THE CONSEQUENCES OF A MISMATCH BETWEEN EMPLOYEE NEEDS AND JOB ATTRIBUTES IN THE INFORMATION SYSTEMS FIELD - AN EMPIRICAL SURVEY

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I hereby certify that except as noted above, this report is entirely my own work, and all references are accurately reported.

Signed by candidate

Guy Meredith

ABSTRACT

The high turnover of IS staff in South Africa continues to be a source of concern to organisations relying on Information Technology. Such turnover is costly, and leads to delays in project completion; loss of valuable experience; and reductions in IS department productivity.

One of the suggestions for reducing turnover that is frequently encountered in the literature is for organisations to implement a dual-career path for their IT staff. This advice is based on the assumption that IT personnel hold either a Managerial or Technical Career Orientation, and that the dual-career path will, therefore, meet the needs of all IT personnel.

This study shows that such an assumption is invalid. As a group, IT professionals in South Africa are shown to have a wide diversity of career orientations. In addition, IT professionals with different career orientations are shown to be very different types of employee, having different needs and values, and exhibiting different levels of performance in the job. As expected, IT professionals also tend to occupy jobs that are most likely to fulfil their career orientations.

Furthermore, IT professionals whose jobs are congruent with their orientations show significantly greater job and career satisfaction, higher organisational commitment, and less intention to leave their organisations, than their counterparts who experience a mismatch. In contrast, the matched group as a whole did not show superior perceived performance in the job to the mismatched group, although certain orientations did exhibit such differences.

It is critical that organisations take cognisance of the diversity of IT personnel in their employ, and adopt career planning and motivational strategies flexible enough to accommodate each orientation. This study has shown that the implementation of a dual-career path will satisfy a scant 10.2% of the individuals surveyed. Thus, greater focus by organisations on understanding the *individual*, and less on seeking to manage the IT profession *as a group*, will result in IT personnel experiencing greater satisfaction, as well as more commitment to, and less likelihood of leaving, their employing organisations.

It is recommended that research is continued into the career orientations of IS personnel. Specifically, it would be valuable to improve and refine the instrument assembled in this study, with the aim of producing a measure that researchers and, moreover, employers can utilise to assess how various jobs match the different career orientations known to exist. Also, it would be beneficial to examine further the performance levels of individuals in positions incompatible with their orientations, and to examine why different levels of performance between matched and mismatched individuals were exhibited by only certain of the orientations. Finally, research should be performed into the different career paths, positions and assignments most suited to the individual orientations, in order to enable organisations to achieve a better fit between the needs of the organisation, and the needs of the IT employee.

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1. Introduction

The growing importance of information and information technology (IT) to organisations has generated a corresponding demand for skilled information systems professionals. However, the IT industry is characterised by an increasing shortage of skilled personnel, and a high staff turnover rate. In such an environment, it is important for IT managers and organisations to understand the reasons for, and take steps to address, the turnover rate of their IT staff.

It has been suggested that guidance for IS managers on personnel management, and specifically on reducing turnover, is limited, due to inadequate focus in IT personnel research on the broader organisational careers literature (Ginsberg and Baroudi, 1988, p. 587). Indeed, a useful construct ignored until recently is Schein's (1987) concept of the Career Orientation. The career orientation refers to a person's self-perceived motives, values, and abilities that guide his or her career decisions. Although nine different orientations have been identified in previous research, much of the advice on IT careers has assumed that IT personnel hold two; either a technical or managerial orientation. This assumption is implicit in the concept of the dual-career path.

Since Ginsberg et al's (1988) criticism, several studies into the career orientations of IS personnel have taken place. The result of these studies has been a somewhat unclear picture of the distribution of orientations held in the industry. For example, whereas Igbaria, Greenhaus and Parasuraman (1991) showed IT professionals to hold primarily technical and managerial career orientations, Meredith (1992), in a study restricted to the Western Cape region of South Africa, found most individuals to hold either a geographical security or lifestyle orientation, with very few being inclined to pursue either technical or managerial careers.

A potentially valuable finding which has emerged, however, is that individuals who occupy jobs compatible with their orientations show greater job and career satisfaction, increased organisational commitment, and less intention to leave their organisations, than their counterparts who experience a mismatch. The effects of incompatibility between job and orientation have only been tested, however, against the managerial and technical orientations, which represent slightly less than 50% of Igbaria et al's (1991), and 15% of Meredith's (1992), samples respectively.

This paper explores the career orientations of a wider South African sample, to determine whether the distribution of career orientations drawn from a national sample will be consistent with that exhibited in the Western Cape, or more closely aligned with Igbaria et al's (1991) results. In addition, the career orientations profile of an IT sample is compared to several other professional occupations in South Africa, in order to examine whether any significant differences exist, and whether such differences imply a need for IT personnel to be managed differently to other professional groups.

The different characteristics exhibited by each orientation are also examined, to establish whether the observations made by Schein (1987) regarding each orientation's likes and dislikes, and abilities, hold true for IT professionals. Further, the tendency for individuals holding particular career orientations to occupy different job types, and, moreover, to hold positions which are likely to fulfil their orientations, is investigated.

Finally, this paper examines whether individuals who occupy jobs incompatible with their orientations show negative job and career outcomes, as exhibited by such individuals in Igbaria et al's (1991) study. This study extends earlier work, however, by examining the effects of a match versus a mismatch on *all* orientations known to exist, rather than only against the Managerial and Technical orientations examined in Igbaria et al's (1991) and Meredith's (1992) studies. Furthermore, additional constructs not examined in previous research, such as the IT professional's performance in the job, and his or her dependency on the employing organisation, are analysed.

1.1 Structure of the Report

Chapter 2 discusses the growing importance of human resources in the IS industry and the reasons for the skill shortage and high turnover inherent in this area. Particular focus is given to contributing factors considered peculiar to South Africa. The career orientation concept and the different career orientations known to exist are introduced, and a summary of research performed to date in the IS field using this construct is presented. Limitations in previous research are described, and the manner in which these limitations are addressed in the current study detailed. Finally, the hypotheses to be examined in this study are presented.

Chapter 3 describes the research methodology. Firstly, the sample choice, sampling procedure, response received and demographic characteristics of the respondents, are described. Thereafter, an extensive description of how the various measuring instruments were compiled, and their psychometric properties, is provided.

Chapter 4 reports on the results of the study. The career orientations profile of the sample is discussed, and the distinguishing characteristics of the individual orientations examined. The distribution, and mean scores, of career orientations between different geographical regions are compared. The tendency for individuals with different orientations to occupy positions compatible with their orientations is explored. Finally, the consequences of a match between job and career orientation are investigated.

Chapter 5 discusses the findings, and their implications for organisations, IT managers and practitioners in the industry. Limitations in the research approach are discussed, and suggestions for further research made.

Finally, Chapter 6 summarises the results, implications and recommendations of this study.

1.2 Definition of Terms Used

The terms 'career anchor' and 'career orientation' are used interchangeably in this report. Frequently, the term "orientation" will be used in place of "career orientation", to save space.

It should be noted that the terms career orientation and career anchor are not entirely synonymous, as Kaplan (1990) points out, as the career orientation lacks the self-perceived talent aspect of the career anchor.

However, it is suggested that these constructs may be considered equivalent in professions where stringent standards exist for entry into the profession, as skill levels are effectively standardised in such groups. Although such standards do not exist in the IT industry, the organisation from which the sample for this study is drawn does impose such standards for admission, and it is thus considered reasonable to regard the terms "anchor" and "orientation" analogous for this study.

The acronyms "IT" and "IS" stand for "Information Technology" and "Information Systems" respectively, and are used interchangeably as adjectives in the text. For example, references to "IT Personnel" and "IS staff" can be regarded as references to the same group - namely, individuals employed in the function of providing Information Technology services to organisations.

The term 'dual career path' refers to a practice which originated in the Engineering profession (Crook, Crepeau and McMurtrey; 1991). This practice involves the implementation of two career paths, one for individuals who desire to remain in an area of technical specialisation, and one for employees wishing to ascend the managerial hierarchy. The dual career path is intended to permit the technical person to advance without taking on the roles and responsibilities of a managerial position.

Several references are made in this paper to terms relating to the Internet. The Internet, essentially, is a worldwide system of linked computer networks (Pfaffenberger, 1993, p330). This system enables individuals linked to the Internet to communicate and exchange information, regardless of their location or proximity to one another. The Internet was originally designed to support educational institutions and, as a result, many universities and colleges have links to the network.

Email, an acronym for electronic mail, is the use of a computer network, such as the Internet, to send and receive messages.

Finally, the following acronyms will appear extensively in tables and graphs throughout the text, and each refers to the specific career orientation shown alongside:

AUT	Autonomy	CHA	Challenge
ENT	Entrepreneurial	GEO	Geographical Security
JOB	Job Security	LIF	Lifestyle
MAN	Managerial Competence	SER	Service/Dedication
TEC	Technical/Functional Competence		

1.3 Statistical Analysis

All statistical analyses reported in this paper were carried out using the Windows-based Statistica package.

1.4 Intended Audience

This paper should be of interest to organisational Human Resource specialists, as well as IS Management, as both are faced with the responsibility of retaining valued IT professionals within their organisations. The results will also be of interest to IS practitioners who experience dissatisfaction or indecision in their jobs and careers, and who could gain some insight into the reasons for their experiences from an understanding of the career orientations concept. Finally, the paper will be of interest to researchers of IS personnel issues, and should motivate further examination into the findings presented herein.

2. THE IMPORTANCE OF HUMAN RESOURCES IN THE IT INDUSTRY

"The image of the automation engineer may not excite the imagination as does the image of the astronaut, but the fate of mankind in the foreseeable future will depend more on what we do manipulating machines on earth than on how we do hurtling them through the heavens".

Adlai Stevenson (1900-1965)

Organisations are becoming increasingly dependent on Information Technology (IT) to prosper, and indeed to survive, in the current competitive environment. Ernst and Young (1989) suggest that "introducing new information technology will be a *competitive necessity* in the 1990s rather than a competitive advantage - *everyone will be doing it*". It follows, then, that as an organisation's dependence on IT increases, so, too, does the importance of retaining skilled IT professionals in that organisation.

Evidence of the increasing importance of IT human resources is found in the many "Key IS Issues" studies that have taken place in various countries. IS Staff development and the maintenance of attractive career paths was ranked 8th and 4th respectively in the USA and Republic of China in a 1990 survey by Harrison and Farn (1990). In a paper comparing and contrasting the key issue studies across Australia, Europe, Singapore and the United States (Watson and Brancheau, 1991), the issue of "specifying, recruiting and developing IS Human Resources" was ranked, on average, sixth overall in importance. The same issue was ranked fifth in South Africa in a study performed by Miller and Pitt (1990).

The importance of attracting and retaining IS human resources is compounded by two significant problems in the IT industry (Igbaria and Siegel: 1993):

- the increasing gap between supply and demand of IS professionals; and,
- the high turnover rates characteristic of this industry (Bartol and Martin, 1982; Goldstein, 1984; Igbaria et al, 1991; Baroudi, 1985; Igbaria, Meredith and Smith: 1994).

2.1 Increasing gap between supply and demand

The shortage of qualified IT personnel is reported to be a world-wide problem (Dengate, Couger and Weber, 1990). Moreover, this scarcity of personnel is expected to increase, given the rapidly changing nature of technology, and the increased importance of IT to organisations (Niederman, Brancheau and Wetherbe, 1991; Baroudi and Ginsberg, 1986; Butler Cox, 1989). The increase in the importance of IT is reflected in the reported demand for IT personnel. Jenkins (1994) cites private sector demands in the USA for system analysts, programmers and IT managers increasing by 52%, 49% and 32% respectively until the end of the decade. Igbaria and Siegel (1992) state that the current growth rate in the demand for IT personnel is increasing at 15% per annum.

While the South African IT industry suffers a similar shortage of skilled IT personnel, this shortage may be aggravated by several factors unique to this country. Firstly, there is an inadequate base of skills due to the historical deficiencies in education experienced by much of the workforce (Meredith, 1992). Secondly, since the 1992 general election and the resultant acceptance of South Africa back into the international community, there has been an increase in the number of foreign companies operating in this country. Such companies often recruit locally, as it is cheaper to do so and because the government discourages the importing of foreign labour. Kun (1995), referring to the first nine months of 1995, reports that "demand (for IT staff) has increased dramatically, largely due to increased business confidence (and) reinvestment by multinationals".

Thirdly, Jordaan (1996) reports that many skilled South African IT practitioners are leaving the country for contracts overseas. This trend is unlikely to decrease given the fact that current exchange rates make the earning of foreign currency an attractive proposition. Further, this trend is exacerbated by the violence factor and potential instability of the country, particularly in certain regions. Kun (1995), for example, reports that the violence factor in Johannesburg results in a dearth of people willing to accept jobs in that area.

2.2 High IT Staff Turnover

High staff turnover has been a problem in the IS industry for many years. Over twenty years ago, Mumford (1972) found that 45% of the systems analysts and programmers she had interviewed intended leaving their organisations. De Marco and Lister (1987, p105) describe encountering turnover rates between 33% and 80% per annum in the IT industry. More recently, Klenke and Kievit (1992) report on studies in the USA which show IT staff turnover to be between 25 and 35% annually, approximately 5 times the departure rate for all US manufacturing companies. Locally, reported turnover figures vary, but tend to be between 20 and 25% (White, 1989; Hamlyn, 1992).

The high rate of IT staff turnover has several undesirable consequences for the IT department, the most significant of which are reduced productivity and increased costs. As Kym and Park (1992) point out, a key project team member leaving an organisation during a project will negatively affect the team's ability to deliver an application on time, and within budget. Moreover, even the most skilled IT professionals offer little return on investment if they only stay with a company for one or two years (Hamlyn, 1992; Mumford, 1972; Butler Cox, 1989; Baroudi, 1985; Bartol et al, 1982, p62). High turnover is particularly damaging at a time when IS departments are expected to contain costs while reducing the time taken to deliver systems (Conner, 1993).

In a critical survey of research articles pertaining to IT personnel, Ginsberg et al (1988, p588) found that the advice most frequently offered to the IT manager for reducing turnover was to effect improved career planning for IT employees; and offer a dual career path in order to cater for those employees not wishing to pursue a managerial career. Ginsberg et al (1988, p591) suggested that such advice was questionable, particularly as IT career research had ignored the wealth of information contained in related research outside of the IT industry. One of the areas neglected was the concept of a Career Orientation or Career Anchor.

2.3 The Career Anchor/Orientation Concept

The career anchor (Schein : 1987, 1985; Kaplan, 1990) is a concept that originated from a longitudinal study of 44 alumni from the Sloan School of Management in Massachusetts. The study took place over a period of ten to twelve years, during which information was gathered from alumni regarding the careers they had chosen, the changes made in their careers, the motives for, and feelings experienced with, each change and the values and attitudes developed during this period.

As the various individuals progressed through their careers, it became evident that each was developing his or her career around an increasingly distinct and consistent pattern of motivations, values and beliefs. These patterns revealed a "growing sense of self - 'this is me, and that is not me'" (Schein : 1987 : p159), which appeared to be derived from the experiences of early years in the career. This self-concept was given the term "career anchor" as it effectively "anchored" the alumni in the study to a particular career direction.

The career anchor is defined by Schein (1985, p:28) as "that set of self-perceptions pertaining to your (1) motives and needs; (2) talents and skills; and (3) personal values that you would not give up if you were forced to make a choice". This self-concept is not present on one's first entry into the workplace, but is developed through occupational experience, from which one gains an understanding of one's real talents, motives and abilities.

Schein (1985, 1987) identified eight career anchors, one of which (Security) was later recognised as consisting of two distinct factors (De Long, 1982). A brief definition of the nine career anchors in terms of which most people can be described, follows:

- *Job Security.* Individuals with this orientation have an overriding need for security and stability, and typically seek careers in large, established organisations known to provide secure and stable employment, with good benefits, and pension/retirement plans.
- *Geographic Security.* Individuals with this orientation seek to remain in a particular geographical area, and may move from company to company in order to avoid being relocated.
- *Autonomy/Independence.* Autonomy-oriented individuals seek maximum freedom in their work, and independence from organisational rules and restrictions.
- *Technical/Functional Competence.* Individuals with this orientation seek to remain in their particular area of technical/functional expertise, and derive most of their satisfaction from exercising and increasing their skills in the work itself.
- *Managerial Competence.* This individual's primary concern is to exercise his or her combination of analytical, emotional and interpersonal skills in the management of others. Such individuals regard technical work as a stepping stone to a managerial career, and seek to move into a general management role as soon as they are able.
- *Entrepreneurship.* Individuals with this orientation have a primary need to create something new, which can be recognised as existing entirely through their own efforts or ideas.
- *Service/Dedication.* This group of individuals is motivated to serve others or to dedicate themselves to a particular cause which they consider important (helping others, teaching, improving the world in some way).
- *Pure Challenge.* For individuals with this orientation, the primary concern is to solve impossible problems, win over tough opponents and overcome seemingly insurmountable challenges.
- *Lifestyle Integration.* For this orientation, the most important objective is to integrate one's career and personal life such that neither dominates the other.

2.4 Research into Career Orientations of IS Personnel

Ginsberg et al (1988, p592) suggested that a key assumption driving many of the studies into (and much of the advice given to) IT personnel was that such personnel held either the technical/functional competence or the managerial competence orientation. Thus, they called for research into the career orientations of IS personnel in order to:

- determine whether this assumption held true, and;
- examine whether individuals whose jobs were congruent with their career orientations exhibited greater job and career satisfaction, and less turnover, than their counterparts who experience a mismatch.

Several studies have taken place in response to the call for more research into career orientations of IS Professionals. One of the first studies was performed by Baroudi in 1988 (Ginsberg and Baroudi, 1992, p42), and was aimed at establishing whether the dual career path, which caters primarily for the technically and managerially-oriented, provided satisfactory career options for the various career orientations that existed in an IS Personnel sample from two organisations. The orientations with the highest mean score for the sample were the variety (i.e. challenge) and service orientations, while technical competence achieved one of the lowest scores. Also, satisfaction with career options was positively correlated only with the managerial competence anchor, which suggested that the dual career ladder as implemented in these organisations was not perceived to provide satisfactory rewards to the technically-oriented.

A further study, carried out by Crepeau et al (Crook et al, 1991), showed that the career anchor construct was operative for IS professionals, and, due to the wide variety of career orientations exhibited, raised further doubts about the ability of the dual-career path to satisfy all IS personnel.

A subsequent study by Crook et al (1991) sought to determine whether the career anchor construct could be used to discriminate between IS job types, and thus enable better matching of an employee with a job. Secondary research questions involved establishing whether the construct allowed for differentiation between males and female IS employees, and between employees with more than five years experience versus those with less. 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 and gender. Thus, it was suggested that IS managers focus on offering IS personnel security, opportunity to be of service, and variety in order to better manage these employees.

Another study was conducted by Igbaria et al (1991), who surveyed IT employees that were members of a professional association (The Association for Computing Machinery) in the USA. This survey showed that IT professionals held a wide variety of career orientations, but confirmed, as had been hypothesised, that the majority were found in the managerial and technical orientations (26.1% and 22.6% respectively). Interestingly, these results conflicted with previous findings - however, it should be noted that Igbaria et al (1991) analysed the *distribution* of individuals with each dominant orientation rather than using the *average scores* for the entire sample. Also, it was found that individuals whose orientations matched their job setting (viz. technically-oriented individuals in technical positions, and managerially-oriented individuals in managerial positions) displayed higher job and career satisfaction, greater organisational commitment, and less turnover intention, than mismatched individuals (viz. technically-oriented employees in managerial positions, and vice-versa).

Igbaria et al (1991, p166) suggested that the generalisability of their findings to IT professionals in other geographic areas should be tested. Thus, Meredith (1992) performed similar research in 1992 in the Western Cape in South Africa, to establish whether Igbaria et al's (1991) findings were definitive in a South African context. Contrary to the American findings, however, the predominant orientations held by the sample were geographical security (25%) and lifestyle (22.3%), with those holding the managerial and technical orientations occupying a scant 12% and 2.4% of the sample. Also, while the results tended to support the view that a mismatch between job and orientation reduced job satisfaction and led to increased turnover intention, the sample size was too small, and the results statistically insignificant, to draw a definitive conclusion in this regard.

The final study in the IS field was conducted by Ginsberg et al (1992), who set out to show that the 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 arise. The results of this study again contrasted with those of Igbaria et al (1991), as neither managerial competence not technical competence dominated. Some correlation with Crook et al's (1991) study was found, however, with the mean scores on challenge, service and job security dominating. Yet, in terms of dominant orientation distribution, challenge, job security and geographical security occurred most frequently. Thus, slightly different profiles emerged, depending on whether distribution or mean score were used to establish the career orientation profile. Finally, as differences of practical significance between different organisations and/or regions failed to materialise, it was concluded that career planning and management "need not be highly tailored to company or geographic region" (Ginsberg et al, 1992, p52).

Thus, it can be seen that a somewhat confusing and contradictory picture of the career orientations of IS personnel emerges from the above studies. Also, the findings of the above studies lack generalisability, due to inconsistencies or limitations in the research approaches. These are discussed below.

2.5 Inconsistencies or Limitations in previous research into Career Orientations of IS Personnel

2.5.1 Inconsistencies in previous research methods

Different approaches have been adopted for establishing the career orientations of IS personnel in the various studies cited above. For example, Igbaria et al (1991) measured the *distribution* of career orientations across their sample and concluded that the dual-career path catered for fifty percent of their sample. Crook et al (1991) and Ginsberg et al (1988) measured the *mean score* achieved on each orientation for their samples, and concluded that the dual-career path would satisfy very few IS personnel, as job security, challenge and the opportunity to be of service were of most importance to these individuals. Thus, it can be seen that the conclusions drawn, and, consequently, the advice offered to IS managers, differs according to the method used to establish the career orientations profile of IS employees. As a result, the generalisability of the findings and conclusions is questionable.

2.5.2 Limitations specific to Research into Effects of Match/Mismatch on Job Outcomes

Several limitations exist which are specific to the research conducted by Igbaria et al (1991) and, thereafter, by Meredith (1992). These limitations are described below.

Insufficient testing of entire sample; inadequate classification of sub-samples. Meredith's (1992) and Igbaria et al's (1991) studies only tested the consequences of a mismatch between job setting and career orientation for those individuals having either a managerial or technical orientation. This was due to the fact that it was believed that most respondents in the IS field would hold one of these two orientations. As a result of this premise, no measure of the extent to which the job fulfilled other orientations was included in the studies. Instead, Igbaria et al (1991) and Meredith (1992) relied on job titles to categorise the type of job occupied by the respondent.

There are several shortcomings to this approach. Firstly, as Trower and Straub (1992, p277) point out, studies of MIS personnel should examine "job roles rather than job titles or even job descriptions because of the variability of job tasks performed by individuals with the same title or job description". Glover (1994) concurs, stating that there is a lack of standardisation in the IS industry in categorising personnel. Indeed, in the above studies there was no way of knowing whether the placement of individuals into a technical or managerial category was correct, as one had no way of knowing to what extent they performed managerial or technical duties and activities.

Moreover, IS employees whose job title implies a managerial role are likely to perform both managerial and technical tasks to a greater or lesser degree - and a job title does not indicate the relative degree of job content. For example, a project manager of a technical systems implementation project may spend only 20% of his time performing managerial duties, with the remainder being spent on technical issues. Thus, this individual may be considered to be holding more of a *technical* than a *managerial* position, because the job content is primarily technical in nature. As a result, it is incorrect to assume that the word 'manager' in the job title enables an accurate classification of an individual as a manager. Rather, the extent to which a job requires managerial and technical activities should be measured on a relative scale to assess the true nature of the individual's job.

Secondly, Igbaria et al's (1991) study permitted analysis of the consequences of a match versus a mismatch between orientation and job, and found a significant correlation between mismatch and reduced job satisfaction, career satisfaction, organisational commitment and increased turnover intention. However, this analysis was conducted *only on the managerially and technically oriented*, as already stated. Meredith's study, therefore, failed to allow for confirmation of these findings due to the fact that the number of managerially and technically oriented individuals in his sample was very small. Thus, while the findings tended to support those of Igbaria et al (1991), the sample was too small for statistical confirmation. Moreover, match versus mismatch tests could not be performed on the remainder of the sample (51.3% in Igbaria et al's (1991) study, and 85.6% in Meredith's (1992)) as no measure of the extent to which their jobs fulfilled their orientations had been included in the study, and the job title gave no indication of the amount of autonomy or job security, for example, enjoyed in the job. Thus, one cannot be sure that individuals with other career orientations would react equally to the lack of congruence between their orientations and their jobs.

Sample bias. It is believed that the choice of Meredith's (1992) sample may have influenced the results. Firstly, the high percentage of individuals holding a geographical security orientation may have been a result unique to the geographical area in which the study was conducted. In a recent study undertaken by the Graduate School of Business and the Institute for Futures Research at the Management School of the University of Stellenbosch (Breier, 1995; Cloete, 1995), it was found that the Western Cape offers "the best quality of life in the country". Thus, it is perhaps not surprising that a sample drawn from this area would contain high numbers of individuals whose primary motivation was to avoid being transferred to another geographical location.

2.6 Intentions of this study

The intentions of this research project are to overcome the limitations existing in the previous studies, as described above, and to extend the study to examine additional constructs relevant to, but not measured in, Igbaria et al's (1991) and Meredith's (1992) previous research.

2.6.1 Addressing Limitations.

Firstly, the career orientations of IS Professionals are established using both the methods described previously (i.e. the average score and the frequency of dominant orientations), to examine the effects that the different methods have on the conclusions which might be drawn from each. Also, the generalisability of findings from both approaches to the rest of industry are examined.

Secondly, the sample consists both of individuals from the Western Cape, as well as from the rest of South Africa. The results from the two geographical regions are compared, to determine whether significant differences exist, or whether findings from one geographical location are generalisable to the South African IT industry as a whole.

Thirdly, the consequences of a mismatch between job and orientation are examined for *each* of the orientations known to exist. Thus, unlike previous studies which examined the effects of mismatch/match between a job and the technical and managerial orientations, this study examines the effects of a match/mismatch on all nine career orientations. Moreover, items are specifically included in the survey instrument to establish the congruence of a job with each orientation, rather than relying on job titles or descriptions.

2.6.2 Extending previous research

Firstly, Igbaria et al (1991, p167) called for research to establish whether the career orientations of IS professionals differ from individuals in other functional areas. To this end, the results of this study are compared to those of another South African study (Kaplan, 1990), which examined the career orientations of fourteen different professional occupations.

Secondly, several additions/amendments are made to previous research instruments to improve the research approach and the usefulness of the findings. A turnover instrument believed to be more accurate than that used in Igbaria et al's (1991) and Meredith's (1992) previous research is utilised. In addition, intention to quit the IS profession, as well as the organisation, is assessed. Also, three distinct aspects of the Organisational Commitment construct are measured, as opposed to the single construct measured in earlier research. Finally, instruments are obtained or created to measure the extent to which a job caters for each of the nine career orientations. The rationale for the inclusion of the instruments mentioned above is provided in Chapter 3.

Thirdly, Miner and Brewer (1976, p998), referring to several studies on work performance, suggest that "placement error", "inappropriate job assignment", and "lack of proper motivational environment" are some of the factors which contribute to ineffective performance. These factors are likely to arise when individuals are placed into jobs that are incompatible with their career orientations. Trower and Straub (1991), too, suggest several factors which might influence an individual's performance in the job, among these being the job holder's skills, abilities and motivation, which are integral parts of the career orientation as defined by Schein (1985). For this reason, it is suggested that a mismatch between an individual's career orientation and his or her job position will result in inferior performance by that individual, in comparison with individuals whose jobs match their orientations. This assertion is examined.

Finally, the effects of a mismatch between career orientation and job are examined for all nine career orientations. The study is expected to establish, therefore, whether Igbaria et al's (1991) findings are definitive for all, or peculiar to the technical and managerial, career orientations.

2.7 Research Hypotheses

The hypotheses which are tested during this study are listed below:

Hypothesis 1.

Significant differences will exist between the distribution of career orientations among individuals resident in the Western Cape, and those resident in other parts of South Africa. Stated differently, neither the geographical security nor the lifestyle orientations will dominate in a sample drawn from outside the Western Cape.

Hypothesis 2.

The career orientation profile of a sample of South African IT professionals will differ significantly from the profiles of other South African professional occupation groups (i.e. accountants, architects, attorneys, dentists, dieticians, medical doctors, engineers, nurses, pharmacists, physiotherapists, psychologists, radiographers, social workers and veterinarians).

Hypothesis 3.

IS employees are more likely to hold positions which fulfil their career orientations than they are likely to hold positions which do not. In other words, technically-oriented individuals are likely to hold technical positions, managerially-oriented individuals are likely to hold managerial positions, autonomy-oriented individuals are likely to hold positions which offer the incumbent autonomy and independence, and so on for the remaining orientations.

Hypothesis 4.

IS employees whose current position matches their career orientation are more satisfied with their job and career, more committed to their organisation, rate their performance in the job more highly, and are less inclined to leave their organisations than those whose orientation does not match their job setting.

2.8 Conclusion

In this chapter, the growing importance of IT to organisations has been described, and the consequent increase in dependence of these organisations on retaining IT personnel noted. The tendency for much of the research into IS careers to assume that IS personnel hold either a technical or managerial inclination, and the drawbacks associated with such an assumption, have been discussed. The career orientations construct has been introduced, and the application of this construct in IS personnel research has been outlined. Limitations existing in certain of the research approaches have been noted, and the current studies' intention to overcome these limitations summarised. Finally, the hypotheses which are tested in this study have been listed.

In the next chapter, the sampling method is described, and the response rate and demographic characteristics of the respondents presented. In addition, the various measuring instruments and their psychometric properties are described in detail.

3. METHODOLOGY

3.1 Introduction

In this chapter, issues affecting the choice of sample are described, together with the sampling method, the resultant sample size and demographic characteristics. The procedure used to obtain the various measuring instruments is explained, and the items making up each scale, and their psychometric properties, presented.

3.2 Sampling Issues

Several issues influenced the selection of a sample for this study. Firstly, for the results to be applicable and, thus, useful, to the majority of organisations employing IT practitioners, the sample chosen had to be broadly representative of the IS industry in South Africa. Also, as the study focuses on IT professionals, the sample had to consist of individuals who were actively employed in the IT industry, and who had made a firm decision to follow a career in this industry. Secondly, the size of the sample had to be large enough to enable the intended statistical analyses to be carried out, and to ensure that the various career orientations that might occur were adequately represented.

3.2.1 Choice of Sample

In previous research into career orientations of IS Professionals in South Africa, Meredith (1992) had used a sample from the Western Cape Chapter of the Computing Society of South Africa (CSSA). It was decided to approach this organisation again, as it is considered to be an ideal association for this type of research. Firstly, its members represent a wide variety of IT job categories and are employed in many diverse organisations and industry types across the country. Moreover, membership is granted only to those who hold or are working towards computer-related qualifications, and who have a minimum number of years experience in the IT field.

Thus, such a sample would represent not only individuals who had made a firm decision to follow an IT career, but would also consist of precisely the type of qualified and experienced individual that organisations are least likely to want to lose. Therefore, the CSSA was approached, and the Executive Committee kindly agreed to provide access to their national mailing list, as well as to a list of over 500 members who were contactable via email.

3.2.2 Size of Sample

The choice of sample size was determined by several factors:

- The need for the nine career orientations (which would effectively constitute nine sub-samples) to be adequately represented in the sample;
- the proposed statistical analyses, some of which require minimum sample sizes (Bryman, 1989; Behr, 1988); and,
- previous response rates achieved for similar research (37.7% in Meredith's (1992) study; 20.3% in Igbaria et al's (1991)).

In Meredith's (1992) previous study, a sample of 300 individuals was extracted. To increase the potential for obtaining sufficient numbers representing each career orientation, it was decided to extract 500 members from the CSSA list who would be surveyed by postal questionnaire; and to send email questionnaires to every member who held an email address. This would effectively result in a potential sample size of 1055. Assuming, on the basis of Meredith's previous research, that a response rate of 30% was achievable, this meant that approximately 330 responses would be received, and, thus, it was likely that most of the career orientations would be adequately represented.

3.2.3 Sampling Procedure

Hypothesis 1 suggested that a difference in the profile of orientations would occur between IT professionals resident in, and those outside of, the Western Cape. It was possible to test this by limiting the current study to only those IT professionals resident outside of the Western Cape, and comparing the results to Meredith's (1992) earlier study, which was restricted entirely to individuals resident in the Western Cape. However, it is possible that Meredith's earlier results could be regarded as dated, as the study took place four years ago. Because of this possibility, it was important to include in the sample a number of individuals from the Western Cape, to determine whether the profiles observed in Meredith's earlier study still held true.

It was decided, therefore, to send postal questionnaires only to individuals outside of the Western Cape. However, the email sample would not be restricted in this fashion, but the responses would be categorised according to location. It was expected, therefore, that the postal sample would consist of only individuals outside of the Western Cape, but the email responses would represent a cross-section of individuals, both resident in and outside of this region.

A list of full members (hereafter referred to as the postal list), together with a list of members with email addresses (the email list), was obtained from the CSSA. The contents of both lists were stored in a database. Then, those members whose names appeared on the email list were excluded from the postal list, in the hope of avoiding sending duplicate questionnaires to the same individuals. In addition, the individuals who were included in Meredith's (1992) earlier study were excluded from the sample, as it was expected that approaching the same individuals with similar research questions might result in a lower response rate. Finally, those members who were resident in the Western Cape (identified according to their postal codes) were excluded from the postal list. The names remaining numbered 1477 in total.

To obtain the desired 500, the method adopted by Meredith (1992) was followed. Firstly, the required 500 out of 1477 translated roughly into a ratio of one out of every three. Thus, a random number between one and three was chosen, and the first name corresponding to that number was extracted from the list of members (sorted in alphabetical sequence). Then, every third person appearing in the list after the first was chosen, until the end of the list was reached, resulting in a total of 492. The procedure was followed again (using a different random number) to obtain the final 8 required to make up a total sample of 500 members. While this is not a purely random sample, as the choice of each subject depends on the previous one chosen (Meredith, 1992; Kaplan, 1990), 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, p108), or when the order is unrelated to the subject of the survey (Moser and Kalton, 1972).

