a dearth of skilled personnel and a continuous brain drain". As a local employer of labour, I would appreciate it if you could take time to complete the following questionnaire, which is designed for a doctoral research study at the Faculty of Management and Commerce, University of Fort Hare. Your contribution would provide valuable insight into issues of skills required for sustainable socio-economic development in South Africa.

Should you have any query regarding this questionnaire, please don't hesitate to call my promoter on telephone number **040-602-2533** or the researcher on **079-6677-055.**

Thank you,

Michael O. Samuel

INSTRUCTIONS FOR COMPLETING THE QUESTIONNAIRE

Note that any information provided in this questionnaire is <u>strictly confidential</u> and is used for statistical reporting only. Please adhere to the following instructions carefully:

- Answer all applicable questions as accurately as possible
- Provide figures, or mark (**X**) as appropriate within the boxes provided

SECTION 1. DEMOGRAPHIC INFORMATION

1.1Kindly indicate your gender

Male	Female

1.2 Your highest educational qualification

Grade 12	Bachelor degree	Postgraduate qualification

1-5 yrs	5-10 yrs	10-15 yrs	15-20 yrs	Above 20 yrs

1.3 your length of service

1.4 Economic sector

Private	Public	Parastatal

1.5 Please indicate the nature of your business
(e.g. engineering, agriculture, education, service provider etc)

1.6 Please indicate the total number of employees in your organisation

SECTION 2. ACTUAL TRAINING OF EMPLOYEES

Definition of training: "Activity that improves the skill levels or capacities of employees to do the type of work they are doing or have done before, or gives them the skills or capacities to do a completely different type of work, either on-site or off-site".

2.1. How often do you conduct training for your employees in a year?

Never	Seldom	No record	Often	Very often
1	2	3	4	5

2.2. Please indicate the number of employees who participated in training during the 2008/2009 financial year

2.3. Which occupation group received the highest number of training during the 2008/9 financial year?

Managers	1
Professionals	2
Technicians and trades workers	3
Clerical and administrative workers	4
Machinery operators and drivers	5

2.4. On a scale of 1 to 5, to what extent did employees participate in the following types of training during the 2008/9 financial year?

	To a small extent				To a large extent
Courses presented by an external agency	1	2	3	4	5
In-house courses by own staff	1	2	3	4	5
Mentoring	1	2	3	4	5
On the job training	1	2	3	4	5
Internships	1	2	3	4	5
Skills programmes	1	2	3	4	5

SECTION 3. SECTOR EDUCATION AND TRAINING AUTHORITY (SETA) SERVICE

2.5. Is the various trainings received by employees recognised under the NQF as additional qualification acquired?

None	Some	Not sure	Most	All
1	2	3	4	5

3.1. How often does your organisation benefit from training programmes organised by SETA?

Never	Seldom	Don't know	Often	Very often
1	2	3	4	5

3.2. To what extent is SETA training related to employees' job?

Not related at all	To a Little extent related	Not sure	Reasonably related	To a large extent related
1	2	3	4	5

3.3. On a scale of 1 to 5, how would you rate the following services of your SETA during the 2008/9 financial year?

(Please tick only one number on each scale that describes your answer best. Only tick items that are applicable to your organisation)

	Poor				Excellent
Advice and support on quality assurance of training (ETQA)	1	2	3	4	5
Internet site and Web pages	1	2	3	4	5
Promptness in paying grants	1	2	3	4	5
Provision of information about courses, programmes and training	1	2	3	4	5
Provision of information about grants	1	2	3	4	5
Provision of Sector Skills Plans	1	2	3	4	5
Provision of free training	1	2	3	4	5
Responsiveness to queries	1	2	3	4	5

3.4. How effective do you consider SETA in its skills intervention responsibility?

Not at all effective	Somewhat effective	Don't know	Effective	Very effective
1	2	3	4	5

3.5. The future of SETA?

Scrapped	Merged	No opinion	Reorganised	Retained
1	2	3	4	5

SECTION 4. TRAINING INFRASTRUCTURE

4.1. Do you provide your employees with opportunities to improve their skills on the job?

Yes	
No	

4.2. Did your organisation have any of the following?

	Yes	**No**
A performance management policy		
A policy on training and development		
A policy on bursaries		
A specific budget for training		
Training records		
Employment equity plan		
A Workplace Skills Plan		
A well equipped training venue		

4.3. How do your employees acquire further education and training?

Through sponsorships	Study leave	Other (specify)

4.4. Do you award bursary to learners in educational institutions

to study courses that are related to your business?

Yes	
No	

4.5. Do you have in-house or sponsored training programmes where inexperienced employees are developed to acquire specific skills?

Yes
No

4.6. How often do you sponsor your employees to attend professional conferences, workshops and seminars?

Very often
Never
Seldom

4.7. Do you subsidise or fully pay for membership annual subscriptions in respect of your professional employees?

Yes	No

4.8. Is your organisation collaborating with any Further Education and Training Colleges or Higher Education and Training institutions in providing learners with experiential or internship infrastructure?

Yes
No

SECTION 5. AFFIRMATIVE ACTION MEASURE

Affirmative action (AA) was introduced in South Africa after the demise of apartheid regime essentially to redress past injustices suffered by the previously disadvantaged people (i.e. Blacks, women and the disabled persons). "AA consists of temporary positive measures or interventions aimed at preferential treatment in appointments, promotions, training and development of designated groups in order to accelerate and advance them".

5.1. As a matter of organisational policy, do you give preference to

Yes
No

people from the previously disadvantaged group when recruiting?

5.2. Do you attract sufficiently qualified applicants from the previously disadvantaged group to fill management positions in your organisation?

Yes
No

5.3. Do you compromise qualification for suitably qualified candidates in order to meet requirements of the Employment Equity Act (55 of 1998) when recruiting?

Yes
No

5.4. Have you suffered any skill lose due to implementation of AA?

Yes	**No**

5.5. Do you consider AA as a desirable political intervention in the workplace?

Yes	No

5.6. In your own opinion, AA should be:

Retained
Suspended
Discontinued

SECTION 6. GENERAL

6.1. As an employer of labour, do you think the local institutions of learning (HET & FET) are producing enough graduates/diplomats with the appropriate skills to fill vacant positions in the economy?

Yes
No

6.2. From your experience as an employer of labour, do you consider the knowledge acquired by learners as sufficient to meet the workplace skills requirement?

yes
No
Unsure

6.3. If no, what, in your opinion could be responsible for this shortcoming?
(Please choose between any of the suggested options provided below)

➢ Poor quality of education acquired by fresh graduates	1
➢ Lack of in-depth practical training for undergraduates	2

6.4. Generally, do you think there is shortage of certain skills that are necessary for rapid economic growth in the country?

