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The Knowledge Economy: Assessment Of The Readiness Of South African Undergraduate Students For The New World Of Work

by

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A research project submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the requirements for the degree of Master of Business Administration

November 2006

ABSTRACT

Globalisation has produced the knowledge economy, which is characterised by a world of work that requires and is dependent on intellectual capital or knowledge workers. Knowledge workers differ from their predecessors who populated the world of work during the industrialisation era. Knowledge workers are highly educated, flexible, technology literate individuals who contribute to increased productivity through life-long learning and innovation, teamwork and the establishment of strong inter-personal networks.

South Africa's economy is increasingly becoming knowledge-oriented and therefore dependent on skilled labour and knowledge workers. However, a skills shortage is said to exist in many sectors, impeding stronger and more sustainable economic growth. Therefore, this research sought to determine whether the future knowledge economy labour market entrants, that is, South African undergraduates possess the characteristics required of knowledge workers, specifically with regard to soft skills.

The research was conducted with the aid of a survey administered to undergraduate students in the relevant faculties. The results derived from the research show that South African undergraduates possess many of the soft skills required of knowledge workers. However, they have some shortcomings that are related to past socialisation structures. These can, in some instances be overcome through adequate education systems, particularly at tertiary level. Nonetheless, the root of the problem still lies at the primary and secondary education levels, which is where the overhaul is required.

DECLARATION

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University.

Monica Ambrosi 14 November 2006

ACKNOWLEDGEMENTS

Sincere gratitude goes to the following people:

- Dr. Albert Wöcke, my research supervisor for his guidance and valuable feedback;
- Pat Nichols for her kind assistance in sourcing the relevant literature;
- Peter Perkins, Prof. Francis Antonie, and other staff and students of the universities surveyed for their assistance in the survey process;
- Emanuela Ambrosi and Danielle Anderson, my dedicated data capturers.

The greatest gratitude goes to my family, for their unwavering support and encouragement.

CONTENTS

CHAPTER 1

Introduction to research problem

In the sections that follow, the research problem is identified and explained with the aid of data and reference to theory as well as previous research.

1.1 Background

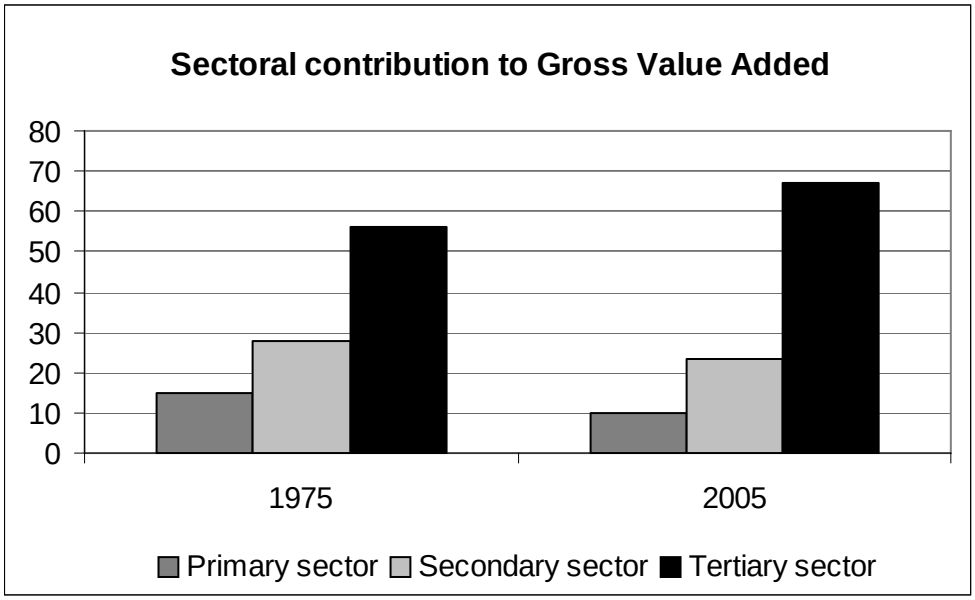
According to the World Bank's classification of countries by Gross National Income (GNI) per capita, South Africa is a high income country (it has a per capita income of $9386 or more) but is nonetheless a developing country (World Bank, 2005). However, the structure of the country's economy leans towards that typically characteristic of more developed countries (see Appendix A); in other words, the tertiary sector, which comprises service-related activities tends to dominate the economy.

Using Gross Value Added (GVA) data released by the South African Reserve Bank (SARB, 2006) confirms that the tertiary sector accounted for nearly 67% of South Africa's economy in 2005, the secondary sector 23% and the primary sector barely 10% (Figure 1.1). The secondary sector encompasses activities such as manufacturing production, construction and utilities; the tertiary sector includes wholesale and retail trade, catering and accommodation, transport, storage and communication, financial intermediation, insurance, real-estate and business services, and other services, including government, community,

personal and social services. Countries whose economies are tertiary sector oriented have the potential to grow faster and generate more jobs than those that remain dependent on agrarian or primary sector activities (Bhorat & Lundall, 2004).

Figure 1.1: Sectoral contribution to Gross Value Added

Source: South African Reserve Bank



The structure of the South African economy therefore suggests that more employment opportunities are likely to be created in the tertiary sector, the output of which is largely reliant on the intellectual input made by labour, or knowledge. It would thus appear that the labour required to populate the tertiary sector ought to be equipped with "brains" rather than "brawn" (Neef, 1998). Indeed, in the increasingly globalised world we live in, knowledge has become very important, with there probably being a shortage of adequately educated people in many countries, leaving critical positions vacant (Isaak, 2005).

This “brains” factor partly forms the basis of the body of theory that explains the concept of the knowledge economy. Drucker (2001) identifies the transition from the “blue collar” worker (industrial worker), which characterised the 1900s to the “technologist”, someone who works both with his hands and his theoretical knowledge, as a transition towards knowledge workers. The transition occurs in order to ensure that labour might better service the needs of the knowledge economy. According to Powell and Snellman (2004), although the concept of the knowledge economy is somewhat unclear, research on the topic focuses on three distinct lines of thought. The first of these maintains that the knowledge economy has its origins in the rise of science-based industries, encompassing also professional services and other information-related industries. The second maintains that there are specific new types of jobs and organisational forms that have developed in recent decades which can be classified as knowledge-intensive. The third and final line of thought on the topic maintains that the knowledge economy is essentially about continuous learning, improvement and innovation at a firm-level.

The common thread that runs through these lines of thought is the role of knowledge. As Powell and Snellman point out, the knowledge economy comprises knowledge-intensive activities. They further highlight that as a result, economies rely increasingly on intellectual or intangible capital, which manifests in a bigger share of a country’s Gross Domestic Product (GDP) being attributed to this intellectual capital. The International Labour Organisation (ILO) also highlights that human resources, whether directly or indirectly, are the main productive resource of any economy (Statistics South Africa, 2005).

On the basis of the country's economic structure, where the tertiary sector is dominant, one can deduct that South Africa is becoming increasingly reliant on intellectual capital and thus knowledge workers. Indeed, Statistics South Africa (hereafter, Stats SA) data for 2006 show that 55.6% of South Africa's labour force is employed in the tertiary sector, with 2.7 million people employed in trade activities, 2.2 million people in service-related activities and 1.2 million in the financial sector. In addition, services and financial sector activities comprise a relatively high percentage of "more skilled workers". In 2005, 51.1% of persons employed in the service sector were more skilled and 37.6% of persons employed in the financial sector were more skilled. Stats SA defines more skilled as comprising managers, professionals and semi-professionals including technicians. In comparison, agriculture, which employs 7.2% of the labour force, mining, which employs 3.7% of the labour force and manufacturing, which employs 14.4% of the labour force all have fewer percentages of more skilled workers. In agriculture, only 4.1% of labour is more skilled; in mining only 8.2% and in manufacturing 16.2%.

Even statistics for earlier years show that skilled and highly skilled workers have been able to increase their share in total employment far more than less skilled workers have. Edwards, (2001) shows that in the period 1984 to 1997, the share of high skilled employment increased across all economic sectors. Over this period, the share of skilled workers (to total employment) nearly doubled from 10% to 18%, while the shares of semi-skilled and unskilled workers remained constant. Bhorat, Lundall and Rospabé (2002) report that in the period 1995 to 1999, the largest increase in labour demand was evident in the

worker category “professionals” (70%) and “managers” (29%), in other words, in the skilled professions. Recent statistics from Stats SA show that skilled workers account for approximately 21% of the employed, up from 18% in 2001.

While the country’s economy is clearly leaning toward knowledge- and skills-intensive industries and activities, educational levels are low and hence unemployment high. South Africa has one of the highest unemployment rates in the world. According to Stats SA, the official unemployment rate for the country as of March 2006 was 25.6%. Unemployment trends in South Africa also reflect a high incidence of unemployment among the young (aged 15 – 24). This is confirmed by official statistics (Table 1.1).

Table 1.1: Unemployment by age (%)

Source: Stats SA, Labour Force Survey (March 2006)

Age (years)	March 2001	March 2006
15 – 24	49.5	50.3
25 – 34	31.2	29.5
35 – 44	17.6	17.2
45 – 54	12.7	11.8
55 – 65	7.3	5.9
Average	26.4	25.6

The unemployment rate of persons aged 15-24 is 50.3% and that of persons aged 25-34 is 29.5%. In contrast, for those nearing retirement (aged 55-65), the unemployment rate is barely 6%. It is also interesting to note that the difficulty of finding employment leads to a high incidence of discouraged work seekers in the youngest age groups (see Appendix B). Furthermore, a number of studies on the South African labour market, such as those of Arora and Ricci (2006)

and Bhorat and Lundall (2004) have found that many graduates and highly educated people struggle to find employment in South Africa. Khotseng, in Smith and Krüger (2005), expresses the opinion that many graduates are unemployed and that the numbers of such graduates are the highest they have ever been. The official data available from Stats SA record an unemployment rate of 3.8% for persons with degrees and higher education, combined.

According to the International Labour Organisation (ILO), the educational levels of a country are a reflection of the skills base of that country and determine the employability of workers (Stats SA, 2005). However, in 2005, South Africa only had 490 000 students attending University and 188 000 attending Technikon out of a population of 46.9 million (Stats SA, 2005). Although when combined these numbers represent a growth rate of 13.6% from University / Technikon attendance in 2002, they nonetheless show that there is a dearth of new labour supply with tertiary education. According to Kingdon and Knight (2005), South Africa's education levels are indeed low when compared to those of, for instance, the newly industrialised nations of the East (the East Asian Tiger economies). Kraak (2004) reports that the participation rate in higher education in the country is a mere 16% of the relevant age group, lower than that found in other developed and even East Asian countries. In addition, surveys conducted among South African firms have shown that they struggle to employ professional, managerial and technical workers. This is suggestive of a mismatch between the characteristics of educated labour entrants and the requirements of employers.

Indeed, South Africa is said to suffer from a skills mismatch, hence the high rate of unemployment (Arora & Ricci, 2006; Bhorat & Lundall, 2004; Poswell, 2002). The South African government, via a document issued by the Department of Labour (Ministerial Programme of Action for 2004 – 2009), recognises that South Africa's labour market is characterised by very distinct and atypical features. These features were borne out of the apartheid legislation which was in force prior to 1994 and include, amongst others, a skills shortage and mismatch. Not everybody agrees. Kraak (2004, p. 71) for instance, claims that South Africa is not undergoing a "skills crisis".

1.2 Research problem

South Africa has an inordinately high rate of unemployment - which also affects graduates. It is often stated that the country suffers from a skills shortage (Akoojee, Gewer & McGrath, 2005; Mlatsheni & Rospabé, 2002) and those skills that exist are not always aligned to employers' requirements (Kraak, 2004). Furthermore, University and Technikon attendance is low relative to the size of the population, thus contributing to the dearth of knowledge workers. Meanwhile, the economy's structure is clearly increasingly shifting towards knowledge intensive activities as development and globalisation intensify. According to Koen (2006, p. 2), not enough research has been focused on the appraisal of "knowledge yielded by graduate studies and (researchers) have not sufficiently explored links between educational study, the curriculum, higher education training, the world of work, graduate career trajectories and changing labour market characteristics." Another point he highlights regards the skills

shortage. If indeed a skills shortage exists, he wonders why there is not, as yet, an answer to a question posed by Muller as far back as 1984, namely, “(w)hy did increased higher education inputs and outputs, occasional caps on student growth to avoid or slow oversupply, and bleak economic conditions throughout the 1990s not combine to shrink vacancy rates in a large number of high-skill professions?” (p. 22).

This research seeks to shed some light on but one of these issues, namely the changing world of work and whether students enrolled at tertiary institutions and in the process of acquiring knowledge possess the characteristics required by this new world, defined as the knowledge economy.

Knowledge workers are increasingly being employed across most sectors of the economy, although they appear to dominate predominantly in the services sector. In turn, a commercial degree is applicable to employment across virtually all sectors of the economy. Hence, the question arises whether future entrants into the South African labour market which is knowledge-based, currently enrolled for undergraduate studies in certain faculties, but especially commerce, at South African universities possess the requisite characteristics required by the economy, enabling them to find suitable employment. In other words, an answer is required to whether and, if so, to what extent the graduates being produced by South African universities are predisposed to fitting into the new world of work generated by the knowledge economy, once they have obtained the minimum requirement for knowledge workers – a relevant tertiary qualification.

In this regard, interest lies not at all in the curricula and teaching methods such students are exposed to but in whether the socialisation they undergo and the higher knowledge they acquire during such studies instils in them the character traits and work preferences analogous to knowledge workers. If not, why not? Alternatively, if the tertiary education process yields mixed results across race, university attended and year of enrolment with regard to knowledge worker traits, why is this so? The only studies conducted to date in this field have investigated the changing nature of the psychological contract between employees and employers, which has more to do with the increased liberalisation of the labour market. Other studies have investigated graduates' expectations relating to the work environment (Smith & Krüger, 2005). What has not been covered, however, is whether South African graduates possess the necessary soft skills that might make them better suited to filling the skilled employment opportunities available in the economy.

CHAPTER 2

Literature Review

Chapter 2 presents the literature relevant to the research undertaken. The literature provides both a backdrop to the research problem as well as the context within which the research questions were formulated.

2.1 Introduction

It is said and accepted that we live in a knowledge economy (Powell & Snellman, 2004; Brown & Lauder 2006; Neef, 1998) which is fundamentally different to the economy which prevailed approximately 30 years ago. However, the emergence of or transition into this economy can only be understood with reference to a myriad of developments, which together can possibly, albeit simplistically, best be referred to as the globalisation process.

This then, is where the tale begins, with an explanation of what globalisation has entailed and might continue to entail into the future. Globalisation provides at least a partial, if not a complete, explanation for why the world economy is as it is today. This discourse is covered in Section 2.2, which is followed by a more in-depth discussion of the advent of what we now refer to as the knowledge economy in Section 2.3. In Section 2.4 the information provided in the preceding sections is supplemented with the aid of a discussion regarding what the advent of globalisation and the knowledge economy has meant for the

labour market. This section covers, briefly, what impact the new operating environment has had on the supply of and demand for labour. More pertinently, however, it also elaborates on how the new operating environment has altered the world of work and the demands placed on organisations and employers and, most importantly on employees.

Section 2.5 adopts the relevant terminology to describe how the knowledge economy has spawned a new type of worker - the knowledge worker. The transition from the blue collar worker of earlier years to the modern-day knowledge worker is discussed in a little bit more detail. The section is followed by a brief discussion of generational transformation, which is a new attempt at explaining the difference found in workers of earlier years to those of the modern economy by way of generational classification.

In Section 2.7, the characteristics required of knowledge workers for them to succeed in the new world of work are examined more closely. The last two sections of the chapter investigate the relevance of the knowledge economy within the South African context and highlight the characteristics of education and skills development in the country and how they relate to the new world of work. In conclusion, a brief sketch is drawn to highlight the positioning of this research within the existing body of theory and research.

2.2 Globalisation: what it is and its role in shaping the world economy

Although views differ, globalisation is more than just the latest buzzword. In

many spheres it is a reality, yet it remains a difficult concept to define with precision. To some, globalisation is about rapid changes in various realms, be they social or economic (Isaak, 2005). More than mere change, globalisation is also accepted to represent the continuous eradication of boundaries of various forms beyond the mere geographical type. Ohmae (2005) espouses this concept of borderlessness and goes further by stating that globalisation is "invisible, cyberconnected, and measured in multiples" (p. 24). His reference to measurement highlights the role of money in globalisation. Indeed, for some, (Desai, 2001; Isaak, 2005; Sachs, 2005) globalisation can be associated with a growing divide between the rich and the poor. This encapsulates succinctly some of the more salient characteristics of globalisation, and sheds some light on why the world has become increasingly integrated, why some formerly national companies have become multinationals and why global economic growth has been enhanced during boom times (Isaak, 2005).

Bhorat and Lundall (2004), Isaak (2005), Micklethwait and Wooldridge (2000) and Ohmae (2005) also find an explanation for globalisation within the tenet of non-interference or *laissez-faire*. In this regard, it is understood to mean the eradication of protectionist policies by governments and a switch to the free movement of some sources of production such as capital and labour, to free trade and free markets in general. The famous classical economist, Adam Smith, first espoused the view that governments' role in the economies of countries ought to be limited and that, ultimately, the "invisible hand" of the free market system characterised by competition would guide economies toward efficiency (Bannock & Baxter, 1998). Ohmae (2005) maintains that this theory,

later elaborated by the likes of Milton Friedman and Friedrich Hayek remains valid. However, he believes that the economic theories available to date do not fully explain the process and concept of globalisation, just as the debate in economic theory on whether there should be more or less government involvement in the economy has failed to take into account the impact of the global economy on national economies.

Behind this enigma, and as a possible explanation for the failure of economic theories to explain certain economic developments, lies the rapid evolvement of information technology that has facilitated global communication and the movement of information. Thus, globalisation is more than borderlessness and deregulation, it is about communication and information technology, it is about increased mobility of not only capital and labour but also information, it is about more rapid reaction to developments across the world and, ultimately, it is about the increased pace of technological innovation and change (Desai, 2001).

Sachs (2005, p. 41) highlights the “cascade of technological change” that took place from 1750 with the advent of the Industrial Revolution in Britain and that resulted in income, in certain parts of the world, rising faster than in others thus producing the rich and poor divide analogous to globalisation. The Industrial Revolution was driven by the harnessing of sources of energy that facilitated industrial production (the invention of the steam engine). According to Sachs more inventions followed during the 19th century, such as that of the telegraph and rail and, by the end of the century, electrification, all of which enhanced the rapid development of the economies of certain parts of the world.

However, the outbreak of the first World War, in 1914, is said to have marked the end of the first wave of globalisation, with the second wave only starting in the early 1970s (Bhaduri, 2005; Sachs, 2005; Desai, 2001). In the interim period, deglobalisation and the rise of Keynesianism ensued (Desai, 2001), with the latter advocating the need for a welfare state (Bhaduri, 2005). This period was thus marked by trade wars and increased protectionism as well as the nationalisation of some industries in many countries. It was also marked by the spread of communism in certain regions and the cold war between America and the Soviet Union (Micklethwait & Wooldridge, 2000). However, with none of these factors succeeding in encouraging broad economic growth and employment and thus, by implication, leaving the rich and poor divide to widen, while simultaneously contributing towards higher inflation at a time when an oil price crisis (in 1973) was already putting upward pressure on prices, the long-held belief in policies inspired by Keynes' theories gave way to policies based on Monetarism. Monetarism in turn, shifted the focus towards the containment of inflation, with price stability being regarded as paramount up to about 1998 (Bhaduri, 2005).

It is clear from historical events that globalisation is not a new phenomenon. As much as history also shows that it is not irreversible, there is some agreement that the world is currently undergoing a renewed phase of globalisation which, according to some (Ohmae, 2005; Desai, 2001) has spawned from two key changes in recent decades, one of a technological nature, the other of a conceptual nature. On the conceptual front, the failure of Keynesianism and of

the Soviet Union in the late 1980s re-ignited the desire for economic and social freedom in the hope that a return to profitability could bridge the rich-poor divide. On the technological front, the cyberconnectivity created by the invention and spread of the Internet in the early 1990s stands out as a key technological advancement in recent history, responsible for the complete revolution of the world. Ohmae (2005) believes that the global economy would indeed not exist in its current form were it not for cybertechnology. He claims that, "(t)echnology was the final building brick to create today's global stage that represents a decisive break with the past" (p. 44). Others (Gray & Halligan, 2005; Desai, 2001) concur. According to Professor Johan Gray (Gray & Halligan), the present phase of globalisation can be thought of as a modern stage of global industrialisation which is being driven by the spread of new communication technologies. In turn, the spread of communication and technology is said to have altered the economic landscape.

2.3 The rise of the knowledge economy

The phrase, the knowledge economy, has a mix of connotations, some positive, some negative. Neef (1998) associates the phrase with the modern, interconnected economy, which is characterised by new technologies that permeate every aspect of life, at home and at work, in a positive manner. The knowledge economy is said to be, for some, synonymous with the process of globalisation (Cohen, 2006). The most recent phase of globalisation, in turn, is said to owe much to the spread of communication technology, as highlighted in the previous section. As a result, in recent decades, prosperous economies

have had, at the root of their prosperity, technologies and information, in turn based on knowledge (Powell & Snellman, 2004). These authors offer a more detailed definition of the knowledge economy, namely, "(t)he knowledge economy (is defined) as production and services based on knowledge-intensive activities that contribute to an accelerated pace of technological and scientific advance as well as equally rapid obsolescence" (p. 201).

In the abundant literature that exists on the topic, reference is often found to the evolution of the economy from Fordist to post-Fordist or post-capitalist, neo-liberal (Brown & Lauder, 2006; Isaak, 2005; Powell & Snellman, 2004; Felstead & Jewson, 1999; Drucker 1993, in Neef). The Fordist economy was the regulated, industrial economy distinguished by high wages for workers with low skills in mass production environments that characterised the Productivity Revolution. Today, however, globalisation has shifted mass production to low-wage, high productivity areas (typically, developing countries) so that developed countries demand higher skills from workers in return for high wages (Brown & Lauder). Powell and Snellman simplify the explanation of this transition by indicating that economies of mostly developed countries have shifted from being manufacturing-based to being service-driven. Such economies are also deregulated, and characterised by specialised functions and forms of work (Cohen, 2006). Ohmae (2005), too, concludes that the outcome of globalisation has been the transformation of economies from manufacturing-based to technologically-dependent. As a result, this transition has coincided with or been embodied in the shrinking of the importance of the traditional factors of production explained by economic theory, namely land, capital and labour, and

the increasing importance of intellectual capital or intellectual assets (Brown & Lauder; Powell & Snellman; Anell & Wilson, 2002; Drucker).

According to Drucker (1993, in Neef, p. 15), "(k)nowledge is now fast becoming the one factor of production, sidelining both capital and labour." He further explains that the world has moved through a number of revolutions over the past 250 years, each in some way inspired by knowledge, beginning with the Industrial Revolution circa 1750, subsequently the Productivity Revolution from 1880 to around 1945 and, more recently, the Management Revolution, which has brought about the modern "knowledge society" via the application of knowledge to knowledge.

The knowledge economy can therefore clearly be associated with the birth of new science- and technology-based industries (Powell & Snellman, 2004); in the modern economy, however, it can also be associated with the need to attract and keep human capital or knowledge workers (Anell & Wilson, 2002). In this regard, Anell and Wilson believe that the knowledge economy is about much more than the spread and use of information technology, it is about individuals and how they apply knowledge, which resonates with Drucker's teachings of applying knowledge to knowledge itself, thus leading to effective management. However, Brown and Lauder (2006) consider the global knowledge economy that prevails to be driven by a mix of technology and the collapse of international barriers, in turn facilitating a shift from low skills economies to high skills economies. There is, evidently, no single, all-encompassing definition for the knowledge economy. Indeed some, such as

McGregor, Tweed and Pech (2004) suggest that it is not possible to draw a clear line between the end of the “old economy” (industrial-based) and the beginning of the “new economy” (knowledge-based).

This discourse, nonetheless introduces the importance of education, as a mean, albeit not the only mean, of acquiring knowledge and skills. The role of education has grown in the recent phase of economic transformation (the Management Revolution), according to Drucker (1993, in Neef). He believes that the educated person is indeed a representative of the knowledge society that we live in (Drucker, 2001). The importance of education features in the writings of others, with reference to both globalisation and the knowledge economy. Isaak (2005) claims that education is akin to a driver’s license for somebody looking for work in the modern economy, and that it equips individuals with the necessary skills, such as innovation, to become productive workers. Powell and Snellman (2004) also make reference to knowledge as being a source of innovation, an observation which was first raised by Daniel Bell, in 1973. Brown and Lauder (2006), claim that Bell was indeed the first to predict the importance of knowledge work and therefore the likely increase in demand for educated workers. Neef (1998) believes that modern enterprises are dependent for their growth potential on innovation, which can only be found in knowledge; and knowledge work requires highly skilled employees.

Education, within the context of the knowledge economy, is, however, more than a tertiary qualification. Constant change and innovation leading to technological advancements mean that life-long learning is important. It is

indeed a feature of the modern society (Livingstone, 1999). Cohen (2006) states that education is key in instilling a sense of life-long learning in workers of all ages as well as the other key characteristics required by the post-Fordist society, namely self-invention and flexibility. In summary, then, the knowledge economy is predominantly service-driven, knowledge-based and technology-aided. It is not a constant state, as innovation and learning lead to continuous improvement and advancements. It requires workers equipped with self-drive and high skills levels and who are willing to evolve with the economy through flexibility and adaptability.

In closing, it would appear that there is some cause and effect relationship between knowledge and technology, although at times the debate presents a dilemma akin to that of the chicken and the egg with regards to the determination of which came first. Drucker (1993, in Neef) states that knowledge has been around for a long time and that it has driven a series of revolutions, the latest of which has been embodied in the rapid dissemination of technological know-how, producing the knowledge economy. At the same time, it has been argued that modern technological communication capabilities have facilitated the spread of knowledge across economies (Powell & Snellman, 2004; Ohmae, 2005; Isaak, 2005). Perhaps the relationship should best be understood as expressed by Ohmae, namely that the elements of what we understand to comprise the global economy and, by implication, the knowledge economy feed on each other. Further, whether there is a cause-effect relationship between the knowledge economy and technology is irrelevant, to some extent. What is relevant is that they both have a need for knowledge

workers.

2.4 The impact of globalisation and the knowledge economy on the labour market and the world of work

Globalisation has changed the nature and rate of employment of workers in many countries. According to Breu, Hemingway, Strathern and Bridger (2001), organisations are pressured by competition arising from globalisation, the pace of technological innovation and the spread of electronic business to react faster to the changing needs of the environment. However, these rapid changes, or globalisation, are said to lead to job losses in some sectors and to new job opportunities in other sectors (OECD, 2005). As Isaak (2005) points out, the productivity gains that arise from globalisation can lead to the concentration of jobs where the skills are found to be the greatest and cheapest. Thus failure to adapt to the changing needs of the economy results in unemployment of the "unskilled, the mis-educated" (Isaak, p. 11). Furthermore, this is increasingly becoming a problem not only for blue collar workers but also for white collar workers (explained in more detail in Section 2.5) and it is spreading to jobs in non-traded services (OECD). Consequently, the need for labour markets to respond more readily to these challenges and in such a way so as to minimise negative outcomes has grown.

The early realisation of this can be traced back two decades. A shift away from regulated labour markets took place during the 1980s, particularly in Europe and gradually led to the dismantling of labour laws deemed to be restricting

economic developments (Wilthagen, 2002). This approach of less restricted labour markets was inspired by the decline of Keynesianism and the rise of Monetarism. However, in some instances, this dismantling merely gave rise to new barriers and inefficiencies, according to Wilthagen. It follows that during the 1990s this approach was revised and a combination of flexibility and the retention of necessary levels of security was sought (Wilthagen). A labour market model that has gained in prominence in this regard is the flexicurity model. As Klammer (2005) points out, the concept of flexicurity developed in response to the new challenges posed by globalisation and from the realisation that the future of labour markets, and indeed of the modern world, would require an innovative blend of flexibility and security. Flexicurity essentially encapsulates the idea that flexibility and security in labour markets are not contradictory but mutually supportive (Bredgaard, Larsen & Madsen, 2005).

While much has been written on the meaning of the individual components of flexicurity within labour markets in a globalised world, with regard to flexibility, this has mostly been with reference to the growing popularity of non-permanent work and hence the shift away from permanent, life-time employment towards fixed-term contract work and part-time work. Flexibility, in this sense, therefore entails lower wages, weaker trade unions, lower employment benefits and employee protection laws (Amoore, 2003; Freeman, 2005). While these issues lead to interesting debates of their own in the literature, of concern within the realm of this research is the meaning of labour flexibility with regard to skills, behaviour and attitude as necessitated by the new world of work arising from a globalised world. Indeed, flexibility, whether in its application to markets,

organisations or individuals, refers, more broadly, to the ability to change quickly in response to changes, internal and external, in the environment and operating conditions (Ganßmann, 2000). Within the context of the knowledge economy, Payton (2000) stresses that restructuring of organisations, changing job requirements and changes in technology all lead to changes in labour demand and indeed increase the demand for upgraded skills.

According to Powell and Snellman (2004), new forms of work that are more flexible manifest in technological changes and are becoming increasingly prevalent. In turn, these new forms of work are requiring organisational structures and practices to change. Thus, the link between technological developments and incessant change in the world of work is clear. It also follows that the knowledge economy is characterised by incessant change in the world of work.

