

https://dspace.org/

The influence of interpersonal skills of IS leaders on IS employee job satisfaction

Aboobaker, Yusuf

2018

https://hdl.handle.net/10539/26715

Aboobaker, Mohammed Yusuf, (2018) The influence of interpersonal skills of IS leaders on IS employee job satisfaction, University of the Witwatersrand, Johannesburg, https://hdl.handle.net/10539/26715

Downloaded from a DSpace repository. https://dspace.org/

SCHOOL OF ECONOMIC & BUSINESS SCIENCES

Research Report

The influence of interpersonal skills of IS leaders on IS employee job satisfaction

Submitted by:

Yusuf Aboobaker

310034

Supervisor:

Jason F. Cohen

Date:2018-02-28

ABSTRACT

Information system/technology (IS/T) leaders require varied skills to drive performance and satisfaction of IS/T employees within their departments. One way posited to increase job satisfaction of employees is by changing the characteristics of the workplace about which employees form attitudes. One such set of characteristics on which attitudes are formed is the interpersonal skills of the supervisor themselves. Generally, IS/T leaders have often been criticised as being poor communicators often with stronger technical than social skills. More research into the importance of interpersonal skills among IS/T leaders is needed. But what exactly are the interpersonal skills of supervisors and can they really affect the job satisfaction of others?

The purpose of this research was to answer the above question by specifically preparing an inventory of interpersonal skills and draw on past theories to develop and subsequently test a model of the relationship between employee perceptions of their immediate IS/T leader's interpersonal skills and their job satisfaction. Specifically, the study hypothesised that the interpersonal skills of IS/T supervisors influences the job satisfaction of the IS/T employee supervised in the presence of commonly known predicators of job satisfaction.

The study employed a deductive, relational design. Data was collected using a survey methodology and employed a structured questionnaire instrument. The sample consisted of 82 IS/T departmental employees from South African organisations in which a permanent IS/T leader heads up the department. Bivariate analysis was performed, and measures were tested for reliability and validity prior to testing the hypothesised model. The model was tested using regression techniques. Results show that interpersonal skill of IS/T leaders significantly influence job satisfaction of IS/T employees, albeit only the sub elements of peer leadership skills and relationship building skills of supervisor's influence employee job satisfaction. The combined effect of interpersonal skills over commonly known predicators is not significant, however peer leadership skills is.

The originality and contribution of this research to IS/T literature takes the form of contribution by espousing the descriptions of interpersonal skills and furthering the

understanding of what role perceived interpersonal skills of supervisors can play in creating an effective IS/T department through satisfied employees.

The practical implications of the study may influence educators, students and recruiters to respectively understand, teach, learn and test for interpersonal skills. IS/T supervisors may also work on elements of those skills found lacking in their behavioural repertoire.

DECLARATION

I, Yusuf Aboobaker (Student number: 310034) am a student registered for master's in commerce information systems by coursework in the year 2017. I hereby declare the following:

I am aware that plagiarism (the use of someone else's work without their permission and/or without acknowledging the original source) is wrong.

I confirm that ALL the work submitted for project for the above course is unaided work except where we have explicitly indicated otherwise.

I have followed the required conventions in referencing the thoughts and ideas of others.

I understand that the University of the Witwatersrand may take disciplinary action against us if there is a belief that this is not my unaided work or that I have failed to acknowledge the source of the ideas or words in my writing.

Signature: 

Source & adapted from:
http://libguides.wits.ac.za/plagiarism_citation_and_referencing/declarationform

ACKNOWLEDGMENTS

I wish to thank the participants and the companies/CIOs that helped me collect data, the instrument pre-testers and pilot test participants.

To my supervisor, Jason, the invaluable support I will never forget and thank you for assisting me though this journey.

To my family, always supportive, pushing me along to completion.

Thank you all.

Table of Contents

ABSTRACT ..... **II**

DECLARATION ..... **IV**

ACKNOWLEDGMENTS ..... **V**

LIST OF TABLES ..... **X**

LIST OF FIGURES ..... **XIV**

LIST OF GRAPHS ..... **XIV**

1 INTRODUCTION **1**

1.1 BACKGROUND 1
1.2 PROBLEM STATEMENT 3
1.3 PURPOSE OF THE STUDY 3
1.4 INTENDED CONTRIBUTION OF THE STUDY 5
1.4.1 CONTRIBUTION TO THEORY 5
1.4.2 CONTRIBUTION TO PRACTICE 5
1.5 DELIMITATIONS OF THE STUDY 6
1.6 STRUCTURE OF THE RESEARCH REPORT 6

2 LITERATURE REVIEW **8**

2.1 FOLLOWER PERCEPTIONS OF LEADERSHIP 8
2.2 INTERPERSONAL SKILLS 9
2.2.1 PSYCHOLOGY, SOCIOLOGY & COMMUNICATIONS 9
2.2.2 ORGANISATIONAL, LEADERSHIP & MANAGEMENT 11
2.2.3 IS MANAGEMENT 13
2.3 CONCEPTUALISATION OF INTERPERSONAL SKILLS 15
2.4 JOB SATISFACTION 18
2.4.1 STUDIES ON JOB SATISFACTION AND SUPERVISION IN IS/T LITERATURE 20
2.4.2 STUDIES ON JOB SATISFACTION IN SOUTH AFRICA 26
2.5 CONCEPTUALISING JOB SATISFACTION FOR THE STUDY 28
2.6 CHAPTER CONCLUSION 30

3 THEORETICAL BACKGROUND & RESEARCH MODEL 31

3.1 THEORETICAL BACKGROUND 31
3.1.1 AFFECTIVE EVENTS THEORY (AET) 31
3.2 THE RESEARCH MODEL 32
3.2.1 INTERPERSONAL COMMUNICATION SKILLS (IPC) 33
3.2.2 RELATIONSHIP BUILDING SKILLS (RBS) 34
3.2.3 PEER LEADERSHIP SKILLS (PLS) 35
3.2.4 SOCIAL AND BEHAVIOURAL AGILITY SKILLS (SBS): 36
3.2.5 CONTROL VARIABLES 37
3.2.6 CHAPTER CONCLUSION 39

4 RESEARCH METHODOLOGY 40

4.1 RESEARCH PARADIGMS AND APPROACHES 40
4.1.1 POSITIVISM 41
4.1.2 INTERPRETIVISM 42
4.2 RESEARCH PARADIGM 43
4.3 RESEARCH DESIGNS 44
4.3.1 EXPLORATORY RESEARCH 44
4.3.2 DESCRIPTIVE RESEARCH 44
4.3.3 RELATIONAL RESEARCH 45
4.3.4 EXPERIMENTAL RESEARCH 45
4.3.5 EXPLANATORY RESEARCH 45
4.4 THE RESEARCH DESIGN AND METHODOLOGY 46
4.5 DATA COLLECTION METHODS 47
4.5.1 OPERATIONALISATION 47
4.5.2 INSTRUMENT AND ITS MEASUREMENT 49
4.5.3 STRATEGY FOR PRE-TEST AND PILOT 50
4.5.4 SAMPLING AND RESPONDENTS 51
4.5.5 QUESTIONNAIRE ADMINISTRATION 54
4.6 DATA ANALYSIS METHODS 56
4.7 ETHICAL CONSIDERATIONS 57
4.8 LIMITATIONS, INTERNAL AND EXTERNAL VALIDITY 58
4.8.1 LIMITATIONS 58
4.8.2 RESEARCH ASSUMPTIONS 59
4.8.3 INTERNAL VALIDITY 59
4.8.4 EXTERNAL VALIDITY 60
4.8.5 RELIABILITY 60
4.8.6 CHAPTER CONCLUSION 61

5 RESULTS 62

5.1 CODING, DATA CLEANING, MISSING VALUES AND OUTLIERS 62
5.1.1 CODING 62
5.1.2 DATA CLEANING AND MISSING VALUE ANALYSIS 63
5.1.3 TRANSFORMATION 68
5.1.4 OUTLIERS 70

5.2 RESPONSE PROFILE 70
5.2.1 DEMOGRAPHIC PROFILE OF PARTICIPANTS 70
5.3 VALIDITY AND RELIABILITY 73
5.3.1 IPS TESTS FOR CONVERGENT VALIDITY 73
5.3.2 IPS TESTS FOR DISCRIMINANT VALIDITY 78
5.3.3 IPS TESTS OF RELIABILITY 83
5.3.4 COMPLEXITY AS A CONTROL 84
5.3.5 JSS SUPERVISION AND PAY AS CONTROLS 87
5.3.6 OTHER SINGLE-ITEM JSS FACETS AS CONTROLS 90
5.3.7 JIG 92
5.4 UNIVARIATE ANALYSIS 93
5.4.1 PREPARATION 93
5.4.2 RESULTS 93
5.5 BIVARIATE ANALYSIS 98
5.6 MULTIPLE LINEAR REGRESSION 101
5.6.1 PREPARATION 102
5.6.2 TESTING OF MULTIPLE REGRESSION ASSUMPTIONS 103
5.6.3 REGRESSION MODELS RESULTS 104
5.7 CHAPTER CONCLUSION 110

6 DISCUSSION 111

6.1 INTRODUCTION 111
6.2 THE LINK BETWEEN INTERPERSONAL SKILLS AND JOB SATISFACTION 111
6.3 OTHER DETERMINANTS OF JOB SATISFACTION 117
6.4 DISCUSSION OF EXPLORATORY FINDINGS 118
6.4.1 AGE 118
6.4.2 RESULTS OF THE STEP-WISE ANALYSIS 119
6.4.3 EXPLORING THE MECHANISM THROUGH WHICH INTERPERSONAL SKILLS IMPACT JOB SATISFACTION 122
6.5 CHAPTER CONCLUSION 123

7 CONCLUSIONS 124

7.1 OVERVIEW OF STUDY 124
7.2 CONTRIBUTION TO THEORY 124
7.3 CONTRIBUTION TO PRACTICE 126
7.4 LIMITATIONS AND THREATS TO INTERNAL AND EXTERNAL VALIDITY 126
7.5 RECOMMENDATIONS FOR FUTURE RESEARCH 128
7.6 CONCLUSION 129

8 REFERENCES 130

9 APPENDICES 145

9.1 ARTICLES REVIEWED FOR INTERPERSONAL SKILLS WITH LEADERSHIP & MANAGEMENT DOMAIN 145
9.2 ARTICLES REVIEWED FOR INTERPERSONAL SKILLS WITH IS MANAGEMENT DOMAIN 146
9.3 ADOPTED INTERPERSONAL SKILLS TAXONOMY 147
9.4 JOB SATISFACTION QUESTIONNAIRE 150
9.4.1 JIG 150
9.5 INTERPERSONAL SKILLS OF LEADER'S QUESTIONNAIRE 150
9.5.1 INTERPERSONAL COMMUNICATION SKILLS 151
9.5.2 RELATIONSHIP BUILDING SKILLS 151
9.5.3 PEER LEADERSHIP SKILLS 152
9.5.4 SOCIAL AND BEHAVIOURAL AGILITY SKILLS 152
9.6 DEMOGRAPHICS QUESTIONNAIRE 152
9.7 CONTROLS QUESTIONNAIRE 154
9.8 OUTCOMES OF PRE-TEST AND PILOT 155
9.9 CORRESPONDENCE TO CIO 157
9.10 CORRESPONDENCE TO EMPLOYEE 158
9.11 MULTIPLE REGRESSION ASSUMPTION TESTING 159
9.11.1 COLLINEARITY 159
9.11.2 LINEAR RELATIONSHIP 161
9.11.3 HETEROSCEDASTICITY 168
9.11.4 NORMALITY OF RESIDUAL DISTRIBUTION 169
9.11.5 NO INFLUENTIAL CASES TO INTRODUCE BIAS 170
9.12 MANOVA TEST RESULTS 171

LIST OF TABLES

Table 1 – Listing of IS/T context job satisfaction studies reviewed.....24

Table 2 - Job satisfaction studies conducted in South Africa 27

Table 3 - Control variables 38

Table 4 - Survey strengths and weaknesses.....46

Table 5 - Summary of Operationalisation 48

Table 6 - Coding results 63

Table 7 - Deletion of incomplete cases 65

Table 8 - Missing items: IPS and controls 66

Table 9 - Missing Items: Demographics 67

Table 10 - Missing items: nominal scales.....68

Table 11 - Demographic profile: Age.....70

Table 12 - Demographic profile: Gender 70

Table 13 - Demographic profile: Educational level 71

Table 14 - Demographic profile: sector 71

Table 15 - Demographic profile: role 72

Table 16 - Demographic profile: CIO relations 72

Table 17 – Convergence validity results: IPC – variance explanation.....74

Table 18 - Convergence validity results: IPC – Component matrix 75

Table 19 Convergence validity results: RBS – variance explanation 75

Table 20 - Convergence validity results: IPC – component matrix 76

Table 21 - Convergence validity results: PLS – variance explanation 76

Table 22 - Convergence validity results: PLS – component matrix 77

Table 23 - Convergence validity results: SBS – variance explanation 77

Table 24 - Convergence validity results: SBA – component matrix 78

Table 25 - Summary of convergence validity - IPS 78

Table 26 - Discriminate validity – IPC & RBS 79

Table 27 - Discriminate validity – IPC & PLS 80

Table 28 - Discriminate validity – IPC & SBS 80

Table 29 - Discriminant validity – PLS & RBS 81

Table 30 - Discriminant validity – SBS & RBS 81

Table 31 - Discriminant validity – SBS & PLS 82

Table 32 - Summary of discriminant tests - IPS 82

Table 33 - Summary of reliability tests - IPS 83

Table 34 - Convergence validity for complexity: variance explanation 84

Table 35 - Convergence validity for complexity: component matrix 85

Table 36 - Discriminant validity for complexity 85

Table 37 - Reliability test complexity: decision making 86

Table 38 - Reliability test complexity: tasks 87

Table 39 - Convergence validity: JSS supervision – variance explanation 87

Table 40 - Convergence validity: JSS supervision – component matrix 88

Table 41 - Convergence validity: JSS Pay – variance explanation 88

Table 42 - Convergence validity: JSS Pay – component matrix 89

Table 43 - Discriminate validity: JSS supervision and JSS Pay 89

Table 44 - Reliability test: JSS Supervision 90

Table 45 - Reliability test: JSS Pay 90

Table 46 - Univariate results: JIG 94

Table 47 - Univariate results: JSS & complexity 95

Table 48 - Univariate results: IPS 97

Table 49 - Correlation Matrix 99

Table 50 - Regression model summary: models 1,2 & 3 104

Table 51 - Regression results: Coefficients for models 1,2 & 3 106

Table 52 - Hypotheses results 107

Table 53 - Regression results: model summary - Stepwise 108

Table 54 - Regression results: Coefficients - Stepwise 108

Table 55 - Regression results: Model summary - IPS Only 109

Table 56 - Regression results: coefficients - IPS only 109

Table 57 - Question dropped after pilot 156

Table 58 - Collinearity statistics: model 2 160

Table 59 - Collinearity statistics: model 3 161

Table 60 - Linear relationships 162

Table 61 - MANOVA summary 171

Table 62 - Univariate ANOVAs 172

LIST OF FIGURES

Figure 1 - Chosen Job satisfaction instrument 29

Figure 2 - Schematic of research model.....33

Figure 3 - Hypothetico-deductive model.....40

Figure 4 - Sampling process 54

Figure 5 - Schematic results of research model 101

LIST OF GRAPHS

Graph 1 – Co-worker histogram 96

Graph 2 – JSS supervision histogram 96

Graph 3 - Average job satisfaction score by age.....119

Graph 4 - Job satisfaction scores, Nature of work by role 120

Graph 5 – Job satisfaction, complexity by role 122

Graph 6 - Residuals plot: model 2 168

Graph 7 - Residuals plot: model 3 169

Graph 8 - Normality plots: model 2.....170

Graph 9 - Normality plots: model 3.....170

1 INTRODUCTION

1.1 Background

Employee satisfaction is important to supervisors and leaders. Past work has shown that there is a positive relationship between an employee's job satisfaction and their job performance (Judge, Thoresen, Bono & Patton, 2001). Organisations with more satisfied employees are also shown to be more effective than organisations with fewer satisfied employees (Ostroff, 1992). Leaders and supervisors, who are generally rewarded for business performance, should thus pay close attention to employee job satisfaction.

More formally, job satisfaction can be defined as an attitude of an employee of a firm and can be defined as "a positive feeling about one's job resulting from an evaluation of its characteristics" (Robbins & Judge 2007, p. 79). The study of job satisfaction has a long history in management literature and has been refined over the years (Zhu, 2013). The most common approach to measuring job satisfaction is the facets approach as used in the Job Descriptive Index (JDI)[1] , the Minnesota Satisfaction Questionnaire (MSQ)[2] and The Job Satisfaction Survey (JSS) [3] (van Saane, Sluiter, Verbeek, Frings-Dresen, 2003; Al-Rubaish, Rahim, Abumadini & Wosornu, 2011).

One of the facets of all these job satisfaction tools is an assessment of employee attitude towards direct supervision. The inclusion of supervision implies that overall job satisfaction is partly determined by how employees feel towards their direct supervisors or leaders. In other words, job satisfaction can change if the attitude toward to the supervisor or leader changes.

Managerial studies on supervision highlight that the success of a supervisor can often be attributed to their interpersonal skills (Robbins & Judge, 2007; Newstrom & Scannell,

[1] Developed by Smith, Kendallt & Hulin in 1969 and updated in 2009 (BGSU 2009)
[2] Developed in 1967 by Weiss, Dawis, England & Lofquist (1967) and updated in 1977
[3] Developed in 1997 by Paul.E. Spector of Florida state university

2006). Interpersonal skill in the broadest sense, is defined as the ability of a person to interact effectively with other people (Spitzberg & Cupach, 1989). Because a great part of a leader's role involves interacting with their followers, interpersonal skills may have a bearing in fulfilling a firm's mission. Thus, the interpersonal skills that a leader demonstrates may help followers to evaluate, form and change attitudes about their leadership and supervision (Lee, Martin, Thomas, Guillaume & Maio, 2015).

Specifically, the interpersonal skills (IPS) of supervisors and leaders as perceived by followers may affect the job satisfaction of the follower.

In the IS/T context, leadership of the IS/T function has taken importance ever since computers began to play a role in the organisation. Such leadership has however evolved from primarily back-office and technology focused, to a more strategic and business-focused role (Ward & Peppard, 2002; Weiss & Adams, 2010). Today the leader is frequently called the Chief Information Officer (CIO) and is primarily responsible for more than just the technology management within their firms, they must also consider benefits realisation and overall contribution of IS/T efforts to business performance outcomes (Chun & Mooney, 2009). This requires that CIOs, and others playing leadership roles in the IS/T function, are able to manage a varied set of technical and non-technical stakeholders involved with the IS/T department. However, CIOs and other IS/T professionals have often been criticised as being poor communicators and socially inept (Gonzalez & McKeen, 2013), with consequences for their relationships with peers (Chakrabarty & Whitten, 2011) and their followers (Anderson & Ball, 2015). The IS/T context is thus an important context within which to explore the dynamics of interpersonal skills and how leaders can impact on the job satisfaction of their followers. This will become increasingly more important in light of increased spend on ICT projects and the growth of the IT workforce (Florentine, 2016), along with the complex and dynamic nature of work that the IT employee faces (Pouliakas & Russo, 2015).

There is however a lack of knowledge within the IS/T leadership domain with regards to the constituent factors of interpersonal skills, and the relative importance of interpersonal

skills over other supervisory characteristics as perceived by IS/T employees to their job satisfaction.

1.2 Problem statement

Information system leaders, managers and supervisors require varied skills. Along with business skills (Bassellier & Benbasat, 2004), cognitive skills and strategic skills (Mumford, Campion & Morgeson, 2007), interpersonal skills have been recognized as important to IS/T leaders (Cohen & Dennis, 2010) and supervisors (Newstrom & Scannell, 2006). Yet within the body of knowledge of IS/T management there is a gap in the conceptualisation of interpersonal skills and its underlying dimensions. This knowledge gap presents itself as a problem as it limits the ability to leverage interpersonal skills to result in an advantageous outcome. Despite past works examining the importance of the interpersonal skills of an IS/T leader to outcomes such as the contribution of the IS/T department to the firm's success (Cohen & Dennis, 2010) and the actual effectiveness of the IS/T leader (Smaltz, Sambamurthy & Agarwal, 2006), there is less understanding on how interpersonal skills of a supervisor impacts on the employees. In practice, IS/T managers do not have a clear understanding of interpersonal skills and therefore do not have an opportunity to hone these skills whereby they can improve and ultimately affect business outcomes through themselves and indirectly through their subordinates' job performance.

Therefore, the inadequate clarity in literature surrounding the dimensions of interpersonal skills for IS/T leaders and supervisors is a research problem in need of investigation. Furthermore, the field's lack of understanding as to whether interpersonal skills of leaders can influence the job satisfaction of their followers is a second research problem that is in need of investigation.

1.3 Purpose of the study

The purpose of this research is to enhance understanding of interpersonal skills in the context of information systems workplace and examine its influence on the job satisfaction outcome of employees. Specifically, the work will draw on literature to solidify and

operationalise the concept of interpersonal skills appropriate to the study of IS/T leaders and supervisors. The study will develop a model hypothesising the impact of employees' perceptions of IS/T leaders' interpersonal skills on job satisfaction. Leaders are defined as the immediate supervisor to which an IS employee reports (Hetland, Sandal & Johnsen, 2007) and could be an IS manager, CIO or head of IT or other applicable title depending on the job position of the employee follower. The hypothesised model will be tested using data collected from a representative sample of IS/T employees within South African firms using a survey methodology and quantitative methods.