Yes
No
Not sure

6.5. If you answered yes in (6.4), what reason would you attribute to this shortage?

➢ Available graduates not having appropriate qualifications	1
➢ Inability of employers to import necessary skills from abroad	2
➢ Combination of above reasons	3

6.6. In your own opinion, do you consider AA as a contributing factor to the general Skills shortages in the country?

Yes
No
Not sure

6.7. Please indicate possible reason militating against skills development in South Africa

➢ Insufficient financial assistance (especially to black students)	1
➢ Lack of career counselling for secondary school learners	2

THANK YOU FOR YOUR PARTICIPATION

APPENDIX B – LETTER OF REQUEST FOR NUMBER OF GRADUATES PER FIELDS OF STUDY

University of Fort Hare

FACULTY OF MANAGEMENT AND COMMERCE

Alice (main) Campus:
Private Bag X1314, King William's Town Rd, Alice, 5700, RSA
Tel: +27 (0) 40 602 2533 • Fax: +27 (0) 40 653 1007

University of Fort Hare
Together in Excellence

21.11.09

TO WHOM IT MAY CONCERN

LETTER OF INTRODUCTION: MICHAEL O. SAMUEL- STUDENT NUMBER 200702116: PHD STUDENT IN DEVELOPMENT STUDIES.

The above named is a Doctoral student in the Department of Development Studies, Faculty of Management and Commerce at the University of Fort Hare. He is presently doing his field-work investigating..." perceived misalignment in skills produced by higher education institutions and those required for sustainable economic growth in South Africa" for his research thesis. He will therefore require your assistance in supplying useful statistical information that will help him in his research. Specifically, he will require information regarding the number of students who graduated in all the faculties, their discipline and the degree awarded from 2003 to 2008. The information required is strictly for the purpose of the research and will not be used for any other purpose than that. We shall appreciate your understanding and anticipated cooperation in this regard.

Do not hesitate to contact me on this phone number -0795165999-should you require further clarification on this subject, please.

Best regards,

Prof. D. R. Thakhathi (Supervisor)

Executive Dean

Faculty of Management and Commerce

University of Fort Hare

Alice Campus.

Bhisho Campus: P.O. Box 1153, KWT 5600, Independence Ave, Bhisho, 5600, RSA
Tel: +27 (0) 40 639-2445 • Fax: +27 (0) 40 639-2447

East London Campus: P.O. Box 7426, 50 Church Street, East London, 5201, RSA
Tel: +27 (0) 43 704-7000 • Fax: +27 (0) 43 704-7095
V/C Dial Up: +27 (0) 43 704-7143/7144

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APPENDIX C - DESCRIPTIVE STATISTICS

ONE WAY FREQUENCIES

sector	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	53	33.13	53	33.13
2	6	3.75	59	36.88
3	101	63.13	160	100

busness	Frequency	Percent	Cum Frequency	Cum Percentage
1	9	5.63	9	5.63
2	41	25.63	50	31.25
3	8	5	58	36.25
4	20	12.5	78	48.75
6	20	12.5	98	61.25
7	6	3.75	104	65
9	16	10	120	75
10	29	18.13	149	93.13
11	11	6.88	160	100

employees	Frequency	Percent	Cumulative Frequency	Cumulative Percentage
2	8	5	8	5
3	37	23.13	45	28.13
4	22	13.75	67	41.88
5	73	45.63	140	87.5
6	20	12.5	160	100

trngfreqnc	Frequency	Percent	Cumulative Frequency	Cumulative Percent
3	12	7.5	12	7.5
4	107	66.88	119	74.38
5	41	25.63	160	100

trngfigure	Frequency	Percent	Cumulative Frequency	Cumulative Percent
3	28	17.5	28	17.5
4	29	18.13	57	35.63
5	103	64.38	160	100

statustrng	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	18	11.25	18	11.25
2	57	35.63	75	46.88
3	6	3.75	81	50.63
4	79	49.38	160	100

exttrng	Frequency	Percent	Cumulative	Cumulative

			Frequency	Percent
3	27	16.88	27	16.88
4	36	22.5	63	39.38
5	97	60.63	160	100

inhousetrng	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	84	52.5	84	52.5
3	47	29.38	131	81.88
4	5	3.13	136	85
5	24	15	160	100

mentor	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	96	60	96	60
2	58	36.25	154	96.25
3	6	3.75	160	100

ondjob	Frequency	Percent	Cumulative Frequency	Cumulative Percent
3	47	29.38	47	29.38
4	7	4.38	54	33.75
5	106	66.25	160	100

internship	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	66	41.25	66	41.25
3	38	23.75	104	65
4	40	25	144	90
5	16	10	160	100

skillprgrm	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	29	18.13	29	18.13
3	97	60.63	126	78.75
4	23	14.38	149	93.13
5	11	6.88	160	100

nqfrecg	Frequency	Percent	Cumulative Frequency	Cumulative Percentage
2	78	48.75	78	48.75
3	44	27.5	122	76.25
4	31	19.38	153	95.63
5	7	4.38	160	100

setatrng	Frequency	Percent	Cumulative Frequency	Cumulative Percentage
2	52	32.5	52	32.5
3	25	15.63	77	48.13
4	59	36.88	136	85
5	24	15	160	100

jobrelated	Frequency	Percent	Cumulative Frequency	Cumulative Percentage
2	8	5	8	5
3	57	35.63	65	40.63
4	84	52.5	149	93.13
5	11	6.88	160	100

qualityass	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	29	18.13	29	18.13
2	19	11.88	48	30
3	63	39.38	111	69.38
4	49	30.63	160	100

internetserv	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	11	6.88	11	6.88
2	36	22.5	47	29.38
3	71	44.38	118	73.75
4	29	18.13	147	91.88
5	13	8.13	160	100

paygrant	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	29	18.13	29	18.13
2	72	45	101	63.13
3	59	36.88	160	100

infoontrng	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	15	9.38	15	9.38
2	21	13.13	36	22.5
3	67	41.88	103	64.38
4	57	35.63	160	100

infoongrant	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	13	8.13	13	8.13
2	53	33.13	66	41.25
3	69	43.13	135	84.38
4	25	15.63	160	100

secskilplan	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	23	14.38	23	14.38
3	31	19.38	54	33.75
4	92	57.5	146	91.25
5	14	8.75	160	100

freetrng	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	43	26.88	43	26.88

2	36	22.5	79	49.38
3	70	43.75	149	93.13
4	11	6.88	160	100

ansquery	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	81	50.63	81	50.63
2	15	9.38	96	60
3	64	40	160	100