Flexibility is not only confined to certain parts of the economy. Indeed, given the association of technology to the new knowledge economy which is said to be service-driven, it is easy albeit incorrect to assume that flexibility only applies in this realm. As Snellman and Powell (2004) point out, information-intensive jobs are to be found across all economic sectors, not only high-tech or service-linked sectors. Further, given that the nature of the work has become more flexible, firms are required to be flexible themselves. In turn, flexibility of the firm in the modern global economy implies flexibility of employees, as demanding as this may be (Anell & Wilson, 2002). Some of the differences that characterise the new world of work are said to include flatter hierarchies, the increased

empowerment of employees, and hence more autonomy, and also the ability of employees to assume greater responsibilities (Powell & Snellman). This then, is what is understood by flexibility from the employee's perspective.

There appears to be a need for both employers and employees to change their concept of the world of work. According to McGregor *et al* (2004) the new modern world of work demands that human capital be thought of and interpreted differently. Hough and Neuland (2001) point out that the mere adoption of the latest technology is insufficient for organisations to survive in the globalising world. In addition to moving with the times in the realm of technology they have to adopt the appropriate mindset. With organisations being the collective of the employers and employees, this means that it is the employers and employees that have to adopt the appropriate mindset. "A mindset is a filter through which we look at the world" (Hough & Neuland, p. 26). These academics also provide a guide to action for global managers which proposes that they manage competitiveness through knowledge, and adaptability through flexibility. This resonates with the early teachings of Drucker. More recently, Drucker (1999), in an article that appeared in the Harvard Business Review, highlights that individuals have to learn to manage themselves in order to succeed in the knowledge economy.

From the literature reviewed thus far, a number of pertinent characteristics that shape the new world of work stand out. The new world of work is increasingly more flexible, as viewed both from the demand (organisation) side and the supply (labour/employee) side. Because of incessant change, driven by

technological advancements, the world of work is not static and therefore participants have to be willing to adapt to ever-changing conditions. The new world of work places a strong emphasis on education, continuous learning or, as noted by Anell and Wilson (2002, p. 27), “continual competence development”. These key concepts are perhaps best captured by Tothill in Smith and Krüger (2005), who explains that, “(i)n the light of the rapid obsolescence of skills, a capacity of life-long learning and flexibility is taking on increasing weight. There is therefore a need for higher education to be closely linked to the needs of the economy”. Kraak (2004) concurs that good secondary and tertiary education are the means to adapting to the ever-changing world spurred by globalisation.

2.5 Transition from blue collar workers to knowledge workers

As noted by Drucker (1993), knowledge has been around for a long time, but the knowledge worker, in the form required by the knowledge economy, has not. Some (Cortada, 1998a) argue that knowledge workers have always existed but that, as industries developed, so they gave rise to new knowledge workers of a different kind. Still, there is widespread agreement that a definite transformation occurred in workers. During the industrialising era, but more so by the early 1900s, a clear distinction existed between blue collar workers and white collar workers. The dividing line was the fact that, on the one hand, blue collar workers worked with their hands, followed orders and did not need any information to carry out their tasks. On the other hand, white collar workers worked with information and therefore needed more knowledge (Anell & Wilson

2002).

According to Drucker, (2001), the blue collar worker was actually of a lower social class. Yet, blue collar workers benefited tremendously from the growth and income generated by the industrialising world and were thus quickly elevated to middle class status. Blue collar workers were, essentially, industrial workers and, because of the rapid mechanisation of industry, they were mostly machine operators (Drucker). These workers were not at first organised, but by the mid-twentieth century their numbers had grown tremendously, leading to increased formal organisation - via trade unions. This in turn resulted in improved benefits and working conditions for blue collar workers (Drucker).

The deregulation of markets which began in the 1980s in more developed countries and spread across other countries in earnest in the 1990s, however, resulted in the rapid decline of the blue collar worker (Drucker 2001). The downsizing which ensued in many corporations as a result of more open trade between countries and which specifically and negatively affected blue collar workers, is often attributed to the advent of the knowledge-based economy (Neef, 1998). Daniel Bell, in Brown and Lauder (2006) maintains that the growing importance of knowledge work is reflected in the transition from blue collar work to white collar work. Thus, the concept of white collar worker has not disappeared but has been replaced by the term “knowledge worker”, first popularised as far back as the late 1950s by Drucker (Cortada, 1998b), to represent the ascent of those workers who have increasingly populated the jobs available in the new economy. Indeed, an economist, William J. Baumol

conducted a study which revealed that the number of knowledge workers increased across sectors as a result of knowledge workers increasingly substituting other types of workers (Cortada, 1998b).

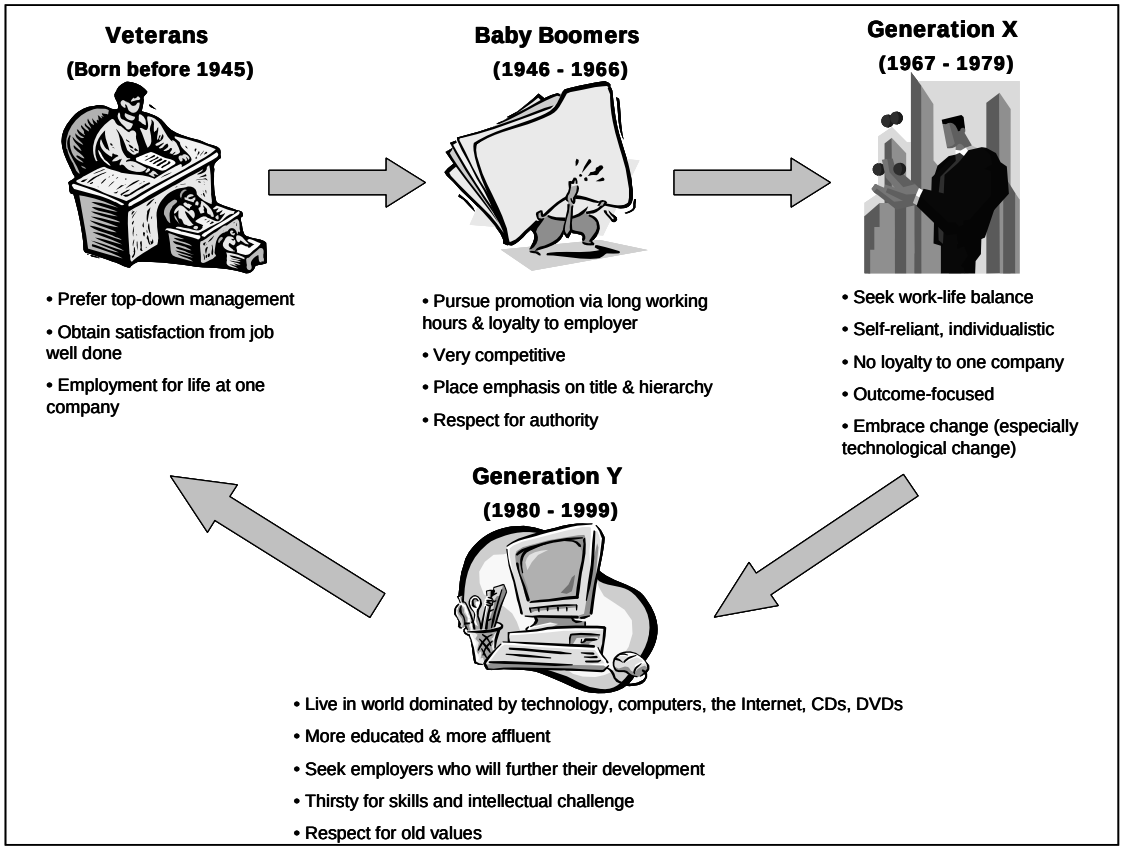
Morris and Western, in Powell and Snellman (2004) contend that the jobs that have been created in recent decades are different to those they have replaced, a factor that accounts for the demand for a different type of labour force - the more educated type, more highly-skilled type - the knowledge worker. Technological advances are said to have made less-skilled workers easily replaceable, while they have enhanced the productivity of more skilled workers (Powell & Snellman). At the same time, new modes of technology also require workers that are sufficiently and adequately skilled to utilise such technology (Anell & Wilson, 2002; Powell & Snellman). There has been, evidently, a shift from brawn to brains (Neef, 1998). Knowledge workers are thus non-production workers (Stevens, 1996) in that they do not become involved in the production process, at least, not directly. As such, it is said that knowledge workers are the modern organisation's competitive advantage. As Stewart (2001, p. 18) points out, the differentiating asset for successful business is the "software and the wetware - the stuff between your ears".

2.6 The generational transformation

A new, modern jargon has developed to refer to the transformation of workers that has occurred during the past century. Reference is often made to the generational change that has occurred. This change compartmentalises

workers, in terms of characteristics and value systems, according to their date of birth. Allen (2004) provides the following segmentation, which is also diagrammatically represented in Figure 2.1.

Figure 2.1: A diagrammatic representation of generational transformation



Workers born before 1945 are referred to as Veterans; those born between 1946 and 1966 are known as Baby Boomers; those born between 1967 and 1979 are collectively known as Generation X; those born from 1980 to 1999 are called Generation Y. Putt (no date) provides a similar segmentation, with some minor differences in the cut-off dates. Hudson, in Putt, also extends the segmentation to include Generation Z. These are individuals born from 1995 to

2005 who will be the workers of the future.

This segmentation of workers carries some similarities to the transition seen in workers from the industrialisation era to the de-industrialisation and knowledge era. For instance, Baby Boomers value hierarchical work environments and this has rendered them very competitive but also fiercely loyal to their employer (Allen, 2004). In contrast, Generation Xers reflect self-reliance and individualism, which renders them more willing to pursue their own career advancement by moving from one employer to the next. As a result, they are far more open to change and accept that change is driven by technological advancements (Allen).

Generation Y, which can be thought of as the current labour market entrants and also those of the immediate future, with many of these currently pursuing the attainment of tertiary education, are the product of the technological environment in which they have been raised. They are comfortable with technology, they are more educated and strive towards obtaining skills and intellectual challenges (Allen, 2004). However, in many respects, they represent a return to the values that shaped Veterans. In this regard, they are said to have a high sense of morality and civic duty, characteristics also possessed by Veterans. Generation Yers therefore also expect employers to take charge of their development.

According to Putt (no date), a study conducted by Hudson (the Hudson study) found that Generation Yers don't necessarily like to be micro-managed;

however, they do expect to be looked after and to receive the desired attention from their employers, such as feedback. A similar finding was made with regard to Generation Xers, implying that the two groups are not that different from one another. Indeed other similarities were found. For instance, both groups were found to be loyal to themselves and their own careers, rather than their employers, as a result of reduced job security in the global, knowledge economy (Putt).

There is some scepticism surrounding this generation theory. Putt, (no date) highlights, for instance that the Hudson study found more similarities between Generation Xers and Yers than differences. In addition, stereotyping the workforce into such neat categories based on generational differences assumes that these differences are more significant than other factors such as an individual's experiences and position in the workplace, for which there is no proof. In addition, Robbins (2005), who also uses generation theory to explain differences in the US workforce, warns that it cannot be assumed that this framework universally applies across all cultures. Nonetheless, it is clear that certain aspects of generation theory can be linked to the changes brought about by the knowledge economy.

2.7 Essential traits of knowledge workers

The knowledge economy and globalisation have created a new world of work. In turn, this new world of work has demanded, increasingly, so-called knowledge workers. So far, it has been highlighted that the knowledge worker is

an educated person with at least a tertiary qualification. However, while this might be the basic qualifying requirement of a knowledge worker, it is not the only one. The work environment created by the knowledge economy, that of flatter hierarchies and which has seemingly transferred more power to the worker, as explained by Powell and Snellman (2004) and Brown and Lauder (2006), clearly demands far more than a tertiary qualification. Nonetheless, this basic qualifying requirement presupposes that such workers have a predisposition to learning and an interest in acquiring knowledge.

The importance of education highlighted by the concept of the knowledge economy can therefore be expanded on. Education of knowledge workers ought not to be understood merely as the possession of a tertiary qualification. It ought to be understood as a long-term, life-long phenomenon. Abell (2000) contends that the intellectual assets of an organisation, its knowledge workers, need to be able to use information to acquire new skills and knowledge on an on-going basis. A tertiary qualification might provide knowledge workers with the starting blocs required. However, if they are not able to source and utilise information, they will not be able to produce knowledge. Abell sums up that knowledge workers are required to be information literate, that is, computer literate. Gladieux and Swail, in Payton (2000) concur; they claim that limited computer literacy is a handicap in the acquisition of knowledge. Knowledge workers also need to be good communicators, and, “(a) breed of proactive and can-do people who relate more strongly to opportunities than performing functions” (Abell, p. 36). Knowledge workers therefore need to have a great

deal of autonomy (Breu *et al*, 2001; Davenport, Thomas & Cantrell, 2002; Powell & Snellman, 2004; Bell, in Brown & Lauder, 2006).

Clearly, knowledge workers need to have both hard and soft skills. Computer literacy and a tertiary qualification, which are all technical skills, can be described as hard skills. Soft skills include those that, according to Brown and Lauder (2006) relate to the personal and social context, such as emotional and social intelligence. They also include drive and determination, an awareness of the needs of the business environment, the ability to work independently and with little close supervision, and the ability to accept change. According to Brown and Lauder, these are characteristics that ought to be found in individuals who possess a tertiary qualification.

There are clearly mixed views regarding the extent to which a tertiary qualification equips individuals for the new world of work. John Bishop, a Professor at the New York State School of Industrial and Labour Relations, in Payton (2000), expresses the view that people skills and job-specific skills and work habits of workers are more important in today's labour market than academic skills. He claims that occupational-specific training is important because job knowledge ultimately determines job performance. In addition, job training ensures the continuous replacement of skills that might have become obsolete. However, because there is a high rate of turnover in the knowledge labour market, employers tend to be less willing to finance training. Hence the added demand for school-based occupational training. McGregor *et al* (2004) concur that workers need to be ambitious enough to seek their own educational

improvement, as, in many industries, job training is a thing of the past. As Brown and Lauder (2006, p. 48) suggest, employers seek “new employees who can hit the ground running”. Also in Payton, Harold Salzman, Senior Research Scientist and Programme Director at the Centre for Industrial Competitiveness at the University of Massachusetts-Lowell, agrees that employers are not willing to invest on employee training because of high employee turnover rates. This point is also emphasised in Neef (1998), who highlights that poaching of highly trained employees and the inability to measure the return on the investment has curtailed firm-based education As a consequence, in the modern organisation, employees are largely expected to be responsible for their own training and skill acquisition. It is notable that the so-called, Generation Xers, appear to appreciate this, while the Generation Yers, although not substantially different, appear to be moving away from accepting this tenet.

McGregor *et al* (2004), summarise the required traits of knowledge workers, succinctly, under three distinct headings: knowledge, skills, and attributes. Knowledge is required to be specialised, technical and professional; it must be industry-relevant; it must encompass technological literacy; it must be operations-based; and it must provide a broad understanding of a changing business environment. The skills required to ensure such knowledge, in turn, encompass multiple project capacity; team working skills; relationship-building skills; client-focus ability; computer use and update ability; negotiation skills; the ability to recognise opportunities. The attributes that can facilitate this are flexibility, adaptability, self-confidence, resilience and a predisposition to

learning. Both Generation X and Y therefore, ought to have the appropriate attributes.

Table 2.1: Transitional model of human capital in the new economy

Source: McGregor et al (2004)

Drivers / Influences	"Old Economy	"New Economy"
Attachment factors	Long tenure - the career employee	Short term involvement - contract, self employment, shareholder
	Dependence / dependability	Adaptation / adaptability
Motivation factors	Psychological "contract" of a job for life - security of job	Intellectual commitment - stimulation of job
	Regular salary	Lure of increased monetary rewards
Work practice factors	Regular, continuing functions and processes	Consecutive or sequential projects
Reward factors	Stable reward structure	Volatile reward structure
	Internal, vertical promotion	Cross-boundary advancement
Development factors	Training	Education
	Career related training to further self in company and improve company capacity	Self actualisation through professional development within and without company
	Company specific skills	Transferable knowledge
Cultural factors	More control of individuals	Greater autonomy of individual
	Organisationally driven	Individual and team driven
Additional factors identified in literature		
Interpersonal relationship factors	Individual work, competition	Teamwork, building professional relationships, networking
	Focus on individual within company	Focus on individuals within and without company

McGregor *et al* (2004) also provide a Transitional Model of Human Capital (Table 2.1), which clearly contrasts the characteristics required of workers in the

new world of work (new or knowledge economy) to those of the old world of work (old economy). Note that this model was supplemented with a section pertaining to inter-personal relationship factors. The importance of such factors is abundantly evident in the literature (McGregor *et al*, 2004; Weissel, no date; Hough & Neuland, 2001; Brown & Lauder, 2006; Rosecrance, 1996, in Neef).

It appears that the characteristics required of knowledge workers are very clear and easily identifiable. Yet, the debate in the literature shows that often it is felt that there is a clear mismatch between the skills on offer by employees and the skills demanded by modern employers (Powell & Snellman, 2004; McKinsey, 2005). According to Powell and Snellman, however, there is no clarity on what skills are actually required, since there is little research on the topic. In contrast, McKinsey, in interviews with human resources experts working for multinationals in a number of developing, or so-called low wage countries (including South Africa), found that only 13% of university graduates across all 28 countries covered are considered suitable for jobs in these companies. There are, of course, variations in this number between types of jobs and between countries. Some of the reasons cited for non-suitability included lack of language skills, a lack of cultural fit as embodied in inter-personal skills, attitudes toward teamwork and flexible work, and a lack of practical knowledge. This suggests that both the tertiary qualifications held by graduates in developing countries and their soft skills are not aligned to the requirements of the global, knowledge economy.

2.8 South Africa and the knowledge economy

South Africa is classified as a developing economy (World Bank, 2005) and is considered, in investment circles, to be an emerging market. This is chiefly evident from its sovereign debt rating, which remains at the lower end of the investment grade scale of a number of prominent credit rating agencies, such as Standard and Poor's, Moody's and Fitch IBCA (Reuters, 2006; refer to Appendix C). According to McKinsey (2005) South Africa fits into the pool of countries it refers to as low-wage countries. However, the literature on the knowledge economy and globalisation suggests that the knowledge economy is a feature of developed countries (Isaak, 2005; Powell & Snellman, 2004; Neef, 1998 and many others). This is understandable, given that it is the more prosperous or wealthy countries that possess the financial means to invest in research and development and therefore these are the countries that tend to be at the cutting edge of technology.

The intensity of a knowledge economy is said to be measurable either by the stock of knowledge, as embodied in human and organisational intellectual capital or by the extent of knowledge activities, such as research and development efforts. An indicator that captures both the stock and level of knowledge activities is the rate of growth in patents (Powell & Snellman, 2004). Developed countries tend to lead in this field (OECD, 2006; see Appendix D). This brings into question whether South Africa is a knowledge based economy.

At least three key factors indicate that it partly is and that it is on its way to

becoming more so. Firstly, Reich, in Anell and Wilson (2002) has shown that more value added is derived from sophisticated services than from the production of goods in the modern economy. In recent years, the production of goods has declined in many economies, and growth has been driven by services, which in turn have relied on high skills and advanced technology (Neef, 1998). The breakdown of South Africa's GDP shows that this is indeed the case for the country. In addition, given that knowledge work is not confined to the services industry (Snellman & Powell, 2004; Neef), the knowledge economy remains pertinent even for countries in which the manufacturing sector remains an important sector.

Secondly, Brown and Lauder (2006) show that multinational companies are focusing on developing strategies that will probably lead to more high skilled jobs being created in low wage economies. This means that, increasingly, low wage economies will be competing with developed economies for high skilled jobs, due to the increased borderlessness of the world and also due to the cost advantage. According to Brown and Lauder, countries like China have made a commitment to closing the skills gap that exists between the country and more developed ones, to the extent that China, in 2001, already had six times more university graduates than countries like the US and UK. These authors conclude that the competition for skilled workers will therefore increasingly become a feature of developing countries. Brown and Lauder also claim that the need for knowledge workers and market flexibility will continue to be a feature of globalisation, until such time as the supply of skills becomes more abundant. Edwards, (2001) points out that South Africa might indeed find itself "squeezed

from both ends of the skills spectrum" (p. 41), meaning that it will have to compete against both the likes of China and India as well as developed economies.

Thirdly, the fact that globalisation remains a reality means that South African businesses and policy makers have to increasingly factor this into their decisions. Hough and Neuland (2001) emphasize that the pace of globalisation continues to quicken. Hence, with its reach widening, more countries, even developing ones, are likely to find themselves affected by the issues currently plaguing more developed countries, in so far as the knowledge economy is concerned.

2.9 South Africa: the higher education system, skills development and the new world of work

South Africa's history of apartheid contributed to many deficiencies in the country, among these, serious deficiencies in the education system and skills development (Akoojee *et al*, 2005; Kraak, 2004; Mlatsheni & Rospabé, 2002; Case & Yogo, 1999). Indeed, a study conducted by Case and Yogo shows that the deprivation suffered by Black South Africans in the apartheid schooling system resulted in an entire generation for which educational attainment, employment prospects and returns to education have been negatively impacted. The quality of education offered in the apartheid schools was inferior, as demonstrated, for instance, by very high pupil/teacher ratios. Case and Yogo highlight that although a democratic government came into being in 1994,

conditions in the education system did not change immediately. Consequently, the same magisterial districts that had recorded high pupil / teacher ratios in 1991, still recorded high pupil / teacher ratios in 1996, according to the survey data used by these authors.

According to Edwards, (2001), education is key in providing labour market entrants with the flexibility they require to adjust to the modern, ever-changing work environment. However, there is acceptance, at the global level, that public education systems are not providing for the requirements of globalisation (Akoojee *et al,* 2005). From this, it can be postulated that inadequate education can lead to inflexibility of labour, as well as other shortcomings in skills. Thus, if South African labour market entrants lack flexibility, as defined in the literature cited herein, and other skills essential in the knowledge economy, it might be possible that this is accounted for by the education system from which they originate. For students currently enrolled at tertiary institutions in the 17 to 24 age bracket, the impact of apartheid education is still applicable, even if only with reference to their primary education. In addition, Kraak (2004) highlights that apartheid also resulted in behavioural and attitudinal legacies for both employers and employees, over and above structural and institutional ones.

Such an example is provided by Mlatsheni and Rospabé (2002), who contend that other factors can influence the opportunity of employment. Such factors include family background, geographic location (urban versus rural habitat) and racial considerations. Their analysis leads them to conclude that even having what are perceived to be relevant qualifications – such as an engineering

degree or computing skills – do not guarantee, for instance, that African graduates will find employment. They suspect that there are a number of reasons for this. One is of an attitudinal nature: employers do not hold the qualifications obtained by Africans or Blacks with high regard as they do not believe these qualifications adequately reflect their skills levels. This short-coming also does not appear to be entirely related to the tertiary qualification obtained but rather to the quality of primary and secondary education, in instances where such schooling was obtained in the traditionally black schools. Ultimately, Mlatsheni and Rospabé wonder, "to what extent a diploma or degree bridges the gap between youths from disadvantaged backgrounds and the rest", and "(i)s it realistic to assume that students who enter tertiary education from differing backgrounds leave with equal skills?" (p. 21). The answer appears to be no.

Kraak (2004) identifies four stages in the human development life cycle of individuals, each of which is influenced by a specific set of social institutions. Stage one is the transition to school; stage two, the transition from school into the labour market; stage three is the entire working life of individuals; stage four is the exit from the labour market. The pertinent social institutions that influence the last three stages of transition are the youth labour market, the world of work and the system of science and innovation. Kraak claims that the manner in which these institutions interact and how they are organised ultimately has a bearing on how education and skills are developed and spread. Kraak asserts that, in the South African context, these systems are not properly aligned and are thus dysfunctional.

2.10 Conclusion

The world remains in the throws of globalisation and no single country is immune to its impact. A significant outcome of the globalisation process is incessant change and the competitive advantage offered by access to and the use of knowledge.

Therefore, increasingly, developing countries are being enveloped into the skills race. In South Africa, a shortage of human capital, or of skills, has been formally identified as an impediment to lowering the high rate of unemployment. In addition, available skills are said to be inadequately matched to the needs of the economy. The mismatch appears to be partly related to different socialisation structures in the South African society, in turn the legacies of apartheid. It is therefore possible that the skills shortage entails a shortage of soft rather than hard skills, that is, a lack of, for instance, labour flexibility and autonomy (as highlighted by multinationals) rather than graduates.

These factors lead to a number of presumptions that require investigation. In turn these presumptions, if proved, could provide insight into possible causes for South Africa's high unemployment rate. It is, for instance, presupposed that South African undergraduates do not possess the required level of flexibility and adaptability required by the new world of work. It is also presupposed that undergraduate students are stimulated by job benefits rather than the intellectual nature of knowledge work. Undergraduates probably prefer stable and predictable functions-based work rather than customer focused and project-

orientated work. They probably also prefer stable and certain reward structures that are linked to hierarchical advancement within an organisation rather than cross-functional advancement. Undergraduates are probably not predisposed to life-long learning and self-driven development, or learning necessitated by continuous technological changes. Congruent to this, is the likelihood that the graduates who enter the new world of work have a low preference for autonomy and the establishment of inter-personal relationships. They are probably also not predisposed to teamwork and networking.

Evidence that supports any or some of these presumptions might therefore provide some explanation for why graduates struggle to find employment in South Africa's knowledge economy. At the same time, lack of such evidence would refute the conclusion that graduates lack the necessary soft skills required by the new world of work, thus impeding or curtailing their employability.

CHAPTER 3

Research

This chapter sets out, more clearly, the purpose of the research, in the first section, and subsequently the actual research questions in the second section.

3.1 Purpose of the research

The research sets out to provide answers to a number of questions which interrogate whether students enrolled for undergraduate studies at South African universities have the characteristics, in particular soft skills analogous to knowledge workers, as set out in the knowledge economy theory and literature. Undergraduates are investigated because they are the future knowledge labour market entrants.

Ultimately, the answers to these questions ought to reveal whether South African undergraduate students are ready, from an attitudinal and behavioural perspective to enter the new world of work of the knowledge economy. As a by-product, they ought to also reveal whether past socialisation structures and current tertiary education structures play a role in influencing the attitudes and character traits of undergraduate students. If this is the case, the dearth of skills and the misalignment of the skills being generated by the education system to the world of work might be rectifiable by addressing these related factors.

3.2 Research questions

The research questions are set out in accordance with the Transitional Model of Human Capital cited in Chapter 2. They are therefore largely drawn from the information provided by the model as well as by other literature sources. These other sources will be elaborated on in Chapter 4, in the section pertaining to the qualitative considerations of instrument design.

3.2.1 Question 1

Attachment factors

Are South African undergraduate students mostly flexible and adaptable as required by the new economy?

3.2.2 Question 2

Motivation factors

Are South African undergraduate students mostly motivated by job benefits and security (via fixed reward structures) or intellectual stimulation and lure of flexible rewards as knowledge workers ought to be?

3.2.3 Question 3

Work practice factors

Do South African undergraduate students prefer stable, functions-based work or varying project work that is more customer rather than functions focused, which

is the type of work that dominates the knowledge economy?

3.2.4 Question 4

Reward factors

Do South African undergraduate students prefer stable reward structures aligned to internal, vertical promotion or volatile reward structures that require cross-functional advancement in the ever-changing new world of work?

3.2.5 Question 5

Development factors

Are South African undergraduate students predisposed to life-long learning, which entails self-actualised and continuous development, often of a technological nature, both within and outside the work place?

3.2.6 Question 6

Cultural factors

Do South African undergraduate students have a preference for work autonomy?

3.2.7 Question 7

Inter-personal relationship factors

Do South African undergraduate students have a predisposition to teamwork and building inter-personal relationships?

CHAPTER 4

Research methodology

This chapter sets out the research methodology adopted in the research process. The research population (Section 4.2) is identified, as is the unit of analysis (Section 4.3) and the sampling method (Section 4.4). The research instrument used is discussed in Section 4.5. The physical and qualitative considerations in the design of the instrument are briefly explained, as is the testing of the instrument. In Section 4.6 the data collection, sorting and analytical processes are discussed. The chapter ends with brief mention of a number of limitations that affected the research.

4.1 Methodology used

The research method adopted was non-experimental and quantitative in nature. The data were thus collected in a natural environment by means of a field study and no planned intervention on the subjects occurred (Welman & Kruger, 2001). The data were collected with the aid of a survey, thus constituting primary data. The administration of a survey was deemed the most appropriate way of obtaining a wide coverage.

The survey aimed at examining the relationships between a number of variables and the attitudinal and behavioural preferences of the subjects of the investigation with regard to the research topic matter. The design of the survey

was based on qualitative thought and considerations drawn from the literature review process.

4.2 Research population

In the broadest definition available, knowledge workers have tertiary qualifications and can be employed across all economic sectors. However, it is accepted that workers with tertiary qualifications in business, commerce and management sciences are all knowledge workers because of the nature of their specialisation and the fact that such a specialisation can be employed across all economic sectors.

Consequently, for the purposes of this research, it was decided to focus on this population group, namely, students currently enrolled at South African universities at undergraduate level in the faculties of business, commerce and management sciences. Since it was not physically possible to survey all South African universities, the research focused on full-time, historically advantaged universities located in Gauteng. Thus, three universities were included in the collection of data.

