

The copyright of this thesis vests in the author. No quotation from it or information derived from it is to be published without full acknowledgement of the source. The thesis is to be used for private study or non-commercial research purposes only.

Published by the University of Cape Town (UCT) in terms of the non-exclusive license granted to UCT by the author.



**Career Orientations and Turnover Intentions of  
Information Systems Professionals in  
South Africa**

*a Dissertation presented to the*

**Department of Information Systems  
University of Cape Town**

in partial fulfilment of the requirements for a

**Master of Business Science Degree  
in  
Information Systems**

by  
**Hilary Speight**

April 2004

## ACKNOWLEDGEMENTS

Firstly, I would like to thank Professor Derek Smith, my supervisor, for all his advice, support and guidance throughout the duration of this research project.

This research project was based on previous studies by Guy Meredith in South Africa, and James Jiang and Gary Klein in the United States of America. My grateful thanks to Guy for allowing me to access his research material, and in particular the research instruments he used.

Thank you to Roger Dawes, of the Computer Society of South Africa (CSSA), who very kindly allowed me to survey the CSSA members. My thanks, also, to Lerina Helm, for her assistance in sending emails to the CSSA members on my behalf.

Thank you to Sven Welzel for his assistance in setting up the online questionnaire; and to Professor Trevor Wegner for his explanation of some of the statistics used in this research project. I would also like to thank Jane Nash for her ongoing support and assistance in proofreading this dissertation.

Finally, I would like to thank the University of Cape Town for the financial aid that has greatly assisted in funding my Master's studies.

I hereby certify that except as noted above, this report is entirely my own, unassisted work, and all references have been accurately reported, using the Harvard style of referencing.

**Signed by candidate**

Hilary Speight

## **ABSTRACT**

Managing Information Systems (IS) personnel has frequently been cited as a major challenge for organisations, particularly with respect to reducing and controlling the high rate of turnover that IS personnel have historically displayed.

In the past, with demand for qualified IS personnel outstripping supply, alternative job openings were plentiful and organisations found it difficult to attract and retain sufficient staff. However, the last few years have seen significant cutbacks in IS spending, resulting in declining growth rates and a reduced demand for IS personnel. Although the South African IS job market does not appear to be as severely affected as in other parts of the world, and there are still pockets of high demand worldwide, it seems unlikely that the IS industry will return to its former glory in the foreseeable future.

Despite these stringent market conditions, organisations continue to be plagued with high, and even more surprisingly, increasing turnover rates. This trend is particularly perturbing for organisations that are highly dependent on IS because of its negative implications. Employee turnover is costly and disrupting, often leading to delays in project completion, there is a loss of valuable expertise and productivity of the IS department is reduced.

Although, this research project only considered IS personnel turnover at the individual level, there are many other factors related to the work and external environments that are believed to affect IS personnel turnover in South Africa. However, these factors which include organisational structure, perceived job market and government policy, are very difficult to measure and are often beyond the control of organisations endeavouring to reduce and control turnover; and as such were not explicitly studied.

Instead, this research focused on the career orientations of South African IS professionals, the consequences of a discrepancy between career wants and perceived career have, and internal relationships between turnover indicators.

The results illustrated that South African IS professionals hold a wide diversity of career orientations, and a closer examination of the distinguishing characteristics exhibited by individuals holding each orientation revealed that the different orientations represent very different types of employee. As such the dual-career path frequently advocated for reducing turnover, is clearly not appropriate for all IS personnel.

For this reason, motivational theory has also been used to try and establish what motivates IS personnel. However, there are also significant differences in the motivational needs of IS employees. Therefore, adopting a single human resource management strategy for IS personnel as a group is also an inappropriate organisational strategy. Rather, the diversity of career orientations demonstrated in this study suggests that it is necessary to consider individual needs and wants.

Indeed, when these desires and aspirations are satisfied in an individual's work environment, the individual is more likely to be satisfied with his or her job and thus more committed to the organisation and less inclined to leave. It therefore becomes apparent that gaps between career wants and perceived career have are highly correlated with turnover intention.

Moreover the results indicate that the size of the gap is important, whereby the smaller the discrepancy between an IS professional's wants and have, the higher their career satisfaction and organisational commitment, and the less pressing their desire to leave.

Of concern, is the fact that there are statistically significant gaps between career wants and have on all nine dimensions among South African IS professionals. Of these gaps, only two are in the favourable direction, indicating that South African organisations do not offer employees what they want. Therefore, there is much room for improvement.

The results also indicate that there is significant positive correlation between job satisfaction, career satisfaction and organisational commitment, whereby individuals experiencing job satisfaction are more likely to be committed to their organisation and experience career satisfaction. In addition, job satisfaction, career satisfaction and organisational commitment were all found to be negatively related to turnover intention. Of importance for organisations seeking a reduction in IS personnel turnover, many of the factors that influence job satisfaction and organisational commitment are under their direct control.

Based on the above findings it becomes clear that organisations seeking a reduction in IS personnel turnover should consider the individual wants of employees, and together with a clear understanding of the types of jobs and career paths available in their organisations, facilitate more appropriate matches between employees and jobs. Organisations should also take steps to try and satisfy the various career orientations that may exist among their staff. These approaches will be mutually beneficial in that staff will be more satisfied in their work, will be more productive and may even demonstrate a higher level of organisational commitment, ultimately leading to a decreased turnover intention.

It is recommended that research regarding turnover of South African IS professionals be continued. Specifically, it would be valuable to develop techniques to determine individual wants of IS personnel; and examine the career paths, work experiences and work environments that would best suit the different orientations of IS professionals. Such research will assist organisations in achieving a better fit between what they provide and the career wants of the IS employee, ultimately leading to increased job satisfaction and lower turnover intention.

## TABLE OF CONTENTS

	Page
Acknowledgements	i
Abstract	ii
Table of Contents	iv
List of Figures and Tables	vi
Glossary	viii
1. Introduction	1
1.1. Research Topic	1
1.2. Necessity for Research	3
1.3. Value of Research	3
1.4. Hypothesis Explanation	3
1.5. Plan of Development	4
2. Literature Review	5
2.1. The IS Labour Market	5
2.1.1. The South African Job Market	8
2.1.2. The Future of the IS Job Market	9
2.2. IS Personnel Turnover Trends	10
2.3. Implications of Turnover	10
2.4. Factors Affecting IS Personnel Turnover	12
2.5. Career Orientations of IS Personnel	12
2.6. Motivating IS Personnel	18
2.7. Job Satisfaction and Organisational Commitment	21
2.7.1. Work Exhaustion	23
2.7.2. Organisational Structure	24
2.8. Other Factors Influencing Turnover	25
2.9. Limitations of Previous Research	26
2.10. Conclusions	27
3. Methodology	28
3.1. Sampling Method	29
3.1.1. Choice of Sample	29
3.1.2. Sample Size	30
3.1.3. Sampling Procedure	31
3.2. Data Collection Techniques	31
3.2.1. Postal Questionnaires	31
3.2.2. Email Questionnaires	32
3.2.3. Online Questionnaires	32
3.3. Actual Data Collection Experience	33
3.4. Survey Instrument	34
3.4.1. Career and Job Satisfaction	35
3.4.2. Organisational Commitment	37
3.4.3. Intent to Leave	39
3.4.4. Career Wants	41
3.4.5. Perceived Career Haves	42
3.5. External Validity	43
3.6. Demographic Characteristics of Respondents	43

	Page
3.7. Ethical Considerations and Data Integrity Issues	46
3.8. Statistical Analysis	47
3.8.1. Motivation for Using Multiple Regression Model	47
3.8.2. Descriptive Statistics	48
3.9. Conclusion / Analysis “Look-Ahead”	49
4. Analysis and Results: Comparison with Meredith’s Work	51
4.1. Distribution of Career Orientations	51
4.2. Comparison of Career Orientation Profiles – Western Cape versus the Rest of South Africa	54
4.3. Distinguishing Characteristics of Each Career Orientation	56
4.3.1. Relationship between Dominant Orientation and Raw Scores on the Remaining Orientations	56
4.3.2. Relationship between Dominant Orientation and Different Aspects of Organisational Commitment	59
4.3.3. Relationship between Dominant Orientation and Demographic Characteristics	60
4.3.4. Closing Remarks on Distinguishing Characteristics of Each Orientation	64
5. Analysis and Results: Testing the extended version of Jiang and Klein’s (2002) Discrepancy Model	65
6. Discussion and Implications	76
6.1. Distribution of Career Orientations among South African IS Professionals	76
6.2. Comparison of Career Orientations in Different Geographical Areas	76
6.3. Profiles of Different Dominant Career Orientations	77
6.4. Discrepancy Model and Turnover Indicators	77
6.5. Limitations	85
6.6. Implications for Future Research	86
7. Conclusions	89
Bibliography	93
Appendix A – Survey Instrument	104
Appendix B – Confirmatory Factor Analysis Results	111
Appendix C – Assumptions for Using Multiple Regression	113
Appendix D – Sign Test	115
Appendix E – Detailed Multiple Regression Tables	116

## LIST OF FIGURES AND TABLES

	Page
Figure 1: Total IS Workforce Demand in the United States (ITAA, 2003a)	6
Figure 2: Current IS Turnover Rate Relative to Organisation's Ideal Rate (Agarwal <i>et al</i> , 1999)	11
Figure 3: Conceptual Research Model based on Jiang and Klein's (2002) Discrepancy Research Model	28
Figure 4: Distribution of Dominant Career Orientations	51
Figure 5: Comparison of Dominant Career Orientations	52
Figure 6: Occurrence of Orientation in Combined Orientations	53
Figure 7: Distribution of Dominant Career Orientations in the Western Cape and the Rest of South Africa	54
Figure 8: Interaction of Career Want and Career Have for Managerial Competence	68
Figure 9: Scatter Plot of Predicted vs Residual Scores	113
Figure 10: Distribution of Standard Residuals	114
Table 1: Examples of the most important Motivator and Hygiene Factors (Couger, 1988a; DuBrin, 1997)	18
Table 2: Ranking of Motivation Factors by Programmers and Analysts: A comparison of the USA and SA (Couger & Smith, 1992a)	20
Table 3: Statistica Results for Reliability Analysis of the Job Satisfaction Scale	36
Table 4: Factor Structure of Career Satisfaction, Job Satisfaction and Turnover Intention Scales after Varimax Rotation	36
Table 5: Varimax Factor Loadings for Turnover Intention Scale	40
Table 6: Descriptive Statistics of Sample	43
Table 7: Comparison of Demographics	44
Table 8: Mean, Range and Standard Deviations of the Sample	48
Table 9: The Correlation Matrix	49
Table 10: Ranking of Orientations	53
Table 11: Distribution of Dominant Career Orientation by Location	55
Table 12: ANOVA of Career Orientation Raw Scores by Location	55
Table 13: ANOVA of Career Orientation Raw Scores by Dominant Career Orientation	56
Table 14: ANOVA of Organisational Commitment by Dominant Career	60
Table 15: ANOVA of Demographic Variables by Dominant Career Orientation	61
Table 16: Chi-Square test of independence between Dominant Orientation and Demographic Variables	63
Table 17: Gaps between Career Want and Have	66
Table 18: Regression Results of Turnover Indicators with Career Want and Career Have	67
Table 19: Regression Results of Organisational Commitment Variables with Career Want and Career Have	69
Table 20: Regression Summary for Hypothesis 4	70
Table 21: Comparison of Regression Summaries for Hypothesis 5a	71
Table 22: Comparison of Regression Summaries for Hypothesis 5b	72
Table 23: ANOVA Table for Hypothesis 6	72
Table 24: Regression Summary for Hypothesis 6	73
Table 25: ANOVA Table for Hypothesis 6a	74
Table 26: ANOVA Table for Hypothesis 6b	74
Table 27: Regression Summary for Hypothesis 6a	74
Table 28: Regression Summary for Hypothesis 6b	75
Table 29: Standard Loadings and t-values for Career Want Measure	111

	Page
Table 30: Standard Loadings and t-values for the Career Have Measure	112
Table 31: Summary of Predicted vs Observed Values	113
Table 32: Regression Summary for Hypothesis 5a (Affective Commitment)	116
Table 33: Regression Summary for Hypothesis 5a (Continuance Commitment)	116
Table 34: Regression Summary for Hypothesis 5a (Normative Commitment)	116
Table 35: Regression Summary for Hypothesis 5b (Affective Commitment)	116
Table 36: Regression Summary for Hypothesis 5b (Continuance Commitment)	117
Table 37: Regression Summary for Hypothesis 5b (Normative Commitment)	117

University of Cape Town

## GLOSSARY

**Affirmative Action / Employment Equity** – In the South African context, this term is used to describe special efforts to recruit and employ groups (non-whites, and to a lesser extent disabled persons and women) who may have been discriminated against in the past.

**Coloured** – In the South African context, this term refers to people of mixed black and white descent, with some Malay influence in the Western Cape communities (NationMaster.com, 2003).

**Previously Disadvantaged** – People who were not afforded the same opportunities (for example in education and employment) in of the past.

University of Cape Town

## **1. INTRODUCTION**

2004 marks the tenth year of democracy in South Africa. During this ten-year period, President Thabo Mbeki, along with several senior cabinet ministers, has continually highlighted the need to grow the Information and Communication Technology (ICT) industry in order to support the overall growth requirements of the country (South African Information Technology Industry Strategy Project (SAITIS), 2000).

As the adoption of technology grows and organisations become more dependent on information systems (IS), the importance of retaining loyal and productive staff increases (Igbaria, Meredith & Smith, 1995). Yet, a continuing challenge in managing IS personnel is the high turnover rate in the profession (Mehler, 1998; Agarwal, Brown, Ferratt & Moore, 1999; Darais, Nelson, Rice & Buche, 2001; Jiang & Klein, 2002). Widely considered to be a critical problem for organisations, high turnover results in lost productivity, delays in critical projects, and an inability of the IS function to meet burgeoning user needs for technologies and systems (Agarwal & Ferratt, 1999).

This clearly demonstrates the need for sound management of turnover. Indeed, gaining control of the turnover and retaining IS personnel is a critical factor in an organisation's effort to achieve strategic business goals (Moore, 1998; Jiang & Klein, 2002). However, research is inconclusive as to whether or not IS personnel are different from non-IS personnel with associated implications as to whether they should be recruited, managed and retained differently (Myers, 1991 in Wynekoop & Walz, 1998; Benamati & Lederer, 2000).

What is known, is that no single factor causes IS professionals to resign from their posts, rather "their departure usually stems from a convergence of things, some of which are within the control of the organisation and some of which are outside their control" (Morello, 1998, p1). It is therefore suggested that IS managers and organisations should mitigate disruption by candidly assessing the factors that contribute to an employee's overall sense of satisfaction and take appropriate action to minimise the negatives and enhance the positives (Morello, 1998). As such, Jiang and Klein (2002) suggest that closing the gap between employee wants and what they perceive they have in their current positions is imperative to improving turnover indicators.

### **1.1. Research Topic**

For this research project, Jiang and Klein's (2002) study which modelled the impact of a discrepancy between the wants of IS professionals and their perceptions of how their organisation satisfied those wants was replicated. Jiang and Klein's (2002) study was conducted in the United States of America, and the aim of this research project was to test the validity of their discrepancy model of IS personnel turnover in the South African context.

However, Jiang and Klein's (2002) discrepancy model only considers the effect of a discrepancy between career wants and careers have on job satisfaction and turnover intention. For the purposes of this study, the model was extended to also investigate the effect of such a

discrepancy on career satisfaction and organisational commitment. As such, this research addresses the following question.

**“What effect does a discrepancy between career wants and career have have on job satisfaction, career satisfaction, organisational commitment and turnover intentions of South African IS Professionals.”**

Terms used in the research topic are clarified as follows:

*Career Wants:* Also referred to as career orientations or career anchors in this paper, career wants describe those factors (motivations, values and beliefs) that reflect an individual’s inner desires and ultimately drive their career decisions.

*Career Haves:* Career haves refer to the amount of each career anchor that an individual perceives their job to offer.

*Discrepancy:* The gap between career wants and career haves.

*Job Satisfaction:* This indicates the degree of personal gratification an individual receives from their current position, or the degree to which the work environment fulfils the individual’s needs.

*Career Satisfaction:* This indicates the degree of personal gratification an individual receives from their current career.

*Organisational Commitment:* This reflects an individual’s sense of identification with a particular organisation and indicates a willingness to remain with, and add value to, an organisation.

*Turnover Intention:* This refers to an individual’s desire to leave their current job/organisation.

*South African IS Professional:* For the purposes of this research, a South African IS professional describes an individual who has made a firm commitment to follow a career in the South African IS industry. The term IS industry is applied broadly to include individuals ranging from hardware technicians, through professional programmers/analysts and managers to academics.

Prior to investigating the validity of the extended version of Jiang and Klein’s discrepancy model, substantial longitudinal comparison was made with Meredith’s (1996) study to establish whether any changes have occurred in the career orientations of South African IS professionals, and if so, what changes have occurred.

## **1.2. Necessity for Research**

Turnover of IS personnel is widely considered to be a critical problem for organisations (Mehler, 1998; Agarwal *et al*, 1999; Darais *et al*, 2001; Jiang & Klein, 2002). For this reason, much research has been carried out to determine the factors influencing personnel turnover; however, these studies have generally been conducted overseas and the results cannot necessarily be generalised to the South African context (Hofstede 1980; Derr & Laurent, 1987; Schein, 1987).

Although a few studies (Igbaria, Meredith & Smith, 1994; Igbaria *et al*, 1995; Meredith, 1996) have looked at turnover of IS personnel in South Africa, these took place in the early 1990s. Since then, significant political, social and economic changes have taken place in South Africa, and the global IS and financial markets have also experienced significant change. All these factors could have had a significant influence on IS personal turnover; and as such should be considered by South African organisations struggling to retain IS personnel. Yet, there is no recent research to support this theory.

## **1.3. Value of Research**

This area of research is valuable in terms of understanding South African IS personnel turnover, and should be of interest to human resource specialists and IS managers, as both are faced with the responsibility of retaining valued IS professionals within their organisations.

The results of this research can be used to adapt human resource policies, in such a way that job satisfaction, career satisfaction and organisational commitment of IS personnel are increased, and ultimately turnover rates are reduced. Similarly, IS managers can use the results of this research to gain insight into the differing characteristics of the various career orientations, enabling them to develop motivational strategies best suited to each individual in their employ. In this way, both the manager and IS professional stand to benefit from the reduced discrepancy between career wants and career have.

The results will also be of interest to IS professionals experiencing dissatisfaction or indecision in their current jobs and careers, given that an understanding of the career orientations concept and discrepancy theory may provide some insight into the reasons behind their current mindset.

Although turnover of IS personnel has been widely researched overseas, relatively little recent South African research has been done in this area. As such this paper provides a perspective that will be of interest to IS personnel researchers and will hopefully motivate further study.

## **1.4. Hypothesis Explanation**

This research project sought to validate an extended version of Jiang and Klein's (2002) discrepancy model of IS personnel turnover. As in that study, hypotheses were tested to

determine whether or not a discrepancy between career wants and career hases influences job satisfaction, career satisfaction, organisational commitment and turnover intention. The internal relationships between these variables were also examined for significance.

### **1.5. Plan of Development**

This report begins by summarising a literature review that was conducted in order to investigate turnover among IS professionals. Specifically worldwide turnover trends were considered, and the possible impact of such turnover was investigated. Thereafter, the factors influencing turnover intention among IS professionals were examined; with a particular focus on job satisfaction, career satisfaction and organisational commitment.

Chapter three describes the research methodology used in this study. Firstly, the sample selection, sampling procedure and actual data collection experience are described. This is followed by an extensive description of the various measuring instruments, which includes a close examination of the reliability of each scale. Thereafter the external validity of the survey instrument is discussed and a description of the demographic characteristics of the respondents is provided.

The data analysis process is thoroughly explained in the fourth and fifth chapters. The results of the longitudinal comparison with Meredith's (1996) work are discussed in chapter four. Firstly, the career orientation profile of the South African IS professionals included in this study is discussed. Searching for evidence of geographic differences in career orientations, the distribution, and mean scores, of career orientations between different geographic regions are then compared. Finally, the distinguishing characteristics of individual orientations are examined.

The second phase of analysis involved testing the extended version of Jiang and Klein's (2002) discrepancy model of turnover intention among IS personnel. The results of this analysis, which investigated the effects of a discrepancy between career hases and career wants on turnover indicators, are discussed in chapter five.

The findings of the previous two chapters are discussed in chapter six together with the implications for organisations, IS managers and practitioners in the industry. Limitations of the research approach are also discussed and recommendations for further research are made.

Finally, a summary of the research study, including the methodology used, findings and implications thereof, is given in chapter seven.

## **2. LITERATURE REVIEW**

Outlining the critical issues facing the Information Systems (IS) profession in the 1990s, several researchers identified management of IS personnel as one of the areas requiring immediate attention (Niederman, Brancheau & Wetherbe, 1991; Butler Cox, 1991; Igbaria & Greenhaus, 1992; Schell, 1998).

Although recruiting of staff is now among the lowest priorities of American companies (META Group, 2003), a continuing challenge in managing IS personnel is the high turnover rate in the profession (Mehler, 1998; Agarwal *et al*, 1999; van Huyssteen, 1999; Darais *et al*, 2001; Jiang & Klein, 2002). Widely considered to be a critical problem for organisations, high turnover results in lost productivity, delays in critical projects, and an inability of the IS function to meet burgeoning user needs for technologies and systems (Agarwal & Ferratt, 1999).

This clearly demonstrates the need for sound management of turnover. However, research is inconclusive as to whether or not IS personnel are different from non-IS personnel, with the implication that they should perhaps be recruited, managed and retained differently. One possible explanation for this controversy is the ever changing nature of the IS field (Myers, 1991 in Wynekoop & Walz, 1998; Benamati & Lederer, 2000).

What is known, is that no single factor causes IS professionals to change jobs, rather “their departure usually stems from a convergence of things, some of which are within the control of the organisation and some of which are outside their control” (Morello, 1998, p1). It is therefore suggested that IS managers and organisations mitigate disruption by considering the factors that contribute to an employee’s overall sense of satisfaction and take appropriate action to minimise the negatives and enhance the positives (Morello, 1998).

As perceptions of the market conditions are one factor contributing to IS personnel turnover (Thatcher, Stepina & Boyle, 2003), this literature review will begin with an overview of the IS labour market, both globally and within South Africa. Following this, trends in IS personnel turnover will be explored, and some of the organisational implications of high turnover will be highlighted. An in-depth investigation of factors affecting IS personnel turnover will then be presented. These include factors related to the individual, the internal job environment and the external environment. Finally some of the limitations of previous research will be highlighted and suggestions made for future research.

### **2.1. The IS Labour Market**

Moore (2000) warns that a supply-demand gap in the labour market compounds staffing problems due to the fact that technology professionals not satisfied in current positions are likely to find alternative employment opportunities plentiful. Similarly, researchers (Moore & Burke, 2002; Thatcher *et al*, 2003) find that perceptions of the external labour (abundant job opportunities) market have a strong positive influence on turnover intentions. As such, in times

of economic growth, emphasis shifts to retaining people with required skills (Price, 1997). For this reason, it is important to establish whether or not such a skills shortage exists within the IS industry.

Despite the Asian economic crisis in the late 1990s and the collapse of many dot.coms in the early 2000s, the global labour market for talented IS staff remained competitive (Beng Khim, 2000; Agarwal & Ferratt, 2001; West & Bogumil, 2001). The IS labour market was considered to be fairly resilient due to the fact that economic crisis or no economic crisis, the overall demand for skilled professionals still exceeded supply (Beng Khim, 2000). In such circumstances, where individual organisations are unable to influence the supply of labour, Agarwal and Ferratt (2001, p59) suggest that they must “develop an internal environment allowing them to attract, employ, and inspire IS staff to deliver maximum performance and productivity”.

However, with the ripple effect of 11 September 2001, depressed world financial markets and the resultant harsh economic climate, the lustre of the IS industry has been tarnished. IS spending has consistently declined over the past two years and according to a survey released by the International Data Corporation (IDC), 2002 was forecast to be the worst year ever for the worldwide IS industry (Hoffman, 2003; Matsushita, 2003). Although research by Gartner Inc forecasts modest recovery in technology outlays by 2004, analysts warn that no industry will experience double-digit growth in IS spending before 2006 – if ever again (Hoffman, 2003).

This decreased spending and slower growth in the IS industry has had a direct negative effect on demand for IS workers worldwide.

Even as the United States economy slowly recovers and the overall size of the IS workforce stabilises and approaches its historic high point of 10.4 million, the Information Technology Association of America (ITAA) (2003a) warns that demand for IS workers is still falling.

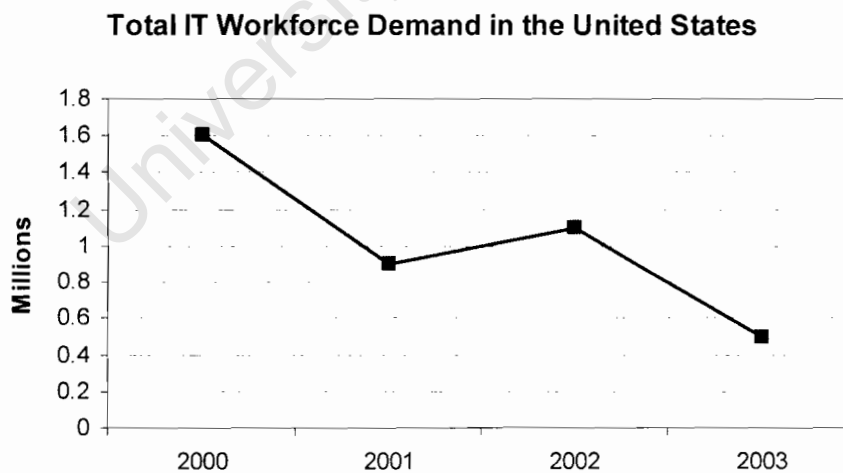


Figure 1: Total IS Workforce Demand in the United States (ITAA, 2003a)

Figure 1, on the previous page, illustrates the hiring intentions at the beginning of each year in the United States, as determined by the annual ITAA study which is based on a survey of approximately 400 hiring managers in both IS and non-IS companies (Gross, 2003; ITAA, 2003a). Since 1997, the annual ITAA study has provided the most comprehensive analysis of IS workforce trends in the United States (ITAA, 2003b). As figure 1 indicates, the 2003 survey forecast a dramatic drop in hiring intentions over the next year, with less than 500 000 IS positions expected to be available – a record low (ITAA, 2003a; Surmacz, 2003a).

The lack of demand for IS professionals is further compounded by the increasing trend toward outsourcing. Although not a new phenomenon, outsourcing the information services function has become an essential strategy for organisations in light of corporate downsizing and restructuring, volatile and competitive environments, and rapid technological advancement (Ang & Slaughter, 2001; Lee, Huynh, Kwok & Pi, 2003). Whilst job opportunities may exist in the contracting field, they are only on a temporary basis, and as such offer little job security to the IS professional (Ang & Slaughter, 2001).

Although the outlook appears bleak and there is no evidence that hiring will rebound in the future, there is a sense of optimism in that the IS hiring slump appears to have “bottomed out” and conditions are likely to improve in the future (Gross, 2003; Konrad, 2003; Surmacz, 2003b). Furthermore, the movement of jobs offshore (outsourcing to India, China, Russia and other countries with inexpensive labour forces) may account for some drop in the demand for IS workers (ITAA, 2003a; Konrad, 2003). To the extent that this is true, a lack of demand may not necessarily equate to a lack of business requirements for access to these talents. As such, a drop in demand may not be as dire as it otherwise seems (ITAA, 2003a). On the other hand, the jobs currently being moved offshore may never come back (Gongloff, 2003).

So while the United States’ IS industry is floundering, countries such as India, China, Ireland, Israel and the Philippines are all experiencing a boom in exporting IS services (Gongloff, 2003).

In more developed countries (with the exception of Ireland), trends in the IS job market have generally been in alignment with the United States.

For example, in Australia, IS professionals are continuing to struggle with a stagnant job market where a recent survey indicated that unemployment in the IS industry was twice the national average (Colley, 2003; Pearce, 2003). However, experts predict that the industry will begin to show strong signs of recovery in 2004 (Hoare, 2003). This view is supported by a leading recruitment index, indicative of long-term trends in the industry, which suggests that Australia’s IS job market is returning to steady growth (Pearce, 2003). This growth is expected mainly in local small and medium-sized businesses rather than large multinationals, because Australian businesses do not face the same political and economic uncertainties as their American counterparts (Pearce, 2003).

Despite the relative health of the domestic economy, 2002 was also a challenging year for the IS industry in New Zealand. With significant cost-cutting endeavours and many mergers, professionals found themselves and their skills in slightly less demand (Greenwood, 2002). This 'oversupply of IS talent' is compounded by an influx of immigrants and returning nationals seeking refuge from the global slowdown (Greenwood, 2002).

### **2.1.1. The South African Job Market**

By 1995, just a year after gaining independence, South Africa was the twentieth largest country market for ICT products and services, accounting for 0.6% of worldwide revenues. In 2000, this would amount to R70 billion (South African Information Technology Industry Strategy Project (SAITIS), 2000). Based on the size and growth of the South African IS industry, research at the turn of the millennium predicted a 62% shortfall in the number of skilled professionals in South Africa by 2003 (Cisco, nd). Although this figure was somewhat overstated, given the unanticipated changes in the global economy, when it comes to job opportunities, the South African IS industry appears to be in far better shape than the US, in terms of the availability of jobs (News24.com, 2003). Indeed, in 2002 the South African Department of Labour identified a vast number of vacancies in the ICT labour market (Access Market International, 2002).

One of the reasons for this is that overseas firms increasingly outsource contracts to South African companies in order to take advantage of cost savings. Even though the Rand has rebounded strongly, the cost of software development in South Africa is still significantly cheaper than in the United Kingdom and the United States (News24.com, 2003).

Furthermore, the "brain drain" has resulted in the loss of many South African IS professionals to countries with more powerful and stable economies and infrastructures, such as New Zealand where they account for a significant percentage of IS immigrants (van Huyssteen, 1999; Greenwood, 2002). This trend is unlikely to decrease given the fact that exchange rates make earning foreign currency an attractive proposition (Meredith, 1996). The exit trend is further exacerbated by increasing incidents of crime and a rising level of associated violence, throughout South Africa. However, although difficult to quantify, it appears that an increasing number of highly skilled South African emigrants are returning to their roots. Therefore, while the brain drain is not yet reversing, it is no longer an increasing trend (Moodie, 2002).

However, Burrows (2003b) warns that the skills shortage in the South African IS industry is not over yet, but rather the nature of the shortage has changed. Despite the fact that the brain drain tide has turned and that many sectors of the IS industry now have an oversupply of under-qualified or inexperienced staff, many top posts, especially in affirmative action areas, are difficult to fill. This is due to the perpetual problem of finding suitable staff with both technical and business management skills in South Africa.

Moleke, Paterson and Roodt (2003) attribute the shortage of appropriately qualified staff to the inadequate education and training system that is still hampered by the legacy of discriminatory policies under apartheid. Moleke *et al* (2003) argue that the extent and quality of involvement with ICT at school level is an important factor affecting an individual's choice to join the IS industry. Yet, access to computers and their use in South African schools is very limited and unevenly distributed. Furthermore, only a few South African students obtain the high mathematics and science marks required to undertake tertiary IS studies.

However, several initiatives have been launched by both the government and the private sector in an attempt to solve these problems (James, Esselaar & Miller, 2001). Whilst they have already achieved limited success and the number of graduates suitable for affirmative action positions is slowly increasing, the shortage will persist until the graduates have accumulated sufficient experience (Moleke *et al*, 2003).

### **2.1.2. The Future of the Global IS Job Market**

In the run up to the year 2000, IS talent was scarce and demand exceeded supply; as a result job opportunities were plentiful (ITAA, 2003a). While it appears unlikely that the IS job market will return to the heyday of the late 1990s, there are still job-growth areas (Hoare, 2003). Currently, the most sought after skills include Java, SQL Software, C and C++, Oracle and Windows NT (ITAA, 2003b). Additionally, there is continuing high demand for network specialists and support for off-the-shelf software such as databases and big-suite applications like customer relationship management software; while growing demand has been predicted for IS workers with Enterprise Resource Planning (ERP) application skills (Beckett, 2003; Colley, 2003). However, research (META Group, 2003) results warn that due to the so-called skills imbalance, many of these positions will remain unfilled. The survey results indicate that outside the United States, the job market for business and systems analysts remains competitive, with companies experiencing the most difficulty in recruiting employees for these positions (META Group, 2003). The inherent nature of these jobs, confirms Bailey and Stefaniak's (1999; 2000; 2001) suggestion that technical skills alone are not sufficient for success in the IS profession, and as such the soft skills component of curricula should be enhanced.

However, with the downturn in the IS industry and the resultant contraction of the job market worldwide, school-leavers appear to have been discouraged from enrolling in tertiary IS courses (Hoare, 2003; Moleke *et al*, 2003). Given that many IS positions require a high level of training (Moleke *et al*, 2003), experts warn that unless this trend is reversed, the industry may once again face a severe skills shortage in a few years time (James *et al*, 2001; Hoare, 2003; Matsushita, 2003).

Although the future of both the global economy and the IS job market remain uncertain, there are indications that they are stabilising and modest recovery is expected in the next

few years (Matsushita, 2003; Pearce, 2003). Yet, even at present growth rates it is predicted that 200 million more IS workers will be needed internationally by the end of the decade (Matsushita, 2003). As such, prevailing economic conditions and the resultant effect on the IS job market are still expected to impact on IS personnel turnover.

## **2.2. IS Personnel Turnover Trends**

Despite the tighter job market, significant turnover rates in the IS profession persist worldwide. (Agarwal *et al*, 1999; Beng Khim, 2000; Cappelli, 2000; Agarwal & Ferratt, 2001; Matsushita, 2003; Thatcher *et al*, 2003). Although acknowledging the IS labour market's influence, some researchers (Barley, 1996; Cappelli, 2000) assert that this is because turnover is driven by the work environment. Or as the META Group (2003) suggest, these higher than expected turnover rates may be partially explained by an exodus of IS professionals to other fields.

Turnover in the IS field has been a problem since the 1960s when turnover of data processing personnel ranged between 15% and 20% annually (Jiang & Klein, 2002). This has increased over the years, with some researchers encountering annual turnover rates of between 33% and 80% at times (De Marco & Lister in Meredith, 1996).

More recently, many Fortune 500 companies have experienced IS personnel turnover of between 25% and 35% annually; approximately five times the departure rate for all American manufacturing companies and twice the average of business managers and professionals (Guimaraes & Igbaria, 1992; Meredith, 1996; Daniels & Vinzant, 2000; Jiang & Klein, 2002). In fact the average job tenure in IS in Fortune 500 companies has shrunk to about thirteen months (Daniels & Vinzant, 2000).

According to the 2003 Worldwide IT Benchmark Report (the industry's definitive source for global IS performance and productivity data), the 2002 worldwide turnover rate of IS staff was at 11.8%, up from 10.6% in 2001 (META Group, 2003).

Locally, reported turnover figures vary, but tend to be between 20% and 25% (Meredith, 1996). In 2002, a large South African IS consulting company, the IQ Business Group, experienced an annual turnover rate of approximately 25% - a relatively low rate in comparison to similar organisations in the same industry (Elliott, 2003).

This trend of increasing turnover rates among IS professionals is particularly perturbing when one considers the implications of such high turnover rates.

## **2.3. Implications of Turnover**

The combined impact of labour volatility and unanticipated changes in IS staff can have serious harmful effects on organisations. Not only because personnel expenses have been shown to consume a large proportion (43%) of the IS budget (Igbaria *et al*, 1994), but qualified and motivated personnel are now recognised as valuable resources, critical to the successful

implementation and use of sophisticated information technology in organisations (Baroudi, 1985; Igbaria *et al.*, 1994).

Therefore, as organisational utilisation of, and dependence on, information systems and technology continues to grow, gaining control of turnover and retaining IS personnel becomes a critical issue in an organisation's effort to achieve strategic business goals (Moore, 1998; Jiang & Klein, 2002).

IS personnel turnover results in reduced productivity and increased costs. Not only is the number of staff available for assignment to projects decreased, but it has been suggested that the cost of replacing an IS worker may be up to seven times the employee's annual salary (Lee, 1999; Moore & Burke, 2002). Given the immense cost of recruiting and training a new employee, it is not surprising that research in South Africa has found that it takes between three and four years for a company to realise a return on their investment (Hamlyn, 1992). Not an ideal situation when average organisational tenure is shrinking to between one and two years (Hamlyn, 1992; Daniels & Vinzant, 2000).