setaeffect	Frequency	Percent	Cumulative	Cumulative
1	1	0.63	1	0.63
2	40	25	41	25.63
3	82	51.25	123	76.88
4	37	23.13	160	100

futureseta	Frequency	Percent	Cumulative	Cumulative
1	23	14.38	23	14.38
2	18	11.25	41	25.63
3	7	4.38	48	30
4	83	51.88	131	81.88
5	29	18.13	160	100

improvskill	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	160	100	160	100

perfmpolicy	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	110	68.75	110	68.75
2	50	31.25	160	100

tdpolicy	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	160	100	160	100

bursarypol	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	110	68.75	110	68.75
2	50	31.25	160	100

trngbudget	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	160	100	160	100

trngrecord	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	160	100	160	100

equityplan	Frequency	Percent	Cumulative	Cumulative

			Frequency	Percent
1	160	100	160	100

WSP	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	160	100	160	100

trngvenue	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	93	58.13	93	58.13
2	67	41.88	160	100

methodfet	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	7	4.38	7	4.38
2	78	48.75	85	53.13
3	75	46.88	160	100

stdentbursa	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	50	31.25	50	31.25
2	110	68.75	160	100

inhousetrn	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	36	22.5	36	22.5
2	124	77.5	160	100

sponsoremp	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	160	100	160	100

paysubscrp	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	42	26.25	42	26.25
2	118	73.75	160	100

attachment	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	77	48.13	77	48.13
2	83	51.88	160	100

recrutpolicy	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	131	81.88	131	81.88
2	29	18.13	160	100

responsadvt	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	107	66.88	107	66.88
2	53	33.13	160	100

meetEEact	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	63	39.38	63	39.38
2	97	60.63	160	100

skillossAA	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	77	48.13	77	48.13
2	83	51.88	160	100

AAnecesary	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	112	70	112	70
2	48	30	160	100

futureofAA	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	107	66.88	107	66.88
2	11	6.88	118	73.75
3	42	26.25	160	100

enoughgrad	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	160	100	160	100

expgraduat	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	15	9.38	15	9.38
2	122	76.25	137	85.63
3	23	14.38	160	100

reason	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	63	43.75	63	43.75
2	81	56.25	144	100

Frequency Missing = 16

skillshortag	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	139	89.68	139	89.68
2	12	7.74	151	97.42
3	4	2.58	155	100

Frequency Missing = 5

whyshort	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	131	84.52	131	84.52
3	24	15.48	155	100

Frequency Missing = 5

AAcobtribut	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	35	22.58	35	22.58
2	111	71.61	146	94.19
3	9	5.81	155	100

Frequency Missing = 5

impedeskill	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	96	61.94	96	61.94
2	59	38.06	155	100

Frequency Missing = 5

APPENDIX D - CROSS TABULATION OF VARIABLES BY SECTOR

Frequency Percent Row Pct Col Pct	Table of sector by statustrng				
		statustrng			
sector	1	2	3	4	Total
1	12	41	6	0	59
	7.5	25.63	3.75	0	36.88
	20.34	69.49	10.2	0	
	66.67	71.93	100	0	
2	6	16	0	79	101
	3.75	10	0	49.4	63.13
	5.94	15.84	0	78.2	
	33.33	28.07	0	100	
Total	18	57	6	79	160
	11.25	35.63	3.75	49.4	100

Statistics for Table of sector by statustrng

Statistic	DF	Value	Prob
Chi-Square	3	93.374	<.0001
Likelihood Ratio Chi-Square	3	120.07	<.0001
Mantel-Haenszel Chi-Square	1	73.925	<.0001
Phi Coefficient		0.7639	
Contingency Coefficient		0.6071	
Cramer's V		0.7639	

Frequency Percent Row Pct Col Pct	Table of sector by exttrng				
		exttrng			Total
	sector	3	4	5	
	1	23 14.38 38.98 85.19	22 13.75 37.29 61.11	148.7523 23.7144.4	59 36.9
	2	4 2.5 3.96 14.81	14 8.75 13.86 38.89	83 51.98 2.285.6	101 63.1
	Total	27 16.88	36 22.5	97 60.6	160 100

Statistics for Table of sector by exttrng

Statistic	DF	Value	Prob
Chi-Square	2	57.143	<.0004
Likelihood Ratio Chi-Square	2	59.813	<.0004
Mantel-Haenszel Chi-Square	1	55.409	<.0004
Phi Coefficient		0.5976	
Contingency Coefficient		0.513	
Cramer's V		0.5976	

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by inhousetrng				
		inhousetrng			
sector	2	3	4	5	Total
1	35	0	0	24	59
	21.88	0	0	15	36.88
	59.32	0	0	40.7	
	41.67	0	0	100	
2	49	47	5	0	101
	30.63	29.38	3.13	0	63.13
	48.51	46.53	4.95	0	
	58.33	100	100	0	
Total	84	47	5	24	160
	52.5	29.38	3.13	15	100

Statistics for Table of sector by inhousetrng

Statistic	DF	Value	Prob
Chi-Square	3	72.29	<.0001
Likelihood Ratio Chi-Square	3	96.547	<.0001
Mantel-Haenszel Chi-Square	1	14.236	2E-04
Phi Coefficient		0.6722	
Contingency Coefficient		0.5579	
Cramer's V		0.6722	

WARNING: 25% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by mentor			
		mentor		Total
sector	1	2	3	
1	13	40	6	59
	8.13	25	3.75	36.9
	22.03	67.8	10.2	
	13.54	68.97	100	
2	83	18	0	101
	51.88	11.25	0	63.1
	82.18	17.82	0	
	86.46	31.03	0	
Total	96	58	6	160
	60	36.25	3.75	100

Statistics for Table of sector by mentor

Statistic	DF	Value	Prob
Chi-Square	2	58.385	<.0003
Likelihood Ratio Chi-Square	2	62.666	<.0003
Mantel-Haenszel Chi-Square	1	56.988	<.0003
Phi Coefficient		0.6041	
Contingency Coefficient		0.5171	
Cramer's V		0.6041	

WARNING: 33% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by ondjob			
	ondjob			Total
sector	3	4	5	
1	0	0	59	59
	0	0	36.9	36.9
	0	0	100	
	0	0	55.7	
2	47	7	47	101
	29.38	4.38	29.4	63.1
	46.53	6.93	46.5	
	100	100	44.3	
Total	47	7	106	160
	29.38	4.38	66.3	100

Statistics for Table of sector by ondjob

Statistic	DF	Value	Prob
Chi-Square	2	47.614	<.0003
Likelihood Ratio Chi-Square	2	65.066	<.0003
Mantel-Haenszel Chi-Square	1	45.12	<.0003
Phi Coefficient		0.5455	
Contingency Coefficient		0.4789	
Cramer's V		0.5455	