Historically advantaged universities were chosen over historically disadvantaged universities because part of the investigation entailed determining whether tertiary education can bridge the gap and differences in character traits and behavioural preferences that might exist between students of different races and that might have arisen as a consequence of the apartheid

education system that prevailed well into the 1990s, at secondary and primary education level.

In summary, the population for this investigation comprised undergraduate students enrolled in the faculties of business, commerce and management sciences at historically advantaged, South African universities located in Gauteng.

4.3 Unit of analysis

The unit of analysis comprised undergraduate students of all races and both genders, male and female. Undergraduate students rather than post-graduate students were selected, for a number of reasons. Technically, undergraduate students are not yet knowledge workers by virtue of the fact that they are still studying and that they do not yet hold a tertiary qualification. However, they were selected rather than graduates or post-graduates in order to determine whether the process of attaining a tertiary qualification instils in students the soft skills required of knowledge workers.

At the same time, it was concluded that surveying graduates or post-graduates would not be appropriate for this investigation, since such units of analysis were likely to have been exposed, even if for short periods of time, to the world of work. This in turn, might have altered their preferences for and their attitudes towards the new world of work environment.

In addition, theoretically, students who are enrolled for post-graduate studies already reflect a key characteristic required of knowledge workers – the willingness to learn more. Hence the need for their exclusion.

4.4 Sample size and sampling method

According to data available from the Department of Education, there were a total of 11 700 students enrolled at undergraduate level in the business, commerce and management sciences faculties of the three universities surveyed in 2000 (Table 4.1). More recent enrolment numbers could not be obtained.

Table 4.1: Enrolment numbers in universities surveyed

Source: Department of Education (Hemis Database, 2000)

University	Number of students enrolled in business, commerce & management sciences (2000)
1	3 343
2	4 929
3	3 428
TOTAL	11 700

Statistically, it is accepted that a sample should not be less than 15 and preferably greater than 25; in addition, the smaller the population, the larger the sample required to yield appropriate and accurate results (Welman & Kruger, 2001). However, sample sizes greater than 500 do little to reduce the size of the standard error generated in statistical analysis of the data (Welman & Kruger). Albright, Winston & Zappe (2003) agree that the sampling error decreases as

the sample size increases. However, they point out that very big sample sizes can also be problematic. For instance, the collection of data can become cumbersome and costly. Also, the chance of non-sampling error can increase.

Given the size of the population outlined earlier and the statistical considerations, a sample size of 500 was deemed appropriate for the purposes of this investigation.

The non-probability sampling method was adopted, since it was not possible to obtain, from the universities surveyed, any personal details of the students registered in the relevant faculties, making random sampling impossible. Non-probability sampling was also easier – less complicated – as well as more economical to administer. Consequently, accidental sampling was utilised to facilitate the collection of the data.

4.5 Research instrument

The research instrument is discussed under a number of headings. These include physical considerations (Section 4.5.1); qualitative considerations (Section 4.5.2); and instrument testing (Section 4.5.3).

4.5.1 Instrument design: physical considerations

The research instrument used was a survey. An example of the survey can be found in Appendix E. The survey consisted of three separate sections. Section

A was designed to collect biographical data in order to facilitate cross-sectional analysis. In this regard, respondents were asked to provide their age, race, gender, the degree enrolled for, the year of enrolment, and their envisaged profession. Some of this information, such as age, degree enrolled for and envisaged profession were not collected for analytical purposes but to enhance the biographical detail available on the units of analysis. In addition, they served as control variables in determining whether any units of analysis ought to be excluded for non-relevance to the research process. The remaining questions in Section A, coupled with those in Sections B and C were designed to draw the information required to determine the readiness of the undergraduate students for the new world of work.

Section B comprised 12 questions or statements. Each question appeared as a set of paired statements, and students were asked to indicate their preference for only one of the statements by selecting a number on a scale of one to five. The scale was set up in accordance with the properties of a semantic differential scale. As such, students were instructed to select the numbers one or two, depending on how strongly they related to the statement on the left of the scale, the numbers four or five depending on how strongly they related to the statement to the right of the scale or the number three if they were completely indifferent in their preference for either of the two paired statements. The statements in Section B were thus formulated in such a way that they each represented either work conditions, character traits or attitudinal preferences aligned to the old world of work (all the statements to the left of the scale), or to the new world of work (all the statements to the right of the scale). By selecting

either the numbers one or two students reflected a preference for the old world of work for each particular statement; by selecting either the numbers four or five, they reflected a preference for the new world of work. Indifference to either was reflected by selecting the number three.

Section C comprised four questions or statements. Students were asked to select their preference for each statement by selecting a number from one to five on a Likert scale, with one representing a very low preference and five representing a very high preference. Of the four questions, three (questions C2, C3 and C4) focused on characteristics particular to the new world of work and one (question C1) to the old world of work.

4.5.2 Instrument design: qualitative considerations

The questions or statements formulated and included in Sections A, B and C of the survey were drawn from interpretation of the literature on knowledge workers, the knowledge economy and the world of work that arises from the latter.

In particular, the Transitional Model of Human Capital in the new economy, provided by McGregor *et al* (2004) was drawn on in its entirety (see Chapter 2; Table 2.1). As explained in Chapter 2, this model was supplemented. The category “inter-personal relationship factors” was added, given the importance highlighted in the literature of networking and teamwork in the new world of work.

The way in which the questions or statements covered each of the aspects identified in the Transitional Model can be explained, in summary, with the aid of Table 4.2.

Table 4.2: Alignment of survey questions / statements to Transitional Model of Human Capital in new economy

Model factors	Relevant survey questions / statements
Attachment	A8, A9 B1, B2, B5, B6, B10
Motivation	B11, B12
Work practice	B4 C1, C2
Reward	B9, B12
Development	A7, A8, A9 B3, B4 C4
Cultural	B6, B7
Inter-personal relationship	B8 C3

McGregor *et al* (2004) are not the only ones that highlight the importance of the factors used in the survey. For instance, the importance of life-long learning, self-driven development of workers and the desire to acquire new skills is often quoted in the knowledge economy literature (Anell & Wilson, 2002; Hough & Neuland, 2001; Abell, 2000; Payton, 2000; Neef, 1998; Cortada, 1998b).

Perhaps one of the most important characteristics required of knowledge

workers in the new knowledge economy is flexibility, also referred to as adaptability. Flexibility is required with regard to a number of aspects - for instance, changes in the work environment; changes in reward structures and duration of employment; changes in the nature of the work performed, for example project work as opposed to stable repetitive work functions; flexibility with regard to mobility, for example the willingness to obtain international experience and exposure; flexibility with regard to the continuous change brought about by technological innovations, which often require the willingness to adopt new skills. Once again, many have written on these aspects. Gupta and Govinrandanjan in Hough and Neuland (2001), for instance, highlight that corporates can only adopt a global mindset if their managers have international experience. Indeed, Drucker (2001, p. 291) espouses that the modern worker has to be a "'citizen of the world' - in vision, horizon and information". Meanwhile, Anell and Wilson (2002), Stevens (1996, in Neef) and Weissel (no date) refer to the importance for workers to be open to change and to be flexible. In turn, Payton (2000), Cortada (1998b) and Weissel make reference to the way in which technological change has altered the world of work, requiring workers to keep pace with these changes by acquiring the necessary skills.

With regard to the inter-personal factors added to the transitional model, evidence of the importance of teamwork can be found in Weissel (no date). Hough and Neuland (2001) make reference to the importance for workers to accept other people's values and Brown and Lauder (2006) highlight the importance of inter-personal sensitivity. In addition, with hierarchies flattening in the new world of work (Rosecrance, 1996, in Neef; McGregor *et al*, 2004) focus

is increasingly shifting away from individual competition and towards teamwork which aids lateral career movements.

4.5.3 Instrument testing

In its initial design format, the survey comprised only Sections A and B. Section B consisted of 28 questions or statements assessed by means of a five-point Likert scale. The statements did not differ in any way from those ultimately used in the survey. However, instead of being paired as opposites, they were stated individually. Following testing of the survey among six individuals it emerged that by allowing respondents to rate each statement individually, a clear preference for the old versus the new world of work could not be assessed. In some instances, the test individuals rated statements that were opposites of each other, similarly.

Consequently, the statements were paired as they appear in the final survey (Appendix E), thus forcing respondents to indicate a clear preference or indifference. The survey was tested again but among seven new individuals. The results obtained were more satisfactory for analytical purposes as they showed that clear preferences for either the old or the new world of work were visible in the responses.

In the first test conducted, the test individuals comprised four males and two females. The group was equally split between Black and White respondents. Unfortunately, it was not possible to test the survey among Asian and Coloured respondents. Further, the educational backgrounds of the test individuals varied

from matriculant to graduate and post graduate.

In the second and final test conducted, the test respondents comprised three males and four females. Three of the test respondents were White, two were Black and two were Asian. Of the seven respondents, only one was a matriculant. All others were either graduates who have completed their tertiary education or graduates currently completing post-graduate studies.

In both test instances, the test individuals were drawn from acquaintances and work colleagues due to convenience.

4.6 Data

The way in which the data were collected, sorted, processed and ultimately analysed is covered in the next few sections.

4.6.1 Collection process

A number of lecturers in the various faculties of the universities surveyed were approached to administer the survey during lectures which they considered most appropriate. In other words, they were given the freedom to administer the survey when they felt it would be a) most convenient; b) less disruptive to their teaching; and c) possible to target lecture sessions with considerable attendance levels. They were also asked to hand out the survey to a mix of first, second and third year students. Ultimately, therefore, the data collected were

collected from a convenience sample, representing students who were readily available on the days the survey was handed out and who showed up for the relevant lectures on a particular day.

In addition, one of the lecturers at one of the universities surveyed was able to administer the survey to students of the university at a campus outside of Gauteng (Limpopo). The students attending this campus come from a historically disadvantaged background. It is thus very likely that most if not all of these students are the product of the apartheid education system, as far as their primary and perhaps secondary education are concerned.

4.6.2 Sorting process

Once the surveys had been collected, they were scanned visually for completeness. Surveys that were either incorrectly completed or not sufficiently filled in were eliminated. For instance, the survey was printed on one page, two sided and in some instances students did not complete the section overleaf.

There were a number of surveys which had to be eliminated because students failed to understand the instructions provided. In these instances, they ticked off two numbers per question, one for each statement on either side of the rating scale. This problem had not been anticipated since in the testing procedure the test individuals had fully comprehended the instructions. The number of surveys excluded for this reason was 26. A further seven were excluded for not being sufficiently completed, bringing the total number of scrapped surveys to 33.

The remaining surveys were then numbered before the capturing process (into Excel) so that each data line in the spreadsheet could be traced back to the original surveys if need be. All details provided in the survey were captured, including the collection point, that is, the relevant university. Most of the biographical details were coded to facilitate the subsequent analytical process. For instance, in the case of gender, a one was allocated for female and a two for male. In the case of race, a one was allocated for Black, a two for Asian, a three for Coloured and a four for White. In the capturing process, a few more surveys were found to be either incorrectly or incompletely filled in and were therefore also excluded (the numbers quoted above for the scrapped surveys include these).

In total, the remaining data constituted a sample of 558, more than the 500 aimed for at the outset. Most of the data were complete, with some line items, however, missing some information in cases where respondents failed to answer a few questions. As three separate individuals captured the data, a further sorting process ensued. For instance, where respondents were asked to indicate whether they would consider working abroad and to indicate why, capturers used their own discretion in providing streamlined explanations of the responses given by the survey respondents. These responses were further streamlined in order to reduce the number of resultant categories by combining those that were essentially similar. For instance, if a respondent indicated wanting to work abroad “in order to see the world” the response was considered identical to having said “to travel”. In many instances, respondents indicated wishing to work abroad in order to gain one or other type of experience. Such

responses were streamlined to “experience” only. The data were then ready for the analytical process.

4.6.3 Analytical process

To begin with, a number of pivot tables were compiled from the data captured on the spreadsheet, in order to review the biographical spread of the sample collected. The data were thus plotted to reflect gender, age, race and year of enrolment distribution. This sorting process highlighted that the number of survey respondents in the “third year” enrolment category was very low, as were the numbers of “Asian” and “Coloured” respondents. In terms of age, the bulk of the respondents fell in the “less than twenty one” age bracket. Age, however, was merely used as one of the control variables to ensure that the sample constituted the targeted population.

In order to be able to confirm visually whether the data collected provided an answer to the research questions posed, the responses to each of the survey questions B1 through to 12 and C1 through to 4 were plotted on bar charts. The data were further consolidated and re-plotted, to reflect whether the respondents showed any preference for the old or new world of work per question posed, or whether they were largely indifferent. In this process, all responses marked “one” or “two” were combined to produce the cumulative preference for the old world of work, while all the responses marked “four” and “five” were combined to produce the cumulative preference for the new world of work. These charts can be found in Appendix F. In addition, to further identify the most prevalent response provided by respondents, the mode was calculated

per question. This also provided a reading of the preference for either the old or new world of work per question.

Some of the data collected in Section A of the survey were also plotted in order to assess whether some of the research questions posed could be answered. In this regard, the respondents' willingness to further their studies at post-graduate level and their willingness to undertake contract work abroad were plotted. The reasons for considering work abroad were also analysed and consolidated to identify whether they were related to factors reflective of acceptance of the new world of work.

Although only three universities were surveyed, in the one instance, surveys were collected from two different campuses of one university. One of the campuses is located outside Gauteng. Consequently, to identify whether location (that is, the residence of students) has a bearing on the socialisation of students and therefore on their preferences, the data were rearranged to test for this. All the students surveyed in the campus outside Gauteng were Black. Thus all the Black students from each university were isolated into one group and frequency graphs were drawn to determine whether survey responses of the students at the different campus differed or not to the responses of their cohorts at the Gauteng campus and at the other universities (see Appendix G).

To extend the analysis into the statistical realm, the survey data collected were also exported to a statistical package. A chi-square test was conducted on a number of paired variables in order to determine whether there was a

statistically significant relationship between the variables.

The chi-square goodness of fit test can be conducted by arranging, or cross-tabulating categorical data. Cross-tabulation shows how many cases with particular values on one variable have particular values on another variable. The chi-square test then indicates how well the data observed and a given, theoretical distribution are matched (Porkess, 2004). The value of the chi-square and its significance depends on the overall number of observations and the number of cells in a table. Small deviations of the relevant frequencies observed across cells from the expected pattern are significant if the number of observations is large. It follows that if any cells in a table have frequencies that are lower than five, the result of the chi-square has to be interpreted with caution. For frequencies that are lower than five, probabilities cannot be estimated with precision.

A number of chi-square tests were conducted. Firstly, using the entire data set collected the significance of race, year of enrolment and university as determinants of the preferences expressed per survey question were examined. Race, year of enrolment and university being attended were also tested for their relevance in determining respondents' choice regarding contract work abroad and post-graduate studies.

However, in many instances, the test results obtained were not completely reliable due to low frequencies being obtained in the tables. Thus, to reduce the number of cells with low frequencies, the chi-square test was re-run on altered

data. For instance, Coloureds and Indians were left out of the sample, due to their low numbers (as gauged by the biographical distribution) and the significance of race, considering only Black and White respondents, was tested against the survey responses per question. In a similar fashion, due to the low number of respondents enrolled for third year studies, these were also excluded from the sample and chi-square tests re-run. Furthermore, with regard to questions in Section B, survey responses were grouped to produce a single reading for “old world of work” and a single reading for “new world of work”. The chi-square test was then re-run on the grouped data.

Finally, to test whether respondents of a particular university attending lectures at a different campus of the university outside of Gauteng, reflected different preferences to their cohorts in Gauteng, the data were sorted to include only Black respondents from each of the universities and the chi-square test re-run. In this instance, the chi-square test tested for the relationship between the students’ responses and the universities they attend, with the campus outside of Gauteng being treated as a separate university. Again, to minimise the number of test results obtained which were not reliable, the same test was conducted on data for which responses one and two for the “old world of work” and responses four and five for the “new world of work” had been combined.

4.7 Limitations

Collection of the data was more difficult than anticipated. The process of obtaining permission from the universities to conduct the survey was lengthy

and cumbersome. However, at the same time, some helpful feedback was received with regard to the survey's design. Nonetheless, the fact that access to students was limited by the lecturers' discretion prevented the collection of a broader sample. In the event, not enough third year undergraduate students were surveyed.

Data collection was, due to convenience and time limitations, restricted to three universities in the Gauteng region. Although data were ultimately also obtained from a campus outside of the province, this was not sufficient to render the sample broad with respect to coverage of universities spread throughout the country. This limitation thus reduces the external validity of the population. Because the population size is relatively large (see Sections 4.2 and 4.4), the external validity thereof is dependent on the research being conducted on a representative sample (Welman & Kruger, 2001). However, as the sample used in this research was a convenience sample rather than a random one, the degree to which the findings can be generalised to the total population is limited.

Chapter 5

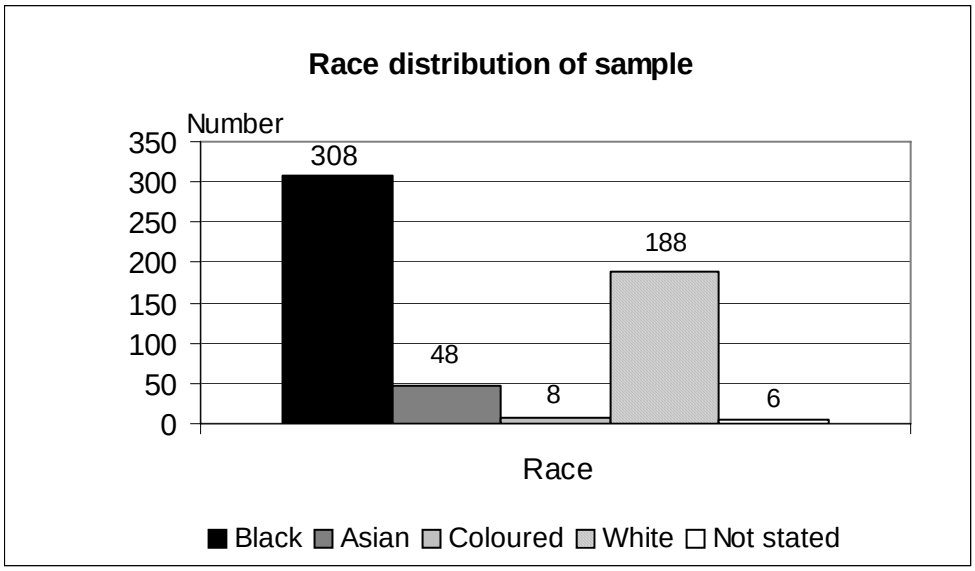
Results

In this chapter, the results of the research are presented by way of figures and tables. To begin with, the biographical data of the sample are presented, followed by the survey data and the relevant results for each research question.

5.1 Biographical data

The respondents to the survey were largely clustered in the Black and White race categories, as reflected in Figure 5.1

Figure 5.1: Race distribution of sample



Predominantly, respondents to the survey fell in the “less than twenty one” age

bracket (Figure 5.2). Indeed, most of them were either enrolled for first year or second year studies (Figure 5.3). In terms of gender, respondents were almost evenly split between male and female (Figure 5.4).

Figure 5.2: Age distribution of sample

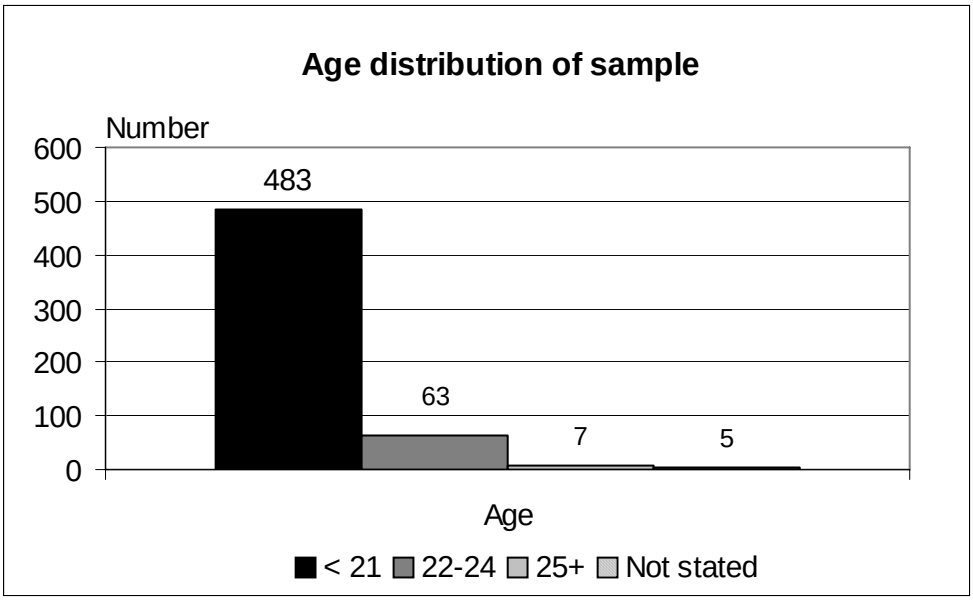


Figure 5.3: Year of enrolment distribution of sample

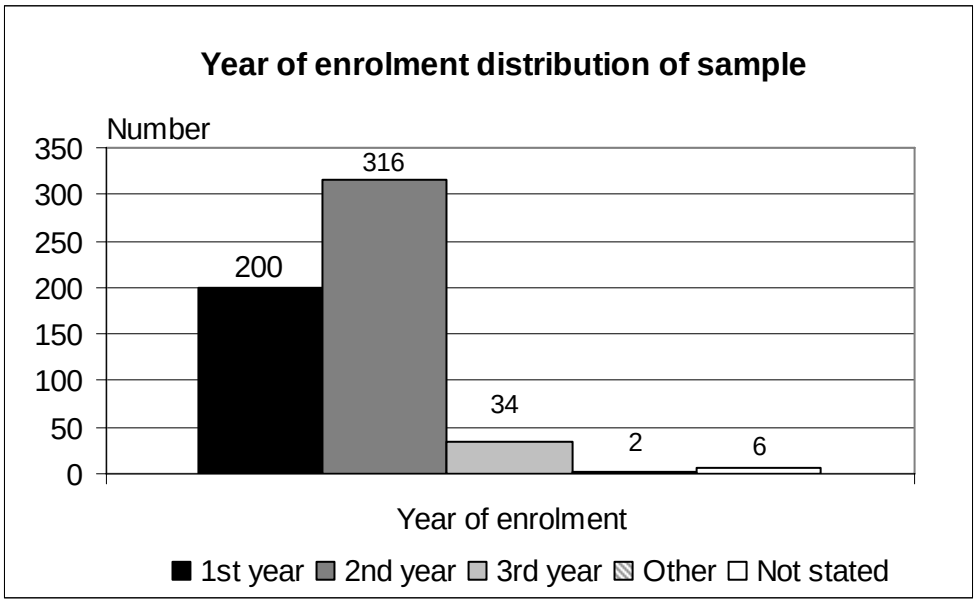
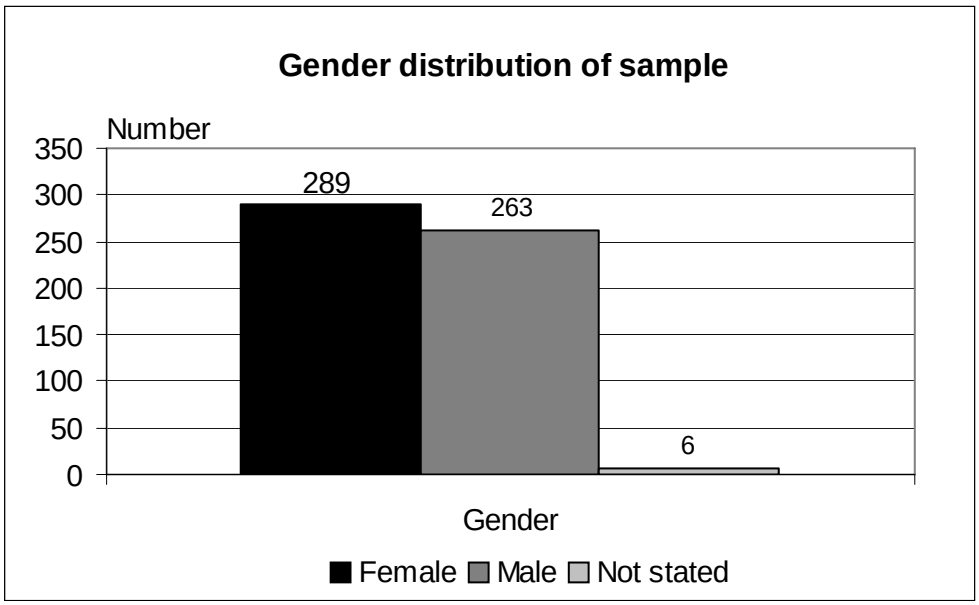


Figure 5.4: Gender distribution of sample



Most respondents indicated having plans to further their studies to post-graduate level (Figure 5.5) and being willing to consider contract work abroad (Figure 5.6).

Figure 5.5: Number considering post-graduate studies

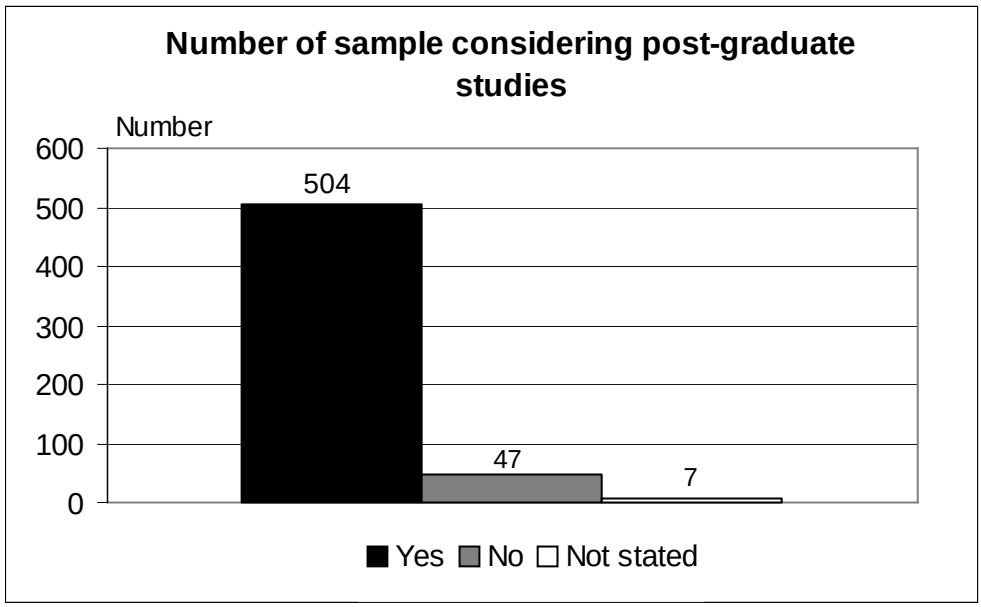


Figure 5.6: Number considering contract work abroad

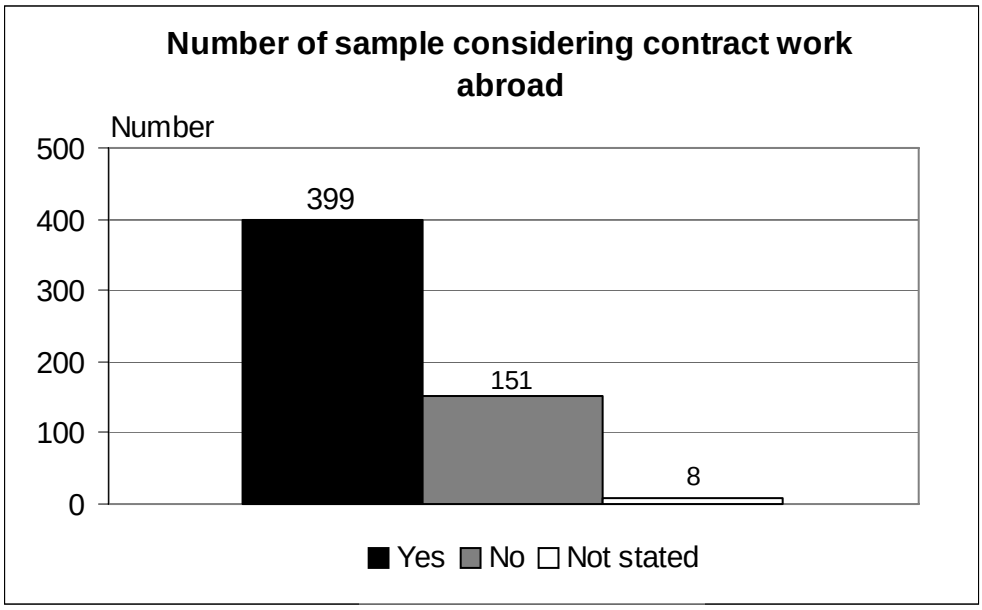
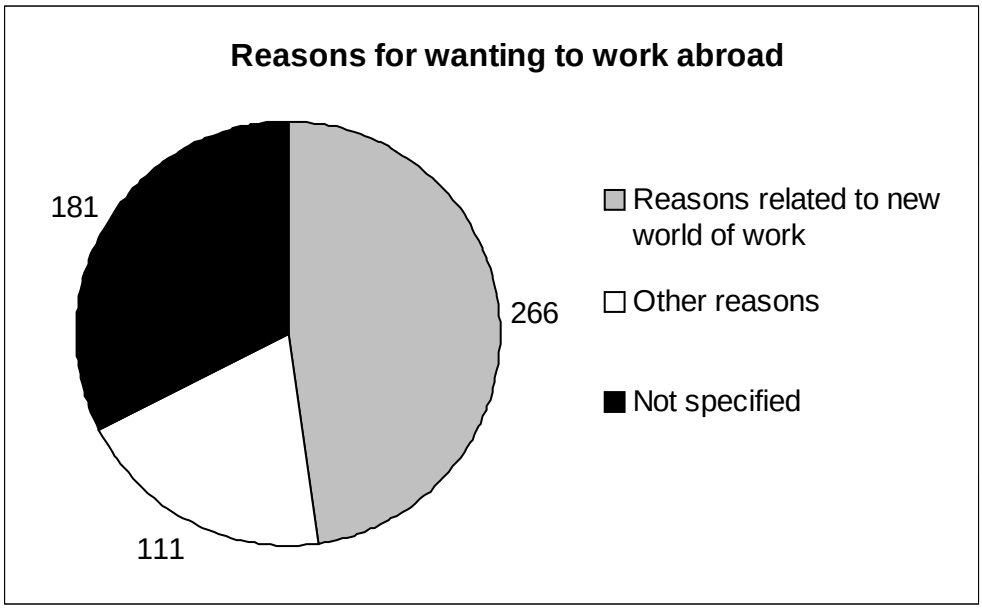


Figure 5.7: Reasons for wanting to work abroad



A variety of reasons were provided for considering work abroad. However, less than 50% of these reasons represented factors related to the new world of

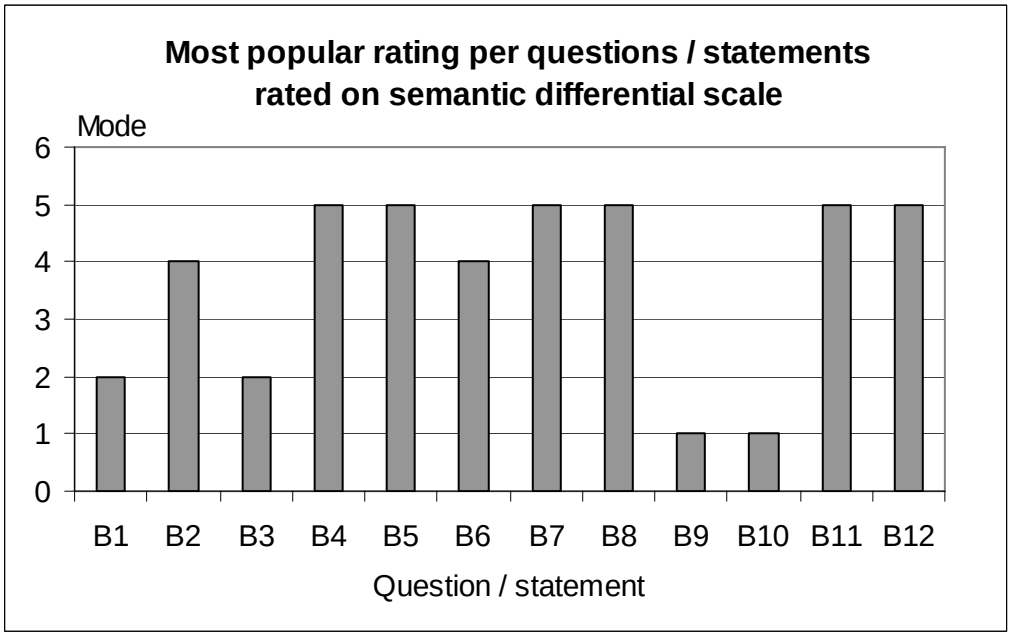
work. Many respondents did not provide a reason for considering contract work abroad (Figure 5.7).