The more granular objectives of this study are:

1. To review the literature and current thinking on interpersonal skills within the domains of psychology, sociology & communication studies, organisational, leadership and management studies and then within the domain of IS/T management. Second, to review job satisfaction within organisational studies with specific reference to IS/T management.

2. To develop a hypothesized model linking the perceptions of the IS/T supervisor's interpersonal skills to employee job satisfaction.

3. To develop a questionnaire pertaining to an IS/T supervisor's interpersonal skills. Utilise an existing job satisfaction tool to measure follower job satisfaction.

4. To collect data from a sample of employees that work at various firms in IS/T departments under direct supervision from a supervisor, manager or leader.

5. To test the reliability, convergent and discriminant validity of the interpersonal skills construct.

6. To perform statistical analysis on the collected data, using correlation and regression techniques to draw inferences about the relationship between interpersonal skills and job satisfaction whilst controlling for other potential determinants of job satisfaction.

1.4 Intended contribution of the study

1.4.1 *Contribution to theory*

There is already well-documented and empirically sound research demonstrating that an improvement in job satisfaction increases job performance and business outcomes (e.g. Harter, Schmidt & Hayes, 2002).

The importance of this research study, therefore, is to enhance understanding of job satisfaction by illuminating if attitudes of followers pertaining to leaders' interpersonal skills influences job satisfaction. This study thus extends the position of the implicit leadership theorists (Epitropaki, Sy, Martin, Tram-Quon & Topakas, 2013) by examining the extent to which followers' schemas of their leadership may affect their own job satisfaction. This study draws on the current thinking from the schools of sociology, communications, psychology and management & leadership regarding interpersonal skills to understand and operationalise the concept of interpersonal skills. These efforts will also contribute dimensions of interpersonal skills and related scales crafted that can be used by future research particularly in the IS/T context.

Moreover, the theoretical contribution is to provide future work with a basis for understanding and measuring job satisfaction in the IS context.

1.4.2 *Contribution to practice*

This study also makes a number of contributions to practice. First, it will enable recruiters to better understand and select for interpersonal skills in IS/T leaders, and even beyond the IS/T context. Second, the results will draw the attention of existing and aspirant IS/T leaders and supervisors to the importance of interpersonal skills. By demonstrating a link between interpersonal skills and employee satisfaction, IS/T leaders and supervisors may be more motivated to seek out training and literature so that they may become better skilled and understand the role of interpersonal skills relative to other skills such as business and strategic skills. Thirdly, the results may bring to the attention of educators of

IS/T leaders, managers and supervisors what sort of skills need to be taught and emphasised in the syllabus. Interpersonal skills are likely to develop from more project-based and team-based learning opportunities, an emphasis on presentations and real-world project settings and any other setting which includes high levels of interaction with others. These are often under-emphasised in a context that values inter-alia technology skills such as programming and software design.

1.5 Delimitations of the study

The delimitations of this study are that respondents are from South Africa working for medium to large organizations across market sectors, and that have a permanent IS/T function. The timing and context of the responses is in a period in which high unemployment rates prevail in the macro context but in the IS/T context shortages in supply are seen. The chosen design of relational research further delimits the study as it is not possible to probe 'why' related responses which may help to uncover any factors not *a priori* hypothesised in the research model or to understand the personal experiences of IS/T employees in relation to leaders' interpersonal skills.

1.6 Structure of the Research Report

Chapter 1 has presented an introduction into the study that has been undertaken, it high-lights the problem and the purpose of the study. The purpose of the study is to examine the importance of interpersonal skills to IS/T leaders by linking these skills to IS/T employee job satisfaction.

Chapter 2 will present existing background literature on leadership, interpersonal skills and employee job satisfaction. The background literature draws from the psychology, sociology, management and IS/T discourses.

Chapter 3 presents the theoretical background and development of the research model. In this chapter, four dimensions of interpersonal skills are introduced. Hypotheses are

developed for each of the four dimensions to job satisfaction. Control variables are also discussed.

Chapter 4 will outline the research methodology used in this research report. It describes the construction of the survey instrument, the sampling approach, and the quantitative methods of analysis that will be used.

Chapter 5 will highlight the results of the testing performed on the data collected for the research model.

Chapter 6 discusses the results with reference to the literature and chapter 7 concludes the research with recommendations to both future research and to practice.

2 LITERATURE REVIEW

This chapter reviews past literature relevant to this study. The review has drawn on three areas of literature, namely, past work on follower perceptions of leaders, literature on the concept of interpersonal skills, and past studies on job satisfaction. Furthermore, the chapter also considers past empirical studies on job satisfaction in relation to IS/T management literature and in relation to the South African context.

2.1 Follower perceptions of leadership

Followers in an organisational setting are employees who actively follow organisational leaders and supervisors (Riggio, Chaleff, & Lipman-Blumen, 2008). Within management and organisational studies, perceptions of followers have played a crucial part in determining what a good leader is and will be (Uhl-Bien, Riggio, Lowe & Carsten, 2014). Lee *et al*. (2015) argue that the vast majority of leader-centric research is based on followers' perceptions. This is since sociologist Max Weber in 1947 studied the charismatic leadership style (Riggio *et al.,* 2008).

Despite most leader-centric studies being based on follower perceptions, followers as a subject themselves are less common (Oc & Bashshur 2013; Uhl-Bien *et al*., 2013). There is however a growing body of work on the concept of "followership".

Followership has been defined as "*the study of the nature and impact of followers and following in the leadership process*" (Uhl-Bien *et al*., 2013 p. 96). The relevance of followership literature to this study is the interplay between follower and leader is acknowledged. An example of this interplay can be seen in Bligh, Kohles, Pearce, Justin & Stovall (2007). These researchers empirically found that follower attitudes towards an aversive leadership style affects follower job dissatisfaction and follower-efficacy. Another example of this interplay at work is Lorinkova, Pearsall and Sims (2013), they found that when followers perceive leaders to have empowering leadership style, one that hands the baton of authority and responsibility to followers, then greater performance in followers is observed.

Thus, this line of research suggests that the way followers perceive the characteristics and skills of their leaders is important to their job satisfaction and performance. Some of these characteristics and skills as mentioned in the field of followership include sociability–extraversion, dominance–assertiveness, energy levels (Uhl-Bien *et al.,* 2013), persuasion skills (Oc & Bashshur, 2013), and ethical conduct (Tee, Paulson & Ashkanasy, 2013). Among these, interpersonal skills may have the potential to exert the strongest effects on a follower.

The concept of interpersonal skills is discussed in greater detail next.

2.2 Interpersonal skills

The concept of interpersonal skills has taken many guises over the years within academia. For example, an initial search has found the use of terms as social intelligence (Thorndike, 1920), social competence (Spitzberg & Cupach, 1989), people skills and soft skills, communication skills (Robles, 2012) and emotional intelligence (Riggio & Lee, 2007), when referring to interpersonal skills.

For this reason, three discourse areas were researched so as to understand the contributions and shortcomings of the literature regarding interpersonal skills. The first area in which background literature was sought, was within the broad area of psychology, sociology and communications. Secondly, within the domain of organisational studies particularly leadership & management, and lastly in the subdomain of IS management.

2.2.1 *Psychology, sociology & communications*

a. *Psychology*

The concept of interpersonal skills as a personal trait was probably first recognized in the psychology & communication literature by Thorndike in 1920. Thorndike tries to describe the different ‘intelligences’ man possesses so that it may be understood, controlled and directed. Subsequently, interpersonal skills have broadly been defined as the ability of a person to interact effectively with other people (Spitzberg & Cupach, 1989). Greene &

Burleson (2003) posit that interpersonal skills should be considered by using the following constructs. First, ‘Knowledge’ – the information that individuals need to communicate in ways perceived as competent, such as what one is expected to see, how others are likely to feel and behave. Second, ‘Motivation’ – the individuals desire to appear competent because of the goal they want to achieve. Thirdly, ‘Skill’ – an individual’s ability to carry out the processes to promote perceptions of competence.

Pickett-Rathjen & Foreyt (1980) stress that the environment in which one finds themselves determines what interpersonal skills should be used. They include the ability to exert influence, build relationships, extend inclusion, build trust, take turns to listen, exercise self-control, self-management and to manage conflict among other behaviours such as eye-contact and hand gestures.

b. ***Sociology***

Parallel to the progress of the psychology field, sociologists coined the concept of social intelligence (SQ) which aligns well to the concept interpersonal skills. Ford & Tisak (1983) define social intelligence as ones’ ability to interact to accomplish relevant objectives in a specific social setting. Dong, Koper, Collaco (2008) and Goleman (2006) unpack social intelligence determinants into two sub categories: Social awareness and Social facility. Goleman (2006) claims that in order to understand social intelligence one must first understand these sub categories.

Social awareness is the ability to sense another’s inner state and understand their feelings. It includes the ability to sense nonverbal communication, listening attentively, gauging intentions and to have social and cultural understanding (Goleman,2006, p. 84).

Social facility is the ability to interact with others effectively which includes non-verbal communication, good presentation, consideration of the parties involved, and the processes needed to influence the outcome of the interaction (Goleman, 2006, p. 84).

c. ***Communications***

Communication theorists focus on the relationship as their unit analysis, they specifically draw out the ability to manage conflict as a key interpersonal skill. They remind us that conflict should not be construed only as a sign of problems but preferably as a sign of opposing tendencies or incompatible forces. Given such, the skill to manage conflict must therefore exhibit creativity and flexibility which promotes dialogue. Writers from this school also suggest that when parties within relationships have power discrepancies between them, it is important to allow parties with less power to voice their dissent without the fear of reprisal and have the opportunity to negotiate their position. Consensus building is seen as a way of not exerting personal control over an interaction but to extract criticism while preserving relationships (Greene & Burleson, 2008).

Taken together the psychology, communications and sociology literature provide useful foundational themes on interpersonal skills. Specifically, they introduce ideas about managing conflict and interactions of individuals with different power bases, along with the importance of good communication and social etiquette within interactions. One should keep in mind that the majority of writing within this domain is to provide remedial guidance on severe cases of dysfunction, however a key takeaway is that the environment as Pickett-Rathjen & Foreyt (1980) describe determines what skills should be possessed in order to evaluate competence.

The next section examines interpersonal skills in the environment of the organisational setting. The literature examines how interpersonal skills has been conceptualised within the organisational setting with a specific focus on leadership and management contributions.

2.2.2 *Organisational, leadership & management*

Perhaps the earliest and still the most popular writing on interpersonal skills within the workplace setting is Dale Carnegie's 'How to Win Friends and Influence People', first published in 1937. Here the author introduces the importance of interpersonal skills in management and supervision within the organisational setting and explains how it leads

to acquiring more customers and a better performing business. Carnegie (1937) further provides outlines and principles for good interaction. He groups them into four categories. First is ‘basic skills’, which includes techniques such as being honest and how to criticise and arouse interest based on the wants of the other party. Second, ‘how to make people like you’, then ‘influencing’ and finally ‘leading change’. These early writings of Carnegie laid the foundations for interpersonal skills needed in the organisational setting.

Since Carnegie (1937) there have been numerous studies trying to identify key interpersonal skills for leaders and supervisors. Appendix 9.1 summarises the articles reviewed for this section. The overall result of the review reveals that the numerous studies conceptualised interpersonal skills in many ways. Below are a few selected works based on relevance, since 2000, which show the progression in thinking.

Rychen & Salganik (2001) performed literature review work for the OECD in which the authors synthesised and condensed interpersonal competencies in the following categories: the ability to relate well to others, the ability to cooperate and the ability to manage and resolve conflict.

Kim, Kim, Yoo, Yoo (2007) built on this previous work and used the identified behavioural indicators of interpersonal skills from previous works and tried to investigate which are the most important. Their work identified nineteen individual interpersonal skills and grouped them into proactive relationship, receptive communication, client orientation and expressive communication categories.

Another influential paper reviewed, was a systematic literature review, conducted by Hutchins, McDermott, Carolan, Gronowski, Fisher & DeMay (2013) for the US army. The authors reviewed 42 academic papers from electronic databases within a date range between 2000 and 2012. The army review identified 28 individual interpersonal skills which they grouped into four high level categories namely, interpersonal communication skills, relationship building skills, peer leadership skills and social & behavioural agility skills.

Next, Bedwell, Fiore & Salas, (2014) identified twelve individual skills and settled on categories of communications skills and relationship building skills. Based on this

categorisation they too offer a definition of interpersonal skills as “goal directed behaviours, including communication and relationship-building competencies, employed in interpersonal interaction episodes characterized by complex perceptual and cognitive processes, dynamic verbal and nonverbal interaction exchanges, diverse roles, motivations, and expectancies” (p.173).

Lastly, and most recently, Beenen and Pichler (2016) proposed an intuitive model for managerial interpersonal skills focused on managing-self, communicating, supporting, motivating and managing conflict.

Despite the many efforts in this area, no consensus appears to have been reached by the writers. The different categorisations for interpersonal skills make this apparent.

However broad themes do emerge, which are mostly related to communication including non-verbal communication, and relationships skills including how to manage conflict. These skills seem to be underpinned by an attitudinal disposition which some have (e.g. Riggio & Lee, (2007)) called a skill that is based on empathy.

The next section examines more concrete models for thinking about interpersonal skills within the narrower domain of IS management literature.

2.2.3 *IS management*

The importance of interpersonal skills to IS/T leadership has also been recognised. For example, Bassellier & Benbasat (2004) studied how interpersonal skills impacts the business competence of the technology leader. Cohen & Dennis (2010) build upon and refined the work of Bassellier & Benbasat, (2004) by conceptualising and testing a model that suggests that interpersonal skills is a distinct CIO competence along with business competence and technology management competence. Yet others, e.g. Yokkhun, Quirchmayr, Chutimasakul, (2014), Shao, Feng, Choudrie, Liu, (2010) and Zimmermann, Petrikina, Schroeder, (2016) suggest that interpersonal skills is part of management/business competencies and is not a distinct competency for an IS/T leader.

While authors posit interpersonal skills as a distinct competency or not, one thing they do commonly forward is that the IS/T context is unique. According to Haselberger (2016), it is unique in terms of member's cultures, their skills, the interdependencies of their tasks, and the uncertainty of those tasks arising from a dynamic and complex environment.

Haselberger (2016) thus argues that this warrants key interpersonal skills for leaders such as interpersonal facilitation, communication, conflict management and the ability to create an enabling & supportive team environment. Pearce & Sims, (2002) had earlier suggested that leaders should require an empowering leadership style which emphasises leaders' encouragement of independent action and opportunity-thinking, self-development, and teamwork using participative goal setting. Cheruvelil, Soranno, Weathers, Hanson, Goring, Filstrup & Read (2014) suggest social sensitivity and emotional engagement as key interpersonal skills for leaders. Muller &Turner (2010) found that tasks in the IS/T context are complex and leaders/supervisors must exhibit high levels of interpersonal skills such as Emotional intelligence (EQ). EQ is considered to include self-awareness, emotional resilience, intuition in the face of incomplete information, sensitivity to others, persuasiveness, motivation of others and commitment to the course of action. Taken together, these authors are suggesting that to counter the unique challenges of the IS/T context, leaders need to heighten interpersonal skills.

Appendix 9.2 contains further listing of articles reviewed from IS/T management literature in which competencies of CIOs were investigated. Contained in appendix 9.2 are the authors' attempts to explain interpersonal skills in their context. Key phrases such as emotional intelligence, social intelligence, social sensitivities, self-awareness, emotionally resilience simple skills, complex skills, political skills, relationship building skills, negotiating skills and empowerment are all used to conceptualise interpersonal skills. It is evident from the review that the treatment of the interpersonal skills concept has been inconsistent and is often lacking a comprehensive conceptualisation. Common themes and phrases are used, but often without clear definitions.

The next section brings together the different perspectives on interpersonal skills to propose a conceptual definition of interpersonal skills for the purpose of this study in the IS/T context.

2.3 Conceptualisation of interpersonal skills

The literature review has yielded many perspectives on interpersonal skills and associated constructs (refer to Appendix 9.1 & 9.2). However, the systematic review of the US army (Hutchins, McDermott, Carolan, Gronowski, Fisher & DeMay, 2013) appears to provide the most comprehensive (given it granularity and coverage), reliable (given the research methods adopted) and integrative account (the inclusion of many sources from different discourses) of interpersonal skills.

Their work has thus been considered a useful basis from which to conceptualise interpersonal skills for this study, what follows is a fuller description of Hutchins *et al.* (2013) categories and its conceptualisation and then how each category is relevant in the IS/T context.

Hutchins *et al.* (2013) conceptualised interpersonal skills along four dimensions. Details on the interpersonal skills taxonomy by Hutchins *et al.* (2013) is found in Appendix 9.3. This section focuses on the relevance within the IS/T context.

1. Interpersonal Communication Skills:

> "Interpersonal communication skills are the set of abilities needed in the interpersonal exchange of information; a two-way exchange requiring skill in both expressing and assimilating information. They not only involve listening, speaking, writing, and sending/receiving nonverbal signals, but doing so empathetically, attentively, responsively, directly, and confidently during the social interaction" (Hutchins *et al.,* 2013, p. 7).

Interpersonal Communication Skills is part of a leader's competency needed for team performance (Haselberger, 2016). Thus, such skills are relevant to leaders in

the IS/T context given the team-oriented nature of IS work. Interpersonal communication skills, enables problem solving, fosters group creativity and supports management of team diversity (Cheruvelil *et al.,* 2014).

Peppard, (2010), Smaltz *et al.* (2006), Hooper & Bunker (2013) and Yokkhun *et al.* further argue that communication skills are important for IS/T leaders in dealing with their management peer set. When IS/T leaders have better communication skills, it drives the IS/T agenda at the executive level, showing how technology intervention can improve business outcomes. Without the skill or where leaders rely on 'technobabble' (Smaltz *et al.,* 2006 p.211) leaders are seen as lesser business leaders.

Thus, interpersonal communication skills seem relevant for leaders in the IS/T context and adopting Hutchins *et al.* (2013) is considered appropriate.

2. Relationship Building Skills:

"Relationship building skills are the set of abilities needed to develop and maintain bonds with others, relate to and support others, foster ongoing relationships, and build strong beneficial alliances. These skills are imperative for team performance. Beyond the forming of interpersonal associations, relationship building skills also involve the management and resolution of conflicts and getting to get what you want from others." (Hutchins *et al.*, 2013 p. 8).

Relationship Building Skills is relevant for leaders in the IS/T context as without it, IS/T leaders are not seen as strategic and their top management peers do not take them to be an equal (Cohen & Dennis, 2010). This may augment the perception of employees regarding the effectiveness and the ability to argue for IS/T concerns. Haselberger (2016) also found that IS/T teams in which IS/T leaders provide feedback as a way to foster good team relations also has shown to improve performance of the team. Performance of the team as reported by Cheruvelil *et al.* (2014) is also aided when leaders quickly resolve conflicts.

Smaltz, *et al. (*2006) furthermore argue that the contemporary IS/T function blends internal services and external service providers to execute on their mandate, given such, building and managing relationships well with outsourced vendors has also been noted as a significant expectation from a high performing IS/T leader as it leads to greater service from the providers.

The evidence within IS/T management literature suggests that relationship building skills of IS/T leaders and supervisors are relevant and therefore relationship building skills is included as part of the conceptualization of interpersonal skills of IS/T leaders.

3. Peer Leadership Skills:

“Peer leaderships skills are the set of abilities necessary not only to be part of a group, but to lead it. The skill set includes the propensity to coach, teach, counsel, motivate, and empower group members; to readily interact with one’s team, earning trust and respect; to actively contribute to problem solving and decision making; and to be sought out by peers for expertise and counsel” (Hutchins *et al.,* pg. 10, 2013).

In the IS/T context, Bassellier & Benbasat (2004) recognises peer leadership skills. They rank it as the most important skill for an IS leader. Haselberger (2016) and Shao *et al.* (2010) also recognised monitoring, coaching, motivating and being a role model as key skill set that an IS/T leader should possess as the project nature of work with IS/T departments requires the building of confidence and the efforts to channel the abilities of team members so that it may bring the best out of the team and in turn will produce better outcomes. Furthermore Correia *et al.,* (2014) and Peppard, (2010) stress leadership skills help to keep alignment within their team and organisational strategies to maximise investments.

Thus, in the IS/T context peer leadership skills is appropriate to be included as a component of interpersonal skills.

4. Social and Behavioural Agility Skills:

> "Social and behavioural agility skills are the set of interrelated abilities needed in order to monitor and interpret both one's own and other's behaviours and flexibly adapt presentation of self to others during social interactions for the purpose of social influence and control over the interaction" (Hutchins *et al.*, 2013 p. 11).
>
> In the IS/T context, Muller & Turner (2010) reports that IS/T leaders with high levels of self-awareness, emotional resilience, sensitivity in interaction and conscientiousness are most likely to be seen as successful. Cheruvelil *et al.* (2014) also recognise social sensitivities which includes empathy as a characteristic of IS leaders who perform as they can better manage diversity within their team.
>
> Thus, in the IS/T context Social and behavioural agility skills is also considered appropriate to be included as a component in the conceptualisation of interpersonal skills.

Interpersonal skill of IS/T leaders is therefore conceptualised along four dimensions of interpersonal communication skills, relationship building skills, peer leadership skills and social & behavioural agility skills. Chapter 3 links these dimensions to job satisfaction outcomes of IS/T employees, but first, some background literature of job satisfaction is presented.