WARNING: 33% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by internship				
		internship			
	sector	2	3	4	5	Total
	1	5	21	33	0	59
		3.13	13.13	20.6	0	36.88
		8.47	35.59	55.9	0	
		7.58	55.26	82.5	0	
	2	61	17	7	16	101
		38.13	10.63	4.38	10	63.13
		60.4	16.83	6.93	15.8	
		92.42	44.74	17.5	100	
	Total	66	38	40	16	160
		41.25	23.75	25	10	100

Statistics for Table of sector by internship

Statistic	DF	Value	Prob
Chi-Square	3	74.978	<.0005
Likelihood Ratio Chi-Square	3	85.883	<.0005
Mantel-Haenszel Chi-Square	1	16.722	<.0005
Phi Coefficient		0.6846	
Contingency Coefficient		0.5649	
Cramer's V		0.6846	

Frequency Percent Row Pct Col Pct	Table of sector by skillprgrm				
		skillprgrm			
	sector	2	3	4	5	Total
	1	6	34	19	0	59
		3.75	21.25	11.9	0	36.88
		10.17	57.63	32.2	0	
		20.69	35.05	82.6	0	
	2	23	63	4	11	101
		14.38	39.38	2.5	6.88	63.13
		22.77	62.38	3.96	10.9	
		79.31	64.95	17.4	100	
	Total	29	97	23	11	160
		18.13	60.63	14.4	6.88	100

Statistics for Table of sector by skillprgrm

Statistic	DF	Value	Prob
Chi-Square	3	30.495	<.0002
Likelihood Ratio Chi-Square	3	34.162	<.0002
Mantel-Haenszel Chi-Square	1	2.2798	0.131
Phi Coefficient		0.4366	
Contingency Coefficient		0.4001	
Cramer's V		0.4366	

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by nqfrecg				
	nqfrecg				
sector	2	3	4	5	Total
1	32	16	11	0	59
	20	10	6.88	0	36.88
	54.24	27.12	18.6	0	
	41.03	36.36	35.5	0	
2	46	28	20	7	101
	28.75	17.5	12.5	4.38	63.13
	45.54	27.72	19.8	6.93	
	58.97	63.64	64.5	100	
Total	78	44	31	7	160
	48.75	27.5	19.4	4.38	100

Statistics for Table of sector by nqfrecg

Statistic	DF	Value	Prob
Chi-Square	3	4.6971	0.195
Likelihood Ratio Chi-Square	3	7.0408	0.071
Mantel-Haenszel Chi-Square	1	2.5574	0.11
Phi Coefficient		0.1713	
Contingency		0.1689	

Coefficient			
Cramer's V		0.1713	

WARNING: 25% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by setatrng				
		setatrng			
sector	2	3	4	5	Total
1	46	8	5	0	59
	28.75	5	3.13	0	36.88
	77.97	13.56	8.47	0	
	88.46	32	8.47	0	
2	6	17	54	24	101
	3.75	10.63	33.8	15	63.13
	5.94	16.83	53.5	23.8	
	11.54	68	91.5	100	
Total	52	25	59	24	160
	32.5	15.63	36.9	15	100

Statistics for Table of sector by setatrng

Statistic	DF	Value	Prob
Chi-Square	3	94.168	<.0001
Likelihood Ratio Chi-Square	3	107.87	<.0001
Mantel-Haenszel Chi-Square	1	85.236	<.0001
Phi Coefficient		0.7672	
Contingency Coefficient		0.6087	

Cramer's V		0.7672	

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by jobrelated				
		jobrelated			
sector	2	3	4	5	Total
1	8	28	23	0	59
	5	17.5	14.4	0	36.88
	13.56	47.46	39	0	
	100	49.12	27.4	0	
2	0	29	61	11	101
	0	18.13	38.1	6.88	63.13
	0	28.71	60.4	10.9	
	0	50.88	72.6	100	
Total	8	57	84	11	160
	5	35.63	52.5	6.88	100

Statistics for Table of sector by jobrelated

Statistic	DF	Value	Prob
Chi-Square	3	27.047	<.0001
Likelihood Ratio Chi-Square	3	33.033	<.0001
Mantel-Haenszel Chi-Square	1	25.106	<.0001
Phi Coefficient		0.4111	
Contingency Coefficient		0.3803	
Cramer's V		0.4111	

WARNING: 25% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by qualityass				
		qualityass			
sector	1	2	3	4	Total
1	29	19	11	0	59
	18.13	11.88	6.88	0	36.88
	49.15	32.2	18.6	0	
	100	100	17.5	0	
2	0	0	52	49	101
	0	0	32.5	30.6	63.13
	0	0	51.5	48.5	
	0	0	82.5	100	
Total	29	19	63	49	160
	18.13	11.88	39.4	30.6	100

Statistics for Table of sector by qualityass

Statistic	DF	Value	Prob
Chi-Square	3	120.99	<.0001
Likelihood Ratio Chi-Square	3	152.3	<.0001
Mantel-Haenszel Chi-Square	1	105.97	<.0001
Phi Coefficient		0.8696	
Contingency Coefficient		0.6562	
Cramer's V		0.8696	

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by internetserv					
		internetserv				Total
sector	1	2	3	4	5	
1	11	0	11	29	8	59
	6.88	0	6.88	18.1	5	36.88
	18.64	0	18.6	49.2	13.56	
	100	0	15.5	100	61.54	
2	0	36	60	0	5	101
	0	22.5	37.5	0	3.13	63.13
	0	35.64	59.4	0	4.95	
	0	100	84.5	0	38.46	

Total	11	36	71	29	13	160
	6.88	22.5	44.4	18.1	8.13	100

Statistics for Table of sector by internetserv

Statistic	DF	Value	Prob
Chi-Square	4	106.85	<.0001
Likelihood Ratio Chi-Square	4	132.1	<.0001
Mantel-Haenszel Chi-Square	1	15.415	<.0001
Phi Coefficient		0.8172	
Contingency Coefficient		0.6328	
Cramer's V		0.8172	

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by paygrant			
	paygrant			Total
sector	1	2	3	
1	29	30	0	59
	18.13	18.75	0	36.9
	49.15	50.85	0	
	100	41.67	0	
2	0	42	59	101
	0	26.25	36.9	63.1
	0	41.58	58.4	
	0	58.33	100	
Total	29	72	59	160
	18.13	45	36.9	100

Statistics for Table of sector by paygrant

Statistic	DF	Value	Prob
Chi-Square	2	84.82	<.0001
Likelihood Ratio Chi-Square	2	112.85	<.0001
Mantel-Haenszel Chi-Square	1	83.181	<.0001