5.2 Survey data

In total, 990 surveys were distributed, 591 were returned completed, producing a response rate of 59.8%.

The modes for each question posed or statement surveyed in Sections B and C are shown in Figures 5.8 and 5.9 respectively. With regard to Section B, a mode of four or five shows a preference for the new world of work. A mode of one or two a preference for the old world of work, while a mode of three shows indifference between either worlds. With regard to Section C, questions or statements were rated on a five-point Likert scale. A high rating for question C1 shows a preference for the old world of work.

Figure 5.8: Modes for questions in Section B



A high rating for questions C2 to C4 shows a high preference for the new world of work. Ratings of four or five are considered high; ratings of one or two are considered low; a rating of three reflects a moderate rating.

Figure 5.9: Modes for questions in Section C

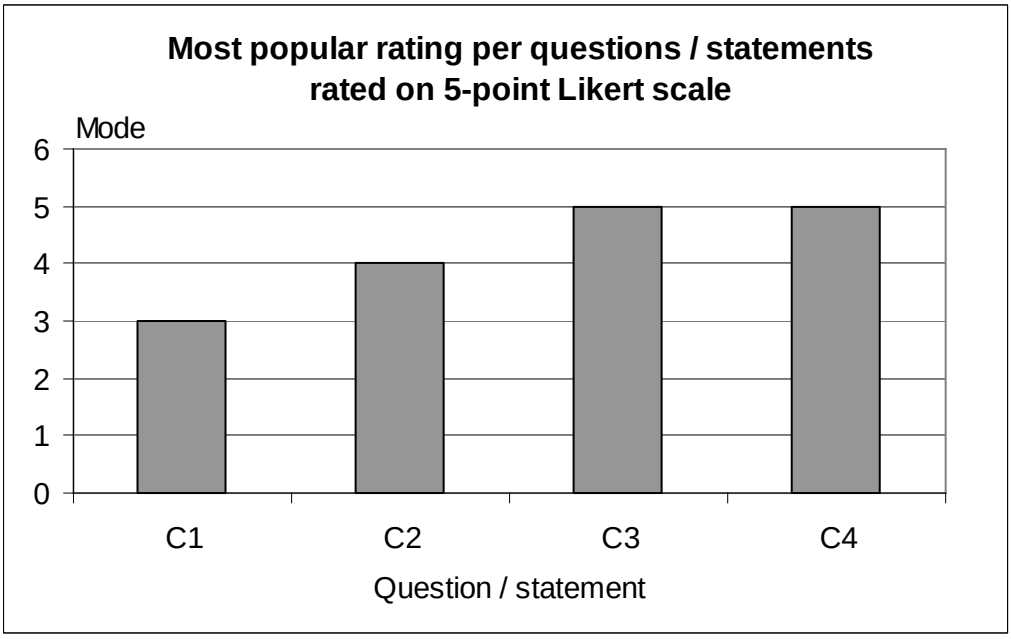
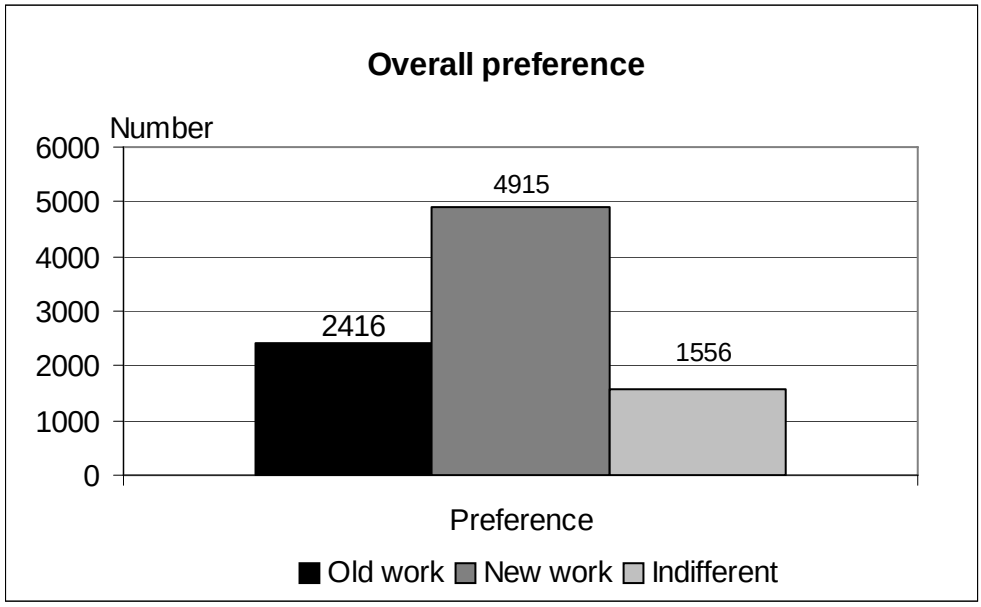


Figure 5.10: Collated survey results



When the frequencies of the responses for all the scale-rated responses in Sections B and C of the survey are summed, an overall preference result is obtained between the new and old worlds of work, as shown in Figure 5.10.

5.3 Results for research questions

The research results pertaining to each of the research questions posed in Chapter 3 are presented below.

5.3.1 Question 1

Attachment factors

Are South African undergraduate students mostly flexible and adaptable as required by the new economy?

Table 5.1: Survey results for research question 1

Question /Statement	**Results (% of total)**			**World of work preferred**
	Yes	**No**		
A8: Are you considering working abroad on a short-term contract basis?	71.5%	27.1%		New
	Reasons related to new world of work	**Other reasons**	**Not stated**	
A9: If you are considering working abroad indicate why	47.7%	19.9%	32.4%	Inconclusive
	Scale 1 - 2	**Scale 3**	**Scale 4 - 5**	
B1	41.0%	22.2%	35.7%	Old
B2	36.4%	17.9%	45.3%	New
B5	7.5%	11.5%	81.0%	New
B6	6.5%	16.7%	76.7%	New
B10	66.5%	14.0%	19.4%	Old

5.3.2 Question 2

Motivation factors

Are South African undergraduate students mostly motivated by job benefits and security (via fixed reward structures) or intellectual stimulation and lure of flexible rewards as knowledge workers ought to be?

Table 5.2: Survey results for research question 2

Question /Statement	Results (% of total)			World of work preferred
	Scale 1 - 2	Scale 3	Scale 4 - 5	
B11	39.1%	19.0%	41.2%	Inconclusive
B12	16.1%	14.3%	69.2%	New

5.3.3 Question 3

Work practice factors

Do South African undergraduate students prefer stable, functions-based work or varying project work that is more customer rather than functions focused, which is the type of work that dominates the knowledge economy?

Table 5.3: Survey results for research question 3

Question /Statement	Results (% of total)			World of work preferred
	Scale 1 - 2	Scale 3	Scale 4 - 5	
B4	8.1%	8.8%	82.6%	New

C1 (bear in mind different scale interpretations)	33.3%	37.1%	29.0%	Inconclusive
C2	19.0%	28.1%	52.5%	New

5.3.4 Question 4

Reward factors

Do South African undergraduate students prefer stable reward structures aligned to internal, vertical promotion or volatile reward structures that require cross-functional advancement in the ever-changing new world of work?

Table 5.4: Survey results for research question 4

Question /Statement	**Results (% of total)**			**World of work preferred**
	Scale 1 - 2	**Scale 3**	**Scale 4 - 5**	
B9	60.9%	14.9%	23.5%	Old

5.3.5 Question 5

Development factors

Are South African undergraduate students predisposed to life-long learning, which entails self-actualised and continuous development, often of a technological nature, both within and outside the work place?

Table 5.5: Survey results for research question 5

Question	**Results (% of total)**		**World of work**

/Statement				preferred
	Yes	**No**		
A7: Are you considering post-graduate studies?	90.3%	8.4%		New
	Scale 1 - 2	**Scale 3**	**Scale 4 - 5**	
B3	54.3%	14.5%	31.0%	Old
C4	12.0%	17.0%	70.8%	New

5.3.6 Question 6

Cultural factors

Do South African undergraduate students have a preference for work autonomy?

Table 5.6: Survey results for research question 6

Question /Statement	Results (% of total)			World of work preferred
	Scale 1 - 2	**Scale 3**	**Scale 4 - 5**	
B7	7.3%	19.4%	72.2%	New

5.3.7 Question 7

Inter-personal relationship factors

Do South African undergraduate students have a predisposition to teamwork and building inter-personal relationships?

Table 5.7: Survey results for research question 7

Question /Statement	Results (% of total)			World of work preferred
	Scale 1 - 2	**Scale 3**	**Scale 4 - 5**	
B8	22.8%	16.3%	60.2%	New
C3	6.5%	7.2%	86.2%	New

It should be noted that the results for each relevant survey question have only been reported once in the above tables, in order to avoid repetition. However, in some instances, the survey questions and therefore the results obtained might be relevant to more than one of the research questions.

5.4 Chi-square test of significance: results

Table 5.8: Results using all races in sample and testing relationship between race and individual survey responses, as rated either 1, 2, 3, 4 or 5 on scale

Q	C^2	P-value	Significant: Y or N	C^2 - test not reliable
B1	44.51	0.0000	Y @ 1% level	*
B2	33.33	0.0009	Y @ 1% level	*
B3	11.05	0.5245	N	*
B4	16.41	0.1732	N	*
B5	37.35	0.002	Y @ 1% level	*
B6	23.04	0.0274	Y @ 5% level	*
B7	31.13	0.0019	Y @ 1% level	*
B8	58.42	0.0000	Y @ 1% level	*
B9	9.28	0.6787	N	*
B10	42.70	0.0000	Y @ 1% level	*

B11	17.13	0.1446	N	*
B12	15.62	0.2093	N	*
C1	*31.45*	*0.0017*	*Y @ 1% level*	*
C2	13.55	0.3306	N	*
C3	39.39	0.0001	Y @ 1% level	*
C4	35.50	0.0004	Y @ 1% level	*
Abroad	3.55	0.3144	N	*
Post-grad	5.38	0.1457	N	*

** In cross-tabulation of test, some cells have expected frequencies smaller than* 5. *Test must therefore be interpreted with caution*

Using all races in the sample and conducting chi-square tests of significance between race and the survey responses did not produce reliable results.

Table 5.9: Results using only Black and White races in sample and testing relationship between race and survey responses, as rated either 1, 2, 3, 4, or 5 on scale

Q	C^2	P-value	Significant: Y or N	C^2 - test not reliable
B1	30.73	0.0000	Y @ 1% level	
B2	24.90	0.0001	Y @ 1% level	
B3	8.39	0.784	N	
B4	5.47	0.2423	N	*
B5	30.33	0.0000	Y @ 1% level	*
B6	15.22	0.0043	Y @ 1% level	*
B7	20.63	0.0004	Y @ 1% level	*
B8	54.96	0.0000	Y @ 1% level	
B9	7.52	0.1106	N	
B10	31.74	0.0000	Y @ 1% level	
B11	13.90	0.0076	Y @ 1% level	
B12	9.94	0.414	Y @ 5% level	
C1	*29.86*	*0.0000*	*Y @ 1% level*	
C2	8.15	0.0861	N	

C3	31.73	0.0000	Y @ 1% level
C4	33.32	0.0000	Y @ 1% level
Abroad	0.64	0.4223	N
Post-grad	0.22	0.6441	N

** In cross-tabulation of test, some cells have expected frequencies smaller than* 5. *Test must therefore be interpreted with caution*

Excluding Coloureds and Indians (which comprised a small portion of the overall sample) and performing chi-square tests of significance between the remaining races and survey responses improved the reliability of the results.

Table 5.10: Results using only Black and White races in sample and testing relationship between race and survey responses, but combining 1 & 2 scale ratings and 4 & 5 scale ratings

Q	C^2	P-value	Significant: Y or N	C^2 - test not reliable
B1	9.87	0.0072	Y @ 1% level	
B2	17.32	0.0002	Y @ 1% level	
B3	2.77	0.2509	N	
B4	1.54	0.4619	N	
B5	8.74	0.0127	Y @ 5% level	
B6	1.31	0.5186	N	
B7	9.98	0.0068	Y @ 1% level	
B8	36.26	0.0000	Y @ 1% level	
B9	4.19	0.1239	N	
B10	26.83	0.0000	Y @ 1% level	
B11	6.21	0.0448	Y @ 5% level	
B12	0.34	0.8434	N	

** In cross-tabulation of test, some cells have expected frequencies smaller than* 5. *Test must therefore be interpreted with caution*

Further improvement in reliability of results was sought by combining the scale ratings (1 & 2; 3 & 4) for Section B.

Table 5.11: Results using all year of enrolment data in sample and testing relationship between year of enrolment and survey responses, as rated either 1, 2, 3, 4 or 5 on scale

Q	C^2	P-value	Significant: Y or N	C^2 - test not reliable
B1	13.02	0.1112	N	
B2	18.50	0.0178	Y @ 5% level	*
B3	17.38	0.0264	Y @ 5% level	*
B4	11.80	0.1605	N	*
B5	11.30	0.1854	N	*
B6	18.93	0.0153	Y @ 5% level	*
B7	4.67	0.7922	N	*
B8	11.24	0.1883	N	*
B9	15.22	0.0550	N	*
B10	26.72	0.0008	Y @ 1% level	*
B11	10.62	0.2244	N	
B12	15.87	0.0443	Y @ 5% level	*
C1	*26.34*	*0.0009*	*Y @ 1% level*	*
C2	12.77	0.1199	N	*
C3	6.76	0.5632	N	*

C4	19.55	0.0122	Y @ 5% level	*
Abroad	0.13	0.9365	N	
Post-grad	3.47	0.1760	N	*

** In cross-tabulation of test, some cells have expected frequencies smaller than* 5. *Test must therefore be interpreted with caution*

Using all years of enrolment (1st, 2nd and 3rd) in the sample and conducting chi-square tests of significance between year of enrolment and the survey responses did not produce entirely reliable results.

Table 5.12: Results using only 1st and 2nd year of enrolment in sample and testing relationship between year of enrolment and survey responses, as rated either 1, 2, 3, 4 or 5 on scale

Q	C^2	P-value	Significant: Y or N	C^2 - test not reliable
B1	6.67	0.1541	N	
B2	6.26	0.1803	N	
B3	13.28	0.0100	Y @ 1% level	
B4	5.24	0.2640	N	
B5	8.21	0.0840	N	*
B6	2.23	0.6938	N	*
B7	3.25	0.5163	N	*
B8	6.89	0.1418	N	
B9	14.78	0.0052	Y @ 1% level	
B10	18.40	0.0010	Y @ 1% level	
B11	9.64	0.0470	Y @ 5% level	
B12	9.36	0.0527	N	
C1	*22.65*	*0.0001*	*Y @ 1% level*	
C2	7.80	0.0990	N	

C3	2.46	0.6517	N
C4	14.70	0.0054	Y @ 1% level
Abroad	0.01	0.9427	N
Post-grad	1.36	0.2431	N

** In cross-tabulation of test, some cells have expected frequencies smaller than* 5. *Test must therefore be interpreted with caution*

More reliability was obtained in the chi-square test of significance testing the relationship between year of enrolment and the survey responses, when excluding all units of analysis enrolled for third year courses.

Table 5.13: Results using only 1st and 2nd year of enrolment in sample and testing relationship between year of enrolment and survey responses, but combining 1 & 2 scale ratings and 4 & 5 scale ratings

Q	C^2	P-value	Significant: Y or N	C^2 - test not reliable
B1	5.95	0.0510	N	
B2	4.23	0.1209	N	
B3	8.65	0.0132	Y @ 5% level	
B4	3.02	0.2212	N	
B5	7.85	0.0198	Y @ 5% level	
B6	1.75	0.4175	N	
B7	2.65	0.2658	N	
B8	6.44	0.0399	Y @ 5% level	
B9	7.43	0.0244	Y @ 5% level	
B10	6.30	0.0428	Y @ 5% level	
B11	8.66	0.0131	Y @ 5% level	
B12	7.50	0.0236	Y @ 5% level	

** In cross-tabulation of test, some cells have expected frequencies smaller than* 5.

Test must therefore be interpreted with caution

More unreliable results were replaced by reliable results by combining the scale ratings (1 & 2; 3 & 4) of responses and testing the relationship between year of enrolment and survey responses.

Table 5.14: Results using all universities in sample and testing relationship between universities and survey responses, as rated either 1, 2, 3, 4 or 5 on scale

Q	C^2	P-value	Significant: Y or N	C^2 - test not reliable
B1	6.60	0.5803	N	
B2	23.11	0.0032	Y @ 1% level	
B3	15.72	0.0465	Y @ 5% level	
B4	14.38	0.0724	N	*
B5	14.96	0.0600	N	*
B6	17.07	0.0294	Y @ 5% level	*
B7	5.59	0.6929	N	*
B8	25.23	0.0014	Y @ 1% level	
B9	17.09	0.0292	Y @ 5% level	
B10	22.83	0.0036	Y @ 1% level	
B11	10.87	0.2093	N	
B12	19.29	0.0134	Y @ 5% level	
C1	*32.62*	*0.0001*	*Y @ 1% level*	

C2	35.93	0.0000	Y @ 1% level	
C3	16.19	0.1109	Y @ 5% level	*
C4	38.70	0.0000	Y @ 1% level	
Abroad	17.43	0.0002	Y @ 1% level	
Post-grad	1.94	0.3788	N	

** In cross-tabulation of test, some cells have expected frequencies smaller than* 5. *Test must therefore be interpreted with caution*

Chi-square tests of significance were conducted using all the universities in the sample to test the relationship between the universities attended by respondents and the survey responses. Some of the results obtained were not reliable.

Table 5.15: Results using all universities in sample and testing relationship between universities and survey responses, but combining 1 & 2 scale ratings and 4 & 5 scale ratings

Q	C^2	P-value	Significant: Y or N	C^2 - test not reliable
B1	6.17	0.1867	N	
B2	14.50	0.0058	Y @ 1% level	
B3	7.59	0.1079	N	
B4	10.98	0.0268	Y @ 5% level	
B5	12.84	0.0121	Y @ 5% level	
B6	1.80	0.7733	N	
B7	1.61	0.8076	N	
B8	22.61	0.0002	Y @ 1% level	
B9	9.56	0.0485	Y @ 5% level	
B10	14.46	0.0060	Y @ 1% level	
B11	8.51	0.0745	N	
B12	9.37	0.0526	N	

** In cross-tabulation of test, some cells have expected frequencies smaller than* 5. *Test must therefore be interpreted with caution*

In order to try and improve the number of reliable results, the relationship between the university attended by the respondents and the survey results was tested but after combining the scale ratings (1 & 2; 3 & 4) of the responses.

Table 5.16: Results using only Black respondents in sample, all three universities but distinguishing two campuses of university one and testing relationship between universities and survey responses, as rated either 1, 2, 3, 4 or 5

Q	C^2	P-value	Significant: Y or N	C^2 - test not reliable
B1	21.90	0.0387	Y @ 5% level	*
B2	31.59	0.0016	Y @1% level	*
B3	13.24	0.3520	N	*
B4	17.77	0.1227	N	*
B5	9.47	0.6622	N	*
B6	20.04	0.0664	N	*
B7	8.73	0.7260	N	*
B8	29.09	0.0038	Y @ 1% level	*
B9	17.41	0.1348	N	*
B10	16.08	0.1870	N	*

B11	10.18	0.6000	N	*
B12	17.19	0.1425	N	*
C1	*22.89*	*0.0287*	*Y @ 5% level*	*
C2	25.58	0.0123	Y @ 5% level	*
C3	12.78	0.3855	N	*
C4	39.82	0.0001	Y @ 1% level	*

** In cross-tabulation of test, some cells have expected frequencies smaller than* 5. *Test must therefore be interpreted with caution*

The chi-square tests conducted to establish the relationship between Black respondents and the university and campus attended by them did not produce reliable results.

Table 5.17: Results using only Black respondents in sample, all three universities but distinguishing two campuses of university one and testing relationship between universities and survey responses, but combining 1 &2 scale ratings and 4 & 5 scale ratings

Q	C^2	P-value	Significant: Y or N	C^2 - test not reliable
B1	16.28	0.0123	Y @ 5% level	*
B2	16.03	0.0136	Y @ 5% level	*
B3	6.79	0.3409	N	*
B4	12.01	0.0618	N	*
B5	5.79	0.4475	N	*
B6	6.34	0.3857	N	*
B7	4.77	0.5741	N	*
B8	16.00	0.0138	Y @ 5% level	*
B9	8.21	0.2233	N	*
B10	10.68	0.0987	N	*

B11	8.42	0.2089	N	*
B12	6.35	0.3848	N	*

** In cross-tabulation of test, some cells have expected frequencies smaller than* 5. *Test must therefore be interpreted with caution*

In order to try and improve the results, chi-square tests were conducted on the same data but after having combined the scale ratings (1 & 2; 3 & 4) for the responses. This failed to improve the reliability of the test results.

CHAPTER 6

Discussion of results

This chapter provides a discussion of the research findings and highlights the instances in which these either support or contradict the presumptions made in Chapter 2. In the first section, an overview of the findings is provided. In remaining sections, the findings relating to each research question posed in Chapter 3 are discussed.

6.1 Overview of main research findings

The primary aim of the research was to assess the readiness of South African undergraduate students for the new world of work, which is shaped by the characteristics of the knowledge economy. Of interest in this regard, was the determination of whether undergraduate students possess the soft skills required by knowledge workers. It follows that the survey administered surveyed respondents' preferences for aspects of the old and new worlds of work.

The broad results of the survey (Figure 5.10) show that the majority of South African undergraduate students - 55.3% of the survey sample – display a preference for the new world of work. Although 17.5% are indifferent between the two worlds of work, nearly a third of the survey respondents still reflect a preference for the old world of work. However, for most of the questions /

statements posed in Section B of the survey, respondents reflect a preference for the new world of work (Figure 5.8). A moderate preference for the old world of work (a scale reading of two) was most often reported with respect to statements B1 and B3, and a strong preference for the old world of work (a scale reading of one) with respect to statements B9 and B10 of the survey. Instead, respondents mostly show a strong preference for the new world of work (scale reading of five) in respect of statements B4, B5, B7, B8, B11 and B12 and a moderate preference for the new world of work (scale reading of four) with regard to statements B2 and B6.

With regard to the broad results obtained for Section C (Figure 5.9), most respondents show a preference for the new world of work, as illustrated by the modes obtained for statements C2, C3 and C4. Recall that of the four statements, these three were worded in such a way that a strong scale reading reflects a preference for the new world of work. The opposite is the case for statement C1. For the latter, the mode reported shows that there is a moderate preference for the old word of work.

On balance, therefore, the overall results intimate that South African undergraduate students are mostly ready, from an attitudinal and preference perspective, for the new world of work. The areas for which there is a low degree of readiness are related to education, reward and work place structures or to some attachment, development and work practice factors, as defined by McGregor *et al* (2004). These issues are analysed more closely in the sections that follow.

6.2 Research findings relating to attachment factors (Question 1)

In Chapter 3, the following question was posed, “are South African undergraduate students mostly flexible and adaptable as required by the knowledge economy?”

6.2.1 General findings

The answer to the question was sought, in the survey, with respect to flexibility in different spheres. In Section A of the survey, respondents were asked to indicate whether they are considering working abroad on a short-term contract basis and, if so, why. In addition, in Section B, they were asked to indicate their preference for company loyalty versus individualism, a stable and predictable environment versus a fast changing environment, an environment that requires rigidity in the individual versus an environment that requires flexibility in the individual, work that requires little to no self-management and individual initiative versus work that requires complete self-management and initiative, and an environment that provides job security versus job flexibility. For four out of these seven statements, respondents indicated a clear preference for the characteristics and preferences that shape the new world of work.

The survey results show that respondents are most willing to work abroad (71.5% of respondents), they quite clearly favour a fast-changing environment (45.3%), an environment that requires individuals to be flexible (81.0%) and self-management and initiative (76.7%). Still, they value company loyalty (41.0%) and job security (66.5%) associated with the old world of work. In

addition, although willing to work abroad for reasons related to the new world of work, it is not conclusively clear that this is a reflection of flexibility of undergraduates. If one considers the reasons for wanting to work abroad, nearly 50% of respondents indicate that it is for reasons such as to gain experience, exposure and to learn more. These are all reasons that can be associated with the new world of work, in other words, the willingness to learn and increase one's skills. However, many respondents (32.4%) gave no indication of their reason for wanting to work abroad. Further, nearly 20% provided reasons not related to knowledge worker characteristics. Thus, the finding is somewhat inconclusive.

6.2.2 Significance of race

On balance, undergraduates reflect a considerable level of flexibility. This level of flexibility seems to be, in some instances, statistically significantly related to race. Chi-square tests of the relationship between race and the responses to statements B1, B2, B5, B6 and B10 report either a 95% or 99% probability of significance. The chi-square test results obtained when cross-tabulating the individual scale responses of one to five and all races are not fully reliable. However, if the scale responses are combined, as explained in Chapter 4, Section 4.6.3, and certain races are excluded, the reliability improves (see Table 5.9 and Table 5.10). The chi-square tests then reveal that race is significant for all statements pertinent to research question 1, barring for B6. Thus, race and the level of preference for self-management and initiative are not statistically significantly related. To sum up, race plays a role in influencing the preference between the old and new world of work when it comes to most

attachment factors.