3.3 Mailing Procedure

3.3.1 Postal Questionnaire

Each of the 500 "postal" subjects was sent a questionnaire; a covering letter explaining the reason for the research and requesting the subject's involvement; and a pre-paid addressed envelope. It was hoped that the covering letters and pre-paid addressed envelopes would increase the response rate, as these are described by Bryman (1989, p44) as "essential basic manoeuvres in minimising refusals" when surveying with postal questionnaires. Of the 500 postal surveys sent out, a total of 119 usable postal responses was received before the deadline set for inclusion, representing a response rate of 24.3%. An additional five were returned by individuals who did not feel qualified to answer, as they were no longer actively employed in the IT field. A further two were returned as the individuals concerned had emigrated overseas. Two more were returned unopened because of incorrect addresses. Finally, one was returned unanswered because it had been received 9 days after the cut-off date for responding.

It should be noted that late delivery of this nature is likely to have negatively affected the response rate far more than this one response would indicate. Indeed, there had been several articles in the Press during the period in which this research was conducted on the slow and ineffective postal deliveries being experienced in South Africa at this time. Evidence of this slow delivery is also provided by several of the respondents, who remarked that they had only received their questionnaires some time after the due date for response, despite these having been posted over three weeks prior to the deadline.

3.3.2 Email Questionnaire

In order to make the questionnaire suitable for answering via email, the method utilised by Mahal in his email survey (Viehland, 1996, p4) was adopted. As will be detailed in section 3.5, each of the questions in the survey are answered by means of a five-point Likert-type scale. In essence, Mahal's method involves placing the Likert scale *in front of* every question, as a string of 5 numbers. The respondent is then requested to either blank out or to mark (e.g. replace with a '#' character) the number corresponding to his or her response. This method thus allows for respondents to answer relatively easily via computer, with minimum cursor movement and number of keystrokes, while also permitting easy recognition of the response by the researcher. To test the ease of use of the modified questionnaire, a sample was sent to several fellow students for completion, and the email version was modified according to their comments.

The final questionnaire, together with the same covering letter used for the postal surveys, adapted slightly for email use, was emailed to the 555 email addresses on the CSSA email list. The questionnaires were sent from a computer at the University of Cape Town (UCT), with a UCT return address, to convince recipients of the researcher's *bona fides.*

Of the 555 messages sent, 35 were returned with messages such as 'service unavailable'; 'no route to host'; 'unknown host'; 'connection refused'. and, 'transient failure', which all indicated a form of network or recipient address failure. A further 8 were returned by individuals who were no longer actively employed in the IT industry. Finally, 3 were returned by individuals who had already received a postal copy.

Thus, 509 can be assumed to have actually reached their destinations. Of these, a total of 86 were returned by the deadline set for completion. This represents a rather unsatisfactory response rate of 16.9%. It is not known how this response rate compares to other surveys conducted via email, as it is believed that very few such surveys have been done. The response rate was likely to have been negatively impacted, however, by the length of the questionnaire, as the postal one took some 30 minutes to complete, on average, and it is likely that it would have taken even longer to complete using email. Moreover, individuals whose Internet connection was not sponsored by their companies, and who did not wish to go through the effort of downloading the questionnaire to their personal computers, are likely to have been reluctant to spend 30 minutes on-line answering the questions!

In total, the combination of both email and postal responses numbers 205, which represents a total response rate of 20.5%. While this is not by any means a satisfactory response rate, it is consistent with the majority of IS survey research (42% of which have response rates below 51% (Pinsonneault and Kraemer (1993, p99)). The implications of the low response rate on the findings will be discussed in Chapter 5.

3.4 Demographic Characteristics of Respondents.

The demographic characteristics of the respondents are presented in Table 1 below. The comparative percentages provided under the heading CSSA represent the figures of the CSSA as a whole ("CSSA Membership Analysis", 1990).

Although these figures are considerably dated, they do provide an indication of how the respondents differ from the characteristics of the broader CSSA population.

Table 1: Demographic Characteristics of the Sample (N=205)

Variables	Sample	CSSA
Gender		
Male	81.5	84.5
Female	18.5	15.5
Education		
Standard IX or less	0	0
Matriculation	7.8	45
Some University or Technikon	8.3	
Undergraduate degree or Technikon Diploma	22.0	35
Some Postgraduate study	14.1	
Postgraduate Degree	47.8	20
Marital Status		
Unmarried	20.0	
Married	80.0	
Organisational Level		
Professional	36.6	
Managerial	63.4	
Salary Categories		
Below R60,000	.5	
60,000 - 79,999	7.3	
80,000 - 99,999	11.2	
100,000 - 119,999	11.7	
120,000 - 139,999	16.1	
140,000 or above	53.2	
Age		
Mean = 42.44 SD = 8.30 Range = 25-64		
25 - 29	4.9	11
30 - 34	13.2	19
35 - 39	22.4	18
40 - 44	22.4	17
45 - 49	14.2	16
50 - 54	15.6	8
55 years old and older	7.3	7
Organisational Tenure (in years)		
Mean = 9.40 SD = 7.72 Range = 0.1-32		
Job Tenure (in years)		
Mean = 4.47 SD = 3.70 Range = 0.1-25		
Number of years in IT field		
Mean = 16.9 SD = 8.43 Range = 1-42		15

Firstly, this study's sample appears to be more highly educated than the general CSSA membership, given the fact that this sample has a far higher incidence of individuals with Postgraduate degrees, and far fewer individuals holding only a Matriculation Certificate. Also, while the mean age of the CSSA member (40.2) is not significantly different from that of this sample (42.44), there are fewer in the 25 to 34 age group and more in the 35 to 44 and 50 to 54 age group in this sample.

3.5 Measuring Instruments

As stated previously, this study was aimed at examining the extent to which a job matched the requirements of each of the nine career orientations. Thus, it was necessary to include in the survey instrument items to assess, for example, the amount of autonomy a job provided for the autonomy-oriented, and the amount of challenge for the challenge-oriented, and so on for each of the remaining orientations.

The field of IS research has received considerable criticism in recent years for developing its own instruments rather than borrowing existing, validated instruments from other suitable disciplines (Zmud and Boynton, 1991, p154; Benbasat, 1991, p183). Thus, a comprehensive survey of the organisational behaviour literature was conducted in an attempt to locate existing, validated instruments suitable for this study. In addition, the CSQS (Calgary Surveys Query System) listing of instruments used in MIS research, as compiled by Professors P.R. Newsted and S.L. Huff (1991, p187) was searched via construct and by keyword.

An overview of the survey instrument resulting from this literature search is described in the next section. Thereafter, each individual measuring instrument making up the complete questionnaire is described in detail, and argument for the use of particular items, as well as supporting statistical evidence, is provided.

3.5.1 The Survey Instrument

The survey instrument consisted of a covering letter, various demographic items, and eleven measuring instruments (see Appendix A).

The covering letter gave a brief description of the research area, and supporting argument for its importance to the IT industry. The letter also stated the length of time required to complete the questionnaire, assured confidentiality, and, in order to encourage participation, offered feedback on individual scores as well as a synopsis of the results to interested respondents. 81% of the respondents requested feedback, indicating that this offer may have been a useful incentive.

The demographic section included items for assessing gender, age, marital status, number of children, age of youngest child, educational level, and number of years in the job, the organisation and the IS profession.

The measuring instruments are described individually below. Where internal consistency reliability scores are reported, these were assessed using the formula recommended by Cronbach, which is widely used as a measure of internal consistency (Igbaria et al, 1993, p136).

3.5.2 Career Orientations Inventory

In the initial studies performed by Igbaria et al (1991) and Meredith (1992), the 41-item Career Orientations Inventory developed by Schein (1985) was used to assess the respondents' orientations. This inventory measures each orientation by means of five items, except for the two security orientations which are measured using three items each. Subsequent to the initial studies, Igbaria and Baroudi (1993) developed (and validated) a shortened version of the inventory, by selecting the three (two in the case of the security orientations) items which loaded highest on the individual factors representing each orientation.

The questionnaire required to measure the extent to which each job matched the nine orientations was expected to be lengthy. As Behr (1988) points out, questionnaires should be as brief as possible to encourage response. Thus, it seemed sensible to adopt the shortened version of the Career Orientations Inventory to reduce the length of the overall survey instrument.

However, because factor analyses performed on responses to the career orientations inventory by South African samples in the past have not produced factors equivalent to those obtained in American studies (Kaplan, 1990; Meredith, 1992), it was considered necessary to perform a factor analysis of the shortened version to confirm its dimensions. Thus, a confirmatory Factor Analysis using the Maximum Likelihood Factors method was performed, which confirmed the presence of nine factors that accounted for 58.87% of the variance. These factors corresponded exactly with those obtained by Igbaria et al (1993), and are shown in table 2 below.

Table 2: Factor Structure of the Shortened Form of the Career Orientations Inventory after Varimax Rotation.

	FACTORS								
Var	**ENT**	**GEO**	**SER**	**LIF**	**TEC**	**JOB**	**MAN**	**CHA**	**AUT**
CA11	**.718**	.005	.128	-.070	.026	.005	.188	-.020	.145
CA17	**.817**	-.043	.073	.134	.066	-.106	.109	.164	-.016
CA25	**.881**	.012	.039	.121	.003	-.006	.076	-.003	.034
CA14	-.020	**.837**	-.102	.019	.160	.054	-.029	.004	.048
CA18	.000	**.897**	.026	.092	.073	.062	-.024	-.078	-.020
CA9	.123	-.041	**.756**	.089	.136	.053	.195	.054	.015
CA15	.092	-.002	**.801**	-.012	-.051	.159	.115	.117	.027
CA22	.025	-.054	**.759**	.050	.072	.149	.093	.085	.044
CA10	.190	.048	.215	**.450**	.135	-.021	.098	-.008	.190
CA19	.147	.105	.041	**.867**	-.019	.040	-.035	.093	.113
CA24	.025	.105	.026	**.364**	.015	-.044	-.059	-.018	.200
CA5	.092	.113	.004	-.004	**.865**	.066	-.136	-.012	.044
CA12	.019	.183	.097	-.083	**.666**	.190	.023	.091	.075
CA20	-.109	.119	.147	.182	**.573**	.048	-.227	.010	-.001
CA3	-.074	.042	.176	.092	.086	**.725**	.112	-.026	-.116
CA8	-.051	.107	.158	-.024	.129	**.816**	.088	-.050	-.010
CA1	.198	.079	.151	-.110	-.088	.208	**.553**	.024	-.127
CA6	.210	-.034	.189	.107	-.107	-.031	**.745**	-.039	.017
CA13	.107	-.066	.147	-.101	-.119	.160	**.799**	.041	-.109
CA4	.115	-.032	.119	.062	.147	-.159	-.115	**.580**	.093
CA16	.098	-.057	.271	.124	-.072	.011	-.009	**.542**	.117
CA23	.095	-.136	.171	.115	.008	-.025	.118	**.640**	.079
CA2	.031	.001	-.039	.146	.037	-.107	.032	.159	**.479**
CA7	.106	.041	.083	.167	.091	-.083	-.132	.080	**.728**
CA21	.094	-.047	.063	.367	.065	-.032	-.186	.119	**.447**

Igbaria et al (1993, p136 and p141) report relatively acceptable internal consistency reliability coefficients for the shortened version of the career orientations inventory. For this sample, the coefficient alphas of the nine orientations are as follows:

Entrepreneurial:	.86	Geographical Security:	.87
Service:	.84	Lifestyle:	.62
Technical:	.76	Job Security:	.79
Managerial:	.79	Challenge:	.67
Autonomy:	.66.		

3.5.3 Instruments to assess the extent to which a job matches each of the Career Orientations

In order to identify individuals whose jobs matched their orientation, it was necessary to obtain or develop items to measure the extent to which a job fulfilled each of the following nine orientations: autonomy; challenge; entrepreneurship; geographic security; job security; lifestyle; managerial: service; and, technical. Each of these orientations is described briefly below, after which the items for assessing the job in terms of the orientation are outlined. Those instruments obtained (or modified) from the organisational behaviour literature, in order to test the extent to which a job fulfilled each orientation, are described first. Thereafter, the development of the remaining orientations is explained.

3.5.3.1 Autonomy/Independence

According to Schein (1987, p163), individuals who hold the autonomy orientation "have an overriding need to do things *their own way*, at *their own pace*, and *against their own standards*". This description of autonomy in the workplace matches precisely the three distinct facets of work autonomy described by Breaugh (1985, p555). These three dimensions include:

- *Work Method Autonomy.* Defined as the extent to which individuals have discretion over the procedures used to perform their work;
- *Work Scheduling Autonomy.* Defined as the degree to which individuals are able to control the sequencing/timing of their various work activities; and,
- *Work Criteria Autonomy.* Defined as the extent to which individuals have the ability to alter the criteria which are used to assess their performance.

Breaugh (1985; 1989) developed and validated the Work Autonomy instrument to assess the extent to which these three dimensions exist in an individual's job. As this instrument taps precisely those dimensions considered by Schein to be critical to the autonomy orientation, it was adopted for use in this study.

In the original Work Autonomy scale, individuals record their agreement or disagreement with each statement (e.g. I have control over the scheduling of my work) on a seven-point Likert scale ranging from 1 (strongly agree) to 7 (strongly disagree). In order to make this measure consistent with the remainder of the survey instrument, the seven-point scale was replaced with a five-point scale. This is acceptable practice as it does not alter the items in any way - the only effect of reducing the number of points in the scale is to marginally reduce the number of distinctions that can be used by respondents (Bryman, 1989, p38).

The coefficient alphas for the three autonomy scales were:

Work Method Autonomy	:	.90
Work Scheduling Autonomy	:	.81
Work Criteria Autonomy	:	.80.

3.5.3.2 Job and Geographical Security

Job Security

For individuals with this orientation, "security, stability and identification with a larger organisational unit become an overriding concern" (Schein, 1987, p162). This emphasis on stability, a predictable future and security dominates all of Schein's (1985, 1987, 1978) discussions of the job security-oriented.

Ashford, Lee and Bobko (1989, p804) have criticised the literature on job security, stating that measurement of this construct has often been included in questionnaires as "a secondary or incidental focus". After a survey of the literature on job security, and the various instruments in existence, Ashford et al (1989, p810) drew up a Job Insecurity Scale (JIS), containing 54 items measuring, among others, the importance of, and threat to, various job features; and the importance, and likelihood, of various threatening events to the job itself.

Clearly, the inclusion of 54 items would have made the overall instrument inordinately lengthy. Inspection of the items, however, showed that those measuring the importance of various job features, and of various threatening events, could be excluded. This was because these items essentially measured the importance to the respondent of certain job factors, such as job security and autonomy, *which had already been established* through the Career Orientations Inventory.

Also, certain of the job features, and the threat to these features, appeared somewhat irrelevant to *the job security* of the security-oriented. For example, the importance of "the physical demands your job places on you" and a threat to "the opportunity to interact with the public" (Ashford et al, 1989, p828) did not correspond with Schein's description of what the security-oriented regard as key. Rather, what matters most to this individual is the security of the job itself.

The security (or insecurity) of the job itself appeared to be best captured by the 10 items measuring the likelihood of threatening events occurring in the respondent's current job. These items form the "threat to total job" scale, which asks respondents to indicate, on a scale of 1 (very unlikely) to 5 (very likely) the possibility of, for example, "losing your job by being fired" and "finding that the number of hours the company can offer you to work may fluctuate from day to day". As it is precisely these types of events that would constitute a threat to the job-security oriented, the 10 items were included in the survey instrument to assess a job's congruence (or lack thereof) with the security orientation. One of the items, however, referred more to a threat to geographical security than job security, and this item is discussed below.

Geographical Security

The geographical security-oriented, according to Schein (1985, p37) will put down roots in a certain area and "shift jobs or companies whenever it is necessary in order to avoid being uprooted". One of the 10 items included in the "threat to total job" scale described above asked respondents how likely it was that they might be "moved to a higher position in another geographic location". As this item seems to capture the type of event that the geographical-security oriented individual would find most threatening and disruptive, it was decided to rely on this item to assess the congruence between a job and the geographical security orientation.

While Ashford et al (1989) had performed a variety of tests to establish the validity of their measure (e.g. correlations between the various subscales of the JIS and job outcomes known to be affected by job insecurity, such as commitment, satisfaction and trust in the organisation), they had not made any attempts to establish whether the various subscales were measuring a single construct or several. In order to determine the factor structure of the 10-item scale used in this study, therefore, a principal components factor analysis (with varimax rotation) was conducted. This analysis yielded 3 factors with eigen value greater than 1, which together accounted for 63.27% of the total variance. The factor structure is shown in table 3 below.

Table 3: Factor Structure of the Threat to Total Job Scale after Varimax Rotation

Variable	Factor 1	Factor 2	Factor 3
SEC1	**.776**	.036	.256
SEC2	**.588**	.237	.330
SEC7	**.573**	-.089	.536
SEC9	**.682**	.021	.139
SEC10	**.827**	-.076	.016
SEC4	-.043	**.834**	-.121
SEC5	.053	**.803**	.180
SEC3	-.038	.044	**.818**
SEC6	.479	.165	**.679**
SEC8	.308	-.108	**.680**

Factor 1 contained items which seemed to relate to a permanent and complete loss of a job, and all contained the phrase "lose your job ..." preceding each item. Factor 3 appeared to describe more of a temporary or less final type of job threat, as it contained items referring to a fluctuation in the number of hours available for work, and the threat of being laid off "for a short while". Factor 2 holds both the item which was expected to test for a threat to geographical security, as well as an item which tests for the threat of "promotion to a higher position within your current location". While it was expected that the geographical security item would load on a separate factor, the loading of the promotion item was unexpected. On inspection, however, it appears that both items load on this factor because of the reference to a "higher position", rather than because of the references in both to "location".

This is rather disappointing, as it was hoped that the item regarding a move to another geographical location would be sufficient to test for a threat to the geographical security oriented. On reflection, it is likely that this item would have been better worded had the stress on "higher position" been removed, and the item simply worded as "be moved to a position in another geographic location". The possibility of respondents placing the emphasis in this item on the promotion aspect rather than the transfer aspect is discussed further in Chapter 4.

Although the factor structure resulting from the factor analysis was not entirely as expected, it was decided to keep the geographical security item separate to the others, as intended. As the remaining nine items all measured threats to job security, whether the threat was of a permanent or temporary nature, these items were aggregated to form a single "threat to job security" score. This approach is supported by the Cronbach Alpha test (Ghiselli, Campbell and Zedeck, 1981, p258) as the internal reliability consistency of the 10 items together is .76, while that of the nine-item scale is .80.

3.5.3.3 Lifestyle

According to Schein (1985, p45), the lifestyle oriented individual seeks to maintain a "balanced and integrated life in which career decisions should not dominate". However, as Schein (1987, p169) also points out, *balancing* personal and professional life is not sufficient, "it is more a matter of findings ways to *integrate* the needs of the individual, the family and the career".

It is not entirely clear from Schein's description how an individual who has managed to integrate his or her various career and family concerns might differ from one who has achieved a balance between these concerns. Also, as this orientation is, according to Schein (1987, p169) "an evolving characteristic", and one that was not even evident in Schein's earlier work (Schein, 1978, p170), descriptions of how a job might best satisfy such an individual are rather scant. It is suggested, however, that flexibility is the most appropriate organisational response. Thus, the individual should be able to take special leave as required (e.g. paternity or maternity leave, sabbaticals), and work "flexitime" to cater for individual circumstances.

Given the above description, it was possible to seek instruments which determined the extent to which an individual's job or organisation provided such flexibility. For example, Judge, Boudreau and Bretz (1994, p772), in a paper on "Executive Attitudes", developed an instrument to test the extent to which companies have policies in place to accommodate work and family issues. Examples of the items in this 5 item scale include "my organisation provides programs to assist in balancing demands of dual-career couples"; and "my organisation stresses the importance of family, leisure and health". However, this scale was not entirely appropriate for two reasons:

- firstly, certain of the items were specific to executives; and certain others assumed that only individuals who were members of "dual-career couples" or had "children and/or elderly family members" required organisational policies to accommodate them. Given that the measure was aimed specifically at executives and at measuring work-family policies, this is not surprising; however, it reduced the measure's suitability for this study's sample, many of which were neither executives nor dual-career couples;
- secondly, the measure assumes that the only policies required in an organisation are those for accommodating individuals with families, especially working wives, children and elderly family members. Schein's view of the lifestyle orientated individuals, however, is that they seek a flexible organisational response to any circumstances that might prevail in their lives. Thus, if they had children, the policies measured in Judge et al's (1994) scale might be entirely appropriate; if, however, they sought a year's sabbatical to take a postgraduate course of study, the scale would not assess the organisation's willingness to accommodate such a requirement.

A second approach to obtaining an appropriate scale was to seek one which measured the extent to which individuals have managed to achieve a balance between their working lives and their home and family concerns. Several instruments appeared potentially useful, among these Powell and Posner's (1989, p697) "Emphasis placed on Career vs. Family/Home Life" scale; the "Work Family Conflict" scale used by Duxbury, Higgins and Mills (1992, p179) and the "Family Interference with Work (FIW)" and "Work Interference with Family (WIF)" scales used and validated by Gutek, Searle and Klepa (1991, p563).

The second approach described was adopted as it is presumed that individuals who have the flexibility in their jobs recommended by Schein (1987, p170) will in all likelihood have less chance of their work interfering with their family and home lives, or vice-versa, as they will be able to alter their working patterns so that any such interference is minimised. This view is borne out by Judge et al's (1994, p776) findings, which showed a significant negative correlation between the existence of organisational work-family policies and work interference with family.

Of the three instruments, Gutek et al's (1991) was selected, as the other instruments, much like Judge et al's (1994), tended to focus too much on family, whereas Gutek's is more general, with less emphasis on "family" and more on "personal interests". In this scale, respondents are required to indicate their agreement or disagreement with each statement on a five point scale from 1 (strongly agree) to 5 (strongly disagree). Example of the items in this scale include "on the job I have so much work to do it takes away from my personal interests" and "my personal life takes up time that I would like to spend at work".

As Gutek et al (1991) had performed a factor analysis which confirmed the dimensions of their instrument, a factor analysis was not performed on this scale. The internal consistency reliability coefficients for the scales were .83 for the WIF scale and .80 for the FIW scale respectively.

3.5.3.4 Challenge

Schein (1987, p169) describes challenge-oriented individuals as seeking positions "in which they face perpetually tougher challenges or more difficult problems"; and suggests that such people stress "the importance of variety" (Schein, 1985, p45). A slightly different and more competitive angle to the challenge-oriented is highlighted in the phrase that these individuals like "winning over extremely tough opponents" (Schein, 1985, p44).

Surprisingly, the literature survey revealed a lack of instruments developed specifically to assess the amount of challenge in a job. Several instruments which appeared potentially useful were found using keywords such as task 'difficulty', 'variety', 'manageability' and 'routineness'. For example, Hrebiniak (1974, p400), in assessing task manageability, includes the item "the tasks I do .... are not simple in nature; in fact, they are very complex". Lynch (1974, p355), assessing routineness, has an item worded "the work I do keeps changing, and I have to change to keep up with it". However, these items are likely to be answered in the affirmative by most individuals in the IT field, regardless of the amount of challenge they experience. This is because system design tasks, for example, are not simple, and the work that one does is frequently changing due to the rapidly changing nature of information technology (Niederman et al, 1991, p475).

The keyword "task difficulty" also yielded little promise. Van de Ven and Delbecq's (1974, p196) index of task difficulty, for example, has items such as "to what extent is there a clearly defined body of knowledge or subject matter which can guide you in doing your work?". An affirmative answer to the question is taken to indicate less task difficulty. However, it is likely that one can answer such a question in the affirmative, yet still experience considerable challenge and variety in one's work.

As none of the instruments located appeared to be suitable for assessing Schein's view of the type of job suited to the challenge oriented, it was decided to develop several items, based closely on Schein's description of this particular career orientation. In order to capture the extent to which a job offered challenge and variety, the following three items were included (all items described hereafter are numbered as in the survey instrument - see Appendix A): "11. My job requires me to face and overcome a variety of extremely demanding problems"; "13. I encounter little variety in the tasks and activities I perform during my working day"; and, "14. In my work, there are new challenges every day".

In addition, to capture the element of competition, the following item was included: "12. My job provides me with the opportunity to compete with others".

Individuals indicated their agreement or disagreement with each item on a five-point scale, ranging from (1) Strongly Disagree to (5) Strongly Agree. Item 13 was worded negatively, in accordance with Bryman's (1989, p53) recommendation that negative items in a multiple-item measure be included to assist in the identification of "response sets".

The four items were combined with 13 other items which were designed to test for a job's capacity to cater for the technical, managerial, entrepreneurship and service orientations respectively. These five sets of items corresponding to the five career orientations mentioned above were included in the same section as they were all of a similar format. While each of these sets of items will be discussed separately, a principal components factor analysis performed to determine whether there was "a close correspondence between *a priori* dimensions, and the question items to which they had been assigned" (Bryman, 1989, p39), is described below.

An initial principal components analysis produced five factors with Eigen Value > 1, but, although the number five corresponded to the five sets of job characteristics being tested, this model was difficult to interpret, and to reconcile with the expected dimensions. Indeed, both Jollife (1986) and Mardia (1979) warn that following the popular rule of including only factors with eigen value greater than 1 may result in too few factors being extracted. Cattel (1978) states that a factor structure is more likely to be distorted by underfactoring than overfactoring, and Rummel (1970, p365) concurs, suggesting that "the researcher should apparently err on the side of too many factors if he errs at all".

Thus, it was decided to attempt one of the other "rules of thumb" recommended by Rummel (1970, p359) to see whether a different approach yielded a more easily interpretable factor structure. Accordingly, a plot of the Eigen Values was obtained from the Statistica package, which is shown below in Figure 1. The discontinuity criterion suggested by Rummel (1970, p364) was then applied, which is described as an effective rule to apply when there are "several eigenvalues close to unity", which was the case in this analysis. The discontinuity rule suggests that "when the last meaningful ... factor is extracted, the eigenvalues will show a discontinuity - a sharper drop than that for adjacent factors". Factors subsequent to the discontinuity are thus disregarded from the factor structure. As shown in Figure 1 below, the discontinuity factor cut-off in this analysis occurs between factors 8 and 9 (circled). Thus, eight factors were retained, which together accounted for 74.34% of the variance.

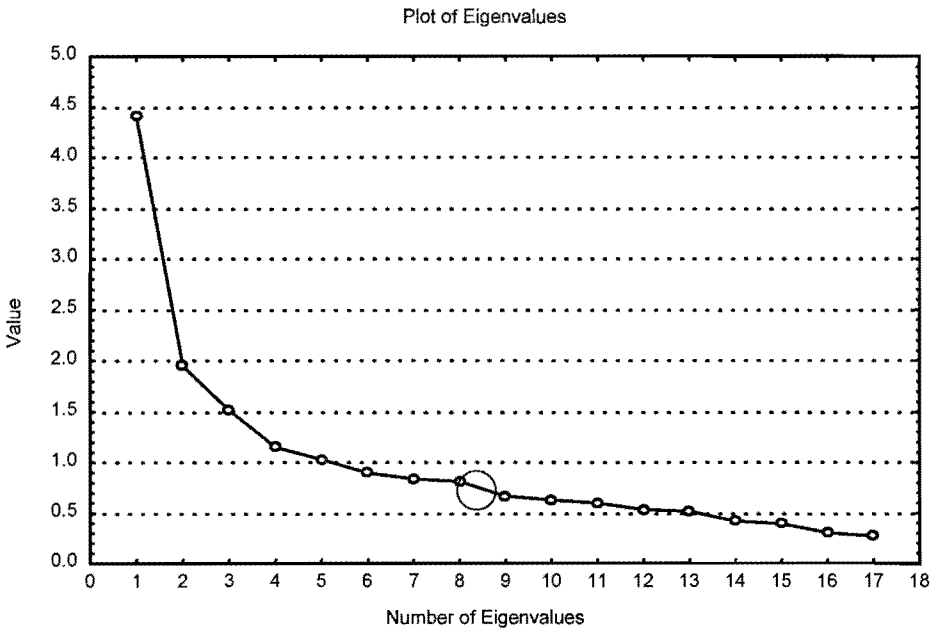

Figure 1: Plot of Eigen Values of the Job Characteristics Factors

The eight factor model is shown in table 4 below. As can be seen, items 11, 13 and 14 load relatively cleanly and saliently on a single factor, whereas item 12 (which focuses on the opportunity to compete) loads separately on a different factor (Factor 8). This is not entirely unexpected; in Meredith's (1992) factor analysis of the 41-item career orientations inventory, the 5 items making up the challenge orientation loaded on two factors, one of which appeared to represent a 'pure challenge' factor, while the other placed greater emphasis on the 'competition' aspect of this orientation. Igbaria et al (1993, p140; 1991, p156), too, found a similar pattern in their various analyses of this orientation, as did Kaplan (1990), who consequently renamed the factor "Challenge/Competition".

However, as the challenge and competition factors in the Career Orientations Inventory are invariably combined to form a measure of the challenge orientation, the same was done in this study to form a single measure of the extent to which a job provided for that orientation. The internal consistency reliability of this scale was .71.

Table 4: Factor structure of the Job Characteristics Items after Varimax Rotation

	FACTORS							
Var	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
JC11	**.723**	.046	-.012	-.049	-.091	.169	.181	.239
JC13	**.709**	.025	-.037	.379	.146	-.009	.155	.066
JC14	**.801**	.077	.141	.045	.066	.159	.260	.121
JC5	.027	**.693**	.297	.091	-.039	.155	.262	.154
JC6	-.105	**-.790**	.213	.069	-.019	-.148	.114	.090
JC2	.011	-.083	**.770**	.089	.050	.155	.097	.205
JC3	.059	.071	**.788**	.002	.328	-.038	.171	-.027
JC4	.353	-.275	**.422**	.413	-.353	-.104	.024	-.179
JC9	-.002	.160	.085	**.782**	-.032	-.025	.159	.298
JC17	.181	-.157	.023	**.780**	.191	.054	.090	-.197
JC10	.084	-.024	.269	.130	**.816**	.103	.105	.151
JC15	.128	.205	.047	.021	-.035	**.809**	.157	-.030
JC16	.095	.039	.041	-.012	.149	**.821**	.122	.159
JC1	.162	-.287	.348	.193	-.283	.240	**.413**	.281
JC7	.209	.154	.076	.118	.048	.097	**.820**	.164
JC8	.194	-.084	.141	.094	.088	.153	**.849**	-.035
JC12	.236	.002	.096	.033	.148	.095	.091	**.844**

3.5.3.5 Entrepreneurship

Schein stresses two aspects of importance to the entrepreneurial individual: the need to create something new, and the need to gain personal recognition from the creative effort. Schein (1985, p39) states that such individuals have "an overriding preoccupation - for some people it is even an obsession - with creating something of one's own *and proving to the world that he or she has done it*" (author's italics). Schein (1985, p39) again stresses the entrepreneur's need for personal prominence from his or her efforts when stating that this individual needs "to make his or her mark"; and create something "that can be identified closely with his or her building efforts" (Schein, 1987, p168). It is also suggested that these people are rather "self-centred, seeking high personal visibility and public recognition" (Schein, 1987, p168).

Further, Schein (1987, p168) suggests that entrepreneurial individuals "did not stay with traditional organisations very long", and implies that there is little such organisations can do to retain these individuals. Considering these statements, it seemed unlikely that an instrument would be obtained describing an organisational environment (other than his or her own business) which would fulfil an entrepreneurially-oriented individual. Indeed, Cornwall and Hartman (1988, p63) remark on the "lack of empirically validated measures of the internal environment necessary for entrepreneurship to thrive within an organisation".

However, the concept of the "intrapreneur", or the corporate entrepreneur, is receiving increased attention as well as research funding by many organisations (Naisbitt and Aburdene, 1985, p79). Atterhed (1985) suggests that intrapreneurship allows for entrepreneurs to remain with their organisations while still fulfilling their creative desires. Naisbitt et al (1985, p74) describes the concept as a "win/win arrangement", as the company retains a creative and valued employee whilst the employee gets to further his or her idea with less of the risk concomitant with the normal entrepreneurial venture.

Given the above, the survey of the literature was expanded to include both the intrapreneur and entrepreneur terms. The survey revealed a paper describing an instrument called the "Intrapreneurial Assessment Instrument", which was developed specifically to assess the degree to which organisations offer the conditions "essential in developing a perceived entrepreneurial environment for employees" (Kuratko, Montagno and Hornsby, 1990, p50). However, while Kuratko et al's paper described the instrument, the various item descriptors had been shortened. Thus, it was not possible to determine the original wording of the instrument, and attempting to guess the wording would probably have resulted in considerable modification to the original items. As Straub (1989, p153) points out, "the more the format, order, wording, and procedural setting of the original instrument is changed, the greater the likelihood that the derived instrument will lack validated qualities of the original".

Thus, in an attempt to obtain the original instrument, an email request, describing the intended research and requesting permission to use the instrument, was emailed to Professors Kuratko, Montagno and Hornsby. Several weeks later, a response was received in which permission to use the instrument was refused, on the grounds that the instrument was being revised (see Appendix B). This was an unfortunate setback.

As this was the only instrument that had been located in the literature survey, it was necessary to develop the items required to test the extent to which the entrepreneurial orientation was catered for in a particular job. Once again, Schein's description of this orientation formed the basis for the development of the items.

The entrepreneurially-oriented individual's central need for recognition from his or her efforts has already been described. It is interesting to note that Kuratko et al (1990) did not identify the opportunity for such recognition as a necessary aspect of an entrepreneurial climate, even after an extensive survey of the entrepreneurial literature. Similarly, Hisrich (1990) does not see this as an important motivating factor, although he does acknowledge that 'achievement' is the second highest motivating factor for female entrepreneurs. Fernald and Solomon (1988, p205), however, recognise that entrepreneurs have a high need for achievement and "enjoy the attainment of success". Schein, however, appears to view achievement as a means for the entrepreneurially-oriented to gain the recognition which is centrally important to them, rather than being an end in itself. Therefore, it is likely that a climate or work position which does not provide opportunity for such recognition will be unfulfilling for such individuals.

For this reason, two items were developed to determine the extent to which a job provided for this salient feature of the entrepreneurial orientation. These are: "7. My work allows me to gain high visibility and personal prominence from whatever I accomplish" and "8. In my work, I have the opportunity to create things which are recognised as existing entirely through my own efforts or ideas".