When IS professionals leave an organisation, aside from decreasing available human resources, the departing employees often take specialised skills, tacit knowledge, and understanding of business operations and information systems with them (Moore & Burke, 2002). Thus, the exit of an IS professional who is well versed in a project can delay or even prevent the implementation of a new technology or system. Hence, turnover has been tied to inadequate deployment of an organisation's IS resources, resulting in overrun schedules and budgets, a reduction in quality and failed systems projects (Jiang & Klein, 2002; Josefek & Kauffman, 2003). Josefek and Kauffman (2003) therefore warn that turnover threatens the profitability and competitive position of the organisation.

Despite the serious implications of turnover, it is not necessary detrimental. Figure 2 below illustrates the results of a recent survey in which only 46% of the respondents reported that the existing turnover rate in their organisations was higher than their ideal IS turnover rate (Agarwal *et al.*, 1999). This suggests that many organisations experiencing turnover, use the resultant job openings to change the skills mix of their workforce (Agarwal *et al.*, 1999).

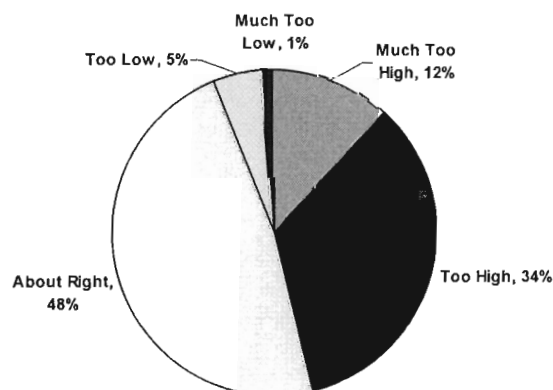


Figure 2: Current IS Turnover Rate Relative to Organisation's Ideal Rate (Agarwal *et al.*, 1999)

Evidently, organisations do not wish to eliminate turnover. Not only would that indicate organisational stagnation, but given that turnover is a natural by-product of a living enterprise, trying to stop it entirely would be a waste of energy, better spent elsewhere (Morello, 1998). However, it is crucial for organisations to reduce and control turnover, particularly amongst the most talented and thus valuable staff. In order to do this, it is necessary to determine exactly what factors influence turnover and then recommend ways of counteracting these factors.

#### **2.4. Factors Affecting IS Personnel Turnover**

Many factors, some related to the work environment and some related to the individual, influence an employee's organisational commitment, job and career satisfaction and ultimately intent to leave (Moore, 2000).

Prior research related to turnover among IS professionals has emphasised motivation factors and their correlation with self-reported intentions to leave (Bartol, 1983; Baroudi, 1985; Igbaria, Greenhaus & Parasuraman, 1991; Moore, 2000).

Steel and Ovalle (1984) advocate the study of turnover intentions rather than actual turnover, suggesting that the two are linked, and that intentions are better predictors of turnover than affective variables, such as job and career satisfaction and organisational commitment. Additionally, Igbaria *et al* (1994) argue that turnover intentions can provide results more quickly and are less difficult to predict than turnover. Moreover, empirical research has consistently found turnover intention to be the strongest cognitive precursor of turnover (Moore, 2000). However, Moore (2000) cautions that turnover intention accounts for only 27% of turnover variance, and therefore should not serve as a direct surrogate for actual turnover. Nevertheless, turnover intentions continue to interest researchers as they are often regarded to be more accurate, given that individuals report on current perceptions rather than trying to recall past circumstances and perceptions. Furthermore, turnover intentions can signal the need for interventions to prevent and reduce the occurrence of actual turnover (Moore, 2000).

There is a wide body of knowledge pertaining to the antecedents of turnover intention and actual turnover at the individual level. However, much of the research is underpinned by a similar theoretical base; making any differentiation between streams of research negligible. Nevertheless, this literature review will first examine the various career orientations of IS personnel, then consider what motivates them, and finally investigate the notion of job satisfaction and organisation commitment. Within each section, the resultant effect on turnover intentions and/or actual turnover will be considered.

#### **2.5. Career Orientations of IS Personnel**

Career orientations of IS professionals are important due to the notion that these orientations could be significantly related to work-related outcome variables such as satisfaction and commitment (Igbaria *et al*, 1991; Crepeau, Crook, Goslar & McMurtrey, 1992; Igbaria *et al*,

1995). Research has shown that the compatibility between an individual's desires and aspirations, and their job setting, produces high levels of job satisfaction, career satisfaction, and organisational commitment, as well as a low level of turnover intention (Igarria *et al*, 1995).

Much of the research exploring dimensions of career orientations has been influenced by the work of Ginzberg and Baroudi (1992 in Igarria *et al*, 1995; Jiang & Klein, 2002). They noted that improved career planning for IS employees, specifically building a dual career ladder in order to satisfy those individuals not wishing to pursue a managerial career, was the most commonly recommended solution for reducing turnover (Igarria *et al*, 1995; Meredith, 1996).

Literature highlights the inadequacies of the traditional technical to managerial career path (Baroudi, 1998; Ferratt & Starke, 1989; Igarria *et al*, 1995). Thus the dual career ladder, which recognises differing career needs and attempts to provide career paths for technically inclined as well as managerially inclined personnel, does appear to be a superior option (Butler Cox, 1991). However, the dual career ladder concept assumes two options to be sufficient and does not take cognisance of the diverse needs that IS personnel have (Igarria *et al*, 1991; Crepeau *et al*, 1992; Ginzberg & Baroudi, 1992; Igarria & Baroudi, 1993; Igarria *et al*, 1995, Crook & Crepeau, 1997).

As Schein (1987) found, individuals hold a wide variety of career interests, which he called career anchors or orientations. The career anchor concept arose from a longitudinal study of forty-four alumni from the Sloan School of Management in Massachusetts (Schein, 1985). The study followed the careers of the alumni over a period of ten to twelve years, during which time information was gathered regarding changes made, the motives for, and feelings experienced with each change, as well as the values and attitudes developed over this period (Schein, 1985; Meredith, 1996).

Although individual job histories and career decisions differed considerably, it became evident that over time each individual was developing a career around an increasingly distinct and consistent pattern of motivations, values and beliefs (Schein, 1985; Meredith, 1996). As Meredith (1996) and van Huyssteen (1999) explain, this concept became known as a 'career anchor', because the alumni appeared to be 'anchored' to a particular career distinction.

Schein (1985, p28) describes the career anchor as "that set of self-perceptions pertaining to your i) motives and needs, ii) talents and skills and iii) personal values that you would not give up if forced to make the choice". As this self-concept is only developed through occupational experience, Schein (1978) suggests that the career anchor develops during the early years of work experience (first ten years), but once established remains stable throughout an individual's career (Igarria *et al*, 1994).

Schein (1985) identified eight career anchors, in terms of which most people can be described, however, it was later acknowledged that one of these (security) actually comprised two distinct

factors (Meredith, 1996). The nine career anchors are briefly described as follows (Jiang & Klein, 2002):

1. **Managerial competence** – individual pursues greater responsibility for accomplishing results through others.
2. **Technical competence** – individual focuses primarily on the exercise of technical expertise.
3. **Job security / tenure** – individual seeks company loyalty, long-term employment, and financial security.
4. **Creative / entrepreneurship** - individual needs to create something on their own by developing a new product or service, or by building a new business enterprise.
5. **Autonomy** – individual looks for situations in which they will be free of organisational constraints and control.
6. **Challenge** – individual seeks solving unsolvable problems, overcoming impossible obstacles and winning against extremely capable opponents.
7. **Service** – individual dedicates self to helping other people and contributes to causes.
8. **Geographic security** – individuals link themselves to a particular area on a long-term basis.
9. **Life-style integration** – individual wants to develop a lifestyle that integrates family and career concerns.

Given the shortcomings of previous work, which failed to incorporate all the career anchors, Ginzberg and Baroudi (1988) called for further research into the career orientations of IS personnel. The aim was to determine the validity of the assumption that IS personnel hold either the technical/functional competence or the managerial competence orientation, and to examine whether individuals whose jobs are congruent with their career orientations exhibit greater job and career satisfaction, and less turnover, than their mismatched counterparts (Meredith, 1996).

One of the first studies in response was by Baroudi (1988) in which the relationship between career orientations and career satisfaction was examined. Using a sample of IS personnel from two organisations, Baroudi found various career orientations were held. Of these, the challenge and service orientations achieved the highest mean scores, while technical competence achieved one of the lowest scores (Meredith, 1996). Furthermore, Baroudi (1988) found substantial variation in correlations between career orientation and career satisfaction, with significant correlations only apparent for four orientations (managerial, job security, service and independence/autonomy) (Igbaria *et al*, 1995).

A subsequent study by Crook, Crepeau and McMurtrey (1991) sought to establish whether the career anchor construct could be used to discriminate between IS job types, thereby facilitating a better employee-job match. Crook *et al* (1991) concluded that the discriminatory power of the construct was marginal, and that IS managers should focus on the career orientations which appeared to be of equal importance across job types. As Meredith (1996) explains, it was

therefore suggested that IS managers focus on offering security, opportunity to be of service, and challenge in order to better manage IS personnel and reduce turnover.

In 1991, Igbaria *et al* conducted a further study examining the distribution of different career orientations among several hundred members of a professional body the Western United States. The survey revealed a diversity of career orientations, but consistent with the hypothesis, managerial (22.6%) and technical (26.1%) competence were the two most widely held orientations by IS professionals. Whilst these results conflict with previous research, Meredith (1996) emphasises the fact that Igbaria *et al* (1991) analysed the distribution of individuals with each dominant orientation rather than using the average scores of the entire sample. Looking specifically at those individuals with a managerial or technical orientation, the study also found that a match between an individual's career orientation and their job setting (for example, managerially orientated individuals in managerial positions) resulted in higher job and career satisfaction, more organisational commitment and lower turnover intention than mismatched individuals (Igbaria *et al*, 1991).

Previous research had only considered the career orientations of IS employees in the United States (Igbaria *et al*, 1995). Noting Igbaria *et al*'s (1991) suggestion that the generalisability of these findings be established in other geographical areas, Meredith (1992) performed similar research in the Western Cape in South Africa (Meredith, 1996). Unlike the American findings, geographical security (25%) and lifestyle (22.3%) were found to be the predominant orientations, with very few individuals inclined to pursue either technical (2.4%) or managerial (12%) careers. However, the results were consistent with the notion that a mismatch between career orientation and job setting reduces job satisfaction and leads to increased turnover intention. Meredith (1996) concedes that the sample size was too small, and the results statistically insignificant, to draw a definitive conclusion. However, the results may be indicative of the fact that many people choose to live in the Western Cape because of its beautiful surroundings and more relaxed lifestyle (Gordon, 2000). While Igbaria *et al* (1995) concur with this sentiment, a further explanation may be that changes are taking place in the IS workforce worldwide. A new work ethic is developing, whereby employees are placing greater emphasis on family and lifestyle and resistance to job mobility is increasing (Igbaria *et al*, 1995; Alexander, 2003).

Also attempting to verify the generalisability of previous work, Ginzberg and Baroudi (1992) embarked on a study in the United States to prove that technical and managerial orientations would not dominate in a sample of IS professionals, and that meaningful differences between geographical regions and different organisations would not occur (Meredith, 1996). Once again the results of this study contrasted with those of Igbaria *et al* (1991) in that neither managerial competence nor technical competence dominated. However, with the mean scores on challenge, service and job security dominating, there is some correlation with the results of Crook *et al* (1991). However, in terms of dominant orientation, distribution, challenge, job security and geographical security occurred most often. Thus as Meredith (1996) highlights, slightly different career orientation profiles emerged, depending on whether distribution or mean score

were used. Importantly, no significant difference was found between different organisations and/or regions and it was concluded that career planning and management “need not be highly tailored to company or geographic region” (Ginzberg & Baroudi, 1992, p52).

Still concerned with geographic influences on results, and expanding on previous work, Meredith (1996) conducted an additional study in South Africa, exploring the career orientations of a national sample of IS professionals. Meredith (1996) extended earlier work to examine the effects of a match versus a mismatch on all career orientations known to exist, as opposed to just the technical and managerial orientations. IS professionals were found to have a wide variety of career orientations; but contrasting with Ginzberg and Baroudi’s (1992) results, considerable differences between the distributions of career orientations in the Western Cape compared to other areas of South Africa were apparent. Of these, the most significant difference was the geographical security orientation of individuals in the Western Cape – a finding consistent with Meredith’s (1992) previous study. Also consistent with previous findings in South Africa, technical and managerial orientations were not common, representing a scant 3.9% and 6.3% of the sample respectively. Meredith’s (1996) findings are also consistent with the notion that individuals holding positions congruent with their career orientations are shown to exhibit greater job and career satisfaction, higher organisational commitment and lower turnover intentions than their mismatched counterparts.

In 1999, seeking temporal differences, van Huyssteen repeated Meredith’s (1992) earlier study in South Africa. While the respondents were drawn from the same geographical region (Western Cape), they were drawn from a single industry (university administration) rather than a professional body, and thus the age range differed. Yet once again, IS employees were shown to hold a wide variety of career orientations, and consistent with Meredith’s (1992) results, van Huyssteen (1999) found a high proportion of respondents displaying a lifestyle orientation. However, the results were inconclusive on whether employees whose jobs match their career orientation experience more job and career satisfaction, greater organisational commitment and lower turnover intentions.

Researchers (Baroudi, 1988; Meredith 1992; Meredith, 1996; van Huyssteen, 1999) have generally found that IS employees hold a variety of career orientations; and use this finding as a basis to criticise the dual career path, arguing that it is limited and not an effective device for managing IS personnel. While the dual career path may not be suitable for all IS professionals; Ridings and Eder (1999) suggest that it is appropriate in organisations concerned with motivating and retaining technical talent. In fact, research (Cole-Gomolski, 1999) has shown that the dual career path reduces turnover, particularly among top technical performers who do not desire a managerial promotion. Results of Ridings and Eder’s (1999) study confirm that a technically inclined employee who is satisfied with his or her present technical career path outlook in an organisation is less likely to seek employment elsewhere. However, contrary to Schein’s (1987) proposition that career anchors take time to develop, Ridings and Eder (1999) surveyed young professionals who were still undertaking part-time tertiary education.

Understanding the concept of career orientation is important for organisations or IS managers concerned with reducing IS personnel turnover, because of the importance it has on an individual's career decisions and subsequent influence on turnover. For example, Schein (1987) suggests that individuals with a geographical security orientation are more satisfied with their jobs and careers and are less likely to leave the organisation, because their primary concern is to remain in a chosen location. However, the concept of career orientation is further complicated by the proposition that various individual variables are significantly related to career orientation (Crook *et al*, 1991; Ginzberg & Baroudi, 1992; Igbaria *et al*, 1991). Empirical research suggests the examination of gender, age, job type, organisational tenure, job tenure, and organisational level as potential correlates of career orientations (Igbaria *et al*, 1995). More recently, research (Agarwal & Ferratt, 2000; Agarwal, De & Ferratt, 2001) has suggested that an IS professional's preferred employment duration is also a critical antecedent of turnover intention.

Gender difference has been confirmed in career orientations, with women found to be more lifestyle oriented than men, who are more technically and managerially oriented (Crook *et al*, 1991; Igbaria *et al*, 1991). Organisational level has also been found to be associated with career orientation. Employees in managerial positions have been found to be more managerially oriented, while employees in professional positions have been found to be more technically or security oriented (Igbaria *et al*, 1995).

Further analysis was conducted on Meredith's (1992) survey results (Igbaria *et al*, 1995) to investigate the network of relationships of career orientations with selected personal variables (gender, marital status, age, tenure, job type, organisational level, and education) and key career variables (job characteristics, job and career satisfaction, organisational commitment and turnover intentions) in South Africa. The results are consistent with the notion that demographic variables influence career orientations. Females were found to be less managerially and job security oriented than males. Individuals holding managerial positions were found to be more managerially oriented, but less technically and lifestyle oriented than those holding technical positions. Similarly, non-managerial IS employees were less managerially oriented but more job security and lifestyle oriented than managerial IS employees. Consistent with expectations, Igbaria *et al*'s (1995) results also show that IS employees score higher on autonomy and managerial competence, but lower on service; indicating that their training and education has made them self-reliant and responsible, therefore increasing their autonomy, managerial and challenge orientation. Additionally, older and more tenured IS employees scored high on job security and geographic security, suggesting that these individuals are more security oriented than younger IS professionals.

Research has created a somewhat confusing and contradictory portrait of the career orientations of IS personnel. Furthermore the inconsistencies and limitations of the studies limit the generalisability of findings. However, many researchers have emphasised the fact that IS managers and organisations endeavouring to reduce turnover should understand the individual needs of employees, and adopt career path strategies flexible enough to meet the needs of all

orientations (Crook *et al*, 1991; Ginzberg & Baroudi, 1992; Zawacki, 1992; Harris, 1993; Meredith, 1996).

However, research (Greenhaus, Parasuraman & Wormley, 1990; Igbaria *et al*, 1991; Crepeau *et al*, 1992; Igbaria & Baroudi, 1993) has found only a weak relationship between wants and career decision indicators; suggesting that career orientations may not be sufficient to explain career satisfaction or intent to leave (Jiang & Klein, 2002). Instead, as research (Van Maanen & Schein, 1979; Ginzberg & Baroudi, 1988) suggests, both the wants of an IS professional and the degree to which they feel these desires are satisfied, should be investigated. It is argued that there must be parity between an individual’s wants and what they “have” to ensure continuing satisfaction and motivation (Jiang & Klein, 2002).

## 2.6. Motivating IS Personnel

Substantial work in motivation theory lends further support to Ginzberg and Baroudi’s (1988, p593) proposition that “when an individual finds that his or her internal career needs are met by the external career options made possible by the organisation, he or she will more likely remain with the organisation”. The underlying theory is that individuals are motivated to use their jobs in order to satisfy their needs. If these needs are not met, the dissatisfied or unmotivated individual is more likely to seek fulfilment elsewhere, possibly in another organisation. While much of this motivational theory research comes from other academic disciplines, the principles hold in the IS field because researchers have found no significant differences in motivational patterns between IS and non-IS professionals (Ferratt & Short, 1986).

According to the research of Frederick Herzberg (1966), there are two different sets of job factors. One set, the motivators or satisfiers, can motivate and satisfy workers. The other set, dissatisfiers, or hygiene factors, can only prevent dissatisfaction.

**Table 1: Examples of the most important Motivator and Hygiene Factors (Couger, 1988a; DuBrin, 1997)**

<b>Motivator Factors</b> (Sources of Job Satisfaction and Motivation)	<b>Hygiene Factors</b> (Sources of Job Satisfaction; Neutral to Motivation)
Challenge of the work itself Responsibility Recognition Achievement Job advancement and professional growth	Physical working conditions Company policies Quality of supervision Co-worker relationships Salary Job security

As can be seen in table 1 above, the motivational elements are the intrinsic, or job content, factors that make the job exciting, while the extrinsic, or job context, factors are hygienic (DuBrin, 1997). According to Herzberg’s two-factor theory, only the presence of the motivator factors leads to more positive energised behaviour, although their absence will not cause dissatisfaction. On the other hand the presence of hygiene (extrinsic) factors is not motivational, but their absence can cause dissatisfaction (Herzberg, 1966).

Hertzberg's study, asking respondents to rank the various factors in terms of importance, was first replicated in the IS field by Jack Fitz-enz in 1977 (Couger, 1988a). Ten years later, during which time many environmental factors had changed, Couger (1988a) repeated Fitz-enz's study and found a temporal influence in rankings, which affects the dissatisfiers (demotivators) more than the satisfiers (motivators). Given this temporal dimension effect on rankings, Couger (1988a) suggests that surveys of this type should be administered at regular intervals (five years) to be consistent with the evolving motivational environment.

Interestingly, in the 1987 study, Couger (1988a) found an identical rating on the top three factors (The Work Itself, Achievement, Advancement), regardless of category (age, gender, job) of comparison. Furthermore, all three of these factors are job related rather than environmentally related, and therefore an organisation can positively influence motivation by improving the job.

One option is for organisations to use the job characteristic model theory of motivation; a systematic approach to improving the job in which the key factor for motivation is the work itself (Couger, 1988b; Couger & Smith, 1992a). The job characteristic model theory of motivation highlights the five most important job variables for motivating employees – skill variety, task identity, task significance, autonomy and feedback from the job itself (Couger & Smith, 1992a). By addressing these factors, organisations can enhance a job's motivating potential.

Couger (1988b) warns that periodic analysis of a job is necessary to ensure that it remains challenging and that motivation is sufficient to the level that the employee does not wish to leave the organisation. Furthermore, not all employees desire the same degree of growth and challenge; therefore managers must ensure that jobs are matched to individual employee growth needs (Couger, 1988b).

The fact that such differences exist in IS personnel motivational needs raises questions about the validity of trying to adopt a blanket human resource strategy aimed at reducing turnover. Meredith (1996, p128) questions the validity of the assumption that a "particular professional group of individuals can be managed and motivated as a group" and suggests that it is unlikely to lead to reduced turnover in the IS industry. However, cross-cultural studies show that computer personnel tend to be more alike, regardless of their country of origin, than their own cultural counterparts (Couger & Smith, 1992a). For example, when comparing South African programmers and analysts with their American counterparts in 1990, Couger and Smith (1992a) found similar rankings of eleven motivation factors as illustrated in table 2 on the following page.

**Table 2: Ranking of Motivation Factors by Programmers and Analysts: A comparison of the USA and SA (Couger & Smith, 1992a)**

Motivation Factors	USA (1988)	SA (1990)
The Work Itself	1	1
Opportunity for Achievement	2	4
Opportunity for Advancement	3	2
Pay and Benefits	4	3
Recognition	5	5
Increased Responsibility	6	7
Quality of Supervision	7	8
Interpersonal Relations with Peers	8	9
Job Security	9	6
Working Conditions	10	10
Company Policies	11	11

In table 2 above, it can be seen that South Africans rated job security higher than their American counterparts. Perhaps this could be explained by the uncertainty (political, economic and social) that existed in South Africa in the early 1990s.

Couger and Smith’s study (1992a, p84; 1992b, p51) also considered individual growth need strength (GNS) defined as “the individual’s need for personal accomplishment and for learning and developing beyond his/her present level of knowledge and skills”; and motivation potential score (MPS) determined by the degree of richness of the five core job dimensions. Over the eight job types identified, South African personnel were generally found to have a high GNS, but job richness in terms of the core job dimensions (MPS) was inadequate (Couger & Smith, 1992a). Subsequent research has produced very similar results, whereby IS professionals have been shown to have a high need for learning and self-development, and a stronger desire to be stimulated and challenged than many IS positions allow for (Khalil, Zawacki, Zawacki & Selim, 1997; Wynkoop & Walz, 1998 in Lee, 2001). Given such a situation, Couger and Smith (1992a) recommend that the core job dimensions of the job be elevated to match the high growth need of IS personnel in order to increase motivation and indirectly reduce turnover.

Closely linked with motivation theory, discrepancy theory recognises the need to consider individual differences; something that is lacking in job satisfaction models (Jiang & Klein, 2002). It acknowledges that job satisfaction is related to the extent to which job outcomes match those desired by the individual, which in turn affects turnover intention (Jiang & Klein, 2002).

Although previous studies (Baroudi, 1988 in Jiang & Klein, 2002; Igarria & Baroudi, 1993) had found certain career wants significantly correlated with career satisfaction, the relationships were quite small and as such probably had little practical significance. While Jiang and Klein (2002) also found that degrees of want are not good predictors, when they are used as anchors to measure against what IS personnel perceive they have, all nine dimensions of the job facets (career anchors) become significant. These findings suggest that closing the gap between employee wants and what they perceive they have in their current positions is imperative to improving turnover indicators (Jiang & Klein, 2002).

## 2.7. Job Satisfaction and Organisational Commitment

The research pertaining to career orientations and motivational factors, discussed above, emphasises the desires and aspirations of IS professionals. However, these alone do not influence turnover. Rather, as the research indicates, it is the work environment, or specifically a mismatch between an individual's personality, their desires and aspirations, and what the job provides that drives turnover (Boshoff & Arnolds, 1995; Barley, 1996; Cappelli, 2000; Roepke, Agarwal & Ferratt, 2000).

When employees find their employment sufficiently satisfactory to continue in it, either permanently or until they have prepared for greater responsibilities, they are said to be experiencing job satisfaction (Thatcher *et al*, 2003). Although changing jobs is, itself, thought to increase job satisfaction (Niederman & Sumner, 2001), there are many factors, related to the work itself, which are believed to directly influence job satisfaction and indirectly affect turnover intention. Whilst researchers (Igbaria *et al*, 1994; Moore, 2000; Thatcher *et al*, 2003) have developed differing conceptual models, the factors include perceived workload, job characteristics, task variety, task significance, boundary spanning, role ambiguity, role conflict, autonomy, feedback and fairness of rewards/salary (Bartol, 1983; Baroudi, 1985; Dittrich, Couger & Zawacki, 1985; Guimaraes & Igbaria, 1992; Igbaria *et al*, 1994; Moore, 2000; King & Xia, 2001; Thatcher *et al*, 2003).

Importantly for IS managers and organisations seeking a reduction in IS personnel turnover, these aspects of the job are all under their direct control and therefore appropriate action can be taken to minimise problems and increase job satisfaction. This is particularly significant because some researchers (Mobley, Griffeth, Hand & Meglino, 1979; Porter, Steers, Mowday & Boulin, 1974) have found job satisfaction to have a direct negative effect on turnover intention.

However, other researchers (Mowday, Porter & Steers, 1982; Porter, Crampon & Smith, 1976; Williams & Hazer, 1986; Igbaria *et al*, 1994) assert that job satisfaction predicts organisational commitment and only has a mediated effect on turnover intention. They suggest that when an employee experiences job satisfaction, the employee's degree of commitment to the organisation increases; and committed employees report lower turnover intention. Nevertheless, the underlying notion holds true in the IS domain where research has confirmed that job satisfaction and workplace perceptions such as job characteristics influence organisational commitment (Thatcher *et al*, 2003). Furthermore, a number of studies have confirmed the important role of organisational commitment in influencing turnover intentions among IS professionals (Steers, 1977; Mowday *et al*, 1982; Bartol, 1983; Baroudi, 1985; Gupta, Guimaraes & Raghunathan, 1992; Griffeth, Hom & Gaertner, 2000; Paré, Tremblay & Lalone 2001; Thatcher *et al*, 2003).

Defined as "measuring the relative strength of an individual's identification or involvement with an organisation", organisational commitment is characterised by (Mowday *et al*, 1982):

- A strong belief in and acceptance of the organisation's goals and values (normative commitment).

- A willingness to exert considerable effort on behalf of the organisation (affective commitment).
- A strong desire to maintain membership in the organisation (continuance commitment).

Theory suggests that organisational commitment mediates the influence of attitudes, affective beliefs, and job characteristics on turnover intention and actual turnover (Thatcher *et al*, 2003). Comparing attitudes such as job satisfaction or beliefs about job characteristics, Porter *et al* (1976) argue that organisational commitment is much less specific and more stable. So whereas job satisfaction may fluctuate with day-to-day incidents, they assert that organisational commitment reflects employees' enduring beliefs about their employer, which develop gradually over time (Thatcher *et al*, 2003). Because of this stability, theorists argue that organisational commitment is the primary predictor of turnover intention (Thatcher *et al*, 2003). Not only does organisational commitment negatively affect turnover intention, but it is also a strong predictor of actual turnover (Mowday *et al*, 1982; Griffeth *et al*, 2000; Thatcher *et al*, 2003).

There is substantial literature examining the relationships between work-related factors, job satisfaction, organisational commitment and turnover intention.

Specifically, Bartol's (1983) tests of a causal model find job satisfaction, rewards, and organisational commitment all significantly and negatively related to turnover. Another causal model relating boundary spanning, role ambiguity, role conflict, job satisfaction, and organisational commitment is partially supported, although all the variables are strong predictors in a regression model (Baroudi, 1985 in Jiang & Klein, 2002). Conversely, Dittrich *et al* (1985) find perceptions of pay and latitude equity to be important in predicting turnover intention; a concept that is weakly supported by Thatcher *et al*'s (2003) more recent research.

Research has also established the relevance of perceived job characteristics (autonomy, identity, variety, significance, and feedback) to understanding the behaviour of IS personnel (Couger, Zawacki & Opperman, 1979; Burn, Tem, Ma & Poon, 1994).

Igbaria *et al*'s (1994) South African study examining the determinants of intention to stay, supports the views that job characteristics influence job satisfaction; and that job satisfaction and organisational commitment have the most substantial and direct influence on turnover intention of IS personnel. However, inconsistent with expectations and conflicting with other research (Bartol, 1983; Dittrich, Couger & Zawacki, 1985; Palmer, Speier, Buckley & Moore, 1998; Thatcher *et al*, 2003), Igbaria *et al* (1994) find that salary has no effects on commitment or turnover intention. This is consistent with the view (Moore, 1999; Jiang & Klein, 2000; Turner & Lowry, 2000) that although economic rewards in the IS profession are important to some degree, it is not the primary attractant or motivator of IS personnel. This provides an interesting perspective, particularly as many organisations resort to increasing IS employees' salaries as a means to prevent turnover (Agarwal & Ferratt, 1998; 1999). On the other hand, IS

staff compensation is falling in some countries such as the United States, due to the tight labour market (META Group, 2003).

As with career orientations, job satisfaction and organisational commitment are also affected by demographic variables. Igarria and Greenhaus' (1992) more complete casual model than earlier studies indicates that certain demographic variables, career opportunity variables and career satisfaction are also related to turnover intention. Griffeth *et al* (2000) suggest that the impact of such demographic differences may be neutralised when using a control variable such as profession, which indicates comparable education or socialisation. Yet, Thatcher *et al* (2003) found age and gender to have mixed effects on turnover intention and actual turnover. Age did not influence turnover intention or turnover; while despite controlling for tenure, gender was found to be a positive predictor of turnover intention, with female IS workers more prone to reporting turnover intention. This finding is consistent with Igarria and Baroudi's (1995) research.

### **2.7.1. Work Exhaustion**

Another powerful, though related factor, that research has repeatedly shown to be significantly correlated to job satisfaction, organisational commitment and consequently turnover intention, is work exhaustion or job burnout (Moore, 2000). Although evident in various work environments, IS professionals are believed to be particularly vulnerable to work exhaustion (Li & Shani, 1991; McGee, 1996; Kaluzniacky, 1998). With recent surveys (META Group, 2003; Overby, 2003) ascertaining that burnout affects more than 70% of corporate IS departments, preventing burnout has become a primary concern for IS managers facing lower productivity, increased long-range turnover and a loss of shareholder value (Surmacz, 2003b).

Burnout or work exhaustion can be defined as a multi-dimensional construct consisting of three components: emotional exhaustion, cynicism (defined as a mental distancing from one's work) and decreased self-efficacy (Moore, 2000; Carr & Jones, 2001). The primary component, exhaustion is defined as the depletion of mental resources (Schaufeli *et al*, 1995 in Moore, 2000).

So while work exhaustion may be influenced by individual factors such as age and organisational tenure (Moore, 2000), research has shown job factors and organisational conditions to be the key components (Cherniss, 1993; Hallsten, 1993; Maslach & Schaufeli, 1993; King & Sethi, 1998; Moore, 2000).

Given the widespread use of technology, the vital importance of many systems and constant change in the industry, IS jobs can very demanding (McGee, 1996). For example, employees are expected to keep systems operational around the clock, are subjected to ever-increasing workloads and seemingly impossible deadlines, and are often poorly integrated into the rest of the organisation (Bartol & Martin, 1982; Li & Shani, 1991; Fischer, 1998;

Lee, 1999; DeMarco, 2001; Moore, 2000; Overby, 2003). Correlating with the concept of work overload, factors such as boundary spanning activities, role conflict and role ambiguity have been found to increase stress among IS professionals and consequently can reduce job satisfaction and increase turnover intention (King & Sethi, 1998; Moore, 2000; Carr & Jones, 2001; Nelson & LeRouge, 2001; Alexander, 2003).

As Cohen (2001) argues, not everyone is comfortable with the round-the-clock expectations that go along with some IS positions and have difficulty balancing family needs with their job. Additionally, with an emphasis on cost reduction, the META Group (2003) reports a decrease in the IS working year and shorter working hours, though there is no evidence of a decreasing workload. Moore's (2000) research provides both qualitative and quantitative evidence that the subsequent work overload appears to be the crux of stress and consequently exhaustion in technology professionals. There is substantial anecdotal evidence from practitioners supporting these findings (Heller, 2000; Overby, 2003). As a result of this undue pressure, staff may become dissatisfied and unhappy with their jobs, prompting them to leave (Moore, 2000; DeMarco, 2001). As Moore (2000) found, IS professionals experiencing work exhaustion report significantly stronger intentions to leave their jobs.

Of concern is the fact that research (Moore, 2000) indicates that it is an organisation's most dedicated and committed staff that are most vulnerable to such work exhaustion. Moore (2000) continues by stating that if an IS employee feels that changes to reduce the workload are unlikely, they will seek a more suitable environment, probably outside the organisation. In support of this, DeMarco (2001) states that a common feature of exit interviews is a sense that the departing person felt 'used'.

### **2.7.2. Organisational Structure**

Organisational size and structure is also thought to play an important role in facilitating job satisfaction, organisational commitment and turnover intention. Research has shown that big companies have greater difficulty in motivating employees than smaller companies. Not only are the project teams larger, but also there are more levels of management through which to communicate (Couger, 1988a; Garden, 1988).

In an effort to reduce this problem, increase productivity and more importantly cut costs and increase profitability, corporate downsizing has become a significant tool of IS management (Scott Morton, 1991; Hitt & Keats, 1992; Remenyi, 1993; Jiang, Margulis & Klein, 1997). This entails removing unnecessary staff and assigning the remaining employees more effectively. In some large organisations of South Africa, such as Old Mutual, this has reached the point where IS staff are often assigned to several different projects simultaneously (Smith, 2003).

DeMarco (2001) disputes the new 'flatter' organisational structure, arguing that it places too much unnecessary pressure on individuals. Research (Smith, Wegner & Quansah, 1998; Overby, 2003) supports this sentiment, citing that a primary complaint of employees surviving corporate downsizing is increased stress levels, mostly attributable to the increased workload, time pressure and role conflict.

Thus, Moore (2000) and DeMarco's (2001) findings on work exhaustion, lead to a disturbing paradox: "the more successful a company is in extracting every bit of capacity from the workers, the more it exposes itself to turnover and attendant human capital loss" (DeMarco, 2001, p40). Indeed, studies (Greenhalgh & Rosenblatt, 1984 in Jiang *et al*, 1997) have shown that downsizing survivors often experience decreased morale, and commitment to their organisations, which are ultimately related to turnover intentions.

Another recent development in organisational structure is the advent of telecommuting. Adopted to address a host of societal, personal and corporate issues, telecommuting allows employees to work in a variety of locations, but still participate in the work of the organisation (Igbaria & Guimaraes, 1999). Given the nature of IS work and recent technological advancements, telecommuting is particularly suited to the IS industry. Aside from cost reductions and increases in productivity, telecommuting has been found to reduce turnover (DiMartino & Wirth, 1990; McCloskey & Igbaria, 2003). Igbaria and Guimaraes (1999) concur that telecommuters experience increased job satisfaction due to a reduction in role stressors (role conflict and role ambiguity) and ultimately have a reduced likelihood of leaving the organisation. However infiltration of telecommuting in South Africa is low and its long-term viability remains unknown.

## **2.8. Other Factors Influencing Turnover**

The above discussion has focused on IS professionals and their interaction with the internal job environment. However, turnover intentions and actual turnover are also thought to be influenced by factors in the external environment such as the IS labour market and the political environment.

The global IS labour market has already been discussed. However, the South African IS labour market has an added complexity, whereby recent legislation calls for employment equity among racial groups within South Africa. Although there is an increasing number of non-white students graduating with IS degrees in South Africa (Marshall, 2001), there is still a shortage of supply in this sector. While White and Lester (2002) suggest that this may be the result of ethnic differences in attitudes towards IS careers, a more likely explanation, given the South African context, is that it is a legacy of the apartheid era, whereby black students were deprived of scientific education (Durnford, 2000).