By way of example, the survey results show that most undergraduates relate more closely to the old world of work in respect of their preference for a work environment that provides job-security. In this respect then, they reflect a low level of flexibility. In the literature review, it was pointed out that education is key in providing labour market entrants with the flexibility they require to adjust to the modern, ever-changing work environment (Edwards, 2001). It was also pointed out that the apartheid education system created a generation for whom employment prospects were negatively affected (Case & Yogo, 1999). Combining these two aspects results in a possible explanation for how race impacts on the preference for job security. Black respondents' preference for job security is clearly linked to the experience of prior generations of Black employees (respondents' parents and grandparents), for whom employment prospects were limited and precarious as a result of their inferior quality of education and the discrimination instilled in all social structures by the apartheid system. In addition, there is reason to believe that some of the current Black undergraduates might also have been exposed to inferior quality education at primary and secondary level (Case & Yogo, 1999). Since the attitudinal and behavioural legacies of apartheid are also said to linger (Kraak, 2004) and to still result in discrimination against Black graduates by some employers, it is understandable that the current generation of Black undergraduates still seeks job security.

6.2.3 Significance of year of enrolment

As far as White respondents are concerned, the more equitable systems in social structures brought about by the new democratic dispensation over the past decade or so might be influencing their preference for job security. Not only is the current system more equitable, it also attempts to redress past imbalances. This has rendered job opportunities for White graduates scarcer, which could account for their preference for job security.

With the aid of chi-square tests, the significance of year of enrolment for attachment factors was also investigated. The aim was to determine whether tertiary education plays a role in determining the preferences of undergraduate students with respect to the world of work. If so, this would mean that tertiary education might be able to bridge any soft skills gap that might exist between students of different races who have been exposed to different quality levels of primary and secondary education, again because of the legacy of apartheid. As pointed out by Case and Yogo (1999) in the literature, education structures did not instantaneously change after 1994.

In the first round of tests, the results obtained were mixed and not all fully reliable (see Table 5.11). In the second round of tests (see Table 5.12) reliability improved and in the third round it was absolute. The tests show that there is a statistically significant relationship at the 5% and the 1% level of confidence, between year of enrolment (using first and second year only) and survey responses (when combined) for statements B5 and B10 respectively. The relationship between year of enrolment and the answers to the other statements

is not statistically significant. Thus, the influence of year of enrolment on attachment factors appears to be limited.

6.2.4 Significance of university attended

The significance of the relationship between the university students are enrolled at, and their responses to the surveys was also investigated. Conclusive results were obtained across the board only after combining survey responses (see Table 5.14 and Table 5.15). Universities attended appear to be statistically significantly related to the responses provided for statements B5 and B10. The probability of the relationship is as high as 99% for B10 and 95% for B5. Surprisingly, a significant relationship appears to exist between the willingness of undergraduate students to consider contract work abroad and the university they are enrolled at. Table 5.14 shows that the probability of this relationship being statistically significant is 99%. Nonetheless, as with year of enrolment, the influence of the university attended on attachment factors is limited.

One last test was run to determine whether there are statistically significant differences between Black undergraduate students attending the campus outside Gauteng and their cohorts in Gauteng (see Table 5.16 and Table 5.17). These tests did not produce any reliable results, as the small sample size of Black students from the Gauteng campus of the one university resulted in small frequencies being obtained in some of the cross-tabulation cells and there was no way of eliminating this problem. Although the results therefore have to be accepted or interpreted with caution, they show that there is a statistically significant relationship between Black undergraduate students' survey

responses to statements B1 and B2 and the university they attend.

6.2.5 Implications of and conclusions from findings

Flexibility is a highly sought-after quality in knowledge workers. Openness to change (Hough & Neuland, 2001; Stevens, 1996, in Neef), autonomy and self-management skills (Brown & Lauder, 2006) are all considered key attributes for knowledge workers to succeed in the new world of work. South African undergraduate students display these characteristics. However, they are not yet fully accepting of job flexibility.

The research findings show that race has something to do with this, as discussed earlier. However, undergraduates probably also have difficulty in accepting job flexibility because of the uncertainty and instability it can bring. This is not surprising. As encountered in the literature, even in more developed countries where the changes brought about by globalisation and the knowledge economy are widespread, job security remains a primary concern (Bredgaard *et al*, 2005). In trying to deal with this issue, more and more countries are seeking to adopt a flexicurity labour market model for this very reason (Klammer, 2005).

In addition, South African labour law has undergone a number of changes over the past decade aimed at enhancing and protecting employee rights, in line with the dismantling of the apartheid system. It could be argued that labour laws have an employee bias. It is therefore possible that undergraduate students' preference for job security is partially influenced by the knowledge that South African labour legislation possesses this bias. Given the significance of the

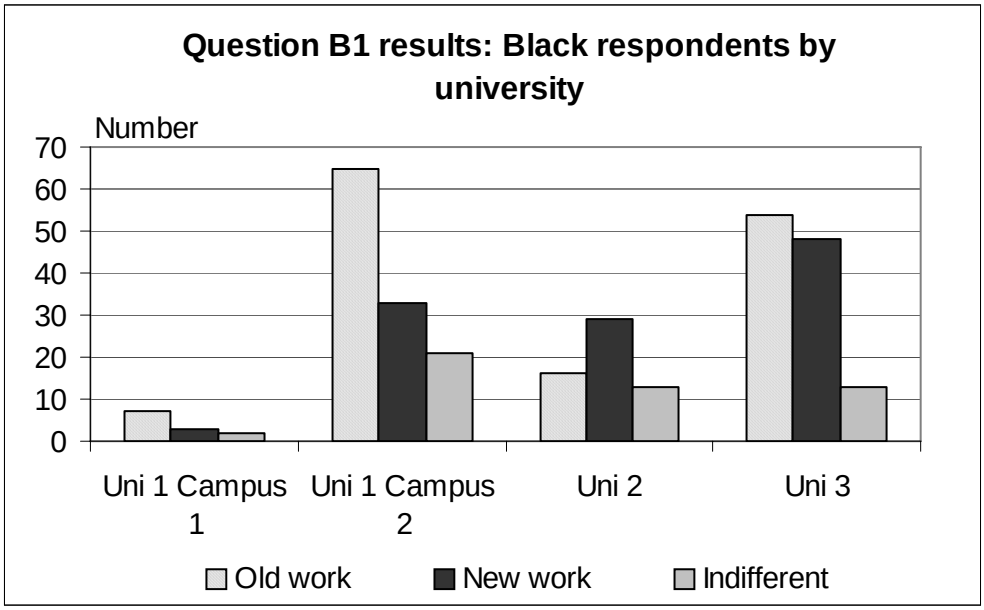
relationship found to exist between the year of enrolment and the preference for job security, as well as the university attended and the preference for job security, evidently tertiary education could play a role in encouraging a more favourable disposition towards job flexibility. In particular, tertiary education could expose undergraduates to the labour market developments brought about by globalisation and educate them on the options available, for example, the flexicurity labour market model.

Furthermore, given that race displays a significant relationship to the responses collected for B1 (Table 5.9), which show that undergraduate students still have a strong preference for loyalty towards a company (Table 5.1), the suspicion that socialisation factors are pertinent in determining the disposition towards the new world of work is partially confirmed by the research. In other words, preference for the old work of work with respect to statement B1 could be related to the attitudinal legacy created by the apartheid system of education and the socialisation process that undergraduate students underwent at primary and secondary school. Edwards (2001), states that inadequate education can lead to labour inflexibility. In addition, it is notable that the chi-square test results compiled in Tables 5.16 and 5.17 show that there is a 95% probability that there is a statistically significant relationship between the responses collected for statement B1 among Black respondents and the university or campus they attend (even though, as pointed out, these findings are not statistically conclusive). The responses to B1 are also shown in Figure 6.1. This can be interpreted to mean, albeit with caution, that at the campus outside Gauteng the attitudinal legacy of apartheid education is stronger, as it is probable that most

Black respondents in the relevant area (which is less centralised and developed) were exposed to inferior primary and secondary education.

A final comment with regard to the findings for B1 can be made. The preference displayed by respondents for the old world of work characteristic of loyalty to the organisation contradicts the tenet made by the generation X and Y debate in this regard. The debate suggests that Generation Xers are individualists, not loyal to one company and that they embrace change (which is a sign of flexibility). Clearly, these research findings show that the generational theory is not applicable in the South African context.

Figure 6.1: Question B1 results for Black respondents only, by university



6.3 Research findings relating to motivation factors (Question 2)

The second question posed in this research was, “Are South African undergraduate students mostly motivated by job benefits and security (via fixed reward structures) or intellectual stimulation and lure of flexible rewards as knowledge workers ought to be?

6.3.1 General findings

The survey results for the relevant questions, namely B11 and B12, are mixed (Table 5.2). Undergraduate students have a clear strong preference (69.2%) for flexible reward structures that include profit sharing rather than fixed and limited reward structures. However, the findings for B11 are inconclusive, as 41.2% of respondents indicate favouring motivation through intellectual stimulation but a very similar 39.1% indicate a preference for motivation via job benefits and security.

6.3.2 Significance of race, year of enrolment and university attended

The chi-square tests show that there is a statistically significant relationship between the responses to statements B11 and B12 and race (see Table 5.9). In contrast, year of enrolment has no bearing on the responses to these statements, while the university attended appears to be statistically significantly related to the responses received only for B12 at the 5% confidence level. There does not appear to be a statistically significant relationship between the universities and campuses attended by Black students and the responses to statements B11 and B12, although the results are not entirely reliable (Table 5.16 and Table 5.17).

6.3.3 Implications of and conclusions from findings

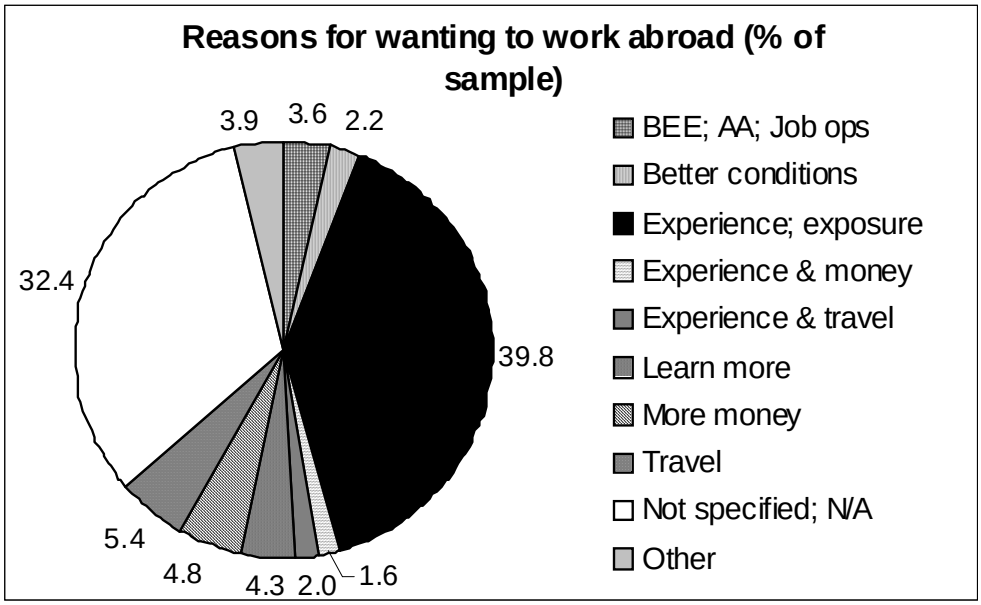
These findings partly resonate with the findings of Question 1 in Section 6.2. The statistically significant relationship between race and the responses collected for B11 and B12 suggest that socialisation factors play a role in determining undergraduates' readiness for the new world of work as characterised by the reduced level of job security.

Unfortunately, with respect to B11, motivation through intellectual stimulation is not a trait that can be influenced and encouraged through tertiary education, since both year of enrolment and the university attended do not have a statistically significant relationship to the survey responses. Rather, since undergraduates have a stronger preference for stimulation through job benefits and security, and the preference for job security is in turn possibly a legacy of South Africa's apartheid policies, this problem might only be overcome with the passing of time. Still, it is evident that primary and secondary education fail to instil a strong thirst for knowledge in students, given their low preference for intellectual stimulation.

It has to be considered, however, that perhaps the high degree of uncertainty created by affirmative action (AA) and black economic empowerment (BEE) among White undergraduates, and the fact that there is such a high level of unemployment in the country, might also have something to do with the preference for job security. Figure 6.2 shows that nearly 6% of respondents indicated considering to work abroad due to BEE/AA reasons and the

perception that there might be better opportunities and conditions in other countries. In some instances, respondents indicated that “better conditions” meant less crime. In addition, the unemployment data available from Stats SA (Appendix B) show that the greater percentage of discouraged work seekers can be found in the 20 – 29 years age bracket. A large percentage of respondents did not provide a reason for considering working abroad. Further investigation might reveal whether there is further strength to the BEE/AA and better conditions factors.

Figure 6.2: Reasons for wanting to work abroad



The findings made in this section suggest that the mindset of undergraduates is inadequate for the new world of work as far as intellectual stimulation is concerned. The link between this and race is clear (see Table 5.9) and confirms the suggestion made by Hough and Neuland (2001), that the more diverse the experiences between individuals are, the greater the likelihood that their

mindsets will differ.

In conclusion, although undergraduates might be in the process of becoming knowledge workers for all intents and purposes, their mindset with regard to certain factors characterising the new world of work could remain a barrier to integration into this world.

Furthermore, South African undergraduates who are in the age-bracket of Generation Y are not as thirsty for intellectual challenge as they are for employment security. This provides yet more proof that generational theory can be refuted within the South African context.

6.4 Research findings relating to work practice factors (Question 3)

Question 3 investigated whether South African undergraduate students prefer stable, functions-based work or varying project work that is more customer rather than functions focused.

6.4.1 General findings

The survey responses in this regard (Table 5.3), report a clear preference for project-based work (82.6%) as far as the results for question B4 are concerned, which is indicative of an alignment to the new world of work. However, the responses collected for C1 reflect a moderate to strong preference for functions-based work, as only 33.3% of respondents selected a low preference

rating on the five point Likert scale for this statement. As shown in Figure 5.9, the most frequent response to question C1 was a rating of three, which means that respondents predominantly have a moderate preference for functions-based work. This clearly contrasts with the overwhelming findings for B4 that report a preference for project-based work. However, the difference could be accounted for by the fact that in question B4, project-based work was also associated with a growing skills set and that respondents, therefore, also associated strongly with this in contrast to the static skills set associated with functions-based work in the contrasting statement provided.

6.4.2 Significance of race, year of enrolment and university attended

The chi-square tests conducted on responses collected for C1 show that there is a statistically significant relationship between these responses and race (see Table 5.9), year of enrolment (see Table 5.12) and university attended (see Table 5.14). Thus, while socialisation factors might be responsible for the tendency to prefer functions-based work, tertiary education could play a role in altering this preference.

6.4.3 Implications of and conclusions from findings

There is a need to address the shortcoming highlighted by the research findings above. In the literature, Abell (2000) points out that knowledge workers are required to seek out the opportunities provided by the new world of work, rather than to concentrate on performing functions. “Can-do” and proactive individuals, as described by Abell, are required. Indeed, individuals that merely perform

repetitive functions cannot be innovative, and innovation is key in the knowledge economy (Powell & Snellman, 2004; Isaak, 2005; Neef, 1998).

6.5 Research findings relating to reward factors (Question 4)

Do South African undergraduate students prefer stable reward structures aligned to internal, vertical promotion or volatile reward structures that require cross-functional advancement in the ever-changing new world of work?

6.5.1 General findings

The findings from the survey, as reported in Table 5.4, show that undergraduate students in South Africa still have a preference for climbing the corporate ladder rather than accepting lateral career movements. This finding provides more reason to doubt the generational theory, which ascribes the preference for hierarchy to the Baby Boomers. The survey responses suggest that Generation Y still attaches a great degree of importance to hierarchy.

6.5.2 Significance of race, year of enrolment and university attended

The chi-square tests show that race is not significantly related to the responses provided for B9 (see Table 5.9). However, both year of enrolment and university attended reflect a statistically significant relationship to the responses provided for B9 (see Table 5.12 and Table 5.14). This means that the preference for hierarchy is not an attitudinal product of the racially determined or influenced education system that students might have been exposed to at primary and

secondary level. Nonetheless, it is a preference that can be influenced by tertiary education.

The findings for question B12, which relates to reward structures, as already reported in Section 6.3 which covers motivational factors, show that undergraduates reflect a strong preference for the new world of work. Thus, the answer to the research question posed as far as reward factors are concerned, is mixed.

6.5.3 Implications of and conclusions from findings

Undergraduates are ready to accept volatile reward structures, however, they still relate reward and hierarchy to one another. The preference for old world of work reward structures needs to be addressed to enhance the readiness of undergraduates for the new world of work, because the latter is increasingly shaped by flatter work structures (Rosecrance, 1996, in Neef).

Once again, tertiary education ought to fill the gap by exposing undergraduates to the implications of the globalising world for the new world of work.

6.6 Research findings relating to development factors (Question 5)

The importance of education and the openness to learning is continuously emphasized in the knowledge economy literature (Anell & Wilson, 2002; Stevens, 1996, in Neef; Abell, 2000). Cortada (1998b, p. 9) maintains that, “(f)

ormal study and application has long been recognised as the road to higher knowledge". Hence, the following question was posed, "are South African undergraduate students predisposed to life-long learning, which entails self-actualised and continuous development, often of a technological nature, both within and outside the work place?"

6.6.1 General findings

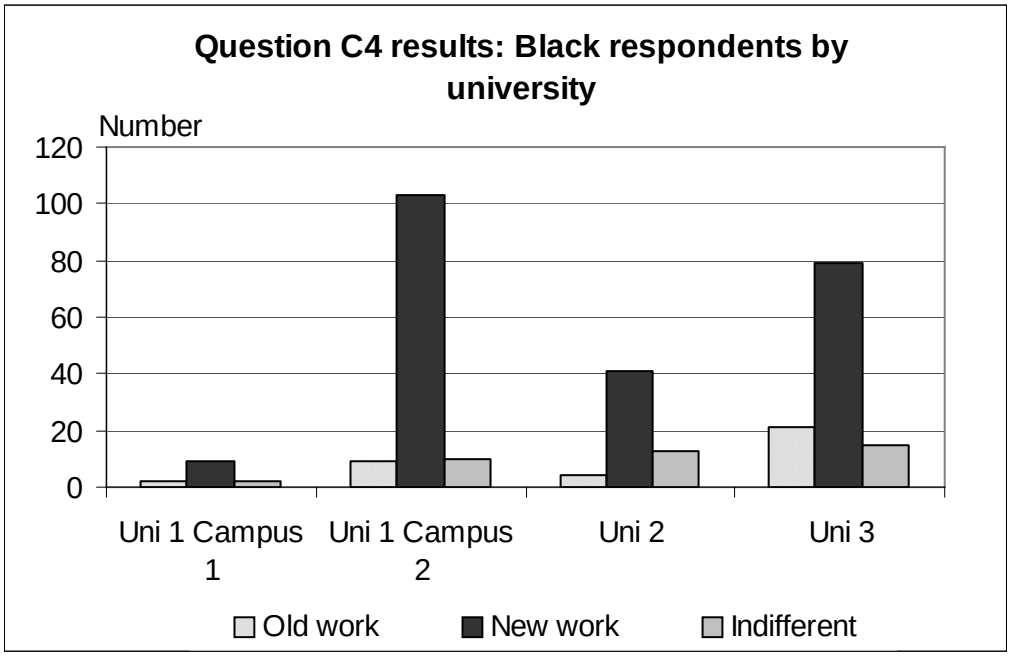
Overall, undergraduates reflect a predisposition to learning as the bulk are considering post-graduate studies (see Table 5.5). In addition, the bulk is considering working abroad. In this regard, as pointed out in Section 6.2, the findings are not absolutely conclusive. However, as can be seen in Figure 6.2, many respondents are considering working abroad in order to gain experience and exposure, a trait that is valued in knowledge workers. More specifically, 4.3% want to work abroad to learn more.

The bulk of respondents (82.6%) indicated a preference for project-based work requiring the acquisition of new skills, or a growing skill set. This can be interpreted positively as far as the development factors associated with the new world of work are concerned. In addition, the bulk of respondents indicated a preference for work requiring knowledge of computer use and keeping abreast of technology developments (question C4). As shown in Figure 5.9, the most prevalent rating selected for C4 was a Likert scale rating of five, indicative of a "strong preference" for the statement. As indicated by Gladieux and Swail (in Payton, 2000), unless employees gain extensive computer experience, their progress in the knowledge based new world of work could be handicapped.

Cortada (1998b) also highlights that, increasingly, the knowledge-based economy requires individuals with computer skills.

It is notable that Black students' openness to computer knowledge and keeping abreast of technological developments is not contrary to that of the entire sample (which they influence greatly, due to the number of Black respondents in the sample). This suggests that despite differences in the quality of primary and secondary education possibly experienced by most Black undergraduates, the negative impact on openness to technology has been minimal. Inferior education institutions are often cash- and resources-strapped, resulting in limited use of computers. Nonetheless, if any negative consequences exist they are clearly being bridged by tertiary education. In addition, the generational discourse could also provide some explanation for this. Generation Y is said to be comfortable with technology as they have grown up in a world dominated by it. This appears to be the only instance in which generation theory has so far been found meaningful in the South African context.

Figure 6.3: Results for question C4 for Black respondents only



6.6.2 Significance of race, year of enrolment and university attended

Chi-square tests show that the relationship between year of enrolment and responses to C4, as well as the relationship between university attended and responses to C4 is statistically significant (see Table 5.12 and Table 5.14). Race is also found to have a statistically significant relationship to the responses for C4. Ultimately, however, the influence of race in this instance is positive in that respondents prefer the new world of work to the old.

The survey results (see Table 5.5) show that undergraduates, despite their openness to learning and skills acquisition, still expect employers to assist in and to drive this process. This is despite the fact that many are considering furthering their studies to post-graduate level, which is an individually-driven decision. This raises the question whether the latter is therefore truly a reflection of willingness to learn or perhaps the by-product of other circumstances. In this

regard, the high rate of unemployment among the youth reported in Chapter 1, comes to mind. The difficulty of finding employment could be driving students to remain at university. However, this would have to be tested further.

6.6.3 Implications of and conclusions from findings

The preference for the old work environment characterised by company-specific, on-the-job training and the future attainment of educational qualifications managed by the employer (question B3) constitutes a barrier, for undergraduates, to the complete integration into the new world of work. Company-specific training is not transferable and this impedes the mobility of employees between companies, which is a characteristic of the knowledge economy. With the flattening of hierarchies, cross boundary advancement and lateral career movements are the mean through which employees can attain the reward factors they seek. Any barrier to employee mobility thus also reduces the possibility of this happening. It is notable and significant then, that both questions B3 and B9 report a preference for the old world of work as, clearly, the two are linked.

Since year of enrolment and university attended reflect a statistically significant relationship to the responses to B3 (see Table 5.12 and Table 5.14), tertiary education can attempt to change this preference for the old world of work.

It is also notable that the preference for the employer to manage the employee's development confirms the character traits attributed to Generation Y in this regard.

6.7 Research findings relating to cultural factors (Question 6)

Do South African undergraduate students have a preference for work autonomy and building inter-personal relationships?

6.7.1 General findings

In the survey, students were asked to rate their preference for complete self-management and individual initiative versus little to no self-management and individual initiative (question B6) and their preference for widespread autonomy versus limited autonomy (question B7). In both instances, responses to these questions show a strong preference for the new world of work (see Table 5.6).

6.7.2 Significance of race, year of enrolment and university attended

It is interesting that the only statistically significant relationship found is that between race and the responses to question B7 (see Table 5.10). Race appears to be related to the preference for autonomy, albeit in a positive manner considering that the sample reports a high preference for autonomy.

6.7.3 Implications of and conclusions from findings

It is tempting to conclude that the country's history of apartheid might have something to do with the preference for autonomy reflected in the sample used in this research, as the system limited the autonomy of certain races in different

contexts, one being the work context. At the same time, the exposure of this research's sample of undergraduate students, who are predominantly younger than twenty one, to the full brunt of the apartheid system as partly enforced through different education systems, is likely to have been limited. Still, socialisation factors clearly play some role in determining the preference for autonomy.

6.8 Research findings relating to inter-personal relationship factors (Question 7)

The final question posed in Chapter 3, concerns whether South African undergraduate students have a predisposition to teamwork and building inter-personal relationships.

6.8.1 General findings

The responses to questions B8 and C3 (see Table 5.7) show that undergraduate students have a strong preference (60.2%) for teamwork and a strong preference (86.2%) for networking and building inter-personal relationships.

6.8.2 Significance of race, year of enrolment and university attended

Chi-square tests show that race and university attended are significantly related to the responses obtained for both questions (see Table 5.9 and Table 5.14). Clearly, however, given the preference for the new world of work in this regard,

the relationship is positive. University attended is also found to be significantly related to the responses obtained from Black undergraduates for question B8 (although the chi-square tests in this regard have to be interpreted with caution). Nonetheless, the relationship would once again appear to be positive.

6.8.3 Implications of and conclusions from findings

One could therefore conclude, albeit with some reservation in the latter example, that tertiary education plays a positive role in influencing an aptitude towards teamwork. However, this is dependent on the tertiary institution itself, since year of enrolment is not statistically significantly related to the responses received for neither B8 nor C3.

6.9 Conclusion of research findings

Barring some inconclusive results, the questions posed in Chapter 3 have been answered by the research findings. In general, although South African undergraduate students appear to possess many of the preferences and character traits required for integration into the new world of work, they are lacking in respect of some.

Where they are lacking and race is significantly related to the shortcomings, the role that the appropriate education system can play in addressing the problem has clearly been highlighted. Indeed, the very reason for the significance of race is in turn related to past education systems. Thus, much of the groundwork

needs to be done at the primary and secondary levels of education. In this regard, however, one also hopes that the passing of time will help improve the situation, as the legacy of apartheid weakens. However, it should not be overlooked that addressing the problem effectively will still depend on the quality of the education system that replaces the old ineffective system.

CHAPTER 7

Conclusion

In this concluding chapter, the main research findings are summarised and the main insights gained are highlighted. The chapter ends with some recommendations related to the research findings as well as recommendations for future research.

7.1 Main findings

This research determined that the South African economy, notwithstanding its emerging market and developing status, is increasingly becoming knowledge based. Although knowledge tends to pervade predominantly the tertiary sector, there is agreement that it affects most economic sectors. Consequently, the economy needs to be populated with intellectual capital and this capital must possess the appropriate characteristics. In other words, knowledge workers that reflect the characteristics analogous to knowledge workers are required.

However, since South Africa has a high unemployment rate, which affects graduates as much as less educated work seekers, the question arose whether perhaps the lack of the necessary soft skills required by knowledge workers is responsible for the lack of skills and skills mismatch seemingly being experienced in the country. Even government has identified these factors as critical impediments to sustainable and strong economic growth.

The survey administered to collect some answers to these phenomena has confirmed the opposite. The majority of South African undergraduates do in fact possess most, albeit not all, the characteristics highlighted in the literature as pertinent for knowledge workers. In other words, they have most of the soft factors required. Most importantly, the level of flexibility reflected by undergraduates that will comprise the future labour entrants within a few years' time is well-developed. However, since race has been identified as a significant determinant of some of the flexibility factors tested, the lack of flexibility in some spheres such as, notably, with regard to job security, suggests that the negative impact of past socialisation structures lingers and influences labour entrants' ability to be fully flexible.

Other remnants of South Africa's past appear to influence the attitude of labour entrants towards the new world of work and to impede them from fully integrating into the knowledge economy work structures. An incorrect mindset, for instance, has been identified and related to undergraduates' low preference for intellectual stimulation and the contrasting high preference for reward-related stimulation in the form of job security.

The research has also shown that, while socialisation factors that reflect concretely in different preferences between races for some of the new world of work characteristics, such as project work versus functions-based work, are at play in some instances, in other instances they are not. For example, where undergraduates appear to still prefer, more strongly, hierarchical work structures associated with the old world of work, socialisation factors play no

role whatsoever. However, some suggestions for ulterior causal factors, as drawn from the data reviewed, have been made, whenever possible, which would need to be investigated further.

The spread of technology appears to have reached and positively influenced the South African youth, at least as far as the youth attending tertiary institutions are concerned. In this regard, even inferior quality primary and secondary education do not appear to have impeded a predisposition to the use of computers and a willingness to keep abreast of technological developments. The research found undergraduates to have a strong degree of acceptance for technological change, suggesting that they are likely to cope well with frequent technological change in the new world of work.

The research has also highlighted that South African undergraduates, possibly as a consequence of past socialisation structures, have a high preference for autonomy in the work place. They also favour teamwork and the development of inter-personal relationships in the world of work.

Where they fall short, however, of some of the required knowledge worker traits, there are instances in which the shortcomings can be addressed. For instance, when it comes to job security, the preference for function-based work, the preference for hierarchical structures and the expectation that their future development and educational needs should be addressed by employers, undergraduates' attitudes could be altered by tertiary education or tertiary education institutions. In some instances, the solution might be generic, across

universities, particularly if year of enrolment has a significant relationship to any of the problematic preferences. In other instances, the solution might be more institutional-specific, if the university attended impacts on preferences.

What the research has confirmed, therefore, is that some shortcomings of future knowledge workers could be addressed at tertiary education level, so that tertiary education could bridge some of the gaps that might exist between undergraduates of different races as a consequence of primary and secondary education quality differences.

The research has also shown that, by and large, undergraduates possess the soft skills required by the knowledge economy and therefore that a skills mismatch, if it exists, does not relate to soft skills. Instead, the research has raised the possibility that attitudinal factors could be influencing the way in which employers regard South African graduate labour entrants to be lacking in skills. In addition, these findings require that the contention that South Africa has a dearth of skills be qualified.