Phi Coefficient		0.7281	
Contingency Coefficient		0.5886	
Cramer's V		0.7281	

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by infoontrng				
		infoontrng			Total
sector	1	2	3	4	
1	15 9.38 25.42 100	21 13.13 35.59 100	23 14.4 39 34.3	0 0 0 0	59 36.88
2	0 0 0 0	0 0 0 0	44 27.5 43.6 65.7	57 35.6 56.4 100	101 63.13
Total	15 9.38	21 13.13	67 41.9	57 35.6	160 100

Statistics for Table of sector by infoontrng

Statistic	DF	Value	Prob
Chi-Square	3	95.111	<.0001
Likelihood Ratio Chi-Square	3	124.46	<.0001
Mantel-Haenszel Chi-Square	1	87.741	<.0001
Phi Coefficient		0.771	
Contingency Coefficient		0.6106	
Cramer's V		0.771	

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by infoongrant				
		infoongrant			Total
sector	1	2	3	4	
1	13 8.13 22.03 100	35 21.88 59.32 66.04	7 4.38 11.9 10.1	4 2.5 6.78 16	59 36.88
2	0 0 0 0	18 11.25 17.82 33.96	62 38.8 61.4 89.9	21 13.1 20.8 84	101 63.13
Total	13 8.13	53 33.13	69 43.1	25 15.6	160 100

Statistic	DF	Value	Prob
Chi-Square	3	67.478	<.0001
Likelihood Ratio Chi-Square	3	75.446	<.0001
Mantel-Haenszel Chi-Square	1	52.536	<.0001
Phi Coefficient		0.6494	
Contingency Coefficient		0.5446	
Cramer's V		0.6494	

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by secskilplan				
		secskilplan			Total
sector	2	3	4	5	
1	23 14.38 38.98 100	20 12.5 33.9 64.52	16 10 27.1 17.4	0 0 0 0	59 36.88
2	0 0 0 0	11 6.88 10.89 35.48	76 47.5 75.3 82.6	14 8.75 13.9 100	101 63.13
Total	23 14.38	31 19.38	92 57.5	14 8.75	160 100

Statistics for Table of sector by secskilplan

Statistic	DF	Value	Prob
Chi-Square	3	72.73	<.0001
Likelihood Ratio Chi-Square	3	85.313	<.0001
Mantel-Haenszel Chi-Square	1	69.603	<.0001
Phi Coefficient		0.6742	
Contingency Coefficient		0.559	
Cramer's V		0.6742	

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by freetrng				
		freetrng			Total
sector	1	2	3	4	
1	43	5	0	11	59
	26.88	3.13	0	6.88	36.88
	72.88	8.47	0	18.6	
	100	13.89	0	100	
2	0	31	70	0	101
	0	19.38	43.8	0	63.13
	0	30.69	69.3	0	
	0	86.11	100	0	
Total	43	36	70	11	160
	26.88	22.5	43.8	6.88	100

Statistics for Table of sector by freetrng

Statistic	DF	Value	Prob
Chi-Square	3	141.5	<.0001
Likelihood Ratio Chi-Square	3	181.64	<.0001
Mantel-Haenszel Chi-Square	1	45.892	<.0001

Phi Coefficient		0.9404	
Contingency Coefficient		0.6851	
Cramer's V		0.9404	

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by ansquery			
		ansquery		Total
sector	1	2	3	
1	42	6	11	59
	26.25	3.75	6.88	36.9
	71.19	10.17	18.6	
	51.85	40	17.2	
2	39	9	53	101
	24.38	5.63	33.1	63.1
	38.61	8.91	52.5	
	48.15	60	82.8	
Total	81	15	64	160
	50.63	9.38	40	100

Statistics for Table of sector by ansquery

Statistic	DF	Value	Prob
Chi-Square	2	18.525	<.0001
Likelihood Ratio Chi-Square	2	19.55	<.0001
Mantel-Haenszel Chi-Square	1	18.235	<.0001
Phi Coefficient		0.3403	
Contingency Coefficient		0.3221	
Cramer's V		0.3403	

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by setaeffect				
		setaeffect			Total
sector	1	2	3	4	
1	1	23	35	0	59
	0.63	14.38	21.9	0	36.88
	1.69	38.98	59.3	0	

	100	57.5	42.7	0	
2	0	17	47	37	101
	0	10.63	29.4	23.1	63.13
	0	16.83	46.5	36.6	
	0	42.5	57.3	100	
Total	1	40	82	37	160
	0.63	25	51.3	23.1	100

Statistics for Table of sector by setaeffect

Statistic	DF	Value	Prob
Chi-Square	3	31.824	<.0001
Likelihood Ratio Chi-Square	3	44.19	<.0001
Mantel-Haenszel Chi-Square	1	28.316	<.0001
Phi Coefficient		0.446	
Contingency Coefficient		0.4073	
Cramer's V		0.446	

WARNING: 25% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by futureseta					
	futureseta					Total
sector	1	2	3	4	5	
1	23	18	7	11	0	59
	14.38	11.25	4.38	6.88	0	36.88
	38.98	30.51	11.9	18.6	0	
	100	100	100	13.3	0	
2	0	0	0	72	29	101
	0	0	0	45	18.13	63.13
	0	0	0	71.3	28.71	
	0	0	0	86.8	100	

Total	23 14.38	18 11.25	7 4.38	83 51.9	29 18.13	160 100

Statistics for Table of sector by futureseta

Statistic	DF	Value	Prob
Chi-Square	4	119.01	<.0001
Likelihood Ratio Chi-Square	4	145.72	<.0001
Mantel-Haenszel Chi-Square	1	104	<.0001
Phi Coefficient		0.8624	
Contingency Coefficient		0.6531	
Cramer's V		0.8624	

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by improvskill		
	improvskill		
sector	1	Total	
1	59 36.88 100 36.88	59 36.88	
2	101 63.13 100 63.13	101 63.13	
Total	160 100	160 100	

Frequency Percent Row Pct Col Pct	Table of sector by perfmpolicy		
	perfmpolicy		Total
sector	1	2	
1	13 8.13 22.03 11.82	46 28.75 77.97 92	59 36.9
2	97 60.63	4 2.5	101 63.1

	96.04 88.18	3.96 8	
Total	110 68.75	50 31.25	160 100

Statistics for Table of sector by perfmpolicy

Statistic	DF	Value	Prob
Chi-Square	1	94.943	<.0001
Likelihood Ratio Chi-Square	1	102.85	<.0001
Continuity Adj. Chi-Square	1	91.529	<.0001
Mantel-Haenszel Chi-Square	1	94.349	<.0001
Phi Coefficient		-0.77	
Contingency Coefficient		0.6103	
Cramer's V		-0.77	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	13
Left-sided Pr <= F	1.71E-23
Right-sided Pr >= F	1
Table Probability (P)	1.69E-23
Two-sided Pr <= P	1.71E-23