Similarly, the South African equity legislation calls for gender equity. However, recent studies have highlighted the relatively low percentage of both female IS students and professionals, and

even suggest that the number of women in the field appears to be shrinking (von Hellens, Nielsen & Trauth 2001; Woszczyński & Myers, 2002). Although research (Marshall, 2001) indicates that one out of every five white South African IS graduates is female, there is still an apparent supply-demand gap in this segment.

Van Huyssteen (1999, p38) suggests that in an industry experiencing such skills shortages, it is “reasonable to expect that competent staff who are unmotivated and hence dissatisfied will readily seek a work environment that provides a better match with their personal characteristics”. Thus, it is expected that black and female IS professionals will have a higher predisposition to turnover intention and actual turnover. This sentiment is supported by Igbaria and Wormley’s (1992) American based research, which indicates that, for various reasons, black employees are more likely to be dissatisfied in their jobs, than their white counterparts. Similarly, Thatcher *et al* (2003) found female IS professionals to be more prone to turnover.

## **2.9. Limitations of Previous Research**

A large percentage of recent research has been conducted overseas, particularly in the United States. However, these results cannot necessarily be generalised to the South African context. Hofstede (1980; 1991) cautions that popular motivational theories are culture-bound, while Derr and Laurent (1987) and Schein (1987) warn that career concepts developed in the United States may not be transferable to other countries.

While South African and American IS professionals share similar employee attitudes (Rosen & Shenkar, 1988 in Igbaria *et al*, 1995) and a common language, researchers have found that the South African IS industry differs from its foreign counterparts (Couger & Smith, 1992a; Marshall, 2001). For example, there is evidence to suggest that South Africa lags behind the United States in terms of implementation of modern management practices (Picton, 1989 in Igbaria *et al*, 1995). Furthermore, Hofstede’s (1991) analysis of 50 countries found that South Africa and the United States differ in individualism (ranked 16 and 1 respectively) (Igbaria *et al*, 1995).

Although local IS personnel turnover was investigated in the early 1990s (Igbaria *et al*, 1994; Igbaria *et al*, 1995; Meredith, 1996), the political, economic and social situations within South Africa have changed significantly since then, suggesting that longitudinal research may be necessary.

Furthermore, despite the plethora of international research, relatively few studies simultaneously examine both the influence of the work environment and external factors (market conditions) on IS personnel (Ang & Slaughter, 2000). With few exceptions, such as Thatcher *et al* (2003), prior research has focused on either internal or external antecedents to turnover. As a result, Griffeth *et al* (2002) call for further research linking internal and external factors to employee beliefs and behaviour.

## **2.10. Conclusions**

From a review of the literature, the following conclusions can be drawn.

Although the IS job market generally appears to be shrinking worldwide, high turnover rates continue to torment IS managers and organisations. This suggests that the work environment is the main driver of turnover intention and actual turnover; or more specifically a mismatch between an employee's wants and what their job provides.

This indicates the need for appropriate career planning, taking into consideration both internal and external factors. An important element of an employee's internal career is the career anchor or career orientation. A career anchor refers to an individual's self-perceived needs, values and talents shaping their career decisions. As individuals can hold a variety of career orientations, there is a strong indication that a multifaceted approach to employee career planning may be crucial in the reduction of turnover.

When career anchors (needs) are taken into account IS managers and organisations can structure jobs in such a way that an individual remains motivated and is satisfied in his or her job. A satisfied employee is more likely to be committed to an organisation and less likely to demonstrate turnover intention.

However, committed IS professionals are more susceptible to work exhaustion in the new 'flatter' organisational structure, and exhausted or 'burned-out' employees are more likely to leave an organisation.

One therefore arrives back at the perennial question – how can organisations reduce turnover among IS personnel? This research project addressed the question from a South African perspective.

### 3. METHODOLOGY

For this research project, Jiang and Klein’s (2002, p249) study which “models the impact (on turnover intention) of a discrepancy between the wants of employees and employee perceptions of how their organisation satisfies those wants” was replicated. Jiang and Klein’s (2002) study was conducted in the United States of America and the aim of this research study is to test and extend the discrepancy model of IS personnel turnover in the South African context.

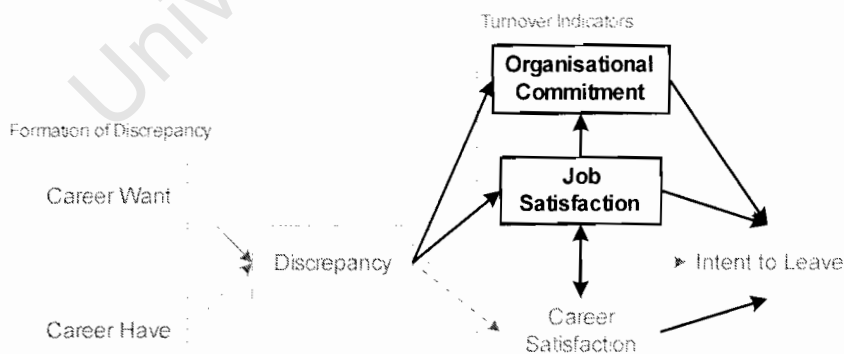
The discrepancy model only considers IS personnel turnover at the individual level, however it is thought that there are additional influences on IS personnel turnover in South Africa, such as organisational structure, economic conditions (the perceived job market) and government policies. Given that these are very difficult to measure and are essentially beyond the control of organisations endeavouring to reduce and control IS personnel turnover, these factors and their effects were not explicitly studied, but their potential influence on turnover will be discussed.

In 1996, Meredith conducted a study to determine “The Consequences of a Mismatch between Employee Needs and Job Attributes in the Information Systems Field” in South Africa. As such the research covers similar aspects to Jiang and Klein’s (2002) more recent study. Given that Meredith’s study was conducted seven years ago, and that circumstances (political, economic and social) in South Africa have changed considerably over this period, comparisons between Meredith’s (1996) results and the results of this study allow for longitudinal study.

This research project was therefore separated into two main areas:

1. Validating Jiang and Klein’s (2002) discrepancy model for IS personnel turnover in South Africa.
2. Comparing results of the current study with Meredith’s (1996) results.

Figure 3 below illustrates the conceptual model examined in this research study. Jiang and Klein’s (2002) initial Discrepancy Research Model is shown in grey and the extensions made for this study are indicated in black. These extensions are based on information found during a review of literature related to IS personnel turnover.



**Figure 3: Conceptual Research Model based on Jiang and Klein’s (2002) Discrepancy Research Model**

Six hypotheses become apparent from the above diagram.

*H<sub>1</sub>: The smaller the discrepancy between an IS professional's wants and hases, the higher their career and job satisfaction.*

*H<sub>2</sub>: The smaller the discrepancy between an IS professional's wants and hases, the less pressing their intent to leave.*

*H<sub>3</sub>: The smaller the discrepancy between an IS professional's wants and hases, the higher their organisational commitment.*

*H<sub>4</sub>: There is a positive correlation between job satisfaction and career satisfaction among IS professionals*

*H<sub>5</sub>: There is a positive correlation between job satisfaction and organisational commitment among IS professionals*

*H<sub>6</sub>: There is a negative correlation between job satisfaction, career satisfaction, organisational commitment and intent to leave among IS professionals*

The methodology used to test the above hypotheses will be considered in this chapter. Firstly, the issues affecting the choice of sample, the sampling method and sample size to be used in this research project will be discussed. Following a description of the possible data collection techniques, the measuring instruments utilised will be explained and the statistical testing methods will be introduced. After explaining how ethical and data integrity issues were handled, the expected results of the research will be presented.

### **3.1. Sampling Method**

Within the context of this research project, it would have been impossible to conduct a census among South African IS professionals / organisations. Instead, a research sample had to be drawn from the IS population. However, for the results of this research to be generalisable and hence useful for South African IS practitioners, it was imperative that the sample chosen be broadly representative of the South African IS industry. As previous research (Igbaria *et al*, 1995; Meredith, 1996) had found significant disparities in the career orientations of IS professionals in the Western Cape compared with other areas in South Africa, the sample also had to be nationally representative. Furthermore, it was necessary to ensure that the sample size was large enough to draw statistically significant conclusions.

#### **3.1.1. Choice of Sample**

Based on previous experiences, the research supervisor suggested that members of the Computer Society of South Africa (CSSA) be used as the sampling frame for this research. Given that this research investigates the impact of a discrepancy between employee wants and perceived 'haves' among South African individuals who have made a firm decision to follow a career in IS, the CSSA was an appropriate body for the sampling frame. The

diversity of CSSA members who represent a wide variety of IS job categories, and who are employed in many diverse organisations and industry types across the country eliminated inadvertent bias. Furthermore, membership is only granted to individuals already holding or working toward computer-related qualifications, and who have a minimum amount of experience. Not only does this indicate commitment to an IS career, but it is also representative of the qualified and experienced individuals that organisations most likely want to retain.

Importantly, the CSSA is also very similar to the American Institute for Technology Professionals (AITP), from which Jiang and Klein (2002) chose their sample. The CSSA and AITP both have strict rules governing membership, limiting entry to individuals who are actively employed in, or associated with, the IS field. With members from a wide variety of positions, organisations and industries, both the CSSA and AITP are broadly representative of the IS industry in their respective countries. Akin to this study, Jiang and Klein (2002) chose an AITP sample because members of the AITP represent a wide variety of organisational settings and had been subjects in previous personnel management research.

Although the Executive Committee of the CSSA refused the initial request for access to their national mailing list, they were very cooperative and agreed to ask their members to assist with this study on behalf of the author.

### **3.1.2. Sample Size**

In order to determine an appropriate sample size it was useful to consider the sample sizes and response rates of previous studies.

Initially, Jiang and Klein's (2002) mailed questionnaires to 500 participants and received 98 responses. In order to increase the sample size, duplicate questionnaires were sent to all those who did not respond in the first wave and 55 additional responses were received, resulting in an overall response rate of 31%. Given that their study was conducted in the United States, it is also useful to consider similar studies in South Africa.

In Meredith's (1992) first South African study, questionnaires were mailed to a sample of 300 individuals in the Western Cape and a response rate of 30% was achieved. In a subsequent study, Meredith (1996) extracted a sample of 500 respondents (questionnaires were either mailed or emailed); however a total response rate of only 20.5% was achieved.

In order to conduct similar research thereby enabling significant and meaningful comparison, a sample of at least 500 respondents had to be used for this research project. Such a sample size complies with Roscoe's (1975) Rule of Thumb.

### **3.1.3. Sampling Procedure**

Initially, the author considered using Meredith's (1996) method to obtain a random sample of 500 individuals from the full list of CSSA national members. Using this method, every  $n^{\text{th}}$  person on the list (sorted alphabetically by first name) would be chosen, until the end of the list is reached. The procedure would be repeated (using a different random number) until 500 participants were selected.

However, as Meredith (1996) explains, this method is not purely random given that the choice of each subject depends on the previous one chosen. Nevertheless, "the method may be considered a satisfactory equivalent to simple random sampling when there is no natural order to the list from which the sample is extracted (Bryman, 1989 in Meredith, 1996, p26), or when the order is unrelated to the subject of the survey (Moser & Kalton, 1972 in Meredith, 1996, p26)".

Although the method would have been suitable, given that the author could not access the CSSA mailing list and the CSSA suggested that they select a sample themselves, the sampling procedure would not have been as controlled or accurate. For this reason, and given that the CSSA is not a very large organisation (2727 members), it was decided to include all CSSA members in the sample.

## **3.2. Data Collection Techniques**

Both quantitative (questionnaires) and qualitative (interviews) techniques could have been used for this research. However, a quantitative approach was used for this research project.

This is because the study that was replicated (Jiang & Klein, 2002), adopted a quantitative approach. Meredith (1996) also used a quantitative approach in his South African study. Using the same research technique allowed for comparisons to be drawn and longitudinal study was possible. Additionally, given the time demands and geographical constraints of qualitative research, a quantitative approach allowed for the inclusion of many more participants, which is particularly desirable given the research topic.

Thus, the first stage of the study was distributing the questionnaire to the CSSA members. There were three possible ways of distributing such a questionnaire:

- Post
- Email
- Online

### **3.2.1. Postal Questionnaires**

Both Jiang and Klein (2002) and Meredith (1996) mailed questionnaires. Self-addressed, postage-paid, return envelopes for each questionnaire were provided for participants in an attempt to minimise refusals and encourage responses. The advantage of this method is that

the participants would receive a hard copy of the questionnaire and very little effort would be required to complete it and put it into the pre-prepared envelope. Furthermore, anonymity of responses can be assured – unless the participant includes their name on the questionnaire or envelope, it would be impossible to determine where it came from. However, there is a significant cost involved with this approach – beside the cost of printing several hundred multi-paged questionnaires at approximately R0.50 per page; two stamped envelopes would be required for each participant at a cost of R1.65 per envelope. Furthermore, without incurring further cost, it would be difficult to determine whether or not the questionnaire reached its intended recipient.

### **3.2.2. Email Questionnaires**

Questionnaires can be emailed to many recipients quickly and very cost-effectively. Like postal questionnaires they can be individually addressed, however an additional advantage of email questionnaires is that those that cannot be delivered will bounce back to the sender. Unlike online questionnaires, if a questionnaire is emailed the respondent immediately sees the questions and minimal effort is required to respond, assuming that the questionnaire has been well designed and laid-out. As the majority of the questions in the survey instrument used in this study were answered by means of a five-point Likert scale, Mahal's method (Meredith, 1996) could be used to make the questionnaire suitable for answering via email. This method allows respondents to answer relatively easily on the computer, with minimum cursor movement and keystrokes, while also permitting easy recognition of the response by the author.

However, this method requires a lot of explaining and there is a high potential for errors when respondents complete the questionnaire. A further disadvantage of emailing questionnaires is that the email may be interpreted as junk mail by the recipient's server (for example, some servers will not accept emails that have Survey or Questionnaire in the subject line) or the recipient can easily delete it upon seeing the subject line. Furthermore, when emailing the completed questionnaire back, the respondent's address would be included in the email – this may cause hesitation among some participants who wish to remain completely anonymous.

### **3.2.3. Online Questionnaires**

Alternatively, the questionnaire could be posted on a website. The address of the website would then be emailed to the participants asking them to go to the website and complete the questionnaire. Given that the results of the online questionnaire can automatically be captured from the website into a programme such as Excel and then transferred to a statistical package, this approach would make data gathering very easy and data capture errors would be minimised. However, the response rate may be slightly lower due to the additional effort required from respondents. Not only would they have to connect to the Internet and/or open an Internet browser to get to the website, but they may not have immediate access to the Internet which would reduce the likelihood of a response.

However, the possibility of a slightly lower response rate is offset by the fact that all completed questionnaires will be usable. This is because online validation can be built into the online questionnaire to ensure that all questions are answered and that only valid answers are entered, for example, only one answer per question.

### **3.3. Actual Data Collection Experience**

It can therefore be seen that the three methods of distributing questionnaires each have advantages and disadvantages.

Although a postal survey would have been consistent with Meredith (1996) and Jiang and Klein's (2002) previous work, due to budget constraints and the relative advantages of using online questionnaires, it was decided to utilise an online questionnaire for this research project. Given that the participants were IS professionals comfortable with computers and were likely to have Internet access, it was felt that such a decision would not significantly reduce the response rate. Furthermore, respondents were given the option to request a printed or email version of the questionnaire if they preferred.

An email briefly introducing the research and explaining its potential value for South African IS practitioners was sent to all CSSA members (2727 individuals) via the National Executive Council. This email also established the time frame in which the online questionnaires were to be completed and assurances were made that information would be kept confidential.

Given the magnitude of research questionnaires originating in the UCT IS department, it was expected that there may have been a reluctance among IS professionals in industry to complete the online questionnaires. In counteraction, the value of the research to the South African IS industry was emphasised in the covering letter and the participants were given the opportunity to request a summary of the findings. Steps have been taken to ensure that such information is promptly distributed at the end of the research project. Furthermore, the introductory letter was sent via the National Executive Committee of the CSSA with a covering note from the Executive Director, Roger Dawes, thus lending credibility to the research.

Participants were only required to submit personal details such as name, postal address or simply an email address if they requested a summary of the findings. Given that the personal details were not necessary for statistical analysis, these details were saved in a separate Excel spreadsheet, thus preventing any linkage between a participant's personal details and the data set used for statistical analysis.

Of the 2727 emails that were sent out, 50 were returned due to network or recipient address failure. Although this suggests that the remaining 2677 reached the intended email address, it is impossible to determine the validity of those email addresses and whether they are still operational and/or regularly checked. The author received eight emails from individuals requesting an email version of the questionnaire. Reasons for the requests included the lack of

an Internet connection, or slow Internet connections at home. The email questionnaires were distributed promptly.

By the deadline a total of 129 responses (123 online and 6 emails) were received. This represents a rather unsatisfactory response rate of 4.8%. It is not known how this response rate compares to other online surveys, but the length of the questionnaire and the fact that individuals may have been unable or unwillingly to complete the online questionnaire at work may have negatively impacted the response rate. Alternatively, individuals may have been reluctant to complete the questionnaire on their home computers due to high connection costs and low speeds. Perhaps it should have been more explicit that the online questionnaire was designed in such a way that individuals could complete the questionnaire offline and then reconnect to submit it.

Given the low initial response rate, it may have been beneficial to send out a second email reminding participants to complete the online questionnaire. In such a case, chi-square tests would have been conducted to ensure that there was no systemic bias between the two waves of responses before combining the responses for data analysis. Unfortunately, the National Executive Committee of the CSSA refused to send out an additional email on the grounds that it would constitute spam.

Although the response rate was much lower than expected, the sample size was large enough for statistically significant analysis.

### **3.4. Survey Instrument**

This study investigated the impact of a discrepancy between career wants and perceived career haves on career satisfaction and intent to leave, two widely used measurements of career-related satisfaction that are important indicators of turnover decisions. However, Jiang and Klein's (2002) discrepancy model was extended to also investigate the impact of such a discrepancy on job satisfaction and organisational commitment as well as considering relationships between the four turnover indicators. It was therefore necessary that the survey instrument included items to measure career satisfaction, job satisfaction, intent to leave, career wants, perceived career haves and organisational commitment.

Given the drawbacks of deriving a completely new and untested instrument for such a study, existing and validated instruments were sought. It was found that neither Meredith (1996) nor Jiang and Klein (2002) developed their own instrument, but rather employed previously validated instruments, and as such the final instruments used in the two studies were very similar. Both instruments were rigorously checked for validity and internal consistency using Cronbach's formula and factor analysis; however Meredith's (1996) instrument is slightly more comprehensive than Jiang and Klein's (2002). Guy Meredith was therefore contacted and permission was granted to use his survey instrument for this research.

The survey instrument (see Appendix A), which had been authorised by the research supervisor and the UCT Commerce Ethics committee was converted to an online format and hosted on a secure UCT server.

The survey instrument used for this study consisted of six measuring instruments and various demographic items as discussed below.

The demographic section at the end of the questionnaire assessed the respondents' province, gender, age, race, educational level, organisational position and number of years in current job, current organisation and the IS profession. Aside from providing a general overview of the demographic composition of the sample, this information allowed for comparisons to be made between the current study and previous studies.

Different instruments were used to measure career and job satisfaction, intent to leave, career wants, perceived career haves and organisational commitment. These are discussed individually below.

#### **3.4.1. Career and Job Satisfaction**

Career satisfaction refers to the extent to which an IS employee expresses a positive attitude toward a career and as such is negatively related to turnover (Jiang & Klein, 2002). Consistent with previous studies (Greenhaus *et al*, 1990; Igbaria & Baroudi, 1993; Jiang & Klein, 2000), Jiang and Klein (2002) used a five-item scale to measure career satisfaction. A slightly more comprehensive instrument employed by Igbaria *et al* (1991) and Meredith (1992, 1996) was used to measure career satisfaction in this study. Respondents were asked to indicate their agreement with each of six items on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). According to Cronbach's formula, which is "widely used as a measure of internal consistency and determines a conservative estimate of the reliability of the scale" (Jiang & Klein, 2002, p255), the internal consistency reliability of the measure is 0.88.

When the desires and aspirations of an individual are satisfied in an individual's work environment with the result that they find their employment sufficiently satisfactory to continue in it, either permanently or until they have prepared for greater responsibilities, they are said to be experiencing job satisfaction (Thatcher *et al*, 2003).

In this study, job satisfaction was assessed by means of three items, answered on the same five-point Likert scale used to measure career satisfaction. While Meredith (1996) determined the internal consistency reliability of the scale to be 0.74, the Cronbach alpha of the scale in this study is -1.18. The negative result highlighted a problem. When looking at the output from Statistica in table 3, on the following page, it can be seen that Cronbach's alpha would increase to 0.68 if the variable JS2 were removed.

Table 3: Statistica Results for Reliability Analysis of the Job Satisfaction Scale

Summary for scale: Mean=10.3256 Std.Dv.=1.51122 Valid N:129 (TurnoverWorking.sta)					
Cronbach alpha: -.1777 Standardized alpha: ---					
Average inter-item corr.: -.17889					
variable	Mean if deleted	Var. if deleted	Stdv. if deleted	Item-Totl Correl.	Alpha if deleted
JS1	6.767442	1.728862	1.314862	-0.239713	0.000000
JS2	7.310078	3.299201	1.816370	-0.584656	0.684784
JS3	6.573643	1.283336	1.132844	0.023808	0.000000

- JS1 Q7 Generally speaking, I am very satisfied with my job
- JS2 Q8 I frequently think of changing my job
- JS3 Q9 I am generally satisfied with the kind of projects I work on in my job

Although Meredith reported no problems with the measure, as seen from the above, JS1 and JS3 clearly relate to job satisfaction, whereas JS2 appears to relate more to turnover intention. To test the validity of this assumption, a principal components factor analysis (with varimax rotation) was conducted. The results of this analysis, shown in table 4 below, indicate that JS2 does indeed load significantly onto the same factor (Factor 1) as variables measuring turnover intention.

Table 4: Factor Structure of Career Satisfaction, Job Satisfaction and Turnover Intention Scales after Varimax Rotation

Factor Loadings (Varimax normalized) (TurnoverWorking.sta)			
Extraction: Principal components			
(Marked loadings are > .700000)			
Variable	Factor 1	Factor 2	Factor 3
CS1	0.043798	<b>0.797245</b>	-0.298472
CS2	0.041521	<b>0.706943</b>	-0.508013
CS3	0.351945	0.648958	-0.315639
CS4	0.124436	<b>0.829764</b>	0.044882
CS5	0.142640	<b>0.733976</b>	0.201620
CS6	0.158781	<b>0.843941</b>	0.064638
JS1	0.471257	0.531849	-0.307094
JS2	<b>-0.718291</b>	-0.332789	0.306167
JS3	0.235836	0.406138	-0.392965
TI1	<b>-0.860689</b>	-0.148586	0.218728
TI2	<b>-0.741580</b>	-0.096324	0.222727
TI3	-0.406390	-0.099022	<b>0.737551</b>
TI4	-0.155436	0.002555	<b>0.858470</b>
TI5	-0.575478	-0.076449	-0.003029
TI6	<b>-0.810635</b>	-0.144280	0.285085
TI7	-0.242684	-0.030149	<b>0.849249</b>
Expl.Var	3.509434	4.123276	3.017009
Prp.Totl	0.219340	0.257705	0.188563

It can therefore be seen that JS2 was not consistent with the rest of the job satisfaction scale. To ensure that only like items were measured and thus increase the reliability of the scale, the variable was removed, and further analysis related to job satisfaction only considered the variables JS1 and JS3.

### 3.4.2. Organisational Commitment

Organisational commitment represents the degree of attachment or loyalty an employee feels toward the organisation. Although significantly influenced by job satisfaction (Boshoff & Mels, 1995), organisational commitment is believed to be a more stable measure (Porter *et al*, 1976), and is considered a strong predictor of both turnover intention and actual turnover (Mowday *et al*, 1982; Griffeth *et al*, 2000; Thatcher *et al*, 2003).

Three dimensions of organisational commitment have been identified, namely affective, continuance and normative commitment (Mowday *et al*, 1982; Allen & Meyer, 1990). These are defined as follows (Mowday *et al*, 1982):

- Affective Commitment – a willingness to exert considerable effort on behalf of the organisation.
- Continuance Commitment – a strong desire to maintain membership in the organisation.
- Normative Commitment – a strong belief in and acceptance of the organisation's goals and values.

Given this complexity, Bagraim and Hayes (1999) recommend that organisational commitment be measured by means of a more comprehensive multidimensional scale rather than a uni-dimensional scale.

Organisational commitment was measured in this study using the same instrument that Meredith (1996) used. The three commitment scales each contain eight items that once again required respondents to indicate their agreement or disagreement with each item on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The internal consistency reliability scores for the scales were calculated as follows:

Affective Commitment	-0.31	(0.89 (Meredith, 1996))
Continuance Commitment	0.53	(0.82 (Meredith, 1996))
Normative Commitment	0.10	(0.75 (Meredith, 1996))

Once again a negative Cronbach's alpha for affective commitment highlighted a problem. The scale summary outputs from Statistica indicated that if the variables AC4, AC5, AC6 and AC8 were removed, Cronbach's alpha would increase to 0.82. When looking at the questions associated with these variables, it can be seen that they are double negatives.

AC4	Q20	<i>I think that I could easily become as attached to another organisation as I am to this one</i>
AC5	Q21	<i>I do not feel like 'part of the family' at my organisation</i>
AC6	Q22	<i>I do not feel 'emotionally attached' to this organisation</i>
AC8	Q24	<i>I do not feel a strong sense of belonging to my organisation</i>

Although questionnaires are often designed in this way to test validity and ensure that responses are consistent (Rust & Golombok, 1999), three respondents did indicate that such questions were difficult to answer.

Cronbach's alpha for the above four variables (AC4, AC5, AC6, AC8) is 0.78 indicating that they are measuring the same thing. While difficult to unequivocally prove, it therefore appears that respondents may have misinterpreted the questions and thus their answers could have been inadvertently reversed. Nevertheless, these four variables were inconsistent with the rest of the scale. To ensure that only like items were measured, thereby increasing the reliability of the scale, further analysis regarding affective commitment only included variables AC1, AC2, AC3 and AC7.

The scale summary outputs from Statistica also indicated that the moderate Cronbach alpha for the continuance commitment measure could be increased to 0.80 if variables CC1 and CC4 were removed. Once again these variables relate to questions with double negatives.

CC1 Q25 *I am not afraid of what might happen if I quit my job without having another one lined up*  
CC4 Q28 *It would not be too costly for me to leave my organisation now.*

Given that these two questions may have also been misinterpreted and are not consistent with the rest of the scale, they were excluded from further analysis regarding continuance commitment. This was to ensure that only like items were measured and thus increase the reliability of the scale.

The scale summary outputs from Statistica also indicated that the very low Cronbach alpha for normative commitment could be increased to 0.62 if the variables NC3, NC8 and NC2 were removed. Yet again, these variables relate to questions with double negatives.

NC2 Q34 *I do not believe that a person must always be loyal to his or her organisation*  
NC3 Q35 *Jumping from organisation to organisation does not seem at all unethical to me*  
NC8 Q38 *I do not think that wanting to be a 'company man' or 'company woman' is sensible anymore*

Cronbach's alpha for the above three variables is 0.51, suggesting that they may be measuring the same thing. Once again these three variables were inconsistent with the rest of the scale, and further analysis regarding Normative Commitment only considered the variables NC1, NC4, NC5, NC6 and NC7, so as to ensure that only like items were measured and thus improve the reliability of the scale.

Unfortunately, no problems with this measure, or the job satisfaction one, were noted by Meredith (1996), or uncovered in the test version of the online questionnaire. A visual inspection of the data suggested that some participants may have answered inconsistently. For example, they indicated that they strongly agreed with the statement that they 'would be very happy to spend the rest of their career with their current organisation', and then indicated that they also strongly agreed with the statement that they did 'not feel a strong sense of belonging to their organisation'. As initial attempt was made to exclude those respondents who had answered in an inconsistent manner, but the author felt that this would introduce bias to the results, because respondents may have answered correctly. For example, they may be extremely satisfied with their job, but continuously think of leaving

their job/organisation/city or country for a variety of other reasons (economic, political or social). Rather it was felt that excluding the specific questions would be a more accurate solution, given that these questions are not necessarily invalid, but simply do not appear to be measuring the same thing as the rest of the scale. For example, in the job satisfaction scale where a similar problem was noted, JS2 is measuring turnover intention rather than job satisfaction (this is illustrated in Table 4). By excluding the inconsistent questions, the reliability of the scales was increased, and ultimately the accuracy and generalisability of the results was improved.

### **3.4.3. Intent to Leave**

Intent to leave, or turnover intention, is defined as that lack of will an individual has to continue to work in their current organisation (Jiang & Klein, 2002).

Although turnover intentions cannot be used as a direct surrogate for actual turnover, they can provide results more quickly and are less difficult to predict than turnover (Igbaria *et al*, 1994; Moore, 2000). As such, researchers often favour the use of turnover intentions. Steel and Ovalle (1984) advocate the study of turnover intentions rather than actual turnover, suggesting that the two are linked, and that intentions are better predictors of turnover than affective variables, such as job and career satisfaction and organisational commitment. Furthermore, turnover intentions can signal the need for intervention to prevent and reduce the occurrence of actual turnover (Moore, 2000).

Both studies by Meredith (1996) and Jiang and Klein (2002) based the turnover intention measurement on the three-item scale developed by Mobley, Horner and Hollingsworth (1978). The scale is based on a hypothesised turnover decision process which involves thinking of leaving, intending to search for alternative employment and intending to leave. These items have been found to be significant predictors of intent to leave the **organisation** (Michaels & Spector, 1982 in Meredith, 1996).

However, Meredith (1996) included additional items in the instrument to be used in this study to measure how likely the respondent is to leave the **IS profession** completely. In this way it will be possible to determine whether a discrepancy between career wants and perceived career hases will lead to an intention to leave the IS profession as well as the job or organisation.

For this study, an additional item was added to measure how likely the respondent is to leave South Africa in the near future. With many South Africans (van Huyssteen, 1999; Greenwood, 2002) currently leaving the country, this item sought to determine whether a discrepancy between career wants and perceived career hases influences the decision to leave.

The response options were again on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) with higher scores reflecting a greater turnover intention. Cronbach's coefficient of reliability for the seven-item measure is 0.85.

While the Cronbach alpha for the turnover intention scale indicates that the scale is reliable, further investigation by means of a principal components factor analysis (with varimax factor rotation) revealed that the scale actually loads onto two separate factors. This is illustrated in table 5 below.

**Table 5: Varimax Factor Loadings for Turnover Intention Scale**

Factor Loadings (Varimax normalized) (TurnoverWorking.sta) Extraction: Principal components (Marked loadings are > .700000)		
Variable	Factor 1	Factor 2
TI1	<b>0.870127</b>	0.231527
TI2	<b>0.804623</b>	0.197182
TI3	0.428312	<b>0.747777</b>
TI4	0.115024	<b>0.917458</b>
TI5	0.564455	0.087585
TI6	<b>0.829503</b>	0.267132
TI7	0.198028	<b>0.901829</b>
Expl.Var	2.647118	2.385711
Prp.Totl	0.378160	0.340816

- TI1 Q10 How likely is it that you will actively look for a **different job** in the next year?
- TI2 Q11 Do you intend to change the **organisation** with which you are now associated?
- TI3 Q12 How likely is it that you will actively look for a **different profession** in the next year?
- TI4 Q13 Do you intend to leave the **IS profession**?
- TI5 Q14 How likely is it that you will seek employment outside South Africa in the near future?
- TI6 Q15 How frequently do you think of leaving **your organisation**?
- TI7 Q16 How frequently do you think of leaving the **IS profession**?

From table 5 it can be seen that the three questions relating to leaving the IS profession (TI3, TI4, TI7) load significantly onto Factor 2, while the three questions relating to leaving the current job/organisation (TI1, TI2, TI6) and the question related to leaving the country (TI5) load onto Factor 1.

Given that individuals may leave their current job/organisation and their profession for different reasons, turnover intention from current job/organisation and from the IS profession in general will be considered separately. The internal reliability consistency of the scale measuring intention to leave the IS profession is 0.87, and is 0.81 for the scale measuring intention to leave current job/organisation.

### 3.4.4. Career Wants

Career wants can be measured by the career orientation inventory (COI) developed by Schein (1985). Consisting of 41 items, Schein's career orientations inventory is used to assess the respondents' career orientations. Both Meredith (1996) and Jiang and Klein (2002), used a shortened version of the inventory, which was developed and validated by Igbaria and Baroudi (1993). This 25-item career orientations inventory includes the three (or two in the case of geographic and job security) items, which loaded highest on the individual factors representing each orientation. By using the shortened version of the career orientations inventory, it is possible to reduce the length of the overall survey instrument, which as Behr (1988) explains is desirable to encourage more responses.

However, Meredith (1996) warns that responses to the career orientations inventory in previous South African research have differed from those obtained in American studies. Like Jiang and Klein (2002), Meredith (1996) therefore performed a Confirmatory Factor Analysis using the Maximum Likelihood Factors method on the shortened career orientations inventory and confirmed the presence of nine factors that accounted for 58.87% of the variance. These factors were found to correspond exactly with those obtained by Igbaria and Baroudi (1993). Furthermore, previous studies (Igbaria & Baroudi, 1993; Meredith, 1996; Jiang and Klein, 2002) report relatively acceptable internal consistency reliability coefficients for the shortened version of the career orientations inventory. These tests provide strong support for the reliability and validity of the shortened career orientations inventory construct.

Consistent with the previous measures in the questionnaire, respondents indicated the importance of each of the career items on a five-point Likert scale ranging from 1 (of no importance) to 5 (very important). The internal consistency reliability of each of the orientations is shown below:

Autonomy	0.52	Lifestyle	0.56
Challenge	0.63	Managerial Competence	0.68
Entrepreneurship	0.86	Service	0.76
Geographic Security	0.77	Technical Competence	0.68
Job Security	0.73		

The Cronbach alpha values shown above are similar to those in the studies of Meredith (1996) and Jiang and Klein (2002) and are acceptable for social science studies (Peterson, 1994, in Jiang & Klein, 2002). Nevertheless, a more rigorous confirmatory factor analysis was conducted to further investigate the reliability and validity of the construct. The results of this analysis, shown in table 29 in Appendix B, indicated a reasonable fit between the model and data. The goodness-of-fit indices are as follows:

Adjusted goodness-of-fit index (AGFI)	0.70
Root mean square residual (RMR)	0.14
Bentler's comparative fit index (CFI)	0.70

Bentler-Bonett non-normed fit index (NNFI)	0.67
Chi-square value / degree of freedom	2.01

As seen in table 29, all t-tests on the factor loadings were significant, indicating convergent validity. The tests described above, provide strong support for the reliability and validity of the career want measure.

### **3.4.5. Perceived Career Haves**

As Jiang and Klein (2002) indicate, the use of similar questions on the “want” and “have” dimensions in discrepancy studies is highly recommended. Therefore, the extent of career opportunities that respondents perceive available in their organisations was measured using the same items as those used to measure internal career wants (career orientations). The only difference was that in this instance, respondents were asked how much of the attribute they experience in their work place. Once again a five-point Likert scale ranging from 1 (no opportunity) to 5 (great opportunity) was used to assess the degree of opportunities provided by the respondent’s organisation. Using confirmatory factor analysis and Cronbach’s formula, Jiang and Klein (2002) confirmed the reliability and validity of this measurement for career ‘haves’ and found the results to be similar to that of the ‘want’ dimension.

The internal consistency reliability of each of the dimensions in this study is shown below:

Autonomy	0.84	Lifestyle	0.84
Challenge	0.70	Managerial Competence	0.81
Entrepreneurship	0.90	Service	0.92
Geographic Security	0.76	Technical Competence	0.49
Job Security	0.82		

The Cronbach alpha values shown above are similar to those in Jiang and Klein’s study (2002) and are acceptable for social science studies (Peterson, 1994, in Jiang & Klein, 2002). As with the career want measure, a more rigorous confirmatory factor analysis was conducted to further investigate the reliability and validity of the construct. The results of this analysis, shown in table 30 in Appendix B, indicated a reasonable fit between the model and data. The goodness-of-fit indices are as follows:

Adjusted goodness-of-fit index (AGFI)	0.52
Root mean square residual (RMR)	0.27
Bentler’s comparative fit index (CFI)	0.68
Bentler-Bonett non-normed fit index (NNFI)	0.65
Chi-square value / degree of freedom	3.14

As seen in table 30, almost all the t-tests on the factor loadings were significant, indicating convergent validity. The tests described above, provide strong support for the reliability and validity of the career have measure

### 3.5. External Validity

Before the findings of a study such as this can be generalised across times and geographic locations, their external validity must be established (Jiang & Klein, 2002). This is done by proving that there is not systematic bias in the sample, for example, the sample should not be primarily drawn from individuals with a high turnover intention.