2.4 Job Satisfaction

Job satisfaction is a widely-used measure of attitude in the workplace. Job satisfaction is an attitude of an employee of a firm and can be defined as "a positive feeling about one's job resulting from an evaluation of its characteristics" (Robbins & Judge, 2007, p. 79). Job satisfaction has a long history in management studies and has been refined over the years (Zhu, 2013). There are many models based on different theories and its simplicity of concept leads to its popularity.

Examples of the most pervasive measurement tools are the Job Descriptive Index (JDI) from Smith *et al.* (1969), the Minnesota Satisfaction Questionnaire (MSQ) of Weiss, Dawis, England & Lofquist (1967); the Job Satisfaction Survey (JSS) (Spector, 1997) the Global Job Satisfaction (GJS) (Quin & Shepard, 1974); and the Job in General Scale (JIG) (Ironson, Smith, Brannick, Gibson & Paul, 1989);

These tools differ from each other in that they either measure satisfaction in a general way or they measure satisfaction based on subcategories or facets of the job. The GJS and JIG are examples of measurement tools focussing on the job in general while the JSS, JDI and MSQ use subcategories or facets.

Ostroff (1992) found that organisations with more satisfied employees are more effective than organisations with fewer satisfied employees. Judge, Thoresen, Bono & Patton (2001) performed a literature review of seven different models of job satisfaction and how it relates to job performance. They found that job performance is linked to job satisfaction. Job satisfaction is thus a useful outcome variable for studying the impacts of the interpersonal skills of leaders on followers.

Job satisfaction has been linked to leadership in two ways.

First, one of the enduring facets that can be found across the plethora of tools using the facet approach to measurement is the facet of supervision (Macdonald & Macintyre, 1997). As an example, the JSS asks the employee to rate whether they feel their supervisor is technically skilled at the job they supervise, if the supervisor is liked by the employee, if the supervisor demonstrates fairness in their treatment of the employee and whether the supervisor shows interest in the employee. As another example, the JDI asks the employee to agree or disagree on whether they find their supervisor supportive, hard to please, impolite, praises good work, tactful, influential, up-to-date, unkind, has favourites, tells me where I stand, annoying, stubborn, knows job well, bad, intelligent, poor planner, around when needed and lazy.

These questions about the supervisor do not directly deal with the interpersonal skills of the supervisor. The JDI tool does use descriptors that could be construed as interpersonal

skill attributes but is restricted to concepts such politeness and tactfulness rather than interpersonal skills more broadly.

Second, are studies that consider leadership behaviour antecedent to job satisfaction. For example, Kennerly (1989) studied leadership behaviour from the followers' perspective and linked it to job satisfaction. The followers were nurses and the head of faculties were the direct supervisors. The results of the study show that positively perceived leadership behaviour increased job satisfaction. Extending this line of work, was Wong & Laschinger (2012) tested whether authentic leadership and empowerment was linked to job satisfaction within the medical fraternity. They found that the more nurses perceive managers as authentic, the higher was their rating for job satisfaction.

While these studies on leadership suggest the potential for interpersonal skills of leaders to influence job satisfaction among followers, various dimensions of interpersonal skill have not been explicitly considered.

Further, although the review of job satisfaction has revealed that measuring attitudes of followers is pervasive and that measuring attitudes directly related to supervision is common place (Robbins & Judge, 2007), studies of supervision do not focus specifically on interpersonal skills of supervisors but rather a general feeling/attitude an employee has about supervision. There is therefore an evidence gap in the general literature on the impact of interpersonal skills on job satisfaction outcomes.

The next section considers the role of IS/T management in determining job satisfaction.

2.4.1 *Studies on Job Satisfaction and supervision in IS/T literature*

There are few studies on job satisfaction of IS/T personnel (Ghazzawi, 2010, Kowal & Roztocki, 2016). Of the few studies, most aimed to find determinants of job satisfaction of IS/T personnel, to understand how to reduce IS/T staff turnover as the two concepts have been studied extensively and shown to be related (Agarwal & Ferratt, 2001).

Of the studies reviewed (summarised chronologically below in table 1), three broad categories emerge. The first are studies that investigated job characteristics aspects of the IT employee. One such paper was Tomovska–Misoska, Tefanovska–Petkovska, Ralev & Krliu-Handjiski (2014) in which they found that the type of physical workspace IT personnel have, can affect job satisfaction. Role related stress caused by role ambiguity and IS/T policies can also influence job satisfaction as confirmed by Calisir & Gumussoy (2007) and Ply, Williams & Thatcher (2012). Tools used in the role can also affect job satisfaction, as McMurtrey, Grover, Teng & Lightner (2002) highlight when they studied job satisfaction of employees of those who used CASE tools.

Second, are studies examining personal & demographic traits of IT employees that influence job satisfaction. For example, in some studies, the IS/T employees' gender was found to play a role in job satisfaction (Kowal & Roztocki, 2016). However, Xu (2009) postulates that it is rather organisational injustice that affects job satisfaction. Lounsbury, Moffitt, Gibson, Drost, & Stevens (2007) research reveals that independent introverts exhibit higher levels of job satisfaction in their IS/T jobs, while Rutner, Hargrave and Mcknight (2008) posited that emotional dissonances for IS/T personnel with regard to internal worldviews in relation to business outcomes also had a relationship with job satisfaction.

Third, and most relevant to this study, are past works that find managerial or supervisor behaviour/skill to be of importance when assessing job satisfaction.

In one study, Goldstein & Rockart (1984) investigated the supervisory characteristic of providing timely feedback to the IS/T employee. Their research concluded that employees who received feedback from supervisors and leaders which was both timely and clear exhibited higher levels of job satisfaction. They conclude therefore that leadership characteristics can impact job satisfaction.

Chen (2008) paid particular interest to studying levels of professionalism, feedback levels and autonomy in a job and how that related to job satisfaction. Chen surveyed IT

professionals and results of the research analysis revealed that feedback and professionalism of their supervisor were among the most significant factors influencing job satisfaction. These findings give important impetus to this study as they align to interpersonal skills such as peer leadership skills, interpersonal communications skills and relationship building skills (Hutchins *et al*., 2013).

Reid, Riemenschnedier, Allen (2008) introduced Leader-member exchange (LMX) as an independent variable to determining job satisfaction. LMX is a leadership theory that focuses on the relationship quality between leader and employee interactions. LMX has been developed over the years to include factors such as competence, interpersonal skill, trust, attention, sensitivity (Dansereau, Seitz, Chiu, Shaughnessy & Yammarino, 2013). Reid *et al.* (2008) concluded that LMX is a significant factor in determining job satisfaction.

Independently Volmer, Nieseen, Spurk, Linz & Abele (2011) also hypothesised that LMX influences job satisfaction, of participants from the IT workplace. They concluded that LMX is a significant factor in determining job satisfaction, but also found these relationships to be reciprocal such that higher quality LMX is determined by higher job satisfaction and thus a virtuous cycle exists between the two.

Of the studies reviewed in this sub category, Zolbanin & Sarathy (2014) is probably the closest in relation to this study. Zolbanin & Sarathy (2014) set out and concluded to show a relationship between employee's job satisfaction and their IT managers competence. Zolbanin & Sarathy (2014) define competence as a two-dimensional construct of IT competence (knowledge in IT) and managerial competence (managerial skills for managing people which include persuasion and good communication skill). Zolbanin & Sarathy (2014) found, at p-levels of 0.01 that managerial competence has a significant influence on job satisfaction. However, IT competence of supervisors does not significantly contribute to employee's job satisfaction. Thus, their work suggests that the technical competence of supervisors is less important to followers than their managerial skills such as communication.

Another study by Kowal & Roztocki 2015 indicated the management's ethical conduct influences job satisfaction of IS/T personnel. The authors tested IT personnel in

organisations in Poland and found that those IS/T professionals were more satisfied when top management strongly supported ethical behaviour.

Zhou, Wang, Tsai, Xue & Dong (2016) also confirm managerial competencies as an influencer of job satisfaction when they used a novel research technique using Fuzzy Theory. They determined that rewards, promotion opportunity, job nature and supervision can influence other criteria of job satisfaction and have the greatest predictive power.

Table 1 below summarises the studies that have examined job satisfaction of IS/T employees, highlighting those reporting links between managerial competencies and job satisfaction.

Table 1 – Listing of IS/T context job satisfaction studies reviewed

Author/s & Year	Title	Journal/Conference	Purpose	Outcome
GoldStein & Rockart (1984)	An examination of work-related Correlates of Job Satisfaction in Programmer/Analysts	MIS Quarterly	Investigate the work-related variables(Role conflict,Role ambiguity and leadership) of Job satisfaction	Role related variables as well and leadership is significant in determining Job Satisfaction
Igbaria & Guimaraes (1993)	Antecendants and consequences of job satisfaction among Information Center Employees	Journal of Management Information Systems	To investigate if role conflict and peronal cahraterisic affaects job satisfaction which in affects organizational commitment and intention to leave.	Confirms role ambiguity and role conflict in predicting job satisfaction and the direct relationship of job satisfaction to organizational commitment, and employee intention to leave
McMurtrey, Grover, Teng & Lightner (2002)	Job satisfaction of information technology workers: the impact of career oreientation and Task Automation in a CASE environment	Journal of Management Information Systems	Examine if career orientation relates to job satisfaction and examine if using Case tools impacts the relationship	In a CASE tool environment, personnel with a predominant technical career orientation have more job satisfaction than those with a predominant managerial orientation
LeRouge, Nelson & Blanton (2006)	The impact of role stress fit and self-esteem on the job attitudes of IT professionals	Information & Management	To investigate if prerferred ans percieved actual role stress influnces job satisfaction	Rolese stress fit postifively influnces job satisfaction
Calisir & Gumussoy (2007)	Determinants of job satisfaction in the IT industry	Proceedings of the 2007 IEEE IEEM	To investigate the impact of work stress on job satisfaction in IT professionals	Slight variance recorded In job satisfaction when Work stress is introduced
Lounsbury,Moffitt, Gibson, Drost, & Stevens (2007)	An investigation of personality traits in relation to job and career satisfaction of information technology professionals	Journal of Information Technology	Personality traits were examined in relation to job satisfaction and career satisfaction for IT professionals	Independent introverts are better suited for IT work
Chen (2008)	Job satisfaction among Information systems personnel	Computers in Human Behavior	To investigate Job Characteristics which affect job satisfaction	Jobs with the characteristics of feedback, professionalism and autonomy can most easily increase the job satisfaction
Reid, Riemenschnedier, Allen (2008)	Information Technology Employees: A Study of Affective Organizational Commitment, Job Involvement, and Job Satisfaction	The american review of public administration	Explore Job caharacteristics and work experience and check thst it influences job satisfaction	Role ambiguity,organizational support leader-member exchange influnece job satsifaction
Rutner, Hargrave and Mcknight (2008)	Emotional dissonance and the information techonology professional	MIS Quarterly	The investigation of Emotional dissonance as a factor of job satisfaction of IT professionals	Job satisfaction is influenced directly by role ambiguity and work exhaustion
Lim (2008)	Job satisfaction of information technology workers in academic libraries	Library & Information Science Research	To invetsigate if demographics, sense of belonging, job autonomy, promotion, role variables or personality influence job satisfaction	A mixed bag of results, some hypothesis were supported while others not, salary, promotion and sense of belonging contributed significantly over other characteristics.
Kamalanabhan, Prakash & Mayuri (2009)	Employee engagement and job satisfaction in the IT industry	Psychological reports	Investigate if employee enagagement influneces job satisfaction	Employee enegagement influences Job satisfaction

Author/s & Year	Title	Journal/Conference	Purpose	Outcome
Xu (2009)	The study of the relationship between Organizational Justice and Job Satisfaction on Y-Genearation in Chinese IT Industry	The 1st International Conference on Information Science and Engineering (ICISE2009)	This study examined the relationship between three forms of organizational justice and job satisfaction on Post-'80 generation employees in Chinese IT industry	Significant relationship found between Organizational justice and job satisfaction
Ghazzawi (2010)	Gender role in Job Satisfaction: The case of the U.S. Information Technolgy professionals	Journal of Organizational Culture, Communications and Conflict	Investiagte if a relationship between Gender of IT employees and their Job Satisfaction Exists	No significant relationship between Gender category and Job satisfaction
Samaranayake & Gamage (2011)	Employee perception towards electronic monitoring at work place and its impact on job satisfaction of software professionals in Sri Lanka	Telematics and Informatics	Investigate if electronic monitoring influnces job satisfaction	Partcipants who viewed monitoring as a invasion of privacy influnced job satsiafction negatively, Those employees who viewed monitoring as some thing relavalent to precurb data leakages indlunces job satsiafction postivly
Volmer, Nieseen, Spurk, Linz & Abele (2011)	Reciprocal Relationships between Leader–Member Exchange (LMX) and Job Satisfaction: A Cross-Lagged Analysis	Applied Psychology: An internal review	The purpose of the study is to test the effects of LMX and job satisfaction, cross-sectionally, longitudinally and reciprocally.	Using a sample of IT employees, LMX is a predicator of Job satisfaction and at the same time Higher job satisfaction creates virtuous cycle and improves LMX
Ply, Williams & Thatcher (2012)	IS employee attitudes and perceptions at varying levels od software process maturity	MIS Quarterly	To test if job satisfaction differs across ogranization with different CMMI maturity levels	Job satisfaction was higher in organizations with lower CMMI maturity levels
Tomovska–Misoska, Tefanovska–Petkovska, Ralev & Krliu-Handjiski (2014)	Workspace as a afctor of job satisfaction in the banking and ICT industrys of Macedonia	Serbian Journal of Management	Investigate the relation between physical workspace environment and employees' job satisfaction	Significant relationship found between Workspace environment perception and job satisfaction
Zolbanin & Sarathy (2014)	Job Satisfaction of IT/IS Professionals: The Impact of Top Management and IT Managers	Twentieth Americas Conference on Information Systems, Savannah	Investigate how top management and IS management can affect job satisfaction of IT/IS professionals.	the ability to effectively utilize IT/IS professionals' skills, and to be an effective representative with top management is a significant predictor of the IS/IT professionals' job satisfaction.
Kowal & Roztocki (2015)	Do Organizational Ethics Improve IT Job Satisfaction in the Visegrád Group Countries? Insights from Poland	Journal of Global Information Technology Management	Investigate the relationship between organizational ethics and job satisfaction in Poland,	Organizational ethics, by top management affect the job satisfaction of information technology professionals
Kowal & Roztocki (2016)	Gender and Job Satisfaction of Information Technology Professionals in Poland	49th Hawaii International Conference on System Sciences	Examine the effects of gender difference on the job satisfaction of information technology professionals in Poland	Women in IT in Poland are less satisfied than male colleagues with their compensation and promotion opprtunities
Zhou, Wang, Tsai, Xue & Dong (2016)	How to Evaluate the Job Satisfaction of Development Personnel	IEEE Transactions on syatems, Man & Cyberectics: Systems	To examine the assessment criteria for the job satisfaction of R&D personnel in high-technology industries using The fuzzy theory	Using fuzzy theory it was determined that rewards, promotion opportunity and job nature and supervision can influnce other criteria of job satisfaction

From the review it seems that there are studies that focus on managerial competence in some form or another. None, however, appear to have comprehensively focused on interpersonal skills of supervisors/leaders and how this influences job satisfaction.

Consequently, the review has exposed gaps in the IS/T management literature. These gaps relate to the incomplete understanding of interpersonal skills in the IS/T context, the need for further studies on job satisfaction of IS/T employees and the role of supervision and leadership in job satisfaction.

In spite of these gaps, there is evidence to suggest that interpersonal skills of IS/T leaders are important to job satisfaction, and often with respect to the attitudes formed around supervision.

2.4.2 *Studies on Job Satisfaction in South Africa*

Given that this research study is conducted in the South African context, a review of the job satisfaction literature in South Africa was conducted as it may provide additional input for developing a hypothesised model. This subsection highlights the review undertaken.

In a report commissioned by the Human Sciences Research Council (Roberts, Kivilu & Davids, EDS, 2012), the author comments that very little research has been performed on job satisfaction in the past, however their own study showed that South African employees who are skilled, exhibit a mean job satisfaction score of 2.19 out of 6.

Given the comment of very little research, this researcher set about searching the Scopus database directly. Scopus was used to find job satisfaction studies in South Africa. The exact query string can be seen in the below footnote[4].

The results of the search yielded eight hits since 2000 (see table 2 below). Of the eight, only four measured job satisfaction.

[4] (TITLE-ABS-KEY(job satisfaction) AND PUBYEAR > 1999) AND (LIMIT-TO (SUBJAREA,"BUSI ")) AND (LIMIT-TO (EXACTKEYWORD,"South Africa "))

Table 2 - Job satisfaction studies conducted in South Africa

Authors	Year	Title	Job satisfaction measured (T/F)	Type of study	Job satisfaction linked results
Stoermer, S., Hitotsuyanagi-Hansel, A., Froese, F.J.	2017	Racial harassment and job satisfaction in South Africa: the moderating effects of career orientations and managerial rank	TRUE	Quantitative	Black South Africans experience more workplace racial harassment than white employees and thus show lower job satisfaction
Bowen, P., Edwards, P., Lingard, H.	2013	Workplace stress among construction professionals in South Africa the role of harassment and discrimination	FALSE	Quantitative	
Douglas, A., Lubbe, B.A.	2010	An empirical investigation into the role of personal-related factors on corporate travel policy compliance	FALSE	Quantitative	
Ramdass, K., Pretorius, L.	2008	The clothing industry for growth in South Africa	FALSE	Quantitative	
Bowen, P., Cattell, K., Distiller, G., Edwards, P.J.	2008	Job satisfaction of South African quantity surveyors: An empirical study	TRUE	Quantitative	Generally paricipants are satisfied
Bowen, P., Cattell, K.	2008	Job satisfaction of South African quantity surveyors	TRUE	Quantitative	Factors influencing job satisfaction was idebtified
Wöcke, A., Sutherland, M.	2008	The impact of employment equity regulations on psychological contracts in South Africa	TRUE	Quantitative	Job satisfaction and labour turnover linkages is weakened by labour legislation
Vermeulen, W.	2003	Benchmarking as an enabler of business excellence in the South African financial sector	FALSE	Quantitative	

Stoermer, Hitotsuyanagi-Hansel, Froese (2017) concluded that based on race lines that employees who are of African descent exhibit lower job satisfaction due to racial harassment.

Bowen, Cattell, Distiller & Edwards (2008) and Bowen & Cattell (2008) researched job satisfaction among South African quantity surveyors. The results indicated that quantity surveyors are overall satisfied. No controls variables were used.

Wöcke, & Sutherland (2008) researched job satisfaction in relation to labour turnover in cases where there is draconian labour legislation and found that the linkage between job satisfaction and labour turnover were strengthened because of the labour legislation. No control variables were used in measuring job satisfaction.

The review of job satisfaction has focused on the technical aspects, the different types of measurement tools, and the context in which this research operates and when taken together, reveals a gap in the body of knowledge. While job satisfaction is a widely used attitudinal measure worldwide. Specifically, in South African and in the IS/T context very little research has been done to date. Thus, the review of job satisfaction informs this research of its timely relevance.

2.5 Conceptualising job satisfaction for the study

Astrauskaitė, Vaitkevičius & Perminas (2011) posit that the biggest problem faced by a researcher when deciding on an applicable job satisfaction instrument, is that there are many to choose from.

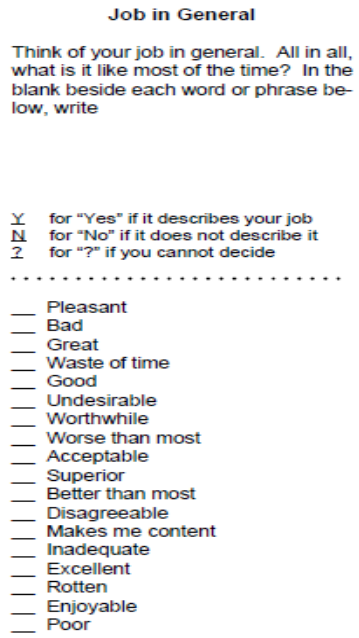
In addressing this problem, a researcher must understand the differences in approach the many tools have been based on. There are two dominate approaches a) the facet approach and b) and the global measure approach (Russel, Spitzmuller, Lin, Stanton, Smith & Ironson, 2004). These authors go on to comment that the facet approach allows for the identification of areas in which employees' satisfaction can be considered satisfactory whereas the global approach is most useful in an applied research in which the overall job satisfaction is of interest. The reason why there are differences in approaches be it global or facet is because for the desire to be parsimonious. The global achieves this over the facet approach. The reason for the parsimony is to improve responses rates as the length of the facet approach has shown to decrease the willingness for the employees to complete the survey (Russel *et al*., 2004).

Another misnomer in addressing the selection of a job satisfaction instrument is that the researcher must consider the validity of the assumption that the sum of facets can equate to the global measure. The reasoning for this assumption is because employees in deriving global measures use 'cognitive processing heuristics' (Jackson & Corr 2002, p. 6) that take into account all facets. Also, Ironside, Smith, Brannick, Gibson & Paul (1989) posit that when the facet approach is selected, the tools includes only a certain number of facets and may preclude one in which the employee may feel strongly about. Furthermore Rice, Gentile & Mcfarlin (1991) suggest that in the facet approach some facets may be less important to employees and suggest that responses will be an average which demonstrates the employees' apathy which will skew results.