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by tdpolicy		
	sector	tdpolicy 1	Total
	1	59 36.88 100	59 36.88

	36.88	
2	101 63.13 100 63.13	101 63.13
Total	160 100	160 100

Frequency **Percent** **Row Pct** **Col Pct**	**Table of sector by bursarypol**		
	bursarypol		**Total**
sector	**1**	**2**	
1	47 29.38 79.66 42.73	12 7.5 20.34 24	59 36.9
2	63 39.38 62.38 57.27	38 23.75 37.62 76	101 63.1
Total	110 68.75	50 31.25	160 100

Statistics for Table of sector by bursarypol

Statistic	**DF**	**Value**	**Prob**
Chi-Square	1	5.1791	0.023
Likelihood Ratio Chi-Square	1	5.387	0.02
Continuity Adj. Chi-Square	1	4.4059	0.036
Mantel-Haenszel Chi-Square	1	5.1468	0.023
Phi Coefficient		0.1799	
Contingency Coefficient		0.1771	
Cramer's V		0.1799	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	47
Left-sided Pr <= F	0.9938
Right-sided Pr >=	0.0167

F	
Table Probability (P)	0.0104
Two-sided Pr <= P	0.0333

Sample Size = 160

Frequency / **Percent** / **Row Pct** / **Col Pct**	**Table of sector by trngbudget**		
	trngbudget		
sector	**1**	**Total**
1	59 36.88 100 36.88	59 36.88
2	101 63.13 100 63.13	101 63.13
Total	160 100	160 100

Frequency / **Percent** / **Row Pct** / **Col Pct**	**Table of sector by trngrecord**		
	trngrecord		
sector	**1**	**Total**
1	59 36.88 100 36.88	59 36.88
2	101 63.13 100 63.13	101 63.13
Total	160 100	160 100

Frequency / **Percent** / **Row Pct** / **Col Pct**	**Table of sector by equityplan**		
	equityplan		
sector	**1**	**Total**
1	59 36.88 100 36.88	59 36.88
2	101 63.13	101 63.13

	100 63.13	
Total	160 100	160 100

Frequency **Percent** **Row Pct** **Col Pct**	**Table of sector by WSP**	
	WSP	
sector	**1**	**Total**
1	59 36.88 100 36.88	59 36.88
2	101 63.13 100 63.13	101 63.13
Total	160 100	160 100

Frequency **Percent** **Row Pct** **Col Pct**	**Table of sector by trngvenue**		
	trngvenue		**Total**
sector	**1**	**2**	
1	23 14.38 38.98 24.73	36 22.5 61.02 53.73	59 36.9
2	70 43.75 69.31 75.27	31 19.38 30.69 46.27	101 63.1
Total	93 58.13	67 41.88	160 100

Statistics for Table of sector by trngvenue

Statistic	**DF**	**Value**	**Prob**
Chi-Square	1	14.07	2E-04
Likelihood Ratio Chi-Square	1	14.102	2E-04
Continuity Adj. Chi-Square	1	12.852	3E-04
Mantel-Haenszel Chi-Square	1	13.982	2E-04
Phi Coefficient		-0.297	

Contingency Coefficient		0.2843	
Cramer's V		-0.297	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	23
Left-sided Pr <= F	1.67E-04
Right-sided Pr >= F	1
Table Probability (P)	1.24E-04
Two-sided Pr <= P	2.41E-04

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by methodfet			
	methodfet			Total
sector	1	2	3	
1	7	10	42	59
	4.38	6.25	26.3	36.9
	11.86	16.95	71.2	
	100	12.82	56	
2	0	68	33	101
	0	42.5	20.6	63.1
	0	67.33	32.7	
	0	87.18	44	
Total	7	78	75	160
	4.38	48.75	46.9	100

Statistic	DF	Value	Prob
Chi-Square	2	43.157	<.0001
Likelihood Ratio Chi-Square	2	48.021	<.0001
Mantel-Haenszel Chi-Square	1	7.9197	0.005
Phi Coefficient		0.5194	
Contingen		0.4609	

cy Coefficient			
Cramer's V		0.5194	

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by stdentbursa		
	stdentbursa		Total
sector	1	2	
1	43	16	59
	26.88	10	36.9
	72.88	27.12	
	86	14.55	
2	7	94	101
	4.38	58.75	63.1
	6.93	93.07	
	14	85.45	
Total	50	110	160
	31.25	68.75	100

Statistics for Table of sector by stdentbursa

Statistic	DF	Value	Prob
Chi-Square	1	75.4	<.0001
Likelihood Ratio Chi-Square	1	78.912	<.0001
Continuity Adj. Chi-Square	1	72.361	<.0001
Mantel-Haenszel Chi-Square	1	74.928	<.0001
Phi Coefficient		0.6865	
Contingency Coefficient		0.566	
Cramer's V		0.6865	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	43
Left-sided Pr <= F	1
Right-sided Pr >= F	1.99E-18
Table Probability (P)	5.75E-17
Two-sided Pr <= P	1.99E-18

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by inhousetrn		
	inhousetrn		Total
sector	1	2	
1	20 12.5 33.9 55.56	39 24.38 66.1 31.45	59 36.9
2	16 10 15.84 44.44	85 53.13 84.16 68.55	101 63.1
Total	36 22.5	124 77.5	160 100

Statistics for Table of sector by inhousetrn

Statistic	DF	Value	Prob
Chi-Square	1	6.9638	0.008
Likelihood Ratio Chi-Square	1	6.7693	0.009
Continuity Adj. Chi-Square	1	5.9668	0.015
Mantel-	1	6.9203	0.009

Haenszel Chi-Square			
Phi Coefficient		0.2086	
Contingency Coefficient		0.2042	
Cramer's V		0.2086	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	20
Left-sided Pr <= F	0.9974
Right-sided Pr >= F	0.0079
Table Probability (P)	0.0053
Two-sided Pr <= P	0.0108

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by sponsoremp		
	sector	sponsoremp 1	Total
	1	59 36.88 100 36.88	59 36.88
	2	101 63.13 100 63.13	101 63.13
	Total	160 100	160 100

Frequency Percent Row Pct Col Pct	Table of sector by paysubscrp			
	sector	paysubscrp 1	 2	Total
	1	31 19.38	28 17.5	59 36.9