Table 6 below shows, the mean, median, skewness and kurtosis values for each of the turnover indicators used in this study.

Table 6: Descriptive Statistics of Sample

Variable	Descriptive Statistics (TurnoverWorking.sta)				
	Valid N	Mean	Median	Skewness	Kurtosis
CS	129	3.514212	3.666667	-0.685006	-0.17283
JS	129	3.655039	4.000000	-0.784989	0.26926
TI	129	2.617940	2.571429	0.191310	-0.87501
TIP	129	2.219638	2.000000	0.789573	-0.56030
TIJ	129	2.916667	3.000000	-0.029584	-1.09111
AC	129	3.255814	3.250000	-0.392413	-0.59578
CC	129	2.997416	3.000000	-0.144314	-0.57526
NC	129	2.638760	2.600000	0.459991	0.16634

From the above table it can be seen that all variables reflected a good distribution given that the means and medians are similar, skewness is near 0 and kurtosis is relatively close to 0 for each variable. Therefore, there is no evidence of bias in the sample.

Systematic biases in the demographics of a sample also threaten the external validity of findings. To verify that no such bias existed, the demographics of the sample were compared with the broader CSSA population and similar studies.

Further comparisons were then made with the results of ITWeb’s 2003 IT salary survey. Conducted annually for the past five years, the survey is considered a fair benchmark for the changing South African IS industry. In 2003, the survey captured 2977 responses from a cross-industry sample of South African IS professionals (Jovanovich, 2003a).

### 3.6. Demographic Characteristics of Respondents

The demographic characteristics of the respondents are illustrated in table 7 on the following page. Table 7 also compares the demographic profile of this study with the profiles of the current CSSA membership body and the respondents of previous studies by Jiang and Klein (2002) and Meredith (1996).

Table 7: Comparison of Demographics

	Sample (n=129)		CSSA (n=2727)	Jiang & Klein (2002) (n=151)	Meredith (1996) (n=205)
<b>Province</b>					
Eastern Cape	7	5.4%	4.0%		
Gauteng	74	57.4%	56.0%		
Free State			0.2%		
KwaZulu-Natal	14	10.9%	9.0%		84.9%
Limpopo	1	0.8%			
Mpumalunga	3	2.3%			
Northern Cape					
North West					
Western Cape	30	23.3%	22.0%		15.1%
<b>Gender</b>					
Male	101	78.3%	82.0%	74.2%	81.5%
Female	28	21.7%	18.0%	25.8%	18.5%
<b>Age</b>					
20 – 29	25	19.4%	10.3%	2.6%	4.9%
30 – 39	30	23.3%	25.0%	12.6%	35.6%
40 – 49	38	29.5%	29.0%	29.1%	36.6%
50 – 59	30	23.3%	22.0%	49.7%	
60 years and older	6	4.7%	7.0%	6.0%	22.9%
<b>Race</b>					
African	9	7.0%	7.0%		
Asian	9	7.0%	2.0%		
Coloured	8	9.2%	0.2%		
White	101	78.3%	41.0%		
Other	2	1.6%	49.0%		
<b>Education</b>					
Grade 11 or less	3	2.3%			Grade 11 or less 0%
Matriculation	8	6.2%		High School 2.6%	Matriculation 7.8%
Diploma	21	16.3%		Associate 18.5%	Some Undergrad 8.3%
Professional Certification	12	9.3%		Bachelors 41.7%	Bachelor/Diploma 22%
Bachelors Degree	28	21.7%		Graduate 37.1%	Some Postgrad 14.1%
Honours Degree	22	17.1%			Postgraduate 47.8%
Masters Degree	26	20.2%			
Doctoral Degree	5	3.9%			
Other Postgraduate Degree	4	3.1%			
<b>Years in IS Field</b>					
	Mean = 17.22			Mean = 16.9	
	SD = 10.21			SD = 8.43	
	Range = 1-40			Range = 1-42	
1 – 5	18	14.0%		6.6%	
6 – 10	23	17.8%		6.0%	
11 – 15	20	15.5%		12.6%	
16 – 20	28	21.7%		21.2%	
21 – 25	10	7.8%		19.2%	
26 – 30	15	11.6%			
31 – 35	10	7.8%		33.8%	
> 35	5	3.9%			
<b>Years in Current Organisation</b>					
	Mean = 7.85			Mean = 9.40	
	SD = 7.95			SD = 8.3	
	Range = 1-37			Range = 0.1-32	
1 – 5	78	60.9%		43.7%	
6 – 10	15	11.7%		17.9%	
11 – 15	11	8.6%		15.2%	
16 – 20	12	9.4%		12.6%	
21 – 25	8	6.3%		6.6%	
26 – 30	0	0.0%			
31 – 35	3	2.3%		3.3%	
> 35	1	0.8%			
<b>Years in Current Position</b>					
	Mean = 4.6			Mean = 4.47	
	SD = 4.09			SD = 3.7	
	Range = 1-20			Range = 0.1 -25	
1 – 5	96	75.0%			
6 – 10	19	14.8%			
11 – 15	9	7.0%			
16 – 20	4	3.1%			

From table 7 it can be seen that the geographic distribution of the sample is very similar to that to the broader CSSA population. This also appears to be good representation of the wider IS population, as recent research (Jovanovic, 2003b) indicates that 67% of South African IS professionals work in Gauteng, 20% in the Western Cape, 6% in KwaZulu-Natal, and the remaining 7% in other provinces.

Although the percentage of male respondents appears to be unusually large (78.3%), this is an accurate reflection of the entire CSSA population. Previous studies (Meredith, 1996; Jiang & Klein, 2002) have also found a substantially larger percentage of male respondents. Interestingly, the results indicate that the relative percentage of women in the South African IS industry has not increased substantially between 1996 and 2004. Discounting any notion of bias, ITWeb's recent survey also found that women only account for around 20% of the IS workforce (Burrows, 2003a).

In terms of age, the sample used in this study is highly representative of the broader CSSA population. As illustrated in table 7, the average age of the sample used in this study is significantly lower than Jiang and Klein's (2002) study, and slightly lower than Meredith's study. Nevertheless, the age of respondents in this sample is normally distributed and thus meets intuitive expectations.

Although the sample may initially appear to be skewed in terms of race, closer inspection reveals that a significant percentage (49%) of CSSA membership is listed as "Other". Therefore, limiting comparisons with the sample used in this study. However, there is evidence to suggest that the sample is representative of the South African IS population. Although warning that their findings do not necessarily reflect actual industry ratios, 25% of the respondents in ITWeb's 2003 IT salary survey were non-white (Jovanovic, 2003b).

Although comparisons between the standard of education are difficult with Jiang and Klein's (2002) study given the differences in educational structures, the sample used in this study appears to have a lower standard of education than that used by Meredith (1996). However Meredith (1996) did point out that his sample deviated from that of the general CSSA membership, with a far higher number of postgraduates and far fewer individuals holding only a matriculation certificate. Yet, the standard of education for the sample used in this study still appears to be slightly above average. ITWeb's survey found that 15% of the respondents held only a matriculation certificate, while 35% held a university, honours, masters or doctoral degree (Jovanovic, 2003b).

Although the average time that South African IS professionals have spent in their current job and the IS field appears to have risen very slightly between 1996 and 2004, the average organisational tenure appears to have fallen by just over eighteen months. Unfortunately, the results of ITWeb's survey could not be used to substantiate this observation. Generally, their respondents had not spent very long in the IS field – 44% (14% in this study) had spent less than 5 years in the field, 27% (17.8% in this study) between 6 and 10 years and only 19% (52.8% in

this study) had over 15 years experience. However, this relatively low job tenure is understandable considering that 67% of the respondents in ITWeb's sample were under the age of 35 (Jovanovic, 2003b).

The sample used in this study appears to be fairly representative of both the CSSA membership body and the South African IS population. As such the findings of this study are believed to be generalisable to the South African IS population.

### **3.7. Ethical Considerations and Data Integrity Issues**

As with any research project involving human subjects, there were some ethical considerations to be addressed. These include:

- Gathering information regarding IS professionals' career wants and their perceptions of their current jobs
- Storage of such sensitive information
- Maintaining data integrity.

In order to satisfy the requirements of the Faculty of Commerce Ethics Committee at UCT, the necessary ethics documentation was filed in July 2003. Together with this documentation, a copy of the final research proposal and the final questionnaire containing the appropriate consent section was submitted. Once approval to continue was granted, an email inviting members of the CSSA to complete the online questionnaire was distributed.

For the purposes of this research, details related to respondent's location, organisational position, gender, race, age, educational level, and number of years in the job, organisation and IS profession were collected. These characteristics were necessary for summarising the demographics of the research sample. Not only was this necessary for comparisons with previous studies, but demographics are also thought to play an integral part in determining turnover intention. As all participants in this study were members of a professional IS organisation (CCSA), no minors were encountered.

Before completing the online questionnaire, participants were required to give their consent and indicate their willingness to participate in the study. At the same time they were assured that data would only be utilised for purposes of statistical analysis and that any personal details provided would never be released. Given the sensitive nature of the data gathered concerning IS professionals' demographics, careers and job satisfaction, it was imperative that this information be kept confidential.

In order to ensure the integrity of the data and simplify data analysis all data obtained from the online questionnaires was entered into a single Excel spreadsheet. Given that the data was automatically transferred from the website into Excel, transcription errors resulting from human intervention were eliminated. Nevertheless, the author double-checked a random sample of the transferred data for errors. The data was then checked through in its entirety and any

peculiarities on the spreadsheet were double checked against the original data on the website. As no errors were encountered, each record was assigned a unique, but arbitrary number. The personal details together with a copy of the corresponding unique numbers were then transferred to a separate, password-protected spreadsheet. Subsequent data analysis was then conducted on the file containing no personal details. In this way, the privacy of the participants' responses and opinions could be guaranteed.

Due to concerns that data may be unintentionally corrupted during the data analysis stage, a master copy of the data without personal details was kept and each statistical test was conducted on a cloned copy of the master file. This minimised the risk of unintentional data corruption.

While statistical analysis was being conducted, the data was kept securely on the author's home computer. On completion of the investigation, this information (both the file with the personal details and the file without personal details) was transferred in its entirety to a disk that was then handed over to the research supervisor, as a representative of UCT.

### **3.8. Statistical Analysis**

Basic statistics were used to determine the demographic profile of the sample and make comparisons with previous studies by Meredith (1996) and Jiang and Klein (2002).

Analysis of Variance (ANOVA) and stepwise multiple regression were used for more detailed longitudinal comparison, and to test the hypotheses pertaining to the "want-have" discrepancies. This is consistent with previous research work by Meredith (1996) and Jiang and Klein (2002).

#### **3.8.1. Motivation for Using the Multiple Regression Model**

The linear regression model was used to determine whether there were significant relationships between pairs of variables (turnover indicators). The multiple regression model is an extension of the linear regression model in that it tests whether the dependent variable has a relationship with one or more independent variables. This was an appropriate model for this study as it allowed for the determination of the relationship between a discrepancy (between career want and have) and turnover indicators, as well as internal relationships among the turnover indicators.

There are some assumptions that have to be met before the results of a multiple regression model can be considered statistically significant. However, as can be seen in Appendix C, the data collected for this research study met all the necessary assumptions.

### 3.8.2. Descriptive Statistics

The descriptive statistics discussed in this section, provide a brief introduction to the data (turnover indicators) and allow one to become more familiar with the data before proceeding into the statistical analysis.

#### Means and Standard Deviations

Table 8 shows the means and standard deviations for each of the turnover indicators. It can be seen that the average scores for job (JS) and career satisfaction (CS) are fairly similar and above three, indicating that respondents are generally satisfied. The average scores for turnover intention as a whole (TI), from current job (TIJ) and from the IS profession (TIP) are also similar and are below three, suggesting that respondents generally do not wish to leave. The average score of turnover intention from the job was 2.92, while the average score for turnover intention from the IS profession was 2.22. This suggests that respondents are slightly less willing to leave the IS profession altogether, and may prefer to search for alternative jobs within the IS profession.

From table 8, it can also be seen that the responses for each variable cover a wide range. This further supports the external validity, and hence the generalisability, of the results.

Table 8: Mean, Range and Standard Deviations of the Sample

Variable	Descriptive Statistics (TurnoverWorking.sta)				
	Valid N	Mean	Minimum	Maximum	Std.Dev.
CS	129	3.514212	1.000000	5.000000	0.888299
JS	129	3.655039	1.000000	5.000000	0.911726
TI	129	2.617940	1.000000	5.000000	1.021479
TIJ	129	2.916667	1.000000	5.000000	1.169407
TIP	129	2.219638	1.000000	5.000000	1.178877
AC	129	3.255814	1.000000	5.000000	1.039956
CC	129	2.997416	1.000000	5.000000	0.944415
NC	129	2.638760	1.200000	5.000000	0.739120

In comparison to the means, the standard deviations of the turnover indicators are all similar and very low. This suggests that no single factor has a more significant influence on turnover intentions, but rather all the variables have a similar influence.

#### Correlation

Correlation testing is used to determine whether there are significant relationships within the data before applying the multiple regression model. The correlation matrix is illustrated in table 9 on the following page. As a value of one represents a perfect relationship, the closer the value is to one the stronger the relationship between the two variables. Significant values in table 9 are emboldened.

From table 9 it can clearly be seen there are low correlations between continuance commitment and career satisfaction (-0.09), job satisfaction (0.05), turnover intention (-0.17) and turnover intention from the IS profession (-0.08). However, higher correlations are seen to exist for all other variables.

Table 9: The Correlation Matrix

Variable	Correlations (TurnoverWorking.sta) Marked correlations are significant at $p < .05000$ N=129 (Casewise deletion of missing data)							
	CS	JS	TI	TIJ	TIP	AC	CC	NC
CS	1.00	0.58	-0.36	-0.36	-0.26	0.35	-0.09	0.18
JS	0.58	1.00	-0.54	-0.50	-0.44	0.49	0.05	0.23
TI	-0.36	-0.54	1.00	0.90	0.83	-0.57	-0.17	-0.37
TIJ	-0.36	-0.50	0.90	1.00	0.51	-0.59	-0.20	-0.31
TIP	-0.26	-0.44	0.83	0.51	1.00	-0.37	-0.08	-0.34
AC	0.35	0.49	-0.57	-0.59	-0.37	1.00	0.14	0.39
CC	-0.09	0.05	-0.17	-0.20	-0.08	0.14	1.00	0.29
NC	0.18	0.23	-0.37	-0.31	-0.34	0.39	0.29	1.00

The correlation matrix can also be used to test for multicollinearity. Multicollinearity exists when the correlation coefficient is 0.90 or higher and in such a case it is unnecessary to include both variables in the regression model (van den Honert, 1999). From the correlation matrix above, it can be seen that the multicollinearity does exist – turnover intention is highly correlated with turnover intention from the job. However, these two variables were not included in the same regression model, instead the impact that other variables have on them was investigated separately.

### 3.9. Conclusion / Analysis “Look-Ahead”

This study, which extended Jiang and Klein’s (2002) discrepancy model, investigated the impact of a discrepancy between career wants and perceived careers haves on career and job satisfaction, organisational commitment and turnover intention among IS professionals in South Africa. Internal relationships between these four turnover indicators were also considered.

In order to ensure the authenticity of this research and make meaningful comparisons with previous work, the survey instrument comprised existing and validated scales.

The actual data resulting from this questionnaire will be analysed and discussed in the following chapters, where the specific methods used to test each hypothesis and the test results will also be discussed in detail. Given that there were two separate, although related dimensions of this research project, two phases of analysis were necessary. The first phase, discussed in chapter four, allowed for longitudinal comparison with Meredith’s (1996) previous work regarding turnover of IS personnel in South Africa. The six hypotheses, and essentially the extended version of Jiang and Klein’s (2002) discrepancy model for IS personnel turnover were tested in the second phase of statistical analysis which is discussed in chapter five.

Prior to any such analysis, it was expected that discrepancies would be found between some of the career wants and perceived career have. Most of these discrepancies were expected to be in an adverse direction, and were thus expected to negatively influence career and job satisfaction, organisational commitment and intent to leave.

Relationships were expected between job satisfaction and organisational commitment and career satisfaction, whereby individuals experiencing job satisfaction were more likely to be committed to their organisation and experience career satisfaction.

In addition, job satisfaction, career satisfaction and organisational commitment were all expected to be negatively related to turnover intention (intent to leave).

University of Cape Town

#### 4. ANALYSIS AND RESULTS: COMPARISON WITH MEREDITH’S WORK

In this chapter, the career orientations of South African IS personnel are investigated and compared with Meredith’s (1996) findings. Firstly, the distribution of career orientations among South African IS professionals is discussed. Following this, possible differences in career orientations between Western Cape residents and those living elsewhere are considered. Finally, differences between the various career orientations are determined and comparisons of the orientations are made.

##### 4.1. Distribution of Career Orientations

The distribution of career orientations among the South African IS professionals who participated in this study is shown in figure 4 below.

One of the most striking characteristics is the very high percentage (46.5%) of respondents who do not have a unique dominant orientation (denoted as COM for “combined” in the graph below). Although Meredith noted a similar phenomenon in his two previous studies, the percentage of non-specific orientations was much lower – 12.5% in 1992 and 29.8% in 1996.

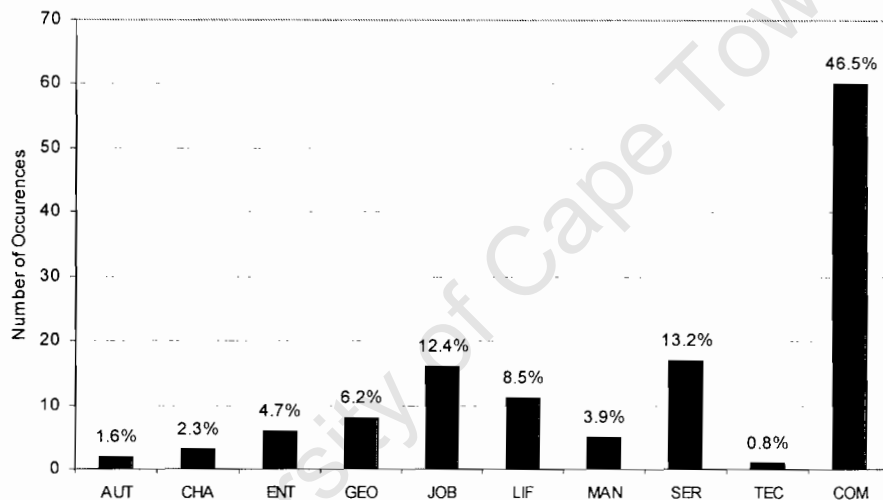
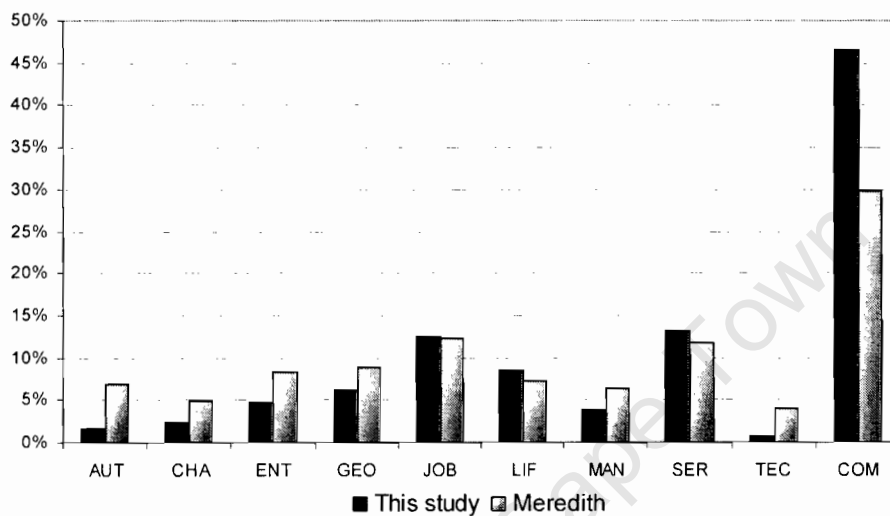


Figure 4: Distribution of Dominant Career Orientations

The large number of combined or non-specific dominant career orientations is unfortunately a consequence of using the shortened career orientations inventory. Although Igbaria *et al* (1991) did not highlight this problem, more recent studies by Ginzberg and Baroudi (1992), Meredith (1996) and van Huyssteen (1999) have all provided support for the assumption that the shortened instrument has significantly increased the number of respondents with a non-specific orientation. However, in a study such as this, it was felt that using the original 41-item career orientations inventory would have a significant negative affect on the number of responses, given that an additional 32 questions (16 each for career wants and career hates) would have been included in the questionnaire.

Disregarding the number of combined or non-specific dominant career orientations, figure 4 suggests that dominant career orientations are unequally distributed. Although the expected frequencies of each orientation are too low for reliable statistical analysis, to allow for comparison with Meredith's results (1996), a chi-square test was performed to test the uniformity of the career orientation distribution across the sample ("combined" were excluded as only the spread of dominant orientation was of interest to the study). The result of the chi-square goodness of fit test was significant ( $D^2 = 36, p < 0.001$ ), indicating that the unequal distribution of dominant career orientation among the sample is not random.

Given that the shortened measure was used, more meaningful comparisons could also be made with Meredith's (1996) work. Figure 5 below compares the distribution of dominant career orientations in this study with that of Meredith's (1996) work.



**Figure 5: Comparison of Dominant Career Orientations**

Meredith (1996) argued that the distribution of career orientations displayed in one sample is not generalisable to other samples, let alone the IS industry. However, on the above graph it appears that the distribution of dominant career orientations among IS professionals in South Africa has remained similar between 1996 and 2004, although relative percentages have been affected by the significant increase in the number of non-specific orientations.

As table 10, on the following page, illustrates that the profile of career orientations in this study is very similar to that of Meredith's (1996) study. One orientation in this study ranks exactly the same as it did in Meredith's, six rank within one position as they did in Meredith's and two rank within two positions.

Table 10: Ranking of Orientations

Orientation	This Study	Meredith
Autonomy	8	6
Challenge	7	8
Entrepreneurship	5	4
Geographic Security	4	3
Job Security	2	1
Lifestyle	3	5
Managerial Competence	6	7
Service	1	2
Technical Competence	9	9

Although Meredith (1996) warned that results are not generalisable, this finding suggests that meaningful comparisons are possible between the two studies, particularly as the samples used were very similar and the geographic location was the same.

As figure 5 and table 10 above illustrate, the two most common dominant orientations are the same, although the number of individuals with a service orientation (13.2%) is now slightly higher than those with a job security orientation (12.4%) which was the highest in 1996.

Although previous research (Igarria *et al*, 1991) had shown IS professionals to predominantly hold a managerial or technical orientation, more recent research both overseas (Ginzberg & Baroudi, 1992) and in South Africa (Meredith, 1992, 1996; van Huyssteen, 1999) disagrees with this finding. Consistent with the latter studies, the number of individuals holding a managerial or technical orientation was found to be low in this study. Technical competence was the least common orientation (0.8%), while managerial competence was only the sixth most common orientation (3.9%).

Given the high percentage of individuals with a non-specific dominant orientation, the author felt it necessary to investigate further. Sixty of the 129 respondents were found to have more than one dominant orientation and figure 6 below illustrates how many times each of nine orientations appeared in the “combined” orientation.

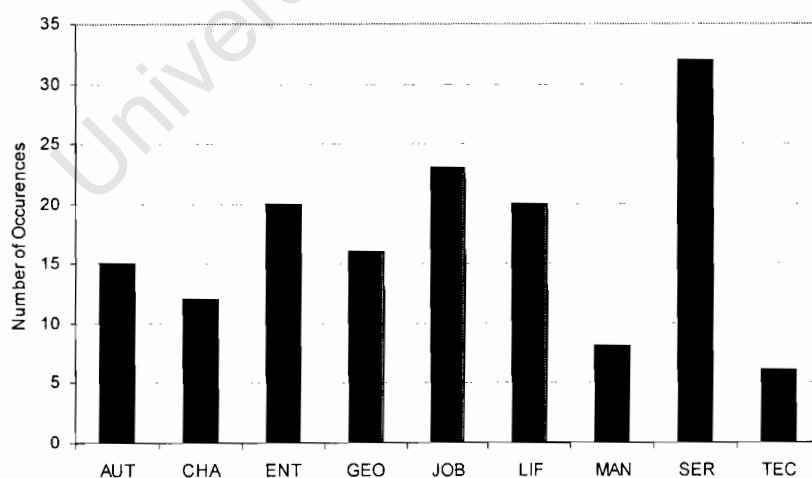


Figure 6: Occurrence of Orientation in Combined Orientations

As seen in figure 6, on the previous page, the most frequently occurring orientation among those individuals with a non-specific dominant orientation was service, while technical competence was the least encountered orientation. As such the profile showing the distribution of career orientations among individuals with a non-specific orientation is consistent with the findings regarding individuals with one dominant orientation. This lends further support to the notion that South African IS professionals have a strong affinity to be of service, but are less inclined toward becoming technical specialists.

#### 4.2. Comparison of Career Orientation Profiles – Western Cape versus the Rest of South Africa

At the onset of his study, Meredith (1996) hypothesised that a significant difference would be found between the distributions of career orientations among individuals residing in the Western Cape and those living in other parts of South Africa. Indeed, Meredith did find that geographic security and lifestyle orientations dominated in the Western Cape, unlike the rest of South Africa where service and job security dominated.

In this study, respondents were asked to specify in which province they reside. The sample was therefore split into two groups – individuals residing in the Western Cape and those living in other provinces. The number of individuals holding each dominant orientation in the Western Cape compared with the rest of South Africa is shown in figure 7 below.

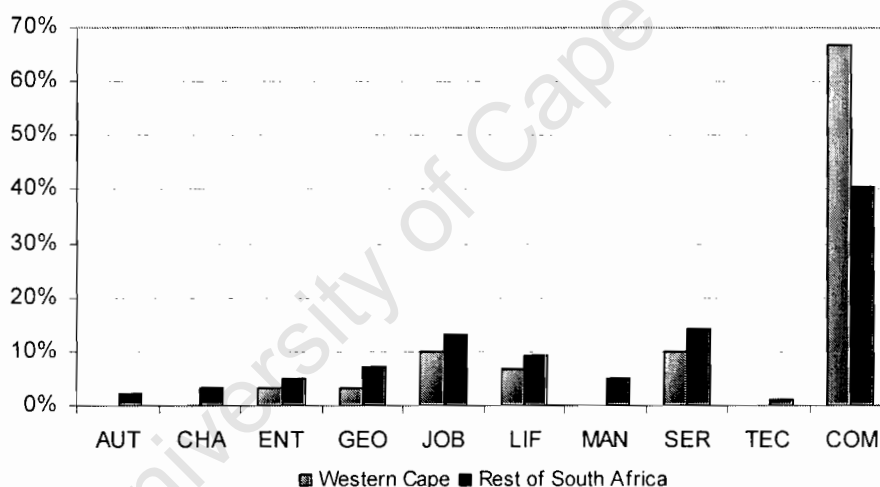


Figure 7: Distribution of Dominant Career Orientations in the Western Cape and the Rest of South Africa

No significant differences between the two samples are immediately apparent in the above graph, but in order to confirm this notion, comparisons were performed between the two sub-samples, using chi-square tests and Analyses of Variance (ANOVA). The frequency counts showing the distribution of dominant career orientation by location are shown in table 11 on the following page. Although the expected cell frequencies are too low for reliable statistical analysis, a chi-square test was performed to enable comparison with Meredith’s (1996) results.

Table 11: Distribution of Dominant Career Orientation by Location

LOCATION	DOMINANT CAREER ORIENTATION										Chi-Square
	AUT	CHA	ENT	GEO	JOB	LIF	MAN	SER	TEC	COM	
Western Cape (n=30)	0	0	1	1	3	2	0	3	0	20	8.05 *
Rest of SA (n=99)	2	3	5	7	13	9	5	14	1	40	

\* p>0.4

Unlike Meredith’s (1996) study, the chi-square result indicates that no significant difference exists between the two regions. Also in contradiction to Meredith’s study, both figure 7 and table 11 suggest that the geographic security orientation is more dominant in the rest of South Africa (7%) than in the Western Cape (3%). Additionally, this study found a slightly higher percentage of individuals with a lifestyle orientation in the rest of South Africa (9%) than in the Western Cape (7%).

However, these results should be treated with caution given the small number of individuals in the Western Cape (n=30). This caveat is particularly applicable given the significantly higher percentage of individuals in the Western Cape found to have more than one orientation (67%) than in the rest of South Africa (40%).

A further test, an analysis of variance was performed on the career orientation raw scores by location, to investigate whether any difference in mean scores between locations was evident. The results of the ANOVA test shown in table 12 below indicate that there are differences, tending towards significance at the 10% level, between the lifestyle, managerial competence and technical competence orientations, with the desire for a chosen lifestyle slightly higher in the Western Cape, while the desire to manage and remain in their technical area of expertise, is slightly weaker for residents of the Western Cape.

Table 12: ANOVA of Career Orientation Raw Scores by Location

LOCATION	CAREER ORIENTATION RAW SCORES								
	AUT	CHA	ENT	GEO	JOB	LIF	MAN	SER	TEC
Western Cape (n=30)	3.76	3.49	3.17	3.41	3.48	4.14	3.13	4.08	2.38
Rest of SA (n=99)	3.61	3.56	3.21	3.01	3.80	3.82	3.46	4.03	2.83
Univariate F	0.75	0.13	0.03	2.54	2.33	4.40	2.86	0.08	4.45
p value	0.39	0.72	0.86	0.11	0.13	0.04	0.09	0.78	0.04

Ginzberg and Baroudi (1992) warn that differences in career orientation scores that are statistically significant may not necessarily have any practical significance. Instead, they argue that only large differences between raw scores, in the region of one full point, should be considered worthy of attention.

Given that the differences noted in table 12 above only tend towards significance at the 10% level and that only small differences occur between raw scores, there is little support for Meredith’s (1996) hypothesis that a significant difference exists between the career orientations of IS professional living in the Western Cape and those living in the rest of South Africa.

Although this may be a result of the very small sub-sample size, it may be indicative of changing trends in South African IS profession, whereby individuals accept that IS jobs are becoming more scarce in the Western Cape, with IS work increasingly concentrated in Gauteng. Indeed, 67% of the respondents in ITWeb’s 2003 IT salary survey were employed in Gauteng, while only 20% were employed in the Western Cape (Jovanovic, 2003a).

### 4.3. Distinguishing Characteristics of Each Career Orientation

To gain a deeper understanding of each career orientation, this section will investigate the distinguishing characteristics of each orientation. In order to do this, three relationships will be examined:

- The relationship between dominant orientation and raw scores on the remaining orientations.
- The relationship between dominant orientation and different aspects of organisational commitment.
- The relationship between dominant orientation and demographic characteristics.

#### 4.3.1. Relationship between Dominant Orientation and Raw Scores on the Remaining Orientations

Consistent with Meredith’s (1996) study, an analysis of variance (ANOVA) test was performed to assess the career orientation raw scores attained for the different dominant orientations. The average score for each dominant orientation was compared with the average score for each remaining orientation. As Meredith (1996) explains, the purpose of this analysis was two-fold: to test whether Schein’s (1987) view of the characteristics of each orientation was correct; and to examine the feasibility of a single motivational strategy for all IS professionals (regardless of their orientation). The results of the ANOVA test are shown in table 13 below. Raw scores for the dominant orientation are emboldened, relatively high scores are underlined, and relatively low scores are italicised.

Table 13: ANOVA of Career Orientation Raw Scores by Dominant Career Orientation

CAREER ORIENTATION	DOMINANT CAREER ORIENTATION									Univariate F
	AUT	CHA	ENT	GEO	JOB	LIF	MAN	SER	TEC	
<b>RAW SCORE</b>										
<b>Autonomy</b>	<b>4.67</b>	3.22	<u>4.17</u>	3.54	3.42	3.06	3.27	3.43	2.67	2.88*
<b>Challenge</b>	<u>4.33</u>	<b>4.78</b>	3.78	3.41	3.13	3.06	3.40	3.61	4.33	2.59*
<b>Entrepreneur</b>	3.33	2.44	<b>4.89</b>	2.63	3.02	<i>2.51</i>	3.00	2.69	1.67	3.24**
<b>Geo Security</b>	3.25	2.67	2.83	<b>4.94</b>	3.00	2.86	<i>1.80</i>	2.79	3.50	5.10***
<b>Job Security</b>	<u>4.00</u>	3.67	2.92	3.38	<b>4.72</b>	3.23	3.10	3.50	<u>4.50</u>	5.43***
<b>Lifestyle</b>	3.67	3.67	3.67	<u>3.79</u>	3.77	<b>4.58</b>	3.00	<u>3.59</u>	<u>4.67</u>	3.74**
<b>Managerial</b>	3.83	2.89	3.94	3.04	3.06	2.97	<b>4.60</b>	3.57	1.33	3.95**
<b>Service</b>	3.83	<u>4.44</u>	2.83	3.29	<u>3.89</u>	<u>3.76</u>	<u>3.47</u>	<b>4.65</b>	4.33	5.97***
<b>Technical</b>	3.17	2.56	2.44	3.42	2.85	2.48	1.53	2.74	<b>5.00</b>	2.51*

\* p≤0.05  
 \*\* p≤0.005  
 \*\*\* p≤0.0005

The results of the ANOVA test, shown in table 13 on the previous page, are similar to Meredith's (1996). South African IS professionals still show a strong desire for a balanced lifestyle. Service scores are also very high, in fact significantly higher than they were in Meredith's (1996) study. Schein (1987, p170) describes service-oriented individuals as those who "seek to work with others in a helping role". Therefore this increase in service scores may be indicative of changing social expectations within South Africa – where individuals often feel a sense of duty to help those less fortunate than themselves. However, it should be noted that Meredith's study included a significantly higher proportion of managers (63.4% compared with 37.3% in this study). With priorities of managers differing from those of non-managerial staff, this may have a significant influence on the results. Although there is no conclusive evidence, perhaps non-managerial staff have a higher desire to be of service.

Conflicting with Meredith's (1996) results, autonomy-oriented IS professionals scored highly on both challenge and job security in this study. This finding challenges Schein's (1987, p136) notion that individuals who hold the autonomy orientation "have an overriding need to do things in their own way, at their own pace, and against their own standards". Of the two individuals holding this orientation, one held a strategic management position while the other was involved in education; and both were males over the age of thirty. Their respective jobs may provide some explanation for the high challenge score; while the desire for job security may be attributed to the fact that it is becoming more difficult to secure an IS job in South Africa, particularly for white males.

As with Meredith's (1996) study, challenge-oriented IS professionals scored highly on service. Although Meredith (1996, p95) found no "noteworthy differences between the challenge and other orientations", the differences noted in this study are significant.

Schein (1987, p39) states that individuals holding an entrepreneurial orientation have an overriding preoccupation with creating something of one's own and proving to the world that he or she has done it. It is therefore not surprising that entrepreneur-oriented IS professionals scored relatively highly on autonomy. It is however, more difficult to understand the low score on technical competence. Yet Meredith (1996) also found a low score for technical competence.

Although geographical security-oriented IS professionals did not have any particularly high or low scores in Meredith's (1996) study, they scored highly on lifestyle in this study. This appears to be a logical combination, given that individuals often choose to remain in a particular geographic region specifically for the lifestyle that exists there. In Meredith's (1996) study, geographical security-oriented IS professionals demonstrated a lower score for job-security. Interestingly, in this study, they were found to have a fairly high score for job-security. Once again this may be indicative of a changing IS profession in South Africa, where jobs are becoming more scarce and individuals have less opportunity to choose where they wish to live, but must rather follow the job market. However, this finding conflicts

with Schein's (1986, p37) argument that geographical security-oriented individuals will "put down roots in a certain area and change jobs or organisations whenever it is necessary in order to avoid being uprooted".