A further requirement for the entrepreneur is reward for his or her efforts. It is not the pay itself which is important, but the fact that wealth gained from their ideas is a means of proving their success in their chosen venture (Schein, 1987, p168). Schein states, further, that it is probably pointless for organisations to try and keep this type of individual unless they are willing to let the person "have his or her own patents and/or 51 percent control of any new enterprises he or she may form". While 51% percent control may be an exaggeration, the very least that must be offered this person is a share in the proceeds resulting from his or her efforts. Kuratko et al (1990, p56), in their instrument, test for the presence of "additional rewards/compensation". Hisrich (1990, p219) suggests that an "equity or ownership position" is the most appropriate motivational reward for the amount of work put into a successful intrapreneurial effort.

As reward consistent with the intrapreneur's effort appears to be regarded as important for motivating this individual, a third item was added to test for this factor. This item required respondents to record their agreement or disagreement with the following statement "10. My organisation provides employees that have new and innovative ideas with a share in the proceeds resulting from such ideas".

Finally, although the first two items developed (see 7 and 8 above) do measure the creativity urge, they focus more on the need for recognition from creating than on the opportunity to create itself. Cornwall et al (1988, p65) describe the entrepreneur's need for "support from others for new ideas". Hisrich (1990, p217) concurs, calling for ideas to be "encouraged and supported, not discouraged". Kuratko et al (1990, p56) have nine items measuring "management support for intrapreneurship". Schein (1987, p168), too, implies the need for an environment allowing creativity to be pursued, in the statement that entrepreneurs seek roles which "best permit exercise of creativity". Thus, a fourth item was included to test the extent to which new ideas received support in an organisation. This was worded negatively, as follows: "9. It is difficult for new and original ideas to receive consideration in my organisation".

Respondents were required to indicate their agreement or disagreement with each of the four items on the same five-item scale employed for the other job characteristics questions described above.

As already stated, these four items were included in the 17 items developed to measure various other Job Characteristics contributing to fulfilment of five of the career orientations. The factor analysis performed on the 17 items is shown in Table 4. As the table shows, the four items intended to measure the congruence of a job with the entrepreneurial anchor did not load cleanly onto one factor. This was not unexpected. As described above, items 7 and 8 were created to test the extent to which an individual had the opportunity for gaining recognition for his or her ideas and effort. These two items loaded onto factor 7, which was interpreted as a factor denoting "Personal Prominence".

Item 10 loaded onto a separate factor, which was interpreted as measuring "reward", as another item intended to measure whether the rewards offered for a technical career were commensurate with those offered in a managerial career also loaded partially on this factor.

Finally, item 9 also loaded onto a separate factor (Factor 4), together with an item intended to measure an aspect of the degree to which a job was congruent with the service orientation. Both these items were negatively worded, as were another two items which loaded partially on this factor. Factor 4 is extremely difficult to interpret. It is possible that the loadings on this factor are less a reflection of their intrinsic homogeneity than of the fact that they are all negatively worded. However, there is a slight degree of commonality between Item 9 and Item 17, as item 9 measures how difficult it is for support to be gained for new ideas, while item 17 measures the degree to which an individual has to act in ways conflicting with his or her own values. Consider, for example, an IT professional who has what he or she considers to be a good idea regarding the way in which a computer system should be developed, but receives no support or encouragement for the idea. This individual may then be developing a system in a way that does not conform to his or her idea of how the system *should* be developed - thus, in essence, the individual may be considered to be acting in ways which conflict with his or her own values (i.e. ideas).

Although the four items loaded on three separate factors, as described above, they were combined to arrive at an overall score for the extent to which a job provided for the entrepreneurial orientation. This combination of different dimensions to form an overall profile for a concept is not unusual; a similar approach is adopted in the Job Diagnostic Survey, in which the scores for autonomy, skill variety and the remaining dimensions are aggregated to arrive at a total Motivating Potential Score for a job (Bryman, 1989, p39). Similarly, the Personal Prominence items, the reward item and the support for new ideas, are combined to arrive at an overall Entrepreneurial Motivating Potential score.

The internal consistency reliability of the four-items is not reported, as they are considered to represent different characteristics of the job or organisational environment. However, the reliability of the two items making up the Personal Prominence factor is .77.

3.5.3.6 Managerial Competence

The managerially-oriented, according to Schein (1978, p134) have "as their ultimate goal, management per se". These individuals hold a combination of analytic, interpersonal and emotional competencies, which they want to exercise in a managerial position. Such individuals seek leadership opportunities, promotion opportunities to general management positions, and high levels of responsibility (Schein, 1985, p42).

In earlier work performed by Igbaria et al (1991) and Meredith (1992), an individual was labelled as occupying a managerial position based on his or her job title. This approach has already been criticised in section 2.5.2. Thus, the literature was surveyed in an attempt to find a measure which would provide a more accurate and reliable classification of an individual as a manager.

Numerous authors have written books and papers describing the nature of managerial work (Stewart, 1963; Campbell, Dunnette, Lawler and Weick, 1970; Khandwalla, 1977; Mintzberg, 1990; Schippmann, Prien and Hughes, 1991; Tornow and Pinto, 1976; Hemphill, 1959; Pheysey, 1972); others have sought to determine whether managers can be treated as a single homogenous group, or whether their activities and roles differ according to industry, organisation size and form, functional area and/or managerial level (Child and Ellis, 1973; Blau, 1986; Pavett and Lau, 1983); and still others have sought to describe the type, and importance, of different skills required in managerial work (Sanchez and Frazer, 1994; Avolio and Waldman, 1989). In many of the above, instruments have been developed to measure managerial work content. Notable by their absence are any instruments which assess the nature of managerial work in the IT industry.

The instruments described in the above papers were examined to determine their suitability for this study. Another not included in the article in which it was described was obtained from the author of the paper (Schippmann, 1995). In general, most of these instruments were too lengthy to include in their existing format, as the resulting questionnaire would have taken several hours to complete. For example, Jeffrey Schippmann very kindly faxed his instrument to the author - but this scale consisted of some 50 pages, containing 681 items in total!

A further concern relating to the items in the various instruments was that they did not necessarily appear to describe only managerial work. For example, activities include "sell ideas or services to others" and "collect and prepare information for review" (Schippmann, 1995); "fill standard reports" and "prepare budgets" (Sanchez et al, 1994, p315); "personally do routine work" and "be concerned with tightly planned schedules" (Hemphill, 1959, p61); "use accounting procedures in analysing financial information" (Tornow et al, 1976, p413); and, "trouble-shoot special problems as they arise" and "keep detailed and accurate records" (Blau, 1986, p231). Many of these activities are just as likely to be performed by individuals in non-managerial IT positions as they are by managers (e.g. programmers might fill in standard reports - such as time sheets and progress reports; analysts will collect and prepare information for review; and most IT staff are concerned with tightly planned schedules!).

Hales (1986, p109) concurs with this view in his criticism of much of the research done on describing managerial work. Hales reviewed 30 years' worth of managerial studies, covering some 25 different author's works, and concluded that one of the major weaknesses of these studies is that "it is uncertain whether they identify exclusively managerial behaviour" (Hales, 1986, p109). Hales suggests that no study has attempted to differentiate between managers and non-managers, and existing studies have failed to prove that activities ascribed to managers are solely managerial activities, rather than simply being activities that managers have been observed to perform.

While Hales' (1986) criticism was directed at Management Work studies in general, there are other studies, in research fields not classified as Managerial Work research, that do measure differences between managers and non-managers. One such study is Miles and Perreault's (1976, p19-44) investigation into Organisational Role Conflict. In this study, the different major roles played by individuals employed in research and development organisations are examined. It was found that Division Managers and Group Leaders displayed significantly higher mean scores on supervisory (and boundary-spanning) activities than did the scientists and engineers in the sample.

Thus, because the Supervisor Scale appears to discriminate between Managers and non-managers, and:

- there is a strong element of supervisory activity in Schein's description of the managerial orientation; and,
- there is a strong element of supervisory activity in other researchers' descriptions of managers - for example, Stewart (1963, p79) defines management as "deciding what should be done and then getting other people to do it"; and,
- Pheysey (1972, 161) views supervisory activities to be a significant portion of the work of at least half of Hemphill's (1960) managers;

several items were adopted from Miles et al's (1976, p42) scale to measure the extent of such activity in this study. These items are: "13. Conduct regular staff meetings" and "14. Make decisions concerning the hiring and/or termination of employees".

Several additional items, closely related to Miles et al's (1976, p42) items, were taken from other scales as these items appeared more suitable for the IT sample. These include (Schippmann, 1995, p93, p110 and p114 respectively): "16. monitor and control the work activities of subordinates"; "17. establish work schedules for subordinates in response to departmental activities or project requirements"; and, "18. counsel staff members on their job performance, career development opportunities and training needs".

Schein (1987, p166), in describing a key element of the managerial orientation (viz. analytical competence) suggests that managers need to be able to "identify, analyse and solve problems under conditions of incomplete information and uncertainty". As this "analytical competency" is a key element of the managerially-oriented individual's make-up, and as a similar item is contained in Schippmann's scale under the "Management Review, Evaluation and Decision-Making" section, an item was added to assess this element in the respondent's job. This item is worded "15. Make decisions under conditions of incomplete information and uncertainty".

Schein (1987, p166), in describing another key element of the managerial orientation (namely, interpersonal and intergroup competence), suggests that managers need to "influence, supervise, lead, manipulate, and control people ... towards organisational goal achievement". Thus, as the "control" and "supervise" aspects of this managerial need had already been catered for in previous items, an item to assess the "influence" element of the job was also added, worded: "11. Influence others in order to attain goals".

Finally, Schein (1985, p43) also suggests that much of the knowledge required for decision-making will be in the heads of subordinates, and the quality of decisions will depend on managers' ability to "bring the right people together around the right problems ..". As this appeared to describe a managerial role which was unlikely to be performed by a non-managerial IT person, an item which appeared to capture this activity was adopted from McLean, Tanner and Smits (1991). This item is worded: "12. Structure people/events to solve problems".

The eight items described above were grouped together with the 10 items measuring Boundary-Spanning (see 3.5.7 below), as they had a similar format. All 18 items were measured on a five-point scale, ranging from 1(not a part of my job) to 5 (a very significant part of my job). A Principal Components Analysis was performed to determine the dimensionality of the 18 items making up the Managerial Activity and Boundary-Spanning Scales. The factor analysis yielded three factors with eigen value greater than 1, which together explained 64.91% of the total variance. However, while the items described above (items 11 to 18, denoted MG1 to MG8 on the table below) loaded relatively cleanly, the Boundary Spanning items loaded across two factors, in many instances with salient loadings on each.

Examination of the two Boundary Spanning factors indicates that the one appeared to refer to activities involving the recommendation of uses of IT to others, while the other held items of more general liaison. However, as the Boundary Spanning items loaded fairly saliently on both of the two factors, and as the dimensions of the boundary-spanning scale were relatively unimportant to this study, the factor analysis was repeated using the Maximum Likelihood Factors approach. This analysis yielded only two factors with eigen value greater than 1, which together account for 53.99% of the variance. The resulting factor structure is shown in table 5 below:

As can be seen in table 5, Item MG1 loaded more heavily on the Boundary Spanning factor than on the Managerial Activity factor. This is not considered cause for particular concern, as managerial activity has been shown to be closely related to boundary spanning activity. However, it was noticed that many of the respondents who indicated *low* levels of boundary-spanning and managerial activity had, nonetheless, scored this item as representing a fairly large part of their jobs. On reflection, this is perhaps not so surprising. System designers and other non-managerial staff will often have to influence others, in that they will have to convince non-IT staff of the logic of a particular course of action, or persuade users that there is a more suitable way of meeting their requirements, or impress upon an organisation the need to adopt a particular Information Technology. Thus, this activity cannot be regarded as solely the domain of the manager, and was, therefore, dropped from the scale. The internal consistency reliability of the resulting seven item scale was .91.

Table 5 Maximum Likelihood Analysis Factor Structure of the Role Requirements Items after Varimax Rotation.

Variable	Factor 1	Factor 2
BS1	.2696	**.6744**
BS2	.2589	**.7208**
BS3	.1793	**.7329**
BS4	.2369	**.6711**
BS5	.1275	**.7432**
BS6	.1038	**.5543**
BS7	.0929	**.4903**
BS8	.2960	**.6827**
BS9	.2375	**.6056**
BS10	.1959	**.7359**
MG1	.3695	**.4987**
MG2	**.5314**	.4327
MG3	**.7835**	.2473
MG4	**.7274**	.3359
MG5	**.4038**	.3401
MG6	**.9264**	.0766
MG7	**.8529**	.0771
MG8	**.8638**	.2065

Because it was recognised that the items described above could not be considered a full list of managerial activities, and because it was quite likely that there are numerous other activities which would serve to differentiate between managers and non-managers in the IT field, a further question was added to the survey instrument. The question asked individuals to indicate "what percentage of your typical work day comprises what you would describe as: managerial tasks and activities; technical tasks and activities; and other tasks and activities". If the latter option was filled in, respondents were asked to specify what they meant by "other".

Thus, it was assumed that if the score on the seven items intended to measure managerial activity correlated highly with the percentage reflected in the "managerial tasks and activities", then this would indicate the acceptability of the seven-item scale as a means of identifying employees performing managerial work. The correlation between the Managerial Activity Scale and the percentage of managerial and technical activities is .64 and -.53 respectively, both correlations significant at $p<.000001$. Thus, the Manager Scale was considered an acceptable measure of the degree to which a respondent could be regarded as performing Managerial work, and, moreover, an acceptable means of distinguishing managers from other IT professionals.

A final aspect of the managerial career considered of primary importance to the managerially-oriented, and not yet measured in the Managerial Scale described above, is the opportunity to progress to a general management position. As Schein (1985, p29) suggests, the managerially-oriented individuals are "anxious to move into a generalist position" and "really want to become general managers" (Schein, 1987, p165). Also, should they not be given the opportunity to reach a responsible level rapidly, they will be dissatisfied and look for opportunities in other organisations (Schein, 1987, p168). Thus, an item to measure the availability of a career path into general management was adopted from Smits, Tanner and McLean (1993, p125), and is worded "my present job provides promotional opportunities outside IS into general management".

This item was included in the 17-item Job Characteristics scale described above and, as shown in table 4, loads onto Factor 2, together with an item which loads negatively, and which measures the amount of technical work in a job. As a job offering promotional opportunities into general management is likely to comprise little technical work, this factor pattern is intuitively acceptable. However, the technical work item is not combined with the managerial path item, but included with the Technical Job Characteristics scale, described below.

The score for the seven Managerial Activity items is combined with the "path to general management" item in order to arrive at a final measure for assessing the degree to which a job caters for the managerial orientation.

3.5.3.7 Service/Dedication

Schein (1978, p170) describes the service-oriented individual as one who "seeks to work with others in a helping role", and whose "interpersonal competence and helping are ends in themselves". Schein (1987, p168) also suggests that such people work towards "some important values, some cause that they considered paramount". Further, it is suggested that such people want their superiors to share their values, and that they would not take jobs in companies which were "hostile towards (their) values" (Schein, 1985, p29).

The literature survey for instruments which measured the extent to which a job provided for such an orientation was unsuccessful. As a result, it was necessary to develop items which appeared to capture Schein's view of the job that would satisfy service-oriented individuals. Three items were developed, to which the respondent was required to indicate his or her agreement or disagreement on a five-point scale from 1 (strongly disagree) to 5 (strongly agree). The first item was "15. My job provides me with the opportunity to use my interpersonal and helping skills in the service of others", and attempts to determine whether a job caters for the desired "helping role".

The second item seeks to determine whether the individual's desire to work towards a specific and important cause is catered for - it is worded "16. My job allows me to work towards a cause about which I feel strongly". The third item was included to determine the extent to which the organisation shared the individual's values, and was worded negatively "17. In my work, I am often required to act in ways which conflict with my own set of values".

As shown in table 4, items 15 and 16 load cleanly onto Factor 6. Item 17, however, loads together with the other negatively worded items onto Factor 4. The possible reasons for this have already been discussed under 3.5.3.5 above. On further reflection, however, this item is perhaps unsuitable for measuring the extent to which a job matches the service orientation. Firstly, the inclusion of the word "often" may have caused different interpretations of the item by the various individuals making up the sample. As Bryman (1989, p51-52) points out, terms like 'often' .... constitute additional sources of ambiguity". Also, because item 16 is, essentially, tapping the job's capacity to allow an individual to work towards his or her cause or values, item 17 is perhaps redundant. For the above reasons, item 17 was discarded, and the scores of items 15 and 16 aggregated to arrive at a total score for the extent to which a job catered for the service-oriented. The internal consistency reliability of this scale was .64.

3.5.3.8 Technical/Functional Competence

The overriding concern of technically-oriented individuals, according to Schein (1985, p28), is to exercise their skills in their chosen area of expertise. Such individuals seek to become increasingly proficient in their speciality, and value challenging and interesting work in that area, as well as recognition for their expertise. Also, technically-oriented individuals favour "external equity" (Schein, 1987, p165), and will expect to receive similar pay to their peers in other organisations. These individuals typically avoid and fear general management, but may accept management responsibilities provided these are within their area of technical expertise.

The literature survey revealed a potentially useful instrument, developed by Trower et al (1992, p280), as an "instrument to differentiate Technologists from Non-technologists". The Technologist definition bore strong resemblance to technically-oriented individuals, and Trower et al (1992, p277) suggest that "technical experts ... would fall under the class called technologists". The instrument described contained items based on roles and traits of technologists gleaned from the literature.

Trower et al (1992, p280 - 284) performed extensive validation on their proposed instrument, which finally resulted in a seven-item scale, of which four items described traits of technologists, while three items related to the roles they played. For this study, the traits were unimportant, as these simply served to confirm characteristics of technologists which, from Schein's descriptions, were already known to be held by the technically-oriented. The three role items are "I consider myself to be well-versed in technology"; "I work with technology in my daily work routine"; and, "I have had formal training and/or extensive experience with technology". On reflection, however, these items were not considered suitable for this study.

Firstly, the entire CSSA sample would answer affirmatively to the third item, as formal training or extensive experience is a precondition for membership in the society. Secondly, IT managers and project managers are likely to respond affirmatively to both the first two questions, given that they work with Information Technology in their daily work routine, and most likely consider themselves well-versed in technology, even though they may perform more managerial than technical duties. Finally, Trower et al (1992, p285), in a test conducted to determine the instrument's ability to differentiate between technologists and non-technologists, found that supervisors disagreed with the scale's classification of their subordinates 31 to 36% of the time, which was considered an unacceptably high error rate for this study. Thus, this instrument was considered inappropriate and insufficient for assessing whether an individual performed a technical as opposed to managerial role in his or her job.

To measure how a job catered for the various needs of the technical orientation, several items were developed based closely on Schein's descriptions of this orientation. These items were: "1. My job allows me to continue to increase my specialist/technical skills and knowledge"; "2. My organisation provides a technical/specialist career path for those individuals who do not choose to pursue a managerial career"; "3. Individuals opting to pursue a technical career path in my organisation are rewarded equitably in comparison with those pursuing a managerial career";

"4. My job provides me with little opportunity to exercise my technical skills and abilities" (reverse scored); and, "5. The functions and tasks I perform, and responsibilities I hold, are primarily technical as opposed to managerial in nature".

As already stated, the above items were included in a 17-item Job Characteristics section in the survey instrument. The factor analysis performed on the 17 items has been discussed previously, and is shown in table 4. As can be seen in the table, items 2, 3 and 4 loaded relatively cleanly on Factor 3. Item 1 loaded on both Factor 3 and (more highly) on Factor 7. As described under 3.5.3.5 above, this factor was interpreted to describe Personal Prominence. Although it is initially unclear why item 1 loads highly on this factor, Schein (1987, p164; 1985, p40) implies that this is not so surprising. Schein suggests that technically-oriented people seek to become "the modern version of the craftsman whose ambition is to become better and better in the craft". Such craftsmen seek the "status that goes with high achievement in one's craft" and they need "to exercise and display their skills".

Thus, these phrases imply a need to improve one's technical expertise, and gain resultant recognition as an expert in one's field. Item 1 refers to increasing skills and knowledge in an area of expertise, which is, thus, likely to enable increased opportunity for the technical individual to be recognised as an expert. Thus, the loading of item 1 on this factor is not so surprising. As item 1 loads reasonably saliently on Factor 3, too, Factor 3 was considered to represent the extent to which a job caters for the technically-oriented.

Item 6 loaded on the factor representing Managerial Advancement, but *negatively*. This is not surprising, as it measures the extent of technical work in a job. Although the five items loaded on several factors, the items were, once again, combined to arrive at a total score for the technical content of a job. The internal consistency reliability of the 5 items is rather low, at .62, but this is to be expected, as these five items represent several dimensions of the extent to which a job caters for the technical orientation.

3.5.4 Instrument to Assess Career and Job Satisfaction

Career Satisfaction and Job Satisfaction were measured using the same scales that had been used in earlier studies by Igbaria et al (1991) and subsequently by Meredith (1992).

Career Satisfaction was measured using a six-item scale, in which respondents record their agreement with each item on a five-point scale ranging from 1 (strongly agree) to 5 (strongly disagree). Examples of items include "I am satisfied with the success I have achieved in my career" and "Overall, I would say that my personal needs have been met with my current career". The internal consistency reliability of the scale was .88.

Job Satisfaction was assessed with three-items, answered on the same five-point scale as Career Satisfaction. These items measured general job satisfaction, satisfaction with projects on which the respondent worked and the frequency with which the respondent considered changing jobs. The internal consistency reliability of the scale was .74.

3.5.5 Instrument to Assess Job Performance

In order to assess the performance of IT professionals, two alternatives existed - to obtain an assessment from a particular individual's superior or colleagues; or, alternatively, to have the individual perform a self-assessment of his or her performance in the job. The former option appeared to be far less practical, given that it was intended to measure the remaining elements of interest to the study via self-administered questionnaire. The latter option, on the other hand, while far more practical, raised the concern of accuracy of self-reported ratings. While there is general consensus that self-rated appraisals of performance tend to be more lenient, there is also support for the view that such appraisals are reliable and accurate provided that they are used for research purposes and the individual being appraised does not perceive any personal gain arising from the self-appraisal (Rasch and Tosi, 1992, p401; Fahr and Werbel, 1986, p529; Fahr, Werbel and Bedeian, 1988, p142; Fox and Dinur, 1988, p582). For this reason, the literature was surveyed in an attempt to locate a suitable instrument for self-assessment of performance.

The existence of a standard performance instrument developed specifically for evaluating the performance of IT personnel, and which, therefore, appeared eminently suitable for use in this study, was either mentioned, or implied, in two papers in the literature (Niederman and Trower, 1993, p232; Trower and Straub, 1991, p68). As the most recent paper suggested that Dr. Trower held a position at Baylor University, Dr. Trower's email address was obtained from the University via the Internet, and an email message sent to him requesting permission to use the instrument referred to in his studies. Dr. Trower responded, and very kindly provided this author with the instrument (see Appendix C).

Doctor Trower had reported that the instrument provided was based on work done by Professor Goldstein, and that in his research he was unable to replicate Goldstein's factor structure (Trower, 1995; Appendix C). Trower indicated that this inability to replicate the factor structure was unimportant to his study, and it was not considered critical to this study either. However, it was important to establish whether the items loaded as expected, or whether a factor analysis might suggest dimensions in the data which Goldstein had not observed. In addition, while an *overall* performance measure was necessary to test the performance aspect of hypothesis 4, it was important and would likely be interesting to isolate the various factors comprising the instrument, to show, for example, whether a technically-oriented individual perceived his technical performance to be greater than his managerially-oriented counterpart. As a result, a factor analysis was performed to determine whether the factor structure in this study replicated that obtained by Goldstein (1988, p151).

Goldstein (1988, p151) suggested the existence of five factors, namely: General, Communication Skills, Job Attitude, Business Knowledge and Technical Skill. In Goldstein's study, the items making up the General factor had not been included in the Factor Analysis, for reasons unexplained in the paper (Goldstein, 1988, p149). A factor analysis with the items included was performed, and it was found that the "General" items loaded on both the Job Attitude and Technical Skill factors. This is not entirely surprising, given that items such as "quality of work produced" are most likely related to Technical Skill, in a sample made up entirely of IT professionals. Similarly, "quantity of work produced" and "overall job performance" are likely to be related to Job Attitude, in any sample. Nevertheless, it was decided to follow the recommended approach, and keep these three items out of the factor analysis, although there appears to be no logical or scientific explanation for why this approach was adopted by Goldstein.

A Principal Components Analysis of the remaining 15 items yielded six factors with an eigen value greater than 1 (see table 6 below), which together accounted for 68.87% of the total variance. The factor structure did not match Goldstein's (1988, p151) and, moreover, was not particularly pure, as several of the items loaded fairly saliently on more than one factor. For these reasons, the factors were re-interpreted according to the salient loadings, taking into account the original dimensions that Goldstein believed the instrument to comprise.

Table 6: Factor Structure of the Performance Items after Varimax Rotation

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
PER4	**.738**	.098	.180	.204	.123	-.035
PER12	**.831**	-.043	.136	.094	.119	.000
PER13	**.611**	.088	.142	-.215	.137	.314
PER14	**.830**	.103	.071	.007	-.004	.020
PER3	-.017	**.800**	.087	-.202	.153	-.032
PER6	.147	**.721**	.165	.222	-.086	.181
PER17	.240	**.373**	.327	.137	.330	-.063
PER9	.172	.071	**.867**	.097	-.110	-.011
PER16	.120	.092	**.823**	-.089	.040	.178
PER1	.055	-.087	-.002	**.843**	.252	-.055
PER2	.191	.245	.085	**.537**	-.368	.452
PER10	.071	.358	.392	-.091	**.456**	.309
PER11	.222	.052	-.131	.252	**.785**	.144
PER5	.095	.515	-.071	.011	-.062	**.632**
PER15	-.027	-.044	.168	-.007	.205	**.825**

The first factor contained the three items (4, 12 and 14) believed by Goldstein to represent Job Attitude, with the addition of Item 13, measuring "the provision of feedback to management", which had been previously grouped under Communication Skills. It seems likely that this item is more a reflection of job attitude than of the ability to communicate. For example, one might have excellent communication skills but still not be inclined to provide feedback to management, simply because, for example, one believes that management does not react to the feedback. Also, providing feedback to management does not necessarily imply that one has communication skills. Thus, the Job Attitude measure was regarded as holding 4 items rather than the 3 of the original study.

Factor 2 contained two items: 3 and 17 which had been discarded from the original study, apparently because they loaded on more than one factor; and item 6, which had originally been included under the Communication Skills factor. Item 6 is "Leadership Ability", which again, in this author's opinion, does not necessarily indicate skill in communicating. Certainly, one should be able to communicate in order to lead, but having leadership ability does not necessarily imply that one has good communication skills. Goldstein (1988, p149) mentions that he had included items for measuring "management ability", but he does not indicate which items in his scale were originally considered to reflect this ability. Certainly, Leadership Ability must correlate with the ability to manage, and items 3 and 17 are indicative of this ability, too, as one needs to be able to "get along with people" and "work with minimal supervision" in a management position. For these reasons, Factor 2 was interpreted as reflecting Management Ability.

Factor three matched exactly the factor interpreted by Goldstein to reflect Business Knowledge, and this factor was retained, unchanged.

Factor 4 contained items 1 and 2, measuring "Technical Skill" and "Creativity" respectively. Goldstein had both these items load on his Technical Skill factor, together with an item measuring "willingness to learn new technologies". The fact that this latter item does not load on Factor 4 is not surprising, as it does not necessarily reflect a Technical Skill. Rather, it indicates more a readiness to change, or a willingness to re-educate oneself to avoid technological obsolescence. Indeed, it is likely, for example, that an IT professional might be a highly skilled COBOL programmer, yet still be unwilling to learn a new programming language. As Crowley (1994) estimates, one-third of IT staff may be unwilling to re-educate themselves to learn the complexities of distributed computing technology, although they remain technically skilled in maintaining "legacy" systems. Thus, willingness to learn new technologies can not necessarily be equated with technical skill.

Furthermore, creativity cannot be considered to reflect a "technical skill". Certainly, a technically skilled person will be aided if he or she also is creative, but one does not necessarily have to be creative in order to be able to resolve a troublesome computer network fault, for example, or write a complex program. Also, this item loaded partially on Factor six, which, as described below, was interpreted as a Communications Skill factor. While Goldstein's approach appears to be to drop items which load on more than one factor (although he is certainly not consistent in this regard!), it was decided to retain this item, but to score it separately. Thus, Technical Skill was made up of one item, the technical skill item, and Creativity was considered to reflect a different ability. While this approach does not necessarily follow the rules of interpreting the correct number of factors, Rummel (1970, p357) does suggest that "it appears foolish to allow an analytic decision criterion to override a 'research sense' of the data".

Factor 5 also contained two items, one being the "ability to organise work", and the other an item already discussed, "willingness to learn new technologies". These certainly appear unrelated, unless one can assume that one needs to be organised in the IT field if one wishes to make time to continue one's work and learn a new technology! Also, item 10 (ability to organise work) loads on the factor labelled Managerial Ability, which is not surprising, but also on the factor labelled Business Knowledge, which is somewhat surprising. Goldstein had rejected this item entirely, but it was decided to retain this item as it did reflect a particular skill, and also because it might reveal interesting differences in individuals with different orientations (e.g. does a managerially-oriented individual feel better able to organise work than a technically-inclined individual?). As already outlined above, the willingness to learn new technologies indicates more of a willingness to accept change then anything else. Therefore, these two items were considered to reflect different dimensions, and were labelled Organisational Ability and Adaptability respectively.

Finally, Factor six contained the two items "oral communication skill" and "written communication skill". It did not match Goldstein's Communication Skills factor, which also held "leadership ability" and "providing feedback to management". These items had already (more appropriately) been included under other factors, as explained above. Therefore, this factor was considered to represent Communication Skill.

The factors resulting from the above analysis are, therefore, Organisational Ability; Technical Skill; Managerial Ability; Job Attitude; Communication Skill; Business Knowledge; Adaptability; Creativity; and General. Although the dimensions do not match those perceived to exist by Goldstein, it is believed that they represent a more likely structure of the various items making up the performance scale. In addition, an Overall Performance score was derived by calculating the average across the entire 18 items.

The original instrument's seven-point scale was replaced with a five-point scale, for consistency with the remainder of the survey instrument. Respondents recorded their assessments of their performance on the scale which varied from 1 (much below average) to 5 (much above average). Respondents were also encouraged to compare their performance with that of others who do the same kind of work as they do, to increase the accuracy of self-assessment. As Mabe and West (1982, p280) point out, accuracy is increased if respondents are guaranteed anonymity, and self-evaluation instructions emphasise comparison with others. The internal consistency reliability of the Performance Scale as a whole is .82. The reliabilities of the individual dimensions containing more than one item are:

Job Attitude	.79	Business Knowledge	.75
Managerial Ability	.53	Communication Skill	.53
General	.70		

The particularly low alphas obtained for the Managerial Ability and Communication Skills scales are cause for concern, and may indicate that the components represent more than one characteristic (Ghiselli et al, 1981, p258). However, coefficient alphas were computed for the dimensions originally perceived to exist by Goldstein, and these alphas were equally, if not more, unreliable. Because the dimensions of the performance items were not expected to materially affect the ability to evaluate hypothesis four, the low alpha scores were not considered to be of particular concern for this study.

3.5.6 Instrument to Assess Perceived Task and Job Characteristics

A 13-item scale used in Igbaria et al's (1991) and Meredith's (1992) research was included to assess the extent to which individual's jobs provided them with different opportunities and rewards. The scale had been included in the original studies to examine the possibility that managerially- and technically-inclined individuals who occupy jobs congruent with their orientations are satisfied because the jobs provide rewards desirable to those orientations. In Meredith's (1992) previous research, however, the factor structure obtained by Igbaria et al could not be duplicated. For this reason, a factor analysis was performed to determine whether the factors bore any resemblance to the dimensions which the instrument purported to measure.

Once again, the factor structure obtained by Igbaria et al (1991) appears to be unique to that study; as it does not correlate at all with the factor loadings in this study (see Table 7 below). Moreover, it is difficult to interpret these factor loadings, as the items which are meant to represent task-based and organisation-based rewards load indiscriminately on various factors. Items 11 and 13 load on Factor 2, which could perhaps be interpreted as a "physical reward" factor, given that "salary increases" and "promotion" are more tangible than rewards such as "technically challenging tasks" and "respect by one's peers". However, Factor 1 is difficult to interpret - for example, "having a great deal of power and influence on the job" loads together with items such as "pursue your ideas" and "be highly respected by your peers".

Similarly, factor 3 has items such as "work on technically challenging tasks" and "work on organisationally important projects".

It is important to note that Igbaria et al's sample had a far higher proportion of managerially and technically-oriented individuals - 26.1 and 22.6% respectively compared to 10.7 and 2.7 % in Meredith's earlier study and 6.8 and 3.9% in the current study. Thus, perhaps a large sample of technically and managerially-inclined individuals would show greater tendency to differentiate between the different rewards in the scale, and show greater support for Igbaria et al's dimensions. It would appear, therefore, that the validity of this factor model is sample dependent (Trower et al, 1992, p283). Moreover, perhaps the tendency five years ago was for people holding technical tasks to be rewarded with "task-based" rewards while people holding managerial positions would be more likely to receive "organisation-based" rewards. However, given the increasing importance of IT to companies, their consequent increased reliance on technical professionals, and the recognition that such professionals need to receive rewards equitable to those received by their managerial counterparts, it is not surprising that these items do not load onto distinctly separate factors any longer. For example, whereas in the past only managers might have expected to "be highly respected by top management" and to have "a great deal of power and influence on the job", it is quite likely that individuals in technical positions might also now be receiving such rewards.

Because the factor structure was difficult to reinterpret, it was decided to retain the dimensions described by Igbaria et al, but to evaluate the results of any analysis performed using these measures with some circumspection. Responses to the 13 items making up this scale are scored on a five point scale ranging from 1 (not at all) to 5 (to a great extent).

Table 7: Factor Structure of the Task and Job Characteristics Items after Varimax Rotation

Variable	Factor 1	Factor 2	Factor 3
TC1	**.775**	.061	.264
TC2	**.703**	.196	.357
TC8	**.751**	.093	.260
TC9	**.599**	.361	.261
TC10	**.598**	.289	.190
TC12	**.670**	.408	.112
TC11	.285	**.757**	.110
TC13	.081	**.799**	.211
TC3	.342	-.097	**.552**
TC4	.336	.012	**.728**
TC5	.054	.317	**.731**
TC6	.292	.414	**.620**
TC7	.352	.215	**.733**

Although the factor structures had suggested otherwise, the original dimensions appear relatively homogenous, given the internal consistency reliability values. The value for the task-based rewards scale was .85, and of the organisation-based rewards was .80.