	52.54 73.81	47.46 23.73	
2	11 6.88 10.89 26.19	90 56.25 89.11 76.27	101 63.1
Total	42 26.25	118 73.75	160 100

Statistics for Table of sector by paysubscrp

Statistic	DF	Value	Prob
Chi-Square	1	33.375	<.0001
Likelihood Ratio Chi-Square	1	33.036	<.0001
Continuity Adj. Chi-Square	1	31.258	<.0001
Mantel-Haenszel Chi-Square	1	33.166	<.0001
Phi Coefficient		0.4567	
Contingency Coefficient		0.4154	
Cramer's V		0.4567	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	31
Left-sided Pr <= F	1
Right-sided Pr >= F	1.37E-08
Table Probability (P)	1.23E-08
Two-sided Pr <= P	1.66E-08

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by attachment		
	attachment		Total
sector	1	2	
1	32	27	59
	20	16.88	36.9
	54.24	45.76	
	41.56	32.53	
2	45	56	101
	28.13	35	63.1
	44.55	55.45	
	58.44	67.47	
Total	77	83	160
	48.13	51.88	100

Statistics for Table of sector by attachment

Statistic	DF	Value	Prob
Chi-Square	1	1.3987	0.237
Likelihood Ratio Chi-Square	1	1.3996	0.237
Continuity Adj. Chi-Square	1	1.0377	0.308
Mantel-Haenszel Chi-Square	1	1.39	0.238
Phi Coefficient		0.0935	
Contingency Coefficient		0.0931	
Cramer's V		0.0935	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	32
Left-sided Pr <= F	0.911
Right-sided Pr >= F	0.1542
Table Probability (P)	0.0652
Two-sided Pr <= P	0.2548

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by recrutpolicy		
	recrutpolicy		Total
sector	1	2	
1	30 18.75 50.85 22.9	29 18.13 49.15 100	59 36.9
2	101 63.13 100 77.1	0 0 0 0	101 63.1
Total	131 81.88	29 18.13	160 100

Statistics for Table of sector by recrutpolicy

Statistic	DF	Value	Prob
Chi-Square	1	60.634	<.0001
Likelihood Ratio Chi-Square	1	69.676	<.0001
Continuity Adj. Chi-Square	1	57.367	<.0001
Mantel-Haenszel Chi-Square	1	60.255	<.0001
Phi Coefficient		-0.616	
Contingen		0.5242	

cy Coefficient			
Cramer's V		-0.616	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	30
Left-sided Pr <= F	9.39E-16
Right-sided Pr >= F	1
Table Probability (P)	9.39E-16
Two-sided Pr <= P	9.39E-16

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by responsadvt		
	responsadvt		Total
sector	1	2	
1	22	37	59
	13.75	23.13	36.9
	37.29	62.71	
	20.56	69.81	
2	85	16	101
	53.13	10	63.1
	84.16	15.84	
	79.44	30.19	
Total	107	53	160
	66.88	33.13	100

Statistics for Table of sector by responsadvt

Statistic	DF	Value	Prob
Chi-Square	1	36.934	<.0001
Likelihood Ratio Chi-Square	1	37.003	<.0001
Continuity Adj. Chi-Square	1	34.849	<.0001
Mantel-Haenszel Chi-Square	1	36.703	<.0001
Phi Coefficient		-0.481	
Contingency Coefficient		0.4331	
Cramer's V		-0.481	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	22
Left-sided Pr <= F	1.78E-09
Right-sided Pr >= F	1
Table Probability (P)	1.59E-09
Two-sided Pr <= P	2.55E-09

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by meetEEact		
	meetEEact		Total
sector	1	2	
1	0	59	59
	0	36.88	36.9
	0	100	
	0	60.82	
2	63	38	101
	39.38	23.75	63.1
	62.38	37.62	
	100	39.18	
Total	63	97	160
	39.38	60.63	100

Statistics for Table of sector by meetEEact

Statistic	DF	Value	Prob
Chi-Square	1	60.704	<.0001
Likelihood Ratio Chi-Square	1	80.764	<.0001
Continuity Adj. Chi-Square	1	58.119	<.0001
Mantel-Haenszel Chi-Square	1	60.325	<.0001
Phi Coefficient		-0.616	
Contingency Coefficient		0.5245	
Cramer's V		-0.616	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	0
Left-sided Pr <= F	3.68E-18
Right-sided Pr >= F	1
Table Probability (P)	3.68E-18
Two-sided Pr <= P	5.02E-18

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by skillossAA		
	skillossAA		Total
sector	1	2	
1	33	26	59
	20.63	16.25	36.9
	55.93	44.07	
	42.86	31.33	
2	44	57	101
	27.5	35.63	63.1

	43.56 57.14	56.44 68.67	
Total	77 48.13	83 51.88	160 100

Statistics for Table of sector by skillossAA

Statistic	DF	Value	Prob
Chi-Square	1	2.282	0.131
Likelihood Ratio Chi-Square	1	2.2853	0.131
Continuity Adj. Chi-Square	1	1.8135	0.178
Mantel-Haenszel Chi-Square	1	2.2677	0.132
Phi Coefficient		0.1194	
Contingency Coefficient		0.1186	
Cramer's V		0.1194	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	33
Left-sided Pr <= F	0.9531
Right-sided Pr >= F	0.089
Table Probability (P)	0.0421
Two-sided Pr <= P	0.143

Sample Size = 160

Frequency Percent Row Pct	Table of sector by AAnecesary		
	AAnecesary		Total
sector	1	2	

Col Pct	**1**	11 6.88 18.64 9.82	48 30 81.36 100	59 36.9
	2	101 63.13 100 90.18	0 0 0 0	101 63.1
	Total	112 70	48 30	160 100

Statistics for Table of sector by AAnecesary

Statistic	DF	Value	Prob
Chi-Square	1	117.39	<.0001
Likelihood Ratio Chi-Square	1	138.72	<.0001
Continuity Adj. Chi-Square	1	113.54	<.0001
Mantel-Haenszel Chi-Square	1	116.65	<.0001
Phi Coefficient		-0.857	
Contingency Coefficient		0.6505	
Cramer's V		-0.857	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	11
Left-sided Pr <= F	1.46E-30
Right-sided Pr >= F	1
Table Probability (P)	1.46E-30
Two-sided Pr <= P	1.46E-30

Sample Size = 160

Frequency Percent Row Pct Col Pct	Table of sector by futureofAA			
		futureofAA		Total
sector	1	2	3	
1	10	7	42	59
	6.25	4.38	26.3	36.9
	16.95	11.86	71.2	
	9.35	63.64	100	
2	97	4	0	101
	60.63	2.5	0	63.1
	96.04	3.96	0	
	90.65	36.36	0	
Total	107	11	42	160
	66.88	6.88	26.3	100