Job-security oriented IS professionals in this study showed a relatively low desire for challenging work. This is consistent with Meredith's findings and supports Schein's (1987, p163) view that such individuals consider "job challenge and other intrinsic motivational tools" less important than factors contributing to their feeling of security.

As with Meredith's (1996) study, the lifestyle-oriented IS professionals scored relatively highly on autonomy and entrepreneurship. The questions measuring lifestyle in the shortened version of the Career Orientation Inventory emphasise the desire to do things in one's own way, for example, "developing a career that permits me to continue to pursue my own lifestyle" and "a career is worthwhile only if it enables me to lead my life in my own way". It is therefore unsurprising that the lifestyle-oriented IS professionals scored highly on autonomy. The high scores for entrepreneurship are also understandable – given that few organisations may be willing or able to provide the flexibility to lead the balanced lifestyle that these individuals seek, they may choose to run their own organisations, and in so doing allow themselves more freedom to pursue the lifestyle they desire. Surprisingly, the lifestyle-oriented IS professionals in this study, showed a very low score for geographic security. This is contrary to both intuitive expectations and Meredith's (1996) findings, given that the ability to pursue a certain lifestyle is often dependent on remaining in a particular geographic area.

Managerially oriented IS professionals displayed a very low desire for technical competence. Once again, this is consistent with Meredith's (1996) findings and appears to support the suggestion that IS professionals have either a managerial or technical inclination. Indeed, Schein (1987, p135) argues that such individuals "view specialisation as a trap" and view technical positions as mere stepping-stones along the path to management. The relatively low score for geographic security is also consistent with expectations given that much of a manager's career is "tied up with a specific company" (Schein, 1985, p167) and they would be more willing to forgo geographic security in favour of career advancement. The very high score for service complies with Meredith's (1996) findings and is not unexpected, given that managers are increasingly being seen as "helpers and facilitators" (Naisbitt & Aburdene, 1985 in Meredith, 1996).

In this study, service-oriented IS professionals scored relatively highly across all other orientations – a result not dissimilar to Meredith's (1996). The high score on lifestyle can be seen to support Schein's view of individuals with this orientation given that they seek a particular lifestyle allowing them to "work with others in a helping role" (Schein, 1987, p168). The relatively high score on job security is surprising as Schein (1985, p29) suggests that service-orientated individuals only seek supervisors and organisations that share their values. However, both Kaplan (1990) and Meredith (1996) reported similar

findings in their work, suggesting that there is some relationship between the desire to be of service and the desire for job security. Kaplan (1990) suggests that these factors may “share some commonality in that both reflect a desire to identify with something greater than oneself (either an organisation or a cause)”.

Consistent with Meredith’s (1996) study, South African IS professionals with a technical orientation still display the lowest managerial aspirations out of all the dominant orientations. This supports Schein’s view of the orientation and his suggestion that “technically orientated individuals view managerial work as ‘painful’, and as ‘too political, too interpersonal, too irrational, and too much a ‘jungle’” (Schein, 1985, p41). As such the lack of managerial ambition among technically orientated IS professionals in South Africa is hardly surprising.

Technically oriented IS professionals also showed the lowest scores toward entrepreneurship. Encountering a similar result, Meredith (1996) explains that these individuals thrive on performing and excelling in their area of expertise and are unlikely to explore entrepreneurial opportunities unless forced to, for example, through lack of employment opportunities in their chosen field.

Yet in contrast with Meredith’s (1996) results, technically oriented IS professionals in South Africa showed a strong desire for a balanced lifestyle in this study. However, it should be noted that only one individual in this study was found to be technically oriented and thus the results are far from conclusive. Meredith (1996) suggests that technically-oriented individuals may be willing to sacrifice some personal time to ensure that they remain up-to-date in the continuously evolving IS field, and given that technology is still advancing at an ever increasing pace in 2004, the suggestion remains valid.

The above analysis has revealed significant differences among individuals with different dominant career orientations. This finding is consistent with Meredith’s (1996) work and supports the belief that a single motivational strategy for all IS professionals regardless of their dominant career orientation is counterintuitive. For example providing greater challenges or opportunities for technical advancement would only be beneficial to IS professionals who are challenge or technically orientated, and may threaten or even worse, demotivate others, such as those who are job-security or managerially oriented.

#### **4.3.2. Relationship between Dominant Orientation and Different Aspects of Organisational Commitment**

An ANOVA test was performed between dominant career orientation and the three aspects of organisational commitment – namely affective, continuance and normative – to determine the existence of any significant differences between each orientation’s level of organisational commitment. The results of the ANOVA are shown in table 14 on the following page.

Table 14: ANOVA of Organisational Commitment by Dominant Career

ORGANISATIONAL COMMITMENT	DOMINANT CAREER ORIENTATION									Univariate F
	AUT	CHA	ENT	GEO	JOB	LIF	MAN	SER	TEC	
Affective	3.75	3.83	2.54	3.94	3.00	2.91	3.75	3.50	3.75	1.63
Continuance	3.67	4.28	2.81	3.06	2.93	2.81	2.70	2.82	1.67	1.44
Normative	2.60	2.80	2.03	2.70	2.93	2.22	2.60	<b>3.02</b>	2.00	2.25*

\* p = 0.036

While Meredith (1996) found significant differences for continuance commitment, as seen in the above table, significant differences were found for normative commitment in this study. Continuance commitment measures an individual’s dependence on an organisation and hence the cost that would be incurred upon leaving. Normative commitment measures an individual’s moral obligation to remain with an organisation.

Although Meredith (1996) did not find a significant difference for normative commitment, the results of the two ANOVA tests are very similar in that both studies found service-oriented individuals to have the highest normative commitment, closely followed by job security-oriented individuals. Whilst differing slightly from Schein’s suggestion that job security-oriented IS professionals may display greater company loyalty, as Meredith (1996, p101) argues, the results are in the expected direction, and “considering the strong need to be of service displayed by service-oriented individuals, their sense of loyalty and moral obligation to remain with their organisation is not surprising”.

Entrepreneurial and technically oriented IS professionals displayed the lowest normative commitment. Given that their aspirations of creating something new or increasing their specialised skills thrive in an environment free of organisational restrictions, this is consistent with intuitive expectations.

**4.3.3. Relationship between Dominant Orientation and Demographic Characteristics**

Igbaria *et al* (1991) found a significant relationship between career orientation and both gender and organisational level. Contrary to this, Meredith (1996) found a relationship tending towards significance between job tenure and dominant orientation, and between organisational tenure and dominant orientation. Chi-square and ANOVA tests were performed on the current sample to determine whether any such relationships existed. It should be noted that although the tables below include the means and frequencies for individuals with a non-specific orientation (‘combined’), these individuals were excluded from the actual tests.

The results of the ANOVA are shown in table 15 on the following page. Unfortunately the age variable was not included in this analysis, the reason being that respondents in this study were only asked to indicate which age category applied to them, while Meredith (1996) asked respondents to provide their actual age.

Table 15: ANOVA of Demographic Variables by Dominant Career Orientation

Years In	DOMINANT CAREER ORIENTATION										Univariate F
	AUT 2	CHA 3	ENT 6	GEO 8	JOB 16	LIF 11	MAN 5	SER 17	TEC 1	COM 60	
IS Field	15.00	24.67	21.17	19.50	16.81	15.18	23.00	16.06	10.00	16.68	0.71
Organisation	12.00	14.00	7.33	8.38	10.13	6.45	2.80	7.12	3.00	7.75	0.76
Position	11.50	10.67	4.83	5.88	4.56	2.18	1.80	5.12	1.00	4.47	2.26*

\* p < 0.05

Whilst Meredith (1996) found relationships tending toward significance between job tenure (years in position) and dominant orientation, and between organisation tenure (years in organisation) and dominant orientation, it is evident from the above table that a significant relationship was found to exist between job tenure and dominant orientation in this study.

From table 15 it can be seen that technically-oriented IS professionals have the lowest job tenure (years in position). Contrasting with Meredith's (1996) findings, this result is not surprising given the high turnover rates found in the IS industry and the consistent demand for highly skilled IS professionals. However, it would not be prudent to read too deeply into this finding given that only one individual was found to be technically-oriented in this study, compared with eight in Meredith's (1996) study.

In line with expectations, managerially orientated IS professionals also display low job tenure. As Meredith (1996) explains such individuals place great importance on career advancement and expect frequent promotions. Moreover, they are likely to make their intentions clear and should their expectations not be met, they would be more inclined to move to a more rewarding organisation. Indeed, the high tenure in the IS field exhibited by managerially oriented individuals indicates a level of knowledge and experience that would be welcomed in an organisation.

The seemingly high tenures at all levels displayed by autonomy and challenge-oriented IS professionals are contrary to expectations, but should also be treated with caution, given the very low number of individuals (two and three respectively) holding these dominant orientations.

The job tenure of job security-oriented IS professionals is relatively high (4.56), though not as high as one would expect given that such individuals are unlikely to leave their current organisation unless their security and stability are threatened. Although respondents with a job security-orientation had only the second highest job tenure (5.66) in his study, Meredith (1996) suggests that such individuals should have a longer organisational tenure than individuals with any other dominant orientation.

Of the sixteen individuals holding a job-security orientation in this study only two were between the ages of 20 and 29, four were between 30 and 39, six were between 40 and 49, and four were between the ages of 50 and 59. Eleven were male, five were female, and all

were white. The profile of job-security oriented individuals – primarily older, white males – is not surprising, given that such individuals are expected to have most difficulty in securing alternative employment due to their age and/or South African employment equity legislation.

The high job tenure displayed by geographically-oriented IS professionals is also a little surprising given that such individuals are willing to change jobs and organisations in order to remain in their preferred geographical area. However, the result found here may be indicative of the fact that the individuals have secured a job that allows them to live in their preferred area and they are not willing to forgo that opportunity.

Entrepreneurially orientated IS professionals exhibited an average length of job tenure, slightly longer than Meredith (1996) found (3.15 years). Such individuals would not generally be expected to stay in a job for an extended period of time, given that they are constantly on the look out for new business opportunities and have a preoccupation with creating something new and gaining recognition for their efforts (Schein, 1985).

One of the lowest job tenures is displayed by lifestyle-oriented IS professionals. This may be indicative of the fact that such individuals frequently change jobs to maintain their chosen lifestyle. Indeed, of the eleven individuals holding this dominant orientation, only two have been in their current jobs for longer than two years, and given that their respective job tenures are five and six years, this is likely to have increased the average job tenure for the group.

Meredith (1996) found service-oriented IS professionals to have the lowest job tenure, but a relatively high organisational tenure; and suggested that organisations may value such individuals, rewarding them with frequent promotions. However, this pattern was not repeated in this study where service-oriented IS professionals we found to have average job and organisational tenure.

Job or organisational tenure is just one aspect of demographic characteristics that was considered. Possible relationships between dominant career orientation and gender, education and organisational level were also investigated.

In the questionnaire, respondents were asked to indicate their current level in the organisational hierarchy. The sample was therefore split into two groups based on organisational level – professional (professional staff) and managerial (first level supervisor, middle management, strategic management, owner/partner). Only five respondents could not be classified into a particular group because they selected 'other'. These individuals were excluded from this section of the analysis.

Unlike Igarria *et al* (1991) who found a significant relationship between career orientation and both gender and organisational level in their American study, Meredith (1996) found

only a relationship tending toward significance between dominant career orientation and organisational level among South African IS professionals.

The frequency counts showing the distribution of dominant career orientations for the various demographic variables are shown in table 16 below. Although the expected cell frequencies are too low for reliable statistical analysis, a chi-square test was performed to enable comparison with the results obtained by Meredith (1996).

**Table 16: Chi-Square test of independence between Dominant Orientation and Demographic Variables**

	DOMINANT CAREER ORIENTATION										Chi-Square
	AUT	CHA	ENT	GEO	JOB	LIF	MAN	SER	TEC	COM	
	2	3	6	8	16	11	5	17	1	60	
<b>Gender</b>											
Male	2	3	5	6	11	7	5	12	1	49	6.43
Female	0	0	1	2	5	4	0	5	0	11	
<b>Education</b>											
Grade 11 or less	0	0	0	1	0	1	0	1	0	0	63.81
Matriculation	1	0	0	1	0	0	1	1	0	4	
Diploma	0	1	0	4	5	1	2	2	0	6	
Professional Certification	0	0	1	0	2	0	0	1	0	8	
Bachelors Degree	0	1	0	1	3	2	1	6	0	14	
Honours Degree	0	0	2	1	1	4	0	3	0	11	
Masters Degree	1	1	3	0	4	2	1	2	1	11	
Doctoral Degree	0	0	0	0	0	1	0	0	0	4	
Other Postgraduate Degree	0	0	0	0	1	0	0	1	0	2	
<b>Organisational Level</b>											
Professional	1	3	3	2	11	10	1	10	1	34	11.05*
Managerial	1	0	3	6	4	1	4	6	0	23	

NOTE: The total number of cases under organisational level is less than 129 due to the small number (5) of individuals not classifiable as either managerial or professional

\* Significant at the 20% level

As shown in table 16 above, no significant relationship was found between dominant career orientation and gender or dominant orientation education in this study. Although not statistically significant, there is some weak evidence of a relationship between dominant career orientation and organisational level.

Finding a slightly stronger relationship between dominant orientation and organisational level, Meredith (1996) concluded that managerially oriented individuals had a greater tendency to occupy managerial positions. This still appears to be true, but with only five managerially oriented individuals, the results should be interpreted with caution.

However, the results indicate that lifestyle-oriented IS professionals tend toward professional careers. Similarly, job security-oriented IS professionals and to a lesser extent, service-oriented IS professionals also appear to prefer professional careers. These results are consistent with both intuitive expectations and Meredith's (1996) results, and may be due to the fact that professional positions allow for greater flexibility and entail less stress than managerial positions.

There also appears to be a slightly greater tendency for geographically oriented individuals to hold managerial positions. Perhaps this because managers are more likely to have a greater say in where they are posted, but once again the small number of individuals holding this orientation must be borne in mind.

Although Meredith's (1996) results also suggest that autonomy-oriented IS professionals are predisposed toward professional careers, there is no clear support for this in the results of this study.

#### **4.3.4. Closing Remarks on Distinguishing Characteristics of each Orientation**

From the various analyses discussed above, it can be seen that the dominant career orientations represent very different types of individuals. Although different types of individuals tend to seek different job, given this diversity of career wants it becomes difficult for an organisation to satisfy all employees. The effects of this discrepancy between what an individual seeks (career wants) and what the organisation actually provides (career haves) will be discussed in the next chapter.

University of Cape Town

## **5. Analysis and Results: Testing the extended version of Jiang and Klein's (2002) Discrepancy Model**

The second phase of analysis involved testing the extended version of Jiang and Klein's (2002) discrepancy model. In doing so the effect of a discrepancy between career wants and career have on turnover indicators was examined, and internal relationships among the turnover indicators were investigated.

Stepwise multiple regression models were used to test the first three hypotheses. The approach is useful in that it first investigates the impact of variables known to explain some of the variance, and then determines whether the introduction of additional variables or interactive affects significantly affects the explanatory model (Jiang & Klein, 2002).

Jiang and Klein (2002) chose to include career wants and career have in the first step, due to the fact that significant relationships had been found between these variables and predictors of turnover in previous studies. Gender was included as a moderator in the first step, based on the fact that relationships between gender and the dependent variables had also been identified in previous studies.

In order to facilitate comparison with Jiang and Klein's (2002) model and testing of the extended version, the same variables (career wants, career have and gender) were used in the first step of the stepwise multiple regression model.

As Jiang and Klein (2002) explain, at this step, discrepancy theory predicts that the regression coefficients will be negative for career wants and positive for career have. This result implies that higher want values result in lower satisfaction, while higher have values result in higher satisfaction; assuming the actual degree of the characteristic is held constant in the workplace. However, the reverse is expected for negatively valued dependent variables such as turnover intention, that is, higher want values result in higher turnover intention, whilst higher have values result in lower turnover intention.

Although the first-step regression results, indicating whether there is an additive discrepancy effect, would be sufficient to support the first three hypotheses, consistent with Jiang and Klein's (2002) methodology, a second step was used to investigate the existence of a non-additive discrepancy affect in this career want-and-have comparison process that could indicate nonlinearities, or possible bias.

Thus the second stage of the stepwise regression model was used to determine whether the interaction effect between career wants and career have significantly explained additional variance. An additional predictor variable, a cross-product score, was calculated by multiplying each respondent's scores for want and have measures. This new variable was entered into the hierarchical regression equation that already contained want values, have values and gender as

predictors. The new  $R^2$  value was then tested to determine whether inclusion of the higher-order term in the regression model contributed significantly to the predictive capacity of the equation. The existence of a significant want-have interaction indicates that the effects on turnover indicators depend on more complex relations. Jiang and Klein (2002) explain that such interactions are usually examined graphically to see whether any patterns emerge.

**Hypothesis 1: The smaller the discrepancy between an IS professional’s wants and haves, the higher their career and job satisfaction.**

**Hypothesis 2: The smaller the discrepancy between an IS professional’s wants and haves, the less pressing their intent to leave.**

Table 17 below shows the means of the career wants, career haves, and the gaps in both this study and the one by Jiang and Klein (2002). Both average and absolute gaps are shown. The absolute gap is based on the average of the absolute values for each difference and therefore represents the difference between the two values regardless of direction. This measure is only of importance when a deviation in either direction leads to lower job and career satisfaction or greater turnover intention (Jiang and Klein, 2002).

**Table 17: Gaps between Career Want and Have**

Dimensions	Career Want		Career Have		Gap (Have-Want)		Absolute Gap	
	This	J&K	This	J&K	This	J&K	This	J&K
Autonomy	3.65	3.06	2.84	2.74	-0.80*	-0.31*	1.19*	0.88*
Challenge	3.54	3.07	3.35	3.10	-0.19*	0.03	0.73*	0.62*
Entrepreneur	3.20	2.47	2.59	2.31	-0.61*	-0.15	1.00*	0.95*
Geographic Security	3.10	3.56	3.36	3.63	0.26*	0.07	0.93*	0.95*
Job Security	3.72	4.04	3.20	3.63	-0.53*	-0.38*	1.04*	0.83*
Lifestyle	3.90	3.62	3.37	3.03	-0.53*	-0.60*	0.90*	0.87*
Managerial Competence	3.39	3.63	2.82	3.30	-0.57*	-0.33*	1.01*	0.78*
Service	4.04	3.20	3.00	3.09	-1.04*	-0.11	1.23*	0.97*
Technical Competence	2.73	2.87	3.32	3.12	0.59*	0.25*	1.10*	0.93*

\* Significant at  $p < 0.05$  level

From the above table it can be seen that the gaps between career wants and haves are generally more pronounced among South African IS professionals. Paired t-tests were used to calculate significance for the gaps, while t-tests were used to calculate significance of the absolute gap scores, and unlike Jiang and Klein’s (2002) study all of these gaps are statistically significant.

Of these gaps, only two are in the favourable direction, that is, individuals perceive that they have more than they desire. Interestingly, in their American study, Jiang and Klein (2002) also found that individuals believed they had more geographic security and technical competence than they wanted. Jiang and Klein (2002) also found that individuals believed they had slightly more challenge than they wanted, although the challenge gap was not in the favourable direction in this study – it was the smallest gap.

To examine the additive discrepancy effect, nine separate stepwise regression analyses for each career decision variable were conducted. Just as Jiang and Klein (2002) found, the addition of the have and want variables (the predictors in the first step) added significantly to the amount of explained variance than when only gender was included. The coefficients for the variables are shown in table 18 below.

**Table 18: Regression Results of Turnover Indicators with Career Want and Career Have**

Dependent Variable	Independent Variable	Career Want	Career Have	Gender
Job Satisfaction	Autonomy	-0.067	+0.250	-0.281
	Challenge	-0.209	+0.411	-0.304
	Entrepreneur	-0.166	+0.172	-0.416
	Geographic Security	+0.065	+0.031	-0.433
	Job Security	-0.051	+0.111	-0.421
	Lifestyle	-0.023	+0.345	-0.326
	Managerial Competence	-0.055	+0.213	-0.324
	Service	+0.043	+0.227	-0.300
	Technical Competence	+0.003	+0.130	-0.433
Career Satisfaction	Autonomy	-0.093	+0.129	-0.244
	Challenge	-0.231	+0.244	-0.283
	Entrepreneur	-0.275	+0.163	-0.371
	Geographic Security	+0.080	+0.047	-0.316
	Job Security	-0.117	+0.054	-0.323
	Lifestyle	+0.074	+0.263	-0.261
	Managerial Competence*	-0.241	+0.231	-0.283
	Service	-0.066	+0.119	-0.266
	Technical Competence	-0.006	+0.167	-0.301
Turnover Intention	Autonomy	+0.250	-0.336	+0.133
	Challenge	+0.232	-0.324	+0.303
	Entrepreneur	+0.349	-0.171	+0.473
	Geographic Security	-0.204	-0.055	+0.333
	Job Security	-0.096	-0.271	+0.304
	Lifestyle	+0.387	-0.405	+0.172
	Managerial Competence	+0.226	-0.252	+0.322
	Service	+0.221	-0.403	+0.126
	Technical Competence	-0.108	-0.424	+0.305
Turnover Intention (Profession)	Autonomy	+0.256	-0.226	+0.121
	Challenge	+0.027	-0.306	+0.167
	Entrepreneur	+0.342	-0.165	+0.386
	Geographic Security	-0.111	-0.034	+0.282
	Job Security	-0.127	-0.219	+0.239
	Lifestyle	+0.529	-0.305	+0.095
	Managerial Competence	+0.237	-0.175	+0.302
	Service	+0.137	-0.398	+0.036
	Technical Competence	-0.316	-0.306	+0.286
Turnover Intention (Position/Organisation)	Autonomy	+0.246	-0.418	+0.142
	Challenge	+0.386	-0.338	+0.405
	Entrepreneur	+0.354	-0.175	+0.538
	Geographic Security	-0.270	-0.071	+0.372
	Job Security	-0.072	-0.311	+0.352
	Lifestyle	+0.281	-0.479	+0.230
	Managerial Competence	+0.217	-0.309	+0.337
	Service	+0.284	-0.406	+0.193
	Technical Competence	+0.048	-0.513	+0.320

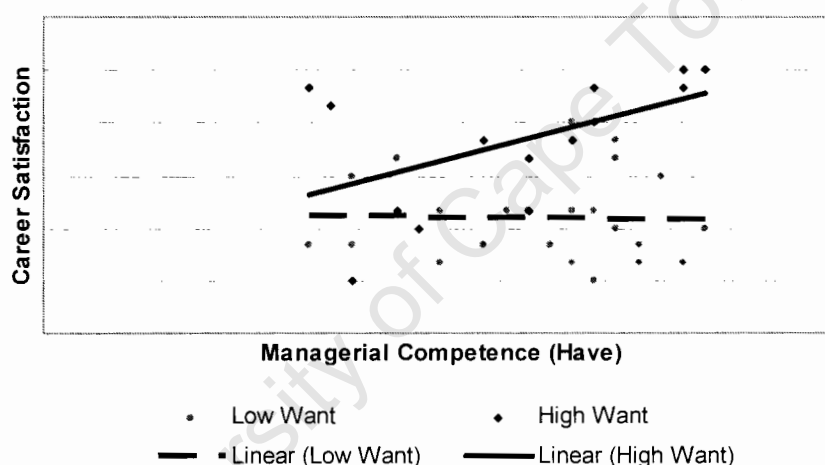
\* Interaction term adds significantly to R<sup>2</sup>

Consistent with Jiang and Klein’s (2002) findings, the directions of the coefficients on the gender variables indicate higher job and career satisfaction and less intent to leave for all want factors, although identical signs on the significant coefficients for the want and have variables were attained when gender was not included in the model.

As Jiang and Klein (2002) explain, to support an additive discrepancy effect, the regression coefficients for wants should be negative and the regression coefficients for haves should be positive (the opposite would be true for turnover intention).

To establish the existence of additive discrepancy, sign tests were conducted for each dependent variable. Based on the binominal distribution, and using the number of signs in the expected direction, these tests predict the probability that the observed pattern is random. The detailed calculation of the sign test and the probability table are shown in Appendix D, but the results show that for all dependent variables the probability that the pattern is random is less than 0.003. Thus the results are statistically significant ( $\alpha=0.05$ ) in support of the hypotheses that a smaller discrepancy between one's career wants and haves results in increased job and career satisfaction and lower turnover intention. As such, Jiang and Klein's discrepancy model of information systems personnel turnover is found to hold true in the South African context.

Investigating further, Jiang and Klein (2002) found the entrepreneurship factor to be significantly affected by the interaction of want and have for both career satisfaction and intent to leave. In contrast, this study found only the managerial competence factor to be significantly affected by the interaction of want and have for career satisfaction. This interaction relation is shown in figure 8 below.



**Figure 8: Interaction of Career Want and Career Have for Managerial Competence**

Consistent with Jiang and Klein's (2002) methodology, the sample was divided into those individuals having little want for managerial competence and those having a higher want. Those higher than one deviation from the mean were considered high-want employees, while those less than one standard deviation from the mean were considered low-want employees. As Jiang and Klein (2002) explain, the want variable was used as the variable for division because discrepancy theory considers wants to be the anchor of the relation.

From figure 8 above, it can be seen that the career satisfaction of high-want individuals increases dramatically as the perceived amount of managerial competence increases. However, the very flat

trend line for low-want individuals tends slightly downward, indicating that the career satisfaction of low-want individuals actually decreases, albeit very slightly, as the perceived amount of managerial competence increases.

Therefore, the interaction effect on career satisfaction was shown to be significant for managerial competence, and while high-want individuals appear to thrive on having more of the managerial competence factor than they actual want, the low-want individuals demonstrate an aversion to having excess managerial competence.

**Hypothesis 3: The smaller the discrepancy between an IS professional’s wants and haves, the higher their organisational commitment.**

Although Jiang and Klein (2002) only considered the effect of a discrepancy between career wants and haves on career satisfaction and turnover intention, it is thought that such a discrepancy also has an effect on organisational commitment (Thatcher *et al*, 2003). As such their discrepancy model was extended to include this hypothesis, which was tested in the same way as the previous two hypotheses.

Once again, nine separate stepwise regression analyses for each career decision variable were conducted to examine the additive discrepancy effect. The coefficients for the variables are shown in table 19 below.

Table 19: Regression Results of Organisational Commitment Variables with Career Want and Career Have

Dependent Variable	Independent Variable	Career Want	Career Have	Gender
Affective Commitment	Autonomy	-0.266	+0.425	-0.216
	Challenge	-0.118	+0.332	-0.417
	Entrepreneur	-0.172	+0.166	-0.519
	Geographic Security	+0.182	+0.087	-0.485
	Job Security	+0.048	+0.197	-0.483
	Lifestyle	-0.253	+0.427	-0.340
	Managerial Competence	+0.103	+0.246	-0.314
	Service	-0.247	+0.361	-0.308
	Technical Competence	-0.076	+0.229	-0.485
Continuance Commitment	Autonomy	+0.010	-0.023	-0.212
	Challenge	-0.008	-0.056	-0.228
	Entrepreneur	-0.110	-0.057	-0.313
	Geographic Security	+0.167	-0.006	-0.135
	Job Security	+0.272	+0.102	-0.164
	Lifestyle	+0.040	-0.024	-0.212
	Managerial Competence	-0.091	-0.062	-0.291
	Service	-0.069	+0.061	-0.152
	Technical Competence	+0.256	-0.068	-0.256
Normative Commitment	Autonomy	-0.071	+0.184	+0.094
	Challenge	-0.091	+0.119	-0.010
	Entrepreneur	-0.057	+0.080	-0.011
	Geographic Security	+0.078	+0.000	-0.021
	Job Security	+0.256	+0.104	-0.018
	Lifestyle	-0.073	+0.146	+0.024
	Managerial Competence	+0.016	+0.084	+0.027
	Service	+0.057	+0.205	+0.107
	Technical Competence	+0.209	+0.111	-0.049

Once again, regression coefficients for wants should be negative and the regression coefficients for have should be positive, to support an additive discrepancy effect.

To establish the existence of additive discrepancy, sign tests were conducted for each dependent variable. The detailed calculation of the sign test and the probability table are shown in Appendix D, but the results show that for all dependent variables the probability that the pattern is random is less than 0.05. Although the results are statistically significant ( $\alpha=0.05$ ), it should be noted that for the continuance commitment variable, only five signs were in the expected direction. Therefore an additive discrepancy effect is not present for continuance commitment. Nevertheless, the results support the hypothesis that a smaller discrepancy between career wants and career have results in increased affective and normative commitment.

Unlike the tests on the previous hypothesis, no factor was found to be significantly affected by the interaction of have and want.

**Hypothesis 4: There is a significant correlation between job satisfaction and career satisfaction among IS professionals.**

Igbaria *et al* (1994) purport that it is reasonable to believe that job satisfaction should also promote feelings of career satisfaction. The motivation behind this is Greenhaus and Callan’s (1994) suggestion that a career is simply a series of work-related experiences over time; and therefore one’s career satisfaction should be at least partly determined by the current job experience (Romzek, 1989). Hypothesis 4 formalises this notion of a correlation between job and career satisfaction.

The results of the simple linear regression model conducted to test this hypothesis are shown in table 20 below.

Table 20: Regression Summary for Hypothesis 4

Regression Summary for Dependent Variable: CS (TurnoverWorking.sta)						
R= .58408229 R <sup>2</sup> = .34115212 Adjusted R <sup>2</sup> = .33596434						
F(1,127)=65.761 p<.00000 Std.Error of estimate: .72386						
N=129	Beta	Std.Err. of Beta	B	Std.Err. of B	t(127)	p-level
Intercept			1.434222	0.264294	5.426622	0.000000
JS	0.584082	0.072026	0.569075	0.070176	8.109299	0.000000

From the above regression summary table, it can be seen that the R<sup>2</sup> value is 0.34. Alternatively stated, this means that job satisfaction explains 34% of the variance in career satisfaction. This relatively low R<sup>2</sup> value suggests that many other factors play a role in determining an individual’s career satisfaction.

Nevertheless, the regression model was found to be very significant at the 0.0000003 p-level, indicating a very significant correlation between job satisfaction and career satisfaction. In fact, the

regression model suggests that a 1% increase in job satisfaction results in an increase of 0.57% in career satisfaction.

**Hypothesis 5a: There is a significant correlation between job satisfaction and organisational commitment among IS professionals.**

**Hypothesis 5b: There is a significant correlation between career satisfaction and organisational commitment among IS professionals.**

As discussed by Igbaria *et al* (1995), high levels of satisfaction (both job and career) are expected to increase organisational commitment since employees who are satisfied in their current positions and careers are believed to have less motivation for leaving than those who are not satisfied.

These two hypotheses predict significant correlations between job and career satisfaction and organisational commitment.

Three separate linear regression models were used to investigate the influence of job satisfaction on each aspect of organisational commitment (affective, continuance, normative). While the detailed regression results can be found in Appendix E, a comparison of the results is shown in table 21 below.

**Table 21: Comparison of Regression Summaries for Hypothesis 5a**

	<b>AC</b>	<b>CC</b>	<b>NC</b>
<b>R Square</b>	0.240	0.002	0.055
<b>JS: P Level</b>	<b>0.000</b>	0.577	<b>0.007</b>
<b>B</b>	<b>0.559</b>	0.051	<b>0.190</b>

Looking at the p-values of the regression equations it can be seen that the regression models for both affective commitment ( $p=0.000000004$ ) and normative commitment ( $p=0.007$ ) are significant at the 5% level. However, the model for continuance commitment is not significant at the 5% level.

Therefore, the first of the two hypotheses cannot be rejected. The results show that there is indeed a significant correlation between job satisfaction and both affective commitment and normative commitment, though not between job satisfaction and continuance commitment. The results suggest that an IS professional who experiences a 1% increase in job satisfaction will, on average, experience 0.56% more affective commitment and 0.19% more normative commitment.

After establishing a significant correlation, between job satisfaction and organisational commitment, three more simple regression models were used to investigate the influence of career satisfaction on each aspect of organisational commitment (affective, continuance, normative). While the detailed regression results can be found in Appendix E, a comparison of the results is shown in table 22 on the following page.

Table 22: Comparison of Regression Summaries for Hypothesis 5b

	AC	CC	NC
<b>R Square</b>	0.120	0.008	0.034
<b>CS: P Level</b>	<b>0.000</b>	0.318	<b>0.036</b>
<b>B</b>	<b>0.405</b>	-0.094	<b>0.153</b>

Consistent with the findings for job satisfaction, the above table shows that there is also a significant correlation between career satisfaction and affective commitment and normative commitment, but not continuance commitment. Therefore, the second of the two hypotheses cannot be rejected either.

Looking at the p-values of the regression equations in table it can be seen that the regression models for both affective commitment ( $p=0.00006$ ) and normative commitment ( $p=0.03$ ) are significant at the 5% level. However, the model for continuance commitment is not significant at the 5% level. The results suggest that an IS professional who experiences a 1% increase in career satisfaction will, on average, experience 0.41% more affective commitment and 0.15% more normative commitment.

Although there are significant correlations between job and career satisfaction and organisational commitment, the above results show that job satisfaction has a greater influence on turnover intention than career satisfaction. However, as seen in tables 21 and 22, the percentage of variance ( $R^2$ ) explained is very low in all cases, indicating that there are many other factors that influence organisational commitment.

**Hypothesis 6: There is a significant correlation between job satisfaction, career satisfaction, organisational commitment and turnover intention among IS professionals**

Several researchers (Mowday *et al*, 1982; Bartol, 1983; Baroudi, 1985; Gupta *et al*, 1992; Igarria *et al*, 1994; Griffeth *et al*, 2000; Niederman & Sumner, 2001; Thatcher *et al*, 2003) have shown that job satisfaction, career satisfaction and organisational all influence turnover intention.

The results of the multiple regression model used to test this hypothesis are shown in the tables below. From the analysis of variance (ANOVA) results displayed in table 23 below, it can be seen that the regression model is highly significant ( $p < 10^{-10}$ ). Therefore the hypothesis cannot be rejected and it can be concluded that one or more of the explanatory variables show significant correlation to turnover intention.

Table 23: ANOVA Table for Hypothesis 6

Effect	Analysis of Variance; DV: TI (TurnoverWorking.sta)				
	Sums of Squares	df	Mean Squares	F	p-level
<b>Regress.</b>	<b>58.6730</b>	<b>5</b>	<b>11.73460</b>	<b>19.27439</b>	<b>0.000000</b>
<b>Residual</b>	74.8846	123	0.60882		
<b>Total</b>	133.5577				

As can be seen from table 24 below, the  $R^2$  value is 0.439, indicating that the explanatory variables explain approximately 44% of the variation in turnover intention. The remaining 56% of the variation is explained by other factors. This relatively low  $R^2$  value could be explained by the fact that many other factors play a role in the decision to leave one's job.

**Table 24: Regression Summary for Hypothesis 6**

Regression Summary for Dependent Variable: TI (TurnoverWorking.sta)						
R= .66280352 R <sup>2</sup> = .43930851 Adjusted R <sup>2</sup> = .41651617						
F(5,123)=19.274 p<.00000 Std.Error of estimate: .78027						
N=129	Beta	Std.Err. of Beta	B	Std.Err. of B	t(123)	p-level
Intercept			5.881630	0.406601	14.46535	0.000000
CS	-0.043593	0.084816	-0.050129	0.097532	-0.51398	0.608191
JS	-0.319318	0.090037	-0.357757	0.100876	-3.54650	0.000553
AC	-0.331994	0.082378	-0.326095	0.080914	-4.03015	0.000097
CC	-0.068376	0.071786	-0.073956	0.077644	-0.95249	0.342715
NC	-0.136154	0.076452	-0.188167	0.105658	-1.78091	0.077396

The regression model, illustrated in table 24, also shows that both job satisfaction and affective commitment are significantly correlated with turnover intention at the 5% level. However, career satisfaction and the remaining organisational commitment measures do not demonstrate a significant relationship with turnover intention at the 5% level of significance.

The regression model implies that a 1% increase in job satisfaction, results in an average decrease of 0.36% in turnover intention, while a 1% increase in affective commitment, results in an average decrease of 0.33% in turnover intention.

The above analysis considered turnover intention as a whole; however this measure incorporates two separate measures – turnover intention from the IS profession and turnover intention from current job. Given the inherent differences in these two measures, the author felt it necessary to separately consider the correlation between career satisfaction, job satisfaction, organisational commitment and turnover intention from both the IS profession and current job. As such two additional hypotheses were developed.