Finally, the research has highlighted, on more than one occasion, the irrelevance of generation theory within the South African context.

7.2 Recommendations

Education has emerged as a dominant theme throughout this research. Attitudinal differences and preferences across races have been linked to past

socialisation structures, in turn the products of the apartheid education system. While this system has largely been dismantled, primary and secondary education are still failing to produce the mindset in the youth that is required by the knowledge economy. An investigation then, by government, into the education system to determine ways in which to encourage the appropriate mindset and attitudes is required. In the meantime, however, all tertiary institutions ought to be encouraged to make more effort in providing graduates with the soft skills they are lacking or that they have but which are poorly developed. The research shows that, at present, some universities might be succeeding, for whatever reason, more than others.

In addition, although the labour legislation in place is in great part aimed at addressing the imbalances created by past apartheid work structures, government needs to investigate whether this legislation is impeding labour market entrants from accepting more flexible work structures and arrangements. In this regard, government should investigate the extent to which a flexicurity labour market model might be appropriate for the South African context. Government also needs to investigate whether labour legislation that provides for BEE/AA is pushing South Africa's knowledge workers abroad in search for better opportunities, as this might be influencing the so-called dearth of skills. At the same time, government and business ought to define what is meant by dearth of skills and skills mismatch, since this research has shown that the soft skills required by knowledge workers are by and large in place. Therefore, there appears to be no reason for a substantial percentage of graduates to be unemployed.

Finally, it is recommended that corporates review their recruitment processes, as these might be discriminating against Black graduates due to the attitudinal legacy of apartheid. In this regard, corporates might also need to embark on a mindset overhaul. In addition, corporates might need to review their reduced willingness to offer some training to new recruits. Although this might appear to contradict the tenets of the knowledge economy, it is merely suggested as a bridging measure.

7.3 Future research recommendations

The research has highlighted that certain areas of the subject matter covered require further investigation. For instance, the mobility and hence flexibility reflected by survey respondents in their willingness to consider working abroad needs to be researched in order to determine whether the learning motivation factor is truly strong or other motivation factors (such as BEE/AA) are stronger.

In addition, the fact that a large proportion of the undergraduates surveyed indicate that they are considering post-graduate studies inevitably leads to the following question: is this a reflection of a thirst for knowledge or is it related to other factors, such as the low likelihood of finding employment in the work place? Indeed, given the low level of preference for intellectual stimulation reflected by the respondents in the sample of this research, it would appear that other factors are at play when it comes to their willingness to pursue post-graduate studies.

It would also be interesting to research the level of understanding among undergraduates of globalisation and what it means for the labour market, the knowledge economy and the new world of work.

In conclusion, extending this particular research more widely across the various South African universities might also produce more useful insights. It might even be worthwhile to extend the analysis to undergraduates enrolled in other faculties to see whether they possess more or less of the attributes required of knowledge workers.

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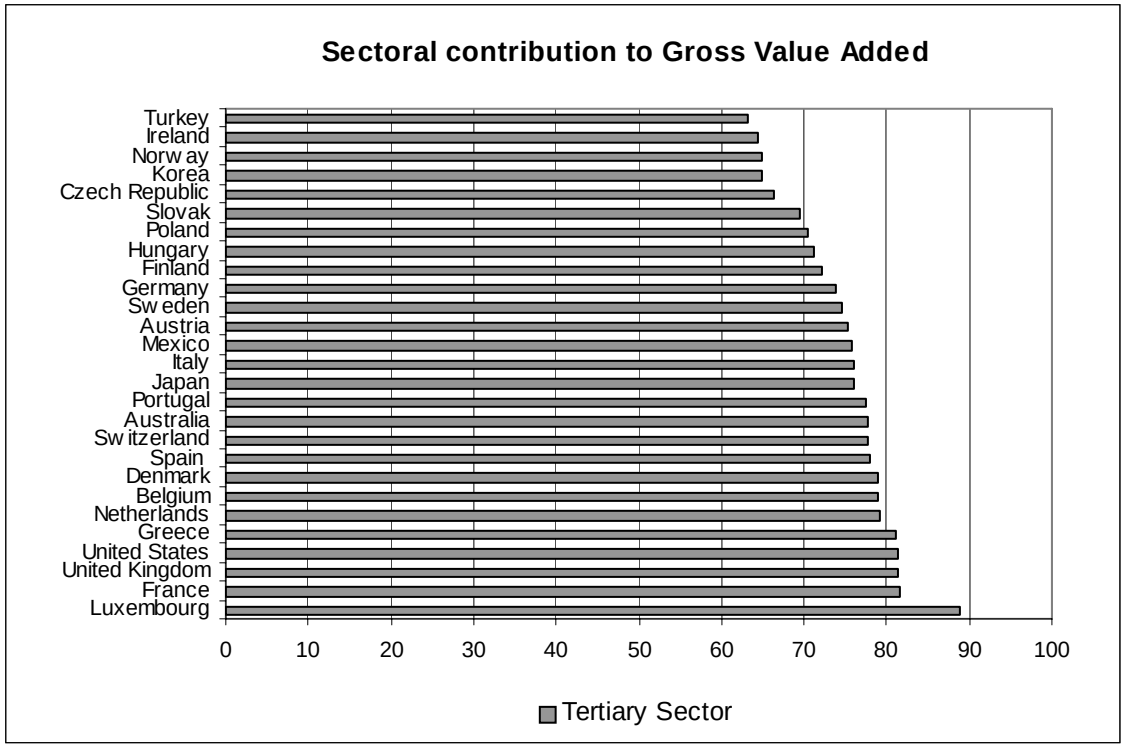
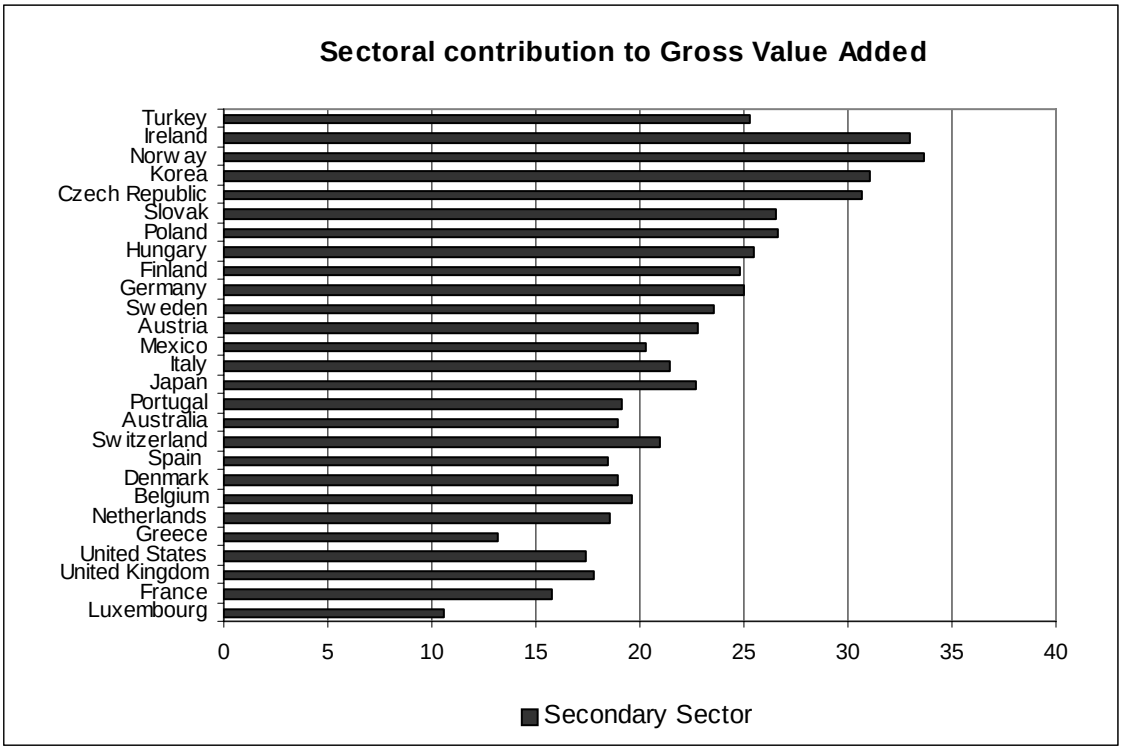
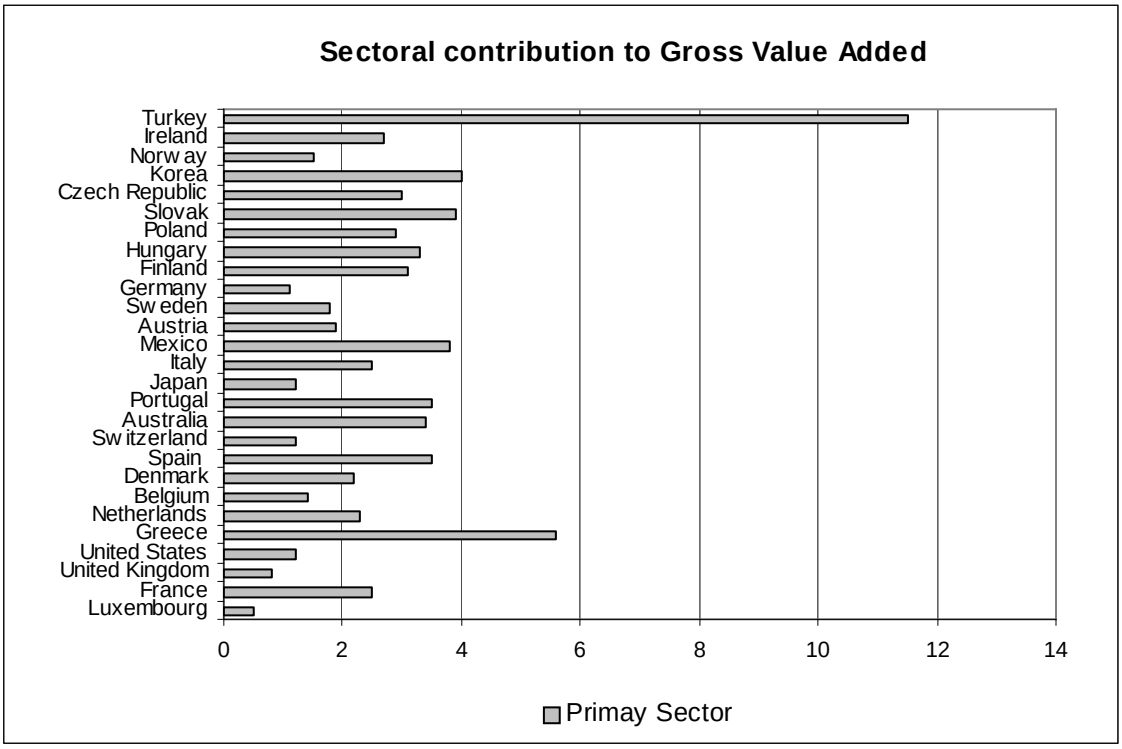
Appendices

Appendix A: Composition of Gross Value Added for selected OECD countries - 2004

(Source: OECD Factbook, 2006)




Sectoral contribution to Gross Value Added
Turkey
Ireland
Norway
Korea
Czech Republic
Slovak
Poland
Hungary
Finland
Germany
Sweden
Austria
Mexico
Italy
Japan
Portugal
Australia
Switzerland
Spain
Denmark
Belgium
Netherlands
Greece
United States
United Kingdom
France
Luxembourg
0
5
10
15
20
25
30
35
40
Secondary Sector


Sectoral contribution to Gross Value Added
Turkey
Ireland
Norway
Korea
Czech Republic
Slovak
Poland
Hungary
Finland
Germany
Sweden
Austria
Mexico
Italy
Japan
Portugal
Australia
Switzerland
Spain
Denmark
Belgium
Netherlands
Greece
United States
United Kingdom
France
Luxembourg
0
2
4
6
8
10
12
14
Primay Sector

Appendix B: Discouraged work seekers by age group

(Source: Stats SA, Labour Force Survey, March 2006)

Age (Years)	Thousand	% of total
15 - 19	319	8.7
20 - 24	980	26.6
25 - 29	782	21.2
30 - 34	508	13.8
35 - 39	349	9.5
40 - 44	274	7.4
45 - 49	213	5.8
50 - 54	135	3.7
55 - 59	98	2.7
60 - 65	24	0.7
Total	3 686	100

Appendix C: South Africa's long-term sovereign debt credit rating and credit ratings scales

(Source: Reuters Guide to Credit Ratings, 2006)

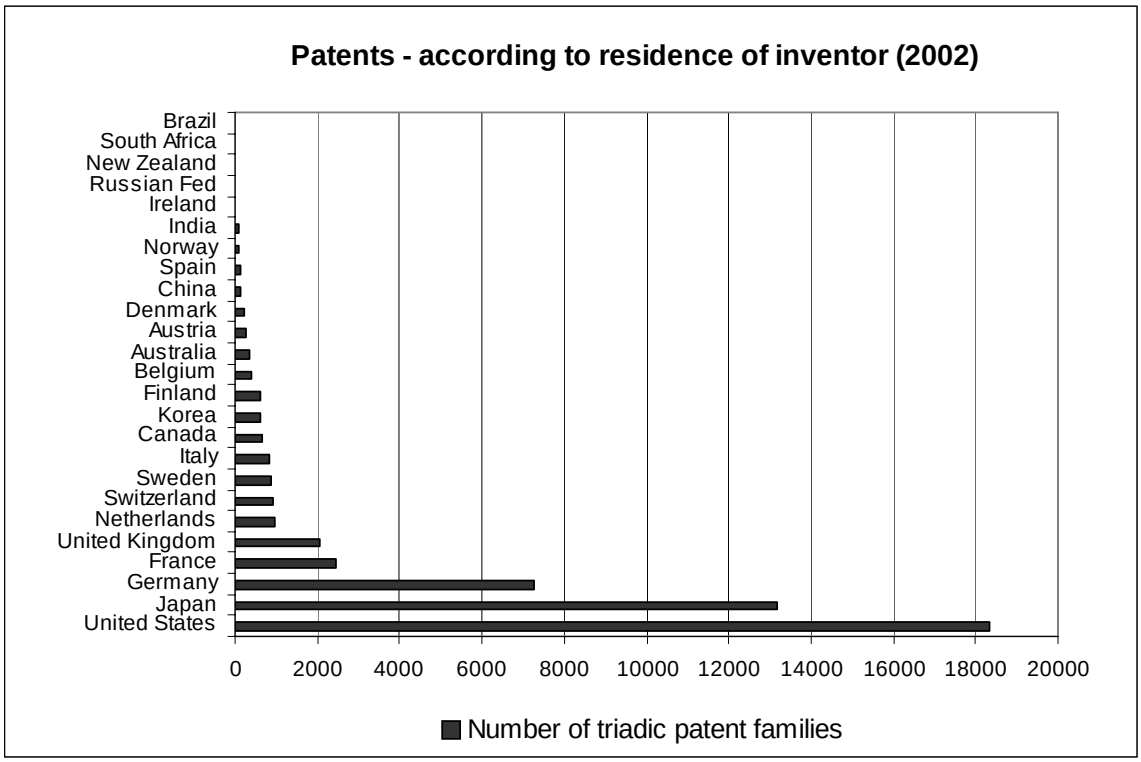
	Standard & Poor's	Moody's	Fitch IBCA
South Africa	BBB+	Baa1	BBB+
Scale	**Standard & Poor's**	**Moody's**	**Fitch IBCA**
Investment grade (highest to lowest)	AAA AA A BBB	Aaa Aa A Baa	AAA AA A BBB
Speculative grade (highest to lowest)	BB B CCC CC C D	Ba B Caa Ca C	BB B CCC CC C DDD/DD/D

Note: S&P and Fitch IBCA ratings from AA to CCC may be modified by a plus or minus sign to show relative standing within the major rating categories.

Moody's applies numerical modifiers, 1, 2, and 3 in each generic rating classification from Aa through B. Modifier 1 indicates the obligation is ranked at the higher end of its generic rating.

Appendix D: Patents data for selected countries and South Africa

(Source: OECD Factbook, 2006)



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YUNIBESITHI YA PRETORIA

Appendix E: Survey administered for research purpose

SURVEY ADMINISTERED FOR THE COMPLETION OF A MASTERS DEGREE IN BUSINESS ADMINISTRATION AT THE GORDON INSTITUTE OF BUSINESS SCIENCE IN 2006

I understand that all information provided by me will only be used for the purpose of this research project and that I will remain anonymous. I confirm having participated under informed consent. (Please tick) ☐

Your participation is very important. However, you may at any point through the survey cease your participation without being negatively affected. Please confirm that you are aware of this. (Please tick) ☐

Biographical and other details (kindly complete to facilitate analysis of survey data)

A1	**Age**	< 21	22-24	25+	
A2	**Race**	Black	Asian	Coloured	White
A3	**Gender**	Male	Female		
A4	**Degree enrolled for**				
A5	**Year of enrollment**	1st	2nd	3rd	Other

A6	Envisaged career\profession (e.g. accountant, financial advisor, etc)	
A7	Are you considering post-graduate studies?	YES / NO
A8	Are you considering working abroad on a short-term contract basis?	YES / NO
A9	If you are considering working abroad, briefly indicate why	

Paired statements appear below. Use the scale 1 to 5 to indicate your preference for either statement. Select either 1 or 2 if you prefer or relate more strongly to the statement on the left and either 4 or 5 if you prefer or relate more strongly to the statement on the right. Only select 3 if you are completely indifferent between statements.
Please only select one number from 1 to 5 for each row.

B1	An environment that values loyalty to the organisation	1	2	3	4	5	An environment that values individualism
B2	An environment that remains stable and predictable	1	2	3	4	5	A fast changing environment
B3	An environment that provides company-specific on-the-job training and manages the attainment of future educational qualifications of its employees	1	2	3	4	5	An environment that encourages and expects employees to manage their own broad self development and the attainment of future educational qualifications
B4	Work that requires carrying out stable and predictable functions and requires a static skills set	1	2	3	4	5	Work that involves varying projects and a growing skills set
B5	An environment that requires rigidity in the individual	1	2	3	4	5	An environment that requires flexibility in the individual

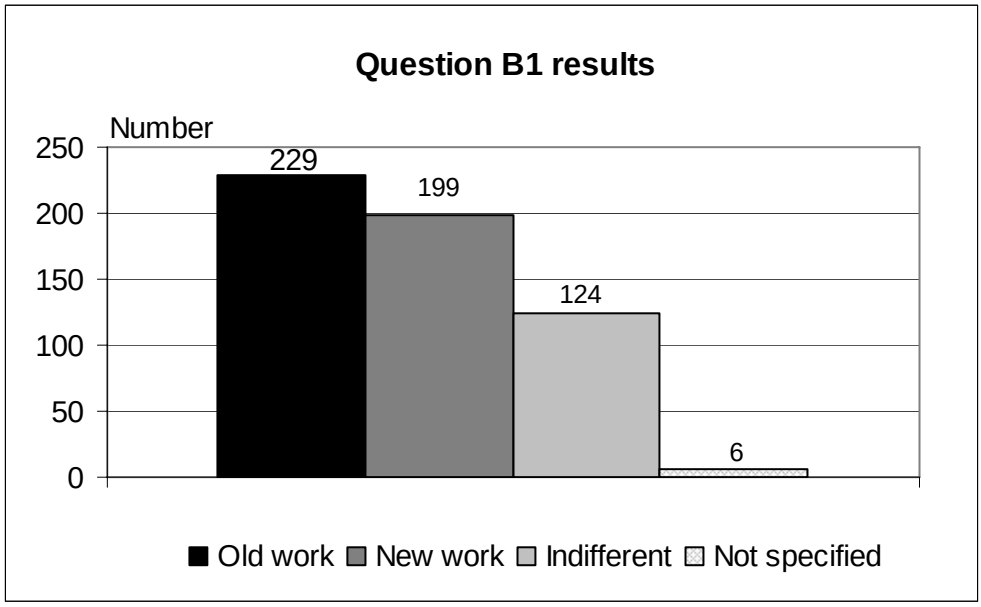
B6	Work and an environment that require little to no self-management and individual initiative	1	2	3	4	5	Work and an environment that require complete self-management and individual initiative
B7	Work and an evironment that limit individual autonomy	1	2	3	4	5	Work and an environment that provide widespread autonomy
B8	Work and an environment that encourage individual work and rivalry or competition	1	2	3	4	5	Work and an environment that require team work
B9	Work and an environment that provide opportunities to climb the corporate ladder	1	2	3	4	5	Work and an environment geared toward cross boundary advancement and hence lateral career movements
B10	A work environment that provides long-term employment prospects (i.e. job security)	1	2	3	4	5	A work environment that provides limited duration contract work (i.e job flexibility)
B11	A work environment that provides motivation through job benefits and security	1	2	3	4	5	A work environment that provides motivation through the nature of the work and intellectual stimulation
B12	Work that is linked to fixed and limited reward structures	1	2	3	4	5	Work that is linked to flexible and volatile reward structures that include profit-sharing

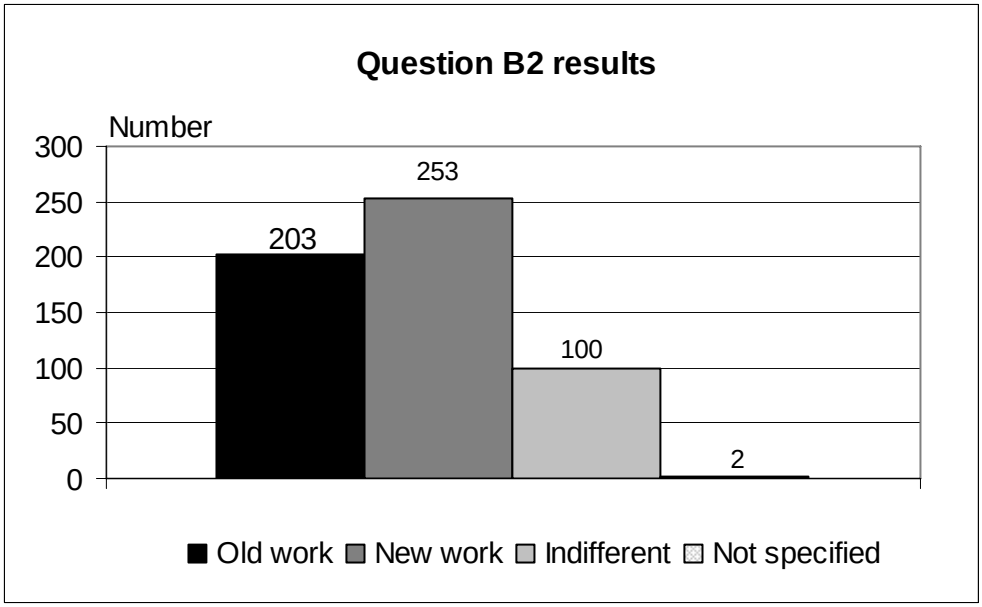
On a scale of 1 to 5, with 1 indicating "very low" and 5 "very high", indicate your level of preference for the following:

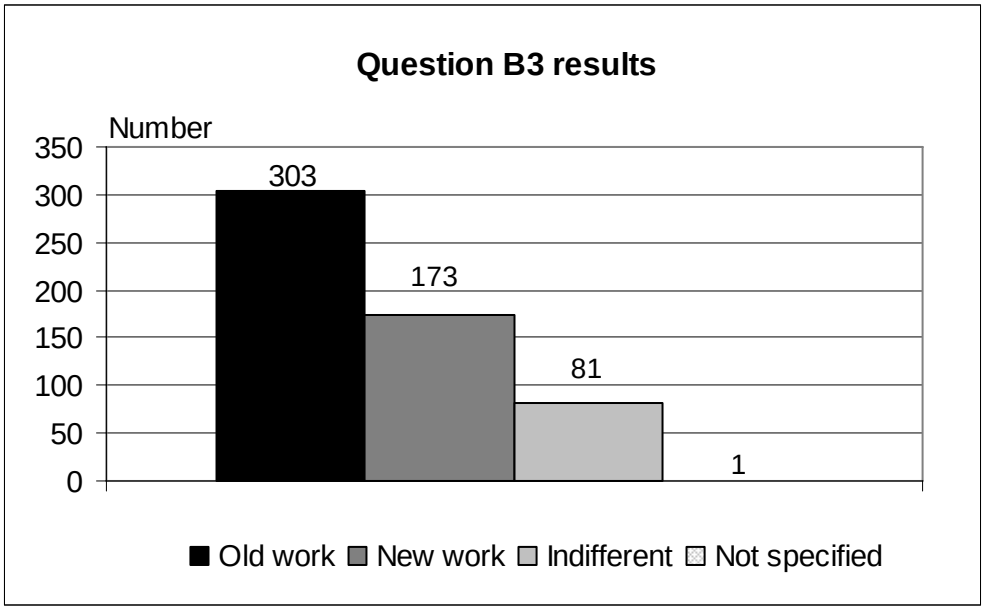
C1	Work that is limited to and focused on performing functions	1	2	3	4	5
C2	Work that requires customer focus	1	2	3	4	5
C3	Work and an environment that offer the opportunity to build professional relationships and to network	1	2	3	4	5
C4	Work and an environement that require knowledge of computer use and keeping abreast of technology developments	1	2	3	4	5

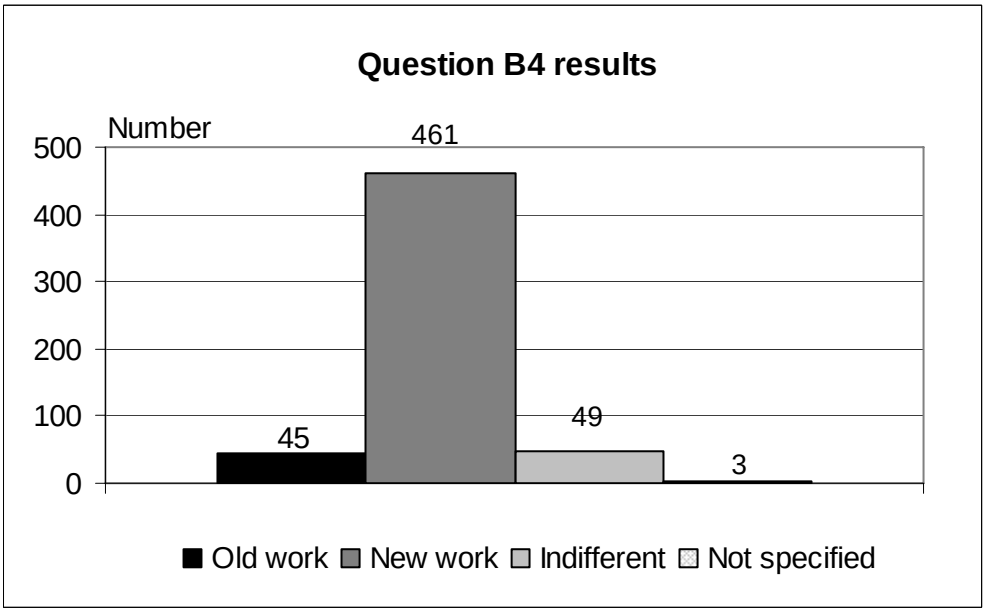
THANK YOU FOR YOUR PARTICIPATION!