The reading suggests that the facet approach and the global measurement approach both have advantages and disadvantages. However, given its pervasive use (Russel *et al.,* 2004) and its parsimonious nature, the instrument chosen for this study is the Job in General Scale (JIG) (Ironson, Smith, Brannick, Gibson & Paul, 1989). The JIG asks the

respondent to comment ‘yes’, ‘no’ or ‘I do not Know’ to eighteen (18) phrases reflecting how employees feel about their jobs most of the time. The JIG scale can be seen in figure 1 below.

Figure 1 - Chosen Job satisfaction instrument



Job in General

Think of your job in general. All in all, what is it like most of the time? In the blank beside each word or phrase below, write

Y for “Yes” if it describes your job
N for “No” if it does not describe it
? for “?” if you cannot decide

. . . . . .

___ Pleasant
___ Bad
___ Great
___ Waste of time
___ Good
___ Undesirable
___ Worthwhile
___ Worse than most
___ Acceptable
___ Superior
___ Better than most
___ Disagreeable
___ Makes me content
___ Inadequate
___ Excellent
___ Rotten
___ Enjoyable
___ Poor

However, as recommended elsewhere (Astrauskaitė *et al.*,2011), the facets approach of the job satisfaction survey (JSS) of Spector (1994) is also included. Specifically, the JSS facets act as controls so that the impact of interpersonal skills on the JIG job satisfaction scale can be examined after taking the impact of the other job facets into account. The facets include pay and remuneration, promotion opportunities, immediate supervision focused on overall competence rather than interpersonal skills, monetary and nonmonetary fringe benefits, contingent rewards, operating procedures, co-workers, nature of work and communication within the organisation.

2.6 Chapter Conclusion

This chapter reviewed literature on why it is important to study followers of leaders, and their attitudes in respect to the leadership process. This chapter also took a close look at interpersonal skills and job satisfaction.

This chapter shows that while job satisfaction has been well researched, there is still a gap in relation to the influences of managerial competencies. The review has shown that different disciplines have researched interpersonal skills, but no consensus is reached between them. When these two concepts of interpersonal skills and job satisfaction are juxtaposed, this research is novel moreover in the IS/T management discipline given interpersonal skills needed by IS/T supervisors.

Consequently, the research is timely and undertakes to ascertain if interpersonal skills of IS/T supervisor's influences job satisfaction of IS/T employees.

In the next chapter, the hypothesised research model is developed.

3 THEORETICAL BACKGROUND & RESEARCH MODEL

This chapter further develops the study's theoretical background and then presents the study's research model and associated hypotheses. First, Affective Events Theory (AET) is discussed which constitutes the theoretical background for the model linking employee attitudes to job satisfaction. Then, the research model is presented along with its five underlying hypotheses. This is followed by a description of the model's control variables.

3.1 Theoretical background

The primary hypothesis of this study is that leaders of employees can have qualities that can affect the job satisfaction of employees. Earlier the work of Hutchins *et al.* (2013) was drawn upon to identify four dimensions of interpersonal skills relevant to the study of leaders in the IS/T context. The link between interpersonal skills of an IS/T leader and the job satisfaction of a follower is underpinned by the Affective Events Theory which is discussed next.

3.1.1 *Affective Events Theory (AET)*

AET builds on the attribution theory (how people judge other people's behaviour), to explain performance and satisfaction in the workplace (Robbins & Judge, 2007). AET was developed by H M. Weiss and R Cropanzano (1996) to explain how moods and emotions influence job satisfaction. The most basic assumption of the theory is that job satisfaction must be conceptualised as an evaluative judgement about one's job (Wegge, van Dick, Fisher, West & Dawson, 2006). The theory explains that events at work trigger the employee to react in certain ways based on the emotion of the event. The event can create stress at one extreme and can uplift in the other extreme. Evaluative judgements are made post-event using the emotions or feelings invoked while the event occurred. AET takes into account pre-existing attitudes about the event, factors in the workplace which include pre-existing attitudes about supervision and management quality and task related features. This attitude that was created has shown to affect job satisfaction and then job performance (Weiss & Cropanzano, 1996).

The theory can be explained through an example[5] as follows: Employee Joe talks to a leader about Joe's future in the organisation. Joe's pre-existing attitude toward the leader is admiration. The leader assures him that his future job is secure within the organisation. Joe feels upbeat and he has a skip in his step. Sometime later, Joe hears a rumour that there are job cuts on the cards. Joe begins to question his interaction with the leader to the extent of whether the interaction was a true reflection of the situation in the organisation. Joe has the emotion of anxiousness and doubts his leader. AET models this scenario and explains that emotional swings keep Joe's attention away from his actual job and in turn a dip in performance, as Joe's mind dwells on his recent interaction with his leader and the rumour making the rounds. Joe's solid attitude towards his leader is crumbling and he questions the veneration he has towards his leader.

Rogelberg, Allen, Shanock, Scott & Shuffler (2010) drew on AET to explain how employee satisfaction is impacted based on how the employees felt about the meetings they attended at work. They argued that the number of meetings typically attended has a relationship to meeting satisfaction and then in turn to job satisfaction.

Affective Events Theory informs the direction of this study by suggesting how employees form attitudes about leaders based on their interactions with those leaders, and that the attitudes can affect the employee's own job satisfaction. Given that the interpersonal skills of leaders will determine the interactions between leaders and followers, they can trigger the employee to form attitudes about their job based on emotional reaction to those leader-follower interactions.

3.2 The Research Model

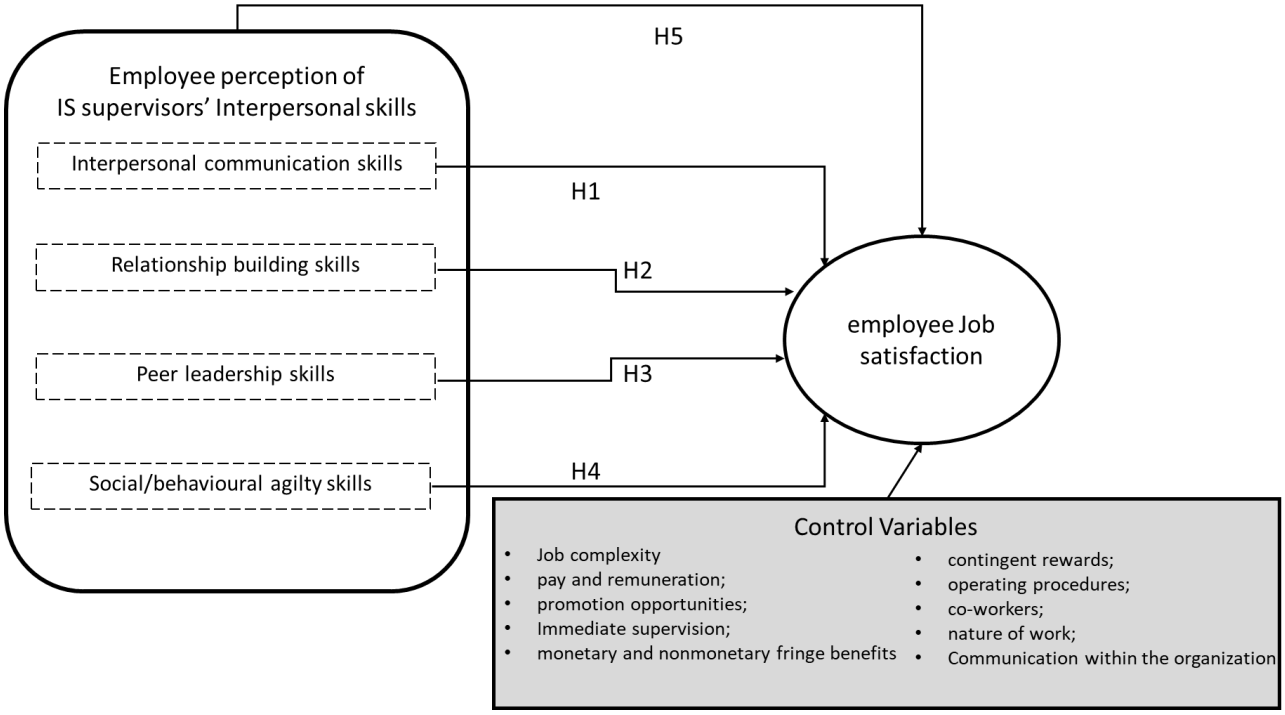
The research model (see figure 2 below) depicts the hypothesised effects of IS leaders' interpersonal skills on follower job satisfaction. The model depicts four dimensions of interpersonal skills drawn from Hutchins *et al.* (2013), namely interpersonal

[5] Scenario developed by the researcher of this study

communication skills, relationship building skills, peer leadership skills and social/behavioural agility skills. Based on affective events theory the model depicts the hypothesised link between these dimensions of interpersonal skills as perceived by the employee and the job satisfaction of the employee.

The model also depicts complexity of work (Judge *et al.,* 2001) as well as the other facets from the selected JSS measurement tool as control variables. The model's hypotheses are developed next.

Figure 2 - Schematic of research model



3.2.1 *Interpersonal communication skills (IPC)*

The concept of interpersonal communication skills can be thought of as the abilities needed by IS/T supervisors that allow them to have meaningful bi-directional conversation, in which the supervisor and the employee get opportunities to speak, be listened to,

acknowledged, both in a verbal and non-verbal manner so as that understanding can be attained while maintaining respect for each participant (Hutchins *et al.,* 2013).

Effective communication by leaders has been shown in past studies to contribute to an employee's job satisfaction (Neves & Eisenberger, 2012). The basis for the argument is effective communication improves the perception that the organisation supports the employee and signals that the leader/supervisor cares about the well-being of the employee and values the contributions of the employee, all of which translates into better performing employees. de Vries, van den Hooff & de Reidder (2006) have also argued that a positive communication style and an eagerness to share, affects employee job satisfaction. Effective communication is a sign that the leaders are willing to share their knowledge with employees which again signals that leaders care not only about the organisational outcomes but the personal growth of the employee. Within the IS domain, Haselberger (2016) carried out a systematic literature review on leadership interactions with IS/T teams. It was posited that effective communication is, a dimension necessary in an interaction to ensuring favourable outcomes. From an AET perspective, the signals of consideration to the employee demonstrated by leaders through their effective communication should trigger positive emotional response on the part of the employee and thus increase their job satisfaction.

Taken together, it is hypothesised that:

Hypothesis 1: The greater the interpersonal communication skills (IPC) of an IS/T leader as perceived by the follower, the greater will be the follower's job satisfaction.

3.2.2 *Relationship building skills (RBS)*

The concept of relationship building skills are a set of abilities that allow a IS/T supervisor to nurture and foster relationships with the employees for mutual beneficial gains (Hutchins *et al.,* 2013).

Hutchins *et al.* (2013) also report that trust is a key ingredient when building relationships. So much so that without it, no relationship can be built. Dong & Howard (2006) write that

trust as key ingredient to relationship building between leader and employee is an important predicator of job satisfaction because when trust is placed in an employee, employees are energised and motivated to perform. Ewen, Wihler, Blickle, Oerder, Ellen III, Douglas & Ferris (2013) write that the leaders or supervisors abilities to accurately read and understand employees, allows such leaders to foster relationships and connect with employees. The study also showed that the skills of the leader/supervisor to build relationships impacts on job satisfaction of the employee. This shows that relationship building skills may impact job satisfaction. From an AET perspective, forging trust might elicit emotions in the employee that the supervisor believes in their abilities. It is these emotions that may contribute to behaviour that may improve job performance and internalised job satisfaction.

Therefore, the following is hypothesised.

Hypothesis 2: The greater the relationship building skill (RBS) of an IS/T leader as perceived by the follower, the greater will be the follower's job satisfaction.

3.2.3 *Peer leadership skills (PLS)*

The concept of peer leadership skills embodies the abilities of an IS/T supervisor to first practice being part of a successful team and then, and only then, use their abilities to lead the team.

Research in this area has not escaped IS management writers' attention. One such writer has shown team building skills is a key skill that IS/T supervisors should possess (Haselberger, 2016). Given the common place knowledge that the work of IS/T is largely team-based, and a variety of skills are required to put into production IS/T projects, it makes sense that as a leader, one should possess these skills. It is only when leaders combined the different skills, and everybody appreciates the complementary nature of each team member's work, that effectiveness is achieved. Adair (2013) writes that when the feeling of devotion to the group and a pride in belonging increases, then teams become effective. From an AET perspective, feelings of devotion and pride experienced by a team

member when their contributions are meaningfully considered, can invoke emotions which may bring about improved performance and job satisfaction.

Therefore, a team and peer-based approach among IS/T leaders are considered important to developing employee affective responses and the following hypothesis is proposed:

Hypothesis 3: The greater the peer leadership skill (PLS) of an IS/T leader as perceived by the follower, the greater will be the follower's job satisfaction.

3.2.4 *Social and Behavioural Agility Skills (SBS):*

The concept of social and behavioural agility skills embodies the appreciation that people are different. In this context, sets of interrelated abilities are required by IS/T leaders to extract the maximum benefit. These abilities may include empathy, persuasion, motivation and negotiation, to name a few.

Following the work of Bassellier & Benbasat (2004), Faraj & Sambamurthy (2006), Smaltz, Sambamurthy & Agarwal (2006), Chen, Preston & Xia (2010), Lee *et al.* (2015), Cheruvelil *et al.* (2014) and Haselberger (2016), social and behavioural agility skills are stressed as a key interpersonal skill for IS leaders/supervisor due the nature of IS work. The particular nature of work related to social and behavioural agility skills are the diverse cultural backgrounds of individuals that make up IS/T teams and the ever-changing requirements imposed on projects.

Success in projects is linked to job performance (Muller & Turner 2010) and as such, leaders who demonstrate skills to allow for better group dynamics in a changing environment, are likely to improve their chances for success. Furthermore, social and behavioural agility allows leaders to draw patronage from a diverse cultural workforce, given that the IS workforce is culturally diverse (Haselberger 2016). From an AET perspective, when employees feel they are respected for their culture, despite the difficulties of a dynamic environment, they can experience positive emotions which may bring about improved job performance and job satisfaction.

The increasing positive relationship between performance and job satisfaction indicate that the following hypothesis may be true:

Hypothesis 4: The greater the social and behavioural agility skill (SBS) of an IS/T leader as perceived by the follower, the greater will be the follower's job satisfaction.

Taken together it can be further hypothesised that Interpersonal skills (IPS) is a combined set of four individual skills, namely interpersonal communication (IPC), relationship building (RBS), peer leadership (PLS) and social & behavioural agility (SBS) that influences job satisfaction. Hence,

Hypothesis 5: The greater the interpersonal skill (IPS) of an IS/T leader as perceived by the follower, the greater will be the follower's job satisfaction.

3.2.5 *Control variables*

A control variable is not of primary interest to a researcher. However, it must be measured to ensure that it does not influence or confound results as the measurement may contribute to the outcome variable of interest - in this instance, job satisfaction.

Certain job facets such as pay and remuneration; promotion opportunities; immediate supervision; monetary and nonmonetary fringe benefits; contingent rewards; operating procedures; co-workers; nature of work; and communication within the organisation may contribute to job satisfaction (Spector 1997). These facets have shown to be important to prediction of job satisfaction (Rice *et al.,* 1991). It is because of their potential role in job satisfaction that they must be controlled out so that they do not confound results of the relationship between the interpersonal skills of supervisors and job satisfaction in general. The instrument selects for these job-related facets and are taken from the job satisfaction survey (JSS) developed by Spector (1997).

Another potentially confounding variable is job complexity. Pouliakas & Russo (2015) write that IS/T work tasks are considered complex given the levels of uncertainty and the

interrelated nature of the work. Judges *et al.* (2001) elaborate that job satisfaction is mitigated by job complexity. As such it becomes prudent to include job complexity as a control variable. Job complexity can be defined as the amount of information processing that is required by the job (Nedelkoska & Patt, 2015).

Therefore, there are ten control variables for this research that may confound results. A summary table (see table 3) of the controls can be seen below.

Table 3 - Control variables

Control variable	Logic linking control variable to job satisfaction derived from the workings of Spector (1997) JSS, unless otherwise stated.
Pay and remuneration	Satisfaction with pay and pay rises
Promotion opportunities	Satisfaction with Promotion opportunities
Immediate supervisor	Satisfaction with immediate supervisor
Monetary and non-monetary fringe benefits	Satisfaction with fringe benefits
Contingent rewards	Satisfaction with rewards not necessarily monetary given for good performance
Operating procedures	Satisfaction with rules and procedures
Co-workers	Satisfaction with co-workers
Nature of work	Satisfaction with the type of work done
Communication	Satisfaction with communication within the organization
Job complexity	The frequency of new information processing (Judges *et al.,* 2001; Nedelkoska & Patt, 2015).

3.2.6 *Chapter Conclusion*

This chapter drew on past literature on job satisfaction and interpersonal skills along with arguments from AET theory to develop a model of how four inter-personal skills of leaders' impact upon the job satisfaction of followers. Interpersonal skills can create a feeling of being cared for, a sense of being in a more trusted relationship, feeling motivated and empowered, and working within an improved group dynamic. These are expected to result in positive emotional responses and consequently job satisfaction on the part of employees.

The next chapter will describe the research methodology undertaken in this research to test the study's hypotheses.

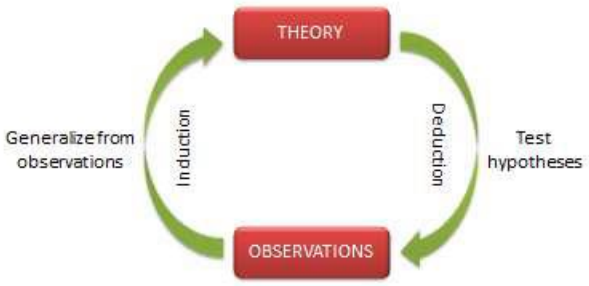
4 RESEARCH METHODOLOGY

This chapter presents the research methodology. First, the research paradigm and approach are described, followed by the research design and methodology. Next, the data collection methods are detailed, and the data analysis procedures are outlined. This is followed by a summary of the ethical considerations and limitations of the research.

4.1 Research Paradigms and Approaches

Research is about finding truth through a scientific method (Strobel, 1998). The traditional scientific method is often described through the hypothetico-deductive model (Bhattacherjee, 2012).

Figure 3 - Hypothetico-deductive model[6]



The model begins with theories - 'truth' statements, i.e. what we think to be true about reality (Kuhn, 1962). Scientists then proceed to test those theories not in a haphazard way but with structured, sub-methods and processes in order to prove or disprove what we think to be known as true. Hypothesising is one such step in this process. Hypotheses are predictions about the outcome of the test. Scientists observe reality using scientific techniques to see how best the theories and concepts and relationships reflect reality. The

[6] Image taken from Bhattacherjee, (2012).

aim of the observation is to build theories which are better able to fit the observed evidence (Bhattacherjee, 2012).

If the evidence from the test shows the theory to be true, one can say that the theory supports the conclusion or the outcome, often this process is called deduction. Sometimes when the evidence does not support the hypothesis (or sometimes scientists start with the evidence), scientists often try and infer their observations from the evidence that these results could be generalised to all experiments of that nature. This, in the science community is called induction.

The approach a scientist follows, either induction or deduction to their research is encapsulated in what they call the research paradigm.

A paradigm for scientific research is a set of assumptions or a collection of beliefs. It is the researchers' world view, or it can be seen as the relationship between the researcher and the world and the parts that make up the world. This belief will determine the researcher's choice of research methods, approaches and design (Bhattacherjee, 2012). Depending on the research paradigm adopted, the ontological, epistemological, methodological, metatheoretical and axiological natures of the research will differ (du Plooy-Cilliers, Davies & Bezuidenhout, 2014). Sometimes research paradigms are referred to as a research tradition (du Plooy-Cilliers *et al.,* 2014).

Positivism and Interpretivism are the two most common paradigms for research and are discussed next.

4.1.1 *Positivism*

Positivism is a paradigm that restricts knowledge creation to what can be observed and measured, it relies on theories that can be tested (Bhattacherjee, 2012). Deduction, as described above - is usually associated with positivist methods (du Plooy-Cilliers *et al*., 2014).

Positivist epistemology assumes that only hard cold facts and figures, usually in the form of numbers that can be measure objectively, count as valid knowledge (Terre Blanche, Durrheim & Painter, 2008).

Positivist ontology views the world as stable, objective and governed by laws, where there is order in the world (du Plooy-Cilliers *et al.,* 2014). Reality can be observed and measured (Bhattacherjee, 2012). Reality is the same for everyone (du Plooy-Cilliers *et al.,* 2014).

Positivist metatheory is summed up as cause and effect (du Plooy-Cilliers *et al.,* 2014). Similar cause will yield similar effect in all circumstances (du Plooy-Cilliers *et al.,* 2014).

Positivist methodology assumes that the only way to precisely measure empirical data is through observation (Bhattacherjee, 2012). For this reason, positivism is usually associated with quantitative methods and techniques.

Positivist axiology assumes that when determining the truth, personal values should play no part, only objectivity (du Plooy-Cilliers *et al.,* 2014). Research must be a representation of hard cold facts (du Plooy-Cilliers *et al.,* 2014).

4.1.2 *Interpretivism*

Interpretivism developed due to the perceived disadvantages that positivist philosophy holds for the examination of the social world. Probably the biggest difference is found in how this approach views relationships between variables or phenomena, as, something that just cannot be measured quantitatively. Interpretivism is usually associated with qualitative methods and is subjective in the perception of truth. Interpretivism is usually adopted when dealing with complex beings like humans (du Plooy-Cilliers *et al.,* 2014).