**Hypothesis 6a: There is a significant correlation between career satisfaction, job satisfaction, organisational commitment and turnover intention (from profession) among IS professionals**

**Hypothesis 6b: There is a significant correlation between career satisfaction, job satisfaction, organisational commitment and turnover intention (from current job) among IS professionals**

The results of the multiple regression models used to test the above hypotheses are shown in the tables below. From the analysis of variance (ANOVA) displayed in the tables 25 and 26 below, it can be seen that the both regression models are highly significant. As neither hypothesis can be rejected at the 0.0000005 p-level, it can be concluded that one or more of the explanatory variables show significant correlation to turnover intention (from profession and from current job).

Table 25: ANOVA Table for Hypothesis 6a

Effect	Analysis of Variance; DV: TIP (TurnoverWorking.sta)				
	Sums of Squares	df	Mean Squares	F	p-level
Regress.	46.5690	5	9.313798	8.723770	0.000000
Residual	131.3190	123	1.067634		
Total	177.8880				

Table 26: ANOVA Table for Hypothesis 6b

Effect	Analysis of Variance; DV: TIJ (TurnoverWorking.sta)				
	Sums of Squares	df	Mean Squares	F	p-level
Regress.	74.3992	5	14.87985	18.18538	0.000000
Residual	100.6424	123	0.81823		
Total	175.0417				

**Turnover Intention from IS Profession**

As can be seen from table 27 below, the R<sup>2</sup> value is 0.261, indicating that the explanatory variables explain approximately 26% of the variation in turnover intention (from the profession). The remaining 74% of the variation is explained by other factors. This low R<sup>2</sup> value could be explained by the fact that many other factors play a role in the decision to leave the IS profession.

Table 27: Regression Summary for Hypothesis 6a

Regression Summary for Dependent Variable: TIP (TurnoverWorking.sta)						
R= .51165243 R <sup>2</sup> = .26178821 Adjusted R <sup>2</sup> = .23177960						
F(5,123)=8.7238 p<.00000 Std.Error of estimate: 1.0333						
N=129	Beta	Std.Err. of Beta	B	Std.Err. of B	t(123)	p-level
Intercept			5.008159	0.538439	9.30126	0.000000
CS	0.030581	0.097321	0.040584	0.129156	0.31423	0.753880
JS	-0.342264	0.103312	-0.442553	0.133584	-3.31290	0.001213
AC	-0.128610	0.094523	-0.145790	0.107150	-1.36062	0.176121
CC	0.022443	0.082370	0.028015	0.102820	0.27247	0.785721
NC	-0.219282	0.087724	-0.349749	0.139917	-2.49969	0.013747

The regression model, illustrated in table 27, also shows that both job satisfaction and normative commitment are significantly correlated to turnover intention (from the profession) at the 5% level. However, career satisfaction, affective commitment and continuance commitment measures do not seem to bear a significant relationship with turnover intention at the 5% level of significance.

The regression model implies that a 1% increase in job satisfaction, results in an average decrease of 0.44% in turnover intention (from the profession), while a 1% increase in normative commitment, results in an average decrease of 0.35% in turnover intention.

**Turnover Intention from Current Job**

As can be seen from table 28 below, the  $R^2$  value is 0.425. It is therefore seen that the explanatory variables explain approximately 43% of the variation in turnover intention (from current job). The remaining 57% of the variation is explained by other factors. This relatively low  $R^2$  value could be explained by the fact that many other factors play a role in the decision to leave a particular job.

**Table 28: Regression Summary for Hypothesis 6b**

Regression Summary for Dependent Variable: TIJ (TurnoverWorking.sta)						
R= .65194881 R <sup>2</sup> = .42503725 Adjusted R <sup>2</sup> = .40166478						
F(5,123)=18.185 p<.00000 Std.Error of estimate: .90456						
N=129	Beta	Std.Err. of Beta	B	Std.Err. of B	t(123)	p-level
Intercept			6.536734	0.471371	13.86749	0.000000
CS	-0.089759	0.085888	-0.118164	0.113068	-1.04507	0.298041
JS	-0.229342	0.091176	-0.294161	0.116945	-2.51537	0.013180
AC	-0.410256	0.083419	-0.461324	0.093803	-4.91800	0.000003
CC	-0.121490	0.072694	-0.150433	0.090013	-1.67125	0.097215
NC	-0.042335	0.077419	-0.066981	0.122489	-0.54684	0.585482

The regression model, illustrated in table 28, also shows that both job satisfaction and affective commitment are significantly correlated to turnover intention (from current job) at the 5% level. However, career satisfaction and the remaining organisational commitment measures do not seem to bear a significant relationship with turnover intention at the 5% level of significance.

The regression model implies that a 1% increase in job satisfaction, results in an average decrease of 0.29% in turnover intention (from current job), while a 1% increase in affective commitment, results in an average decrease of 0.46% in turnover intention.

## **6. DISCUSSION AND IMPLICATIONS**

In this chapter, the implications of the findings of this study are investigated. Firstly, a brief summary of the findings is given. This is followed by a discussion of the implications for organisations, managers and professionals in the IS industry as well as researchers in the field of IS personnel turnover. Finally, the limitations of the study are discussed.

### **6.1. Distribution of Career Orientations among South African IS Professionals**

Supporting previous research (Schein, 1987; Igbaria *et al*, 1991; Crepeau *et al*, 1992; Ginzberg & Baroudi, 1992; Igbaria & Baroudi, 1993; Igbaria *et al*, 1995, Crook & Crepeau, 1997), this study has shown that South African IS employees hold a wide variety of career orientations. Although contrasting with Igbaria *et al*'s (1991) study conducted in the United States that found IS professionals to be predominantly technically or managerial orientated, these findings correlate with more recent studies both overseas (Ginzberg & Baroudi, 1992) and locally (Meredith, 1992; 1996; van Huyssteen, 1999).

Indeed, the non-uniform distribution of dominant career orientations among IS professionals in South Africa has remained similar between 1996 and 2004. Service (13.2%) and job security (12.4%) remain the most common dominant orientations, although service has now risen slightly ahead of job security. The predominance of the service orientation may be indicative of changing social expectations within South Africa, where individuals often feel a sense of duty to help those less fortunate than themselves, and seek positions that allow them to do so.

Autonomy (1.6%) and technical competence (0.8%) were found to be the two least common orientations. This is also consistent with Meredith's study (1996) in which they ranked seventh and ninth respectively. The low incidence of these two orientations may be a consequence of the changing work environment, whereby technical skills alone are no longer sufficient for success in the IS profession (Bailey & Stefaniak, 1999; 2000; 2001), and greater emphasis is placed on teamwork.

Unfortunately a considerable proportion of the sample (46.5%) could not be classified in terms of a unique dominant orientation. This was primarily due to the use of the shortened form of the career orientations inventory, rather than being the result of career indecision on the part of the respondents.

### **6.2. Comparison of Career Orientations in Different Geographical Areas**

Unlike previous South African studies (Meredith, 1996; van Huyssteen, 1999), no significant differences were noted between the distributions of career orientations in the Western Cape compared with the rest of South Africa. Whilst contradictory to previous South African research, the results are consistent with Ginzberg and Baroudi's (1992) findings and may be indicative of changing trends among South African IS professionals.

However, these results should be treated with caution given the small number of individuals in the Western Cape (n=30), and the significantly higher percentage of individuals in the Western Cape found to have more than one orientation (67%) compared with those in the rest of South Africa (40%).

### **6.3. Profiles of Different Dominant Career Orientations**

As expected, the relationships between the dominant orientation and the scores for the remaining orientations indicate that the different orientations represent very different types of employees. Among the most significant differences exhibited were the managerially oriented and entrepreneurial individuals' very low interest in technical work, and the technically oriented and geographic security-oriented individuals' equal lack of interest in managerial work.

In terms of organisational commitment, service and job-security oriented individuals were found to have the highest moral obligation to remain with their current organisation, whilst entrepreneurial and technically oriented individuals showed the least. Although technically oriented individuals were also found to have the lowest job tenure, this result cannot be generalised to the larger population given that only one individual was found to be technically oriented in this study. Managerial-oriented individuals were also found to change jobs relatively frequently. All these findings are consistent with intuitive expectations, and with Schein's (1985) view of individual orientations.

However, career orientations alone cannot explain career satisfaction and turnover intentions of IS personnel. Research (Van Maanen & Schein, 1979; Ginzberg & Baroudi, 1988; Jiang & Klein, 2002) has shown that it is necessary to consider both the wants of an IS professional and the degree to which they feel these desires are satisfied.

### **6.4. Discrepancy Model and Turnover Indicators**

The discrepancy model proposed by Jiang and Klein (2002), purports that a smaller discrepancy between an IS professional's career wants and career have will lead to increased career and job satisfaction, and less pressing intent to leave. Consistent with the findings of Jiang and Klein (2002), this study found both hypotheses to be true.

Extending Jiang and Klein's (2002) discrepancy model, hypothesis three suggested that a smaller discrepancy between an IS professional's career wants and career have, would lead to increased organisational commitment. The results supported this hypothesis in terms of affective and normative commitment, but rejected it for continuance commitment.

Discrepancy theory provides a method to link job satisfaction, career satisfaction, organisational commitment and turnover intention to variables that reflect a gap between employee wants and their perceptions of what they have in their jobs. However, the variables and the associations between them are not mutually exclusive, but are rather intricately linked with one another. For

this reason, three additional hypotheses were tested in order to gain a deeper understanding of the internal relationships among these variables.

The first relationship investigated was that between job satisfaction and career satisfaction. A very significant positive correlation was found between these two variables, thus confirming the fourth hypothesis.

As discussed by Igarria *et al* (1995), high levels of satisfaction (both job and career) are expected to increase organisational commitment since employees who are satisfied in their current positions and careers are believed to have less motivation for leaving than those who are not satisfied. Thus, the fifth hypothesis, which was broken down into two sub-hypotheses (considering job and career satisfaction separately), suggested that job and career satisfaction were highly positively correlated with organisational commitment. Support for these hypotheses was evident in terms of affective and normative commitment, but in terms of continuance commitment, the hypotheses were rejected.

Based on the findings of several researchers (Mowday *et al*, 1982; Bartol, 1983; Baroudi, 1985; Gupta *et al*, 1992; Igarria *et al*, 1994; Griffeth *et al*, 2000; Niederman & Sumner, 2001; Thatcher *et al*, 2003), hypothesis six purported that there is a significant negative correlation between job satisfaction, career satisfaction, organisational commitment and turnover intention among IS professionals. However, only job satisfaction and affective commitment were found to be significantly negatively correlated with turnover intention.

Given that turnover intention incorporates two separate measures (turnover intention from the IS profession and turnover intention from current job), which are inherently different, potential correlations between job satisfaction, career satisfaction, organisational commitment and turnover intention for each dimension were investigated separately. The results indicated that only job satisfaction and normative commitment are significantly negatively correlated with a desire to leave the IS profession, whilst only job satisfaction and affective commitment are significantly negatively correlated with a desire to leave current job.

It therefore becomes apparent, that job satisfaction (which is highly positively correlated with career satisfaction), affective commitment and normative commitment are significantly negatively correlated with turnover intention. Interestingly, continuance commitment is not significantly correlated with turnover intention. However, continuance commitment originates from a realisation of the costs associated with leaving an organisation. Therefore, as Allen and Meyer (1990) warn, high continuance commitment coupled with a desire to leave may result in reduced turnover, but at the price of poorer performance from the employee.

There are several important implications arising from the findings of this study. Firstly, Ginzberg and Baroudi's (1998) assumption that IS professionals hold either a technical or managerial orientation was found to be invalid for South African IS professionals in 2004. As such the dual-career path, once advocated as the solution for IS personnel turnover (Ginzberg &

Baroudi, 1988; Igbaria & Greenhaus, 1992; Tan and Igbaria, 1993), is only likely to satisfy a very small percentage of individuals with technical and managerial orientations (4.7% in this sample).

Furthermore, significant differences were found in the characteristics of each career orientation. Given this diversity, the assumption that a particular professional group of individuals can be managed and motivated as a group (Crook *et al.*, 1991; Ginzberg *et al.*, 1992) is questionable and outdated, and unlikely to lead to reduced turnover in the South African IS industry.

In fact, as long ago as the early 1970s, researchers (Weinberg in Moore, 1991) warned that it was mistaken to assume that all IS professionals have the same personality profile, with the implication that they can be managed with a blanket approach. Although the typical career path in IS once assumed that one size fits all (De Marco, 1987 in Meredith, 1996), organisations seeking a reduction in turnover must realise that they are now managing individuals as opposed to a work force (Harris, 1993).

As such, it is important for organisations and IS managers to understand the individual needs of their employees, and adopt a career path strategy that is flexible enough to meet the needs of all orientations.

Whilst an understanding of the desires and aspirations of the IS professional is essential, these alone do not influence turnover. Rather, as research indicates, it is the work environment, or specifically a mismatch between an individual's personality, their desires and aspirations, and what the job provides that drives turnover (Mumford, 1972; Boshoff & Arnolds, 1995; Barley, 1996; Cappelli, 2000). The underlying theory is that individuals are motivated to use their jobs in order to satisfy their needs. If these needs are not met, the dissatisfied or unmotivated individual is more likely to seek fulfilment elsewhere, possibly in another organisation (Ginzberg & Baroudi, 1988).

Closely linked with motivational theory, discrepancy theory recognises the need to consider individual differences (Locke, 1976). Discrepancy theory provides a method to link the turnover indicator variables of job satisfaction, career satisfaction, organisational commitment and turnover intention to variables that reflect this gap between employee wants and perceived hases. The results of this study indicate that organisations and IS managers seeking a reduction in turnover must find ways to close this gap between employee wants and what they perceive they have in their current positions.

The results of this study indicate that managers need to pay careful attention to several aspects of employee wants. Significant differences in an adverse direction were found for autonomy, challenge, entrepreneur, job security, lifestyle, managerial competence and service.

The desire for autonomy, challenge and more entrepreneurial opportunities indicates that South African IS professionals want challenging tasks, and seek reprieve from organisational rules and

restrictions to demonstrate and implement their unique skills and ideas (Schein, 1985; 1987; Smits, McLean & Tanner, 1993). The need for job security is consistent with prevailing conditions in the South African IS employment market. Jobs are no longer as plentiful as they once were, and as indicated by respondents in this study, employment equity legislation further hampers job prospects for some groups, particularly white males. Lifestyle integration is also a significant need, whereby South African IS professionals desire an effective integration between their career and personal life such that neither dominates the other (Schein, 1985; 1987). Managerial competence is another need among South African IS professionals. Although the dual-career path has been shown to be ineffective when applied to all IS personnel, it would be useful in satisfying those individuals with managerial aspirations (Ginzberg & Baroudi, 1988). A further need is to be of service, whereby South African IS professionals seek to dedicate themselves to an important cause (Schein, 1985; 1987). The fact that Jiang and Klein (2002) did not encounter a similar desire to be of service in the United States and that the desire has grown significantly in South Africa since 1996 (Meredith), may be indicative of local social trends, where there is an increased awareness of the need to help the less fortunate.

As Jiang and Klein (2002) suggest, management conceptualisation of employee career plans should take all of these into account in order to reduce turnover, although the exact mix cannot be determined from existing data.

The only two significant discrepancies in a favourable direction were for geographic security and technical competence. Both of these seem counterintuitive. Meredith (1996) argued that Western Cape residents in particular had a strong desire to remain in their current geographical location, yet the results of this study suggest that South African IS professionals have more geographical security than they actually desire. However, this may be affected by the increased need for job-security, whereby individuals are more willing to follow the job market than remain in a particular geographical area. In terms of technical competence, researchers have argued that IS professionals look for technical challenges to meet growth needs and often change jobs to keep abreast of technological developments (Dittrich *et al*, 1985). Jiang and Klein (2002) suggest that this result may be due to an increased desire for lifestyle integration, an inability to keep up with technological development, or simply a lack of passion among those individuals attracted by lucrative positions, rather than a love of technology. Nevertheless, as Jiang and Klein (2002) assert, even the discrepancies in this direction can be important to IS professionals and managers trying to reduce personnel turnover, specifically when seeking trade-offs in developing a career plan.

It can therefore be seen that there is a general consensus between the literature and the findings of this study, in that an assessment of the fit between an IS professional and their job is critical for effective management of these personnel. Although the task of individualising career and reward policies is a daunting prospect for any organisation, there are several possible solutions. Some of the options available to organisations and IS managers seeking to reduce personnel turnover are discussed below.

## **Career Planning/Management**

One of the most holistic options that will be beneficial to both the organisation and the IS professional, regardless of their dominant orientation, is career planning. Recommended by Jiang and Klein (2002), effective career planning can be used to close the gaps between career wants and have. Through self-assessment and goal setting, career planning increases an employee's awareness of themselves and their career goals and assists in aligning personal goals to organisational opportunities.

However as Jiang and Klein (2002) emphasise, it is important that the responsibility for career planning be shared between the organisation and an employee. Whilst employees need to be proactive and take responsibility for managing their own careers, organisations can offer career counseling and mentoring by senior managers to ensure that employees set appropriate career objectives and that their career interests are matched to specific functions within the organisation. It is also imperative that mechanisms be put in place to facilitate feedback to the employee as well as the organisation. Coupled with frequent monitoring, this will enable the early detection of deviations from plans or changes in life that may alter the employee's view. Under such circumstances, organisations need to be flexible enough to have multiple career paths that allow employees to move through the positions and functions available in the most suitable way. However, appropriate training must be done in a timely manner and undertaken seriously by the employee. As Jiang and Klein (2002) explain, each of these activities has the potential to reduce discrepancies by identifying the gaps and modifying the environment to close them or training the employee to undertake another job that would be mutually beneficial.

Organisations could also encourage lateral career movement among their staff, particularly in the early stages of their careers (Meredith, 1996). Schein (1985) suggests that the wider variety of experiences in various positions will enable a more rapid development of a clear and stable self-concept for the individual. Organisations will also benefit, in that they will be able to ascertain employees' strengths and weaknesses and place them accordingly (Butler Cox, 1989 in Meredith, 1996).

Aside from improved career management, there are several more specific options available. These are discussed below.

## **Social Projects**

In general, South African IS professionals have a strong desire to be of service. Organisations can capitalise on this by offering all employees, but particularly service-oriented individuals, the opportunity to participate in projects that will satisfy their desire to assist in a worthy cause, whilst enhancing the image of the organisation. This is particularly significant in a country such as South Africa where great emphasis is placed on social responsibility and community upliftment.

### **Flexible Working Periods**

South African IS professionals show a strong desire for a balanced lifestyle. In response to this, organisations could adopt flexible working periods, whereby individuals do not have to work specific hours, as long as their goals and deadlines are met. This would allow individuals more freedom in terms of balancing their work and family lives, potentially leading to increased job and career satisfaction. Those organisations that extend such flexibility to their employees, may find that the employees have a greater sense of organisational commitment given that they are likely to be happier and may feel that they would not be afforded the same opportunity should they leave the organisation. Such increases in job satisfaction and organisational commitment would be invaluable to organisations seeking a reduction in turnover intention.

Whilst flexible-working periods would be particularly suitable for lifestyle-oriented individuals, such arrangements are likely to benefit all orientations to a degree. For example, autonomy-oriented individuals would be able to decide when they will work and at what pace, whilst technically oriented individuals could arrange work schedules around courses that allow them to constantly update their skills (Meredith, 1996).

### **Telecommuting**

Another option that may appeal to some career orientations is telecommuting, which involves equipping individuals to work from home. Telecommuting is particularly suited to IS professionals as much of their work can be conducted away from the organisation's premises and in isolation. Gaining popularity overseas, telecommuting has been found to reduce organisational costs, increase employee productivity and reduce turnover (DiMartino & Wirth, 1990; McCloskey & Igarria, 2003). In spite of these benefits, the blurring of the professional-personal boundaries can result in increased work-family conflict and thus, while it may be appropriate for autonomy oriented individuals, this options is not likely to suit lifestyle oriented individuals (Duxbury, 1992 in Meredith, 1992). Furthermore, the infiltration of telecommuting in South Africa is low and its long-term viability remains unknown.

### **Reskilling**

One of the biggest challenges affecting South African IS professionals and those organisations employing them is employment equity legislation. South African organisations are now legally required to employ a representative workforce, thus increasing the number of previously disadvantaged employees. However, in the South African IS industry, there are currently not enough qualified individuals from the previously disadvantaged groups. As stated by one of the respondents in the survey, this means that many white males remain unemployed while jobs go unfilled. Although employment equity legislation is likely to affect all employees, it is expected to be particularly worrying for individuals with a job security orientation.

Furthermore, the era of lifetime employment with one organisation has ended and employees can no longer take their jobs for granted. Indeed as Meredith (1996) discusses, some of the job characteristics most attractive to the job security-oriented, such as formal tenure systems, routine and expected promotion and guaranteed pensions and benefits are likely to fall away in the near future. This means that it will become increasingly difficult to motivate such individuals. Given that motivated employees experience greater job satisfaction and are more productive, organisations can motivate job security-oriented employees by providing opportunities to develop and refine skills that would be beneficial to the organisation, but are also highly sought after outside their current job/organisation. Although there is a risk that these individuals would then leave the current organisation on their own accord, the risk is expected to be minimal among job security-oriented employees, particularly as they will sense that their organisation is investing in their future.

However, the responsibility of ensuring that an employee's skills are kept up-to-date should not be left to the organisation. Regardless of their orientation, all individuals should take it upon themselves to keep abreast of changing trends in the IS industry and ensure that they are employable. For example, there are currently many opportunities for individuals with a mix of technical and soft skills. As such, technically orientated individuals could improve their employment prospects, by gaining additional business and presentation skills.

### **Promoting Intrapreneurship**

Organisations stand to benefit greatly from the innovative, entrepreneurially oriented individuals in their employ. However, such individuals exhibit high turnover intention, and it is essential that organisations work toward ensuring that the career wants of such individuals are met and that job satisfaction remains high. One possible solution is the endorsement of "intrapreneurship".

Intrapreneurship combines the roles of employee and entrepreneur and provides the company with an opportunity to capitalise on the imagination and ideas of the entrepreneurs, while allowing the entrepreneurs to exercise their creative talent without the risk they would normally face on their own (Igarria *et al.*, 1995).

However, it is likely that organisations will have to undertake considerable change to accommodate the entrepreneurially oriented and encourage intrapreneurial activity. Some of the suggestions made by Meredith (1996) include empowering individuals to take risks and bend rules, a willingness to accept both success and failure provided that lessons are learnt and mistakes are not repeated, encouraging individual ownership of the new idea, product or division and very importantly a wholehearted commitment to the entrepreneurial effort by top management.

Another option that may satisfy the needs of entrepreneurial and autonomy oriented individuals, whilst ensuring that organisations retain the benefit of their expertise, is to outsource the

position to the individual. As such the individual works independently, but is contracted back to the original organisation. Once again, there are potential benefits to both the individual and the organisation. The individual is given the freedom to work on their own, whilst the organisation has the power to demand a specific level of productivity and given that the organisation is no longer responsible for benefits, such an arrangement can work out less expensive in the long run.

### **Project-Centred Careers**

As a further means of handling the wide variety of career orientations shown to exist among IS personnel, organisations could facilitate project-centred careers (Allen & Katz, 1986 in Meredith, 1996). This would allow individuals to pursue their interests and develop their particular skills as they move from project to project, rather than having to follow either a managerial or technical career path. As Meredith (1992; 1996) suggests, a project-centred career may be particularly appropriate for the IS profession, whereby individuals can be assigned to different projects, and different phases of different projects according to their career orientations.

For example, Meredith (1996) suggests that technically inclined individuals could be assigned to the phase where the various technical design alternatives are debated and selected. Alternatively, the service-oriented employee may be most satisfied and effective during the systems implementation phases, whereby they could train end-users on the operation of a system. Similarly, challenge oriented individuals may derive most satisfaction during the analysis and design phase of an extremely complex system.

Such an arrangement would be beneficial to both the individual and the organisation, given that individuals performing work that corresponds with their orientation are more likely to experience job satisfaction and work more productively, ultimately increasing the overall effectiveness of the organisation.

### **Job Descriptions**

As discussed by Meredith (1996), organisations should clearly describe the various job and career opportunities available to IS professionals. These descriptions should not only be in terms of work content, but should also include the roles and responsibilities of the employee and the compatibility with various orientations. For example, if a position is expected to be very challenging, but offer little in the way of job security or promotional opportunities, potential applicants should be made aware of this to prevent unrealistic expectations and ensure that only suitable candidates apply. Once again, this is expected to benefit both the individual and the organisation, given that exaggerated job descriptions can only lead to disappointment, reduced productivity and eventual turnover (McLean, Smits & Tanner, 1991).

Although the above discussion has focused on what an organisation can do to increase job satisfaction, career satisfaction and organisational commitment, and ultimately reduce IS personnel turnover, it is important to understand that the issue is not one-sided. Although it is difficult for organisations to implement policies that will satisfy the diversity of career wants demonstrated in this sample, they are not solely responsible for the gaps between career wants and have. This is partly due to the fact that the IS professionals do not always indicate what they require and expect from their jobs and careers. Given that IS managers and organisations are dealing with many employees and do not have the resources to individually evaluate all employees, it is important for an employee to take the initiative and inform their manager of their needs and values. However, individuals need to take the time to carefully consider what they really want from their job and career. Without this, individuals are in danger of choosing something that may appear attractive, but is inconsistent with their personal ambitions and values. As gaps appear between what the individual actually wants and what they have, the individual may become less satisfied, more unproductive and may ultimately choose to leave the job and/or organisation.

### **6.5. Limitations**

The author acknowledges the existence of some limitations to this study. Consistent with survey research these were mainly with regard to the sample and sampling procedure.

Firstly, the response rate was extremely low. Although many other surveys conducted in the IS industry have achieved relatively low response rates (Pinsonneault & Kraemer, 1993), the 4.8% response rate in this study was very unsatisfactory. In other circumstances, a second email reminding participants of the online questionnaire would have been sent out. However, the author did not have direct access to the CSSA mailing list, and unfortunately, the National Executive Committee of the CSSA refused to send out an additional email on the grounds that it would constitute spam.

Furthermore, the sample used in this study was drawn from a professional body that limits membership to individuals who meet certain criteria. As such the single organisation may not be representative of the general South African IS population. It is, therefore, important to consider whether this non-response bias and the sample source would materially affect the generalisability of the findings to the remainder of the South African IS industry.

One of the aims of this study was to test and extend Jiang and Klein's (2002) discrepancy model in the South African context. As such, some of the limitations of their study were inadvertently carried through to this study. As discussed in section four, the respondents in this survey held a wide variety of job titles, and as Guimaraes and Igarria (1992) highlight, certain career wants vary by job title. Thus, drawing specific conclusions about a particular job category from these more general observations would be risky. Indeed, as this study has shown, stereotyping the IS profession and attempting to develop one motivational strategy to satisfy all employees (within an organisation, or according to job category) is unlikely to succeed.

Another common limitation is the time factor – this study only considered individuals at a particular point in time. Schein (1978) proposed that career anchors develop during the early years of work experience, but once established remain stable throughout an individual's career. However, other researchers (Dalton, Thompson & Rice, 1977; Igbaria *et al*, 1995; Alexander, 2003) argue that career wants are expected to change over time and over the career life cycle of an individual. Similar to career stage considerations, previous studies (Igbaria & Baroudi, 1993; Igbaria *et al*, 1995) have also found that age is significantly related to certain career anchors. Although the ages of respondents in this study were normally distributed, age differences may result in changes to the dominant anchors, further complicating any conclusions.

As Jiang and Klein (2002) warn, there may be other factors that were not considered, which may affect an individual's career wants, for example dual-career families or prevailing economic conditions. However, it should be noted that the above-mentioned limitations have a more significant impact on specific career orientations and are thus more pertinent to the longitudinal comparison with Meredith's (1996) work, rather than on the examination of the discrepancy model.

Overcoming these limitations and developing a better understanding of IS personnel turnover, raises several questions for future research. These questions will be addressed in the following section.

#### **6.6. Implications for Future Research**

Although only pre-existing, pre-validated survey instruments were used in this study, some unexpected difficulties were encountered with the scales for job satisfaction and organisational commitment where double negative phrases were used. Researchers should take cognisance of this fact, and take appropriate action to prevent the reoccurrence of similar problems in future research.

The samples used in both Meredith's (1996) study and this study were drawn from one professional body. It is therefore suggested that future South African research encompass a wider sample of IS professionals to test the applicability of the findings to the general IS population.

In order to facilitate relevant comparison with Meredith's (1996) earlier work, a shortened version of Schein's career orientations inventory was used in this study. However, future researchers investigating the career orientations of individuals should refrain from using the shortened instrument if possible. Whilst the shortened instrument may significantly reduce the length of a questionnaire and potentially lead to a higher response rate, there are substantial trade-offs in terms of accuracy and reliability.

A further factor that may affect the accuracy, and subsequent generalisability, of results is the age of respondents. Meredith (1996) suggests that researchers exclude respondents under the

age of 30, given that such individuals may not have yet established a firm and stable career anchor, and as a result may be incorrectly classified in terms of a dominant career orientation. Similarly, Dalton *et al* (1977) argue that an individual's career development evolves over time and career stages. As such the wants and external career opportunities of IS professionals may differ over time (Jiang *et al*, 1997; Jiang & Klein, 2002). Thus, an interesting research project would be a longitudinal study of IS employees with various initial orientations as they progress through their careers. The extent to which the career anchor does remain stable over time once established could also be investigated. The results of such a study would provide valuable insights into career development and help identify what influences career decisions. This information could assist individuals and IS managers in achieving more effective long-term career planning.

Throughout this study, great emphasis has been placed on the nine career orientations identified by Schein (1985; 1987). Whilst these have proven to be very reliable in the past, there is no evidence suggesting that all possible career anchors have been identified. As Jiang and Klein (2002) suggest, changing socioeconomic conditions and organisational requirements may alter the structure of internal anchors. Cultural studies have shown that South Africa has a unique and diverse society (Hofstede, 1991; Marshall, 2001), yet the majority of research conducted in the IS industry (including this study) is based on underlying theories and principles that were developed in North America and Europe. It may therefore be necessary to test the validity and relevance of the nine career orientations, as well as the instruments used to measure each orientation in the South African context.

This study focused primarily on the orientations and wants of IS professionals, and whether those wants were being met in their current job. As Jiang and Klein (2002) suggest, future discrepancy studies investigating the importance of various wants should consider variables that complement those represented by Schein's career orientation inventory. These would include perceptions of equitable treatment (Dittrich *et al*, 1985), role ambiguity and conflict (Baroudi, 1985), rewards and professionalism (Bartol, 1983), and career-related variables (Igbaria & Baroudi, 1985).

The IS industry would also benefit immensely from research and development of techniques to determine, and satisfy the specific wants of IS personnel. As Jiang and Klein (2002) argue, understanding the differences will be invaluable for managers developing individualised career paths, given that successful career-planning requires both an understanding of the general issue and a meaningful way to determine the specific needs and need level of an employee. Schein's (1985; 1987) career orientations inventory is just one way in which IS managers can gain a deeper understanding of employee career needs. Another tool that could be used is employee attitude-related surveys; given that employee attitudes can have a significant effect on an IS employee's career decisions. Indeed, an organisation seeking a reduction in personnel turnover should be looking to increase job satisfaction and organisational commitment.

Jiang and Klein (2002) highlight the fact that IS employees working in the same department on similar tasks are likely to have different wants. They argue that research examining the career opportunities provided by various IS positions/jobs as well as the desires satisfied by each opportunity would be useful, given the significant benefits of matching opportunities to an individual. Although Meredith (1996) has already investigated this area in South Africa, it would be interesting to see whether there have been any significant changes as a result of the changing environment (economic, political, social and technological).

Although this study only considered factors influencing IS personnel turnover at the individual level, a review of the literature indicated that there are many other factors, within both the work and external environment that have a potential impact on such personnel turnover. However, very little research, particularly in South Africa, has considered factors such as the influence of organisational structure, economic conditions and government policy on IS personnel turnover. Given the current business and political situation of South Africa and the condition of world markets, it is thought that all three have a significant influence on IS personnel turnover, and as such should be considered by organisations struggling to retain IS personnel. However, there is currently no empirical evidence to support this theory.

University of Cape Town

## 7. CONCLUSIONS

As the use of, and dependence on, information technology increases, the relative importance of retaining loyal and productive IS staff increases. Yet, despite a tighter IS job market, a continuing challenge in managing IS personnel is the high turnover rate in the profession. Given the negative impacts of such turnover in terms of reduced productivity and increased costs, it is essential that organisations gain control over the turnover.

There are several factors relating to the individual, work environment and external environment that influence turnover of IS professionals. While some of these are beyond the control of the organisation, some are within the organisation's control and can be manipulated to increase employee satisfaction and ultimately reduce turnover.

For this reason much research has been carried out to determine the factors influencing personnel turnover, but this has generally been conducted overseas. Research (Hofstede, 1991; Marshall, 2001) has identified significant differences between foreign and local IS professionals, and therefore, the results of overseas studies cannot necessarily be generalised to the South African context. Although, a few studies have considered IS personnel turnover in South Africa, these took place in the early 1990s and South Africa has experienced significant political, social and economic changes since then. Combined with the changes in the global IS job market and the financial markets, these factors are believed to have affected the attitudes of IS personnel.

Therefore, substantial longitudinal comparison was made with Meredith's (1996) work in the first part of this study, to establish whether any changes have occurred in the career orientations of IS professionals, and if so, what changes have occurred.

In the second part of this study, Jiang and Klein's (2002) study which modelled the impact of discrepancy between the wants of IS professionals and their perceptions of how their organisation satisfied those wants was replicated. Jiang and Klein's (2002) study was conducted in the United States of America, and the aim of this research project was to test the validity of their discrepancy model of IS personnel turnover in the South African context. However, Jiang and Klein's (2002) discrepancy model only considers the effect of a discrepancy between career wants and career hases on job satisfaction and turnover intention. For the purposes of this study, the model was extended to also investigate the effect of such a discrepancy on career satisfaction and organisational commitment.

A quantitative method was adopted for this research project and all members of the CSSA were invited to complete an online questionnaire that included items to measure career satisfaction, job satisfaction, intent to leave, career wants, perceived career hases, organisational commitment and various demographic characteristics. Although the response rate was much lower than expected, respondents were representative of the larger South African IS population and the sample size was large enough for statistically significant analysis.

The results of this analysis illustrated that South African IS professionals hold a wide diversity of career orientations. Yet one of the suggestions for reducing turnover that is frequently encountered in the literature is for organisations to implement a dual-career path, based on the assumption that IS personnel hold either a managerial or technical career orientation. While the actual distribution of career orientations in this study was fairly distorted by the high percentage of individuals with a non-unique dominant orientation, the number of individuals holding managerial (3.9%) and technical (0.8%) orientations was a minority. As such, the dual-career path is clearly not appropriate for all IS personnel, for example it does not account for the two most common orientations in South Africa – job security (12.4%) and service (13.2%).

Although previous studies in South Africa (Meredith, 1992; 1994) have found a high percentage of individuals with a geographic security orientation in the Western Cape, a similar pattern was not apparent in this study. Indeed, no statistically or practically significant differences were found between IS professionals in the Western Cape and those living in other parts of South Africa. However, these results should be treated with caution given the relatively small number of respondents from the Western Cape whose dominant orientation could be identified. Rather as Meredith (1996) warns, IS managers and organisations in the Western Cape should carefully consider the ramifications of transferring a valued employee from the Western Cape to another part of the country.

A closer examination of the distinguishing characteristics exhibited by individuals holding each orientation revealed that the different orientations represent very different types of employee. Significant differences in the motivational needs of IS professionals were found. Therefore, adopting a single human resource management strategy for IS personnel as a group, based on mean scores of career orientations in a sample, or even on the frequency of orientations, is an inappropriate organisational strategy. Rather, the diversity of career orientations demonstrated in this and other studies suggests that it is necessary to consider individual needs and wants.

However, with such a diversity of career wants it becomes difficult for an organisation to satisfy all employees. A discrepancy therefore arises between what an individual seeks and what the organisation actually provides. In such a situation, an IS employee is more likely to become dissatisfied with their job and seek a position that better meets their needs. As such, a gap between career wants and have has a negative influence on turnover intention.

The results of this study revealed significant gaps between career wants and have for all nine dimensions, that were generally more pronounced than Jiang and Klein (2002) found in the United States. Of these gaps, only two (geographic security and technical competence) were in the favourable direction, suggesting that South African IS professionals believe they have more of these than they desire.