3.5.7 Instrument to Assess Boundary Spanning

Boundary-spanning was included in Igbaria et al's (1991) study, and again in Meredith's (1992), to confirm that the classification of individuals into groups of managers and non-managers was correct. Boundary-spanning is defined as the amount of organisational and interdepartmental boundary crossing an individual undertakes in order to perform his or her work (Baroudi, 1985, p342). The extent of boundary-spanning activity has been shown to be significantly higher among managers than among non-managers (Miles et al, 1976, p26), and further confirmation of the manager/non-manager classification would be gained if those classified as managers showed higher boundary-spanning than non-managers.

The boundary-spanning measured used by Igbaria et al (1991) and subsequently by Meredith (1992) was adopted for this study. As described in section 3.5.3.6 above, the items making up this scale were combined with the items making up the Supervisory Activity items. A maximum Likelihood Factor analysis revealed that the Boundary-Spanning items loaded on one factor and the Supervisory Items on another. The ten items making up the Boundary Spanning scale were measured on a five-point scale varying from 1 (not a part of my job) to 5 (a very significant part of my job). The internal consistency reliability of this scale was .90.

3.5.8 Instrument to Assess Turnover Intentions

In previous studies by Igbaria et al (1991) and Meredith (1992), a single-item was used to assess how long individuals intended staying with their organisations. However, Mobley, Horner and Hollingsworth (1978, p410) developed a three-item scale based on a hypothesised turnover decision process which involves thinking of quitting, intending to search for alternative employment and intending to quit (Mobley, 1977, p238). These items have been found to be significant predictors of turnover (Michaels and Spector, 1982, p57), and were believed to offer more accuracy than the single measure, as the scale explored various indicators of the intention to quit, and did not restrict the respondent to indicating only an intention to quit the *organisation*. In other words, intention to quit the *job* was also catered for.

Individuals record their responses to the items indicating intention to search and intention to quit on a five-point scale ranging from 1 (highly unlikely) to 5 (highly likely). In addition, responses to the item regarding how frequently respondents think of quitting are recorded on a five-point scale varying between 1 (never) to 5 (constantly). The three items making up this scale were combined to arrive at an overall turnover intention score, consistent with previous usage of this scale (Michaels et al, 1982, p55; Blau, 1988, p291). The internal consistency reliability of the scale was .82.

Blau (1988, p291) had also included a Career Withdrawal scale in his study, which used the Job Withdrawal scale described above, but replaced the word "job" with the word "profession". Blau has shown this measure to have discriminant validity from the job withdrawal scale. The Career Withdrawal scale was included in this study, as it was considered important to determine whether a mismatch between job and career orientation might lead to an intention to quit the profession as well as the job or organisation. Thus, the word "job" was replaced with the word "IS profession" in the Job Withdrawal scale in order to create a Career Withdrawal scale.

Responses to the items are recorded on the same scales as used for the job withdrawal scale above. The internal consistency reliability of the scale was .81.

3.5.9 Instrument to Assess Organisational Commitment

In Igbaria et al's (1991) and Meredith's (1992) previous research, a single measure of organisational commitment was used to determine a respondent's attachment to his or her organisation. As Klenke et al (1992, p173) point out, however, a single measure of organisational commitment may be inappropriate, as organisational commitment may be a result of one or more different aspects of the commitment construct. Allen and Meyer (1992, p2-3) describe the three different commitment components as follows:

- *Affective commitment.* Affective commitment reflects an identification with, and desire to remain part of, an organisation, and such commitment is expected to result in reduced turnover and better performance.
- *Continuance Commitment.* Continuance commitment originates from a realisation of the costs associated with leaving an organisation. A high continuance commitment coupled with a desire to leave might result, as Allen et al (1990, p15) posit, in reduced turnover but at the price of poorer performance from the dependent individual.
- *Normative Commitment.* Normative commitment refers to a feeling of "moral obligation" to remain with an organisation, simply because it is the correct and proper thing to do.

It was considered important to expand the organisational commitment element of this study to accommodate the three different types measured above. Firstly, as Klenke et al (1992, p174) point out, little is known of the above three components of commitment as regards IS employees; also, IS employees are relatively highly paid, and it is often implied that IS staff are recruited through offers of above average salaries (Glover, 1994, p11), or are overpaid (Wintrob, 1994, p1).

If this is the case, one might expect an IT sample to exhibit high Continuance Commitment counts. Moreover, if individuals feel dependent on their organisations, but not emotionally attached, they might indicate a low turnover intention because of this fact. This could confuse the results of a study which ignores the continuance commitment measure, as individuals will display low affective commitment but, in contrast to expectations, low turnover intention.

Also, it was considered of value to assess whether individuals with high continuance commitment display lower perceived performance in the job than their counterparts who have lower continuance commitment scores. As already stated, Allen et al (1990, p15) believe high Continuance Commitment may achieve reduced turnover but at the price of poorer performance from the dependent individual.

Finally, it will be of value, and is likely to provide further evidence of the Construct Validity of the career orientations concept, to determine whether individuals with certain career orientations show greater normative commitment than others - for example, Schein (1985, p29) suggests that the job security orientation may manifest itself "in company loyalty". Also, the security-oriented may display greater Continuance Commitment. Schein (1978, p148) points out that, as a security-oriented individual, one has to "accept that the organisation's definition of one's career is indeed the only valid definition and *must accept one's dependency on the organisation*".

The three commitment scales each contain eight items, and respondents indicated their agreement or disagreement with each item on a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). The internal consistency reliability scores for the scales were:

Affective Commitment	.89
Continuance Commitment	.82
Normative Commitment	.75.

3.6 Conclusion

Where possible, the survey instrument used in this study has been composed of existing and validated scales. However, complete and valid scales for measuring the extent to which jobs catered for certain of the career orientations could not be found in the organisational behaviour and IS research literature. Thus, scales have been developed to measure these areas, based closely on Schein's description of the job types suited to the various orientations. In addition, factor analysis has been undertaken to establish and/or confirm the dimensionality of the items, and, where applicable, the internal consistency reliability of the resultant scales has been established to determine the homogeneity of the constituent items.

It should be noted that the scales for measuring the extent to which a job caters for the nine career orientations represent an initial attempt at creating a suitable instrument for this purpose. Clearly, research into this area would benefit from expanding and refining the scales so that an instrument could ultimately be provided that organisations, as well as researchers, could put to use in examining the motivating potential of various jobs for each of the career orientations.

In the following chapter, the data resulting from the questionnaire described above is analysed, and the findings discussed. In addition, the methods used to test each hypothesis, and the test results, are described.

4. RESULTS

4.1 Introduction

In this chapter, the various analyses conducted to test the hypotheses are described, and the results of each test examined and discussed. The distribution of occurrences in each career orientation are shown, and the method used for, and results of, the comparison between Western Cape residents and those resident elsewhere are described. Then, the profile of career orientations of the sample as a whole is determined, using various methods and comparing the results of each. Finally, the individuals whose jobs are congruent with their orientations, and those whose jobs are not, are identified, and the effects of a match versus a mismatch on job outcomes examined.

4.2 Distribution of Career Orientations

As previously stated, earlier research in the USA had shown IS professionals to hold predominantly managerial and technical orientations, while a similar study in the Western Cape had shown a predominance of geographical security and lifestyle orientations.

The distribution of career orientations among the IS professionals in this study is shown in figure 2 below. The first noticeable characteristic of the distribution is the extremely high percentage (29.8%) of individuals whose dominant orientation could not be determined (denoted by the acronym "UNK"). Although Meredith's (1992) previous study experienced this phenomenon, the percentage of unknowns was far smaller (12.5%). It is surprising to note that Igbaria et al (1991, p161) report no "unknowns" in their initial study, which used the original 41-item Career Orientations inventory.

It is also unfortunate that Igbaria et al (1993), in their study performed to develop the shortened form of the Inventory, appear not to have measured the distribution of their sample across the career orientations. Had he done so, it is likely that he might have noticed the large number of unknowns and warned potential users of the instrument of this fact.

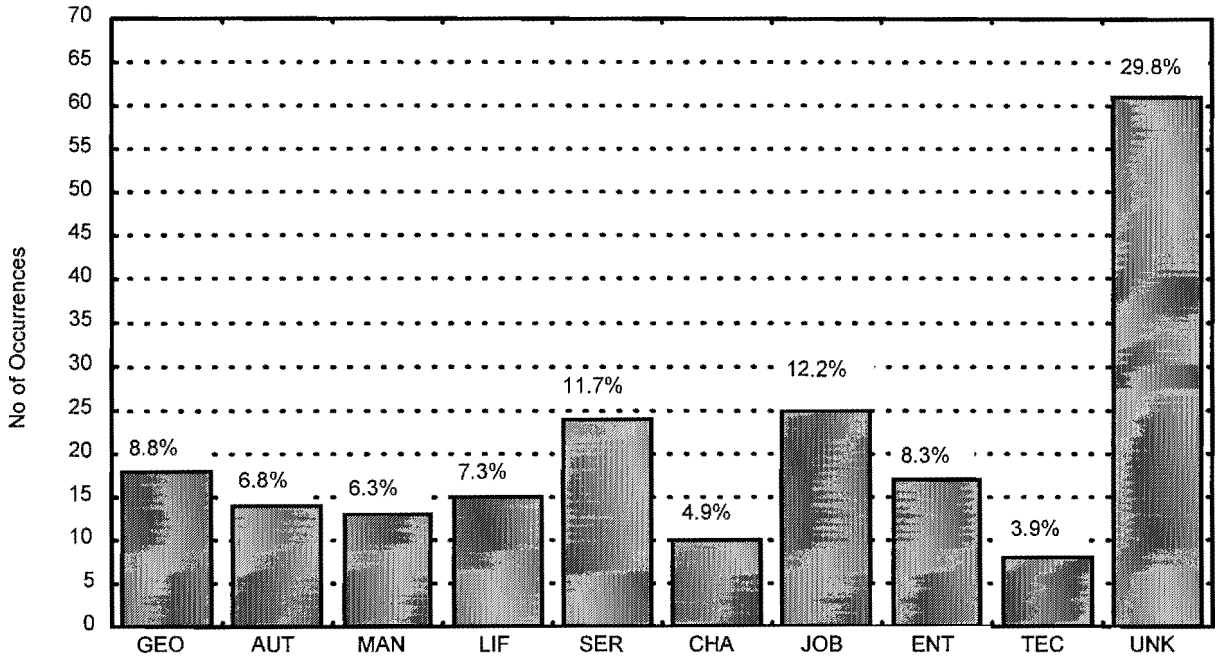

Figure 2: Distribution of Dominant Career Orientations in National CSSA Sample

Support for the assumption that the shortened instrument has significantly increased the number of unknowns in this study is provided by Ginsberg et al (1992, p44), who also developed their own shortened version of the career orientations inventory (based on an earlier version developed by De Long (1982)), consisting of three items to measure each orientation. In the table showing the distribution of Ginsberg et al's (1992) sample across the different orientations, the sum of the percentages total 158.31%. The reason for this is that the unknowns were assigned to each of the several orientations on which they scored equally. While this is a somewhat meaningless approach, as it hardly provides a true profile of the career orientation distribution among their sample, it does show that a relatively high proportion of their sample was unable to be assigned to one dominant career orientation.

Indeed, Ginsberg et al (1992, p45) suggest that "the efficiency gained through the use of 3-item scales results in a fairly high cost in terms of reliability". Thus, it is likely that the accuracy of Igbaria et al's scale (1993) is even further reduced, as two of the orientations are measured with only two items each.

Disregarding the number of unknowns, the distribution of career orientations across the sample shows fewer extremes than were evident in Igbaria et al's (1991) and Meredith's (1992) earlier research. However, job security and service dominate, with the least number of cases holding the technical and challenge orientations. A Chi-Square test was performed to test the uniformity of the career orientation distribution across the sample ("unknowns" were excluded as only the spread of dominant orientation was of interest to the study). The result of the Chi-Square test tends towards significance ($x2 = 15.125$, $p<.057$), and indicates that the unequal distribution of career orientations among the sample is greater than what might have been expected by chance.

It is evident from the graph that the number of individuals holding the technical and managerial orientations is low, which is contrary to Igbaria et al's (1991) findings, but consistent with those of Meredith (1992) and Ginsberg et al (1992). The remainder of the profile is not, however, consistent with Ginsberg et al (1992, p45), who reported the highest number of individuals occupying the challenge, job and geographic security orientations. However, Ginsberg et al's approach to establishing the distribution of orientations has already been criticised above, so a meaningful comparison between this study and their's is not possible. Nevertheless, it is clear that the distribution of career orientations displayed by one sample is certainly not generalisable to other samples, let alone to the entire IS industry. This finding, and its implications, are discussed further in Chapter 5.

4.3 Comparison of Career Orientation Profiles - Western Cape versus Other Areas in the RSA

In order to test hypothesis one, which stated that career orientations of a sample drawn from outside of the Western Cape would differ markedly from a sample representing the Western Cape, the following approach was adopted. Firstly, the individuals who had received, and responded with, postal questionnaires were classified as being resident "outside of the Western Cape". Of the email respondents, the CSSA address list, together with the email addresses, were used to determine if the respondent was living in, or outside of, the Western Cape, and each was classified accordingly.

Thereafter, comparisons were performed between the two sub-samples, using Chi-Square tests and Analyses of Variance (ANOVAs). In addition, because the number of individuals in the Western Cape sub-sample of the current study was relatively small (n=31), this sub-sample was combined with the frequencies occupying each orientation in Meredith's (1992) earlier study (which was restricted entirely to the Western Cape). Also, the raw scores on each orientation of both Western Cape samples were similarly combined. The Chi-Square and ANOVA tests were then repeated, to gain a clearer and more accurate comparison of individuals in the Western Cape versus individuals elsewhere in the RSA, and also to determine whether the profile in Meredith's earlier study held true.

The results of the Chi-Square test conducted on this study's sample alone is shown in table 8 below. Although the Chi-Square result indicates that a significant difference exists between the two regions, this result should be treated with caution given the small number of individuals in the Western Cape sub-sample (n=31). However, it is noticeable from the table that the proportion of individuals occupying the geographical orientation in the Western Cape is far higher, as expected, than the proportion with this orientation elsewhere.

Table 8: Distribution of Dominant Career Orientations by Location

	DOMINANT CAREER ORIENTATION										
LOCATION	**UNK**	**TEC**	**MAN**	**AUT**	**JOB**	**SER**	**CHA**	**LIF**	**ENT**	**GEO**	**Chi-Square**
W.Cape (n=31)	11	0	2	3	2	0	3	3	0	7	21.36*
Other (n=174)	50	8	11	11	23	24	7	12	17	11	

* $p \leq 0.01$

The ANOVA conducted of the raw scores by location reveals a similar result, with the geographical security orientation being significantly higher in the Western Cape than elsewhere. There are also significant differences between the service and managerial scores, with the desire to be of service, and to manage, being weaker for residents of the Western Cape.

Table 9: ANOVA of Career Orientation Raw Scores by Location

	CAREER ORIENTATION RAW SCORES								
LOCATION	**TEC**	**MAN**	**AUT**	**JOB**	**SER**	**CHA**	**LIF**	**ENT**	**GEO**
W.Cape (n=31)	2.94	2.76	3.67	3.26	3.37	3.53	3.86	2.76	3.60
Other (n=174)	2.97	3.29	3.51	3.51	3.75	3.52	3.64	3.09	2.79
Univariate F	.02	7.47*	1.18	1.74	5.12**	0.00	2.57	2.10	11.02***

* $p \leq 0.01$
** $p \leq 0.05$
*** $p \leq 0.005$

Combining the results of Meredith's (1992) earlier study with the Western Cape sub-sample in the current study provides a more accurate and representative picture. The number of individuals holding each dominant orientation outside of the Western Cape is shown in figure 2 below, while the distribution of each orientation in the Western Cape is shown in figure 3.

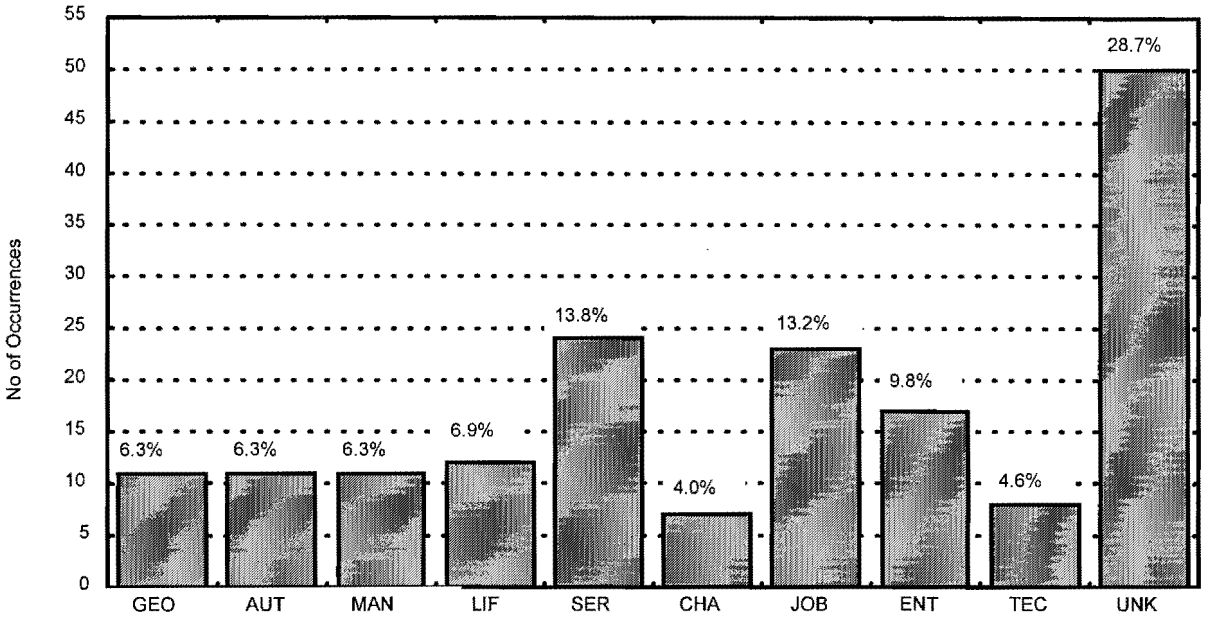

Figure 3: Distribution of Dominant Career Orientations outside of the Western Cape

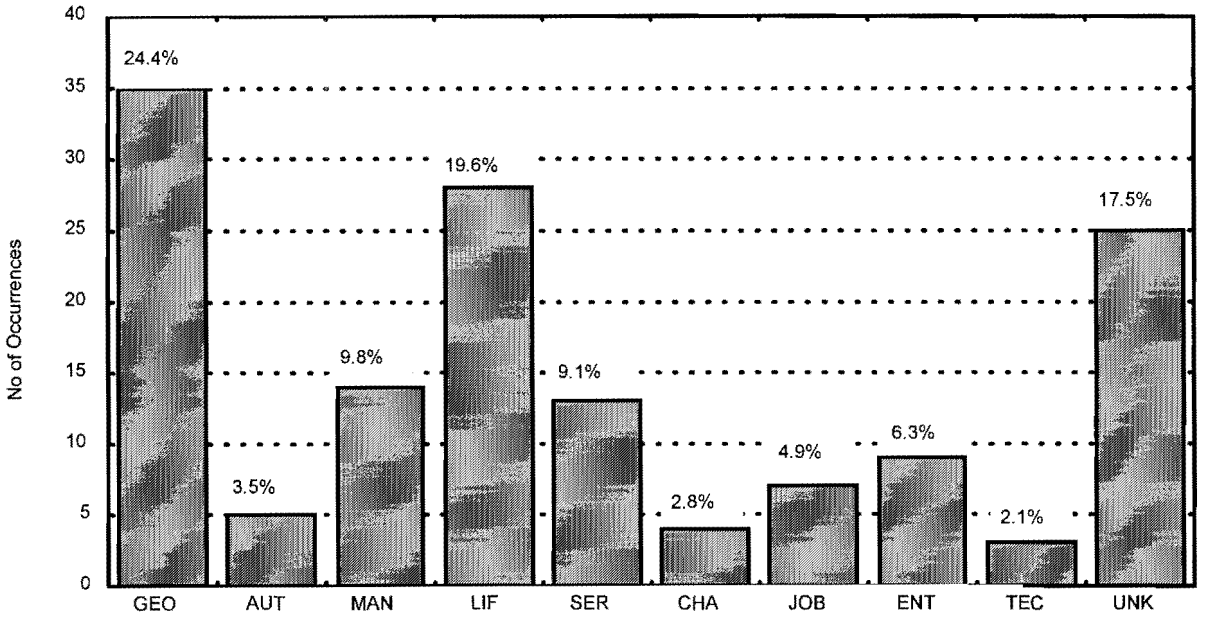

Figure 4: Distribution of Dominant Career Orientations in the Western Cape

It is immediately apparent from reviewing the two graphs that notable differences appear to exist between the two samples. In order to confirm this finding, however, a Chi-Square test of independence between dominant orientation and location was performed, and is shown in Table 10 below.

This test again excluded the unknowns, as no hypothesis had been made regarding the distribution of unknowns across different locations. The result of the test ($x2 = 38.76$, $p<0.00001$) shows that there are substantial differences between those individuals living and working in the Western Cape, and those located elsewhere.

Table 10: Distribution of Dominant Career Orientations by Location (from two studies)

	DOMINANT CAREER ORIENTATION										
LOCATION	**UNK**	**TEC**	**MAN**	**AUT**	**JOB**	**SER**	**CHA**	**LIF**	**ENT**	**GEO**	**Chi-Square**
W.Cape(n=143)	25	3	14	5	7	13	4	28	9	35	38.76*
Other (n=174)	50	8	11	11	23	24	7	12	17	11	

* $p \leq 0.00001$

Firstly, as expected, a far higher percentage of the individuals in the Western Cape are geographically-oriented and lifestyle-oriented than elsewhere in the country (25.5% vs. 6.3%; and 19.6% vs. 6.9% respectively). In addition, there are a higher number of job security and service orientations outside of the Western Cape. Also, the number of individuals with autonomy and entrepreneurial orientations in the Western Cape is less than elsewhere, but the number of managerially-oriented slightly higher. It is likely, however, that the lower number of individuals in the job security, service, autonomy and entrepreneurial orientations in the Western Cape is largely due to the far higher number of lifestyle and geographically-oriented individuals in this region.

As a final test, an Analysis of Variance was performed of the career orientation raw scores by location, to see whether any difference in mean scores between locations was evident. Once again, the mean scores from Meredith's (1992) previous study were combined with those of the Western Cape in this study.

As shown in table 11 below, a desire for geographical security and a balanced lifestyle are, as expected, significantly higher for individuals in, as opposed to outside of, the Western Cape. Interestingly, the need for challenge and for remaining in a particular technical area of expertise is lower for individuals in the Western Cape than elsewhere, as is the need for autonomy (though to a lesser extent).

Table 11: ANOVA of Career Orientation Raw Scores by Location

	CAREER ORIENTATION RAW SCORES								
LOCATION	**TECH**	**MAN**	**AUT**	**JOB**	**SER**	**CHA**	**LIF**	**ENT**	**GEO**
W.Cape(n=143)	2.75	3.17	3.35	3.35	3.64	3.09	4.00	2.99	3.62
Other (n=174)	2.97	3.29	3.51	3.51	3.75	3.52	3.64	3.09	2.79
Univariate F	4.06*	1.14	3.54+	2.26	1.43	24.97**	20.62**	0.58	36.89**

* $p \leq 0.05$ ** $p \leq 0.00001$

\+ Tends towards significance at the 10% level ($p < 0.061$)

Thus, the data has confirmed the first hypothesis that a significant difference exists between the career orientations of IS professionals resident in the Western Cape and those resident in other areas. As Ginsberg et al point out (1992, p48), however, differences in career orientation scores which are statistically significant may not necessarily have any practical significance - in their view, only large differences between raw scores, in the region of one full point, should be considered worthy of attention. Thus, while the differences in scores on the technical, challenge and lifestyle orientations are significant, their practical relevance is questionable. The difference between scores on the geographic security orientation, however, is close to a full point (0.83), and this difference is, therefore, of some practical significance. Indeed, the difference in geographical security orientation score and distribution is the only finding that stayed constant between the smaller sub-sample from this study and the combined sample from both studies.

As was posited in Meredith's (1992) work, the importance of geographic security to those resident in the Western Cape is not surprising, considering the beauty of the surroundings, the way of life one is able to pursue, and the relatively higher living standards available in this area. The implication of this finding, and how IS managers and organisations should respond to it, is further discussed in Chapter 5.

Note that for the remainder of the paper, analyses are performed on the sample from this study alone. The inclusion of Meredith's (1992) earlier results was only to provide a more substantial Western Cape sample for comparative purposes.

4.4 Career Orientations Profile of the IS Profession in relation to other Occupations

As stated earlier, Igbaria et al (1991) called for research to establish whether the career orientations of IS professionals were unique, and different to those of personnel in other functional areas. This research is expected to provide insight into whether individuals drawn towards the IS profession are markedly different to those in other professions, and whether any differences warrant special personnel management approaches. The need for special management approaches has been described frequently in the literature, with various researchers describing IS personnel as needing more challenge/variety and greater autonomy (Smits, McLean and Tanner, 1993, p115; Couger, Adelsberger, Borovits, Zviran and Motiwalla, 1990, p44; Dengate et al, 1990, p78; Couger and Zawacki, 1980), while others suggest that no motivational differences exist between IS individuals and those employed in other functional areas (Ferrat and Short, 1986).

Kaplan (1990) investigated the differences among career orientation scores between 14 different professions, namely: Accountants, Engineers, Architects, Attorneys, Doctors, Nurses, Radiographers, Physiotherapists; Psychologists, Social Workers, Dieticians, Veterinarians, Dentists, and Pharmacists. While it is recognised that the above occupations are unlikely to be found in a typical organisation (apart from accountants and, possibly, engineers and attorneys), it was considered that a comparison between IS professionals and other professional occupation groups would still provide a useful guide to the relative values of the IS community.

In Kaplan's (1990, p143) study, one of the research problems he faced was to measure how the various professional groups differed in the strength of their propensity towards each of the career orientations. Kaplan (1990, p166) employed the Bonferroni means test as a "powerful control against the greater probability of making a Type 1 error ... when multiple comparisons are made". As Kaplan points out, comparing the means for each of the 15 professions with those of every other profession implies 15 (15-1)/2 = 105 pairs of means to compare, each with a .05 probability of a Type 1 error. The overall error rate can be kept at the .05 level by employing the Bonferroni means test, which sets the comparisonwide error rate to α/c, where c represents the required number of comparisons. Following a similar approach in this study, meant that the comparisonwide error rate should be set at .05/105 = .00048.

In order to test whether the means were significantly different, therefore, the mean score and standard deviation for each orientation, and the size of the sample, for each professional group and for the IS sample from this study, were fed into a probability calculator facility on the Statistica package. Only where the calculator showed differences of significance < .00048 were the differences in means regarded as statistically significant.

Kaplan's (1990, p242) approach was also adopted in order to provide a synopsis of the profile of the IS profession relative to other professions. This approach entails developing a graph, in which each horizontal line represents one of the career orientations, and the numbers on the line denote the various professions' scores on that orientation, ranked from highest to lowest. The number is determined by taking the number of professions who scored significantly lower on that orientation, less the number that scored significantly higher. The profile is plotted through the centre point of like figures. The final profile portrays the IS profession's relative position on each of the career orientations. The resultant profile is shown in Figure 5 below.

Figure 5: A profile of the relative positions of IS Professionals on the Career Orientations Inventory

CAREER ORIENTATIONS

CHA	**14**	8	8	7	5	3	-2	-4	-3	-3	-4	-6	-6	-6	-11
SER	13	11	8	6	3	1	0	0	-2	-2	**-3**	-4	-7	-11	-12
AUT	8	5	5	3	**3**	3	3	2	2	1	-1	-1	-9	-12	-12
ENT	9	8	6	6	6	6	6	3	0	-7	-8	-8	-8	-0	-9
GEO	4	2	2	1	1	1	0	1	**0**	0	0	-1	0	-3	-8
JOB	14	10	10	6	0	-1	-2	-1	-4	-4	-4	-5	-4	-7	-8
TEC	4	3	2	1	1	1	1	1	1	1	0	1	-1	-2	-14
MAN	9	9	7	6	4	3	2	1	-1	-3	-4	-4	-8	-9	-12
LIF	5	3	2	2	1	1	1	1	1	1	0	0	-1	-4	**-13**

As can be seen from the above graph, IS professionals show a significantly higher need for challenge than all the other professional groups. This confirms the findings of previous research into this profession.

The desire to be of service to others is relatively low, which is initially surprising. However, all the professions which rated higher on this characteristic were those one would typically expect to be service-oriented - for example, nurses and social workers. Compared to engineers and accountants, IS professionals show significantly higher service scores, and this is expected, as the IS industry is regarded by many as a service-provider to business.

The relatively high orientation towards autonomy (and the fact that no other profession shows *significantly* higher autonomy) is consistent with expectations and with previous research.

IS professionals scored highly on entrepreneurship, with six professions exhibiting significantly lower, and none showing significantly higher, scores on this orientation. Again, this is not surprising. IS professionals are in an occupation which requires them to be creative; and, they are intimately involved in creating and designing systems to support the business needs of their various organisations. Also, given the constant change in information technology, and the demand for new and competitive IT applications, IS professionals are in an excellent position to capitalise on the demand for their skills by creating businesses of their own, or operating as self-employed consultants.

The IS profession's orientation towards geographical security was roughly in the middle of the various professional groups, with only Engineers showing a significantly lower score on this variable and Radiologists significantly higher. It appears, therefore, that as a group, IS professionals are not overly concerned with remaining in one area, but are not as prepared as Engineers, for example, to go wherever their job dictates.

The score on Job Security was surprisingly high for the IS profession. Only nurses showed a significantly higher score on this orientation, while engineers, doctors, accountants, attorneys, dentists, veterinarians and architects all exhibited a significantly lower concern with this orientation. Considering that IS skills are in demand, and that most organisations rely on IT professionals to support their IT needs, this high score is at odds with intuitive expectations.

However, it should be noted that the mean age of this sample is over 40, an age at which "the person feels less mobile and attractive in the job market and therefore more concerned about Security" Hall (1978, p188). Moreover, many organisations are examining "outsourcing" their IT requirements, to cut the high costs associated with maintaining an in-house IT department. In addition, many organisations are downsizing, which involves the replacement of large mainframe computers, with which the older employee is probably more familiar, with smaller midrange and PC technology. Thus, older IT employees are at risk, firstly because of their age, and secondly because of their lack of knowledge of the new technology. As Hattingh (1994) points out, the IT industry is "notorious for age discrimination", as organisations feel it is more cost-effective to hire the "young go-getters" who cost less and probably are more familiar with the latest technology. Also, the older employee's perceived sense of obsolescence is constantly heightened in a field characterised by rapid change, as is the IT field. As Kaufman (1989, p74) states, "it is ironic that the occupational groups most responsible for achieving rapid technological change .. - are themselves highly vulnerable to the consequences of such change".

The technical orientation of IS professionals is relatively high, but only significantly higher than the Engineering profession. Given that the job of an IS professional is largely technical in nature, it is somewhat surprising that the score is not higher. However, as Kaplan (1990, p186) remarks, this outcome may be less a characteristic of the sample than a result of the questions used to assess the technical competence orientation.

As Kaplan suggests, one could assess a career orientation by asking an individual to rank its importance relative to other orientations, or simply by estimating its importance without reference to any other orientation. However, the questioning approach adopted in the inventory asks respondents to rate the importance of remaining in their technical area (thus, the technical anchor) against *being promoted.* Not only is this perhaps an inappropriate frame of reference, but also one that will lower the tendency to rate the technical orientation highly, given that promotion implies greater reward in the typical corporation.

Aspirations to manage are neither particularly high or low among IS professionals, as shown by their central position on the graph. Engineers and nurses are significantly more compelled to seek managerial positions, while Veterinarians, Doctors and Physiotherapists are significantly less so. Kaplan (1990, p236) believes that the high scores for nurses and engineers is a reflection of the reward policies which favour those in management positions in these professions. The relatively high score for the technical orientation, and the central score on the managerial orientation, may be an encouraging sign that organisations have altered the typical reward policies and career paths for IT professionals, as they have often been recommended to do in the literature (Butler Cox, 1989; Zawacki, 1993, p73) so as not to reward only those ascending the traditional managerial career path.

While the lifestyle orientation scores of the other professions were relatively similar, as shown by the few significant differences between the groups, the IS profession showed a lifestyle orientation significantly lower than all the other professions except for Accountants. The reason for this is not entirely clear. In Kaplan's study (1990, p255), it was reasoned that the high score on this orientation for Doctors was a result of the extreme stress their work places on these individuals, as well as a more acute understanding of the health benefits gained from a balanced lifestyle!

Perhaps the low score on this orientation for IT professionals means that their profession already allows them to pursue the lifestyle they desire. For example, the profession is relatively well-paid, and it is possible that most organisations provide sufficient flexibility to cater for the average IT employees' needs. Thus, their low score may simply be a reaction to the fact they already have balanced lifestyles.

Kaplan (1990, p243) adopted the above graphical approach to representing each profession's profile, because he felt that simply reporting on each profession's career orientation scores relative to one another would have yielded little of value. In previous research on career orientations of IS professionals, the approach Kaplan argues against was adopted (Crook et al, 1991, p18); Ginsberg et al, 1992, p45). It is interesting to note the contrasts in the presumed profiles when different methods are used. In table 12 below, the career orientations are arranged in descending order of importance, following the relative mean scores on each orientation. The order of importance, relative to the other fourteen professions evaluated by Kaplan, is shown alongside.