If positivists like hard cold facts and figures, usually in the form of numbers, interpretivists epistemology enjoy words and common sense (du Plooy-Cilliers *et al.,* 2014). All this translates into different methods on how they collect evidence. For example, positivists will want to collect numbers or scores to use as part of their evidence whereas interpretivists collect stories and commentary as their evidence (Terre Blanche *et al*., 2008).

Interpretivism sees knowledge as fluid and embedded within a meaning system (du Plooy-Cilliers *et al.,* 2014).

Interpretivist ontology sees reality is different from the viewers point of view and may not be the same as anybody else (du Plooy-Cilliers *et al.,* 2014). Reality is based on past experience and can change (du Plooy-Cilliers *et al.,* 2014).

Interpretivist metatheory can be summed as stories, not statistical evidence as is the case in positivism, i.e. as sentences and formal language that describes relationships (du Plooy-Cilliers *et al.,* 2014).

The guiding system for interpretivist methodology is the qualitative research (Terre Blanche *et al*., 2008). Qualitative research focuses on formal language in the form of sentences rather than numbers. Interpretivists aim to study reality subjectively in a manner that is sensitive to context (du Plooy-Cilliers *et al.,* 2014).

Interpretivist axiology values the complex understanding of unique realities, in which there is no attempt to adjudicate in a value-free way. Findings are shaped using one's own interpretation and value set (du Plooy-Cilliers *et al.,* 2014).

4.2 Research paradigm

The research problem addressed by this study is the inadequate clarity surrounding the extent to which interpersonal skills of IS leaders, influence employee job satisfaction, which is an important outcome for any organization.

Therefore, the aim of this research is not to describe social action and its meaning, but rather to find if there is a statistical relationship between interpersonal skills and job satisfaction and thus it restricts itself to what can be observed through measurement. This work has thus been informed by a positivist perspective. The positivist perspective is one where the relationship between the researcher and what can be known is detached and the researcher has objective views as seen from the outside looking in (Terre Blanche,

Durrheim, Painter, 2006). Practically speaking, positivists carry out research within the hypothetico-deductive model (traditionally used by scientists to progress knowledge). Thus, the research began with theory and then developed hypotheses (predictions about relationships) based on known theories in the body of knowledge. Tests are then performed to prove or nullify those hypothesis or predictions (du Plooy-Cilliers *et al.,* 2014). The actual outcome of the test either reinforces theories or falsifies the hypothesis or predictions. Given the meta-theoretical position, the approach of deductive reasoning is adopted.

4.3 Research Designs

Research design is defined as a process concerned with creating and selecting a blueprint of activities that is needed to satisfactorily answer the research questions posed by researchers (Bhattacherjee, 2012). Typical research designs include exploratory research, descriptive research, relational research, experimental research and explanatory research.

4.3.1 *Exploratory research*

Exploratory designs aim to clarify ambiguous problems (Zikmund, 2003); in respect of magnitude and extent of the phenomenon (Bhattacherjee, 2012). They are preliminary investigations into a phenomenon (Terre Blanche *et al.*, 2008). Usually exploratory research provides initial ideas surrounding a phenomenon. Researchers choose this design with the expectation that subsequent studies will be needed (Bhattacherjee, 2012). Exploratory designs are usually inductive in their approach as new insights are sought (Terre Blanche, *et al.* 2008). Generally qualitative methods such as unstructured interviews are used (du Plooy-Cilliers *et al.,* 2014).

4.3.2 *Descriptive research*

The aims of descriptive is to describe the characteristics of a phenomena (Terre Blanche *et al.* 2008) or of a population (Zikmund, 2003). It can also include descriptions of

relationships between phenomena (du Plooy-Cilliers, *et al*., 2014). Descriptive research can include both qualitative and quantitative studies (du Plooy-Cilliers, *et al.,* 2014). However, survey methods are a typical method in descriptive research studies.

4.3.3 *Relational research*

The aim of relational research is to establish if an association, interdependence or relationship exists between two or more potentially related phenomena or variables that describe a phenomenon. (du Plooy-Cilliers, *et al.*, 2014). It does not have the aim to prove causation (Class notes, 2016), as these designs cannot adequately control for confounding effects or establish temporal precedence in data. Cross-sectional data is typically used in relational research studies. The relationship can be measured (e.g. correlation) and be seen as reliable and valid only if supported by established theory founded within the body of knowledge.

4.3.4 *Experimental research*

The aim of experimental research is to go further than relational studies by not only demonstrating that a relationship existing between phenomenon but also to show causation (direction of relationship) (du Plooy-Cilliers, *et al.,* 2014) and to recognise the presence or absence of alternative explanation for the outcome (Zikmund, 2003).

Experimental studies are typically quantitative and rely on randomisation.

4.3.5 *Explanatory research*

Explanatory research aims to provide causal explanations of phenomena (Terre Blanche, *et al.,* 2008). It clarifies ‘how’ and ‘why’ there is a relationship between phenomena (du Plooy-Cilliers *et al.,* 2014). Explanatory studies tend to be more interpretive and are usually combined with descriptive studies (Terre Blanche, *et al.,* 2008).

4.4 The Research Design and Methodology

Following on from the hypothetico-deductive approach, this study adopted a relational research design because of its aim to establish if an association exists between two or more potentially related phenomena or variables that describe a phenomenon (du Plooy-Cilliers *et al.,* 2014). The aim of the research is to provide size (magnitude) and directionality of relationship, and not to prove causation. The study is cross-sectional and thus cannot establish temporal precedence in the data that would be required for causality. Instead, causation can only be inferred from the theory underpinning the work.

The specific methodology (or research strategy) selected was the survey methodology. A survey that does not manipulate variables but just merely measures them using statistical methods. The survey was carried out at a specific point in time. The strength of this strategy provides for external validity and provides insights from multiple perspectives and theories (Bhattacherjee, 2012).

Table 4 - Survey strengths and weaknesses

Survey Strengths	Survey weaknesses
External validity is ensured given data is collected in the field	Internal validity is low as cannot control all the variables
Ability to capture and control a large number of variables	Difficult to infer outcomes from results to the greater population
Ability to include multiple perspectives from different theories	May be subject to respondent bias which affects internal validity
Adapted from (Bhattacherjee, 2012)	

4.5 Data Collection Methods

4.5.1 *Operationalisation*

Operationalisation is the process of developing indicators or items for measurement of theoretical constructs (Bhattacherjee, 2012).

This research has taken great lengths to ensure that all constructs were derived from research with academic rigour. Job satisfaction is well known in organisation behaviour research, interpersonal skills has been a subject of attention within literature of communication studies, psychology and leadership & management circles. The AET theory was drawn on to conceptualise the constructs.

Underpinning AET is the Attribution theory, which postulates the idea that workers evaluate characteristics of their work and form judgements.

Certain judgements are made at the occurrence of events like meetings or interactions for example, when employees meet with their supervisors/ leaders. The meeting is evaluated by the employee and judgements are created which in turn affects performance and satisfaction.

Thus, conceptualization and operationalisation of this study is based on the idea that employees form judgements about phenomena such as the interpersonal skill (and its subconstructs) of leaders. These evaluative judgements can in turn affect the worker's job satisfaction.

Table 5 - Summary of Operationalisation

Construct	Conceptual Definition	Operational definition	Literature source
Part A			
Job satisfaction JIG - Dependant variable	Job satisfaction is a positive feeling about one's job resulting from an evaluation of its characteristics	18 items measured as Yes, No, Can't make mind up	JIG Ironson, Smith, Brannick, Gibson & Paul (1989)
Job satisfaction JSS- (Controls)	Job satisfaction is a positive feeling about one's job resulting from an evaluation of its characteristics	13 items measured as on 6 point Likert scale	Spector (1997)
Part B			
Interpersonal Communication Skills	Interpersonal communication skills are the set of abilities needed in the interpersonal exchange of information; a two-way exchange requiring skill in both expressing and assimilating information. They not only involve listening, speaking, writing, and sending/receiving nonverbal signals, but doing so empathetically, attentively, responsively, directly, and confidently during the social interaction.	7 items measured on a 5-point scale ranging from (1) poor, (2) fair, (3) good, (4) very good and (5) excellent	Hutchins et al. (2013)
Relationship Building Skills	Relationship building skills are the set of abilities needed to develop and maintain bonds with others, relate to and support others, foster ongoing relationships, and build strong beneficial alliances. These skills are imperative for team performance. Beyond the forming of interpersonal associations, relationship building skills also involve the management and resolution of conflicts, and getting to get what you want from others.	9 items measured on a 5-point scale ranging from (1) poor, (2) fair, (3) good, (4) very good and (5) excellent	Hutchins et al. (2013)
Peer Leadership Skills	Peer leaderships skills are the set of abilities necessary not only to be part of a group, but to lead it. The skill set includes the propensity to coach, teach, counsel, motivate, and empower group members; to readily interact with one's team, earning trust and respect; to actively contribute to problem solving and decision making; and to be sought out by peers for expertise and counsel.	8 items measured on a 5-point scale ranging from (1) poor, (2) fair, (3) good, (4) very good and (5) excellent	Hutchins et al. (2013)
Social/Behavioural Agility Skills	Social and behavioural agility skills are the set of interrelated abilities needed in order to monitor and interpret both one's own and other's behaviours and flexibly adapt presentation of self to others during social interactions for the purpose of social influence and control over the interaction.	4 items measured on a 5-point scale ranging from (1) poor, (2) fair, (3) good, (4) very good and (5) excellent	Hutchins et al. (2013)
Part C			
Job complexity	A minimum conception : The levels of information processing on the job	6 items measured on a 5 - point scale ranging from (1) never (2) less than ones a month (3) at least one a month (4) at least once a week (5) everyday	Nedelkoska, Patt 2015
Part D			
Demographic data	Age, gender, number of years in current role, number of years at organisation, education level, number of reporting levels below CIO, frequency of interaction between employee and CIO.	Categorical data	

4.5.2 *Instrument and its measurement*

A structured questionnaire was developed (see appendix 9.3, 9.4 & 9.5). The questionnaire was logically divided into four parts as described below.

a. ***Part A***

The first part of the questionnaire pertained to the constructs of job satisfaction. This part is further divided into two sub-parts.

The first sub-part is a replica of the Job in General (JIG) scales, these scales were used to determine the overall satisfaction of the IT employee. The JIG has 18 questions, the response options are Agree; Disagree; or Can't make my mind up. These responses are mapped to the scores of 1, 2 and 3 respectively and then summed in accordance with the original authors of the measurement tool.

The second sub-part used the job satisfaction survey (JSS) designed by Paul E. Spector in 1985 (Spector, 1997). JSS has nine subscales namely pay, promotion, supervision, fringe benefits, contingent rewards, operating procedures, co-workers, nature of work and communication. The total for this construct is 36 questions. Each sub-scale has four questions. The response options are the 6-point Likert scale ranging from strongly disagree to strongly agree, as this is consistent with the JSS. The JSS scales were included to control the overall measurement of Job satisfaction.

The job satisfaction surveys selected for this research were implemented exactly as the original authors suggested. This of course brings the advantages but also their disadvantages of the choices the original authors made. Despite these limitations, given that the focus of this research was on Interpersonal rather than on job satisfaction, it was considered appropriate that the job satisfaction questions be implemented without alteration. See table 5 for summary of items.

b. ***Part B***

The second part of the questionnaire pertained to interpersonal skills. For this part there were four subscales. The sub-scales are i) Interpersonal communication skills, ii)

relationship building skills, iii) Peer leadership skills and iv) Social/Behavioural agility skills. In total, these sub-scales comprised of 28 questions (Items) with response options on a 5-point Likert scale ranging from strongly disagree to strongly agree. These scales were adapted from the work of Hutchins *et al.* (2013).

c. ***Part C***

The third part of the questionnaire pertained to job complexity. There were six question items asking the respondents how often they faced complex job decisions and tasks with response options scaled as; 1=never, 2=less than once a month, 3=at least once a month, 4=at least once a week and 5=every day. The inclusion of these job complexity items as controls was based on Nedelkoska & Pratt (2015) and Judges *et al.* (2001)

d. ***Part D***

The fourth part elicited demographic data. These includes age, gender, number of years in current role, number of years at organisation, education level, number of reporting levels below CIO, frequency of interaction between employee and CIO.

4.5.3 *Strategy for pre-test and pilot*

Before the survey was administered, a panel of IS practitioner experts and academics was assembled to improve the face and content validity of the instrument via a pre-test. Face validity is defined as a sense of reasonableness of asserting that 'on the face of it' it looks like there is a fit between measurement and construct (Bhattacherjee, 2012). Content validity is defined as an assessment of how well the scale match or stem from the relevant theory or existing domain scientific body of knowledge (Bhattacherjee, 2012). Two IS/T practitioners holding the most senior IS/T position in their respective organisations and known to the researcher were selected along with three academics to pre-test the instrument. The pre-test helped to establish the content validity of the instrument.

Once the pre-test was completed a pilot test was be performed using a small random selection of eight IS/T employees from the larger sampling frame (IS/T employees working for CIOs listed in the CIO directory of South Africa). The aim of the pilot test was to collate

feedback in an aim to improve validity and reliability of the measurement instrument (du Plooy-Cilliers, *et al*., 2012)

Comments on the questionnaire were carefully scrutinised to determine if any changes had to be made to the instrument. Of the pre-testers and pilot respondents four commented on the length of the instrument and how this might deter potential respondents from completing the survey. It was decided that 23 questions pertaining to research controls needed to be dropped. These items were dropped, and 13 questions were retained to ensure coverage of the JSS control variables.

The specific questions that were dropped are listed in appendix 9.8.

The final questionnaire can be viewed in appendix 9.4,9.5, 9.6 and 9.7. or at this link URL: https://www.surveymonkey.com/r/Preview/?sm=ssCafGjwsmQXdVvv0hKA4w8ZeDvbArJreB3CBVPsJBjmmcpEWmgIsi5JdMBsPTc5

4.5.4 *Sampling and respondents*

Sampling is a statistical process that selects a subset of a group/population the research is interested in observing or making interferences about. This process is used because sometimes it is not feasible to reach the entire group or population (Bhattacherjee, 2012).

The first step of the sampling process is to define the population of the research based on the unit of analysis.

The population of interest in this study was IS/T employees working at companies that have a permanent and dedicated IS/T function with supervisors to manage employees.

Due to feasibility issues accessing the population can be a challenge, therefore the second step in the sampling process is how to choose a sampling frame - an accessible section of the population, (Bhattacherjee, 2012). Careful consideration must be given to the sample frame so that ideally one could ensure that the subset represents the population so that the finding for the subset can be generalised back to the population.

The sampling frame for this research is South African (SA) IS/T employees working for businesses which are typically medium to large in size.

The third step in the sampling process to decide how to access the sampling frame. Accessing the sampling frame can occur using two broad sampling techniques. Namely, non-probability and probability-based sampling. Non-probability sampling is defined as a technique where the probability of members of the population being selected cannot be calculated (Bhattacherjee, 2012). It can be contrasted with probability-based sampling which aims to give every chance to a particular unit being selected (Bhattacherjee, 2012). Probability based sampling, statistically provides higher external validity i.e. generalisation of the sample results to the population. A typical probability sampling technique is simple random sampling.

There are different types of non-probability sampling strategies such as expert sampling and convenience and purposive sampling. Purposive sampling means selecting units who are available and willing to participate but are known to be a *typical* sample of the population (Terre Blanche, Durrheim & Painter, 2006). Convenience sampling is a non-probability sampling method where the researcher draws a sample of from the population which is close at hand (Bhattacherjee, 2012). One of the disadvantages for this type of sampling is that the results analysed from this sample is very difficult to generalise to the population, as the sample drawn may not represent the population and therefore limits extrapolation. Expert sampling is choosing respondents in a non-random based way. Their selection is based on their reputation, knowledge and expertise of a particular subject matter (Bhattacherjee, 2012).

In this research, because no single list was available for the sampling frame of IT employees, employed in South Africa medium to large corporations, it was decided to adopt two non-probability sampling methods namely purposive and convenience sampling.

The first non-probability sample of the population selected for this study was of a purposive nature. Here, a sample was accessed by selecting organisations listed in the CIO Directory of South Africa published by IT web (a well-known IT media house in South Africa). These

organisations are known to have at least one permanent IS/T supervisor namely the Head of the IS/T department or CIO and were likely to employ a large number of IS/T staff. IS/T employees of these organisations were invited to participate in the study.

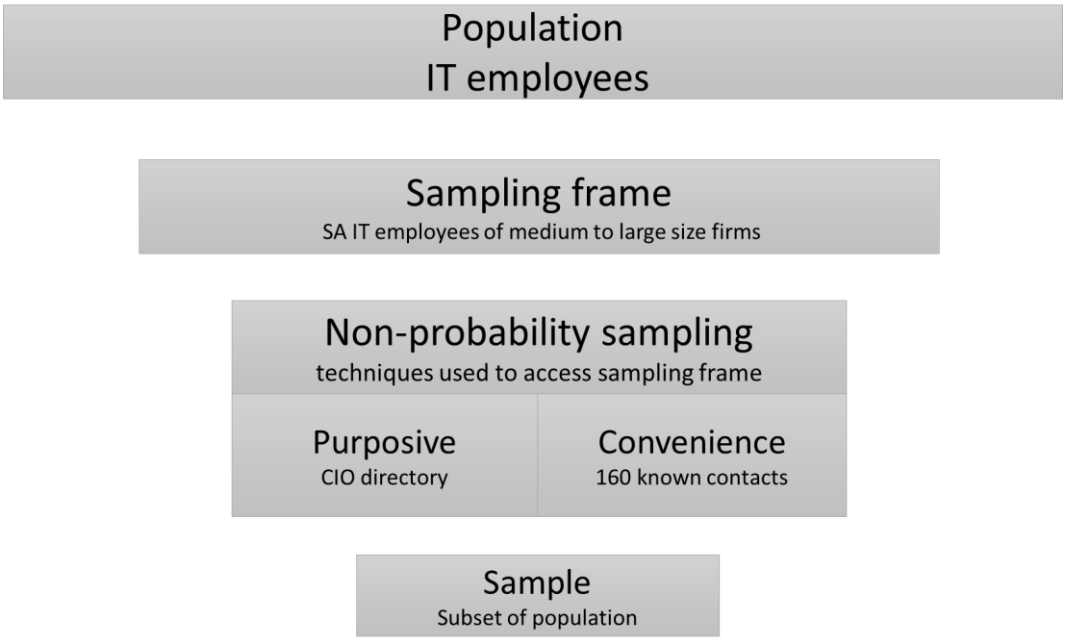
Although the use of such sampling strategy limits the generalisability of the study's findings, the results will none-the-less be of interest given the large number of the organisations listed in the directory (over two hundred) from diverse industries.

The number of CIOs listed in the directory was 228. Fifty-two (52) of the 228 CIOs were not contacted as they represented companies outside of South Africa or headed the IS/T division of a State-owned company. One hundred and seventy-two (172) CIOs were contacted via e-mail (60) and LinkedIn InMail (112) to request permission for their subordinates to take part.

The second non-probability sample was derived by sending 160 invitations using the convenience sampling techniques. These employees contact details were known to the researcher and were vetted for the overall criteria imposed by the research.

Figure 4 represents a summary of the sampling process used in this research.

Figure 4 - Sampling process



4.5.5 *Questionnaire administration*

Administration of the questionnaire to the purposive sample and the convenience sample are discussed next.

a. ***Administration to the purposive sample***

The CIO Directory of South Africa lists CIOs and their organisations. The contact information provided in the directory was used to contact the CIOs. The initial contact information message (See appendix 9.9) contained information regarding the study and a request asking the CIO to forward an attachment (See appendix 9.10) to their supervised employees directly.

If the CIO opted to send the mail directly to the subordinates, this was deemed implicit consent for their organisational employees to participate. These CIOs then directly emailed their staff with the appropriate attachment (appendix 9.10).

Three sets of reminders were sent out after two-week intervals. The survey began on September 17th, 2017 and by November 8th, 2017, twelve (12) organisations indicated their willingness to help distribute the questionnaire to IS/T employees. Thirty (30) had read their messages and four (4) CIOs declined the invite. A total of forty-four (44) responses had been collated before the convenience sampling was implemented.

b. ***Administration to the convenience sample***

Three sets of invitations (all included appendix 9.10) were sent out from the 8th of November 2017 to participate.

i. **Set 1**

The first set included CIOs, IS/T supervisors that met the criteria of the population but were not mentioned in the CIO Directory.

ii. **Set 2**

The second set included IS/T supervisors that were personally known to the researcher and who worked for organisations listed in the CIO directory but where the CIOs previously contacted in the purposive sample did not explicitly decline the invitation for their employees to participate.

iii. **Set 3**

The third set included senior managers of organizations that met the criteria of being South African and known to have an IS/T department with a full-time IS/T supervisor. The senior managers were known to the researcher and they were invited to approach their IS/T supervisor to seek permission to survey the IS/T employees.

After two weeks, one reminder was sent to the convenience sample.

In all cases, the identified contact was requested to forward the invitation to participate to individual IS/T employees.

The correspondence to the IS/T employees explained that all responses will be anonymous and confidential, and results will not be shared with any third party, including their CIO or supervisor, or used for any purposes other than the study. The questionnaire, being self-administered, contained careful instructions for completion.

For both sampling techniques the survey tool kept count of responses. On February 2nd, 2018 the survey was closed and thus after 20 weeks in data collection a total of 129 responses had been collected.