Furthermore, the results indicated that the size of the gap is important, whereby the smaller the discrepancy between an IS professional's wants and have, the higher their career satisfaction and organisational commitment, and the less pressing their desire to leave.

As expected, the results also confirmed that there is a significant correlation between job satisfaction and career satisfaction among South African IS professionals. Furthermore, both job satisfaction and career satisfaction were found to be highly correlated with organisational commitment (affective and normative commitment), whereby individuals experiencing job satisfaction are more likely to be committed to their organisation and experience career satisfaction.

In addition, job satisfaction and organisational commitment were found to be negatively related to turnover intention. The results indicated that job satisfaction and normative commitment are significantly correlated with a desire to leave the IS profession, whilst job satisfaction and affective commitment are significantly correlated with a desire to leave the current job. Importantly for organisations seeking a reduction in IS personnel turnover, many of the factors that influence job satisfaction and organisational commitment are under their direct control.

Based on the findings of this study it becomes clear that organisations seeking a reduction in IS personnel turnover should consider the individual wants of employees, and together with a clear understanding of the types of jobs and career paths available in their organisations, facilitate more appropriate matches between employees and jobs. For example, through effective career planning organisations can assist IS professionals to develop a greater awareness of themselves and their career goals and ultimately align their personal goals with organisational opportunities. At the same time, organisations should implement more flexible career paths and working policies allowing them greater opportunity to satisfy the various career orientations that may exist among their staff.

A further suggestion for reducing IS personnel turnover is to allow IS employees greater flexibility, not only in terms of working hours, but also allowing for more autonomy and encouraging individual ownership of ideas and products. To circumvent the dual-career path whilst ensuring that individuals are still learning and developing, it is recommended that organisations undertake to continuously re-skill their staff, or alternatively, facilitate project-centred careers. This would allow individuals to pursue their interests and develop their particular skills as they move from project to project.

These approaches will be mutually beneficial in that staff will be more satisfied in their work, will be more productive and may even demonstrate a higher level of organisational commitment, ultimately leading to a decreased turnover intention. However, it is important to realise that organisations are not solely responsible for the gaps between career wants and have. Given that IS managers and organisations are dealing with many employees and may not have the resources to individually evaluate all employees, it is important for an employee to take the initiative and inform their manager of their needs and values.

Whilst this study has provided valuable insights into the IS personnel turnover in South Africa, the author acknowledges that there were some limitations. Overcoming these limitations and developing a better understanding of IS personnel turnover, highlights several possibilities for future research, with regard to turnover of South African IS personnel.

For example, this study has only considered the career orientations and career wants of South African IS personnel at a particular point in time. However, these are thought to evolve over time, and therefore an interesting research project would be a longitudinal study of IS employees with various initial orientations as they progress through their careers. The results of such a study would assist individuals and IS managers in achieving more effective long-term career planning.

It would also be particularly useful to research and develop techniques to determine the individual wants of IS personnel and investigate which career paths, work experiences and work environments would best suit the different orientations. A clearer understanding of the differences will be invaluable for IS managers trying to develop individualised career paths to better match jobs and individuals, with an ultimate aim of reducing turnover among South African IS personnel.

University of Cape Town

## BIBLIOGRAPHY

- Access Market International. 2002, *An Assessment of the ICT Labour Market*, A Research Report for the Information Systems, Electronics and Telecommunication Technologies Education and Training Authority (ISETT SETA), the South African Information Technology Industry Strategy Project (SAITIS) and the Department of Labour, Pretoria, South Africa.
- Agarwal, R, Brown, CV, Ferratt, TW & Moore, JE. 1999, *Recruiting, Retaining, and Attracting IT Professionals*, SIM Member Company Practices, June.
- Agarwal, R, De, P & Ferratt, TW. 2001, 'How Long Will They Stay? Predicting an IT Professional's Preferred Employment Duration', *Proceedings of the 2001 ACM SIGCPR Conference, San Diego, California, USA*, ed M Serva, ACM Press, USA, pp 132-138.
- Agarwal, R & Ferratt, TW. 1998, 'Recruiting, Retaining, and Developing IT Professionals: An Empirically Derived Taxonomy of Human Resource Practices', *Proceedings of the 1998 ACM SIGCPR Conference, Boston, Massachusetts, USA*, ed R Agarwal, ACM Press, USA, pp 292-302.
- Agarwal, R & Ferratt, TW. 1999, *Coping with Labour Scarcity in Information Technology: Strategies and Practices for Effective Recruitment and Retention*, Pinnaflex, Cincinnati, USA.
- Agarwal, R & Ferratt, TW. 2000, 'Retention and the Career Motives of IT Professionals', *Proceedings of the 2000 ACM SIGCPR Conference, Evanston, Illinois, USA*, ed W Nance, ACM Press, USA, pp 158-166.
- Agarwal, R & Ferratt, TW. 2001, 'Crafting an HR Strategy to Meet the Need for IT Workers', *Communications of the ACM*, pp 58-64.
- Alexander, S. 2003, 'Stress-Busters', *Computerworld*, Jun 9, (Online), Available: <http://www.computerworld.com/careertopics/careers/story/0,10801,81863,00.html>, (2003, Jun 20).
- Allen, NJ & Meyer, JP. 1990, 'The Measurement and Antecedents of Affective, Continuance and Normative Commitment to the Organisation', *Journal of Occupational Psychology*, vol 63, pp 1-18.
- Ang, S & Slaughter, SA. 2000, 'The missing context of information technology personnel: A Review and future direction for research', in *Framing the Domains of IT Management: Projecting the Future ... Through the Past*, ed RW Zmud, Pinnaflex, Cincinnati, Ohio, USA, pp 305-327.
- Ang, S & Slaughter, SA. 2001, 'Work Outcomes and Job Design for Contract Versus Permanent Information Systems Professionals on Software Development Teams', *MIS Quarterly*, vol 25, no 3, pp 351-370.
- Bagraim, JJ & Hayes, L. 1999, 'The Dimensionality of Organisational Commitment amongst South African Actuaries', *Management Dynamics*, vol 8, no 2, pp 21-39.
- Bailey, JL & Stefaniak, G. 1999, 'Preparing the Information Technology Workforce For the New Millennium', *Computer Personnel*, vol 20, no 4, ACM Press, USA, pp 4-15.
- Bailey, JL & Stefaniak, G. 2000, 'Preparing the Information Technology Workforce For the New Millennium', *Proceedings of the 2000 ACM SIGCPR Conference, Evanston, Illinois, USA*, ed W Nance, ACM Press, USA, pp 1-7.
- Bailey, JL & Stefaniak, G. 2001, 'Industry Perceptions of the Knowledge, Skills, and Abilities Needed by Computer Programmers', *Proceedings of the 2001 ACM SIGCPR Conference, San Diego, California, USA*, ed M Serva, ACM Press, USA, pp 93-99.

- Barley, SR. 1996, 'Technicians in the workplace: Ethnographic evidence for bringing work into organisation studies', *Administrative Science Quarterly*, vol 41, no 3, pp 404-441.
- Baroudi, JJ. 1985, 'The Impact of Role Variables on IS Personnel Work Attitudes and Intentions', *MIS Quarterly*, vol 9, no 4, pp 341-356.
- Baroudi, JJ. 1988, 'The career needs of IS personnel: Does the dual career ladder work?', *Proceedings of the Twenty-First Annual Hawaii International Conference on Systems Science, Kona, Hawaii, USA*, ed RH Sprague Jr, IEEE Computer Society Press, Los Alamitos, California, USA, pp 171-180.
- Bartol, KM. 1983, 'Turnover Among DP Personnel: A Causal Analysis', *Communications of the ACM*, vol 26, no 10, pp 807-811.
- Bartol, KM & Martin, D. 1982, 'Managing Information Systems Personnel: A Review of the Literature and Managerial Implications', *MIS Quarterly*, vol 6, no 4, pp 49-70.
- Beckett, H. 2003, 'Finding a Job This Quarter', *Workthing.com*, (Online), Available: <http://workthing-d-aspen.workthing.com/front/channel/it/viewpoints/jobmarket.xml>, (2003, Jun 14).
- Behr, AL. 1988, *Empirical Research Methods for the Human Sciences*, 2<sup>nd</sup> Edition, Butterworths Publishers Pty Ltd, Durban, South Africa.
- Benamati, J & Lederer, AL. 2000, 'The Emerging IT Group and Rapid IT Change', *Proceedings of the 2000 ACM SIGCPR Conference, Evanston, Illinois*, ed W Nance, ACM Press, USA, pp 23-32.
- Beng Khim, L. 2000, *Trends in the Information Technology Job Market*, (Online), Available: <http://technology.monster.com.hk/articles/itmarket>, (2003, Jun 14).
- Boshoff, C & Arnolds, C. 1995, 'Some antecedents of employee commitment and their influence on job performance: a multi foci study', *South African Journal of Business Management*, vol 26, no 4, pp 125-135.
- Boshoff, C & Mels, G. 1995, 'Role stress and job satisfaction: Their supervisory antecedents and their influence on organisational commitment', *Journal of Industrial Psychology*, vol 21, no 1, pp 25-32.
- Burn, JM, Tem, WM, Ma, LCJ & Poon, RSK. 1994, 'Job expectations of IS professionals in Hong Kong', *Proceedings of the 1994 ACM SIGCPR Conference, Alexandria, Virginia, USA*, ed JW Ross, ACM Press, USA, pp 231-241.
- Burrows, T. 2003a, 'Salary Survey, Women in IT', 2003 Salary Survey, *ITWeb*, May 7, (Online), Available: <http://www.itweb.co.za/surveys/Salary/2003/womeninit/survey030507.asp>, (2004, Jan 21).
- Burrows, T. 2003b, 'The New Skills Imbalance', 2003 Salary Survey, *ITWeb*, May 9 (Online), Available: <http://www.itweb.co.za/surveys/Salary/2003/skillsshortage/survey030509.asp>, (2004, Jan 21).
- Butler Cox. 1991, 'Staffing the Systems Function', *Butler Cox Foundation Report 71*, September.
- Cappelli, P. 2000, *Is there a shortage of information technology workers*, The Centre for Human Resources, Wharton School of Business, University of Pennsylvania, USA.
- Carr, C & Jones, BM. 2001, 'Organisational Culture and the Antecedents of Turnover in High-Stress IT Jobs', *Proceedings of the Seventh Americas Conference on Information Systems, Boston, Massachusetts, USA*, eds D Strong, D Straub & JI DeGross, Association for Information Systems, USA, pp 1479-1482.

- Cherniss, C. 1993, 'Role of professional self-efficacy in the etiology and amelioration of burnout', in *Professional Burnout: Recent Developments in Theory and Research*, eds WB Schaufeli, C Maslach & T Marek, Taylor & Francis, Washington DC, USA.
- Cisco. Nd. 'A South African Renaissance', *Cisco Systems*, (Online), Available: [http://www.cisco.com/edu/emea/pdfs/houwteq\\_final.pdf](http://www.cisco.com/edu/emea/pdfs/houwteq_final.pdf), (2003, Jun 14).
- Cohen, S. 2001, '2001 Job Satisfaction Survey: Desperate for Direction', *Computerworld*, (Online), Available: [http://www.computerworld.com/cwi/story/0,1199,NAV47\\_STO61742,00.html](http://www.computerworld.com/cwi/story/0,1199,NAV47_STO61742,00.html), (2003, June 22).
- Cole-Gomolski, B. 1999, 'Dual Career Paths Reduce Turnover', *Computerworld*, vol 33, no 8, pp 24.
- Colley, A. 2003, 'What are the hot IT jobs for 2003', *ZDNet UK*, Jan 15, (Online), Available: <http://news.zdnet.co.uk/story/0,,t269-s2128738,00.html>, (2003, Jun 14).
- Couger, JD. 1988a, 'Motivators vs Demotivators in the IS Environment', *Journal of Systems Management*, vol 41, no 6, pp 36-41.
- Couger, JD. 1988b, 'Motivating IS Personnel', *Datamation*, Sep 15, pp 59-64.
- Couger, JD & Smith, DC. 1992a, 'Evaluating the Motivating Environment for Information Systems Personnel in South Africa Compared to the United States, Part I', *South African Computing Journal*, no 6, pp 79-84.
- Couger, JD & Smith, DC. 1992b, 'Evaluating the Motivating Environment for Information Systems Personnel in South Africa Compared to the United States, Part II', *South African Computing Journal*, no 8, pp 46-51.
- Couger, JD, Zawacki, RA & Opperman, EB. 1979, 'Motivation levels of MIS managers versus those of their employees', *MIS Quarterly*, vol 3, no 3, pp 47-56.
- Crepeau, RG, Crook, CW, Goslar, MD & McMurtrey, ME. 1992, 'Career anchors of information systems personnel', *Journal of Management Information Systems*, vol 9, no 2, pp 145-160.
- Crook, CW & Crepeau, RG. 1997, 'A Study of the Career Orientations of Information Systems Students and Professionals', *Proceedings of the 1997 ACM SIGCPR Conference, San Francisco, California*, ed F Niederman, ACM Press, USA, pp 138-144.
- Crook, CW, Crepeau, RG & McMurtrey, ME. 1991, 'Utilisation of the career anchor / career orientation constructs for management of IS professionals', *Proceedings of the 1991 ACM SIGCPR Conference, Athens, Georgia, USA*, ed TW Ferratt, ACM Press, USA, pp 26-31.
- Dalton, GW, Thompson, PH & Rice, RL. 1977, 'The four stages of professional careers – A new look at performance by professionals', *Organizational Dynamics*, vol 6, no 1, pp 19-42.
- Daniels, C & Vinzant, C. 2000, 'On the Job: The Joy of Quitting', *Fortune*, 7 Feb, pp 199-202.
- Darais, KM, Nelson, KM, Rice, SC & Buche, MW. 2001, 'Identifying the Enablers and Barriers of Information Technology Personnel Transition', *Proceedings of the Twenty-Second International Conference on Information Systems, New Orleans, Louisiana, USA*, pp 289-298.
- DeMarco, T. 2001, *Slack*, Broadway Books, New York, USA.

- Derr, CB & Laurent, A. 1987, 'The internal and external career: a theoretical and cross cultural perspective', in *Handbook of Career Theory*, eds MB Arthur, DT Hall, BS Lawrence, Cambridge University Press, Cambridge, UK, pp 454-471.
- DiMartino, V & Wirth, L. 1990, 'Telework: A new way of working and living', *International Labour Review*, vol 129, no 5, pp 529-554.
- Dittrich, JE, Couger, JD & Zawacki, RA. 1985, 'Perceptions of Equity, Job Satisfaction and Intention to Quit among Data Processing Personnel', *Information & Management*, vol 8, no 2, pp 67-75.
- Dollery, B. 2002, 'This is the autumn of my discontent', *Computerworld*, Oct 28, (Online), Available: <http://www.idg.co.nz/webhome.nsf/0/d3947ed50c0b341ccc256c5b0001bfa4?OpenDocument>, (2003, Jun 17).
- DuBrin, AJ. 1997, *Fundamentals of Organisational Behaviour*, South Western College Publishing, Ohio, USA, pp 78-79.
- Durnford, L. 2000, *Progress and problems in South African science*, (Online), Available: <http://www.rnw.nl/science/html/southafrica20000327.html>, (2003, Jun 22).
- Elliott, AJ. 2003. South African IS Professional, Conversation with the author, 16 June.
- Ferratt, TW, Agarwal, R, Moore, JE & Brown, CV. 1999, 'Observation from "the front": IT executives on practices to recruit and retain information technology professionals', *Proceedings of the 1999 ACM SIGCPR Conference, New Orleans, Louisiana, USA*, ed J Prasad, ACM Press, USA, pp 102-112.
- Ferratt, TW & Short, LE. 1986, 'Are information systems people different?', An investigation of motivational differences', *MIS Quarterly*, vol 10, no 4, pp 377-386.
- Ferratt, TW & Starke, FA. 1989, 'Making the transition: system analysis to management', *Journal of Systems Management*, vol 41, no 1, pp 14-17.
- Fischer, A. 1998, 'Data Communications stress survey: Is your career killing you?', *Data Communications*, Feb, pp 53-64.
- Freeman, LA, Jarvenpaa, SL & Wheeler, BC. 2000, 'The Supply and Demand of Information Systems Doctorates: Past, Present and Future', *MIS Quarterly*, vol 24, no 3, pp 355-380.
- Garden, A. 1988, 'Maintaining the Spirit of Excitement in Growing Companies', *Computer Personnel*, vol 11, no 4, pp 10-12.
- Ginzberg, MJ & Baroudi, JJ. 1988, 'MIS careers – A theoretical perspective', *Communications of the ACM*, vol 31, no 5, pp 586-594.
- Ginzberg, MJ & Baroudi JJ. 1992, 'Career orientations of IS personnel', *Proceedings of the 1992 ACM SIGCPR Conference, Cincinnati, Ohio, USA*, ed AL Lederer, ACM Press, USA, pp 41-55.
- Gongloff, M. 2003, 'US Job Jumping Ship', *CNNMoney*, Mar 13, (Online), Available: [http://money.cnn.com/2003/03/13/news/economy/jobs\\_offshore/](http://money.cnn.com/2003/03/13/news/economy/jobs_offshore/), (2003, Jun 17).
- Gordon, G. 2000, 'Cape Town Lifestyle is number one attraction', *Business Day*, Oct 2, (Online), Available: <http://www.citi.org.za/Article/1000/1001/945.html>, (2003, Jun 22).
- Greenhaus, JG & Callanan, GA. 1994, *Career Management*, Drydent, Hinsdale, USA.

- Greenhaus, JH, Parasuraman, S & Wormley, WM. 1990, 'Effects of race on organisational experience, job performance evaluations, and career outcomes', *Academy of Management Journal*, vol 33, no 1, pp 64-86.
- Greenwood, D. 2002, '2002 Review: Jobs - Waiting for the upturn', *Computerworld*, Dec 17 (Online), Available:  
<http://www.idg.net.nz/webhome.nsf/0/74B73CBD7F001499CC256C9200046F05?opendocument>, (2003, Jun 17).
- Griffeth, RW, Hom, PW & Gaertner, S. 2000, 'A meta-analysis of antecedents and correlates of employment turnover: Update, moderator tests, and research implications for the next millennium', *Journal of Management*, vol 26, no 3, pp 463-488.
- Gross, G. 2003, 'IT workforce demand lowest in four years', *Computerworld*, May 5, (Online), Available:  
<http://www.computerworld.com/careertopics/careers/labor/story/0,10801,80982,00.html>, (2003, Jun 14).
- Guimaraes, T & Igbaria, M. 1992, 'Determinants of Turnover Intentions: Comparing IC and IS Personnel', *Information Systems Research*, vol 3, no 3, pp 273-303.
- Gupta, YP, Guimaraes, T & Raghunathan TS. 1992, 'Attitudes and Intentions of Information Centre Personnel', *Information and Management*, vol 22, no 3, pp 151-160.
- Hallsten, L. 1993, 'Burning out: A framework', in *Professional Burnout: Recent Developments in Theory and Research*, eds WB Schaufeli, C Maslach & T Marek, Taylor & Francis, Washington DC, USA.
- Hamlyn, J. 1992, 'High Staff Turnover Due to Insecurity', *Computing SA*, March 1992, p 3.
- Harris, TJ. 1993, 'The Post-Capitalist Executive: An Interview with Peter F Drucker', *Harvard Business Review*, May-June, pp 115-122.
- Heller, M. 2000, 'Why are you so stressed?', *CIO Magazine*, May 8, (Online), Available:  
<http://comment.cio.com/soundoff/110800.html>, (2003, Jun 22).
- Herzberg, F. 1966, *Work and the Nature of Man*, World Publishing, Cleveland, Ohio, USA.
- Hitt, MA & Keats, BW. 1992, 'Strategic Leadership and Restructuring: A Reciprocal Interdependence', in *Leadership: A Multiorganisational-level Perspective*, eds RL Phillips & JG Hunt, Quorum Books, New York, USA.
- Hoare, D. 2003, 'IT Employment Crash not Terminal', *The Australian IT*, May 14, (Online), Available:  
<http://it.uts.edu.au/news/media/030514employment.html>, (2003, Jun 17).
- Hoffman, T. 2003, 'Gartner: IT spending could rebound modestly by '04', *Computerworld*, Jun 10, (Online), Available:  
<http://www.computerworld.com/managementtopics/management/story/0,10801,81972,00.html>, (2003, Jun 14).
- Hofstede, G. 1980, *Culture's Consequences*, Abridged Edition, Sage Publications, Beverly Hills, USA.
- Hofstede, G. 1991, *Cultures and Organisations: Software for the Mind*, McGraw-Hill, London, UK.
- Igbaria, M & Baroudi, JJ. 1993, 'A Short-Form measure of Career Orientations: A Psychometric Evaluation', *Journal of Management Information Systems*, vol 10, no 2, pp 131-154.

- Igbaria, M & Baroudi, JJ. 1995, 'The impact of job performance evaluations on career advancement prospects: An examination of gender differences in the IS workplace', *MIS Quarterly*, vol 19, no 1, pp 107-123.
- Igbaria, M & Greenhaus, JH. 1992, 'Determinants of MIS Employees' Turnover Intentions: A Structural Equation Model', *Communications of the ACM*, vol 35, no 2, pp 34-49.
- Igbaria, M, Greenhaus, JH & Parasuraman, S. 1991, 'Career Orientations of MIS Employees: An Empirical Analysis', *MIS Quarterly*, vol 15, no 2, pp 150-169.
- Igbaria, M & Guimaraes, T. 1999, 'Exploring Differences in Employee Turnover Intentions and its Determinants among Telecommuters and Non-Telecommuters', *Journal of Management Information Systems*, vol 16, no 1, pp 147-164.
- Igbaria, M, Meredith, G & Smith DC. 1994, 'Predictors of intention of IS professionals to stay with the organisation in South Africa', *Information & Management*, vol 26, pp 245-256.
- Igbaria, M, Meredith, G & Smith, DC. 1995, 'Career Orientations of Information Systems Employees in South Africa', *Journal of Strategic Information Systems*, vol 4, no 4, pp 319-340.
- Igbaria, M & Wormley, WM. 1992, 'Organisational Experiences and Career Success of MIS Professionals and Managers: An Examination of Race Differences', *MIS Quarterly*, vol 16, no 4, pp 507-529.
- ITAA. 2003a, *Information Technology Association of America 2003 Workforce Survey*, May 23 (Online), Available: <http://www.ita.org/workforce/studies/03execsumm.pdf>, (2003, Jun 14).
- ITAA. 2003b, *ITAA Data Show Overall Information Technology Workforce Grew Slowly in 2002*, Apr 2, (Online), Available: <http://www.ita.org/news/pr/PressRelease.cfm?ReleaseID=1049298968>, (2003, Jun 14).
- James, T, Esselaar, P & Miller, J. 2001, 'Towards a Better Understanding of the ICT Sector in South Africa: Problems and Opportunities for Strengthening the Existing Knowledge Base', *Proceedings of the 2001 Trade and Industrial Policy Strategies Annual Forum, Muldersdrift, South Africa*, (Online), Available: <http://www.tips.org.za/f2001/james.pdf>, (2004, Feb 28).
- Jiang, JJ & Klein, G. 2000, 'Supervisor Support and Career Anchor Impact on the Career Satisfaction of the Entry-Level Information Systems Professional', *Journal of Management Information Systems*, vol 16, no 3, pp 219-230.
- Jiang, JJ & Klein, G. 2002, 'A Discrepancy Model of Information System Personnel Turnover', *Journal of Management Information Systems*, vol 19, no 2, pp 249-272.
- Jiang, JJ, Margulis, ST & Klein, G. 1997, 'IS Downsizing Survivor's Career Management Attitudes', *Computer Personnel*, vol 18, no 1, ACM Press, USA, pp 3-15.
- Josefek, RA & Kauffman, RJ. 2003, *IT Human Capital and the Information Systems Professional's Decision to Leave the Company*, (Online), Available: [http://misrc.umn.edu/workingpapers/fullpapers/2002/0218\\_010103.pdf](http://misrc.umn.edu/workingpapers/fullpapers/2002/0218_010103.pdf), (2003, Apr 20).
- Jovanovich, R. 2003a, 'Salary Survey: Methodology', *ITWeb*, May 7, (Online), Available: [www.itweb.co.za/surveys/Salary/2003/methodology/survey030507.asp](http://www.itweb.co.za/surveys/Salary/2003/methodology/survey030507.asp), (2004, Jan 21).
- Jovanovich, R. 2003b, 'Salary Survey: Sample Description', *ITWeb*, May 7, (Online), Available: [www.itweb.co.za/surveys/Salary/2003/sampledescription/survey030507.asp](http://www.itweb.co.za/surveys/Salary/2003/sampledescription/survey030507.asp), (2004, Jan 21).

- Kaluzniacky, E. 1998, 'An Assessment of Stress Factors Among Information Systems Professionals in Manitoba', *Proceedings of the 1998 ACM SIGCPR Conference, Boston, Massachusetts*, ed R Agarwal, ACM Press, USA, pp 254-257.
- Kaplan, RAL. 1990, *The Career Anchors, Job Involvement and Job Satisfaction of Professional People*, Unpublished Doctoral Thesis, University of Cape Town, Cape Town, South Africa.
- Khalil, OEM, Zawacki, RA, Zawacki, PA & Selim, A. 1997, 'What Motivates Egyptian IS Managers and Personnel: Some Preliminary Results', *Proceedings of the 1997 ACM SIGCPR Conference, San Francisco, California, USA*, ed F Niederman, ACM Press, USA, pp 187-196.
- King, RC & Sethi, V. 1998, 'The Impact of Socialization on the Role Adjustment of Information Systems Professionals', *Journal of Information Systems*, vol 14, no 4, pp 195-217.
- King, RC & Xia, W. 2001, 'Retaining IS Talents in the New Millennium: Effects of Socialisation on IS Professionals' Role Adjustment and Organisational Attachment', *Proceedings of the 2001 ACM SIGCPR Conference, San Diego, California, USA*, ed M Serva, ACM Press, USA, pp 144-156.
- Konrad, R. 2003, 'US IT job market to stay bleak', *Australian IT*, May 6, (Online), Available: <http://australianit.news.com.au/articles/0,7204,6390722%5e15335%5e%5enbv%5e15306-15317,00.html>, (2003, Jun 14).
- Lee, DMS. 1999, 'Information seeking and knowledge acquisition behaviours of young information systems workers: Preliminary analysis', *Proceedings of the Fifth Americas Conference on Information Systems, Atlanta, Georgia, USA*, ed RL Leitheiser, Association for Information Systems, USA, pp 856-858.
- Lee, PCB. 2001, 'The Impact of Role Variables on Turnover Intentions of Information Technology Professionals: An Examination of Moderating Effects', *Proceedings of the Seventh Americas Conference on Information Systems, Boston, Massachusetts, USA*, eds D Strong, D Straub & JI DeGross, Association for Information Systems, USA, pp 1483-1489.
- Lee, J, Huynh, M, Kwok, R & Pi, S. 2003, 'IT Outsourcing Evolution – Past, Present and Future', *Communications of the ACM*, pp 84-89.
- Li, EY & Shani, AB. 1991, 'Stress Dynamics of Information Systems Managers: A Contingency Model', *Journal of Management Information Systems*, vol 7, no 4, pp 107-130.
- Locke, EA. 1976, 'The nature and causes of job satisfaction', in *Handbook of Industrial and Organizational Psychology*, ed E Dunnett, Rand McNally, Chicago, USA, pp 1297-1350.
- Madnick, SE. 1991, 'The Information Technology Platform', in *The Corporation of the 1990s*, ed M Scott Morton, Oxford University Press, New York, USA, pp 27-60.
- Marshall, L. 2001, 'A Perspective on the IT Industry in South Africa', *Communications of the ACM*, vol 44, no 7, pp 55-56.
- Maslach, C & Schaufeli, WB. 1993, 'Historical and Conceptual Development of Burnout', in *Professional Burnout: Recent Developments in Theory and Research*, eds WB Schaufeli, C Maslach & T Marek, Taylor & Francis, Washington DC, USA.
- Matsushita, M. 2003, 'Market on the move – IT and hiring predictions for 2003', *Brainbox.com.au*, Jan 23, (Online), Available: <http://www.brainbox.com.au/brainbox/home.nsf/0/5795D5FA1AD2C7D149256CB6001EB55D?opendocument>, (2003, Jun 17).

- McCloskey, D & Igbaria, M. 2003, 'Does "Out of Sight" Mean "Out of Mind"? An Empirical Investigation of the Career Advancement Prospects of Telecommuters', *Information Resources Management Journal*, vol 16, no 2, pp 19-34.
- McGee, MK. 1996, 'Burnout!', *Information Week*, Mar 4, pp 34-40.
- McLean, ER, Smits, SJ & Tanner, JR. 1991, 'Managing new MIS professionals', *Information and Management*, vol 20, no 4, pp 257-263.
- Mehler, M. 1998, 'Keeping your People', *Smart Reseller*, (Online), Available: <http://www.zdnet.com/sr/channels/features/980309/keeping.html>, (2003, Apr 12).
- Meredith, GRG. 1992, *The Career Orientations of Information Systems Professionals*, Unpublished Bachelor of Commerce (Honours) Technical Report, University of Cape Town, South Africa.
- Meredith, GRG. 1996, *The Consequences of a Mismatch between Employee Needs and Job Attributes in the Information Systems Field – An Empirical Survey*, Unpublished Master of Commerce Dissertation, University of Cape Town, South Africa.
- META Group. 2003, *2003 Worldwide IT Benchmark Report*, (Online), Available: [http://www.metagroup.com/products/inforum/3\\_pdf/es\\_WB3.pdf](http://www.metagroup.com/products/inforum/3_pdf/es_WB3.pdf), (2003, Jun 22).
- Mobley, WH, Griffeth, RW, Hand, HH & Meglino, BM. 1979, 'Review and conceptual analysis of the employee turnover process', *Psychological Bulletin*, vol 86, no 3, pp 493-522.
- Mobley, WH, Horner, SO & Hollingsworth, AT. 1978, 'An evaluation of the precursors of hospital employee turnover', *Journal of Applied Psychology*, vol 63, no 4, pp 408-414.
- Moleke, P, Paterson, A & Roodt, J. 2003, 'ICT and Associated Professionals' in *Human Resources Development Review*, ed A Kraak, pp 634-659, (Online), Available: <http://hrdwarehouse.hsrc.ac.za/hrd/it/it.pdf>, (2004, Feb 24).
- Moodie, G. 2002, 'Many Happy Returns', *Sunday Times*, Dec 8, (Online), Available: <http://www.suntimes.co.za/2002/12/08/insight/in01.asp>, (2003, Jun 17).
- Moore, JE. 1991, 'Personality Characteristics of Information Systems Professionals', *Proceedings of the 1991 ACM SIGCPR Conference, Athens, Georgia, USA*, ACM Press, USA, pp 140-155.
- Moore, JE. 1998, 'Job Attitudes and Perceptions on Exhausted IS/IT Professionals: Are We Burning Out Valuable Human Resources', *Proceedings of the 1998 ACM SIGCPR Conference, Boston, Massachusetts, USA*, ed R Agarwal, ACM Press, USA, pp 264-273.
- Moore, JE. 1999, 'Are You Burning Out Valuable Human Resources?', *HR Magazine*, Jan, pp 527-556.
- Moore, JE. 2000, 'One Road to Turnover: An Examination of Work Exhaustion in Technology Professionals', *MIS Quarterly*, vol 24, no 1, pp 141-168.
- Moore, JE & Burke, LA. 2002, 'How to Turn Around "Turnover Culture" in IT', *Communications of the ACM*, vol 45, no 2, pp 73-78.
- Morello, D. 1998, 'Does an Insane IT Labour Market Demand Insane Measures?', *Gartner Group*, May 28, (Online), Available: <http://www.gartnerweb.com/gg/purchase/0/00/685/94/doc/00068594/00068594.html>, (2003, Jun 22).
- Mowday, RT, Porter, LW & Steers, RM. 1982, *Employee-Organisation Linkages: The Psychology of Commitment and Absenteeism and Turnover*, Academic Press, New York, USA.

- Mumford, E. 1972, *Job Satisfaction – A Study of Computer Specialists*, Longman Group Limited, London.
- Naisbitt, J & Aburdene, P. 1985, *Re-inventing the Corporation*, Warner Books Inc, New York, USA.
- NationMaster.com. 2003, *Encyclopedia*, (Online), Available:  
<http://www.nationmaster.com/encyclopedia/Coloured>, (2004, Jan 26).
- Nelson, AC & LeRouge, C. 2001, 'Self-Esteem: Moderator between Role Stress Fit and Satisfaction and Commitment', *Proceedings of the 2001 ACM SIGCPR Conference, San Diego, California, USA*, ed M Serva, ACM Press, USA, pp 74-77.
- News24.com. 2003, 'IT Job Market Strong', *News24.com*, May 9, (Online), Available:  
[http://www.news24.com/News24/Finance/Economy/0,,2-8-25\\_1357684,00.html](http://www.news24.com/News24/Finance/Economy/0,,2-8-25_1357684,00.html), (2003, Jun 14).
- Niederman, F, Brancheau, JC & Wetherbe, JC. 1991, 'Information systems management issues for the 1990s', *MIS Quarterly*, vol 15, no 4, pp 475-495.
- Niederman, F & Sumner, MR. 2001, 'Job Turnover Among MIS Professionals: An Exploratory Study of Employee Turnover', *Proceedings of the 2001 ACM SIGCPR Conference, San Diego, California*, ed M Serva, ACM Press, USA, pp 11-20.
- Overby, S. 2003, 'Staff Alert', *CIO Magazine*, May 1, (Online), Available:  
<http://www.cio.com/archive/050103/staffing.html>, (2003, Jun 22).
- Palmer, J, Speier, C, Buckley, M & Moore, JE. 1998, 'Recruiting and Retaining IS Personnel: Factors Influencing Employee Turnover', *Proceedings of the 1998 ACM SIGCPR Conference, Boston, Massachusetts, USA*, ed R Agarwal, ACM Press, USA, pp 286-288.
- Paré, G, Tremblay, M & Lalone, P. 2001, 'Workforce Retention: What Do IT Employees Really Want', *Proceedings of the 2001 ACM SIGCPR Conference, San Diego, California, USA*, ed M Serva, ACM Press, USA, pp 1-10.
- Pearce, J. 2003, 'Aust IT jobs returning to growth: Olivier', *ZDNet Australia*, Mar 3, (Online), Available:  
<http://www.zdnet.com.au/news/business/0,39023166,20272520,00.htm>, (2003, Jun 17).
- Pinsonneault, A & Kraemer KL. 1993, 'Survey Research Methodology in Management Information Systems: An Assessment', *Journal of Management Information Systems*, vol 10, no 2, pp 75-105.
- Porter, LW, Crampon, WJ & Smith, EJ. 1976, 'Organisational Commitment and Managerial Turnover: A Longitudinal Study', *Organisational Behaviour and Human Performance*, vol 15, no 1, pp 87-98.
- Porter, LW, Steers, RM, Mowday, RT & Boulin, PV. 1974, 'Organisational Commitment, Job Satisfaction and Turnover among Psychiatric Technicians', *Journal of Applied Psychology*, vol 59, no 5, pp 603-609.
- Price, A. 1997, *Human Resource Management in a Business Context*, International Thomson Business Press, London, UK, p 200.
- Remenyi, DSJ. 1993, 'The Key Issues in Information Management for the Mid-1990s: Back to business basics through the commercialisation of the ISD', *South African Computing Journal*, no 10, pp 14-22.
- Ridings, CM & Eder, LB. 1999, 'An Analysis of IS Technical Career Paths and Job Satisfaction', *Computer Personnel*, vol 20, no 2, ACM Press, USA, pp 7-26.
- Roepke, R, Agarwal, R & Ferratt, TW. 2000, 'Aligning the IT Human Resource with Business Vision: The Leadership Initiative at 3M', *MIS Quarterly*, vol 24, no 2, pp 324-353.