Table 12: Comparison of Career Orientation Profiles Resulting from different methods

	IMPORTANCE OF CAREER ORIENTATION		
	Mean	**Relative to other Orientations**	**Relative to other Professions**
SER	3.69	1	8
LIF	3.67	2	9
AUT	3.53	3	4
CHA	3.52	4	1
JOB	3.48	5	3
MAN	3.21	6	6
ENT	3.04	7	2
TEC	2.96	8	5
GEO	2.91	9	7

As can be seen, the first approach suggests that a desire to be of service is most important to IS professionals, followed by the need for a balanced lifestyle. Kaplan's approach, however, yields a completely contrasting picture, with the service and lifestyle needs being ranked *as least in importance*, and challenge and the entrepreneurial need being highest. Finally, if one considers the distribution shown earlier in figure 2, one might consider Job Security to be the primary orientation, as this was held by the majority of respondents (12.2%).

Thus, the IS Manager wishing to motivate and retain his or her IS professionals is likely to receive different advice, depending on the method utilised. Following the one approach, it may be decided to give all IS employees more chance of being of service to the organisation, and a very flexible working arrangement. However, this approach is unlikely to succeed, if, in fact, the employees really desire challenge and the opportunity to create something of their own (which is a more intuitively acceptable finding, and one which correlates with previous research into IS personnel).

It must be stressed, once again, that *neither* method adequately serves to identify a motivational approach for the IS manager to adopt. This is because the above profiles reflect the mean score of various needs against other needs, or against other professions, *for the sample as a whole.*

The limitation in this approach should be obvious, in the light of the wide variety of dominant career orientations shown to exist in various IS personnel samples. For example, providing all IT staff with the opportunity to serve others, based on the sample's mean score on this orientation, will serve to motivate *only 11.7% of the sample who have this dominant orientation.* This observation is borne out by observing the relative importance placed on the remaining career orientations by each group with a specific dominant career orientation. These relative scores, and other characteristics which serve to distinguish one orientation from another, are analysed in the next section.

4.5 Distinguishing Characteristics of Each Career Orientation

In this section, the following relationships are examined:

- between dominant orientation and raw scores on the remaining orientations;
- between dominant orientation and perceived performance levels in the job;
- between dominant orientation and different aspects of organisational commitment; and,
- between dominant orientation and demographic characteristics.

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

An analysis of variance was performed to assess the career orientation raw scores held by the different dominant orientations. This analysis had two purposes: to determine 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 staff (i.e. for all orientations).The results of the ANOVA are shown in table 13 below, with the raw score of the dominant orientation highlighted. Raw scores which are high relative to other orientations are underlined, and relatively low raw scores are presented in italics.

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

	DOMINANT CAREER ORIENTATION									
CAREER ORIENTATION	**TEC**	**MAN**	**AUT**	**JOB**	**GEO**	**SER**	**CHA**	**LIF**	**ENT**	**Univariate F**
Raw Score										
Technical	**4.38**	*2.26*	2.38	2.85	3.07	3.01	2.50	3.27	2.73	5.59*
Managerial	*2.58*	**4.46**	2.62	2.97	2.80	3.25	3.07	2.76	3.45	6.09*
Autonomy	3.29	*2.85*	**4.40**	3.48	3.35	3.63	3.43	3.69	3.47	5.28*
Job Security	3.06	3.12	*2.89*	**4.54**	*3.00*	3.50	3.45	3.17	3.24	8.22*
Geo Security	3.06	2.38	2.32	2.82	**4.67**	2.35	2.35	3.20	2.18	11.20*
Service	*3.00*	3.62	3.19	3.45	3.35	**4.53**	3.70	3.47	3.47	7.18*
Challenge	3.25	3.44	3.43	*3.00*	3.41	3.54	**4.67**	3.07	3.71	6.53*
Lifestyle	*3.17*	*3.28*	3.62	3.61	3.61	3.56	3.77	**4.45**	3.69	3.98*
Entrepreneurship	*2.00*	2.72	2.88	2.47	2.69	2.89	2.90	3.36	**4.71**	12.06*

* $p \leq 0.0005$

As can be seen, the technically-oriented individuals show the lowest desire to manage out of all the dominant orientations. This is consistent with expectations, and with Schein's view of this orientation. Schein (1987, p165) suggests that the technically-oriented individuals view managerial work as "painful", and as "too political, too interpersonal, too irrational, too much a "jungle"" (Schein, 1985, p41). Thus, their lack of desire to assume a managerial role is scarcely surprising.

The technically-inclined show one of the lowest scores towards entrepreneurship. As these individuals derive their pleasure from performing and excelling in their chosen area of expertise, they are unlikely to explore entrepreneurial opportunities unless they are prevented from pursuing their craft in their current organisations (which, as will be shown in Section 4.9 below, the majority of technically-inclined individuals are not).

It is not clear why the technically-oriented score low on the desire for a balanced lifestyle - however, because of the rapidly changing nature of the IT field, and the need to avoid technological obsolescence, perhaps technically-oriented individuals are willing to sacrifice some of their personal or family time in order to remain expert in their field.

The desire to be of service for the technically-oriented is also low, but this is to be expected, as providing service requires a reasonably high degree of interpersonal activity, which this orientation typically avoids. As Holland (19??, p530) points out, service-oriented individuals are "gregarious rather than isolated, and prefer work with people, whereas technology and science oriented people are isolated rather than gregarious, and prefer things to people".

Managerially-oriented individuals scored low on the technical orientation, and this, too, is consistent with expectations. Schein (1987, p166) suggests that these individuals "view specialisation as a trap", and they see technical jobs only as stepping stones on the way to a managerial job (Schein, 1978, p135). Managers also scored low on autonomy, which matches Igbaria et al's (1991, p158) findings, and is again consistent with expectations. Schein (1985, p164) points out that "greater rank or responsibility ... might entail loss of autonomy". Also, because so much of a manager's career is "tied up with a specific company" (Schein, 1985, p167), this implies that the manager, like the security-oriented, will have to accept, to some degree, an organisational definition of his or her career. This, in turn, implies less autonomy. The high service score for the managerially-oriented is not unexpected, as managers are increasingly being seen as "helpers and facilitators" (Naisbitt et al, 1985, p61).

Autonomy-oriented individuals scored low on job security. Of the 16 individuals holding this orientation, six are consultants and one owns his or her own company. Given the current high tendency for organisations to outsource much of their IT work, this lack of concern for job security among these individuals is not surprising.

Job-security oriented individuals show a low desire for challenging work. Again, this is consistent with Schein's (1987, p163) view of this anchor, as such individuals consider "job challenge and other intrinsic motivational tools" less important than factors contributing to their feeling of security. The geographical security-oriented do not have any particularly high or low scores, apart from job-security which is lower than that of all other orientations but autonomy. While Igbaria et al (1991, p155) had combined the two security factors to create a single indicator of the need for security, the low need for job security exhibited by the geographical security oriented supports the view that these should be treated as separate constructs.

Also, the low job-security score for the geographical security-oriented is not unlikely, given that such individuals are not so much tied to a particular organisation as to a particular region. Indeed, people with this orientation will *move from company to company* in order to stay in a particular geographical area (Schein, 1987, p163).

Service oriented individuals showed relatively high scores for autonomy and job security. The concern for autonomy conforms to expectations, as Schein (1987, p169) indicates that such individuals find "the freedom to operate relatively autonomously" important. The high job security was unexpected, although Kaplan (1990) found that the individuals with the highest service orientation in his study also showed high job security. However, these individuals were nurses, who were underpaid and whose skills were not in high demand relative to the other occupations. Thus, their high mean score for job security was seen as more a reflection of their circumstances than of a general desire for high security among the service oriented. Nevertheless, Kaplan (1991, p183) also reports that the job security and service career orientations correlated highly in his study, suggesting that there is some relationship between a desire to be of service and a desire for job security. As Kaplan points out, perhaps these factors share some commonality in that both reflect a desire to identify with something greater than oneself (either an organisation or a cause).

The challenge-oriented individuals exhibited a relatively higher score on the lifestyle and service orientations. However, the lifestyle and service scores are not dramatically different from the raw scores of many of the other dominant orientations, and, thus, are not considered to be indicative of any noteworthy differences between the challenge and other orientations.

The lifestyle-oriented showed a high score for autonomy, geographical security and entrepreneurship. The high score for geographic security is consistent with intuitive expectations, as the ability to pursue a certain lifestyle is often dependent on remaining in a particular geographical area. The high score on autonomy, too, is not surprising - many of the questions measuring lifestyle in the Career Orientations Inventory imply a need for autonomy, and for doing things in one's own way - for example: "A career is worthwhile only if it permits me to lead my life in *my own way*" and "developing a career that permits me to continue *my own* lifestyle is...". Finally, the high entrepreneurial score is not unexpected, given that many lifestyle-oriented individuals may find organisations unwilling to provide the flexibility they require to maintain a balanced lifestyle, and may desire to run their own businesses simply so that they can modify their working habits as circumstances and lifestyle dictate.

The above ANOVA has revealed significant differences between the needs of the different groups representing each Dominant Career orientation. Once again, the results tend to suggest that a single motivational strategy for such a diverse set of groups would be inappropriate. As already stated, providing, for example, greater challenge or greater opportunity to be of service would motivate only the challenge or service orientations, and, may even serve to *demotivate* certain individuals, such as those with the job security orientation.

4.5.2 Relationship between Dominant Orientation and Perceived Performance Levels in the job

An ANOVA was conducted between dominant career orientation and perceived performance in the job to see whether any significant differences between each orientation's view of their abilities existed. This analysis was conducted to examine whether Schein's (1987) view of the talents and skills of each orientation was correct; and also to examine the accuracy of self-assessment of performance levels. If, for example, the different orientations exhibit different perceptions of their abilities in certain areas, and these perceptions coincide with Schein's (1987) view of the abilities of the various orientations, then the likelihood that the self-assessment can be considered accurate is increased. The results of the ANOVA are shown in table 14 below.

Table 14: ANOVA of Job Performance Assessments by Dominant Career Orientation

	DOMINANT CAREER ORIENTATION									
JOB PERFORMANCE	**TEC**	**MAN**	**AUT**	**JOB**	**SER**	**CHA**	**LIF**	**ENT**	**GEO**	**Univariate F**
Technical	**4.50**	3.71	3.79	3.71	3.96	4.50	3.93	4.00	4.11	1.66+
Creativity	4.13	**4.36**	4.14	3.58	4.29	4.30	4.00	**4.29**	3.72	3.20**
Managerial	3.79	**4.55**	4.14	4.04	**4.38**	4.10	4.16	4.18	4.13	2.24*
Job Attitude	4.28	4.29	3.66	3.94	4.25	4.13	4.08	4.21	4.08	1.74+
Communication	4.13	**4.36**	3.86	3.88	4.06	4.10	3.90	4.00	4.19	1.14
Organisational	3.13	**4.36**	3.86	3.88	3.83	3.60	3.67	3.94	3.89	1.78+
Bus. Knowledge	3.63	**4.39**	4.07	3.69	4.15	4.20	4.03	4.12	3.92	1.84+
Adaptability	**4.63**	4.50	4.07	4.33	4.38	**4.70**	4.47	4.41	4.50	0.82
General	4.00	4.33	3.98	4.00	4.18	4.40	4.09	4.24	4.17	1.12
Overall	4.02	**4.35**	3.93	3.92	4.20	4.21	4.06	4.16	4.09	2.26*

* $p \leq 0.05$

** $p \leq 0.005$

\+ Significant at the 10% level (p=.114, 0.086, 0.095 and .075 respectively)

As can be seen in the above table, considerable differences exist between the various orientations in terms of their job performance ratings. For three of the job performance types the differences are significant, while for a further four the differences tend towards significance at the 10% level.

As expected, the technically-oriented rate their technical skills higher than do any of the other orientations, except for the challenge-oriented, with whom they share this high score. Also, as expected, the managerially-oriented rate themselves lowest on this score, together with the job-security oriented.

In terms of creativity, the managerially-oriented rate themselves highly, as do the entrepreneurially-oriented. This score for the latter is unsurprising, as is the high score for the managerially-inclined; Mintzberg (1990, p171) sees one of the roles of a manager being that of an entrepreneur; who has to adapt his or her unit to changing circumstances, and who is "constantly on the lookout for new ideas". Indeed, an IT manager has to perhaps be even more of an entrepreneur than most other functional managers, as he or she is expected to be an "agent of change" (Winski, 1992, p12; Nolan, 1973, p147).

On the managerial performance factor, the managerially-oriented rate their performance as superior, while the service-oriented follow close behind. Again, as expected, the technically-oriented consider themselves least effective in the performance of managerial work. As far as Communication skills are concerned, the managerially-oriented rate themselves as the most competent in this area, and given that successful managers "communicate effectively" (Campbell et al, 1970, p8), and that Avolio et al (1989, p467) show communication ability to be one of the most important skills a manager should possess, this rating is not surprising.

In terms of organisational ability, the managerially-oriented again rate themselves highly, and given that one of the key components of a manager's job is to organise (Khandwalla, 1977, p153), this is to be expected. The technically-oriented individuals' low score on this performance attribute is equally consistent with expectations, given that "organising" implies a degree of administrative or managerial work

The high business knowledge the managerially-oriented rate themselves as having is again consistent with the reported nature of the IT manager's job, who is expected to have "a good understanding of his company, its capacity for change, and its competitive environment" (Nolan, 1973, p145). Amoroso, Thompson and Cheney (1989, p2) concur, stating that the skills of the successful IT manager must include the ability to understand business needs, and to know how to apply Information Technology to meet these needs.

The low score of the technically-oriented on Business Knowledge is not particularly surprising, but is cause for concern. While the use of their technical skills are key to these individuals, business knowledge is still important if they wish to succeed in the IT field, particularly in the future. In two recent surveys, business knowledge is seen as one of the most critical areas for improvement in the IS professionals' skill set (Watson, Young, Miranda, Robichaux and Seerley, 1990, p24; Cheney, Hale and Kasper, 1990, p245).

The technically-oriented rate their willingness to learn new technologies (see Adaptability) as high, as expected. This score is even higher for the challenge-oriented, and, considering that the learning of a new technology can be considered a challenging activity, this is consistent with intuitive expectations.

The lowest overall performance score is exhibited by the Job Security-oriented. Again, this is consistent with Schein's observations of this orientation. Schein (1987, p163) suggests that such individuals, who gain the security they are seeking, will be satisfied with the level they have achieved and may become "gradually less involved in their work". Some will feel guilty for not having the ambition to rise further in the organisation, and may elect to exercise unused talents in non work-related activities. These statements suggest that a relatively low overall performance score for the job-security orientation is not particularly surprising.

Finally, it is worth noting that no significant differences exist in terms of perceived *General* Performance levels in the job. This indicates that the differences which exist in the remaining performance levels are due to differences in ability commensurate with the dominant orientation held, rather than being due to different levels of general ability.

4.5.3 Relationship between Dominant Orientation and Different Aspects of Organisational Commitment

An ANOVA was performed between dominant orientation and the three different aspects of organisational commitment measured, namely: Affective, Continuance and Normative Commitment. The results of the ANOVA are shown in table 15 below.

Table 15 ANOVA of Organisational Commitment by Dominant Orientation

	DOMINANT CAREER ORIENTATION									
ORGANISATIONAL COMMITMENT	**TEC**	**MAN**	**AUT**	**JOB**	**SER**	**CHA**	**LIF**	**ENT**	**GEO**	**Univariate F**
Affective	3.34	3.87	2.97	3.33	3.39	3.46	3.22	3.41	3.42	0.91
Continuance	2.63	*2.49*	2.56	**3.69**	2.78	2.89	3.08	*2.51*	3.08	5.03*
Normative	2.83	2.63	2.53	2.90	2.92	2.55	2.62	2.71	2.57	1.05

* $p \leq 0.00005$

The only significant result shown in the above table is for the Continuance Commitment. This commitment reflects a measure of the individual's dependence on the organisation, and the potential cost to the individual should he or she leave. The job security-oriented display the highest Continuance Commitment, which is again entirely in line with Schein's view of this orientation. As pointed out in Chapter 3, the job security-oriented "must accept his dependency on the organisation" (Schein, 1978, p148). Also consistent with expectation is the relatively low dependency displayed by the entrepreneurially-oriented on the organisation.

Although Schein (1985, p29) suggested that the job security orientation may display greater company loyalty, no significant differences were revealed. However, the scores were in the expected direction, as the job security orientation did display the second highest score, and the service orientation the highest. Considering the strong need to be of service displayed by the service orientation, their sense of loyalty and moral obligation to remain with their organisation is not surprising.

4.5.4 Relationship between Dominant Orientation and Demographic Characteristics

In Igbaria et al's (1991) study, a significant relationship was found to exist between career orientation, and both gender and organisational level. In Meredith's (1992) earlier study, no significant relationships were found to exist between dominant orientation and any of the demographic variables. Notwithstanding this fact, Chi-Square and Analysis of Variance tests were performed on the current CSSA sample to determine whether any such relationships existed. It should be noted that although the tables below include the means and frequencies for individuals classified as "unknown", these individuals were excluded from the tests, once again, as their dominant orientation had not been identified.

The results of the ANOVA are shown in table 16 below. Contrary to Igbaria's findings, it is evident from the table that a relationship which tends towards significance exists between job tenure and dominant orientation, and between organisation tenure and dominant orientation. Individuals with a job security orientation have been employed in their jobs for longer than those holding other orientations (except for the technically-oriented), and have been with their organisations for considerably longer. This is consistent with expectations, as such individuals are unlikely to leave their organisations as long as their requirements for security and stability are met. Thus, they can be expected to have longer organisational tenure than individuals occupying other orientations.

Also, as Schein (1987, p163) points out, if security-oriented individuals have the security they desire, they "will be content with the level they have attained" and are, thus, less likely to pursue promotional opportunities than, for example, their managerially-oriented counterparts.

Table 16: ANOVA of Demographic Variables by Dominant Career Orientation

	DOMINANT CAREER ORIENTATION										
	UNK 61	**TEC 8**	**MAN 14**	**AUT 14**	**JOB 24**	**SER 24**	**CHA 10**	**LIF 15**	**ENT 17**	**GEO 18**	**Univariate F**
Age	43.69	38.88	43.23	39.29	45.24	41.79	44.90	40.40	39.71	41.56	1.33
Job Tenure	5.07	5.75	3.38	3.43	5.66	2.94	4.70	4.73	3.15	4.75	1.92+
Org Tenure	9.70	6.50	8.15	6.79	12.84	9.88	10.80	9.60	5.47	9.69	1.75+
MIS Tenure	16.85	17.50	17.23	12.57	18.56	16.71	20.40	15.20	15.94	18.28	1.14

+ Tends towards significance at the 10% level ($p<0.063$ and $p<0.092$ respectively)

The fact that the technically-oriented have the highest job tenure is initially somewhat surprising, given the high turnover endemic to the IT industry and the demand for skilled IT professionals. As will be shown later, however, only one of these individuals has a job which is not congruent with the technical orientation. Thus, the majority are in jobs which allow them to pursue their technical specialty, increase their technical skills and receive the appropriate rewards. For such individuals, high job tenure is not particularly surprising.

The low job tenure shown for the managerially-oriented is expected, as such individuals place great importance on advancement, and "expect promotions frequently" (Schein, 1987, p167). If organisations do not respond to this need, managerially-oriented people are inclined to move to organisations that will. Because such individuals actively seek promotion opportunities, and are likely to make known their expectation to advance rapidly, it is not surprising that their job tenure is relatively low.

The entrepreneurially-oriented also can be expected to exhibit low job tenure, as this individual is constantly seeking opportunity for challenge, and to create something with which he or she can be identified, and is likely to move frequently if the need is not met. Also, as will be discussed later, five out the seventeen individuals holding this orientation have their own organisations, and two of these have existed for only one year and another for two years, which is likely to have brought the average job and organisational tenure down for this group.

The service-oriented individuals exhibit the lowest relative job tenure, yet their organisational tenure is high. It is not clear why this is so, particularly as the majority of service-oriented individuals have jobs compatible with their orientations (see 4.7.11 below). One can only assume that the organisations for whom these service-oriented individuals work value their service orientation, and thus promote them fairly frequently.

In Igbaria et al's (1991, p158) study, a higher percentage of men held the technical orientation, while a higher percentage of women were oriented towards a balanced lifestyle. Also, Igbaria found that individuals with autonomy, managerial and service orientations were more likely to hold positions at the managerial organisational level than were those with service, technical or challenge orientations.

The results of the Chi-Square test performed between dominant orientation and demographic variables to test whether Igbaria's findings held true for this sample, are shown in table 17 below.

Table 17: Chi-Square test of independence between Dominant Orientation and Demographic Variables

	DOMINANT CAREER ORIENTATIONS										
	UNK 61	**AUT 14**	**CHA 10**	**ENT 17**	**GEO 18**	**JOB 25**	**LIF 15**	**MAN 13**	**SER 24**	**TEC 8**	**Chi-Square**
Gender											
Male	52	11	9	14	14	19	11	11	20	6	1.88
Female	9	3	1	3	4	6	4	2	4	2	
Marital Status											
Unmarried	13	3	0	5	5	6	2	3	2	2	7.17
Married	48	11	10	12	13	19	13	10	22	6	
Education											
Matriculation	6	0	0	1	0	5	0	0	3	1	35.85
Some University	3	1	2	1	2	4	2	1	0	1	
Undergrad. Deg	9	5	2	6	5	4	5	3	6	0	
Some Postgrad.	11	0	0	5	2	2	3	1	3	2	
Postgrad. Deg	32	8	6	4	9	10	5	8	12	4	
Organisational Level											
Professional	17	10	3	6	7	8	8	2	10	4	14.71+
Managerial	42	3	7	11	11	17	7	11	14	4	

Note: The total number of cases under Organisational Level is smaller than 205 due to the small number of individuals unable to be classified as either managerial or professional.

\+ Significant at the 10% level (p=0.065)

Unlike Igbaria's study, no significant relationships between gender and dominant orientation were found to exist. Females were just as likely to hold a technical orientation as Males (indeed, even more likely - 5.3% of the females were technically-inclined compared to 3.6% of the males); while females were only slightly more likely to hold a lifestyle orientation (10.53% versus 6.59%).

A relationship was found between dominant orientation and organisational level, although this only tended towards significance (p=0.065). As expected, managerially-oriented people were more inclined to occupy positions at the managerial level. Contrary to Igbaria's findings, however, the autonomy-oriented tend to occupy positions at the professional rather than at the managerial level. This is more consistent with intuitive expectations than was Igbaria's finding. As Schein (1987, p163) suggests, autonomy-oriented individuals "cannot stand to be bound by other people's rules, by procedures, by working hours, (and) dress codes", to which those ascending the corporate career ladder would typically have to adhere.

In his description of jobs fitting for such individuals, Schein mentions management as being suitable only in the context of managing "geographically remote plants or divisions", where autonomy is still possible. Thus, he implies that the typical managerial position offers its incumbent less autonomy than an autonomy-oriented individual would like.

There is also a slightly greater tendency for lifestyle oriented individuals to occupy professional posts rather than managerial posts. This is perhaps due to greater flexibility being available to professional employees than to managerial employees, and less of the stress associated with the typical management position. The observed frequencies for the remaining orientations exhibit no unusual characteristics.

4.5.5 Concluding Remarks on Distinguishing Characteristics of each Orientation

As has been shown in the various analyses described above, the different career orientations represent very different types of employee. As will be shown in the next section, these different types of employee tend to occupy jobs commensurate with their orientations. In the section thereafter, the consequences of employees occupying jobs which do not match their orientations will be discussed.

4.6 Tendency for IS professionals to hold jobs compatible with their Career Orientations

Hypothesis two suggested that IS Professionals were likely to hold positions which fulfilled their career orientations. In order to test this hypothesis, two tests were conducted: a Chi-Square test of dominant career orientation by job type; and, an ANOVA of dominant career orientation by Job characteristics. These tests, and their results, are described below.

4.6.1 Relationship between Dominant Career Orientation and Job Type

In order to establish whether a relationship existed between career orientation and the type of job occupied by an employee, individuals were grouped into job categories, as the number of individuals holding each job type was too small for meaningful analysis to be conducted.

Igbaria et al (1991, p159) had also grouped various job types into categories, but their approach is not adopted for this study. In Igbaria et al's study, System Analysts were grouped into the "Manager" category. However, as Meredith (1992, p57) suggested, this categorisation is inappropriate, as System Analysts are not necessarily managers, and cannot be regarded as performing managerial-type work any more than programmers can. In Whitten, Bentley and Barlow's detailed description of the work of a systems analyst (1989, p12), and Meissner's 1986, p7) definition of this position, no mention is made of any managerial tasks or responsibilities. Also, the exclusion of System Analysts from the Managerial category is supported by examining the percentage of daily work load spent on managerial and technical activities, by System Analysts, compared to the various managerial job categories. As can be seen in table 18 below, System Analysts indicate that their working day comprises a meagre 20% of managerial activities, with the majority being spent in technical type work. Thus, their profile of work activities matches more closely those of other, non-managerial IT staff.

Table 18: Percentage of Typical Work Day Spent on Different Activities, by Job Type

JOB TYPE	Percentage of Daily Work	
	Managerial Activities	Technical Activities
Managers	61.86	27.86
Project Managers	49.17	45.00
System Analysts	20.00	63.75

As a result, a different method of categorisation was adopted in this study. Firstly, systems analysts, analyst programmers and programmers were grouped into a "System Developers" category.

The various managerial jobs were grouped into a "Manager" category, apart from Project Managers and Team Leaders, who were grouped together under the category "Project Manager". Consultants were grouped together, while individuals performing jobs of a specific technical nature (network engineers, database administrators) were categorised as "Technical" staff. The "Academics" category was comprised of lecturers and professors at Universities. The remaining job categories are self-explanatory.

Certain of the categories have very few members, as they were unable to be logically grouped with other job types into a single category. Hence, the significance of the Chi-Square test (shown in table 19 below) should be interpreted with some conservatism, as there would have been many instances where the number of individuals per category was insufficient to apportion among the various cells.

Table 19: Chi-Square test of Dominant Orientation by Job Type

	DOMINANT CAREER ORIENTATIONS									
JOB TYPE	**AUT**	**CHA**	**ENT**	**GEO**	**JOB**	**LIF**	**MAN**	**SER**	**TEC**	**TOTAL**
Consultants	**6**	2	1	0	3	2	0	5	1	20
Managers	1	4	1	2	5	2	7	7	1	30
Technicians	0	0	0	1	1	1	0	4	2	9
Trainers	0	0	0	0	1	0	0	0	0	1
Owners	1	1	**5**	2	0	2	1	0	0	12
Project Mgrs	0	1	0	4	1	2	1	0	0	9
Support staff	0	0	0	0	1	0	0	0	0	1
Sales staff	1	0	0	0	0	0	0	0	0	1
Syst. Developrs	3	1	1	3	1	3	1	1	2	16
Academics	0	0	0	1	**4**	0	0	1	1	7
Total	12	9	8	13	17	12	10	18	7	106

Notes:

1. The relationship between Career Orientations and Job Type was statistically significant at level .005 (X^2=105.79, p<.01)
2. N is smaller than 144 due to missing values or inability to place job titles in a particular category

As shown in table 19, there is a significant relationship between dominant orientation and type of position held. For autonomy-oriented individuals, there was a tendency to occupy consultancy positions. This is entirely consistent with expectations, given that Schein (1985, p38) suggests that such individuals tend to pursue "autonomous professional careers, such as teaching or consulting". Among the challenge-oriented, the majority held managerial careers, and again this is not unexpected, because such careers offer "variety and intense challenge" (Schein, 1985, p45).

A high proportion of entrepreneurially-anchored individuals were proprietors of their own companies, which is again consistent with expectations. Among the geographically-oriented, there were less than expected in consultant and managerial positions, and more in project management positions. Perhaps the latter position allows for greater mobility between organisations, as a project management position is more transitory in nature than a permanent IS management position. Thus, if a threat to geographic security was perceived, the project manager has greater likelihood of obtaining a project management position in another organisation in the same geographic area than he or she has of finding an IS management position. If this is the case, then it is surprising that more of these individuals do not occupy consulting positions, which offer even greater latitude for movement. The reason for the lack of geographically-oriented personnel in consultancy positions could, however, be due to the fact that certain consultancies expect their staff to be willing to assume consulting positions wherever the work is - in other words, they may be required to spend considerable time away from home in order to fulfil their consulting role. Clearly, such an arrangement is unlikely to suit the geographically-oriented.

No job security-oriented individuals are found in ownership positions, but this is scarcely surprising, given that such individuals prefer work that is "stable and predictable" (Schein, 1985, p37). Beginning one's own business is a challenging activity for any orientation, but the high risk involved and consequent lack of stability and predictability (particularly when starting off the business) is likely to deter most security-oriented individuals. A high proportion of Job Security individuals are found in the Academic job category. Again, this is to be expected, as Schein (1987, p163) suggests that such people "welcome the formal tenure system such as exists in schools and universities".

The managerially-oriented occupy, as expected, primarily managerial posts. There are no consultants with this dominant orientation, which is also expected. A consulting position is unlikely to offer the managerially-oriented the opportunity to exercise that combination of analytical, interpersonal and emotional skills which makes managerial jobs meaningful and rewarding. Finally, none of these individuals hold technical posts, which is entirely consistent with expectations.

Of the individuals holding the service orientation, more were found in consulting, managerial and technical positions than expected, and none occupied project management or ownership posts. The higher number in consulting is anticipated, as many who have this anchor but do not feel that their organisations shares their values, leave and become autonomous professionals such as consultants. Indeed, of the 14 people holding this orientation in Schein's initial studies (1985, p169) five were consultants. The relatively high number of managers with this orientation is also expected. As already stated, the role of the manager is increasingly being seen as one of helper, and, as Kaplan (1990, p261) suggests, the successful manager "is altruistic in that he will sacrifice his own self-interest for the welfare of the company".

Individuals with a technical anchor tended to occupy technical posts, as well as system development positions, as expected. Also unsurprising was the complete lack of such individuals in the job category of managers.

Thus, despite the small number of individuals in the various job categories, the data has still shown substantial support for hypothesis three.

4.6.2 Relationship between Dominant Career Orientation and Job Characteristics

The second test conducted in order to further test hypothesis three was an ANOVA of dominant orientation against Job Characteristics. It was expected that, for example, individuals with the challenge orientation would occupy jobs having a higher challenge content, relative to the other orientations. Similarly, individuals with the Job Security orientation might be expected to be in jobs where the relative threat to job security was low. The ANOVA was conducted after first excluding individuals whose jobs were at variance with their dominant career orientation (the process of identifying such individuals, and the consequences of a mismatch, are discussed extensively in section 4.7).

Thus, the challenge-oriented with a challenge score lower than the midpoint of the scale were excluded; and likewise for the autonomy-oriented with an autonomy score lower than the midpoint, and so on for every other orientation. However, the scores on the job characteristics relating to the remaining orientations was ignored - individuals were only included or excluded *based on their score on the job characteristic relating to their orientation.* Thus, this exclusion was not expected to bias the results in the desired direction in any way. For example, a matched challenge-oriented individual should only have more challenge in the job than a matched autonomy-oriented individual, *if different orientations tend to occupy jobs which fulfil that orientation,* as hypothesis two suggests.

The results of the ANOVA reveal significant differences between the job characteristics of the various orientations, and are shown in table 20 below. In the table, the job security and geographic security scores have been reversed, so that they represent the amount of security *held* rather than the *threat to job security* which the survey instrument measured. However, the Work I. Family and Family I. Work scores are unchanged and, thus, reflect the mean amount of work interference with family, and vice-versa, experienced by each dominant orientation.

Table 20: ANOVA of Job Characteristics by Dominant Career Orientation

	DOMINANT CAREER ORIENTATION									
JOB CHARACTERISTIC	**TEC**	**MAN**	**AUT**	**JOB**	**SER**	**CHA**	**LIF**	**ENT**	**GEO**	**Univariate F**
Technical	**4.20**	3.04	3.73	3.32	3.50	3.45	3.23	3.78	3.61	1.54
Autonomy	4.30	3.96	**4.25**	3.68	3.84	4.11	3.90	4.04	4.00	1.50
Managerial	2.24	**4.11**	2.13	2.61	3.25	3.02	3.24	2.99	3.14	3.63****
Job Security	4.35	4.00	3.77	**4.14**	3.80	3.86	3.84	4.22	4.25	1.69+
Geo Security	3.86	3.73	3.67	4.32	3.67	4.00	3.71	3.10	**4.59**	2.20*
Work I. Family	3.32	**3.52**	3.06	2.76	3.19	3.03	**2.57**	3.15	3.25	1.00
Family I. Work	1.86	1.89	1.79	1.66	1.57	1.53	1.64	1.63	1.65	0.19
Entrepreneur	3.14	3.20	3.25	2.75	3.43	3.84	3.46	**3.85**	3.21	2.95**
Service	3.21	3.72	3.21	3.50	**4.17**	4.31	3.43	3.55	3.32	2.69*
Challenge	3.86	3.89	3.96	3.21	4.19	**4.56**	3.93	3.67	3.62	3.57***
Path to G Mgmt	2.71	**3.78**	2.50	2.40	3.11	2.38	2.57	3.50	1.94	3.10***
Managerial %	21%	**82%**	29%	37%	38%	43%	34%	42%	34%	3.17***
Boundary Spanning	2.67	**3.25**	2.81	2.67	**3.30**	**3.40**	2.94	2.68	2.73	1.78+

* $p \leq 0.05$
** $p \leq 0.01$
*** $p \leq 0.005$
**** $p \leq 0.001$
\+ Significant at the 10% level ($p < .11$ and $p < .87$ respectively)

As can be seen in this table, significant relationships are exhibited between dominant orientation and several of the job characteristics. For example, those jobs offering the highest content of managerial work, which require the job-holder to undertake supervisory activities, and which offer a path to general management, are held by the managerially-oriented. Similarly, individuals with the geographic security orientation have jobs which offer the highest geographic security.

The entrepreneurially-oriented hold jobs offering the highest opportunity for creative activity and for gaining personal recognition from the creative effort. Similarly, those oriented towards service have jobs offering the second-highest opportunity to be of service and to work towards a cause considered important to them, with only the challenge-oriented exhibiting a higher score on this job characteristic. Finally, the jobs offering the highest degree of challenge are occupied by the challenge-oriented.

Significant differences between the job characteristics across other career orientations are not exhibited, although many of the scores tend towards significance or are in the expected direction. For example, technically-oriented individuals hold jobs offering the highest opportunity for exercising technical skills, for advancing in one's specialty, and for following a technical career path, as evidenced by their high Technical Work score. Similarly, job-security oriented individuals have jobs offering high levels of security, although the entrepreneurially-oriented, technically-oriented and geographical security oriented show marginally higher scores. The autonomy-oriented have jobs offering a high degree of autonomy, although the technically-oriented score marginally higher.