Statistics for Table of sector by futureofAA

Statistic	DF	Value	Prob
Chi-Square	2	110.12	<.0001
Likelihood Ratio Chi-Square	2	129.79	<.0001
Mantel-Haenszel Chi-Square	1	109.09	<.0001
Phi Coefficient		0.8296	
Contingency Coefficient		0.6385	
Cramer's V		0.8296	

Frequency Percent Row Pct Col Pct	Table of sector by enoughgrad		
		enoughgrad	
sector	2	Total
1	59	59
	36.88	36.88

	100 36.88	
2	101 63.13 100 63.13	101 63.13
Total	160 100	160 100

Frequency **Percent** **Row Pct** **Col Pct**	**Table of sector by expgraduat**			
		expgraduat		**Total**
sector	**1**	**2**	**3**	
1	0 0 0 0	55 34.38 93.22 45.08	4 2.5 6.78 17.4	59 36.9
2	15 9.38 14.85 100	67 41.88 66.34 54.92	19 11.9 18.8 82.6	101 63.1
Total	15 9.38	122 76.25	23 14.4	160 100

Statistics for Table of sector by expgraduat

Statistic	**DF**	**Value**	**Prob**
Chi-Square	2	16.043	3E-04
Likelihood Ratio Chi-Square	2	21.453	<.0001
Mantel-Haenszel Chi-Square	1	0.1252	0.724
Phi Coefficient		0.3167	
Contingency Coefficient		0.3019	
Cramer's V		0.3167	

Sample Size = 160

Frequency **Percent** **Row Pct** **Col Pct**	**Table of sector by reason**		
	reason		**Total**
sector	**1**	**2**	
1	0 0 0	55 38.19 100	55 38.2

	0	67.9	
2	63	26	89
	43.75	18.06	61.8
	70.79	29.21	
	100	32.1	
Total	63	81	144
	43.75	56.25	100
Frequency Missing = 16			

Statistics for Table of sector by reason

Statistic	DF	Value	Prob
Chi-Square	1	69.214	<.0001
Likelihood Ratio Chi-Square	1	89.849	<.0001
Continuity Adj. Chi-Square	1	66.367	<.0001
Mantel-Haenszel Chi-Square	1	68.733	<.0001
Phi Coefficient		-0.693	
Contingency Coefficient		0.5698	
Cramer's V		-0.693	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	0
Left-sided Pr <= F	4.28E-20
Right-sided Pr >= F	1
Table Probability (P)	4.28E-20
Two-sided Pr <= P	5.31E-20

Effective Sample Size = 144
Frequency Missing = 16

Frequency Percent Row Pct Col Pct	Table of sector by skillshortag			
	sector	skillshortag		Total
		1	2	3	
	1	55	0	4	59
		35.48	0	2.58	38.1
		93.22	0	6.78	
		39.57	0	100	
	2	84	12	0	96
		54.19	7.74	0	61.9
		87.5	12.5	0	
		60.43	100	0	
	Total	139	12	4	155
		89.68	7.74	2.58	100
	Frequency Missing = 5				

Statistics for Table of sector by skillshortag

Statistic	DF	Value	Prob
Chi-Square	2	14.017	9E-04
Likelihood Ratio Chi-Square	2	19.358	<.0001
Mantel-Haenszel Chi-Square	1	0.0248	0.875
Phi Coefficient		0.3007	
Contingency Coefficient		0.288	
Cramer's V		0.3007	

WARNING: 50% of the cells have expected counts less than 5. Chi-Square may not be

a valid test.

Effective Sample Size = 155
Frequency Missing = 5

Frequency Percent Row Pct Col Pct	Table of sector by whyshort		
		whyshort	Total
sector	1	3	
1	40 25.81 67.8 30.53	19 12.26 32.2 79.17	59 38.1
2	91 58.71 94.79 69.47	5 3.23 5.21 20.83	96 61.9
Total	131 84.52	24 15.48	155 100
Frequency Missing = 5			

Statistics for Table of sector by whyshort

Statistic	DF	Value	Prob
Chi-Square	1	20.349	<.0001
Likelihood Ratio Chi-Square	1	20.179	<.0001
Continuity Adj. Chi-Square	1	18.338	<.0001
Mantel-Haenszel Chi-Square	1	20.218	<.0001
Phi Coefficient		-0.362	
Contingency Coefficient		0.3407	
Cramer's V		-0.362	

Fisher's Exact Test	
Cell (1,1)	40

Frequency (F)	
Left-sided Pr <= F	1.05E-05
Right-sided Pr >= F	1
Table Probability (P)	9.37E-06
Two-sided Pr <= P	1.33E-05

Effective Sample Size = 155
Frequency Missing = 5

Frequency Percent Row Pct Col Pct	Table of sector by AAcobtribut			
	AAcobtribut			Total
sector	1	2	3	
1	35	24	0	59
	22.58	15.48	0	38.1
	59.32	40.68	0	
	100	21.62	0	
2	0	87	9	96
	0	56.13	5.81	61.9
	0	90.63	9.38	
	0	78.38	100	
Total	35	111	9	155
	22.58	71.61	5.81	100
Frequency Missing = 5				

Statistics for Table of sector by AAcobtribut

Statistic	DF	Value	Prob
Chi-Square	2	75.21	<.0001
Likelihood Ratio Chi-Square	2	90.056	<.0001
Mantel-Haenszel Chi-Square	1	66.999	<.0001
Phi Coefficient		0.6966	
Contingency Coefficient		0.5716	
Cramer's V		0.6966	

Effective Sample Size = 155
Frequency Missing = 5

Frequency Percent Row Pct Col Pct	Table of sector by impedeskill		
	sector	impedeskill	Total
		1	2	
	1	16	43	59
		10.32	27.74	38.1
		27.12	72.88	
		16.67	72.88	
	2	80	16	96
		51.61	10.32	61.9
		83.33	16.67	
		83.33	27.12	
	Total	96	59	155
		61.94	38.06	100
	Frequency Missing = 5			

Statistics for Table of sector by impedeskill

Statistic	DF	Value	Prob
Chi-Square	1	48.981	<.0001
Likelihood Ratio Chi-Square	1	50.486	<.0001
Continuity Adj. Chi-Square	1	46.626	<.0001
Mantel-Haenszel Chi-Square	1	48.665	<.0001
Phi Coefficient		-0.562	
Contingency Coefficient		0.49	
Cramer's V		-0.562	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	16
Left-sided Pr <= F	2.25E-12
Right-sided Pr >= F	1
Table Probability (P)	2.09E-12
Two-sided Pr <= P	3.90E-12