4.6 Data Analysis Methods

The first step that was taken before analysing the data included data cleaning, reverse coding, removal of outliers and treatment of missing data. Next, principal components factor analysis (PCA) was carried out. The reason for this test was to show statistically that measurement items demonstrate adequate convergent validity and discriminant validity (Bhattacherjee, 2012). Convergent validity ensured the construct accounted for the majority of the variance in the underlying items, i.e. how close or how much the items converges on the construct. Discriminant validity ensured that the different measures or items were measuring the construct and not some other construct. This was demonstrated by taking note of the PCA loadings for each measurement item. The loadings inform how much of the variation in an item is explained by the component. Low loadings (<.6) signal that the measurement item does not adequately reflect the component.

The next step was to ensure the reliability of the scale. Bhattacherjee (2012) defines reliability as the degree to which the measure of a construct is dependable and consistent. Cronbach's alpha reliability test was used as this measured internal consistency as recommended by Bhattacherjee (2012).

Composite scores were then calculated, and their distributions checked by examining skewness and kurtosis measures. This was for all constructs, namely pay, promotion, supervision, fringe benefits, contingent rewards, operating procedures, co-workers, nature of work, communication, interpersonal communication skills, peer leadership skills, social and behavioural skills and relationship building skills.

The next step in data analysis was to ensure that no multi-collinearity existed so that the independent variables were not too closely related to each other. A correlation matrix was produced which assisted in detection of multi-collinearity.

Finally, a multiple regression analysis was used to test the research model's underlying hypotheses. Specifically, job satisfaction was the dependant variable in the regression equation and the interpersonal skills factors and controls were the independent variables.

Hypotheses were considered supported when the observed values and relationship was not by chance. A significance level of 0.05 was chosen. Which means that these tests allowed for up to 5% probability of making a type 1 error i.e. false positive errors. In addition, the R^2 as an indication of the predictive power of the model was calculated. The calculation of R^2 provided insight into the explanatory power of the model given the variability measured in the independent predictor of interpersonal skills variables. The adjusted R^2 was also evaluated. It is a modified version of R^2, adjusting for the number of predictor variables.

4.7 Ethical Considerations

The overarching principle of scientific research is to do no harm (Bhattacherjee, 2012). In order that this principle is upheld, this research protocol sat before a university ethics committee. To ensure that it complied with the university standards, the participant information sheet accompanying the survey informed all potential participants on the purpose, nature and methods of the research. The participants were informed that responding to the questionnaire was completely voluntary. Their privacy was also maintained by keeping their responses confidential and by not asking them to identify themselves in the questionnaire. They were also told that they could withdraw from the survey at any point without risk of loss. As IS/T employees were surveyed, all participants are likely to be over the age of 18 years. And no individuals under the age of 18 were targeted. No incentives were used to induce responses, but participants could opt to receive a copy of the results in an aggregate form on request by emailing the researcher.

4.8 Limitations, Internal and external validity

4.8.1 *Limitations*

Limitations are matters outside of the researchers control usually associated with the research approach and design (Simon & Goes, 2013). This study adopted a relational design that does not provide evidence of causation merely directional association. Generalisation of findings is also a weakness of relational studies arising from the selection of non-probability sampling techniques such as the convenience and purposive sampling methods as used in this study. Given the non-probability convenience sampling used, inferences cannot readily be made about the population based on results found in the sample (Bhattacherjee, 2012).

The choice of instrument has its inherent limitations. In this case, a self-administered survey introduced limitations such as poor response rates (Delva, Kirby, Knapper & Birtwhitsle, 2002), bias in the responses or mistakes in recording responses (Zikmund, 2003). The nature of self-administered surveys also limited the respondent to a closed-ended response, and the researcher could not then follow-up with potentially important counter questions (du Plooy-Cilliers *et al.*, 2014).

Social desirability bias may also be a limitation. This type of bias occurs in self-administered surveys in which the respondent projects a response different to their actual position to avoid embarrassment as they may believe the socially desirable response will be more favourably judged when viewed by others (Fisher, 1993).

Any behavioural study inherently has a common method bias problem. Podsakoff, Mackensie, Lee, Podsakoff (2003) write that the biases occur because of the measurement methods, e.g. the questionnaire itself, rather than the construct the measure represents. This too is a limitation of this study.

The cross-sectional nature of this survey limits the inference of causation as temporal precedence cannot be established in the data. Causal inference that interpersonal skill of

supervisor's results in job satisfaction of employees are only made with reference to the theory discussed in Chapter 3.

4.8.2 *Research assumptions*

Respondents answered in a truthful manner due to the measure taken to inform them of voluntariness and the guarantee of anonymity.

Respondents answered in a timely manner due to the use of gentle reminders in the data collection process.

JSS is a valid measure of job satisfaction facets given the citations it has received in academic circles, as it specifically included facets that are useful for controlling experiments.

JIG is also an appropriate measure of overall job satisfaction based on its pervasive use.

Exhibited or displayed interpersonal behaviour of a leader in interactions is based on the skills the leader has. i.e. the perceptions of the respondents with respect to the leaders underlying skill.

4.8.3 *Internal validity*

For research to be considered internally valid, the research method and design must demonstrate it answers the research question or hypothesis. It is a question of what controls have been put in place. (du Plooy-Cilliers *et al.,* 2014).

The controls and process put in place in this research were:

- Using theoretical constructs and variables based on pre-existing theories ensuring translational validity
- Having a strategy for pre-tests and a pilot ensuring instrument validity (face and content validity), and

- Performing relevant statistical tests ensuring criterion-related validity including convergent and discriminant validity.

4.8.4 *External validity*

External validity refers to the generalisation of the finding to a larger population from which the sample was drawn. Stronger external validity can be provided through the process of probabilistic sampling, where randomisation cancels out extraneous variables (Bhattacherjee, 2012). This allows for the generalisation of the findings to a larger population from which the sample was drawn.

This research, however, used non-probabilistic sampling techniques, namely purposive sampling and convenience sampling. The list compiled by IT web in their CIO directory was chosen purposively as it represents the populations parameters. However, the CIO directory is a leading and authoritative list of IS/T leaders in organisations that have a permanent IS/T function in South Africa, and the results should thus have useful implication for a number of organisations. While sampling may have been introduced based on a more convenient sub-sample, Lynch (1982) suggest that judgements of external validity are best made by experts in the substantive domain under investigation rather than specialists in methodology.

4.8.5 *Reliability*

Reliability means having the qualities of credibility and consistency. Consistency implies that another researcher will be able to repeat the research and find similar results while credible implies that the *means* of the research are acceptable to the world of research (du Plooy-Cilliers *et al.,* 2014).

The process adopted in this research of using literature to ground the research and documenting procedures for data collection and analysis ensures credibility and facilitating consistency should the work be repeated.

In addition, the Cronbach alpha internal consistency test was used as a measure of reliability as recommended by Bhattacherjee (2012).

4.8.6 *Chapter conclusion*

This chapter described the research methodology, focusing on the hypothetico-deductive relation research design and survey methodology. The survey data collection methods were outlined including, the measurement of the variables. The non-probabilistic sampling techniques used in this research was a pragmatic choice given the limited time and resources available for the study. The correlation and regression techniques that was used for analysing the collected data and testing the hypothesised model were outlined along with efforts to ensure reliability and validity of the work. Ethical considerations were explained along with limitations of the work.

In the next chapter, the results of the data analysis and hypothesis testing is presented.

5 RESULTS

This chapter presents results of the analysis performed on the collected data. Data cleaning is discussed followed by describing the profile of the sample. Next, validity and reliability results are presented followed by correlation analysis and hypothesis testing.

5.1 Coding, Data Cleaning, Missing values and Outliers

First, data coding was performed on the data. Data coding is the process of converting data into a numeric format so that is readable by computer programs in order for statistical analysis to occur (Bhattacherjee, 2012). The second activity performed is data cleaning. The intention of data cleaning is to find any errors and correct them where possible with the aim of minimising any impact on the results (Van den Broeck *et al.,* 2005). These errors arise despite the best intentions of the researcher in survey design. Respondents may introduce errors in the data they input (Van den Broeck, Argeseanu, Eeckels & Herbst, 2005).

5.1.1 *Coding*

In this research the survey tool assisted the researcher to properly code the data. The tool allowed for setting up of coding parameters so as when the data was captured, the tool automatically coded the data numerically. Table 6 below illustrates the coding used.

Table 6 - Coding results

Construct	Response	Response code mapping
Part A		
Job satisfaction JIG	Yes	3
	No	0
	Can't make my mind up	1
Job satisfaction JSS- (Controls)	Disagree Very Much	1
	Disagree Moderately	2
	Disagree Slightly	3
	Agree Slightly	4
	Agree Moderately	5
	Agree Very Much	6
Part B		
Interpersonal Communication Skills, Relationship Building Skills, Peer Leadership Skills, Social/Behavioral Agility Skills	Poor	1
	Fair	2
	Good	3
	Very good	4
	Excellent	5
Part C		
Job complexity	Never	1
	Less Than once a month	2
	At least ones a month	3
	At least once a week	4
	Everyday	5

5.1.2 *Data cleaning and missing value analysis*

Data cleaning involved removing responses that had obvious response patterns or were not genuinely completed for example responses missing large amounts of data.

Given that no question was mandatory, the survey tool allows for respondents to page through the online forms without any questions being answered. Sometimes respondents began to respond to the questions on the first few pages of the online forms but towards the latter pages they skipped many questions. One way to identify this type of pattern in respondent behaviour was to evaluate a respondent's completion rate.

It was found that twelve respondents (Ids:2, 4, 40, 52, 55, 60, 65, 72, 78, 93, 105, 122) were missing more than half the data and given such, the overall response was deemed incomplete and therefore unreliable. The responses were deleted from the dataset. The remaining responses were further evaluated on the quantum of missing values. An additional set of responses were found to be missing approximately one third of the data in sporadic places across the questionnaire and these too were selected for deletion (Ids 6, 36,37,67,77,80,91,113,117 and 118).

In dealing with the remaining missing values, a researcher must first identify crucial variables that cannot be missing. Based on a researcher's tolerance level, one can decide to remove the response or keep the response but complete it using an imputation method (Bhattacherjee, 2012). When researchers try to deal with remaining missing values, they must decide if the data is missing completely at random (MCAR) (Pigott, 2001) or it is missing because it is directly related to other variables.

In this research the JIG scale items measured the dependant job satisfaction variable and as such these items were deemed critical to the study and cannot be missing. Consequently, only one of the JIG subscales was allowed to be missing, and if were missing a score of 1 was used to impute the missing value as per the instruction of the creators of the JIG (Brodke *et al.,* 2009), i.e. it was coded as a 'not sure' response. The researcher discovered 25 responses with more than one JIG question item was missing, and as such these were removed from the data set (Ids: 5, 9, 11, 14, 17, 20, 23, 25, 29, 49, 56, 57, 59, 63, 66, 74, 85, 89, 92, 99, 109, 111, 116, 119, 128).

At this point, 82 responses were remaining with enough complete data to facilitate meaningful statistical analysis. They too were further analysed, and any remaining missing values were considered missing completely at random.

See table7 below for summary of deletion of incomplete cases

Table 7 - Deletion of incomplete cases

Number of responses	129
Number of removed during cleaning	47
Reasons for removal	
Sweep 1. Missing > 50% of data	12
Sweep 2. Missing > 33% of data	10
Sweep 3. Missing > 1 JIG scale item	25
Useable data set	82

Remaining missing data can be treated in a number of ways (Bhattacherjee, 2012). A researcher can either leave the data as missing and perform pair-wise or list-wise deletion in the statistical analysis or perform some form of imputation. Imputation methods are based on the remaining available completed responses, e.g. one can use the mean of the completed cases or regress the missing values based on what is completed (Soley-Bori, 2013). Conventional imputation may introduce bias as the values are systemic rather than random (Bhattacherjee 2012). Some advanced manner or methods include i) Multiple imputation – replace values with statistical acceptable values (Soley-Bori, 2013), ii) Maximum likelihood – use the variance co-variance metric in a regression model, or iii) Bayesian simulation – iterative or semi parametric algorithms that predicts samples of missing values (Soley-Bori, 2013).

In this research the remaining missing values were imputed based on the nature of the question as follows:

i. Multi-item scales

In the case of all multi-item scales, the average of all the completed scale items for that construct, within the same case (response) was used as the replacement for the missing values.

Questions falling into this category are;

- Interpersonal communication

- Relationship building skills
- Peer leadership skills
- Social and behavioural agility skills
- Job complexity

The following table highlights the summary of the missing items for multi-item scales.

Table 8 - Missing items: IPS and controls

Scale	Missing items
Interpersonal communication	2 responses missing 1 item each
Relationship building skills	6 responses missing 1 item each
Peer leadership skills	4 responses missing 1 item each
Social /behavioural agility skills	2 responses, 1 response 1 missing item, 1 response 4 missing items (used the series mean)
Job complexity	No missing values

ii. Single-Item scales

If a question has no sub-questions and the question is missing as in the example of the question regarding co-workers, then an average of all available cases across respondents was used to replace the missing value (i.e. the series mean). Age, years at organisation, and number of years in current role are all examples of single-item scales.

Questions falling into this category are:

- Age
- Number of years in current role

- Number of years at organisation
- Number of levels below CIO
- Frequency of interaction with CIO

Table 9 - Missing Items: Demographics

Scale	Missing Items
Age	6
Number of years in current role	2
Number of years at organisation	4
Number of levels below CIO	5
Frequency of Interaction with CIO	2

iii. JIG and JSS scales

In the case of the JIG scales, the authors explain that the value of one (1) should be used as a replacement to the missing values. A total of three (3) items was completed as instructed by the authors Brodke *et al.* (2009), (Ids:48, 83 & 90).

No missing values were found for the JSS scales

iv. Nominal scales

For nominal scales, the ‘other’, ‘prefer not to say’ or ‘not listed’ label was selected to complete the missing value. For example, if gender was not completed then the label ‘prefer not to say’ was used. If ‘sector’ was incomplete, then the option label of ‘not listed’ was used to complete. Below is a table outlining all the nominal scales and the response used if missing values were found.

Table 10 - Missing items: nominal scales

Missing Question	Selected value used to complete missing value	Number of Missing Items
Sector	Not Listed	2
Gender	Prefer not to say	2
Current role	Not Provided	2
Highest education level	Prefer not to say	2

5.1.3 *Transformation*

a. ***Reverse coding***

It is important when coding, to take into account any items that may have been asked in a reverse (negative) manner to the other items within the scale. In these cases, the data has to be transformed to suit the response so that meaningful interpretation can take place. This is called reverse coding transformation (Bhattacherjee, 2012).

In this research, there were a few questions that needed to be reverse coded.

The authors of the JIG advise, subscale items number 2,4,6,8,12,14,16,18 are to be reverse coded so items that score 3 must become 0 and those who scored 0 become 3. For example, item 2 deals with a perception of the job as ‘bad’ and is reverse coded such that a ‘no’ response would imply a good job and must therefore be scored a 3. A score of 1 remains unchanged as these reflected neutral responses (neither yes or no) (Brodke *et al.,* 2009).

The authors of the JSS advise that the following questions should be reverse coded. 2,4,6,8,10,11,12 as these questions are posed in the negative. For example, item 2 deals with the lack of promotion opportunities and was coded so that agreement would imply less satisfaction with promotion.

b. ***Collapsing***

Another type of transformation is collapsing responses into simpler forms. In this research, these types of transformation exist.

The JIG scale is collapsed into a single score by adding each coded response in the multi-item scale. This is in accordance with the methods outlined by the authors of this scale. Therefore, once collapsed, the scale ranges from 0 to 54 where 54 is the highest level of job satisfaction.

The JSS scales, measured on a 6-point scale, are collapsed into a single score for each facet (Spector, 1997). This is instructed as an arithmetic sum, if there are 4 sub- items within the facet then the score is simply out of 24 by adding the sub scales together. If there are less than four sub-items, then one must compute a score out of 24 by first summing the sub-items, dividing by the number of sub-items, and then multiplying it by four.

For the demographic question pertaining to the respondent's current job role, some respondents chose not to select a pre-existing role and opted to complete the open-ended response choice for this question. The researcher collapsed those responses into a pre-existing option that was best fit or added a new role. The labels that were added are;

- IT finance
- IT risk
- Team leader
- Tester
- Trainer
- Data scientist

5.1.4 *Outliers*

An observation that measure a statistically great distance away from other observations, is known as an outlier. In this research no outliers were observed. The reason for this is the survey questions were all close ended in nature and therefore responses were all on valid points of the measurement scale.

5.2 Response profile

5.2.1 *Demographic profile of participants*

Table 11 - Demographic profile: Age

Average Age of respodent	37.1
Average age in current role	6.2
Average Age in Organization	6.4

The average age of respondents was 37 with an average of 6 years in their current organisation. This suggests respondents have been in their organisations for a fairly long period of time and have had sufficient time to evaluate their jobs and the skills of their leader.

Table 12 - Demographic profile: Gender

Gender	% to Total	Frequency
Male	65.85%	54
Female	30.49%	25
Prefer not to say	3.66%	3

It was not surprising that nearly 66% were male given that the South African IT sector is largely male dominated, and the gender imbalance has been reported elsewhere e.g. Trauth, (2013).

Table 13 - Demographic profile: Educational level

Educational level	% to Total	Frequency
Matric	9.76%	8
Diploma	25.61%	21
Degree	24.39%	20
Hounours	18.29%	15
Masters	14.63%	12
Prefer not to say	7.32%	6

IT employees are fairly well educated with over 56% of the sample having at least a bachelors level qualification.

Table 14 - Demographic profile: sector

Sector	% to Total	Frequency
Construction and Engineering	1.22%	1
Consumer goods & services	1.22%	1
Education	1.22%	1
Energy & utilities	1.22%	1
Financial Services	52.44%	43
Health and Pharmaceutical	2.44%	2
Industrial	2.44%	2
Information Technology	26.83%	22
Professional and business Services	2.44%	2
Retail	1.22%	1
Not listed	7.32%	6

The majority of responses were from the IS/T sector and financial services. This is not surprising given the large investment of financial services companies in IS/T assets.

Table 15 - Demographic profile: role

Current role	% to Total	Frequency
Not Provided	3.66%	3
Architect	6.10%	5
Analyst	14.63%	12
Programmer	10.98%	9
Administrator	4.88%	4
Support	13.41%	11
Manager	32.93%	27
IT finance	6.10%	5
IT Risk	2.44%	2
Team leader	1.22%	1
Tester	1.22%	1
Trainer	1.22%	1
Data scientist	1.22%	1

A third of the participants reported that they were managers with the other respondents spread across a range of job roles in the IS/T department. Analyst, programmers and IT support were fairly represented with much fewer respondents from emerging roles such as data scientists.

Table 16 - Demographic profile: CIO relations

Reporting levels below CIO	% to Total	Frequency
0	7.32%	6
1	21.95%	18
2	24.39%	20
3	19.51%	16
4	12.20%	10
5	10.98%	9
6	1.22%	1
10	2.44%	2

Frequency of interaction with CIO	% to Total	Frequency
Everyday	20.73%	17
At least once a week	26.83%	22
At least once a month	17.07%	14
Less than once a month	14.63%	12
Never	20.73%	17

Over 45% of respondents deal with the CIO at least once a week and over half of respondents are found to be at least 2 levels below the CIO. Six (6) respondents reported that they are on same level of the CIO, perhaps those respondents have dotted lines to the CIO or work in a matrix organisational structure.

5.3 Validity and reliability

This section presents results of the test of validity and reliability of data prior to use in hypothesis testing.

For validity, the Principal Component Analysis (PCA) test was used. A general rule of thumb when performing Principal Component Analysis, is that the sample size should be 5 – 10 times the number of items to be evaluated in the PCA. Given the sample size of 82 relative to the number of items, it was decided therefore to analyse the various scales independently to establish their unidimensionality and convergent validity before attempting to combine items from across different scales in order to establish discriminant validity. PCA was carried out to identify factors with eigenvalues greater than one, and the method of rotation was set to varimax.

The Cronbach's alpha test for internal consistency was used to establish reliability of scales following the confirmation of their validity.

The next eight subsections contain results of these types of tests used in this research.

5.3.1 *IPS Tests for Convergent Validity*

28 items were used to measure the four dimensions of interpersonal skills. Respondents were asked to rate their supervisor as their IS/T leader on each of the items ranging from 1=poor to 5=excellent.

a. ***Interpersonal communication skills***

Kaiser-Meyer-Olkin (KMO) test, a measure of sampling adequacy recorded 0.883, higher than the recommended 0.5, to demonstrate adequacy. The significant value of Bartlett's Test of Sphericity which indicates if PCA should be conducted was less than 0.05 indicating that is was acceptable to perform PCA.

Eigenvalues set to greater than one and the method of rotation set to varimax.

Table 17 – Convergence validity results: IPC – variance explanation

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.07	72.422	72.422	5.07	72.422	72.422
2	0.528	7.548	79.971			
3	0.447	6.387	86.358			
4	0.359	5.125	91.482			
5	0.246	3.518	95			
6	0.205	2.934	97.933			
7	0.145	2.067	100			

Extraction Method: Principal Component Analysis with varimax rotation.

In the figure above the total variance explained, indicates how much of the variability in the data items has been modelled by the extracted factor, namely interpersonal communication skills. In this case it is 72.422. It has been reported by many statisticians that the way to interpret this table is by counting how many components that have a figure in the 'Total' column greater than the eigenvalue set in the test parameter. In this research, the parameter was set to 1 and when reading the table. There is only one component registering more than 1 at 5.07. This indicates that one factor was extracted, or in other words these subscales sufficiently demonstrate that the underlying subscales measure one construct.