Also, as expected, the lifestyle-oriented show lower levels of Work Interference with Family. The managerially-oriented, on the other hand, exhibit the highest interference of work with family. Given that most of the managerially-oriented occupy managerial posts (see section 4.5.4 above), which are generally stressful, and can lead to "ulcers, or ... nervous breakdowns" (Schein, 1985, p167) this high score is consistent with expectations. The high score is also consistent with results reported by Judge et al (1994, p773), who found executives to have a mean score of 3.83 on the WIF scale, while managers had 3.35, compared to the 2.2 of a cross-section of other employees.

In addition, the high WIF score reported by managers in the IT field is consistent with Viehland's (1996) view of job stress among IT managers. It is reported that IT managers feel that they can "never really get away from it all", particularly now that technology such as cell phones and laptops makes IT managers contactable (and able to continue working) 24 hours a day. Indeed, it is likely that such technology affects all IT professionals to a degree, considering that the mean WIF score for the sample is 3.09, regardless of position or orientation. This score is far higher than the mean of 2.2 reported for a cross-section of employees by Judge et al above.

Some of the lower scores achieved also tend to support hypothesis 2. For example, Schein (1978, p148) suggests that security-oriented individuals "may lose some degree of freedom", as their career decisions are, essentially, defined by their organisations. This corresponds to the low score on the autonomy job characteristic experienced by these individuals. Also, the managerially-oriented perform the lowest amount of technical work, while the technically-oriented have a similarly low score on the amount of managerial work performed. The job-security have the lowest experience of entrepreneurial characteristics in their jobs and, as expected, experience the least challenge.

Finally, the extent of boundary-spanning activities performed by the various orientations is also shown in the above table. While the managerially-oriented do not experience the highest degree of boundary-spanning, their score is relatively high, with only the challenge and service orientations displaying slightly higher scores. Also, as expected, the technically-oriented have the lowest score on this aspect of the job.

The results of the various tests conducted in this section have shown convincing support for hypothesis 2. As the relationships between dominant career orientation, and job category as well as job characteristics have shown, individuals holding different dominant career orientations tend to hold jobs commensurate with those orientations.

4.7 Effects of Incompatibility between Career Orientation and Job Characteristics

Hypothesis 4 predicted that IS professionals whose jobs matched their orientations would exhibit greater job and career satisfaction, higher organisational commitment, less turnover intention and superior performance in the job than the individuals experiencing a mismatch.

In order to assess whether an individual held a job compatible with his or her orientation, the scores on the job characteristics relating to that orientation were utilised. As described earlier, responses to the various items measuring job characteristics were recorded on a five point scale, with 5 indicating strong agreement (i.e. strong confirmation that the job catered for the orientation being measured) and 1 indicating strong disagreement. Thus, for example, an individual with a challenge orientation, who had a mean score of 3 or less on the items measuring the amount of challenge in the job, was classified as "mismatched". A score greater than 3 resulted in a classification of "matched", as such a score indicated agreement that the job offered characteristics commensurate with the orientation being measured.

For the security and lifestyle oriented, whose items expressed the lack of security or lifestyle (i.e. their items represented a threat to security or high interference with lifestyle), the scoring method was reversed. Thus, a score of 3 or less meant the threat or interference was unlikely, or neither likely nor unlikely, and the respondent was classified as "matched".

Certain of the analyses conducted previously were limited by the number of individuals whose dominant orientation could not be established. This limitation was not as much of a drawback in the current analysis, as individuals without a clearly identifiable dominant career orientation could still be assigned a match or mismatch status, provided all the dominant orientations they appeared to have were satisfied, or all the orientations were unsatisfied. For example, if certain individuals appeared to regard autonomy, challenge and service as equally important, they could be regarded as matched if their jobs offered high autonomy, challenge and service opportunity, and mismatched if *all three* aspects of the job were unfulfilled. If the job appeared to only offer sufficient autonomy, but no challenge or service opportunity, then the individual could not be classified as either matched or mismatched, and was, thus, excluded from both groups.

4.7.1 Relationship of Match and Mismatch Groups with Demographic Variables

In Igbaria et al's (1991, p160) study, significant differences had been found to exist in gender and organisational level between the matched and the mismatched groups, with the mismatched group containing a greater proportion of females than males, and, likewise, a higher proportion of individuals at the professional than at the managerial level. Thus, Chi-Square tests and ANOVAs were performed of demographic variables against the Match/Mismatch status, to see if any similar relationships existed in this study. The results of these tests are shown in table 21 below.

As can be seen from Table 21, a higher proportion of the female sample (52.2%) was mismatched than of the male sample (22.9%). Unlike Igbaria et al's (1991) study, however, significant differences between the number of mismatched individuals at the professional level versus the number at the managerial level, were not exhibited.

Table 21: Relationship of Match and Mismatch Groups with Demographic Variables

Results of ANOVA

Variables	SUBGROUP MEANS		
	MATCH (n=141)	MISMATCH (n=39)	Univariate F
Age	42.41	42.44	0.00
Organisational Tenure	9.65	9.59	0.00
Job Tenure	4.66	3.69	2.14
MIS Tenure	16.88	17.38	0.12

Results of Chi-Square

Variables	NUMBER OF CASES		
	MATCH (n=141)	MISMATCH (n=39)	Chi-Square
Gender			
Male	118	27	4.08*
Female	23	12	
Education			
Matriculation	9	3	1.99
Some University or Technikon	12	2	
Undergrad. Deg/Tech. Diploma	34	8	
Some Postgraduate Study	18	8	
Postgraduate Degree	68	18	
Marital Status			
Unmarried	26	10	0.99
Married	115	29	
Organisational Level			
Professional	50	19	1.73
Managerial	85	20	

* $p<0.05$

Note: Numbers (at the organisational level) are smaller than 180 due to the inability to classify certain individuals as being at either the Professional or Managerial organisational level.

Thus, as Igbaria et al's (1990, p161) paper implies, it is necessary to control for Gender when analysing variance between match and mismatch status and job outcomes. However, controlling for Gender is only appropriate when Gender is shown to be significantly correlated with the dependent variables of interest (Stevens, 1992, p332; Tabachnick and Fidell, 1989, p316). It was considered necessary to test this assumption, therefore, before simply controlling for a variable which may or may not have had any real effect on the job outcomes in this study.

4.7.2 Differences in Job Outcomes between Male and Female IS Professionals

Two ANOVAs were conducted to determine whether there was a difference in job outcomes based on the gender of the respondents. In order to remove the effect of a match or mismatched status, the first ANOVA was limited to "matched" males versus females, while the second investigated "mismatched" males versus females. The results of these tests are shown in Tables 22 and 23 below.

Table 22: Males versus Females (Jobs Matched with Orientation)

Job/Career Outcomes	SUBGROUP MEANS		Univariate F
	MALES (n=118)	FEMALES (n=23)	
Job Satisfaction	3.94	3.59	3.50+
Career Satisfaction	3.72	3.46	2.32
Organisational Commitment			
Affective	3.49	3.33	0.58
Continuance	2.89	3.14	1.57
Normative	2.71	2.68	0.03
Turnover Intention (org)	2.42	2.51	0.13
Turnover Intention (prof)	1.75	1.71	0.03

Tends towards significance at the 10% level ($p<0.064$)

Table 23: Males versus Females (Jobs Mismatched with Orientation)

Job/Career Outcomes	SUBGROUP MEANS		Univariate F
	MALES (n=27)	FEMALES (n=12)	
Job Satisfaction	2.95	3.31	1.17
Career Satisfaction	3.01	3.21	0.32
Organisational Commitment			
Affective	3.18	2.97	0.41
Continuance	3.24	2.93	1.02
Normative	2.83	2.74	0.16
Turnover Intention (org)	3.06	3.31	0.39
Turnover Intention (prof)	2.02	1.72	0.71

As can be seen in table 22 above, matched females show slightly less career satisfaction and affective commitment to their organisations than do males, and slightly higher turnover intention, but these are not significant. The difference in job satisfaction tends towards significance at the 10% level ($p<0.064$).

For mismatched males versus females, however, the differences in job and career satisfaction are in the opposite direction, while the turnover intention is marginally higher and affective commitment lower.

It appears that the differences in job outcomes between male and female IS Professionals are not sufficiently high to warrant controlling for the Gender variable in the ANOVA. Nevertheless, in order to ensure that differences in job outcomes between match and mismatch groups were not affected by the number of females versus males in each group, two Analyses of Variance were performed between the match and the mismatch group, one in which Gender was controlled and the means adjusted, and one in which Gender was not included as a covariate.

4.7.3 Differences in Job Outcomes between Matched and Mismatched Individuals - Complete Sample

The results of the ANOVA and Chi-Square tests conducted to determine whether differences in Job Outcomes existed between matched and mismatched individuals, are shown in tables 24 and 25 below.

Regardless of whether one controls for the Gender of the sample or not, the results show convincing support for hypothesis 4. IS professionals whose jobs match their career orientations show significantly higher job and career satisfaction, and less inclination to leave their organisations, than do their mismatched counterparts. Affective commitment is also considerably higher for the matched, significantly so where Gender is not controlled, and tending towards significance at the 10% level where Gender is controlled ($p=<0.054$). The only element of hypothesis 4 not supported by the data is that which suggested matched individuals would show superior performance to the mismatched group, as no significant differences in performance levels were found to exist.

Table 24: Impact of Match between Dominant Career Orientation and Job Characteristics on Job Outcomes (means adjusted for Gender)

Job/Career Outcomes	SUBGROUP MEANS MATCH (n=141)	MISMATCH (n=39)	Univariate F
Job Satisfaction	3.87	3.07	27.17****
Career Satisfaction	3.67	3.08	15.17***
Organisational Commitment			
Affective	3.45	3.13	3.75+
Continuance	2.94	3.14	1.50
Normative	2.70	2.81	0.77
Turnover Intention (org)	2.44	3.13	11.60**
Turnover Intention (prof)	1.73	1.94	1.62
Performance			
Overall	4.11	4.10	0.03
Technical	3.98	3.91	0.20
Managerial	4.20	4.17	0.09
Business	3.99	4.12	0.99
Creativity	4.04	4.11	0.24
Organisational	3.83	3.91	0.24
Attitude	4.15	4.01	1.83
Communication	4.04	4.02	0.02
Adaptability	4.41	4.48	0.33
General	4.15	4.17	0.07

*** p≤0.0005 ** p≤0.001
* p≤0.05 **** p≤0.000001
+ Tends towards significance at the 10% level (p<.054)
Note: Means adjusted for Covariate of Gender

Table 25: Impact of Match between Dominant Career Orientation and Job Characteristics on Job Outcomes

Job/Career Outcomes	SUBGROUP MEANS MATCH (n=141)	MISMATCH (n=39)	Univariate F
Job Satisfaction	3.88	3.06	29.19****
Career Satisfaction	3.68	3.08	16.54***
Organisational Commitment			
Affective	3.46	3.12	4.46*
Continuance	2.93	3.14	1.73
Normative	2.70	2.80	0.69
Turnover Intention (org)	2.43	3.14	12.61***
Turnover Intention (prof)	1.74	1.93	1.40
Performance			
Overall	4.10	4.11	0.00
Technical	3.97	3.92	0.11
Managerial	4.19	4.18	0.01
Business	4.00	4.12	0.87
Creativity	4.04	4.10	0.20
Organisational	3.82	3.92	0.50
Attitude	4.14	4.03	1.18
Communication	4.03	4.03	0.00
Adaptability	4.40	4.49	0.44
General	4.14	4.18	0.20

**** p≤0.000001 *** p≤0.0001
* p≤0.05

Although the above tables showed little difference between the results when controlling and when not controlling for the demographic variable of gender, two further tests were conducted to remove any effect that gender might have had on the job and career outcomes. Firstly, a comparison of differences between Matched and Mismatched *Male* IS professionals was performed, followed by a comparison between Matched and Mismatched *Females.* The results of these two tests are shown in tables 26 and 27 below.

Table 26: Job Outcomes of Male IS Professionals - Matched versus Mismatched

	SUBGROUP MEANS		
Job/Career Outcomes	**MATCH (n=118)**	**MISMATCH (n=27)**	**Univariate F**
Job Satisfaction	3.94	2.95	34.43****
Career Satisfaction	3.72	3.01	16.58***
Organisational Commitment			
Affective	3.49	3.18	2.40+
Continuance	2.89	3.24	3.22+
Normative	2.71	2.83	0.74
Turnover Intention (org)	2.42	3.06	8.28**
Turnover Intention (prof)	1.75	2.02	2.12
Task-Based Rewards	3.74	3.21	1.92
Organisation-Based Rewards	2.85	2.42	1.14
Performance			
Overall	4.08	4.08	0.00
Attitude	4.09	4.03	0.27
General	4.12	4.14	0.02

* p≤0.05 ** p≤0.005
*** p≤0.0001 **** p≤0.000001
+ Tends towards significance at the 10% level (p<0.125 and p<0.075 respectively)

As shown in table 26 above, matched males show significantly greater job and career satisfaction, and significantly lower turnover intention, than their mismatched counterparts. The difference in Affective Commitment is in the expected direction, but only tends towards significance at the 10% level (p<.125). Interestingly, the Continuance Commitment (i.e. commitment solely due to the recognition of the high costs of leaving the organisation) is higher for the mismatched than the matched group, tending towards significance at the 10% level (p<0.075).

As mentioned in Chapter 3, research has shown (Allen et al, 1990, p15) that supervisor's ratings of their subordinates' performance correlated negatively with the continuance commitment scores. Thus, turnover intention may be reduced in such individuals but at the cost of poorer performance. While the self-assessed performance levels shown above do not support this assertion, the effects of the higher turnover intention, combined with the higher dependency scores, of the mismatched group warrant further investigation. This is discussed further in Chapter 5.

Table 27: Job Outcomes of Female IS Professionals - Matched versus Mismatched

Job/Career Outcomes	SUBGROUP MEANS		Univariate F
	MATCH (n=23)	MISMATCH (n=12)	
Job Satisfaction	3.60	3.31	0.65
Career Satisfaction	3.46	3.21	0.67
Organisational Commitment			
Affective	3.33	2.97	1.53
Continuance	3.14	2.93	0.62
Normative	2.68	2.74	0.07
Turnover Intention (org)	2.51	3.31	2.96+
Turnover Intention (prof)	1.71	1.72	0.00
Task-Based Rewards	3.74	3.21	1.92
Organisation-Based Rewards	2.85	2.42	1.14
Performance			
Overall	4.20	4.17	0.07
Attitude	4.38	4.02	4.25*
General	4.23	4.28	0.08

* $p \leq 0.05$

\+ Tends towards significance at the 10% level ($p<0.095$)

For the females, the differences in job and career satisfaction, affective commitment, and turnover intention were all in the expected direction, but only the turnover intention difference tended towards significance ($p<0.095$). Interestingly, the Performance aspect labeled Attitude, which measured effort put forth on the job, level of dedication to the job, and attitude towards the job, was significantly lower for the mismatched females than for the matched. Such a difference was not observed for the Male sub-sample. Note that the remaining performance aspects were excluded from the graph, as no differences between match and mismatch sub-samples was evident.

Thus, the results of the test on the Male sample alone show considerable support for hypothesis four, while the results for the Female sample, while not significant, are all in the expected direction. In order to establish whether the differences shown in the four tables above held true for the matched and mismatched groups holding each of the dominant career orientations, similar ANOVAs were performed for the sub-samples representing each orientation. These tests are shown and discussed below.

Note that in the interests of conserving space and not boring the reader, only those job outcomes which were expected to be significantly different, based on the results above, are shown in the tables. As will have been noted, little difference in Normative Commitment (i.e. loyalty to the organisation because "it is the correct thing to do") between the matched and mismatched individuals were exhibited in any of the above tables. Also, no difference in the intention to leave the IS profession was exhibited between the matched and mismatched groups. Finally, as already stated, few differences in performance level were noted, apart from the significant difference in Attitude exhibited in Table 27 above.

Thus, normative commitment values, intentions to leave the profession, and differences in performance are excluded from the tables which follow, unless significant differences, or results completely contrary to expectations, were shown to exist by the ANOVAs. Also, where differences in performance aspects peculiar to the orientation may have been expected (e.g. managerial performance for the managerial orientation), these are included in the tables.

4.7.4 Differences in Job Outcomes between Matched and Mismatched Individuals with the Autonomy Orientation

The results of the ANOVA between matched and mismatched individuals with the autonomy orientation are shown in table 28 below.

Table 28: Impact of Match between Dominant Career Orientation and Job Characteristics on Job Outcomes (Autonomy-Oriented)

Job/Career Outcomes	SUBGROUP MEANS MATCH (n=12)	MISMATCH (n=2)	Univariate F
Job Satisfaction	3.53	3.17	0.26
Career Satisfaction	3.54	3.25	0.14
Organisational Commitment			
Affective	2.85	3.69	0.94
Continuance	2.49	3.00	0.71
Normative	2.40	3.31	2.82
Turnover Intention (org)	3.08	1.50	3.25+

\+ Tends towards significance at the 10% level (p=0.096)

As shown above, autonomy-oriented individuals who had autonomy in their jobs exhibited higher job and career satisfaction than those lacking autonomy. However, these results are not significant. Contrary to expectations, the turnover intention of the mismatched individuals was lower (significant at the 10% level - $p<0.10$) than the matched, and the affective commitment higher. The questionnaires of these individuals were scrutinised, therefore, to determine whether factors existed which could explain the unexpected result.

The first respondent whose answers may have affected the results has high levels of autonomy in her job, and was, thus, classified as "matched". Her career satisfaction and job satisfaction scores are high, but, surprisingly, her affective commitment score is low and her turnover intention high. However, her current position is that of a "contractor". An IS contractor, by the very nature of the position, typically moves from organisation to organisation and job to job, and seldom stays for very long in one position. The relationship of a contractor with the organisation to whom he or she is currently contracting is, thus, transient in nature. For such individuals, commitment to the employing organisation is likely to be low, and turnover intention high, simply because they have no intention of maintaining a permanent association with the company. Thus, while her scores at first appeared unlikely, these are entirely logical given the nature of the position held by this respondent.

A further matched individual displaying high turnover intention and low affective commitment, while showing high job and career satisfaction, intends emigrating overseas. Thus, these scores which initially appear contrary to expectations are not surprising, and would have affected the total sample's results to some degree.

In addition, one of the matched individuals is a consultant, who commented that he had answered the questionnaire from the perspective of the organisation *to whom he was currently consulting*. This comment was interpreted to mean that he had indicated his intention to leave, and affective commitment toward, the organisation with whom he had a temporary consulting arrangement rather than his own consultancy. Is this was the case, then, as for the contractor above, the high job and career satisfaction, together with high turnover intention and low affective commitment, are not surprising. Once again, though, his scores do tend to lower the mean scores on the aforementioned job outcomes for the matched group as a whole.

Finally, one of the mismatched individuals is young (26 years of age), and has only been in the IS field for 4 years. Thus, this individual's dominant orientation may not yet have been developed and stabilised. As Schein (1987, p157) suggests, it may take up to 10 years of work experience before an individual acquires a stable and mature career orientation. Moreover, the development of the orientation is increased if the individual has many varied experiences and positions. As this individual is in her second job, it is quite possible that her career orientation is not yet fully developed, and, thus, that she has been misclassified. Such misclassification would account for her low turnover intention (M=1) and high Job and Career Satisfaction, and Affective Commitment (M=4.67; 4.83 and 4.13 respectively). Also, these extreme scores would have influenced the mean mismatch scores (n=2) considerably.

Thus, the high turnover intention and low affective commitment scores in the above table can be explained to some degree by investigation of the individual responses. However, these findings point to a need to alter the survey instrument in such studies as this to avoid potential confounding of the results due to the nature of the respondent's job. Individuals who are IT consultants frequently appear to answer the turnover intention and affective commitment questions from the viewpoint of the organisation to whom they are currently consulting. Thus, a self-employed consultant or contractor reports high job turnover intention, but has no desire to *stop consulting or contracting* - the type of work is entirely satisfactory, but the individual has no commitment to the organisation for whom he or she is consulting, and every intention of seeking other employment, simply because that is the nature of their job.

Moreover, future studies should limit the age of respondents to over 30, as Meredith had done (1992) in his initial study. This is likely to allow for greater accuracy in the identification of the samples' dominant orientations.

4.7.5 Differences in Job Outcomes between Matched and Mismatched Individuals with the Challenge Orientation

The results of the ANOVA between matched and mismatched individuals with the challenge orientation is shown in table 29 below. As the table shows, challenge-oriented individuals who have little challenge in their jobs exhibit considerably lower job satisfaction, career satisfaction and affective commitment; and higher intention to leave their organisations, than their counterparts who do experience challenge. The difference in career satisfaction is significant, while the difference in job satisfaction tends towards significance ($p=0.013$).

Table 29: Impact of Match between Dominant Career Orientation and Job Characteristics on Job Outcomes (Challenge-Oriented)

Job/Career Outcomes	SUBGROUP MEANS MATCH (n=8)	MISMATCH (n=2)	Univariate F
Job Satisfaction	3.71	2.50	2.83+
Career Satisfaction	3.52	2.75	20.47**
Organisational Commitment			
Affective	3.56	3.06	0.73
Continuance	2.70	3.63	1.71
Turnover Intention (org)	2.58	2.83	0.06
Performance			
Overall	4.32	3.75	2.95
Managerial	4.29	3.33	4.25+
Business	4.25	4.00	0.16
Creativity	4.38	4.00	0.46
Organisational	3.63	3.50	0.02
Attitude	4.38	3.13	6.34*
General	4.54	3.83	1.30

** $p \leq 0.005$ * $p \leq 0.05$

\+ Tends towards significance at the 10% level ($p=0.073$)

Interestingly, individuals with high challenge in their jobs also show a marked difference in perceived performance in the job. The higher job attitude score of the matched individuals is significant, while the higher managerial score tends towards significance. The remaining performance differences are not significant, but are still relatively higher for the matched than for the mismatched. This result, thus, tends to support the performance aspect of hypothesis 4, even though the results for the entire sample did not.

It is possible that performance differences between matched and mismatched individuals will be more pronounced for the challenge-oriented, as such individuals find work meaningful only if their competitive skill can be exercised; if there is no opportunity for challenge the person becomes "bored and irritable" (Schein, 1985, p43). If the work represents no challenge, it therefore has no meaning for individuals with this anchor, and, thus, it is quite likely that they will not perform it to the best of their ability.

4.7.6 Differences in Job Outcomes between Matched and Mismatched Individuals with the Entrepreneurial Orientation

The entrepreneurially-oriented are believed to be most satisfied when they own their own businesses. Thus, the first test conducted for this orientation was an ANOVA comparing the job outcomes of entrepreneurially-oriented owners against employees. The results of this test are shown in table 30 below.

Table 30: Impact of owning vs. not owning one's own business on Job Outcomes (Entrepreneurially-Oriented)

Job/Career Outcomes	SUBGROUP MEANS OWNER (n=5)	EMPLOYEE (n=12)	Univariate F
Job Satisfaction	4.47	3.19	22.60*****
Career Satisfaction	4.43	3.07	10.87****
Organisational Commitment			
Affective	4.20	3.08	5.63*
Continuance	2.90	2.64	0.61
Turnover Intention (org)	1.87	3.36	12.08***
Turnover Intention (prof)	1.13	2.67	9.24**
Performance			
Overall	4.54	4.00	6.54*
Technical	4.20	3.92	0.55
Managerial	4.53	4.03	4.33+
Business	4.30	3.86	2.22
Creativity	4.60	4.17	2.04
Organisational	4.00	3.92	0.03
Attitude	4.70	4.00	5.70*
Communication	4.40	3.83	2.67
Adaptability	4.80	4.25	2.27
General	4.67	4.06	6.93*

***** p≤0.0005 **** p≤0.005
*** p≤0.005 ** p≤0.01
* p≤0.05
\+ Tends towards significance at the 10% level (p=0.055)

The differences in job outcomes between entrepreneurial owners and employees is highly significant. Owners show far higher job and career satisfaction, as well as affective commitment, and, as expected, for less intention to leave their (own) organisations than do the entrepreneurially-oriented individuals who are employees rather than owners.

Also, owners show significantly higher levels of overall performance, general performance, and attitude towards the job, while their higher managerial ability tends towards significance ($p=0.055$). The remaining differences in performance, while not significant, are all in the expected direction. Interestingly, mismatched individuals show a far higher intention to leave the IS profession than do the matched individuals. Perhaps this is because they have failed to yet realise their entrepreneurial ambitions in the IT industry, but these ambitions are strong enough for them to consider branching into other fields to satisfy their need.

The above results show strong support for Schein's (1987, p168) view that for individuals with this orientation, "ownership is the most important issue". However, as already discussed, many organisations are investigating the "intrapreneurship" concept, and seeking to create opportunities for entrepreneurs to remain with the organisation, and still satisfy their entrepreneurial needs. In order to test, therefore, whether organisations that went some way to offering an intrapreneurial environment managed to reduce the turnover intentions and increase the satisfaction of individuals with this orientation, a second ANOVA was performed comparing the matched against the mismatched. However, owners were excluded from this test, as the extremely high differences exhibited between the owners and non-owners would have influenced the results, and, moreover, the second test was intended to discover whether entrepreneurially-oriented *employees* could still be satisfied when working for others. The results of the second ANOVA are shown in Table 31 below.

Table 31: Impact of Match between Dominant Career Orientation and Job Characteristics on Job Outcomes (Entrepreneurially-Oriented, excluding owners)

Job/Career Outcomes	SUBGROUP MEANS MATCH (n=5)	MISMATCH (n=7)	Univariate F
Job Satisfaction	3.27	3.14	0.15
Career Satisfaction	3.17	3.00	0.10
Organisational Commitment			
Affective	3.43	2.84	1.29
Turnover Intention (org)	3.40	3.33	0.02
Performance			
Overall	4.00	4.01	0.00
Technical	3.80	4.00	0.24
Managerial	3.73	4.24	5.47*
Business	4.10	3.86	0.56
Creativity	4.40	4.00	1.46
Organisational	4.00	3.86	0.09
Attitude	4.10	3.93	0.21
Communication	3.60	4.00	0.11
Adaptability	4.40	4.14	0.32
General	4.13	4.00	0.20

* $p \leq 0.05$

The differences between the two groups are slight, although the entrepreneurs whose jobs allowed them to gain personal prominence from their efforts, and whose organisations offered a share in the proceeds resulting from their ideas, did show higher job and career satisfaction, and affective commitment than those who did not receive such opportunities. As stated, however, these differences, although in the expected direction, are marginal, and cannot be seen as compelling evidence for organisations to offer such incentives. Moreover, all the entrepreneurially-oriented, whether matched or mismatched, show a high intention to leave their employing organisation. This provides some support for Schein's view (1985, p39) that, "from the point of view of the organisation, it is probably hopeless to try and retain this kind of person". Of course, the instrument did not attempt to establish whether the employing organisations were willing to allow these individuals 50% control of new ventures they might dream up - all it examined was the opportunity to gain personal renown from their efforts and some share in proceeds. Thus, although the above results suggest otherwise, organisations may still be able to retain these individuals if they fully support their entrepreneurial compulsion. This possibility is discussed further in Chapter 5.

4.7.7 Differences in Job Outcomes between Matched and Mismatched Individuals with the Geographical Security Orientation

The results of the ANOVA between matched and mismatched individuals with the geographical security orientation is shown in table 32 below. Contrary to expectations, the mismatched individual shows greater job satisfaction, but less career satisfaction, than the matched individuals. Also, affective commitment is higher for this individual, and turnover intention lower. None of the above differences are seen as significant, but this is not surprising, given the small number of individuals in the mismatched group (n=1).

Table 32: Impact of Match between Dominant Career Orientation and Job Characteristics on Job Outcomes (Geographical Security-Oriented)

Job/Career Outcomes	SUBGROUP MEANS		Univariate F
	MATCH (n=17)	MISMATCH (n=1)	
Job Satisfaction	3.96	4.33	0.12
Career Satisfaction	3.84	2.67	1.52
Organisational Commitment			
Affective	3.37	4.25	0.88
Continuance	2.98	4.88	4.35+
Normative	2.49	3.88	6.40*
Turnover Intention (org)	2.18	1.33	0.78
Turnover Intention (prof)	1.59	1.00	0.68

* $p \leq 0.05$

\+ Tends towards significance at the 10% level (p=0.053)

In order to establish the reasons for these contrary results, the mismatched individual's responses were examined in greater detail. As pointed out in the Factor Analysis of the items making up the Job Security Measure, the item measuring the likelihood of the respondent moving "to a higher position in another geographic location" loaded on the same factor as the item measuring the likelihood of moving to "a higher position in your current location". Thus, it was remarked that the emphasis in this question may have been placed on the "higher position" by many respondents, rather than on the different geographic location.

This assumption is borne out by the sole "mismatched" individual's responses of "likely" to both of the aforementioned questions. Thus, perhaps this individual was regarding a promotion as likely, and not so much the transfer to another geographic location. Indeed, it is somewhat *unlikely* that both a promotion to a higher position in *one's current location*, and to a higher position in *another location,* would be imminent.

Perusal of the other geographically-oriented individual's responses show that most do interpret the items correctly, as many respond positively to the promotion item but negatively to the transfer option. Nevertheless, the reliance on a single item (Bryman, 1989, p38) to assess the threat to geographic security is unwise, as a person answering incorrectly on this one item will result in that person being incorrectly classified in terms of the match/mismatch status. Future research testing the threat to geographical security would benefit from placing the emphasis in this question more on the transfer aspect by removing the reference to a "higher" position. Also, at least one additional question should be added to accurately assess the potential threat to the geographic-security of various respondents.

Finally, it should be noted that the matched individuals above are not exhibiting *low* job and career satisfaction, and high turnover intentions. Indeed, relative to the other matched groups their levels of satisfaction are high, and intentions to leave low. It is purely the mismatched respondent's scores which are against expectations. However, had the respondent failed to notice the geographic transfer implication in the question, and focused instead on the promotion aspect, as discussed, then it is likely that the individual is not mismatched at all, in which case his responses would make sense.

4.7.8 Differences in Job Outcomes between Matched and Mismatched Individuals with the Job Security Orientation

The results of the ANOVA between matched and mismatched individuals with the job security orientation are shown in table 33 below.

Table 33: Impact of Match between Dominant Career Orientation and Job Characteristics on Job Outcomes (Job Security-Oriented)

Job/Career Outcomes	SUBGROUP MEANS		Univariate F
	MATCH (n=20)	MISMATCH (n=5)	
Job Satisfaction	3.68	3.13	1.51
Career Satisfaction	3.19	3.23	0.02
Organisational Commitment			
Affective	3.29	3.50	0.32
Continuance	3.54	4.28	3.49+
Normative	2.87	3.03	0.37
Turnover Intention (org)	2.30	2.80	0.76
Turnover Intention (prof)	1.50	1.67	0.26
Performance			
Overall	3.88	4.17	2.45
Business	3.65	4.10	1.73
Organisational	3.75	4.60	6.07*
Attitude	3.84	4.40	4.17+
General	3.97	4.33	2.43

* $p \leq 0.05$

\+ Tends towards significance at the 10% level ($p<0.075$ and $p<0.053$ respectively)

As for the geographical-security oriented, the results in table 33 are somewhat at odds with expectations. While the matched individuals show greater job satisfaction than the mismatched, and less turnover intention, as expected, there is no difference in career satisfaction. Also, the mismatched individuals show marginally higher Affective Commitment. While these scores are not significant, several are contrary to expectations. Also contrary to expectations are the higher perceived performance levels of the mismatched, in comparison to the matched.

Investigation of the individual responses reveal no factors which might aid in explaining these scores. However, certain characteristics of the job security oriented individual might offer some explanation. For example, a dominant job security orientation implies a strong desire to stay with one's employer. Indeed, the most salient characteristic of this orientation is the need for stable and predictable work, characterised by remaining with one organisation. Thus, one can expect such individuals to display high organisational commitment, as this is a key part of their orientation.

Further, such commitment is likely to remain reasonably high until or unless the loss of a job is imminent. For the mismatched in this sample, the threat to job security is not extremely high - indeed, the mean score for this variable is 3.4 on a scale of 1 to 5. Thus, the mean score is just above the midpoint of the scale, and is even below point 4 (which denotes that the events threatening job security are "likely"). Thus, it is possible and, indeed, probable that these individuals will only exhibit low affective commitment if the threat to their security is considerable and imminent.

The higher turnover intention score exhibited by the mismatched group is not significant, and is below the midpoint of the scale, indicating that their intention to leave is more unlikely than likely. Thus, this lack of intention to leave correlates, to a degree, with the slightly higher affective commitment score shown by the mismatched group.

Another interesting result which is contrary to expectations, is the higher performance scores (some of which are significant or tend towards significance) of the mismatched individuals. However, Brockner, Grover, Reed and Dewitt (1992, p423), in a study of layoff, and survivors' work effort, showed that individuals for whom job insecurity was *moderate* showed far greater work effort than individuals for whom job insecurity was *high*.

As the job insecurity for the mismatched sample is hardly high, as shown above, and can best be described as moderate, the greater perceived performance level of these individuals is consistent with prior research. Although Brockner et al (1992) did not examine other job outcomes such as satisfaction, it is conceivable that individuals with moderate job insecurity may also show greater affective commitment, as did the mismatched group above.

4.7.9 Differences in Job Outcomes between Matched and Mismatched Individuals with the Lifestyle Orientation

The results of the ANOVA between matched and mismatched individuals with the lifestyle orientation is shown in table 34 below.

Table 34: Impact of Match between Dominant Career Orientation and Job Characteristics on Job Outcomes (Lifestyle-Oriented)

Job/Career Outcomes	SUBGROUP MEANS		Univariate F
	MATCH (n=7)	MISMATCH (n=8)	
Job Satisfaction	4.10	3.50	2.37
Career Satisfaction	4.21	3.29	5.29*
Organisational Commitment			
Affective	2.98	3.42	1.18
Continuance	2.55	3.55	15.05**
Normative	2.32	2.88	2.68
Turnover Intention (org)	2.95	2.96	0.00
Turnover Intention (prof)	2.14	1.54	3.80+

** $p \leq 0.005$ * $p \leq 0.05$

+ Tends towards significance at the 10% level (P=0.073)

While the differences in Job and Career satisfaction between matched and mismatched individuals is in the expected direction (and is significant for Career Satisfaction), there is no difference in turnover intention, and affective commitment is higher for the mismatched than for the matched individuals.