- Roscoe, JT. 1975, *Fundamental Research Statistics for the Behavioural Sciences*, 2<sup>nd</sup> Edition, Holt Rinehart and Winston, New York, USA.
- Romzek, B. 1989, 'Personal Consequences of Employee Commitment', *Academy of Management Journal*, vol 32, pp 649-661.
- Rust, J & Golombok, S. 1999, *Modern Psychometrics*, 2<sup>nd</sup> Edition, Routledge, London, UK.
- Schein, EH. 1978, *Career Dynamics: Matching Individual and Organisational Needs*, Addison-Wesley, Massachusetts, USA.
- Schein, EH. 1985, *Career Anchors: Discovering Your Real Values*, University Associates Inc, California, USA.
- Schein, EH. 1987, 'Individuals and Careers', in *Handbook of Organisational Behaviour*, ed LW Lorsch, Prentice-Hall, New Jersey, USA, pp 155-177.
- Schell, GP. 1998, 'Perspectives on Computer Personnel Research', *Computer Personnel*, vol 19, no 2, pp 3-12.
- Scott Morton, MS. 1991, *The Corporation of the 1990s: Information Technology and Organisational Transformation*, Oxford University Press, USA.
- Smith, DC. 2003. Lecturer at University of Cape Town, Conversation with the author, 24 Apr.
- Smith, DC, Hanson, AL & Oosthuisen, NC. 1991, 'A Causal Analysis of Job Turnover among System Analysts', *South African Computing Journal*, no 4, March 1991, pp 64-67.
- Smith, DC, Wegner, A & Quansah, Y. 1998, 'The Effects of Organisational Restructuring on 'Survivor' Stress in Information Systems Personnel', *Proceedings of the 1998 ACM SIGCPR Conference, Boston, Massachusetts, USA*, ed R Agarwal, ACM Press, USA, pp 258-263.
- Smits, SJ, McLean, ER & Tanner, JR. 1993, 'Managing high-achieving information systems professionals', *Journal of Management Information Systems*, vol 9, no 4, pp 102-120.
- South African Information Technology Industry Strategy Project (SAITIS). 2000, *South African ICT Sector Development Framework Report*, (Online), Available: <http://www.dti.gov.za/saitis/docs/ictnov-00.html>, (2004, Feb 16).
- Steel, RP & Ovalle, NK, 1984. 'A Review and Meta-Analysis of Research on the Relationship between Behavioural Intentions and Employee Turnover', *Journal of Applied Psychology*, vol 69, pp 673-686.
- Steers, RM. 1977, 'Antecedents and outcomes of organisational commitment', *Administrative Science Quarterly*, vol 22, no 1, pp 45-56.
- Surmacz, J. 2003a, 'IT Workforce Shows Flat Growth', *CIO Magazine*, May 6, (Online), Available: <http://www2.cio.com/metrics/2003/metric540.html>, (2003, Jun 14).
- Surmacz, J. 2003b, 'Burned Out Unit', *CIO Magazine*, Mar 26, (Online), Available: <http://www2.cio.com/metrics/2003/metric520.html>, (2003, Jun 22).
- Surmacz, J. 2003c, 'Job Forecast: Cloudy', *CIO Magazine*, Jan 8, (Online), Available: <http://www2.cio.com/metrics/2003/metric485.html>, (2003, Jun 14).

- Tan, M & Igbaria, M. 1993, 'Exploring the Status of Turnover and Salary of Information Technology Professionals in Singapore', *Proceedings of the 1993 ACM SIGCPR Conference, St. Louis, Missouri, USA*, ed MR Tanniru, pp 336-348.
- Thatcher, JB, Stepina, LP & Boyle, RL. 2003, 'Turnover of Information Technology Workers: Examining Empirically the Influence of Attitudes, job Characteristics, and External Markets', *Journal of Management Information Systems*, vol 19, no 3, pp 231-261.
- Turner, R & Lowry, G. 2000, 'Motivating and Recruiting Intending IS Professionals: A study of what attracts IS students to prospective employment', *South African Computing Journal*, no 26, pp 132-137.
- Van den Honert, R. 1999, *Intermediate Statistical Methods for Business and Economics*, University of Cape Town Press, Cape Town, South Africa.
- Van Huyssteen, R. 1999, *The Career Anchors of IS Professionals in University Administration*, Unpublished Bachelor of Commerce (Honours) Technical Report, University of Cape Town, South Africa.
- Van Maanen, J & Schein, EH. 1979, 'Toward a theory of organisational socialisation', in *Research in Organisational Behaviour*, ed B Staw, JAI Press, Connecticut, USA, pp 209-264.
- Von Hellens, LA, Nielsen, SH & Trauth, EM. 2001, 'Breaking and Entering the Male Domain. Women in the IT Industry', *Proceedings of the 2001 ACM SIGCPR Conference, San Diego, California, USA*, ed M Serva, ACM Press, USA, pp 116-120.
- Vroom, V. 1964, *Work and Motivation*, Wiley, New York, USA.
- West, LA & Bogumil, WA. 2001, 'Immigration and the Global IT Work Force', *Communications of the ACM*, vol 44, no 7, pp 34-38.
- White, M. 1989, 'Defusing the Skills Bomb', *Computer Mail*, January 1989, pp 15-21.
- White, SD & Lester, WF. 2002, 'The IT Workforce Challenge: Adoption of IT Careers by minority Groups – Issues and Recommendations', *Communications of the Association for Information Systems*, vol 9, pp 441-455.
- Williams, LJ & Hazer, JT. 1986, 'Antecedents and consequences of satisfaction and commitment in turnover models: A reanalysis using latent variable structural equation methods', *Journal of Applied Psychology*, vol 71, no 2, pp 219-231.
- Woszczynski, AB & Myers, MA. 2002, 'IT: The Last Boys' Club?', in *Proceedings of the Eighth Americas Conference on Information Systems, Dallas, Texas, USA*, Association for Information Systems, USA, pp 2157-2162.
- Wynekoop, JL & Walz, DB. 1998, 'Revisiting the Perennial Question: Are IS People Different?', *The DATA BASE for Advances in Information Systems*, vol 29, no 2, pp 62-72.
- Zawacki, RA. 1992, 'Motivating the IS People of the Future', *Information Systems Management*, Spring, pp 73-75.

## APPENDIX A - SURVEY INSTRUMENT

### TURNOVER INTENTIONS AND CAREER PATHS OF IS PROFESSIONALS IN SOUTH AFRICA

*This questionnaire is the cornerstone of a Master's research project investigating turnover intentions and career orientations of South African IS professionals.*

*The questionnaire should take approximately 15 minutes to complete and your participation will be most appreciated. All information will be recorded anonymously and will only be used for research purposes.*

I acknowledge that I am participating in this research project of my own free will. I understand that I may refuse to participate without penalty. I understand that the information I supply on this questionnaire will be held in confidence and will be used for research purposes only.

YES NO

#### CAREER AND JOB SATISFACTION

Please indicate your agreement or disagreement with each of the following items by selecting the number to the right of each statement that corresponds most closely to your desired response. Please try to avoid answering neutral.

- 1 = Strongly disagree
- 2 = Disagree to some extent
- 3 = Neutral
- 4 = Agree to some extent
- 5 = Strongly agree

	Strongly Disagree				Strongly Agree
1. I am satisfied with the success I have achieved in my career	1	2	3	4	5
2. I am satisfied with the progress I have made toward achieving my overall career goals	1	2	3	4	5
3. Overall, I would say that my personal needs have been met with my current career	1	2	3	4	5
4. I am satisfied with my rate of promotion during my career	1	2	3	4	5
5. I am satisfied with the pay level I have achieved during my career	1	2	3	4	5
6. I am satisfied with the status that I have achieved during my career	1	2	3	4	5
7. Generally speaking, I am very satisfied with my job	1	2	3	4	5
8. I frequently think of changing my job	1	2	3	4	5
9. I am generally satisfied with the kind of projects I work on in my job	1	2	3	4	5

#### TURNOVER INTENTIONS

Please consider the statements reflecting turnover intentions below and select the number to the right of the statement that corresponds most closely to your desired response. Please try to avoid answering neutral.

- 1 = Highly unlikely / Never
- 2 = Somewhat Unlikely / Occasionally
- 3 = Neutral / Uncertain
- 4 = Somewhat Likely / Often
- 5 = Highly likely / Constantly

	Highly Unlikely			Highly Likely	
10. How likely is it that you will actively look for a <b>different job</b> in the next year?	1	2	3	4	5
11. Do you intend to change the <b>organisation</b> with which you are now associated?	1	2	3	4	5
12. How likely is it that you will actively look for a <b>different profession</b> in the next year?	1	2	3	4	5
13. Do you intend to leave the <b>IS profession</b> ?	1	2	3	4	5
14. How likely is it that you will seek employment outside South Africa in the near future?	1	2	3	4	5
	Never			Constantly	
15. How frequently do you think of leaving <b>your organisation</b> ?	1	2	3	4	5
16. How frequently do you think of leaving the <b>IS profession</b> ?	1	2	3	4	5

**ATTITUDES TOWARD YOUR ORGANISATION**

Below are a series of statements that represent the feeling that individuals might have about the company or organisation for which they work. With respect to your own feelings about your organisation, please indicate the degree of your agreement or disagreement with each statement by selecting the one number to the right of each statement that corresponds to your desired response. Please try to avoid answering neutral.

- 1 = Strongly disagree
- 2 = Disagree to some extent
- 3 = Neutral
- 4 = Agree to some extent
- 5 = Strongly agree

	Strongly Disagree			Strongly Agree	
17. I would be very happy to spend the rest of my career with this organisation	1	2	3	4	5
18. I enjoy discussing my organisation with people outside it	1	2	3	4	5
19. I really feel as if this organisation's problems are my own	1	2	3	4	5
20. I think that I could easily become as attached to another organisation as I am to this one	1	2	3	4	5
21. I do not feel like 'part of the family' at my organisation	1	2	3	4	5
22. I do not feel 'emotionally attached' to my organisation	1	2	3	4	5
23. This organisation has a great deal of personal meaning for me	1	2	3	4	5
24. I do not feel a strong sense of belonging to my organisation	1	2	3	4	5
25. I am not afraid of what might happen if I quit my job without having another one lined up	1	2	3	4	5
26. It would be very hard for me to leave my organisation right now, even if I wanted to	1	2	3	4	5
27. Too much in my life would be disrupted if I decided I wanted to leave my organisation now	1	2	3	4	5
28. It would not be too costly for me to leave my organisation now	1	2	3	4	5
29. Right now, staying with my organisation is a matter of necessity as much as a desire	1	2	3	4	5
30. I feel that I have too few options to consider leaving my organisation	1	2	3	4	5
31. One of the few serious consequences of leaving my organisation would be the scarcity of available alternatives	1	2	3	4	5

	Strongly Disagree			Strongly Agree	
32. One of the major reasons I continue to work for my organisation is that leaving would require considerable personal sacrifice – another organisation may not match the overall benefits I currently have	1	2	3	4	5
33. I think that people these days move from company to company too often	1	2	3	4	5
34. I do not believe that a person must always be loyal to his or her organisation	1	2	3	4	5
35. Jumping from organisation to organisation does not seem at all unethical to me	1	2	3	4	5
36. One of the major reasons I continue to work for this organisation is that I believe that loyalty is important and therefore feel a sense of moral obligation to remain	1	2	3	4	5
37. If I got another offer for a better job elsewhere I would not feel it was right to leave my organisation	1	2	3	4	5
38. I was taught to believe in the value of remaining loyal to one organisation	1	2	3	4	5
39. Things were better in the days when people stayed with one organisation for most of their careers	1	2	3	4	5
40. I do not think that wanting to be a ‘company man’ or ‘company woman’ is sensible anymore	1	2	3	4	5

### **CAREER ORIENTATIONS INVENTORY**

When answering the questions in this inventory, think about the kinds of criteria you have used in recent years to make decisions about job moves, company moves, whether or not to accept new assignments, and other career options. Also think about the kinds of criteria that are important to you as you consider future career decisions.

If you feel that your present or future criteria are different from those of the past, answer in terms of the present or future. It is important that you answer these questions in terms of how you look at these criteria now, and how they will influence future career decisions, even though some of the questions are worded in terms of the past. There are no right or wrong answers, except in terms of their importance to you, so be honest with yourself.

For each criterion or statement, please select the number that best describes how important or how true it has been and continues to be in your career decision. How important is each of the following statements for you? Please try to avoid answering neutral.

- 1 = Of no importance
- 2 = Slightly important
- 3 = Neutral
- 4 = Relatively important
- 5 = Very important

	Of No Importance			Very Important	
41. The process of supervising, influencing, leading and controlling people at all levels is ...	1	2	3	4	5
42. The chance to do things my own way and not be constrained by the rules of an organisation is ...	1	2	3	4	5
43. An employer who will provide security through guaranteed work, benefits, a good retirement program, etc, is ...	1	2	3	4	5
44. Working on problems that are almost insoluble is ...	1	2	3	4	5
45. Remaining in my specialised area as opposed to being promoted out of my area of expertise is ...	1	2	3	4	5
46. To be in charge of a whole organisation is ...	1	2	3	4	5
47. A career that is free from organisational restrictions is ...	1	2	3	4	5

	Of No Importance			Very Important	
	1	2	3	4	5
48. An organisation that will give me long-run stability is ...	1	2	3	4	5
49. Using my skills to make the world a better place to live and work in is ...	1	2	3	4	5
50. Developing a career that permits me to continue to pursue my own lifestyle is ...	1	2	3	4	5
51. Building a new business enterprise is ...	1	2	3	4	5
52. Remaining in my area of expertise throughout my career is ...	1	2	3	4	5
53. To rise to a high position in general management is ...	1	2	3	4	5
54. Remaining in one geographical area rather than moving because of a promotion is ...	1	2	3	4	5
55. Being able to use my skills and talents in the service of an important cause is ...	1	2	3	4	5

**How true is each of the following statements for you? Please try to avoid answering neutral.**

- 1 = Not at all true
- 2 = Slightly untrue
- 3 = Neutral
- 4 = Relatively true
- 5 = Completely true

	Not at All True			Completely True	
	1	2	3	4	5
56. The only real challenge in my career has been confronting and solving tough problems, no matter what they were in	1	2	3	4	5
57. I am always on the lookout for ideas that would permit me to start and build my own enterprise	1	2	3	4	5
58. It is more important for me to remain in my present geographic location than to receive a promotion or new job assignment in another location	1	2	3	4	5
59. A career is worthwhile only if it enables me to lead my life in my own way	1	2	3	4	5
60. I will accept a management position only if it is in my area of expertise	1	2	3	4	5
61. I do not want to be constrained by either an organisation or the business world	1	2	3	4	5
62. I want a career in which I can be committed and devoted to an important cause	1	2	3	4	5
63. I feel successful only if I am constantly challenged by a tough problem or a competitive situation	1	2	3	4	5
64. Choosing or maintaining a certain lifestyle is more important than career success	1	2	3	4	5
65. I have always wanted to start and build up a business of my own	1	2	3	4	5

**JOB / WORK CHARACTERISTICS**

The set of statements below are similar to the above section, but now please consider the extent to which your current job and organisation satisfies these statements. For each criterion or statement, please select the number that best describes the opportunity that is currently available to you. Please try to avoid answering neutral.

- 1 = No opportunity
- 2 = Slight opportunity
- 3 = Neutral
- 4 = Opportunity
- 5 = Great opportunity

	No Opportunity		Great Opportunity		
69. The process of supervising, influencing, leading and controlling people at all levels	1	2	3	4	5
70. The chance to do things my own way and not be constrained by the rules of an organisation	1	2	3	4	5
71. An employer who will provide security through guaranteed work, benefits, a good retirement program, etc	1	2	3	4	5
72. Working on problems that are almost insoluble	1	2	3	4	5
73. Remaining in my specialised area as opposed to being promoted out of my area of expertise	1	2	3	4	5
74. To be in charge of a whole organisation	1	2	3	4	5
75. A career that is free from organisational restrictions	1	2	3	4	5
76. An organisation that will give me long-run stability	1	2	3	4	5
77. Using my skills to make the world a better place to live and work in	1	2	3	4	5
78. Developing a career that permits me to continue to pursue my own lifestyle	1	2	3	4	5
79. Building a new business enterprise	1	2	3	4	5
80. Remaining in my area of expertise throughout my career	1	2	3	4	5
81. To rise to a high position in general management	1	2	3	4	5
82. Remaining in one geographical area rather than moving because of a promotion	1	2	3	4	5
83. Being able to use my skills and talents in the service of an important cause	1	2	3	4	5
84. The only real challenge in my job / career is confronting and solving tough problems, no matter what they are in	1	2	3	4	5
85. Always on the lookout for ideas that would permit me to start and build my own enterprise	1	2	3	4	5
86. Able to remain in my present geographic location rather than to receive a promotion or new job assignment in another location	1	2	3	4	5
87. My career is worthwhile because it enables me to lead my life in my own way	1	2	3	4	5
88. Accept a management position in my area of expertise	1	2	3	4	5
89. Work unconstrained by either an organisation or the business world	1	2	3	4	5
90. Commit and devote my career to an important cause	1	2	3	4	5
91. Feel successful because I am constantly challenged by a tough problem or a competitive situation	1	2	3	4	5
92. Able to choose or maintain a certain lifestyle that is more important than career success	1	2	3	4	5
93. Start and build up a business of my own	1	2	3	4	5

## **BACKGROUND INFORMATION**

The remaining questions in the survey are concerned with your background and work experience. This information will help identify trends in data for different groups of employees and will allow for comparisons with similar research. Please remember that responses are completely anonymous and confidential. No one from your organisation will have access to any individual's responses to any of the items in this survey.

- i. Province
- Eastern Cape
  - Gauteng
  - Free State
  - KwaZulu-Natal
  - Limpopo
  - Mpumalunga
  - Northern Cape
  - North West
  - Western Cape
- ii. Gender  Male  Female
- iii. Age Group
- Younger than 20
  - 20 – 29
  - 30 – 39
  - 40 – 49
  - 50 – 59
  - 60 or older
- iv. Race (Demographic Analysis Only)
- African
  - Asian
  - Coloured
  - White
  - Other (please specify) \_\_\_\_\_
- v. What is the highest level of education you have completed?
- Standard XI or less
  - Matriculation
  - Diploma
  - Professional Certification (e.g. MCSE, Oracle, Novell)
  - Bachelors Degree
  - Honours Degree
  - Masters Degree
  - PhD
  - Other Postgraduate Degree
- vi. What is your current level in the organisational hierarchy?
- Professional Staff (for example, Programmer, Analyst, Consultant)
  - First Level Supervisor
  - Middle Management (Department Head)
  - Strategic Management (Executive)
  - Owner / Partner
  - Other (please specify) \_\_\_\_\_

vii. For how many years have you been employed in the IS field (to the nearest year)?  
\_\_\_\_\_ Years

viii. For how many years have you been employed in your current organisation (to the nearest year)?  
\_\_\_\_\_ Years

ix. For how many years have you been employed in your current position (to the nearest year)?  
\_\_\_\_\_ Years

Thank you very much for your cooperation. Please check that you have answered all questions. If you would like to receive a summary of this research after it has been evaluated, please fill in your name and contact details below.

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Email: \_\_\_\_\_

If you have any comments you would like to make, please feel free to write them below. Please return the completed survey back to the researcher as soon as possible.

Comments:

University of Cape Town

## APPENDIX B – CONFIRMATORY FACTOR ANALYSIS RESULTS

Table 29: Standard Loadings and t-values for Career Want Measure

		Standard Loading	t-value *
<b>Autonomy</b>			
WAUT1	The chance to do things my own way and not be constrained by the rules of an organisation is ...	0.31	2.43
WAUT2	A career that is free from organisational restrictions is ...	0.97	3.14
WAUT3	I do not want to be constrained by either an organisation or the business world	0.40	2.72
<b>Challenge</b>			
WCHA1	Working on problems that are almost insoluble is ...	0.44	4.60
WCHA2	The only real challenge in my career has been confronting and solving tough problems, no matter what they were in	0.59	5.69
WCHA3	I feel successful only if I am constantly challenged by a tough problem or a competitive situation	0.81	6.64
<b>Entrepreneurship</b>			
WENT1	Building a new business enterprise is ...	0.71	13.65
WENT2	I am always on the lookout for ideas that would permit me to start and build my own enterprise	0.80	18.27
WENT3	I have always wanted to start and build up a business of my own	0.94	25.07
<b>Geographic Security</b>			
WGEO1	Remaining in one geographical area rather than moving because of a promotion is ...	0.88	949021832.869
WGEO2	It is more important for me to remain in my present geographic location than to receive a promotion or new job assignment in another location	0.71	11.60
<b>Job Security</b>			
WJOB1	An employer who will provide security through guaranteed work, benefits, a good retirement program, etc, is ...	0.71	764409303.278
WJOB2	An organisation that will give me long-run stability is ...	0.81	9.69
<b>Lifestyle</b>			
WLIF1	Developing a career that permits me to continue to pursue my own lifestyle is ...	0.38	3.32
WLIF2	A career is worthwhile only if it enable me to lead my life in my own way	0.94	4.42
WLIF3	Choosing or maintaining a certain lifestyle is more important than career success	0.44	3.60
<b>Managerial Competence</b>			
WMAN1	Building a new business enterprise is ...	0.43	4.71
WMAN2	To be in charge of a whole organisation is ...	0.93	7.83
WMAN3	To rise to a high position in general management is ...	0.62	6.46
<b>Service</b>			
WSER1	Using my skills to make the world a better place to live and work in is ...	0.65	9.55
WSER2	Being able to use my skills and talents in the service of an important cause is ...	0.80	12.34
WSER3	I want a career in which I can be committed and devoted to an important cause	0.73	11.09
<b>Technical Competence</b>			
WTEC1	Remaining in my specialised area as opposed to being promoted out of my area of expertise is ...	0.73	11.09
WTEC2	Remaining in my area of expertise throughout my career is ...	0.69	8.00
WTEC3	I will accept a management position only if it is in my area of expertise	0.54	6.39

\* Significant at  $p < 0.05$  level

Table 30: Standard Loadings and t-values for the Career Have Measure

		Standard Loading	t-value *
<b>Autonomy</b>			
WAUT1	The chance to do things my own way and not be constrained by the rules of an organisation is ...	0.69	11.38
WAUT2	A career that is free from organisational restrictions is ...	0.87	19.90
WAUT3	I do not want to be constrained by either an organisation or the business world	0.86	19.69
<b>Challenge</b>			
WCHA1	Working on problems that are almost insoluble is ...	0.83	9.27
WCHA2	The only real challenge in my career has been confronting and solving tough problems, no matter what they were in	0.62	7.35
WCHA3	I feel successful only if I am constantly challenged by a tough problem or a competitive situation	0.56	6.71
<b>Entrepreneurship</b>			
WENT1	Building a new business enterprise is ...	0.86	28.45
WENT2	I am always on the lookout for ideas that would permit me to start and build my own enterprise	0.78	20.18
WENT3	I have always wanted to start and build up a business of my own	0.97	42.43
<b>Geographic Security</b>			
WGEO1	Remaining in one geographical area rather than moving because of a promotion is ...	0.86	11.27
WGEO2	It is more important for me to remain in my present geographic location than to receive a promotion or new job assignment in another location	0.72	
<b>Job Security</b>			
WJOB1	An employer who will provide security through guaranteed work, benefits, a good retirement program, etc, is ...	0.73	787527154.205
WJOB2	An organisation that will give me long-run stability is ...	0.94	14.91
<b>Lifestyle</b>			
WLIF1	Developing a career that permits me to continue to pursue my own lifestyle is ...	0.82	17.95
WLIF2	A career is worthwhile only if it enable me to lead my life in my own way	0.87	19.87
WLIF3	Choosing or maintaining a certain lifestyle is more important than career success	0.71	13.28
<b>Managerial Competence</b>			
WMAN1	Building a new business enterprise is ...	0.71	12.44
WMAN2	To be in charge of a whole organisation is ...	0.75	13.65
WMAN3	To rise to a high position in general management is ...	0.85	16.84
<b>Service</b>			
WSER1	Using my skills to make the world a better place to live and work in is ...	0.86	30.35
WSER2	Being able to use my skills and talents in the service of an important cause is ...	0.93	41.45
WSER3	I want a career in which I can be committed and devoted to an important cause	0.88	32.35
<b>Technical Competence</b>			
WTEC1	Remaining in my specialised area as opposed to being promoted out of my area of expertise is ...	0.58	2.81
WTEC2	Remaining in my area of expertise throughout my career is ...	0.85	2.92
WTEC3	I will accept a management position only if it is in my area of expertise	0.20	1.82 **

\* Significant at  $p < 0.05$  level

\*  $p = 0.068$

## APPENDIX C – ASSUMPTIONS FOR USING MULTIPLE REGRESSION

In order for the results of a multiple regression model to be statistically significant, the following assumptions with regard to the data should be met (van den Honert, 1999):

- The error term (the difference between the predicted and actual values of Turnover Intention),  $e$ , is a random variable with  $E(e) = 0$
- The variance of  $e$  is the same for all values of each case ( $X_1 - X_p$ )
- The variance of  $e$  is independent of the actual values of each case ( $X_1 - X_p$ ) and is independent of any other value of  $e$
- The error,  $e$ , is normally distributed.

The error term was derived using Statistica, and a summary of the output is shown in table 31 below.

Table 31: Summary of Predicted vs Observed Values

	Observed Value	Predicted Value	Residual	Standard Pred. v.	Standard Residual	Std.Err. Pred. Val	Mahalanobis Distance	Deleted Residual	Cook's Distance
Min	1.0000	1.2668	-1.7029	-2.0064	-2.1909	0.0743	0.1765	-1.7366	0.0000
Max	5.0000	4.5182	2.8767	2.8219	3.7011	0.2606	13.3981	2.9980	0.1506
Mean	2.6179	2.6179	0.0000	0.0000	0.0000	0.1313	2.9767	0.0016	0.0083
Median	2.5714	2.5887	-0.0371	-0.0434	-0.0478	0.1282	2.4903	-0.0419	0.0032

The first three assumptions were then tested by examining the distribution of the standard residuals illustrated in the graph below.

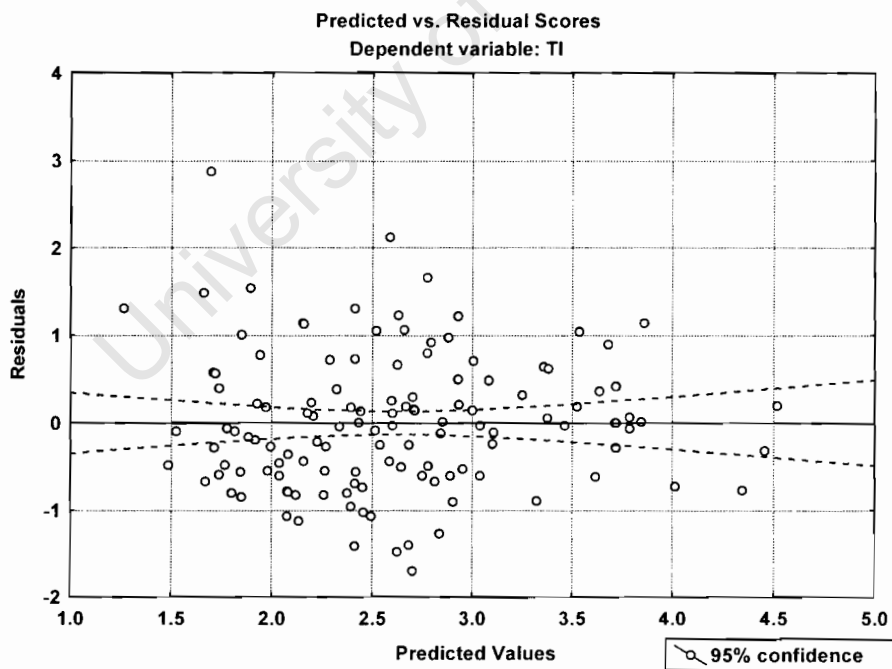


Figure 9: Scatter Plot of Predicted vs Residual Scores

From figure 9 on the previous page it can be seen that the error term is a random variable as there is no clear pattern in the data. In fact, the spread is fairly consistent, that is, the residuals do not increase as the predicted values increase; and thus the assumption of constant variance is satisfied. The lack of a pattern in the scatter plot is also evidence of the fact that the residuals (error terms) are independent of the values of  $X_1 - X_p$ .

The last assumption regarding the normal distribution of the data was tested by looking at the histogram depicting the distribution of the standard residuals shown below.

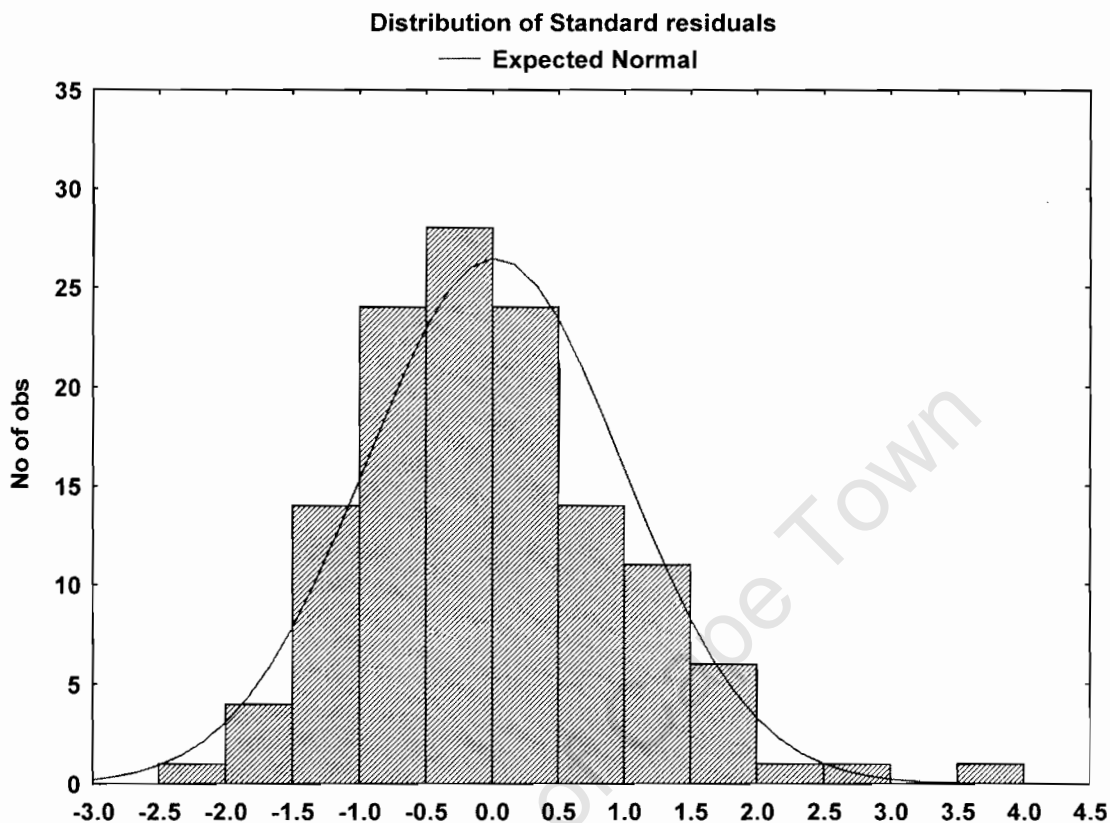


Figure 10: Distribution of Standard Residuals

For the error term,  $e$ , to be described as normally distributed, 66% of the data must lie within one standard deviation of the mean, and 95% must lie within two standard deviations. As illustrated in figure 10 above, approximately 70% of the data lies within one standard deviation and approximately 98% lies within two standard deviations. It can therefore be said that the error term of the data is normally distributed.

From the above discussion, it can be seen that all four assumptions were satisfied and the multiple regression model was used with confidence to analyse the data.

## APPENDIX D –SIGN TEST

The probability mass function used to test for an additive discrepancy effect is:

$$\begin{aligned}
 P(\text{NoSignsInExpectedDirection} = x) &= \binom{18}{x} 0.5^x (1 - 0.5)^{18-x} \\
 &= \binom{18}{x} 0.5^{18} \\
 &= \binom{18}{x} 0.000003814
 \end{aligned}$$

From which the following probability table is calculated

No. of Signs in Expected Direction	Probability
0	0.00000
1	0.00007
2	0.00058
3	0.00311
4	0.01167
5	0.03268
6	0.07080
7	0.12138
8	0.16689
9	0.185437
10	0.16689
11	0.12138
12	0.07080
13	0.03268
14	0.01167
15	0.00311
16	0.00058
17	0.00007
18	0.00000

In this study, the number of signs in the expected direction for each variable was as follows:

Dependent Variable	No. Signs in Expected Direction	Probability
Job Satisfaction	15	0.00311
Career Satisfaction	16	0.00058
Turnover Intention	15	0.00311
Turnover Intention (Profession)	15	0.00311
Turnover Intention (Position/Organisation)	16	0.00058
Affective Commitment	15	0.00311
Continuance Commitment	5	0.03268
Normative Commitment	13	0.03268

## APPENDIX E – DETAILED MULTIPLE REGRESSION TABLES

**Hypothesis 5a: There is a significant correlation between job satisfaction and organisational commitment**

Table 32: Regression Summary for Hypothesis 5a (Affective Commitment)

Regression Summary for Dependent Variable: AC (TurnoverWorking.sta)						
R= .4903326 R <sup>2</sup> = .24042670 Adjusted R <sup>2</sup> = .23444581						
F(1,127)=40.199 p<.00000 Std.Error of estimate: .90992						
N=129	Beta	Std.Err. of Beta	B	Std.Err. of B	t(127)	p-level
Intercept			1.211563	0.332227	3.646795	0.000386
JS	0.490333	0.077336	0.559297	0.088213	6.340279	0.000000

Table 33: Regression Summary for Hypothesis 5a (Continuance Commitment)

Regression Summary for Dependent Variable: CC (TurnoverWorking.sta)						
R= .04961566 R <sup>2</sup> = .00246171 Adjusted R <sup>2</sup> = -----						
F(1,127)=.31341 p<.57658 Std.Error of estimate: .94696						
N=129	Beta	Std.Err. of Beta	B	Std.Err. of B	t(127)	p-level
Intercept			2.809567	0.345750	8.125996	0.000000
JS	0.049616	0.088626	0.051395	0.091804	0.559830	0.576582

Table 34: Regression Summary for Hypothesis 5a (Normative Commitment)

Regression Summary for Dependent Variable: NC (TurnoverWorking.sta)						
R= .23447426 R <sup>2</sup> = .05497818 Adjusted R <sup>2</sup> = .04753706						
F(1,127)=7.3884 p<.00748 Std.Error of estimate: .72134						
N=129	Beta	Std.Err. of Beta	B	Std.Err. of B	t(127)	p-level
Intercept			1.943995	0.263373	7.381154	0.000000
JS	0.234474	0.086262	0.190084	0.069931	2.718167	0.007482

**Hypothesis 5b: There is a significant correlation between career satisfaction and organisational commitment**

Table 35: Regression Summary for Hypothesis 5b (Affective Commitment)

Regression Summary for Dependent Variable: AC (TurnoverWorking.sta)						
R= .34594151 R <sup>2</sup> = .11967553 Adjusted R <sup>2</sup> = .11274384						
F(1,127)=17.265 p<.00006 Std.Error of estimate: .97958						
N=129	Beta	Std.Err. of Beta	B	Std.Err. of B	t(127)	p-level
Intercept			1.832547	0.353225	5.188047	0.000001
CS	0.345942	0.083257	0.405003	0.097471	4.155116	0.000059

Table 36: Regression Summary for Hypothesis 5b (Continuance Commitment)

Regression Summary for Dependent Variable: CC (TurnoverWorking.sta) R= .08868358 R <sup>2</sup> = .00786478 Adjusted R <sup>2</sup> = .00005269 F(1,127)=1.0067 p<.31759 Std.Error of estimate: .94439						
N=129	Beta	Std.Err. of Beta	B	Std.Err. of B	t(127)	p-level
Intercept			3.328757	0.340536	9.77504	0.000000
CS	-0.088684	0.088386	-0.094286	0.093970	-1.00337	0.317592

Table 37: Regression Summary for Hypothesis 5b (Normative Commitment)

Regression Summary for Dependent Variable: NC (TurnoverWorking.sta) R= .18438443 R <sup>2</sup> = .03399762 Adjusted R <sup>2</sup> = .02639130 F(1,127)=4.4697 p<.03646 Std.Error of estimate: .72930						
N=129	Beta	Std.Err. of Beta	B	Std.Err. of B	t(127)	p-level
Intercept			2.099612	0.262978	7.983993	0.000000
CS	0.184384	0.087214	0.153419	0.072568	2.114156	0.036457

University of Cape Town