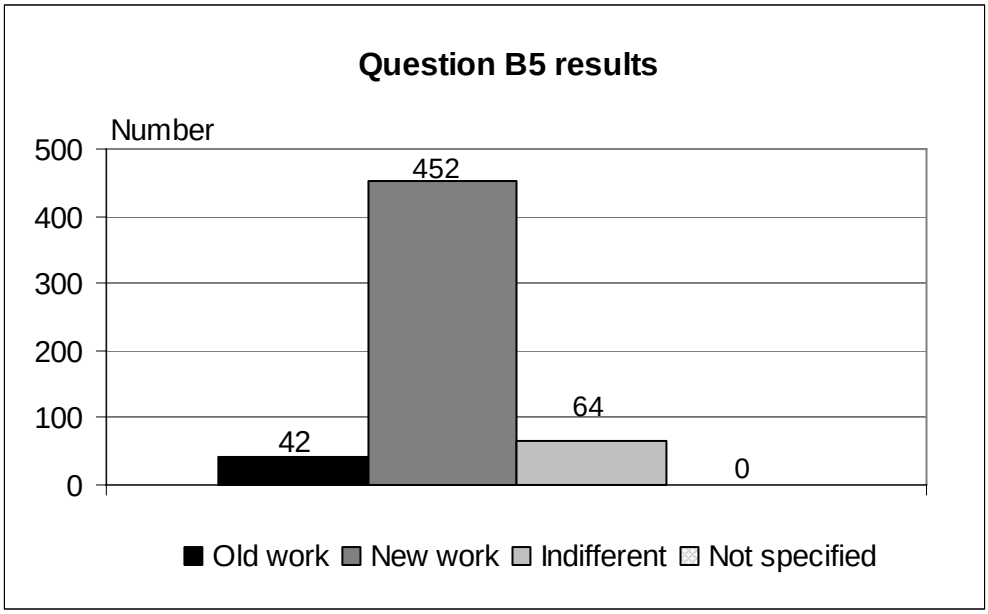
Appendix F: Diagrammatic representation of survey results

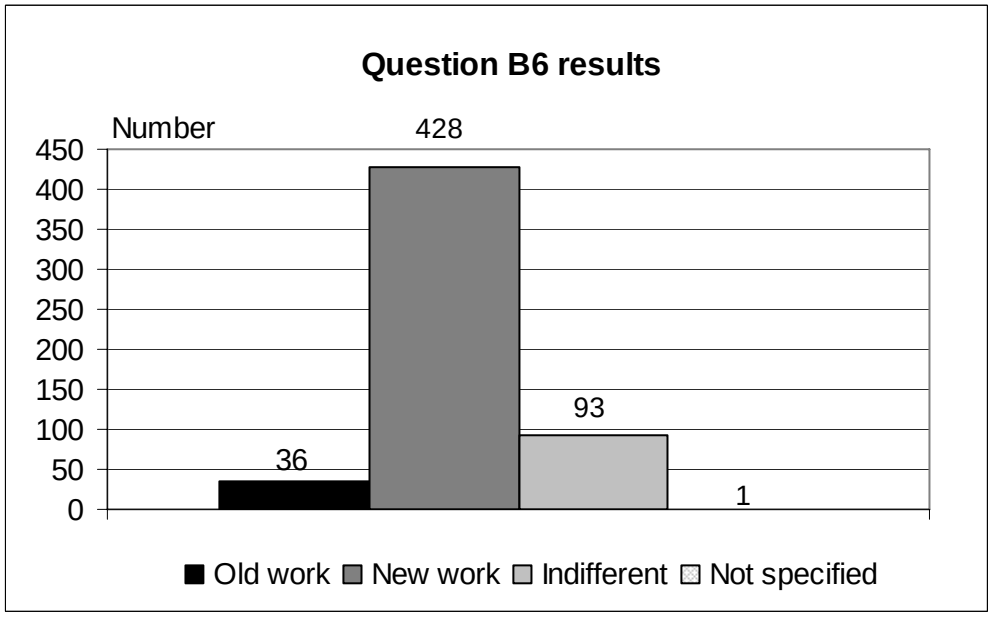


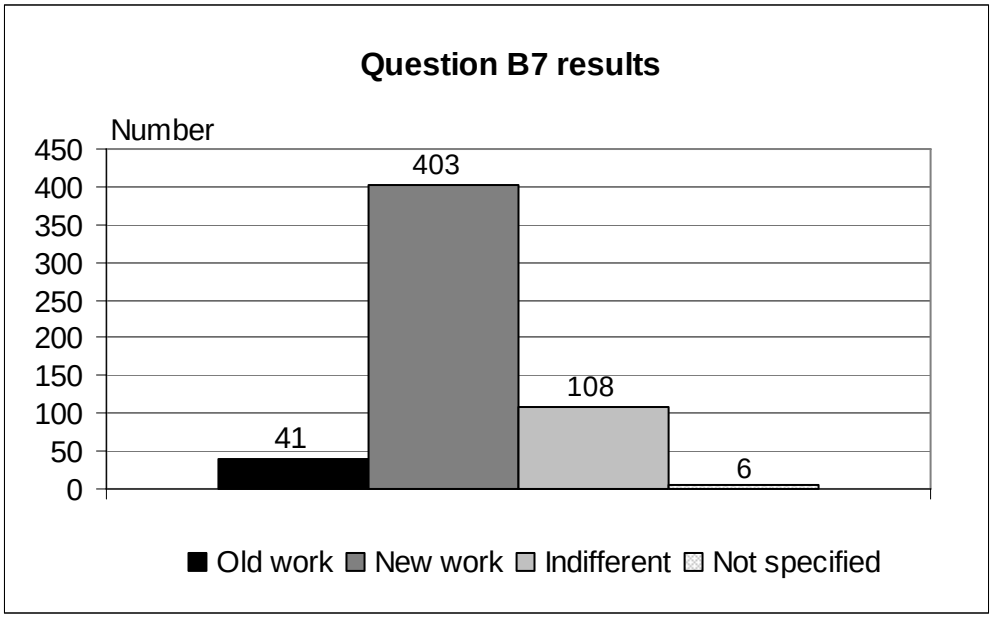


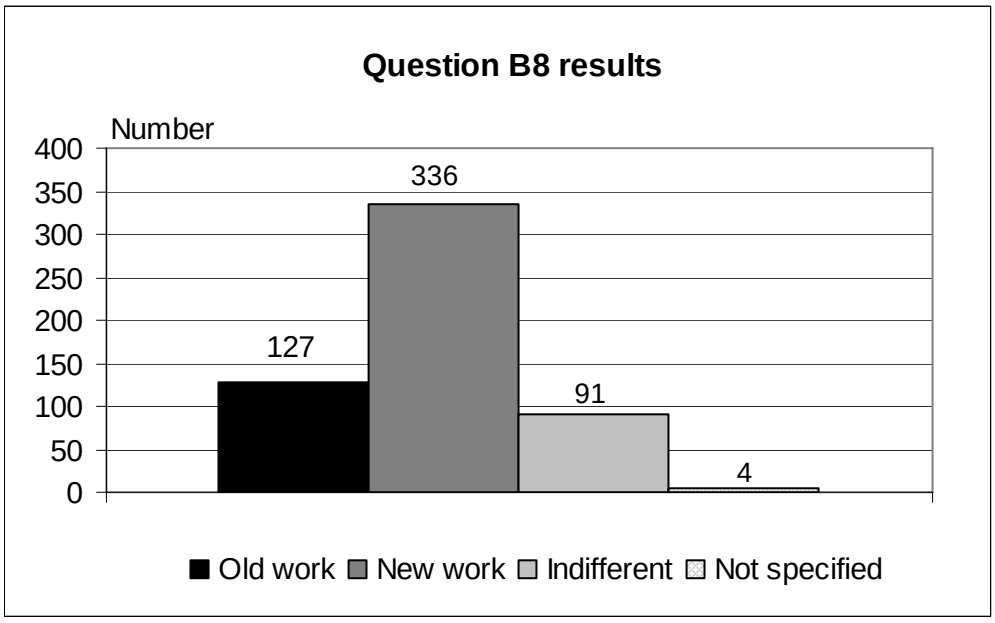

Question B3 results
Number
350
300
250
200
150
100
50
0
303
173
81
1
Old work
New work
Indifferent
Not specified

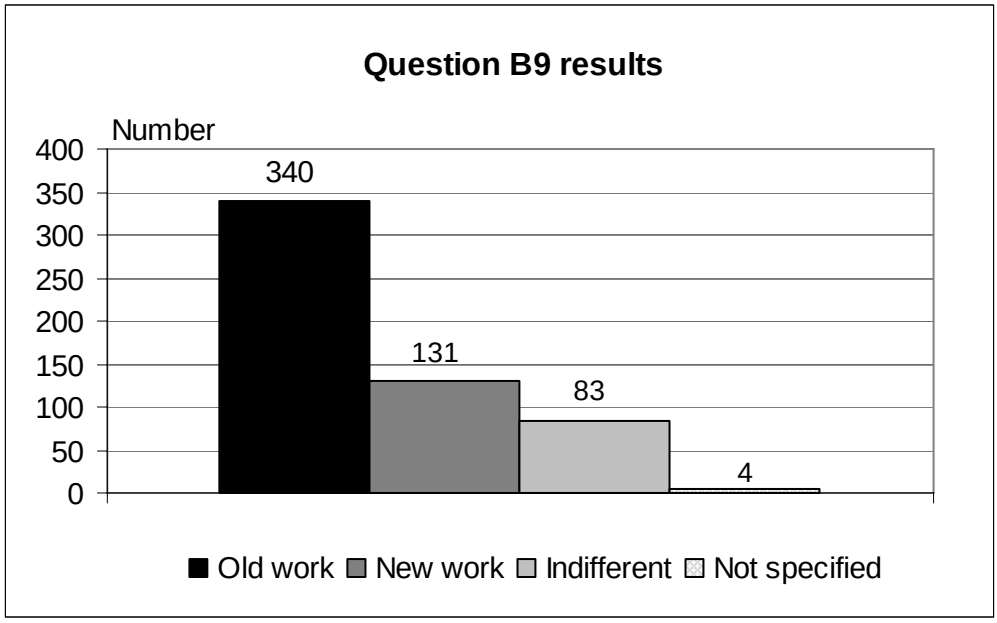

Question B4 results
Number
500
400
300
200
100
0
45
461
49
3
Old work
New work
Indifferent
Not specified

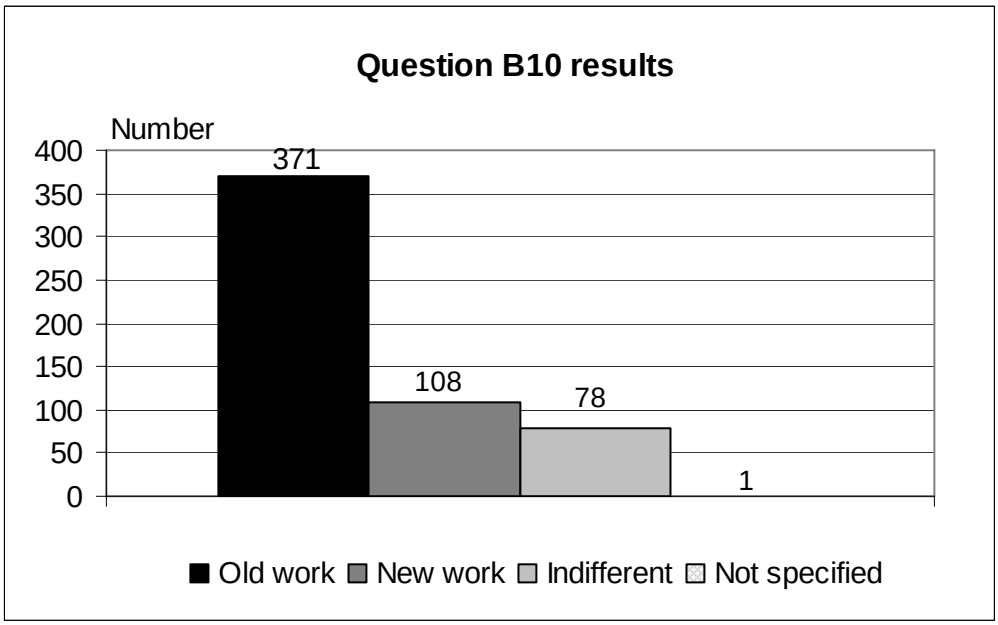

Question B5 results
Number
500
400
300
200
100
0
452
42
64
0
Old work
New work
Indifferent
Not specified

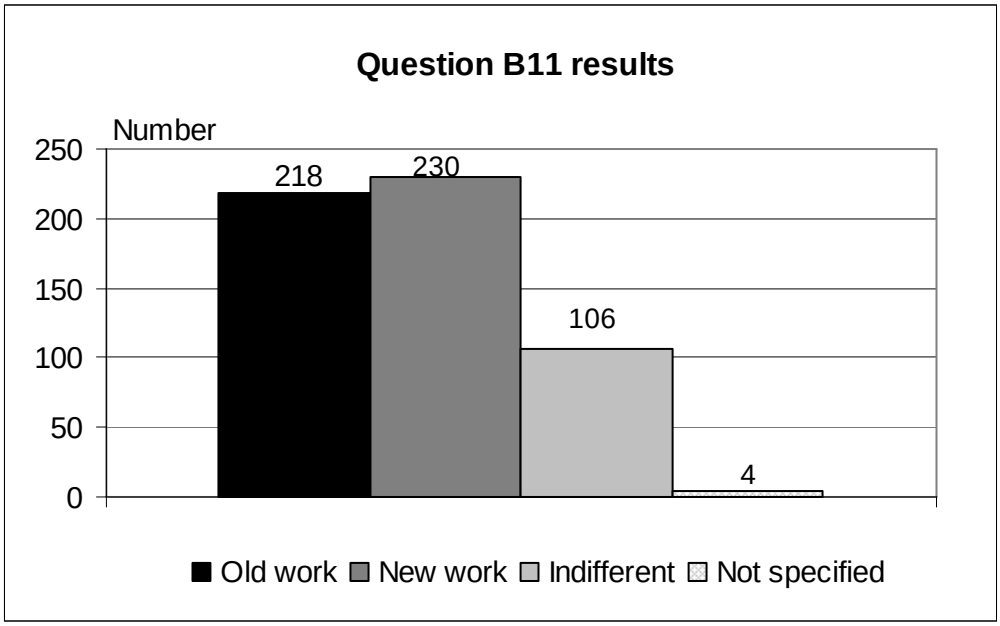

Question B6 results
Number
450
400
350
300
250
200
150
100
50
0
428
36
93
1
Old work
New work
Indifferent
Not specified

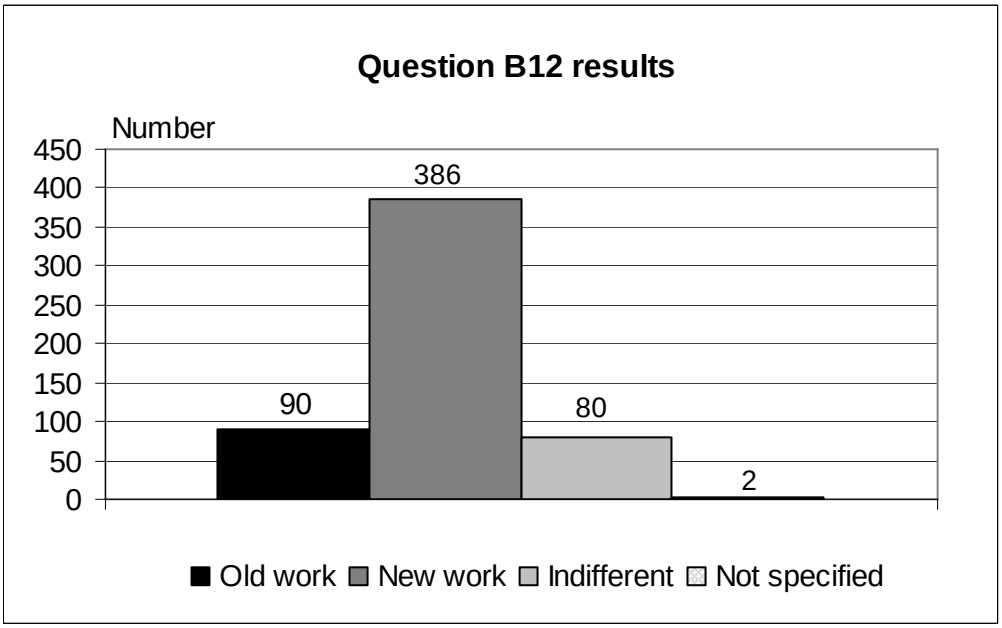

Question B7 results
Number
450
400
350
300
250
200
150
100
50
0
41
403
108
6
Old work
New work
Indifferent
Not specified

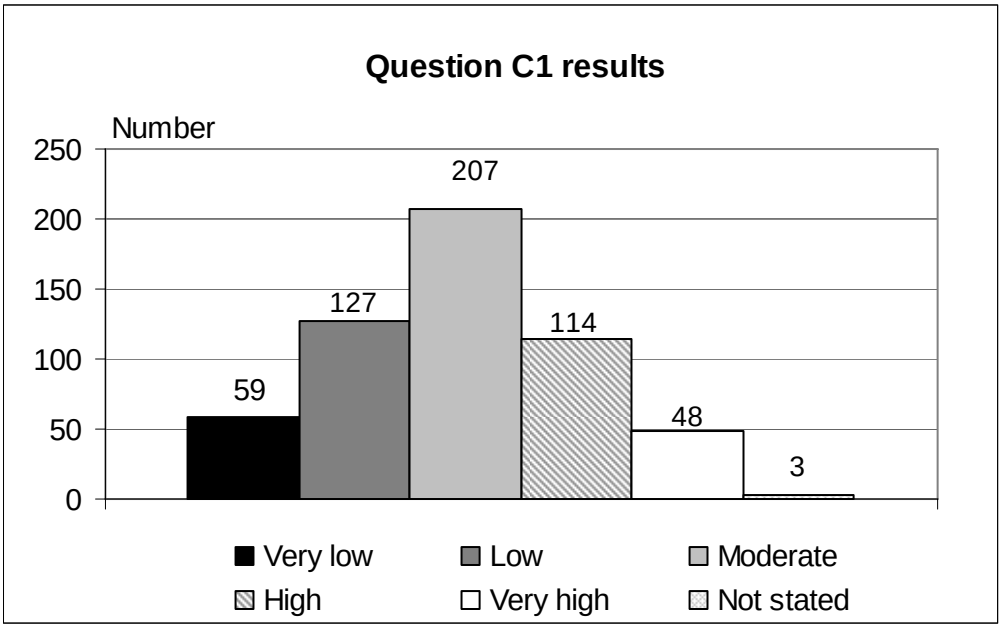

Question B8 results
Number
400
350
300
250
200
150
100
50
0
127
336
91
4
Old work
New work
Indifferent
Not specified

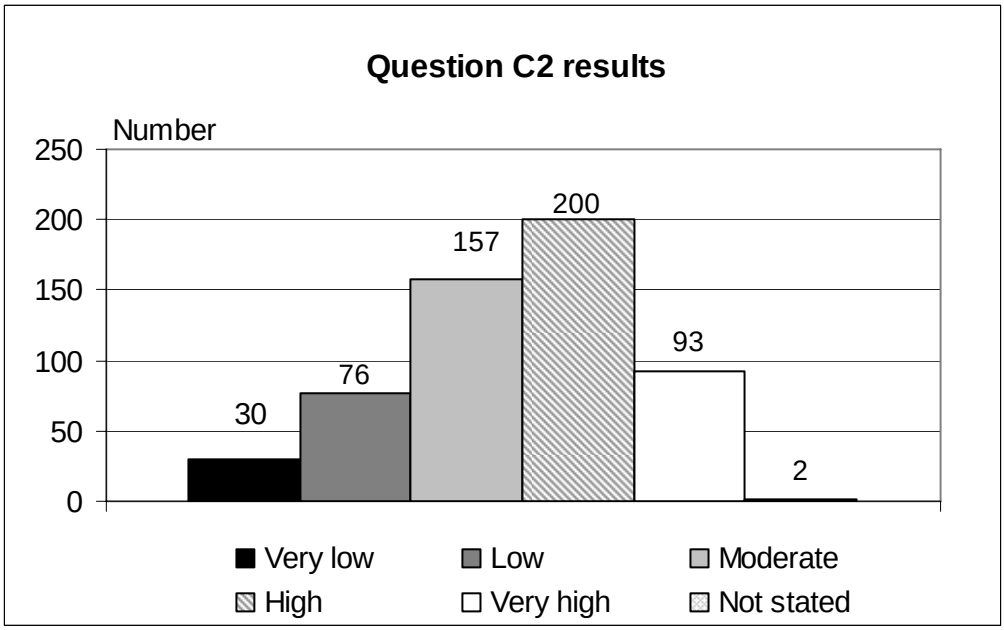

Question B9 results
Number
400
350
300
250
200
150
100
50
0
340
131
83
4
Old work
New work
Indifferent
Not specified

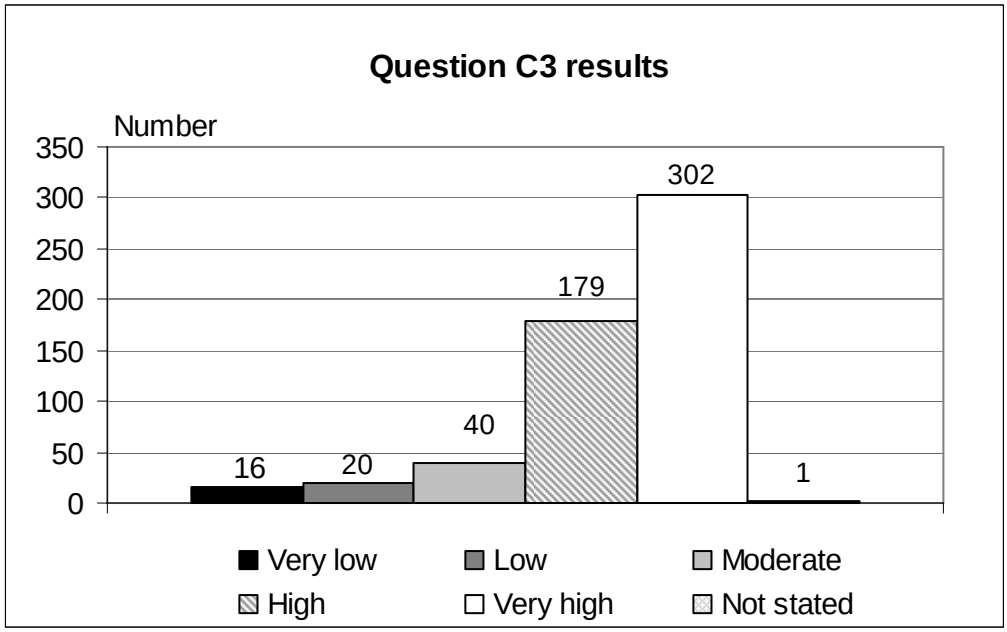

Question B10 results
Number
400
350
300
250
200
150
100
50
0
371
108
78
1
Old work
New work
Indifferent
Not specified

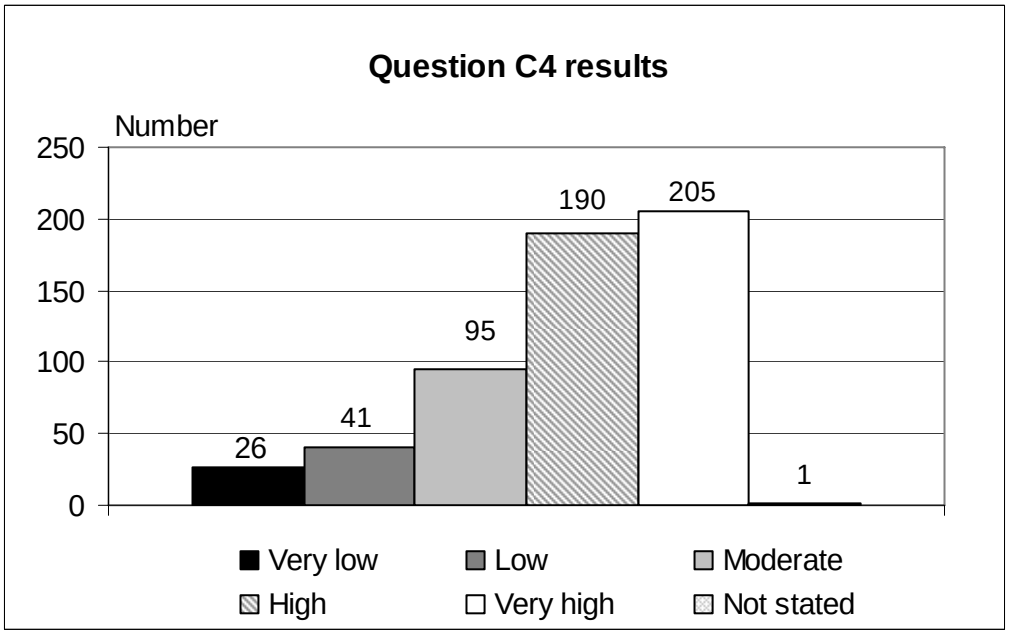

Question B11 results
Number
250
200
150
100
50
0
218
230
106
4
Old work
New work
Indifferent
Not specified


Question B12 results
Number
450
400
350
300
250
200
150
100
50
0
90
386
80
2
Old work
New work
Indifferent
Not specified

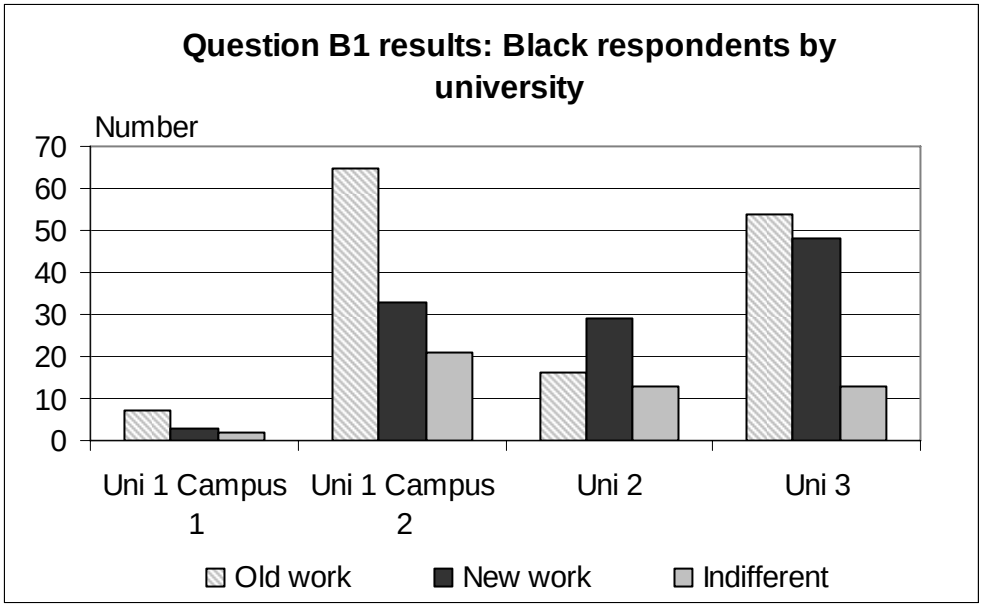

Question C1 results
Number
250
200
150
100
50
0
59
127
207
114
48
3
Very low
Low
Moderate
High
Very high
Not stated

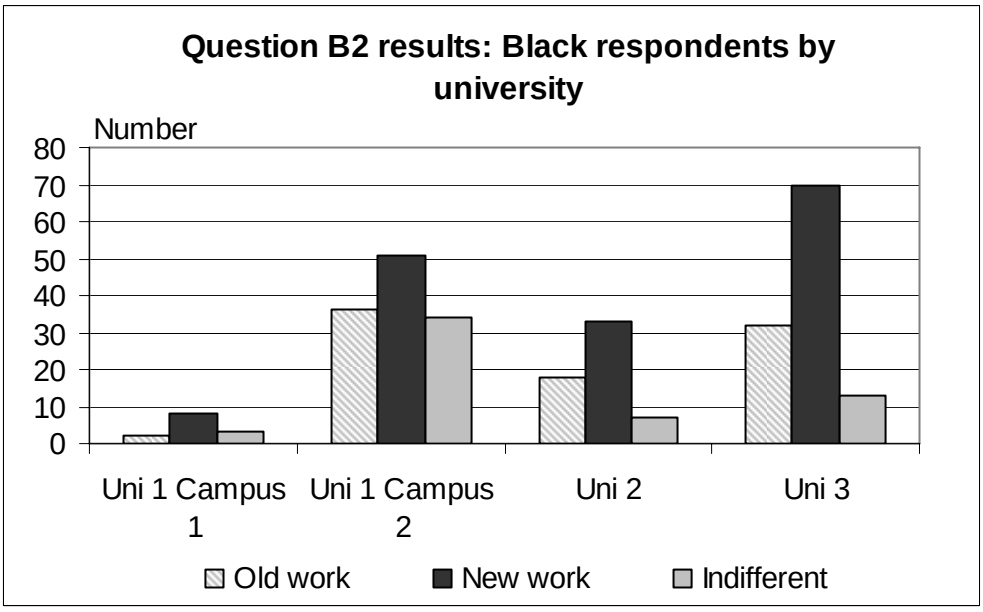

Question C2 results
Number
250
200
150
100
50
0
30
76
157
200
93
2
Very low
Low
Moderate
High
Very high
Not stated

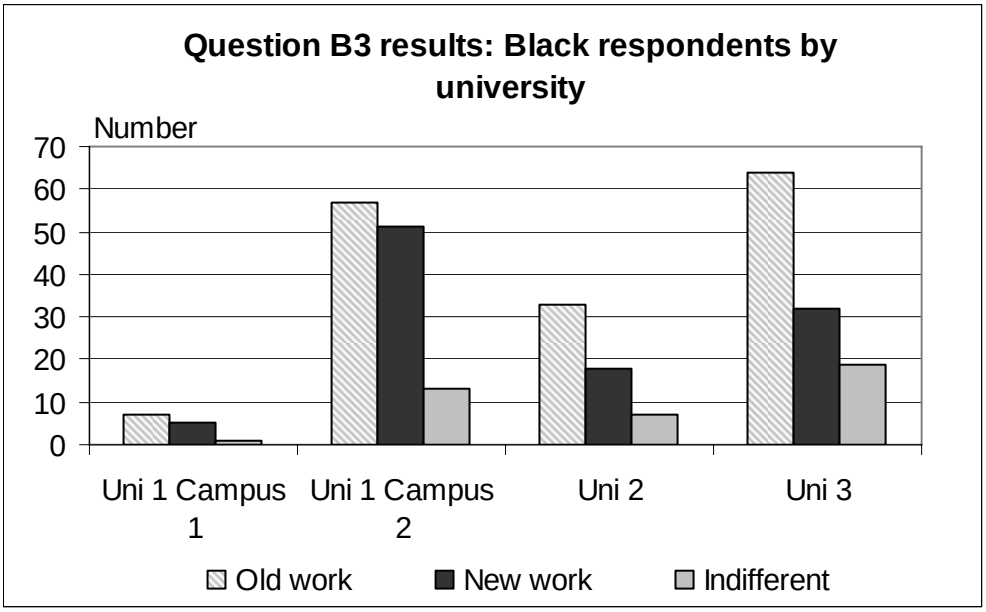

Question C3 results
Number
350
300
250
200
150
100
50
0
16
20
40
179
302
1
Very low
Low
Moderate
High
Very high
Not stated