Once again, the individual responses were examined to shed some light on the unexpected difference in Affective Commitment, and the complete lack of variance between the turnover intention scores. One of the matched individuals exhibits high job and career satisfaction, but high turnover intention (4.67) and low Affective Commitment (2.5). However, this individual had indicated that she is emigrating although she is entirely happy with her current work situation.

Two other respondents (although not lifestyle-oriented) also indicated their intention to leave the country, due to the high violence factor in Johannesburg, in spite of their being entirely happy with their work situations. The affect of the violence factor in certain regions was not examined in this study, although in retrospect it might have been worthwhile, as it appears to be affecting certain respondents' career decisions. Indeed, the extreme scores given by this individual to the affective commitment and turnover intention scores are likely to have affected the mean of such a small sample considerably. A repeat of the ANOVA excluding this individual resulted in the turnover intention for matched individuals dropping to 2.67, but the affective commitment only raised marginally, to 3.06. Thus, the higher commitment of the mismatched lifestyle-oriented individuals is still at odds with expectations.

Another mismatched individual whose results appear at odds with the rest of the mismatched group scores highly on the Work Interference with Family (WIF) scores, which accounts for her being assigned the status of "Mismatched". However, her Family Interference with Work (FIW) scores almost as highly (a mean of 3.5 versus 4.0). Thus, perhaps regarding a high score on one or the other as evidence of a mismatch is inappropriate, and should only be done if the WIF and FIW scores are not equal. In other words, an equal score on both dimensions indicates that the amount of interference from work to family, and vice-versa, is equal, and thus the person is, in effect, achieving a balanced life style!

Another individual had a low WIF score, and was thus given the status of "matched". Her Career Satisfaction and Job Satisfaction scores are high, but, surprisingly, her Affective Commitment score is low and her Turnover Intention High. However, like the autonomy-oriented individual discussed earlier, this person is a contractor, and these contrasting scores are entirely logical given the nature of the position held by this respondent.

Yet another individual was given the status of mismatch due to the high score on the WIF scale. While a mismatch did exist, her job outcome scores were relatively neutral, although the turnover intention was lower than expected. However, on closer examination, her comments revealed that she was working half-days only, at home, as she had a two-year old child to look after. Thus, it is quite likely that such an individual would score highly on the WIF scale, as she is working at home whilst minding her toddler. This implies, too, that her present job *allows* her to maintain her lifestyle, even though her answers to the WIF scale were taken to suggest otherwise. Thus, perhaps this scale is not entirely appropriate for assessing the extent to which a job caters for the lifestyle-oriented.

As described in section 3.5.3.5, there were two types of question which could be asked: either one which assessed the flexibility which the respondent experienced in his or her job; or, one which assessed the degree of interference the job had in the respondent's life, assuming that low interference would indicate that the employing organisation was flexible to this orientation's needs. In retrospect, perhaps the former option would have resulted in a more accurate assessment of the congruence between job and the lifestyle orientation.

It is interesting to note that the lifestyle-oriented, mismatched individuals displayed a significantly higher Continuance Commitment to their organisations than did the matched (as did the mismatched job security-oriented). This could be another reason why neither of the mismatched sub-samples in the above two orientations exhibit significantly higher turnover intentions than the matched. Examination of the correlations between the two variables indicates that Continuance Commitment is negatively correlated with turnover intention ($r = -.16$, $p<.05$). Thus, the high dependency on the employing organisations exhibited by the mismatched job security-oriented and lifestyle-oriented individuals could have lowered their turnover intention scores to some degree.

4.7.10 Differences in Job Outcomes between Matched and Mismatched Individuals with the Managerial Orientation

The results of the ANOVA between matched and mismatched individuals with the managerial orientation is shown in table 35 below.

Table 35: Impact of Match between Dominant Career Orientation and Job Characteristics on Job Outcomes (Managerially-Oriented)

Job/Career Outcomes	SUBGROUP MEANS		Univariate F
	MATCH (n=9)	MISMATCH (n=4)	
Job Satisfaction	4.11	3.00	6.77*
Career Satisfaction	4.10	3.25	6.02*
Organisational Commitment			
Affective	4.01	3.53	1.28
Continuance	2.57	2.31	0.46
Turnover Intention (org)	1.78	3.50	11.14**
Turnover Intention (prof)	1.63	2.50	1.92
Performance			
Overall	4.27	4.44	0.43
Managerial	4.37	4.83	2.68
Business	4.44	4.13	0.57
Creativity	4.33	4.50	0.17
Organisational	4.33	4.25	0.03
Attitude	4.25	4.38	0.14
Communication	4.28	4.50	0.23
General	4.15	4.58	2.08
Organisation-Based Rewards	3.91	3.17	1.76
Task-Based Rewards	4.16	3.82	0.79

* $p \leq 0.05$ ** $p \leq 0.01$

As shown in table 35, the managerially-oriented individuals whose job comprises primarily work of a managerial nature, and offers them promotional opportunities into General Management, have significantly higher job and career satisfaction, and significantly lower turnover intention, than their counterparts whose work situation does not cater for their orientation. Also, the affective commitment of the matched individuals, while not significantly different to that of their mismatched counterparts, is in the expected direction.

There were only two females with the managerial orientation in this sample, and both were classified as "mismatched". The managerial orientation was, moreover, the only sub-sample in which a Chi-Square test (see table 36) showed a significant difference between the proportion of males and females in the matched and mismatched groups ($x2=5.32$, $p=0.02$).

Table 36: Count of Matched and Mismatched Male and Female individuals with the Managerial-Orientation

	NUMBER OF CASES		
Gender	**MATCH (n=9)**	**MISMATCH (n=4)**	**Chi-Square**
Males	9	2	5.32*
Females	0	2	

* $p \leq 0.05$

Although earlier tests had shown gender not to significantly affect job outcomes, it was considered prudent to perform an ANCOVA with gender as the covariate, in case gender did have some influence on job outcomes in this instance. The results of this test are shown in table 37 below.

Table 37: Impact of Match between Dominant Career Orientation and Job Characteristics on Job Outcomes, (Managerially-Oriented - means adjusted)

Job/Career Outcomes	SUBGROUP MEANS		Univariate F
	MATCH (n=9)	MISMATCH (n=4)	
Job Satisfaction	4.03	3.08	2.68
Career Satisfaction	3.88	3.46	1.03
Organisational Commitment			
Affective	3.81	3.73	0.20
Continuance	2.48	2.41	0.02
Normative	2.87	2.33	0.73
Turnover Intention (org)	2.27	3.00	2.08

The differences between the matched and mismatched individuals are still in the expected direction in the above table, but are no longer significant. The lack of significance should be interpreted with caution, however. In the above test, one may be controlling for the very factor that caused the mismatch in the first place. Firstly, as Alperson (1993, p36) suggests, corporate cultures which accept women as equals are rare in South Africa. Further, such discrimination is prevalent in South Africa, and is expected to prevent women from reaching upper levels of management for many years to come, regardless of their qualifications (Gosling, 1996; Gordon-Fish, 1993, p49; Bendix and Morrison, 1988, p31). Indeed, it was precisely this factor that caused the two female managers to be classified as mismatched, because although they performed primarily managerial work, both perceived there to be no path to general management. Thus, controlling for gender in this instance is similar to controlling for the match/mismatch status, which appears somewhat illogical! Nevertheless, it appears that female IT managers are unlikely to be able to fully fulfil their managerial orientation for as long as the circumstances described above prevail in South Africa.

Table 35 also shows the difference in task-based and organisation-based rewards between the matched and mismatched samples. In Igbaria et al's (1991) research, managerially-oriented people in technical positions were shown to perceive less opportunities for organisation-based rewards than managerially-oriented people in managerial positions.

In table 35, only one of the mismatched individuals is classified as such due to his performing technical work rather than managerial work, while the remaining three lack a path to general management. Nevertheless, a similar result to Igbaria et al's is shown, as the matched individuals show greater opportunity for organisation-based rewards, although the result is not significant. It is possible that a more significant result would have materialised, had the mismatched individuals all held technical rather than managerial positions.

4.7.11 Differences in Job Outcomes between Matched and Mismatched Individuals with the Service Orientation

The results of the ANOVA between matched and mismatched individuals with the service orientation is shown in table 38 below. The results are entirely as predicted, and significantly so. Individuals with this orientation that are able to use their interpersonal skills in the service of others, and work towards a cause about which they feel strongly, show significantly higher job and career satisfaction, as well as organisational commitment, and significantly less intention to leave their organisation, than their counterparts whose jobs do not permit them to fulfil their service orientation. Moreover, the matched individuals perceive themselves to put more effort into their jobs, and have a higher level of dedication, and better attitude, towards their job than the mismatched.

Table 38: Impact of Match between Dominant Career Orientation and Job Characteristics on Job Outcomes (Service-Oriented)

Job/Career Outcomes	SUBGROUP MEANS		Univariate F
	MATCH (n=18)	MISMATCH (n=6)	
Job Satisfaction	3.93	2.22	25.25***
Career Satisfaction	3.64	2.11	11.82*
Organisational Commitment			
Affective	3.80	2.15	21.60**
Turnover Intention (org)	2.22	3.94	20.51**
Performance			
Attitude	4.35	3.96	2.95+

*** $p \leq 0.00005$ ** $p \leq 0.0005$

* $p \leq 0.005$

\+ Tends towards significance at the 10% level ($p < 0.10$)

4.7.12 Differences in Job Outcomes between Matched and Mismatched Individuals with the Technical Orientation

The results of the ANOVA between matched and mismatched individuals with the technical orientation is shown in table 39 below.

Table 39: Impact of Match between Dominant Career Orientation and Job Characteristics on Job Outcomes (Technically-Oriented)

	SUBGROUP MEANS		
Job/Career Outcomes	**MATCH (n=7)**	**MISMATCH (n=1)**	**Univariate F**
Job Satisfaction	3.90	2.67	1.18
Career Satisfaction	3.64	3.00	0.79
Organisational Commitment			
Affective	3.27	3.88	0.33
Continuance	2.61	2.75	0.13
Normative	2.73	3.50	1.54
Turnover Intention (org)	2.33	3.33	0.48
Turnover Intention (prof)	1.67	1.33	0.10
Performance			
Overall	3.97	4.39	11.70*
Technical	4.43	5.00	1.00
Managerial	3.67	4.67	7.88*
Business	3.50	4.50	1.75
Creativity	4.14	4.00	0.13
Organisational	3.00	4.00	1.31
Attitude	4.25	4.50	0.33
Communication	4.14	4.00	0.04
Adaptability	4.57	5.00	0.56
General	4.00	4.00	0.00
Organisation-based rewards	3.24	2.50	1.57
Task-based rewards	3.98	2.29	7.32*

* $p \leq 0.05$

As for the geographically-oriented, their is only one individual occupying the mismatched sub-sample. Nevertheless, this individual displays less job and career satisfaction, and greater turnover intention, than his matched counterparts. While these results are not significant (and the small sample size makes them less so), they are in the expected direction. Contrary to expectations, however, is the higher organisational commitment displayed by the mismatched individual. No reasons for this discrepancy could be determined.

The mismatched individual also rates many aspects of his performance more highly than his matched counterparts. However, it is on the managerial-type activities (e.g. managerial, business knowledge, organisational ability) that he regards his performance as superior. Considering that he is classified as mismatched because he is in a managerial position, this difference is consistent with expectations.

The differences in task-based and organisation-based rewards are also reported in table 39. The results are similar to Igbaria et al's (1991), as there is significantly greater opportunity for task-based rewards for the technically-oriented in technical positions than in managerial positions.

4.7.13 Concluding Remarks on Consequences of Job/Career Orientation Mismatch

The individuals who experienced a mismatch between their jobs and their orientations displayed, with few exceptions, considerably less job and career satisfaction, as well as affective commitment, than their matched counterparts. Also, the turnover intention of the mismatched groups was significantly higher than that of the matched, while, for certain orientations, superior perceived levels of performance were exhibited by the matched group. These findings have important implications for the management of IS personnel, and are discussed further in Chapter 5.

4.8 Frequency of Match/Mismatch Occurrence for each Dominant Orientation

For certain of the above orientations, the ratio of mismatched to matched individuals appeared considerably higher than the average for the whole sample. To test this observation, a Chi-Square test was conducted of Match/Mismatch distribution by dominant career orientation. Once again, the "unknowns" were excluded from the test, although they are included in the table. The results of this test are shown in Table 40 below.

Table 40: Frequency of Match/Mismatch Occurrences by Dominant Career Orientations

Job Match/ Mismatch	DOMINANT CAREER ORIENTATION										
	UNK	TEC	MAN	AUT	JOB	SER	CHA	LIF	ENT	GEO	Chi-Square
Match (n=141)	33	7	9	12	20	18	8	7	10	17	14.65+
Mismatch (n=39)	3	1	4	2	5	6	2	8	7	1	

+ Result tends towards significance at the 10% level (p=0.066)

As can be seen in the above table, the ratios of mismatched to matched are notably higher for certain of the career orientations. Considering the general ratio of mismatched to matched, there are fewer mismatched in the geographically-oriented group than might have been expected. In the lifestyle and entrepreneurial groups, there is a far higher proportion of mismatched individuals to matched.

The high proportion of mismatched to matched in the entrepreneurially-oriented group is not surprising. The items measuring the entrepreneurial characteristics of the job measured the opportunity for personal prominence from creative efforts, and for a share in the proceeds resulting from good ideas, and the support for new ideas. For owners of businesses, these items were all scored highly. For employees, however, such items would only be scored highly in organisations that have recognised the need to promote "intrapreneurship" and, as this is a relatively recent concept, such organisations are likely to be few in number.

Similar explanations for the low number of mismatched geographically-oriented individuals, and high number of mismatched lifestyle orientations, are difficult to find. However, some doubts have been cast on the suitability and accuracy of both the item measuring the degree to which the job caters for the geographical-security orientation, and those for measuring the job's compatibility with the lifestyle orientation (see 4.7.7 and 4.7.9 above). Thus, the ratios for these two orientations may be inconsistent with the remainder of the sample, more because of the instruments used to assess the job's compatibility with the orientation, than because of circumstances peculiar to the orientation.

4.9 Conclusion

Analysis of the data has shown that IT professionals in a National CSSA sample exhibit a rich variety of career orientations, with a slight majority holding the job security and service orientations, and very few individuals occupying the technical and challenge orientations. Significant differences were found to exist in the distribution of orientations, and the mean score on individual orientations, between individuals resident and non-resident in the Western Cape. Also, the sample as a whole showed a significantly different profile to fourteen other professional groups in South Africa, with IT professionals showing the greatest desire for challenge and the lowest need for a balanced lifestyle.

The different orientations were shown to represent very different types of employees. Individuals holding different dominant orientations varied significantly in their scores on the various career orientations, rated their performance in the job differently to other orientations, differed in their dependence on their employing organisations, and exhibited different lengths of tenure in their jobs and with their organisations. The majority of these differences were entirely consistent with Schein's definition of the various orientations. Also, individuals with different dominant orientations were shown to occupy jobs that best fitted their orientations.

Finally, individuals whose jobs matched their orientations were shown, with few exceptions, to be significantly more satisfied with their jobs and careers, to show higher organisational commitment, and to be less inclined to leave their organisations, than their counterparts who experienced a mismatch. While differences in performance levels between matched and mismatched individuals were not exhibited for the entire sample, such differences were shown to exist for several of the career orientation sub-samples.

The implications of the above findings are discussed in Chapter 5.

5. Discussion

5.1 Frequency of Career Orientations among IS Professionals

The data from a National Sample of CSSA members has revealed that this sector of the IT community in South Africa holds a wide variety of career orientations. Contrary to Igbaria's findings, however, the technical and managerial orientations are among the least frequent, representing a scant 3.9% and 6.3% of the sample respectively. This finding correlates with an earlier study into the career orientations of South African IS professionals, in which the technical and managerial orientations occupied 2.4% and 12% of the sample (Meredith, 1992).

The distribution of the sample across the various orientations was not uniform, although there were fewer extremes than found in previous studies (Meredith, 1992; Igbaria et al, 1991). Job security (12.2%) and service (11.7%) occurred most frequently, while technical (3.9%) and challenge (4.9%) occurred the least. A considerable proportion of the sample (29.8%) could not be classified in terms of their dominant orientation, 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.

5.2 Comparison between Different Geographical Areas

The data in this study showed considerable differences between the distribution of career orientations in the Western Cape compared to the distribution in other areas of South Africa. Also, the comparison of mean scores on each of the orientations between these two regions, supported this finding. While several significant differences exist, the one with the most practical significance, and which is most consistent across samples drawn from the Western Cape and across methods used to evaluate differences, is for the Geographical Security orientation.

Individuals in the Western Cape show a far higher need for remaining in their current geographical location than do personnel based elsewhere. This is most likely due to the higher standard of living experienced in this region (Breier, 1995; Cloete, 1995), as well as the beauty of the surroundings and the somewhat less frenetic pace of business in this region. This finding has important implications for the employing organisation, and for the employee, which are discussed under the relevant section below.

5.3 Differences between Career Orientation Profiles of IS Professionals and Fourteen other Professional Occupations

Compared to fourteen other professions in South Africa, IS professionals showed a significantly higher desire for challenging work than all other professions. Also, IS professionals exhibited a higher interest in pursuing entrepreneurial opportunities, and a high need for autonomy, relative to most other professional groups. The relatively high need for job security among IS professionals was unexpected, but is likely to be a reflection of the age of the sample, combined with threats to security from recent organisational trends such as downsizing and outsourcing. Finally, the IS profession showed the lowest need for a balanced lifestyle out of all the professions.

The above profile resulted from comparing the mean score on a particular orientation for the IS sample, with the mean score on that orientation for every other profession. However, another approach, commonly used in IS career orientations studies, is to determine the relative importance of each orientation for the IS profession as a whole. This is done by comparing the mean score on each orientation to that obtained for every other orientation, for the whole sample.

The two approaches have been shown to reveal completely contrasting profiles. As discussed in Chapter 4, it appears that the opportunity to be of service, and a balanced lifestyle, are key to IS professionals, using one approach. In comparison to other professions, however, these two orientations are lowest in importance, with challenge and the pursuit of entrepreneurial opportunity being the highest.

These conflicting results suggest that both approaches yield little in the way of practical advice for the organisation wishing to better manage its IT employees. Indeed, the practice of adopting a Personnel Management strategy based on the profile of a group as a whole has been criticised previously, as such an approach can only satisfy those whose individual profiles match that of the group. As shown in Chapter 4, and as discussed below, individuals with different dominant career orientations have very different profiles to one another, in terms of the relative scores on the remaining orientations. Also, very few of the individuals in this sample have career orientation profiles matching that of the entire sample.

5.4 Profiles of Different Dominant Career Orientations

Relationships between the dominant orientation and the scores for the remaining orientations indicate, as expected, that the different orientations represent *very different* types of employee. Among the differences exhibited are the managerially-oriented individual's low interest in technical work, and the technical individual's equal lack of desire for managerial work; the job security-oriented person's low need for challenge in the job; the lifestyle-oriented employee's need for autonomy; and the entrepreneur's desire for challenge.

Moreover, the individuals holding different orientations perceive themselves to have different abilities. The managerially-oriented rate their managerial skills, business knowledge and communication skills higher than the remaining orientations. The technically-oriented rate their technical skills as superior to other orientations, and show a high willingness to learn new technologies, as do the challenge-oriented. The entrepreneurially-oriented display high creativity. The job security-oriented rate their performance in the job as lowest of all orientations. Few of these differences are surprising.

Also, the job security-oriented show the highest dependency on their organisations out of all the orientations, while the entrepreneurially-oriented show the least. In addition, the security orientation displays high job and organisational tenure, as expected. The managerially-oriented. on the other hand, change jobs relatively frequently. Finally, managerially-oriented individuals showed a greater tendency to occupy jobs at the managerial organisational level, while autonomy-oriented individuals were inclined to occupy jobs at the professional level. All these findings are consistent with intuitive expectations, and with Schein's (1985, 1987) view of the individual orientations.

Also, as hypothesis two suggested, a significant relationship exists between career orientation and type of job, with individuals holding jobs that match their orientations. The data showed, for example, that autonomy-oriented individuals were most likely to be occupying consultancy positions; managerially-oriented were likely to be managers; and entrepreneurially-oriented were frequently owners of their own organisations. In addition, the technically-inclined tended to occupy positions of a technical (or non-managerial) nature.

Also, the work characteristics of the various sub-samples are further indication that individuals gravitate towards work which best suits their orientations. For example, the challenge-oriented experience the most challenge; the managerially-oriented perform the highest quantity of managerial work, and were most likely to be in positions offering a path to general management; the service-oriented have more opportunity to be of service than any of the remaining orientations, and a similar pattern is observed for each of the other career orientations.

Thus, it is unlikely that a dual-career path will be sufficient to satisfy the different needs and values of a profession exhibiting such a wide diversity of career orientations. Nor, for that matter, is a single motivational approach (e.g. provide all IT employees with challenge in their jobs) likely to succeed. This assertion is borne out by the evaluation of the effects of a mismatch on an IT professional's job and career outcomes.

5.5 Consequences of Match versus Mismatch between Dominant Orientation and Job

Individuals who held positions congruent with their orientations were shown to exhibit greater job and career satisfaction, higher organisational commitment, and less likelihood of leaving their organisations, than their counterparts whose jobs did not match their orientations. For each of the individual orientations, this pattern was repeated with few exceptions. Where exceptions did occur, these were usually able to be explained in terms of factors not catered for in the survey, such as intention to emigrate due to potential instability and violence in the country; or different responses to certain items based on the nature of the IT position held; or potential weaknesses in the items assessing a job's congruence with a particular orientation.

Little difference in perceptions of performance in the job, between the matched and mismatched groups for the whole sample, was shown. However, differences in performance between matched and mismatched individuals were exhibited in certain instances - for example, matched females showed that they put greater effort into, and were more dedicated to, their job than the mismatched females. Similar results were found for the challenge and service-oriented. The entrepreneurially-oriented owners of organisations outperformed their non-owner counterparts in all aspects of performance.

The findings support hypothesis four, and both confirm and extend Igbaria's findings in respect of the consequences of a mismatch between job and orientation. The findings are consistent with the view that individuals in jobs not compatible with their orientations will exhibit a number of negative job outcomes, the most serious of which is their intention to leave their employing organisations.

5.6 Implications for the Organisation, IS Manager and IS Professional

There are several important implications arising from the findings of this study. Firstly, the assumption that a dual-career path alone will be sufficient to cater for the needs of the majority of IS personnel is incorrect. Indeed, the dual-career path is likely to satisfy only the small percentage of individuals (10.2%) with technical and managerial orientations in this sample. Furthermore, the assumption that a particular professional group of individuals can be *managed and motivated as a group,* is questionable and outdated, and unlikely to lead to reduced turnover in the IS industry.

Thus, taking the advice of Crook et al (1991), or, for that matter, Ginsberg et al (1992), and providing all employees with challenge, or the opportunity to be of service, is unlikely to succeed. Weinberg warned, as long ago as 1971 (Moore: 1991), that it was incorrect to assume that all IS professionals have the same personality profile. Brown (1994), in a paper entitled "13 Fatal Errors Managers Make and How you can Avoid Them", defines one of the errors as "Manage Everyone the Same Way". De Marco et al (1987) suggest that the typical career path in IS assumes that one size fits all, and that it is critical to reject this assumption to avoid worker dissatisfaction. Drucker concurs, in an interview with Harris, (1993) stating that organisations can no longer manage a work force, but must recognise that they manage *individuals*.

It is, thus, important for IS managers and employing organisations to understand the *individual* needs of their employees, and to adopt a career path strategy flexible enough to meet the needs of all orientations. The high proportion of IT professionals (21.7%) that occupy jobs incompatible with their orientations in this sample suggests that managers do not spend a great deal of time attempting to understand their individual employee's needs and motives. Smolowitz (1994) suggests that few employers understand what is important to their employees. As Kym et al (1992) point out, it is rare that organisations go to the effort of understanding what kind of people IT employees are, what satisfies them and what they require from their jobs, yet it is "an essential and indispensable pre-requisite for effective management of an IT department". Zawacki (1992, p74) concurs, suggesting that "during this decade, managers must do a better job of matching employees and jobs". Mumford (1972, p206), too, many years ago, suggested that turnover was far higher in organisations where "the fit between what employees were seeking from work and what the employer was providing had unsatisfactory elements". Myers (1991, p32) stresses that "an assessment of the fit between the IS professional and the changing work environment is a fundamental component of IS human resource management".

Thus, there is general agreement in the literature, which is supported by the findings of this study, that an assessment of the fit between IS professional and job is critical to effective management of these personnel. Organisations may feel daunted by the prospect of establishing every individuals' requirements, and attempting to structure career and reward policies in such a fashion as to meet the needs of all career orientations. However, organisations regularly carry out performance appraisals of their employees, and the additional cost of assessing orientations will be minimal. In addition, flexible career paths are fast becoming the norm (Naisbitt et al, 1985, p106).

Indeed, it is likely that a simple adjustment of current career paths and reward policies with a view to offering flexibility, in the form of a 'menu' of options which individuals could select according to the requirements of their orientations (Toffler, 1981, p395; Schein, 1985; Meredith, 1992), would enable the requirements of most orientations to be met. Some specific options which organisations might consider adopting are described below.

Flexible Working Periods

Many organisations are now going beyond offering flexitime, to allowing employees to agree a certain number of hours that they will work for a year, and then setting up a schedule of when the hours will be worked, that will suit both the organisation and the employee (Teriet : 1985). Also, Smolowe (1996, p42) reports that organisations in the USA are allowing teams of employees to agree on how they will meet production goals set by management. Thus, the employees work, for example, 10 hour days for four days a week for a three week period. Thereafter, they get five days off. This provides the employees with considerable flexibility, and with time to pursue their personal interests and family commitments.

In the IT industry, where project teams are frequently formed to produce a particular information system, such arrangements could easily be introduced. The team could decide, for example, how much work is required in order to implement the system by a given date, and they could then structure their work loads accordingly. This arrangement has added benefit, in that the team commits itself to a goal as a team, and then controls the team members' adherence to the goals. Thus, the team is more likely to meet its commitments, and, therefore, the organisation's needs, while at the same time providing for the needs of its members.

Similar to the "flexible year" described above is Bailyn's (1993) recommendation of a "discontinuous" career strategy, in which employees and organisations negotiate to break up a career into several parts, each requiring different levels of commitment, and offering different rewards and tasks. Thus, an employee may elect to adopt a "low-commitment" career segment when family concerns and outside interests are most pressing, but will be able to do so at no cost to his or her reputation or standing with the company. Moreover, the company benefits because there are many occasions when the work tempo drops for a period, during which the cost of maintaining a permanent employee presence is excessive. Particularly in the IT field, organisations might elect to have low-commitment periods between development projects, and high commitment/high workload periods when projects with critical deadlines are underway.

The arrangements described above would be particularly suitable for the lifestyle-oriented. However, these arrangements are likely to benefit *all* orientation to a degree. For example, the technically-oriented individual who wishes to spend a year on sabbatical, updating his or her skills, will be able to do so. Also, the autonomy-oriented is provided the opportunity of deciding when he or she will work, and at what pace. Also, the job-security may be able to pursue a "low-commitment" career period while work is scarce, rather than being laid off. Thus, the arrangement is likely suit more than just the lifestyle orientations.

Telecommuting

Another option which might suit certain orientations is telecommuting, which involves equipping individuals to work from home. It is particularly suited to IT professionals, as much of their work (e.g. coding, design) can be performed away from the organisation's premises. The arrangement has been reported to increase productivity of the employee, and reduce costs for the employer. However, it has also been reported to increase rather than reduce work-family conflict (Duxbury et al, 1992, p188) and thus, while it may be appropriate for the autonomy orientation, it is unlikely to suit the lifestyle oriented.

Job Sharing

Job sharing is a concept which was originally designed to accommodate individuals who wished to work part-time, in jobs that were previously only open to employees willing to work on a full-time basis. The idea entails two individuals sharing one job - an example quoted by Naisbitt et al (1985, p113) involved two females sharing the job of business systems manager at Levi Strauss. Thus, the concept has been shown to work for IT people in the past, and could benefit organisations immensely. Job sharing is particularly appropriate for the lifestyle-oriented individual. As Walton (1985, p112) points out, job sharing is highly suitable for individuals who wish "to lead a more varied and balanced life". Even the job security oriented could benefit from such an arrangement. For example, instead of retrenching staff, employees could have the option of sharing work, and thus still receive an income (albeit reduced) from being productively employed. Moreover, the organisation benefits from having two highly experienced individuals in one job!

Reskilling

Individuals with a job security orientation are likely to be among those most difficult for organisations to motivate in the future. As Handy (Rapoport, 1994, p100) points out, careers are becoming shorter, and the 45 year job with one paternalistic organisation is a concept of the past. Workers can no longer take their jobs for granted, and it is likely that some of the job characteristics most attractive to the security-oriented, such as formal tenure systems, promotion according to number of years in the job or with the organisation, and guaranteed pensions and benefits, will fall away in the near future. One possibility that organisations could pursue to keep the job security-oriented satisfied is to provide them with opportunities for developing and honing skills that are needed outside of their current organisation. Thus, these individuals will then be able to find further work opportunities if they are forced to leave their organisations.

Promoting Intrapreneurship

Although the results of Chapter 4 appeared to indicate that entrepreneurially-oriented individuals, who are provided some entrepreneurial rewards within their organisations, still exhibit high turnover intention, it is possible that such individuals can yet be offered suitable organisational careers. Firstly, it must be noted that the items used to assess entrepreneurial opportunity, although related closely to Schein's (1985, p39) description of the entrepreneurially-oriented, may not have sufficiently measured characteristics which might motivate such employees.

Atterhed (1985, p86) suggests that companies wishing to foster intrapreneurship must recognise that "traditional incentives, particularly financial ones", cannot persuade the entrepreneur to stay. Rather, it is likely that an organisation must make a considerable number of changes to accommodate the entrepreneurially-oriented, and to encourage intrapreneurial activity, many of which were not evaluated in this study.

Some of the many suggestions in the literature include providing empowerment to take risks and bend rules (Hisrich, 1990, p217; Kuratko et al, 1990, p56); "a broad array of financial, technical and personnel support", and the willingness to accept both success or failure (Atterhed, 1985, p79); ownership of the new idea, product or division (Schein, 1985, p39; Hisrich, 1990, p219); and wholehearted commitment to the entrepreneurial effort by top management (Hisrich, 1990, p219; Atterhed, 1985, p79).

Another option for satisfying an organisation's entrepreneurially-oriented professionals is to "turn them into suppliers" (Clutterbuck, 1985, p49). This approach involves allowing the employees to, effectively, run their own company which then sells its services back to the previous employer. The approach has several benefits: firstly, it provides the employees with complete independence, and would satisfy the entrepreneurially-oriented employee entirely; secondly, results show that organisations typically hire back services which are more productive, and less expensive than the in-house staff had ever been.

Offering Membership Incentive

In addition, instead of offering financial incentives, organisations may increasingly be required to offer their employees membership incentives. As Handy (1995, p48) suggests, in an era where workers are recognised as assets, the contract with the employing organisation has to be modified. Handy suggests that core workers be offered membership rights, which give them some say in the running of the organisation. For example, members will have a say in strategic initiatives and investments the company might seek to make, and will obtain some return for the investment of their knowledge and ideas in the company. As Handy suggests (1995, p48), membership can replace "a sense of belonging to a *place* with a sense of belonging to a *community*".

Thus, membership rights will most likely satisfy several of the career orientations: the entrepreneurially-oriented, who have some sense of ownership in the organisation; the autonomy-oriented, who have some control over the organisation's direction; the challenge-oriented, who obtain a sense of challenge from having a say in how the company should operate; and even the security-oriented, whose "sense of belonging" is catered for.

Project-Centred Career

A further means of catering for the wide diversity of career orientations shown to exist among IT personnel is for organisations to implement a project-centred career (Allen and Katz, 1986, p187). Such a career involves the assignment of individuals to projects in which they have most interest, rather than having them climb either a managerial or technical career path. As Meredith (1992) suggests, this project-centred career may be particularly appropriate for the IT profession. Individuals could be assigned not only to different projects, but *different phases* of different projects, according to their career orientations. For example, Schein (1987, p160) investigated the effectiveness and satisfaction of individuals with different orientations at various stages of a large aerospace project It was shown that technically-inclined individuals were happiest and most effective at the design phase, entrepreneurially-oriented at the conceptualisation stage, and so on.

The phases in this project are quite similar to those found in the typical Information Systems development project. Thus, for example, the technically-inclined could be assigned to that phase where the various technical design alternatives are debated and selected. The service-oriented employee might be most satisfied and effective during systems implementation, at which time he or she could train user personnel in use of the new system. The challenge oriented would most likely find the analysis and design of an extremely complex system challenging.

Both the organisation and employee would benefit from this arrangement, as the individual would perform work commensurate with his or her orientation, while the organisation would have satisfied staff with increased effectiveness.

Avoiding/Enabling Geographic Transfer

Also, to satisfy many of the orientations may not even require extensive changes to policies. Rather, some common-sense application of the knowledge gained from assessing career orientations will likely suffice. For example, it would be unwise to recommend a transfer for individuals who indicate their desire to stay in a particular geographical location. If, however, an organisation feels a transfer is critical to the well-being of the organisation, then several of the guidelines offered by Carruthers and Pinder (1983) should be adopted. Specifically, these authors report that individuals are more willing to make the transfer, and more satisfied with the new location, if they have some familiarity with the new environment, if the new location is seen as growing and dynamic, and if the transfer is seen to improve the families' income and standard of living. Nevertheless, Carruthers et al's study did not take into account the career orientations of its sample, so it is possible that even with such factors, the geographically-oriented will resent the move.

Several options have been described above which organisations might adopt to cater for the diversity of career orientations likely to exist in their IT staff. Additional steps which organisations should adopt to avoid misplacing their IT professionals are described below.

Development of the Career Orientation

Organisations should encourage lateral career movement among their staff, particularly in the early stages of their careers (Meredith, 1992, p78). Schein (1985. p157) suggests that a variety of experiences and positions, and feedback from each, early in the career, will enable more rapid development of a clear and stable self-concept than few jobs or minimal feedback. Companies will also benefit, in that they will be able to ascertain the strengths and weaknesses of the employee, and thus determine the positions for which he or she is best suited (Butler Cox : 1989, p29).