This is supported by the loadings presented in the table below. The loadings measure the correlation between a specific observed variable and a specific factor loading. In this case,

the loadings are above the 0.6 rule of thumb. Therefore, interpersonal communication skill is considered unidimensional and as evidencing adequate convergent validity.

Table 18 - Convergence validity results: IPC – Component matrix

Component Matrix[a]	
	Component
	1
IPS_IPC_Active_listening	0.838
IPS_IPC_Oral_communication	0.857
IPS_IPC_Written_communication	0.840
IPS_IPC_Assertive_communication	0.864
IPS_IPC_Non_verbal_communication	0.830
IPS_IPC_Informing	0.890
IPS_IPC_Information_gathering	0.837
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

b. ***Relationship building skills***

KMO test for sampling adequacy is reported as 0.907. The significant value of Bartlett's Test of Sphericity was less than 0.05 indicating that is was acceptable to perform PCA.

Table 19 Convergence validity results: RBS – variance explanation

Total Variance Explained						
	Initial Eigenvalues			Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.159	68.435	68.435	6.159	68.435	68.435
2	0.686	7.624	76.059			
3	0.531	5.895	81.954			
4	0.443	4.927	86.881			
5	0.368	4.085	90.966			
6	0.311	3.453	94.419			
7	0.245	2.726	97.145			
8	0.140	1.560	98.705			
9	0.117	1.295	100.000			
Extraction Method: Principal Component Analysis with varimax rotation						

In the figure above, one component registers an eigenvalue greater than one and accounts for 68.435 of the variability modelled by the extracted factor namely, relationship building

skills. This indicates that the subscales sufficiently demonstrate that the underlying subscales measures one construct.

This is supported by the loadings table below, which were all above 0.6. Therefore, relationship building skills is considered unidimensional and evidencing adequate convergent validity.

Table 20 - Convergence validity results: IPC – component matrix

Component Matrix[a]	
	Component
	1
IPS_RBS_Team_cooperation	0.851
IPS_RBS_Courtesy	0.827
IPS_RBS_Amicability	0.844
IPS_RBS_Trust	0.834
IPS_RBS_Dependability	0.889
IPS_RBS_Intercultural_sensitivity	0.791
IPS_RBS_Service_orientation	0.797
IPS_RBS_Negotiation	0.778
IPS_RBS_Conflict_Resolution	0.829
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

c. ***Peer leadership skills***

KMO test for sampling adequacy is reported as 0.900. The significant value of Bartlett's Test of Sphericity was less than 0.05 indicating that is was acceptable to perform PCA.

Table 21 - Convergence validity results: PLS – variance explanation

Total Variance Explained						
	Initial Eigenvalues			Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.777	72.215	72.215	5.777	72.215	72.215
2	0.640	8.002	80.217			
3	0.440	5.506	85.723			
4	0.348	4.352	90.075			
5	0.283	3.544	93.619			
6	0.218	2.728	96.347			
7	0.170	2.123	98.470			
8	0.122	1.530	100.000			
Extraction Method: Principal Component Analysis with varimax rotation.						

The total variance explained by one peer leadership skills component was 72.215. This suggests its measures one construct.

This is supported by the loadings table below, which were all above 0.6. Therefore, peer leadership skills are considered unidimensional, and evidencing adequate convergent validity.

Table 22 - Convergence validity results: PLS – component matrix

Component Matrix[a]	
	Component
	1
IPS_PLS_Role_model	0.836
IPS_PLS_Helping_others	0.846
IPS_PLS_Task leadership	0.897
IPS_PLS_Energizing_others	0.881
IPS_PLS_Rewarding_others	0.831
IPS_PLS_Controlling	0.768
IPS_PLS_Formal_staffing	0.878
IPS_PLS_Informal_staffing	0.856
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

d. ***Social and behavioural agility skills***

For this construct, KMO test for sampling adequacy is reported as 0.842. The significant value of Bartlett's Test of Sphericity was less than 0.05 indicating that is was acceptable to perform PCA.

Table 23 - Convergence validity results: SBS – variance explanation

Total Variance Explained						
	Initial Eigenvalues			Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.288	82.193	82.193	3.288	82.193	82.193
2	0.301	7.522	89.715			
3	0.253	6.315	96.030			
4	0.159	3.970	100.000			
Extraction Method: Principal Component Analysis with varimax rotation.						

Total variance explained by one component was 82.193 of the variability modelled by the extracted social and behavioural agility skills factor. Observed loadings were above the 0.6 rule of thumb and therefore, social and behavioural agility skills is also considered unidimensional and evidencing adequate convergent validity.

Table 24 - Convergence validity results: SBA – component matrix

Component Matrix[a]	
	Component
	1
IPS_SBS_Social_perceptiveness	0.905
IPS_SBS_Self_presentation	0.881
IPS_SBS_Social_influence	0.924
IPS_SBS_Adaptability	0.915
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

e. ***Summary of convergence validity tests for IPS***

Table 25 - Summary of convergence validity - IPS

Interpersonal skill	**Pass/Fail convergence validity**
Interpersonal communication skills	Pass
Relationship building skills	Pass
Peer leadership skills	Pass
Social and behavioural agility skills	Pass

5.3.2 *IPS Tests for Discriminant Validity*

Discriminant validity is a further aspect of construct validity. It shows that two measures that are not supposed to be related are in fact, unrelated. Given that the overall construct measures interpersonal skills, each sub construct was coupled with another sub-construct and then tested. Again, using the PCA test but this time referring to the rotated component

matrix after setting the test parameters to specifically extract two (2) factors. The loadings in the component columns can be inspected to see where the rule of thumb test of 0.6 is surpassed in each component column. Then, by comparing it to what is actually been measured in terms of description, one can determine if the constructs are discriminant.

When the Interpersonal Communication Skills (IPC) with Relationship Building Skills (RBS) were tested for discriminant validity, the results below show that IPC and RBS are stable as separate constructs, however there is some overlap. For example, nonverbal communication, which based on theory, belongs to the IPC construct actually has a loading of 0.491 on RBS which indicates that there is a correlation to RBS. Another example was Trust which is intended to reflect RBS but which has a loading of 0.431 in relation to IPC. However, this is not surprising given that the constructs are in fact measuring a super construct of IPS and overlapping is bound to happen. Intuitively, one can believe that nonverbal communication is part building a relationship. But overall the majority of loadings above 0.6 are grouped nicely into the theorised constructs and clear primary loadings on intended constructs of interest was evident. Therefore, there is sufficient evidence to consider IPS discriminate from RBS.

Table 26 - Discriminate validity – IPC & RBS

Rotated Component Matrix[a]		
	Component	
	1	2
IPS_IPC_Active_listening	0.698	0.461
IPS_IPC_Oral_communication	0.849	
IPS_IPC_Written_communication	0.806	
IPS_IPC_Assertive_communication	0.819	
IPS_IPC_Non_verbal_communication	0.655	0.491
IPS_IPC_Informing	0.793	
IPS_IPC_Information_gathering	0.607	0.577
IPS_RBS_Team_cooperation	0.654	0.577
IPS_RBS_Courtesy		0.855
IPS_RBS_Amicability		0.856
IPS_RBS_Trust	0.431	0.705
IPS_RBS_Dependability	0.477	0.740
IPS_RBS_Intercultural_sensitivity		0.750
IPS_RBS_Service_orientation	0.425	0.643
IPS_RBS_Negotiation	0.590	0.509
IPS_RBS_Conflict_Resolution	0.542	0.624
Extraction Method: Principal Component Analysis.		
Cross-loadings less than 0.4 are hidden		
a. Rotation converged in 3 iterations.		

The same type of interpretations can be made when comparing Interpersonal Communication Skills with Peer Leadership Skills. See table below.

Table 27 - Discriminate validity – IPC & PLS

Rotated Component Matrix[a]		
	Component	
	1	2
IPS_IPC_Active_listening		0.754
IPS_IPC_Oral_communication		0.846
IPS_IPC_Written_communication	0.422	0.722
IPS_IPC_Assertive_communication		0.781
IPS_IPC_Non_verbal_communication	0.434	0.707
IPS_IPC_Informing	0.415	0.784
IPS_IPC_Information_gathering	0.528	0.643
IPS_PLS_Role_model	0.695	0.456
IPS_PLS_Helping_others	0.730	0.422
IPS_PLS_Task leadership	0.737	0.498
IPS_PLS_Energizing_others	0.705	0.521
IPS_PLS_Rewarding_others	0.777	
IPS_PLS_Controlling	0.668	
IPS_PLS_Formal_staffing	0.845	
IPS_PLS_Informal_staffing	0.808	
Extraction Method: Principal Component Analysis.		
Cross-loadings less than 0.4 are hidden		
a. Rotation converged in 3 iterations.		

The table shows each item having a primary loading on its expected construct.

Next, items from interpersonal communication skills were examined with items from social and behavioural agility skills.

Table 28 - Discriminate validity – IPC & SBS

Rotated Component Matrix[a]		
	Component	
	1	2
IPS_SBS_Social_perceptiveness		0.865
IPS_SBS_Self_presentation		0.824
IPS_SBS_Social_influence		0.846
IPS_SBS_Adaptability		0.869
IPS_IPC_Active_listening	0.784	
IPS_IPC_Oral_communication	0.823	
IPS_IPC_Written_communication	0.795	
IPS_IPC_Assertive_communication	0.821	
IPS_IPC_Non_verbal_communication	0.717	0.424
IPS_IPC_Informing	0.866	
IPS_IPC_Information_gathering	0.742	
Extraction Method: Principal Component Analysis.		
Cross-loadings less than 0.4 are hidden		
a. Rotation converged in 3 iterations.		

Very little overlap can be seen in the above table with nice groupings of loadings reflecting the theoretical constructs for IPC and SBS.

For completeness (See tables 29 through 31 below), discriminant analysis of relationship building skills (RBS) were compared with social and behavioural agility skills (SBS), peer leadership skills (PLS) with SBS and RBS with PLS. Again, the loadings all point to a stable construct of RBS, SBS and PLS respectively.

Table 29 - Discriminant validity – PLS & RBS

Rotated Component Matrix[a]		
	Component	
	1	2
IPS_PLS_Role_model	0.583	0.586
IPS_PLS_Helping_others	0.582	0.599
IPS_PLS_Task leadership	0.492	0.749
IPS_PLS_Energizing_others	0.562	0.666
IPS_PLS_Rewarding_others	0.495	0.637
IPS_PLS_Controlling		0.832
IPS_PLS_Formal_staffing		0.895
IPS_PLS_Informal_staffing		0.816
IPS_RBS_Team_cooperation	0.646	0.570
IPS_RBS_Courtesy	0.823	
IPS_RBS_Amicability	0.846	
IPS_RBS_Trust	0.747	
IPS_RBS_Dependability	0.780	0.415
IPS_RBS_Intercultural_sensitivity	0.786	
IPS_RBS_Service_orientation	0.723	
IPS_RBS_Negotiation	0.585	0.467
IPS_RBS_Conflict_Resolution	0.672	0.450
Extraction Method: Principal Component Analysis.		
Cross-loadings less than 0.4 are hidden		
a. Rotation converged in 3 iterations.		

Table 30 - Discriminant validity – SBS & RBS

Rotated Component Matrix[a]		
	Component	
	1	2
IPS_SBS_Social_perceptiveness		0.880
IPS_SBS_Self_presentation		0.855
IPS_SBS_Social_influence		0.850
IPS_SBS_Adaptability		0.822
IPS_RBS_Team_cooperation	0.789	
IPS_RBS_Courtesy	0.785	
IPS_RBS_Amicability	0.791	
IPS_RBS_Trust	0.814	
IPS_RBS_Dependability	0.872	
IPS_RBS_Intercultural_sensitivity	0.605	0.567
IPS_RBS_Service_orientation	0.761	
IPS_RBS_Negotiation	0.689	
IPS_RBS_Conflict_Resolution	0.747	
Extraction Method: Principal Component Analysis.		
Cross-loadings less than 0.4 are hidden		
a. Rotation converged in 3 iterations.		

Table 31 - Discriminant validity – SBS & PLS

Rotated Component Matrix[a]		
	Component	
	1	2
IPS_SBS_Social_perceptiveness		0.859
IPS_SBS_Self_presentation		0.838
IPS_SBS_Social_influence		0.839
IPS_SBS_Adaptability		0.870
IPS_PLS_Role_model	0.728	0.404
IPS_PLS_Helping_others	0.761	
IPS_PLS_Task leadership	0.840	
IPS_PLS_Energizing_others	0.762	0.437
IPS_PLS_Rewarding_others	0.697	0.454
IPS_PLS_Controlling	0.800	
IPS_PLS_Formal_staffing	0.838	
IPS_PLS_Informal_staffing	0.837	
Extraction Method: Principal Component Analysis.		
Cross-loadings less than 0.4 are hidden		
a. Rotation converged in 3 iterations.		

a. ***Summary of Discriminant test for IPS***

Table 32 - Summary of discriminant tests - IPS

Interpersonal skill	**Pass/Fail discriminant validity**
Interpersonal communication skills	Pass
Relationship building skills	Pass
Peer leadership skills	Pass
Social and behavioural agility skills	Pass

Before moving on to reliability tests, as a recap, all the IPS scales converge on the theoretical subconstructs and all the IPS subconstructs are significantly discriminant from each other.

5.3.3 *IPS tests of reliability*

For the construct of interpersonal skills, the Cronbach's test for internal consistency was used to test for reliability. George and Mallery (2003, p. 231) provide the following rules of thumb with regards to interpreting the value outputted by the test.:

- >.9 – Excellent reliability
- >.8 – Good reliability
- >.7 – Acceptable reliability
- >.6 – Questionable reliability
- >.5 – Poor reliability
- < .5 – Unacceptable reliability

Table 33 - Summary of reliability tests - IPS

Scale	Cronbach's alpha	Number of items
IPC	0.936	7
RBS	0.942	9
PLS	0.944	8
SBS	0.927	4

For all the scales of IPS, the table above reflects that the Cronbach's alphas were in excess of 0.9, which in terms of George and Mallery (2003) is excellent and therefore the items can be considered reliable measures of the respective construct.

In this section we focused on the IPS subconstructs. The subconstructs of IPS have sufficiently demonstrated validity and reliability.

Next, we move on to the validity and reliability tests of the other constructs used in this research.

5.3.4 *Complexity as a control*

PCA and Cronbach's Tests for internal consistency were also run for complexity.

a. ***Convergent Validity***

KMO test for sampling adequacy is reported as 0.717. The significant value of Bartlett's Test of Sphericity was less than 0.05 indicating that is was acceptable to perform PCA.

Eigenvalues set to greater than one and the method of rotation set to varimax.

Table 34 - Convergence validity for complexity: variance explanation

Total Variance Explained									
	Initial Eigenvalues			Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.075	51.247	51.247	3.075	51.247	51.247	2.109	35.142	35.142
2	1.035	17.257	68.504	1.035	17.257	68.504	2.002	33.362	68.504
3	0.838	13.970	82.474						
4	0.445	7.416	89.890						
5	0.379	6.322	96.213						
6	0.227	3.787	100.000						
Extraction Method: Principal Component Analysis.									

As reflected in Table 34, two components were extracted having eigenvalues over one.

This is supported by the loadings table below. The loadings measure the correlation between a specific observed variable and a specific factor of each loading. In this case, the 2 factors have been extracted by virtue of the PCA. Therefore, complexity in this research should not be interpreted as a single construct but, was instead composed of two constructs.

Table 35 - Convergence validity for complexity: component matrix

Component Matrix[a]		
	Component	
	1	2
Complexity_Difficult_decisions	0.757	
Complexity_knowledge_gaps	0.633	0.600
Complexity_Problems	0.801	
Complexity_Tasks	0.578	
Complexity_Try_new	0.741	-0.532
Complexity_New_tasks	0.759	
Extraction Method: Principal Component Analysis.		
a. 2 components extracted.		

b. ***Discriminant Validity***

These two extracted factors can be clearly seen in the rotated component matrix. Complexity relating to decision making seem to group and complexity related to tasks also seem to group.

Table 36 - Discriminant validity for complexity

Rotated Component Matrix[a]		
	Component	
	1	2
Complexity_Difficult_decisions		0.782
Complexity_knowledge_gaps		0.871
Complexity_Problems	0.425	0.715
Complexity_Tasks	0.598	
Complexity_Try_new	0.904	
Complexity_New_tasks	0.812	
Extraction Method: Principal Component Analysis.		
a. Rotation converged in 3 iterations.		

The ‘Decision’ group that seem to form are for subscales;

- How often do you make difficult decisions independently?
- How often do you have to close knowledge gaps?
- How often do you react to unforeseen problems?

Hunter, Schmidt & Judiesch, (1990) relate job complexity to the information-processing demands of jobs and thus this finding seems to be in line with this past work.

The 'Task' group that seem to form are for subscales;

- How often do you perform many different tasks?
- How often do you improve or try out something new?
- How often do you deal with new tasks?

Wood (1986), relates job complexity in terms of *'task complexity'* and this subdivision of tasks is not as foreign as one initially thought.

The two deconstructed complexity scales load very nicely to the respective 'decisions' and 'tasks' grouping.

c. ***Reliability***

Cronbach's alpha test for internal consistency was run for the individual subconstructs of complexity.

The subconstructs of decision making regarding complexity was extracted and Cronbach's test was performed. The results are in the table below. Cronbach alpha reads 0.775.

Table 37 - Reliability test complexity: decision making

Reliability Statistics	
Cronbach's Alpha	N of Items
0.775	3

In similar fashion to decision making, the subconstructs of tasks regarding complexity was extracted and Cronbach's test was performed. The results are in the table below. Cronbach alpha reads 0.735.

Table 38 - Reliability test complexity: tasks

Reliability Statistics	
Cronbach's Alpha	N of Items
0.735	3

The two reliability tests performed above reinforce that these two subconstructs for complexity show be regarded as separate constructs given the outcome of the reliability test point to acceptable reliability.

5.3.5 *JSS Supervision and Pay as controls*

PCA and Cronbach's Tests for internal consistency were also run for Supervision subscale found within the scales of the JSS.

a. ***Convergent Validity***

KMO test for sampling adequacy is reported as 0.713. The significant value of Bartlett's Test of Sphericity was less than 0.05 indicating that is was acceptable to perform PCA.

Eigenvalues or the uniqueness of the variable was set to 1 as a minimum and the method of rotation set to varimax and the test was run.

Table 39 - Convergence validity: JSS supervision – variance explanation

Total Variance Explained						
	Initial Eigenvalues			Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.776	69.400	69.400	2.776	69.400	69.400
2	0.717	17.918	87.318			
3	0.281	7.028	94.345			
4	0.226	5.655	100.000			
Extraction Method: Principal Component Analysis.						

In the figure above, the total variance explained by one component registering an eigenvalue greater than one accounts for 69.400 of the variability modelled by the extracted factor namely Supervision. This indicates that one factor was extracted, or in other words these subscales sufficiently demonstrate that the underlying subscales measure one construct.

This is supported by the loadings shown in the table below. Which are above 0.6.

Table 40 - Convergence validity: JSS supervision – component matrix

Component Matrix[a]

	Component
	1
JSS_Supervisor_unfair	0.853
JSS_Supervisor_competent	0.809
JSS_Supervisor_feeling	0.829
JSS_Supervisor_like	0.841

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

For JSS subscale of Pay, KMO test for sampling adequacy is reported as 0.713. The significant value of Bartlett's Test of Sphericity was less than 0.05 indicating that is was acceptable to perform PCA.

Table 41 - Convergence validity: JSS Pay – variance explanation

Total Variance Explained

Component	Initial Eigenvalues			Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.511	75.543	75.543	1.511	75.543	75.543
2	0.489	24.457	100.000			

Extraction Method: Principal Component Analysis.

In the figure above, the total variance explained by one component registering an eigenvalue greater than one accounts for 75.543 of the variability modelled by the extracted factor namely Pay. This indicates that one factor was extracted, or in other words

these subscales sufficiently demonstrate that the underlying subscales measure one construct.

The loadings were all above 0.6.

Table 42 - Convergence validity: JSS Pay – component matrix

Component Matrix[a]	
	Component
	1
JSS_Pay_Fair	0.869
JSS_Pay_increases	0.869
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

This points to the subscales of pay converging on the pay construct.

b. ***Discriminant Validity***

JSS subscales of Supervision (4 items) was selected along with the JSS subscales for Pay (two items) for the purpose of establishing discriminant validity.

Table 43 - Discriminate validity: JSS supervision and JSS Pay

Rotated Component Matrix[a]		
	Component	
	1	2
JSS_Supervisor_unfair	0.848	0.064
JSS_Supervisor_competent	0.798	0.163
JSS_Supervisor_feeling	0.814	0.162
JSS_Supervisor_like	0.856	-0.068
JSS_Pay_Fair	0.096	0.868
JSS_Pay_increases	0.064	0.859
Extraction Method: Principal Component Analysis.		
a. Rotation converged in 3 iterations.		

In the table above, it can be seen that Supervisor and Pay items do not converge on the same component as the cross-loadings are low. Therefore, the subscales of Supervisor converge on the supposed construct and it is discriminate from other constructs.

c. ***Reliability***

The Cronbach test for internal consistency was performed and the results for JSS supervisor scales are 0.853. This indicates that the reliability of measurement is good.

Table 44 - Reliability test: JSS Supervision

Reliability Statistics	
Cronbach's Alpha	N of Items
0.853	4

d. ***Reliability***

Cronbach's test for internal consistency was performed on JSS subscale of Pay and returned a value of 0.676, which is borderline acceptable.