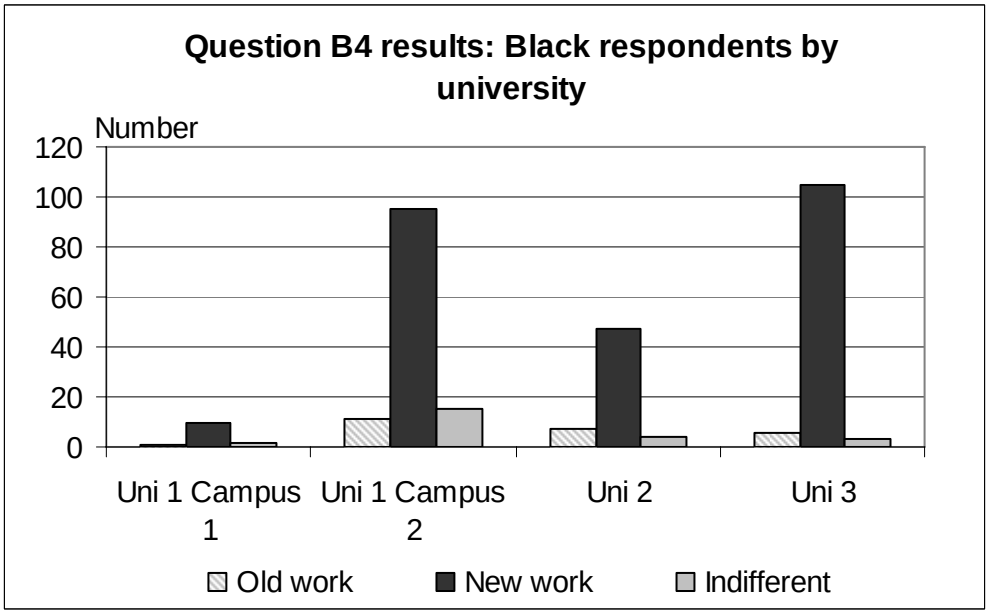

Question C4 results
Number
250
200
150
100
50
0
26
41
95
190
205
1
Very low
Low
Moderate
High
Very high
Not stated

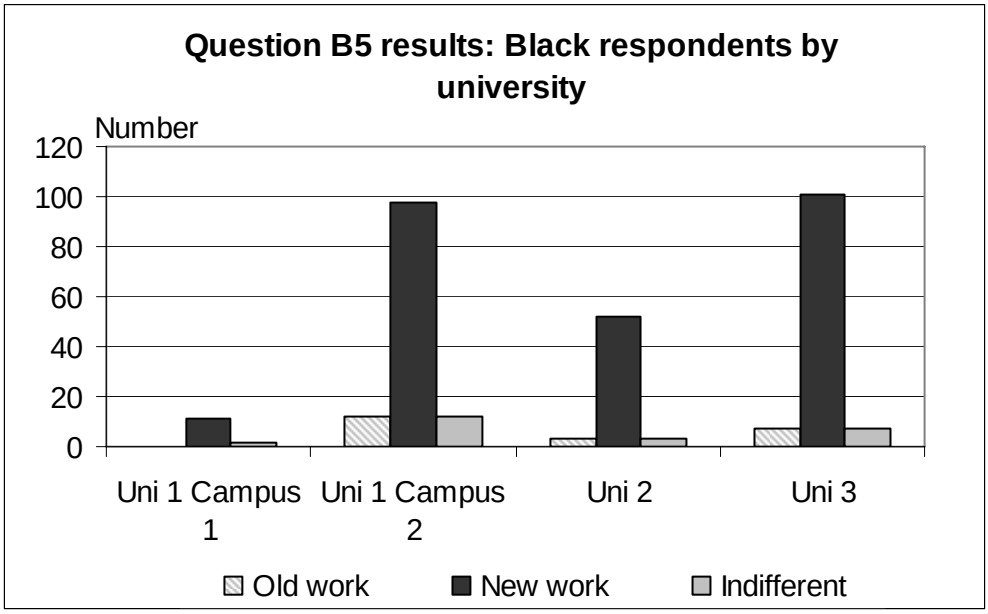
Appendix G: Diagrammatic representation of survey results for Black respondents only

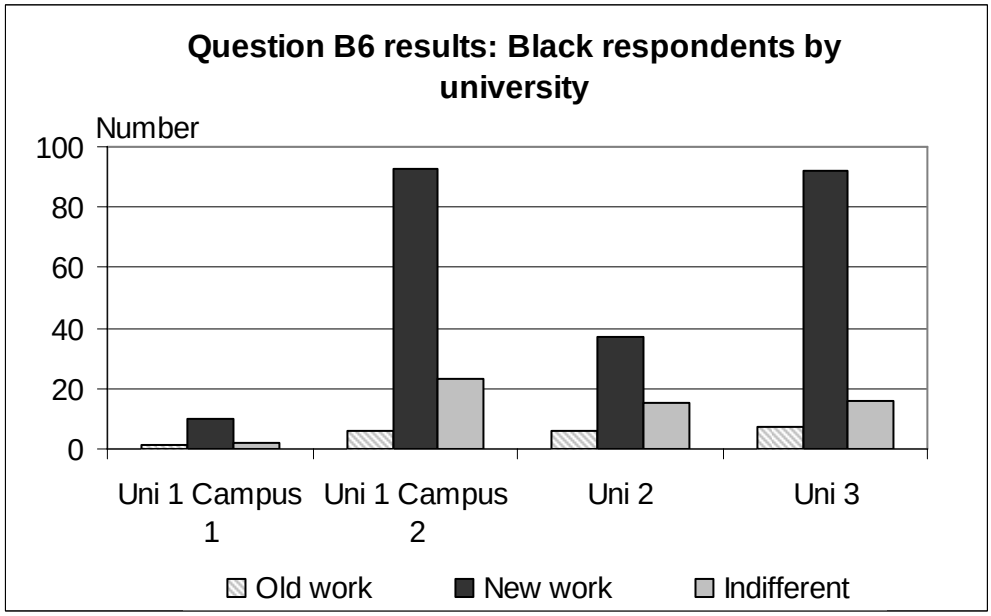


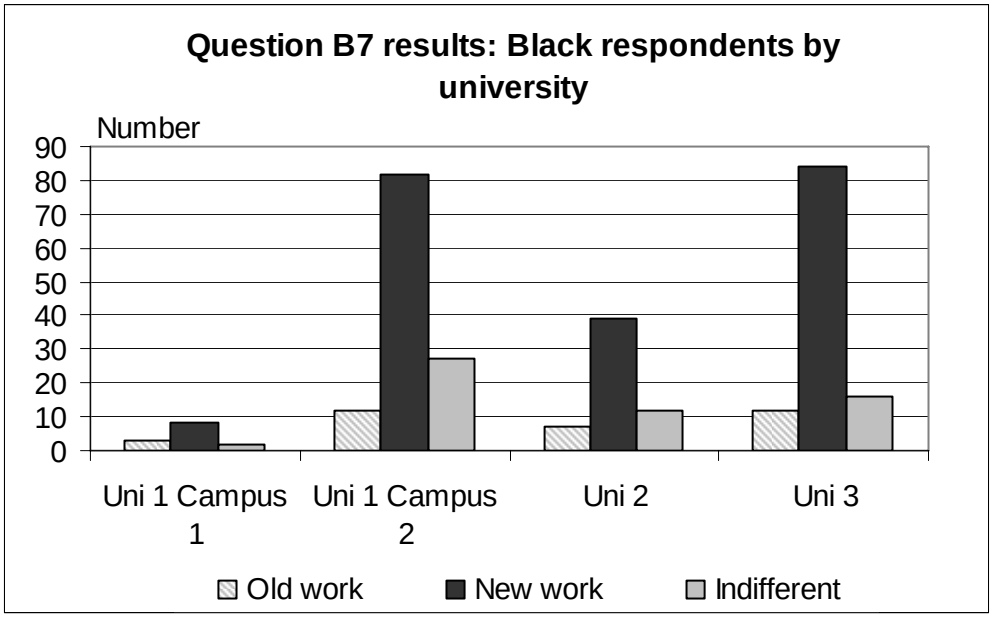


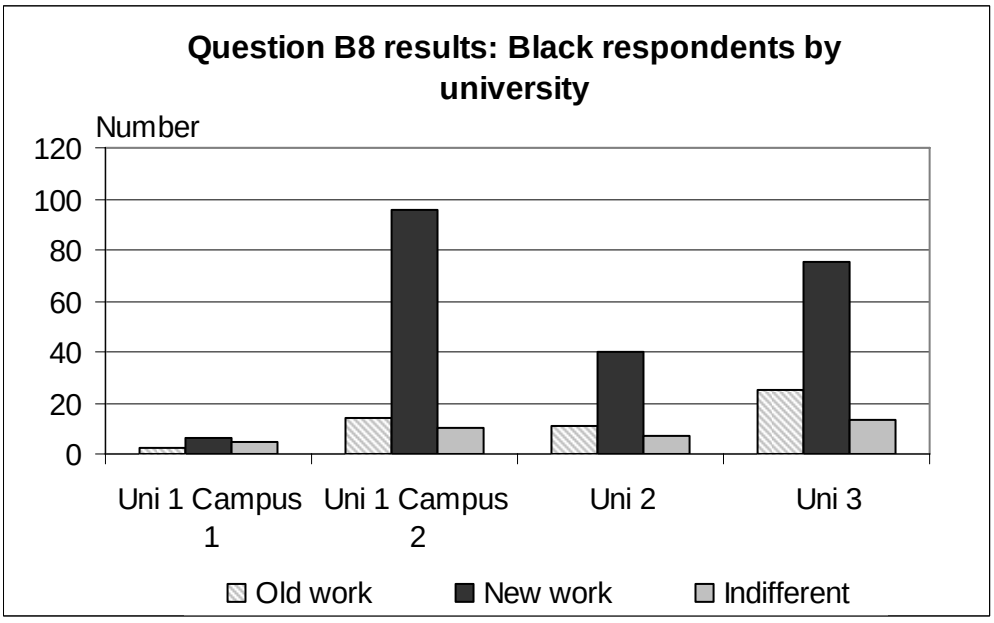

Question B3 results: Black respondents by university
Number
70
60
50
40
30
20
10
0
Uni 1 Campus 1
Uni 1 Campus 2
Uni 2
Uni 3
Old work
New work
Indifferent

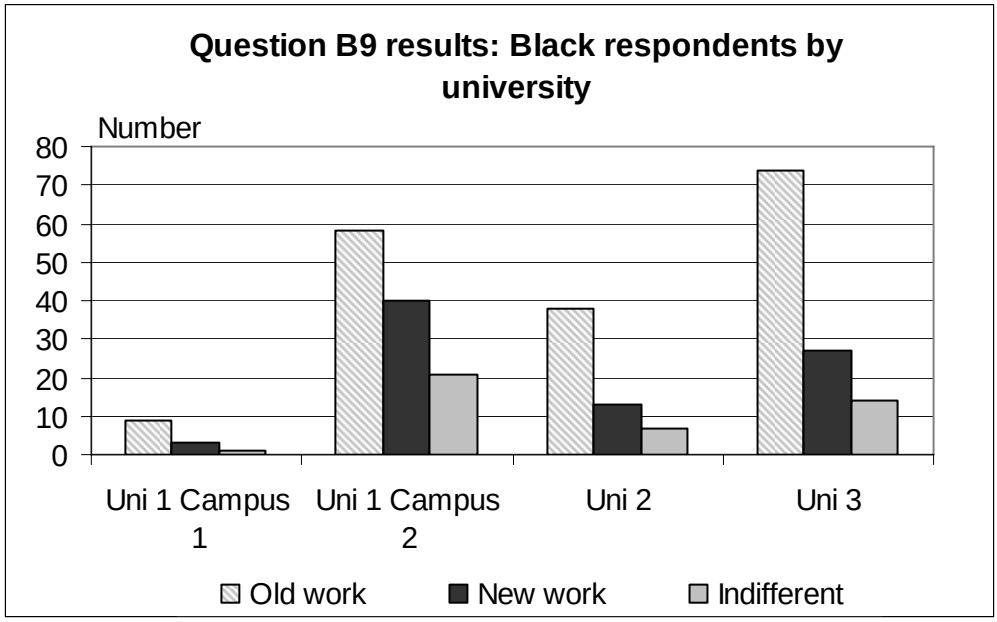

Question B4 results: Black respondents by university
Number
120
100
80
60
40
20
0
Uni 1 Campus 1
Uni 1 Campus 2
Uni 2
Uni 3
Old work
New work
Indifferent

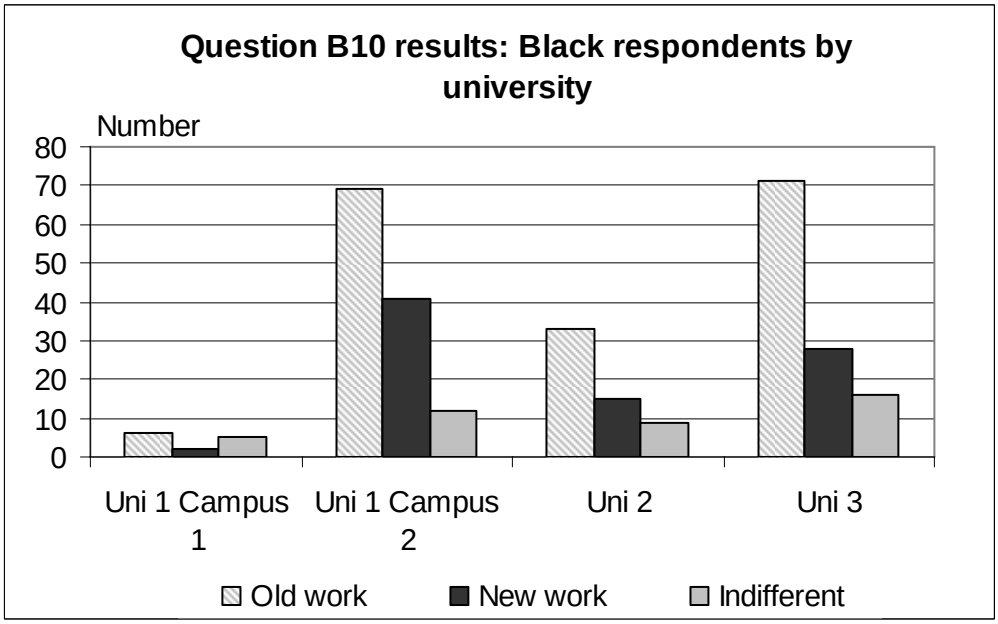

Question B5 results: Black respondents by university
Number
120
100
80
60
40
20
0
Uni 1 Campus 1
Uni 1 Campus 2
Uni 2
Uni 3
Old work
New work
Indifferent

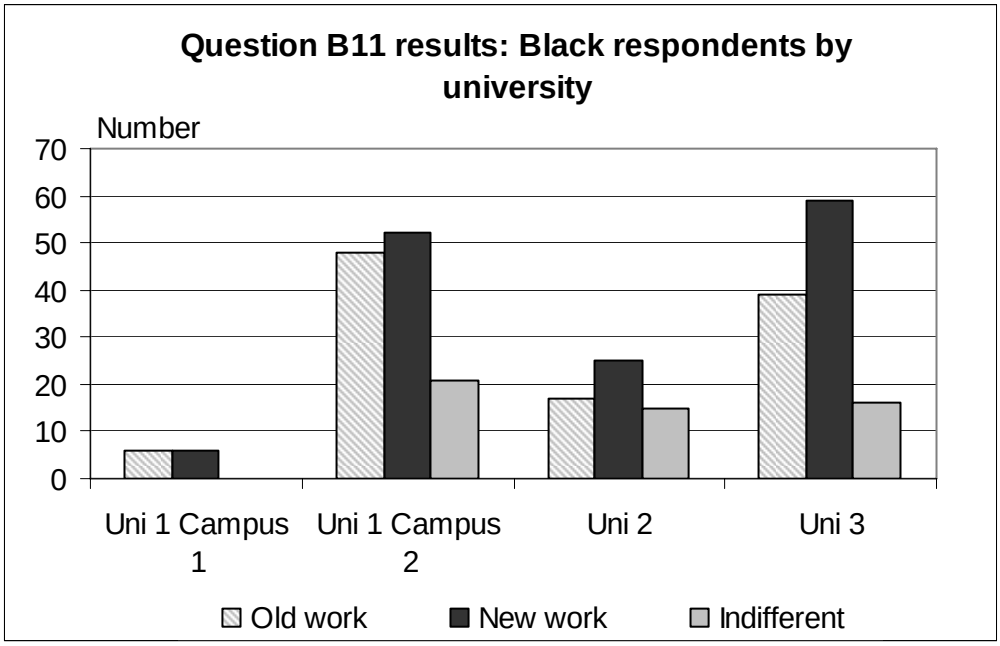

Question B6 results: Black respondents by university
Number
100
80
60
40
20
0
Uni 1 Campus 1
Uni 1 Campus 2
Uni 2
Uni 3
Old work
New work
Indifferent

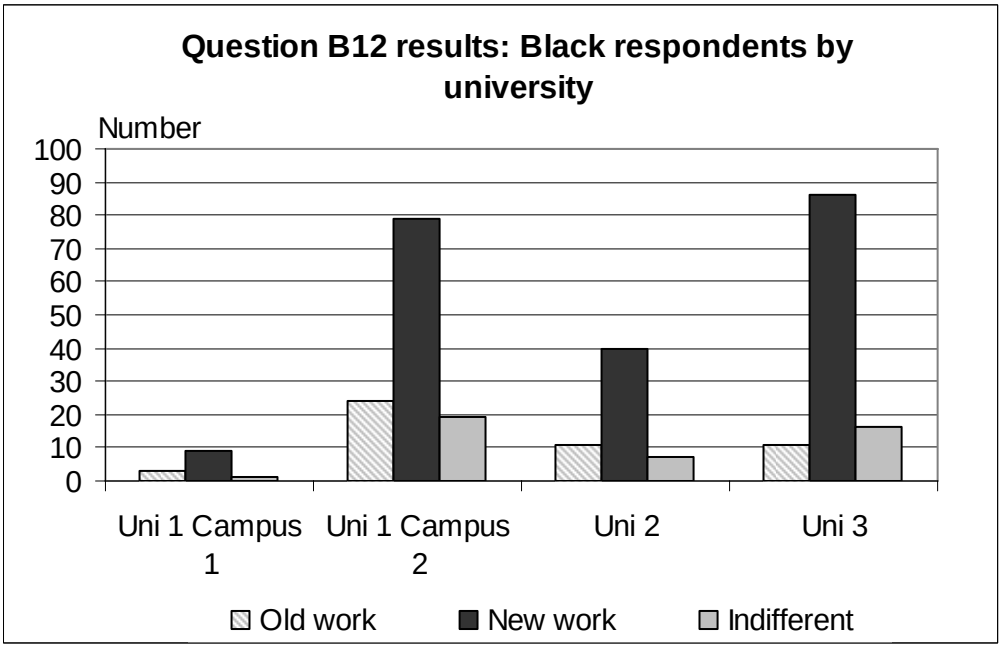

Question B7 results: Black respondents by university
Number
90
80
70
60
50
40
30
20
10
0
Uni 1 Campus 1
Uni 1 Campus 2
Uni 2
Uni 3
Old work
New work
Indifferent

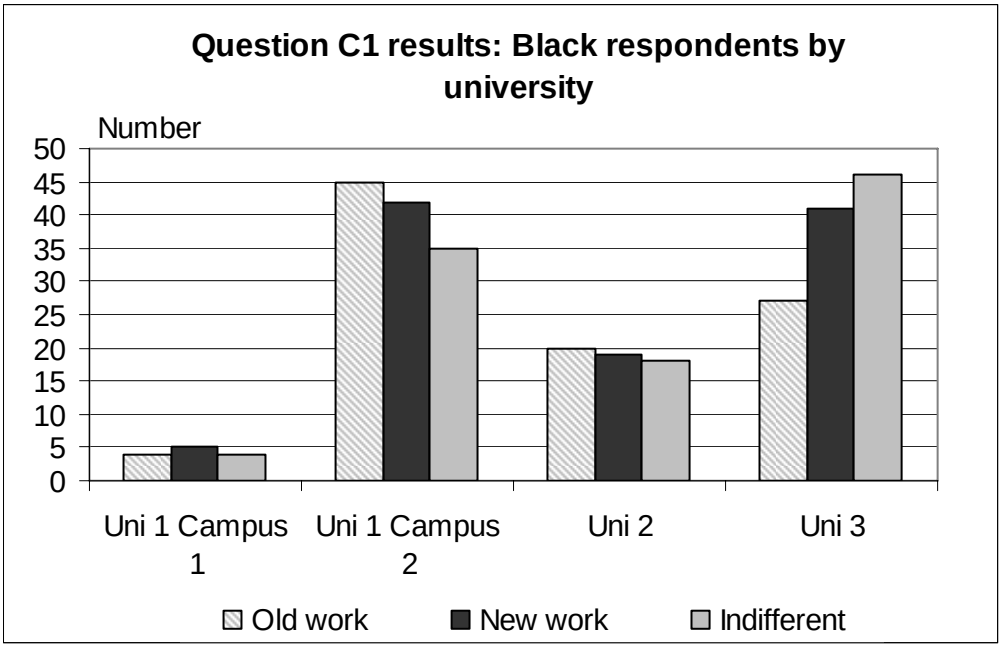

Question B8 results: Black respondents by university
Number
120
100
80
60
40
20
0
Uni 1 Campus 1
Uni 1 Campus 2
Uni 2
Uni 3
Old work
New work
Indifferent

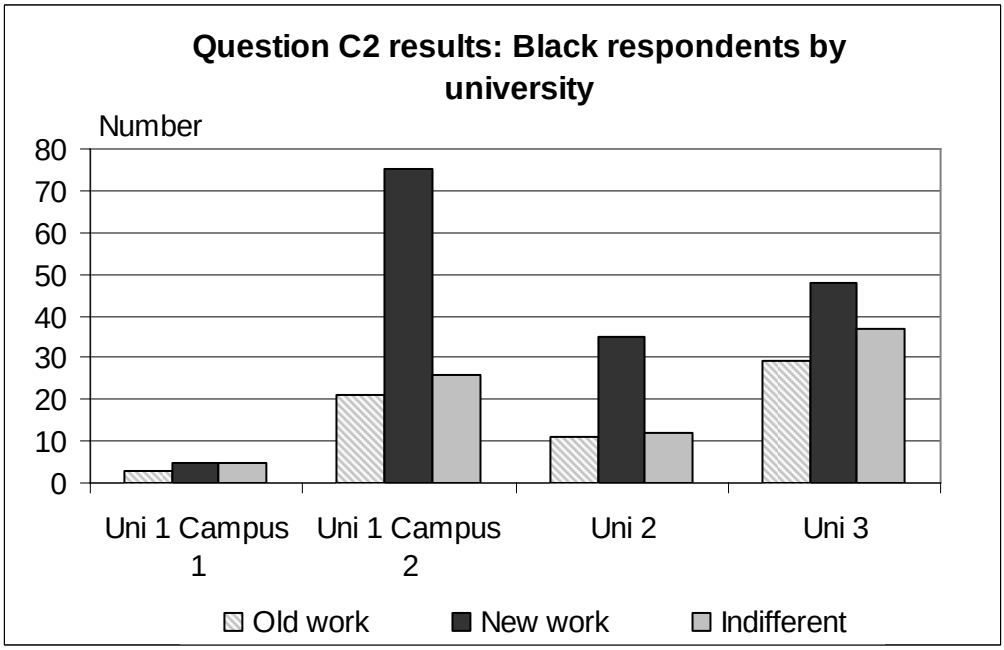

Question B9 results: Black respondents by university
Number
80
70
60
50
40
30
20
10
0
Uni 1 Campus 1
Uni 1 Campus 2
Uni 2
Uni 3
Old work
New work
Indifferent

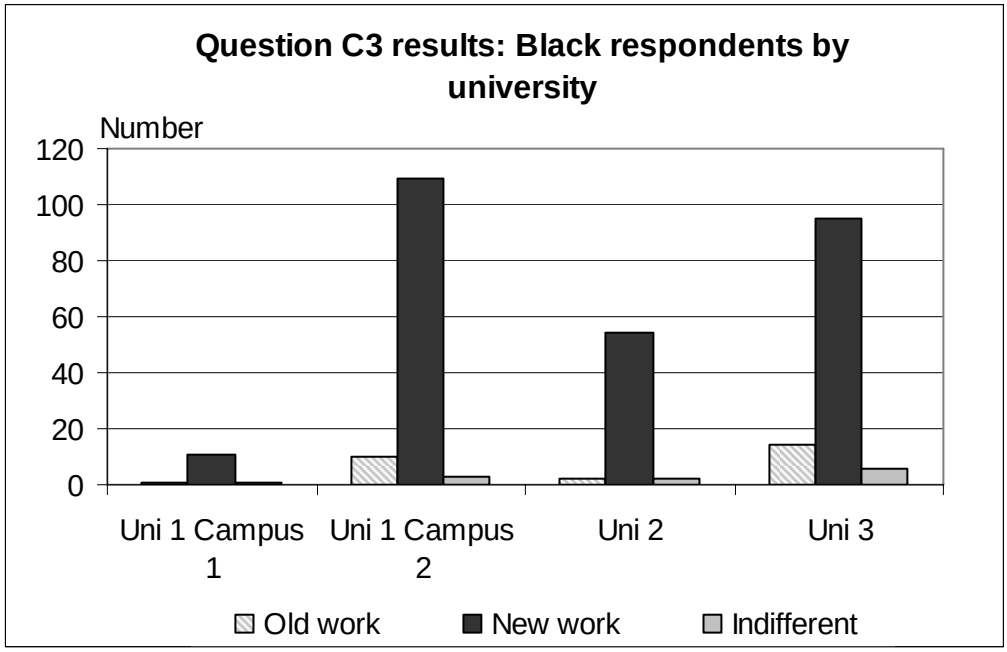

Question B10 results: Black respondents by university
Number
80
70
60
50
40
30
20
10
0
Uni 1 Campus 1
Uni 1 Campus 2
Uni 2
Uni 3
Old work
New work
Indifferent

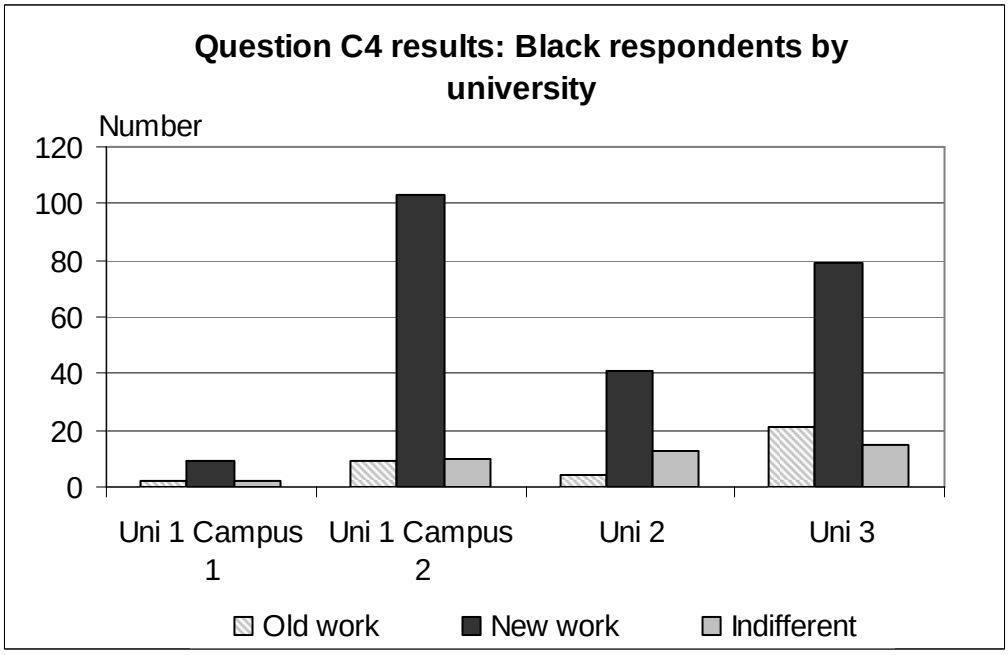

Question B11 results: Black respondents by university
Number
70
60
50
40
30
20
10
0
Uni 1 Campus 1
Uni 1 Campus 2
Uni 2
Uni 3
Old work
New work
Indifferent


Question B12 results: Black respondents by university
Number
100
90
80
70
60
50
40
30
20
10
0
Uni 1 Campus 1
Uni 1 Campus 2
Uni 2
Uni 3
Old work
New work
Indifferent


Question C1 results: Black respondents by university
Number
50
45
40
35
30
25
20
15
10
5
0
Uni 1 Campus 1
Uni 1 Campus 2
Uni 2
Uni 3
Old work
New work
Indifferent


Question C2 results: Black respondents by university
Number
80
70
60
50
40
30
20
10
0
Uni 1 Campus 1
Uni 1 Campus 2
Uni 2
Uni 3
Old work
New work
Indifferent


Question C3 results: Black respondents by university
Number
120
100
80
60
40
20
0
Uni 1 Campus 1
Uni 1 Campus 2
Uni 2
Uni 3
Old work
New work
Indifferent


Question C4 results: Black respondents by university
Number
120
100
80
60
40
20
0
Uni 1 Campus 1
Uni 1 Campus 2
Uni 2
Uni 3
Old work
New work
Indifferent