Recovering from Misplacement

Although organisations may adopt many of the strategies described above to avoid misplacing their employees, it is possible (and quite probable) that individuals will still occasionally be placed in positions which are incompatible with their career orientations. An option which would enable organisations to rectify an inappropriate employee assignment or promotion is to adopt the "honourable demotion" concept (Pierce, 1991, p11-12). This concept enables employees who have been assigned to jobs which they do not like, or in which they do not perform as well as they had in their previous positions, to return to their prior positions without the stigma normally associated with such a move. Thus, technically-inclined programmers, for example, who are promoted to project manager positions based on their excellent programming skills, may return to a programming job should they find that they have no liking, or ability, for managing other people.

Job Descriptions

A further necessity is for organisations to clearly describe the various jobs and career opportunities that exist for IT professionals. The jobs and positions available should be described not only in terms of the work content, and the roles and responsibilities of the job holder, but also in terms of their compatibility with the various orientations. For example, if a position is expected to offer an individual a great deal of challenge, but little job security, this must be made clear, so that the prospective applicant is fully aware of the job's motivating potential. As McLean, Smits and Tanner (1991, p263) point out, "exaggerated job descriptions can only lead to disappointment and eventual turnover".

Finally, it is important to understand that the action to address high turnover cannot all be one-sided. Indeed, it is likely that the blame for the high degree of mismatch evident in this sample can not be laid squarely at the door of the IS manager or the employing organisation. Granted, it is unlikely that many organisations currently have career paths in place flexible enough to cater for the wide variety of career orientations exhibited in this sample. However, it is equally unlikely that individuals employed in the IT field always express their requirements honestly and accurately. Drucker (Harris, 1993, p119), although not referring specifically to IT employees, suggests "when you don't communicate, you don't get to do the things you are good at". Thus, IT employees who wish to avoid a mismatch must inform their managers of their needs and values. Further, Hall (1978, p181) reports that people are inclined to be "rather passive about even major career decisions", and are often likely to move for the wrong reasons. IT professionals should, therefore, ensure that they evaluate the reasons for any change in career that they wish to make, so that they can be sure the change is made for the right reasons, and that it is necessary.

5.7 Implications For Research

Firstly, it should be noted that the items used to assess the compatibility of a job with the various career orientations represent an initial attempt at developing a suitable instrument for this purpose. As such, the reliability of the instrument, as evidenced by some of the low coefficient alphas, can be improved and refined. Moreover, the single item used to assess a job's threat to the geographically-oriented is inadequate, and modification of, and addition to, this item is recommended. Furthermore, it may be more appropriate to measure a job's compatibility with the lifestyle-oriented in terms of the flexibility offered to the job-holder, as well as the various policies which an organisation might have in place to cater for individuals with this orientation.

In addition, the job outcomes between matched and mismatched individuals were influenced, in certain instances, by factors which had not been catered for in the survey instrument. For example, several individuals intended emigrating, largely due to the high crime rate in their geographic area. Thus, although they were happy in their work, their turnover intentions were high and organisational commitment low. Also, the type of job held by the respondent occasionally influenced the way in which he or she responded to the turnover intention and organisational commitment questions. Thus, researchers intending to use the instrument for further study of IS personnel should instruct self-employed consultants and contractors to answer these questions from the perspective of their own businesses (even if they are the sole employees) rather than from that of the organisation to whom they are currently under contract.

Also, researchers wishing to assess the career orientations of individuals would be well advised to refrain from using the shortened form of the career orientations inventory. It must be recognised that the shortened form may increase the likelihood of a good response rate, but at the cost of reduced accuracy and reliability.

A further factor which may affect the accuracy of the results is the age of the respondents. It is suggested that researchers exclude from their samples respondents under the age of 30, as it is possible that such individuals have not yet established a firm and stable career anchor, and they may, therefore, be misclassified in terms of dominant career orientation.

On a related note, and as advised in previous research (Meredith, 1992), the number of unknowns may be reduced by having respondents complete the career anchor self-analysis exercise offered in Schein's (1985) book. As this exercise requires the researcher to interview each individual, it would be impractical unless conducted in a single or, at most, across a few organisations. However, it is likely to enable a more accurate classification of each individual, and provide the opportunity for cross-checking against the individual's responses to the inventory. It might also be appropriate for organisations to adopt this approach, to gain insight into their employees' needs and values with limited cost and effort.

Although performance differences were not observed between the match and mismatch sub-samples for the sample as a whole, certain differences were observed between these groups in some of the individual orientations. Although the self-assessment instrument appeared accurate, in that the perceptions of performance levels among various orientations seemed entirely consistent with expectations, it is possible that respondents were still inclined to rate their performance higher than was actually the case. Thus, individuals wishing to extend this research might achieve a different and perhaps more accurate result by getting respondents' superiors or colleagues to complete the performance assessment.

As pointed out in Chapter 3, there appears to have been a scarcity of research into the nature of the IT manager's job. It would be extremely useful if research could be undertaken to establish the different roles, activities and responsibilities of an IT manager. Not only would such research be of value to studies of this nature, but it would also provide invaluable information to IT professionals considering whether or not to follow a managerial career.

Finally, as Meredith (1992) advocated in earlier research, an interesting point of study might be to examine the effectiveness and satisfaction of individuals with various orientations during different stages of the systems development life cycle. This would best be conducted as a form of longitudinal research, over the lifetime of a project or several projects. Although of long duration, such research may nevertheless provide valuable insight into the feasibility of offering IT employees a project-centred career, in which they are assigned to certain stages of a project according to how compatible those stages are with their orientations.

5.8 Limitations

This research suffers several of the limitations consistent with survey research. Firstly, the overall response rate was 20.5%, which is an extremely unsatisfactory response rate, although, as already stated, one which is consistent with many other surveys in the IT industry. Furthermore, the organisation from which the sample for this study was drawn is a professional body, which limits membership to individuals who meet certain predetermined conditions (see section 3.2.1). Finally, the sample has been shown to be more highly educated than the majority of the body from which it was drawn, and to have a higher percentage of individuals over the age of 40. It is important, therefore, to consider whether this non-response bias, the sample source, and the sample demographics would materially affect the generalisability of the findings to the remainder of the IT industry.

Certainly, it cannot be assumed that the entire South African IS profession, or, for that matter, the entire membership of the CSSA, has a general profile which matches the one exhibited by this sample. Indeed, the differences in career orientation distributions existing between geographic regions have already shown such an assumption to be inaccurate. However, it is probably irrelevant whether the orientations profile is typical of the IT profession or not, as no recommendations are made based on this profile, unlike other studies. As already stated, stereotyping the IT profession and attempting to develop one motivational strategy to satisfy all employees is unlikely to succeed.

It is, thus, considered to be of far greater importance to examine the generalisability of the findings regarding the consequences of a match versus a mismatch between job and career orientation. The fact that this sample is composed entirely of members of one professional body should not significantly alter these findings, and nor should the low response rate. Igbaria et al (1991) showed similar differences between the matched and mismatched in his earlier study, which focused purely on the managerial and technical orientations. This study has shown such differences to be exhibited regardless of orientation. It is likely that the only effect a larger sample may have had would have been on the ratio of matched to mismatched. However, the consequences of the match and mismatch are likely to be similar, regardless of the IT sample. There is no apparent reason to assume that other groups of IT professionals will be more accepting of a mismatch between job and orientation, and less dissatisfied, than were those in this sample.

A second limitation common to survey research is the fact that the study has attempted to demonstrate causality using a "snapshot" of individual perceptions at a single juncture. Although the study has shown relationships to exist between job outcomes and a match/mismatch between job and orientation, the relationships may be more intricate than these findings indicate. Hence, it would be useful for researchers to pursue a form of longitudinal study, as advocated at the end of section 5.7 above. For example, researchers might assign individuals to different stages of a project, and to different projects, where the amount of autonomy, challenge and other work characteristics corresponding to each of the career orientations can be expected (or have been made) to differ. Thereafter, the job satisfaction and related job outcomes could be measured, much like in this study, for people in positions compatible and incompatible with their orientations. The difference, however, would be that in a longitudinal study of this nature, the researchers have some ability to manipulate the variables and observe the effects, and, thus, produce a more irrefutable picture of the consequences of incompatibility on job outcomes.

6. CONCLUSION

This study has revealed that IT professionals in South Africa hold a wide diversity of Career Orientations. While an implicit assumption in much of the theory regarding IT personnel has been that such personnel hold either a technical or managerial career orientation, the results of this study suggest otherwise. While the actual distribution of career orientations in this study was somewhat distorted by the high percentage of individuals whose dominant orientation could not be clearly identified, the number of individuals in the technical and managerial orientations was still in the minority, with only 3.9% and 6.3% of the sample holding these orientations, respectively. The orientations held most frequently were the job security (12.2%) and service (11.7%) orientations; however, the distribution of orientations in this sample was not characterised by the extremes exhibited in Meredith's (1992) earlier study, in which geographical security (25%) and lifestyle (22.3%) dominated.

As expected, the high percentage of individuals with the geographic security orientation in Meredith's (1992) earlier work was peculiar to the region in which the study was conducted. As shown in this paper, individuals in the Western Cape have a far greater need to remain in their current geographical location than do IT professionals resident in other parts of South Africa. While certain other statistically significant differences between the Western Cape and other regions were shown to exist, the only difference considered practically significant was that in the geographic security orientation. It is apparent, therefore, that IT managers and organisations in the Western Cape have to consider very carefully the ramifications of transferring a valued employee from this region to other parts of the country.

IT professionals, as a group, were shown to display a significantly different profile of orientations, based on mean scores, to fourteen other professional occupational groups in South Africa. The IT professionals showed a greater propensity towards work of a challenging nature, and a strong desire for entrepreneurial activity. On the other hand, the desire for a balanced lifestyle was of least importance. While this desire for challenge is consistent with certain other investigations into IT personnel, it was shown that an entirely different conclusion regarding the needs of IT personnel would have been drawn had the scores on each orientation been examined relative to every other orientation, for the sample as a whole. Thus, it appears that conclusions regarding the management of IT personnel may frequently depend on the method used to establish the career orientations profile. It is concluded, therefore, that adopting a motivational strategy for IT personnel *as a group*, based on the mean scores of career orientations in a sample, or even on the frequency of orientations, is an inappropriate organisational response to such research. Indeed, the diversity of career orientations exhibited by this and other studies requires organisations to understand *each individual's* motives and values, rather than seeking to apply one personnel management strategy for all.

This view was borne out by examination of the different likes and dislikes, and abilities, exhibited by individuals holding each orientation. It was shown that the different career orientations represent very different types of employee. Each orientation displays different motives, and different levels of performance, consistent with the particular orientation. Also, this study confirmed that individuals with different orientations tend to occupy jobs most likely to fulfil the needs characteristic of their orientations.

Finally, the most convincing argument for the need to understand and manage IT professionals with different orientations as individuals, rather than as a group, was provided by examination of the consequences of a mismatch between job and career orientation. Individuals who occupied jobs incompatible with their orientations, such as challenge-oriented people who experience no challenge in the job, or service-oriented people who are prevented from fulfilling their desire to be of service, show significantly lower job satisfaction, career satisfaction, and organisational commitment; as well as increased turnover intention; and, in certain orientations, lower levels of performance in the job, than their counterparts whose jobs fulfil the needs of their orientations.

In view of these findings, organisations which employ IT professionals should seek to establish the orientations of these individuals, and to understand the types of jobs and career paths available in their organisations, so that a better fit between employee and job can be made. Further, organisations are advised to adopt flexible careers and working policies, such that they cater for the various career orientations which might exist in their organisations. Such an approach will be of benefit both to the employees, who will be more satisfied in their work, and also to the organisation, which will benefit from reduced staff turnover and, thus, a more productive IT department.

Finally, it is recommended that the research initiated in this paper is continued, with the ultimate aim of developing an accurate and reliable instrument for assessing the degree to which individual jobs provide for the various career orientations known to exist. It is also suggested that researchers spend less time on attempting to establish the career orientations profile of IT professionals *as a group*, because it has been shown that the needs and motives of IT professionals differ considerably between different geographic regions, different samples, and, indeed, between different dominant orientations.

Research into career orientations of IS professionals would be better spent on examining the career paths, work experiences and work environments which best suit the different orientations of IT professionals, as well as the consequences of occupying a job incompatible with one's career orientation. Such research will provide researchers and, more importantly, employing organisations and IS practitioners, with much needed knowledge on the best means of matching job and employee.

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Appendix A

Survey Instrument

SECTION I: ROLE REQUIREMENTS

Individuals in DP/MIS departments perform a variety of activities as part of their job. Using the response options described below, please indicate the extent to which each of the following activities represents a part of your job.

(Please circle the appropriate number).

1 = Not a part of my job
2 = A small part of my job
3 = A moderate part of my job
4 = A large part of my job
5 = A very significant part of my job

1. Represent your department/division to other units in the organisation.	1	2	3	4	5
2. Prepare and give briefings to other units in the organisation.	1	2	3	4	5
3. Inform other units in the organisation of new developments in information technology.	1	2	3	4	5
4. Integrate or coordinate interdependent activities of other individuals or units in the organisation.	1	2	3	4	5
5. Assist other units in determining appropriate uses of information technology.	1	2	3	4	5
6. Prepare reports for other units in the organisation.	1	2	3	4	5
7. Respond to requests for information from other units in the organisation.	1	2	3	4	5
8. Recommend new applications of information technology to top management.	1	2	3	4	5
9. Act as liaison with other units in the organisation.	1	2	3	4	5
10. Recommend policy and strategy regarding organisational uses of information technology.	1	2	3	4	5
11. Influence others in order to attain goals.	1	2	3	4	5
12. Structure people/events to solve problems.	1	2	3	4	5
13. Conduct regular staff meetings.	1	2	3	4	5
14. Make decisions concerning the hiring and/or termination of employees.	1	2	3	4	5
15. Make decisions under conditions of incomplete information and uncertainty.	1	2	3	4	5
16. Monitor and control the work activities of subordinates.	1	2	3	4	5
17. Establish work schedules for subordinates in response to departmental activities or project requirements.	1	2	3	4	5
18. Counsel staff members on their job performance, career development opportunities and training needs.	1	2	3	4	5

SECTION II: TURNOVER INTENTIONS

Please consider the statements reflecting turnover intentions below, and circle the number to the right of the statement which corresponds most closely to your desired response.

	Highly unlikely				Highly Likely
1. How likely is it that you will actively look for *a different job* in the next year?	1	2	3	4	5
2. Do you intend to change the organisation with which you are now associated?	1	2	3	4	5
3. How likely is it that you will actively look for *a different profession* in the next year?	1	2	3	4	5
4. Do you intend to leave the IS profession?	1	2	3	4	5
	Never				Constantly
5. How frequently do you think of leaving *your organisation*?	1	2	3	4	5
6. How frequently do you think of leaving *the IS profession*?	1	2	3	4	5

SECTION III: CAREER AND JOB ATTITUDES

Please indicate your agreement or disagreement with each of the following items by circling the one number to the right of each statement that corresponds most closely to your desired response.

1 = Strongly disagree
2 = Disagree to some extent
3 = Uncertain
4 = Agree to some extent
5 = 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

SECTION IV: TASK AND JOB CHARACTERISTICS

Below are a set of statements that may describe aspects of your job. Please indicate the extent to which you agree or disagree with each statement by circling the appropriate number next to it.

To what extent does your current job situation permit you to?

	Not at all				To a great extent
1. Pursue your ideas.	1	2	3	4	5
2. Build a professional reputation.	1	2	3	4	5
3. Work with competent colleagues.	1	2	3	4	5
4. Work on technically challenging tasks.	1	2	3	4	5
5. Work on organisationally important projects.	1	2	3	4	5
6. Work on projects leading to advancement.	1	2	3	4	5
7. Work on professionally important projects.	1	2	3	4	5
8. Have freedom to be creative and original.	1	2	3	4	5
9. Be highly respected by top management.	1	2	3	4	5
10. Be highly respected by your peers.	1	2	3	4	5
11. Receive substantial annual salary increases.	1	2	3	4	5
12. Have a great deal of power and influence on the job.	1	2	3	4	5
13. Receive a promotion within the next year or two.	1	2	3	4	5

SECTION V: MANAGERIAL/TECHNICAL WORK CONTENT

Please indicate below what percentage of your typical work day comprises what you would describe as:

Managerial tasks and activities: ☐ %

Technical tasks and activities: ☐ %

Other tasks and activities: ☐ %
(Please specify: _____)

100 %

SECTION VI: ATTITUDES TOWARD YOUR ORGANISATION

Listed below are a series of statements that represent the feelings 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 circling the one number to the right of each statement that corresponds to your desired response.

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

Affective Commitment

1. I would be very happy to spend the rest of my career with this organisation.	1	2	3	4	5
2. I enjoy discussing my organisation with people outside it.	1	2	3	4	5
3. I really feel as if this organisation's problems are my own.	1	2	3	4	5
4. I think that I could easily become as attached to another organisation as I am to this one.	1	2	3	4	5
5. I do not feel like 'part of the family' at my organisation.	1	2	3	4	5
6. I do not feel 'emotionally attached' to this organisation.	1	2	3	4	5
7. This organisation has a great deal of personal meaning for me.	1	2	3	4	5
8. I do not feel a strong sense of belonging to my organisation.	1	2	3	4	5

Continuance Commitment

1. I am not afraid of what might happen if I quit my job without having another one lined up.	1	2	3	4	5
2. It would be very hard for me to leave my organisation right now, even if I wanted to.	1	2	3	4	5
3. Too much in my life would be disrupted if I decided I wanted to leave my organisation now.	1	2	3	4	5
4. It wouldn't be too costly for me to leave my organisation now.	1	2	3	4	5
5. Right now, staying with my organisation is a matter of necessity as much as desire.	1	2	3	4	5
6. I feel that I have too few options to consider leaving this organisation.	1	2	3	4	5
7. One of the few serious consequences of leaving this organisation would be the scarcity of available alternatives.	1	2	3	4	5

	Strongly Disagree				Strongly Agree
Continuance Commitment (continued)					
8. One of the major reasons I continue to work for this organisation is that leaving would require considerable personal sacrifice - another organisation may not match the overall benefits I have here.	1	2	3	4	5
Normative Commitment					
1. I think that people these days move from company to company too often.	1	2	3	4	5
2. I do not believe that a person must always be loyal to his or her organisation.	1	2	3	4	5
3. Jumping from organisation to organisation does not seem at all unethical to me.	1	2	3	4	5
4. 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
5. 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
6. I was taught to believe in the value of remaining loyal to one organisation.	1	2	3	4	5
7. Things were better in the days when people stayed with one organisation for most of their careers.	1	2	3	4	5
8. I do not think that wanting to be a 'company man' or 'company woman' is sensible anymore.	1	2	3	4	5

SECTION VII: 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 questions. 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 circle the number that best describes how important or how true it has been and continues to be in your career decisions.

How important is each of the following statements for you?

	Of no importance				Centrally Important
1. The process of supervising, influencing, leading and controlling people at all levels is...	1	2	3	4	5
2. The chance to do things my own way and not to be constrained by the rules of an organisation is ...	1	2	3	4	5

	Of no importance				Centrally Important
3. An employer who will provide security through guaranteed work, benefits, a good retirement program, etc., is...	1	2	3	4	5
4. Working on problems that are almost insoluble is ...	1	2	3	4	5
5. Remaining in my specialised area as opposed to being promoted out of my area of expertise is ...	1	2	3	4	5
6. To be in charge of a whole organisation is...	1	2	3	4	5
7. A career that is free from organisation restrictions is..	1	2	3	4	5
8. An organisation that will give me long-run stability is...	1	2	3	4	5
9. Using my skills to make the world a better place to live and work in is...	1	2	3	4	5
10. Developing a career that permits me to continue to pursue my own life style is...	1	2	3	4	5
11. Building a new business enterprise is...	1	2	3	4	5
12. Remaining in my area of expertise throughout my career is...	1	2	3	4	5
13. To rise to a high position in general management is...	1	2	3	4	5
14. Remaining in one geographical area rather than moving because of a promotion is...	1	2	3	4	5
15. 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?

	Not at all true				Completely True
16. The only real challenge in my career has been confronting and solving tough problems, no matter what area they were in.	1	2	3	4	5
17. I am always on the lookout for ideas that would permit me to start and build my own enterprise.	1	2	3	4	5
18. It is more important for me to remain in my present geographical location than to receive a promotion or new job assignment to another location.	1	2	3	4	5
19. A career is worthwhile only if it enables me to lead my life in my own way.	1	2	3	4	5
20. I will accept a management position only if it is in my area of expertise.	1	2	3	4	5
21. I do not want to be constrained by either an organisation or the business world.	1	2	3	4	5
22. I want a career in which I can be committed and devoted to an important cause.	1	2	3	4	5

	Not at all true				Completely True
23. I feel successful only if I am constantly challenged by a tough problem or a competitive situation.	1	2	3	4	5
24. Choosing and maintaining a certain lifestyle is more important than is career success.	1	2	3	4	5
25. I have always wanted to start and build up a business of my own.	1	2	3	4	5

SECTION VIII: JOB/WORK CHARACTERISTICS

Below are a set of statements that may describe aspects of your job, the work that you do and your work situation. Please indicate the extent to which you agree or disagree with each statement by circling the appropriate number next to it.

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

Work Method Autonomy

1. I am allowed to decide how to go about getting my job done (the methods to use).	1	2	3	4	5
2. I am able to choose the way to go about my job (the procedures to utilise).	1	2	3	4	5
3. I am free to choose the method(s) to use in carrying out my work.	1	2	3	4	5

Work Scheduling Autonomy

1. I have control over the scheduling of my work.	1	2	3	4	5
2. I have some control over the sequencing of my work activities (when I do what).	1	2	3	4	5
3. My job is such that I can decide when to do particular work activities.	1	2	3	4	5

Work Criteria Autonomy

1. My job allows me to modify the normal way we are evaluated so that I can emphasise some aspects of my job and play down others.	1	2	3	4	5
2. I am able to modify what my job objectives are (what I am supposed to accomplish).	1	2	3	4	5
3. I have some control over what I am supposed to accomplish (what my superior sees as my job objectives).	1	2	3	4	5

Job Characteristics

1. My job allows me to continue to increase my specialist/technical skills and knowledge.	1	2	3	4	5
2. My organisation provides a technical/specialist career path for those individuals who do not choose to pursue a managerial career.	1	2	3	4	5

	Strongly Disagree				Strongly Agree
Job Characteristics (continued)					
3. Individuals opting to pursue a technical career path in my organisation are rewarded equitably in comparison with those pursuing a managerial career.	1	2	3	4	5
4. My job provides me with little opportunity to exercise my technical skills and abilities.	1	2	3	4	5
5. My present job provides promotional opportunities outside IS into general management.	1	2	3	4	5
6. The functions and tasks I perform, and responsibilities I hold, are primarily technical as opposed to managerial in nature.	1	2	3	4	5
7. My work allows me to gain high visibility and personal prominence from whatever I accomplish.	1	2	3	4	5
8. In my work, I have the opportunity to create things which are recognised as existing entirely through my own efforts or ideas.	1	2	3	4	5
9. It is difficult for new and original ideas to receive consideration in my organisation.	1	2	3	4	5
10. My organisation provides employees that have new and innovative ideas with a share in the proceeds resulting from such ideas.	1	2	3	4	5
11. My job requires me to face and overcome a variety of extremely demanding problems.	1	2	3	4	5
12. My job provides me with the opportunity to compete with others.	1	2	3	4	5
13. I encounter little variety in the tasks and activities I perform during my working day.	1	2	3	4	5
14. In my work, there are new challenges every day.	1	2	3	4	5
15. My job provides me with the opportunity to use my interpersonal and helping skills in the service of others.	1	2	3	4	5
16. My job allows me to work towards a cause about which I feel strongly.	1	2	3	4	5
17. In my work, I am often required to act in ways which conflict with my own set of values.	1	2	3	4	5

SECTION IX: WORK/FAMILY CONFLICT

Below are a set of statements that may describe affects of your work on your family/home life, or affects of your family/home life on your work. Please indicate the extent to which you agree or disagree with each statement by circling the appropriate number next to it.

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

Work Interference with Family

1. After work, I come home too tired to do some of the things I'd like to do.	1	2	3	4	5
2. On the job I have so much work to do that it takes away from my personal interests.	1	2	3	4	5
3. My family/friends dislike how often I am preoccupied with my work while I am at home.	1	2	3	4	5
4. My work takes up time that I'd like to spend with my family/friends.	1	2	3	4	5

Family Interference with Work

1. I'm often too tired at work because of the things I have to do at home.	1	2	3	4	5
2. My personal demands are so great that it takes away from my work.	1	2	3	4	5
3. My superiors and peers dislike how often I am preoccupied with my personal life while at work.	1	2	3	4	5
4. My personal life takes up time that I'd like to spend at work.	1	2	3	4	5

SECTION X: JOB SECURITY

Thinking about your future, how likely is it that each of these events might actually occur to you in your current job?

1 = Very unlikely
2 = Unlikely
3 = Neither likely nor Unlikely
4 = Likely
5 = Very likely

1. Lose your job and be moved to a lower level job within the organisation?	1	2	3	4	5
2. Lose your job and be moved to another job at the same level within the organisation?	1	2	3	4	5
3. Find that the number of hours that the company can offer you to work may fluctuate from day to day?	1	2	3	4	5
4. Be moved to a higher position within your current location?	1	2	3	4	5

	Very unlikely				Very Likely
5. Be moved to a higher position in another geographic location?	1	2	3	4	5
6. Lose your job and be laid off for a short while?	1	2	3	4	5
7. Lose your job and be laid off permanently?	1	2	3	4	5
8. Find your department or your division's future uncertain?	1	2	3	4	5
9. Lose your job by being fired?	1	2	3	4	5
10. Lose your job by being pressured to accept early retirement?	1	2	3	4	5

SECTION XI: PERFORMANCE ASSESSMENT

Please rate your performance during the time that you have been employed in your current job. Compare your performance with that of other people who do the same kind of work as you do. Remember that these ratings are for research purposes only, and will be kept strictly confidential.

1 = Much below average
2 = Below average
3 = Average
4 = Above average
5 = Much above average

1. Technical skill	1	2	3	4	5
2. Creativity	1	2	3	4	5
3. Skill in getting along with people	1	2	3	4	5
4. Effort put forth on the job	1	2	3	4	5
5. Oral communication skill	1	2	3	4	5
6. Leadership ability	1	2	3	4	5
7. Quality of work produced	1	2	3	4	5
8. Quantity of work produced	1	2	3	4	5
9. Knowledge of client or user business	1	2	3	4	5
10. Ability to organize work	1	2	3	4	5
11. Willingness to learn new technologies	1	2	3	4	5
12. Level of dedication to the job	1	2	3	4	5
13. Providing feedback to management	1	2	3	4	5
14. Attitude toward the job	1	2	3	4	5
15. Written communication skill	1	2	3	4	5
16. Understanding customer's business objectives	1	2	3	4	5
17. Ability to work with minimal supervision	1	2	3	4	5
18. Overall job performance	1	2	3	4	5

SECTION XII: CAREER PATH and GOAL

1. Please indicate what job you would like to hold in the upcoming one to three year period:

   _____.

   ___ If you are undecided, please check here.

2. Please indicate what job you would like to hold in the upcoming seven to ten year period:

   _____.

   ___ If you are undecided, please check here.

SECTION XIII: 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. 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.

1. Sex ___ 1. Male. ___ 2. Female

2. Age (to nearest Year): _____

3. Marital Status

   ___ 1. Never married.
   ___ 2. Married.
   ___ 3. Divorced/separated.
   ___ 4. Widowed.

   (If you are currently married, please complete question 4. If you are currently unmarried, skip directly to question 5.)

4. Is your spouse currently employed?

   ___ 1. Yes (specify number of hours worked per week) ___ hours.
   ___ 2. Spouse not currently employed.

5. How many children do you have?

   ___ Children.

6. If you have children, what is the age of your youngest child?

   My youngest child is _____ years of age.

7. What is the highest level of education you have completed?

   ___ 1. Standard IX or less.
   ___ 2. Matriculation.
   ___ 3. Some University or Technikon.
   ___ 4. Undergraduate degree or Technikon Diploma.
   ___ 5. Some postgraduate study.
   ___ 6. Postgraduate degree.

8. What is your level in the organisation hierarchy?

__ 1. Professional staff (eg. Programmer, Analyst, Consultant)
__ 2. First level supervisor
__ 3. Middle management (Department Head).
__ 4. Strategic management (Executive).
__ 6. Owner/Partner.
__ 5. Other (specify).

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

10. For how many years have you been employed in the MIS/DP field (to the nearest year)?
____ Years

For how many years have you been employed in your current job?
____ Years

11. Annual Salary in current position:
___ 1. Below R60,000.
___ 2. 60,000 - 79,999.
___ 3. 80,000 - 99,999.
___ 4. 100,000 - 119,999.
___ 5. 120,000 - 139,999.
___ 6. 139,000 or Above.

13. Current job title:

Thank you very much for your cooperation. Please check that you have answered all questions. If you would like to know your own scores fill in your name and address below.

NAME : _____

ADDRESS : _____

_____

_____

_____

If you have any comments you would like to make, please feel free to write them below. Please mail the completed survey back to the researchers in the enclosed envelope as soon as possible.

Appendix B

Request for Permission to use Intrapreneurial Assessment Instrument

Meredith,Guy,GR

From: 00RVMONTAGNO@bsuvc.bsu.edu
To: Meredith,Guy,GR
Subject: Re: Intrapreneurship Assessment Instrume
Date: 05 - Dec - 95 5:16PM

Guy,

We discussed the possibility of releasing the instrument to you but have decided at this point that it would not be appropriate. The instrument is currently under revision and the version that is referred to in the SMJ article has been changed considerably. We anticipate that the new version will be published sometime soon and if you are still interested contact us then.

Best of Luck

Ray Montagno

Appendix C

Request for Permission to use Performance Assessment Instrument

Meredith,Guy,GR

From: Jonathan_Trower@BAYLOR.EDU
To: Meredith,Guy,GR
Subject: Re: Request for Performance Measurement
Date: 11 - Oct - 95 1:04PM

Guy,

I'd be happy to help you out with the performance instrument I used in my dissertation. The original source of the instrument is David Goldstein, "An Updated Measure of Supervisor-Rated Job Performance for Programmer/Analysts" in the proceedings of the 1988 SIGCPR conference, pp. 148-152. The actual instrument was not included in the proceedings paper, so Prof. Goldstein sent me a copy. I added one extra possible response for each item (does not apply) because in the context of my research, it was possible that a particular item would not apply to one or more of the individuals in the project teams I was studying. When I used the study in my dissertation, I obtained a reliability of .92 for the entire scale, but I was unable to replicate Goldstein's factor structure. I don't know if that would be a problem for you or not; it wasn't for me.

Here's the instrument as I used it. Each item was rated on a 1 to 7 scale labeled much below average, below average, somewhat below average, average, somewhat above average, above average, and much above average:

Please rate your own performance during this time period. Compare your performance with that of other people who do the same kind of work on this or any other project team over the time period since the last meeting. Remember that these ratings are for research purposes only, and that they will have no impact whatsoever on your job.

Technical skill

Creativity

Skill in getting along with people

Effort put forth on the job

Oral communication skill

Leadership ability

Quality of work produced

Quantity of work produced

Knowledge of client or user business

Ability to organize work

Willingness to learn new technologies

Level of dedication to the job

Providing feedback to management

Attitude toward the job

Written communication skill

Understanding customer's business objectives

Ability to work with minimal supervision

Overall job performance

Good luck with your project. Let me know if I can do anything
else for you.

Jonathan Trower

On Tue, 10 Oct 1995 09:13 +0000 meredigr@oza.bp.com wrote:

> From: meredigr@oza.bp.com> Date: Tue, 10 Oct 1995 09:13 +0000
> Subject: Request for Performance Measurement Inst
> To: Jonathan_Trower@baylor.edu
>
> Microsoft Mail v3.0 IPM.Microsoft Mail.Note
> From: Meredith,Guy,GR
> To: 'Jonathan_Trower@BAYLOR.edu'
> Subject: Request for Performance Measurement Instrument
> Date: 1995-10-10 08:12
> Priority:
> Message ID: 3492A2F9
> Parent message ID: E27B44CB
> Conversation ID: E27B44CB
>
>

>
> Dear Professor Trower
>
> I am a part-time student at the University of Cape Town, South
> Africa, currently studying towards an M.Com in Information
> Systems (IS). For my dissertation, I intend to further research
> I began in my Honours year, which was based on a paper entitled
> "The Career Orientations of IS Professionals", by Professor
> Magid > Igbaria, published in MIS Quarterly of June 1991.
>
> I intend to examine the career orientations of IS professionals,
> in order to establish whether individuals that occupy job
> positions congruent with their orientations show greater job and
> career satisfaction, more commitment to their organisations and
> less inclination to leave their organisations than do their
> counterparts who experience a mismatch.
>
> At the same time, I wish to investigate whether a mismatch
> between career orientation and job setting influences an
> individual's performance in the job. To this end, I am seeking existing
> instruments which may enable me to measure such performance. In a
> paper written by yourself and Professor Niederman ("Industry
> Influence on IS Personnel and Roles"), you describe a "standard
> performance instrument" utilized in your Ph.D Thesis at the
> University of Minnesota in 1992. In an earlier paper (by yourself
> and D.W. Straub), bearing the same title as your Ph.D and which
> describes your intended research, you state that "task level

> performance (will) be assessed through self-reports".
>
> I am contacting you in the hope that you will be willing to allow me to
> use the instrument mentioned in the above papers. I would be most
> grateful, as I believe the instrument would greatly assist me in my
> intended research.
>
> Please would you let me know whether you are willing to assist
> me. Should you require any further information regarding the
> intended research, or confirmation from my supervisor (Professor
> Derek Smith) of the information I have provided in this message, I
> will be more than happy to provide this to you.
>
> I may be contacted on the email address from which this message
> originates, or, alternatively, on Guyr@iaccess.za.
>
> Thank you
>
> Sincerely
>
> Guy Meredith
>

****
Jonathan Trower E-Mail: Jonathan_Trower@Baylor.EDU
Asst. Professor of IS WWW: http://hsb.baylor.edu/html/trower
Baylor University voice: (817) 755-1111 ext. 4754#
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Waco, TX 76798-8005
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