Table 45 - Reliability test: JSS Pay

Reliability Statistics	
Cronbach's Alpha	N of Items
0.676	2

5.3.6 *Other single-item JSS facets as controls*

The tests for validity and reliability performed above were specific to those scales measured using multiple items. For single-item scales there are other criteria for evaluating validity and reliability.

Validity and reliability for single-scale items can be reasonable if the selection of the single-scale item is based on four criteria (1) the nature of the construct, (2) the nature of existing instruments, (3) the research objectives, and (4) sampling considerations (Fuchs & Diamantopoulos 2009).

a. ***Nature of construct***

Items that are said to be concrete, meaning, all respondents will unanimously agree what the item is, can be used as single item measures, diametrically opposed to this, is abstract items for example constructs like power or culture, in which each respondent may perceive these constructs differently (Fuchs & Diamantopoulos 2009).

In this research, the JSS items which are single scale in item are Promotions, Fringe benefits, Contingent rewards, Operating conditions, Co-workers, Nature of work and Communication. The items all pertain to the job environment and there is no mistaking the construct as something else.

b. ***Nature of existing instrument***

If the existing instrument is lengthy it can have negative effects in the form of response biases (Duhachek, Coughlan, and Lacobucci, 2005). Removing redundant items from the instrument can lessen response bias and therefore improving validity and reliability (Fuchs & Diamantopoulos, 2009). In this research, the items were removed in order to reduce the questionnaire length. For example, while promotion was measured by 4 items in the JSS, a single representative item was used for this study.

c. ***Research objectives***

If the variable and associated measurement item are the focal point of the research objective, then single items are not appropriate to the study. Here, multiscale items are preferred (Fuchs & Diamantopoulos, 2009). Single items limit the ability to detect measurement error. In this research, the redundant items pertained to controls and not the research objective and therefore the validity and reliability of these scales are only somewhat diminished.

d. ***Sampling considerations***

When the sample frame that is available is small and the frame is over-sampled such as in organisational research which yields low response rates (Fuchs & Diamantopoulos, 2009), then it is acceptable to reduce items to a single item.

In this research, the sampling frame was in the field of organisational research, in which managers/ supervisors are potentially over-surveyed.

In Fuchs & Diamantopoulos (2009), they conclude "…if a construct is concrete, used as a control variable, and the single-item measure sufficiently satisfies reliability and validity requirements, it would indeed be appropriate to use it in substantive research" (P. 206)

5.3.7 *JIG*

Job in General scales (JIG) comprises of 18 general phrase questions about job satisfaction. Each sub item was scores 0,1 or 3 depending on the respondent's choice. The summation of the individual scores gives the overall JIG score.

The JIG demonstrated Cronbach's internal consistency score of 0.865. This reliability result compares similarly to other tests of the JIG scale (Brodke *et al.,* 2009).

All the constructs intended to be used in the research were thus considered sufficiently tested for reliability and validity, with the exception of complexity which has been deconstructed into two stable valid and reliable sub constructs.

Given that validity and reliability had been established, analysis of data could proceed. The next sections of the chapter present results of analysis starting with univariate analysis, then moving on to bivariate tests and ultimately model tests with multiple regression.

5.4 Univariate analysis

Univariate analysis is the statistical analysis of a single variable. In this section, the mean, the range and standard deviation will be presented for all variables.

5.4.1 *Preparation*

Before presenting the analysis, the validity and reliability testing ensured that composite scoring can be meaningfully calculated for the multi-item constructs from their underlying scales. Composite scores were therefore calculated for; JSS Pay; JSS Supervisor, Interpersonal communication skills, Relationship building skills; Peer leadership skills; Social and behavioural agility skills and JIG satisfaction scores. Given that complexity was not unidimensional, scores were calculated for each of its two components.

5.4.2 *Results*

Table 47 presents the descriptive statistics for the JIG items and the overall score

Table 46 - Univariate results: JIG

Univariate Analysis JIG									
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
JIG_Pleasant	82	0	3	2.72	0.821	-2.731	0.266	5.941	0.526
JIG_Bad®	82	1	3	2.83	0.562	-3.023	0.266	7.319	0.526
JIG_Great	82	0	3	2.26	1.195	-1.092	0.266	-0.622	0.526
JIG_Waste_of_time®	82	1	3	2.83	0.562	-3.023	0.266	7.319	0.526
JIG_Good	82	0	3	2.82	0.669	-3.575	0.266	11.599	0.526
JIG_Undesirable®	82	1	3	2.78	0.629	-2.544	0.266	4.581	0.526
JIG_Worthwhile	82	0	3	2.65	0.880	-2.242	0.266	3.483	0.526
JIG_Worse_than_most®	82	1	3	2.93	0.378	-5.029	0.266	23.875	0.526
JIG_Acceptable	82	0	3	2.84	0.638	-3.953	0.266	14.461	0.526
JIG_Superior	82	0	3	1.83	1.395	-0.414	0.266	-1.767	0.526
JIG_Better_than_most	82	0	3	2.63	0.910	-2.226	0.266	3.350	0.526
JIG_Disagreeable®	82	1	3	2.76	0.658	-2.354	0.266	3.629	0.526
JIG_Makes me content	82	0	3	2.00	1.352	-0.676	0.266	-1.474	0.526
JIG_Inadequate®	82	1	3	2.61	0.797	-1.567	0.266	0.468	0.526
JIG_Excellent	82	0	3	1.99	1.310	-0.619	0.266	-1.482	0.526
JIG_Rotten®	82	1	3	2.93	0.378	-5.029	0.266	23.875	0.526
JIG_Enjoyable	82	0	3	2.54	1.009	-1.842	0.266	1.683	0.526
JIG_Poor®	82	1	3	2.90	0.433	-4.268	0.266	16.620	0.526
JIG*	82	22	54	46.83	8.641	-1.331	0.266	0.962	0.526
® was reversed score									
* Component scored									

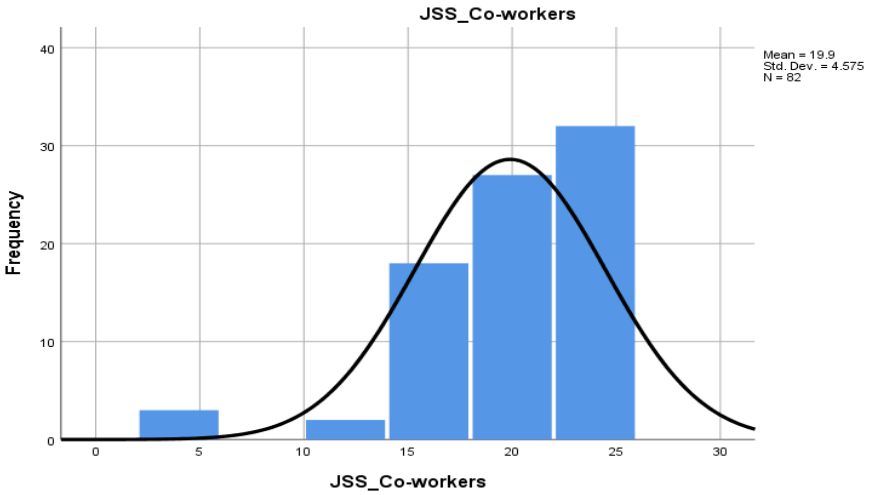
The overall JIG scale score is normally distributed, but the average of 46 suggests that most responds are happy about their jobs experiencing higher levels of satisfaction. This may suggest a non-response bias where individuals less happy about their jobs may not have responded.

Table 47 - Univariate results: JSS & complexity

Univariate Analysis Controls									
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
JSS_Pay_Fair	82	1	6	3.82	1.596	-0.384	0.266	-1.061	0.526
JSS_Pay_increases®	82	1	6	2.82	1.549	0.477	0.266	-0.904	0.526
JSS_Pay*	82	4	24	13.27	5.466	-0.043	0.266	-0.866	0.526
JSS_Promotion®	82	4	24	10.73	6.057	0.537	0.266	-0.708	0.526
JSS_Fringe_benefits®	82	4	24	15.66	5.869	-0.185	0.266	-0.890	0.526
JSS_Rewards	82	4	24	14.83	6.110	-0.362	0.266	-0.909	0.526
JSS_Operating_conditions®	82	4	24	13.80	5.834	0.001	0.266	-0.721	0.526
JSS_Co-workers	82	4	24	19.90	4.575	-1.575	0.266	3.346	0.526
JSS_Nature_of_work®	82	4	24	18.15	5.767	-0.759	0.266	-0.333	0.526
JSS_Communication	82	4	24	13.56	5.988	-0.337	0.266	-1.151	0.526
JSS_Supervisor_unfair®	82	1	6	5.09	1.416	-1.438	0.266	0.861	0.526
JSS_Supervisor_competent	82	1	6	4.67	1.361	-1.062	0.266	0.685	0.526
JSS_Supervisor_feeling®	82	1	6	4.89	1.414	-1.116	0.266	0.334	0.526
JSS_Supervisor_like	82	1	6	4.84	1.436	-1.357	0.266	1.063	0.526
JSS_Supervisor*	82	4	24	19.49	4.688	-1.202	0.266	0.833	0.526
Complexity_Difficult_decisions	82	1	5	4.09	0.905	-0.887	0.266	0.642	0.526
Complexity_knowledge_gaps	82	1	5	4.01	1.000	-1.012	0.266	0.727	0.526
Complexity_Problems	82	2	5	4.17	0.858	-0.821	0.266	0.015	0.526
Complexity_Tasks	82	3	5	4.60	0.682	-1.438	0.266	0.690	0.526
Complexity_Try_new	82	2	5	3.91	0.945	-0.545	0.266	-0.562	0.526
Complexity_New_tasks	82	2	5	4.06	0.986	-0.759	0.266	-0.477	0.526
Complexity*	82	2.33	5.00	4.14	0.64	-0.699	0.266	-0.177	0.526
Complexity_Subgroup_DM*	82	4.00	15.00	12.27	2.29895	-0.900	0.266	0.804	0.526
Complexity_Subgroup_Task*	82	7.00	15.00	12.57	2.13744	-0.776	0.266	-0.187	0.526
® was reversed score									
* Component scored									

Satisfaction with supervisor and co-workers seem to be a mildly skewed, however normal (see below). While the table above suggests that skewness and kurtosis of the other JSS and complexity variables are within the normal range and no concerns regarding their distribution are noted. The complexity subgroups have very similar means but the minimum scores for complexity related to tasks seems to have a higher value.

Graph 1 – Co-worker histogram



Graph 2 – JSS supervision histogram

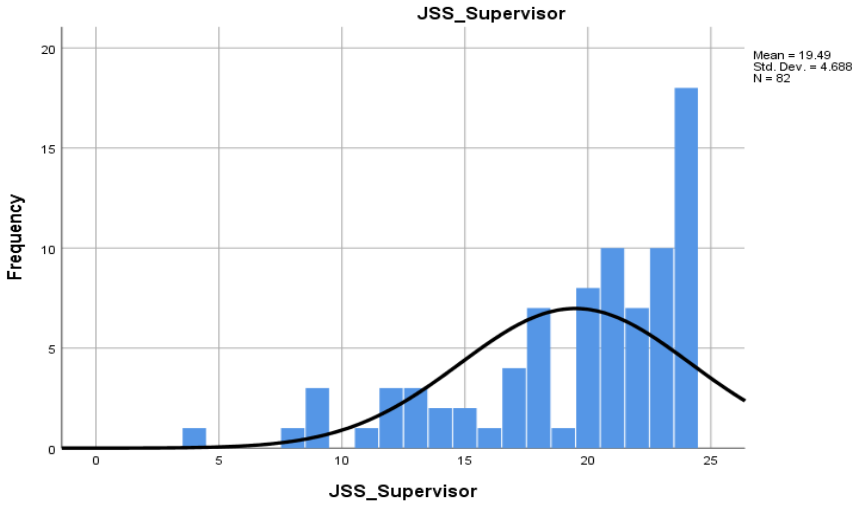


Table 48 - Univariate results: IPS

Univariate Analysis IPS									
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
IPS_IPC_Active_listening	82	1	5	3.71	1.060	-0.660	0.266	0.195	0.526
IPS_IPC_Oral_communication	82	1	5	3.72	1.057	-0.696	0.266	0.001	0.526
IPS_IPC_Written_communication	82	1	5	3.61	1.027	-0.618	0.266	-0.022	0.526
IPS_IPC_Assertive_communication	82	1	5	3.49	1.209	-0.507	0.266	-0.688	0.526
IPS_IPC_Non_verbal_communication	82	1	5	3.18	1.145	-0.369	0.266	-0.707	0.526
IPS_IPC_Informing	82	1	5	3.56	1.156	-0.496	0.266	-0.451	0.526
IPS_IPC_Information_gathering	82	1	5	3.63	1.012	-0.376	0.266	-0.322	0.526
IPS_IPC*	82	1.00	5.00	3.56	0.94	-0.451	0.267	-0.119	0.529
IPS_RBS_Team_cooperation	82	1	5	3.29	1.149	-0.350	0.266	-0.557	0.526
IPS_RBS_Courtesy	82	1	5	3.66	1.057	-0.559	0.266	-0.166	0.526
IPS_RBS_Amicability	82	1	5	3.62	1.085	-0.560	0.266	-0.365	0.526
IPS_RBS_Trust	82	1	5	3.60	1.110	-0.475	0.266	-0.558	0.526
IPS_RBS_Dependability	82	1	5	3.56	1.218	-0.565	0.266	-0.602	0.526
IPS_RBS_Intercultural_sensitivity	82	1	5	3.63	1.128	-0.290	0.266	-1.096	0.526
IPS_RBS_Service_orientation	82	1	5	3.72	1.080	-0.739	0.266	-0.097	0.526
IPS_RBS_Negotiation	82	1	5	3.46	1.056	-0.256	0.266	-0.724	0.526
IPS_RBS_Conflict_Resolution	82	1	5	3.28	1.168	-0.189	0.266	-0.752	0.526
IPS_RBS*	82	1.11	5.00	3.54	0.92	-0.377	0.266	-0.536	0.526
IPS_PLS_Role_model	82	1	5	3.34	1.125	-0.553	0.266	-0.386	0.526
IPS_PLS_Helping_others	82	1	5	3.52	1.125	-0.463	0.266	-0.531	0.526
IPS_PLS_Task leadership	82	1	5	3.35	1.201	-0.413	0.266	-0.593	0.526
IPS_PLS_Energizing_others	82	1	5	3.20	1.222	-0.093	0.266	-0.830	0.526
IPS_PLS_Rewarding_others	82	1	5	3.06	1.180	-0.167	0.266	-0.753	0.526
IPS_PLS_Controlling	82	1	5	3.18	1.156	-0.073	0.266	-0.973	0.526
IPS_PLS_Formal_staffing	82	1	5	3.18	1.113	0.014	0.266	-0.843	0.526
IPS_PLS_Informal_staffing	82	1	5	3.15	1.032	-0.024	0.266	-0.509	0.526
IPS_PLS*	82	1.000	5.000	3.25	0.971526	-0.139	0.266	-0.484	0.526
IPS_SBS_Social_perceptiveness	82	1	5	3.35	1.093	-0.167	0.266	-0.565	0.526
IPS_SBS_Self_presentation	82	1	5	3.62	0.989	-0.427	0.266	-0.173	0.526
IPS_SBS_Social_influence	82	1	5	3.55	0.983	-0.419	0.266	-0.224	0.526
IPS_SBS_Adaptability	82	1	5	3.51	1.045	-0.499	0.266	-0.338	0.526
IPS_SBS*	82	1.00	5.00	3.51	0.93165	-0.431	0.266	-0.110	0.526
IPS*	82	5.24	20.00	13.85	3.37978	-0.203	0.266	-0.423	0.526
* Component scored									
Valid N (listwise)	82								

The table above contain descriptive statistics regarding IPS and suggests few concerns over the normality of distributions as the skewness and kurtosis values are in acceptable ranges. Composite scores are marked with an asterisk, with results suggesting average perception of the skills possessed by respective IS/T leaders are fairly favourable.

5.5 Bivariate analysis

Correlation analysis was performed to determine if any statistically significant relationships exist between the variables measured. The correlation results and significance levels are reported in the table below;

Table 49 - Correlation Matrix

Correlations

	JIG	JSS_Pay	JSS_Promotion	JSS_Fringe_benefits	JSS_Rewards	JSS_Operating_conditions	JSS_Co-workers	JSS_Nature_of_work	JSS_Communication	JSS_Supervisor	Complexity_Subgroup_DM	Complexity_Subgroup_Task	IPS	IPS_IPC	IPS_RBS	IPS_PLS	IPS_SBS	D_age	D_years_in_currrent_role	D_years_at_organisation
JIG	1	0.177	.260*	.318**	.307**	0.195	.381**	.608**	.314**	.346**	-0.021	.332**	.245*	0.213	.244*	.276*	0.146	.317**	0.132	0.044
JSS_Pay		1	.255*	.235*	.279*	.222*	0.116	0.191	0.180	0.186	0.018	-0.097	-0.031	-0.041	-0.042	-0.001	-0.030	0.207	-0.118	0.026
JSS_Promotion			1	0.143	.360**	-0.063	0.045	.345**	0.153	0.090	0.092	.221*	-0.043	-0.032	-0.040	-0.062	-0.020	-0.201	-.289**	-.219*
JSS_Fringe_benefits				1	0.132	.220*	.264*	.279*	0.133	0.090	-0.030	0.020	0.138	0.142	0.152	0.066	0.141	.254*	0.059	0.041
JSS_Rewards					1	0.132	.385**	.403**	.375**	.360**	-0.079	-0.039	.242*	.237*	0.160	.249*	.221*	-0.005	0.097	-0.137
JSS_Operating_conditions						1	0.155	.271*	.235*	.370**	-0.188	0.126	.299**	.339**	.266*	.283*	0.185	-0.044	0.084	-0.051
JSS_Co-workers							1	.412**	.366**	.640**	-0.199	-0.030	.405**	.388**	.311**	.469**	.281*	-0.003	0.051	-0.085
JSS_Nature_of_work								1	.365**	.374**	-0.133	0.139	0.102	0.125	0.096	0.139	0.005	0.032	0.065	-0.024
JSS_Communication									1	.412**	-0.214	-0.017	.431**	.469**	.352**	.463**	.261*	-0.097	-0.086	-0.067
JSS_Supervisor										1	-0.141	0.032	.689**	.639**	.616**	.713**	.503**	-0.020	0.035	-0.188
Complexity_Subgroup_DM											1	.508**	-0.204	-0.215	-0.109	-.293**	-0.112	0.130	-.265*	0.004
Complexity_Subgroup_Task												1	-0.001	0.054	0.124	-0.060	-0.117	0.165	-0.019	-0.098
IPS													1	.923**	.921**	.921**	.830**	0.032	0.164	-0.133
IPS_IPC														1	.835**	.827**	.656**	-0.031	0.184	-0.198
IPS_RBS															1	.812**	.666**	0.084	0.166	-0.187
IPS_PLS																1	.664**	0.060	0.170	-0.117
IPS_SBS																	1	0.002	0.070	0.023
D_age																		1	.503**	.382**
D_years_in_currrent_role																			1	.272*
D_years_at_organisation																				1

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Legend			
Variable code name	Description	Variable code name	Description
JIG	Independent variable: Job in general - Job satisfaction	Complexity_Subgroup_DM	Control: Complexity regarding decision making
JSS_Pay	Job satisfaction control: facet of pay	Complexity_Subgroup_Task	Control: Complexity regarding tasks
JSS_Promotion	Job satisfaction control: facet of Promotion	IPS	Predictor variable: Global composite Interpersonal skills
JSS_Fringe_benefits	Job satisfaction control: facet of fringe benefits	IPS_IPC	Predictor variable: Composite Interpersonal communication skills
JSS_Rewards	Job satisfaction control: facet of rewards	IPS_RBS	Predictor variable: Composite relationship building skills
JSS_Operating_conditions	Job satisfaction control: facet of operating conditions	IPS_PLS	Predictor variable: Composite peer leadership skills
JSS_Co-workers	Job satisfaction control: facet of co workers	IPS_SBS	Predictor variable: Composite Social and behavioural agility skills
JSS_Nature_of_work	Job satisfaction control: facet of nature of work	D_age	Continuous demographic variable: Age of respondent
JSS_Communication	Job satisfaction control: facet of orgainsation communication	D_years_in_currrent_role	Continuous demographic variable: Number of years respondent in current role
JSS_Supervisor	Job satisfaction control: facet of supervisor (general feelings)	D_years_at_organisation	Continuous demographic variable: Number of years the respondent has been at the organization

Given that JIG is the dependant variable, it is listed in the first row in the correlation matrix above. When one reads along the JIG row across the different columns, one is able to see the correlation between the different predictor variables and JIG.

Statistical significance of the relationship is noted in the table with the superscript of asterisks. All control variables are statistically significant except, pay, operating conditions and complexity related to decision making. The most strongly correlated item related to JIG is the job facet related to the nature of work. This particular question measured if the respondents found meaning to their life through the type of work they do.

Correlation was also run with some of the demographic variables. It is noted that age is also positively and significantly correlated with JIG.

The interpersonal skills variables are a key aspect to this research and when interrogating the correlation matrix, it is noted that interpersonal communication skills and social and behavioural agility skills do not statistically significantly correlate, however the global score for interpersonal skill does correlate significantly. The direction of the relationship of all interpersonal skills are positive.

This suggests that hypotheses of H_2, H_3 and H_5 are supported while H_1 and H_4 are not supported. Given the statistical significance found in these variables, the IPS skills of relationship building skills and peer leadership skills appear the most important to job satisfaction.

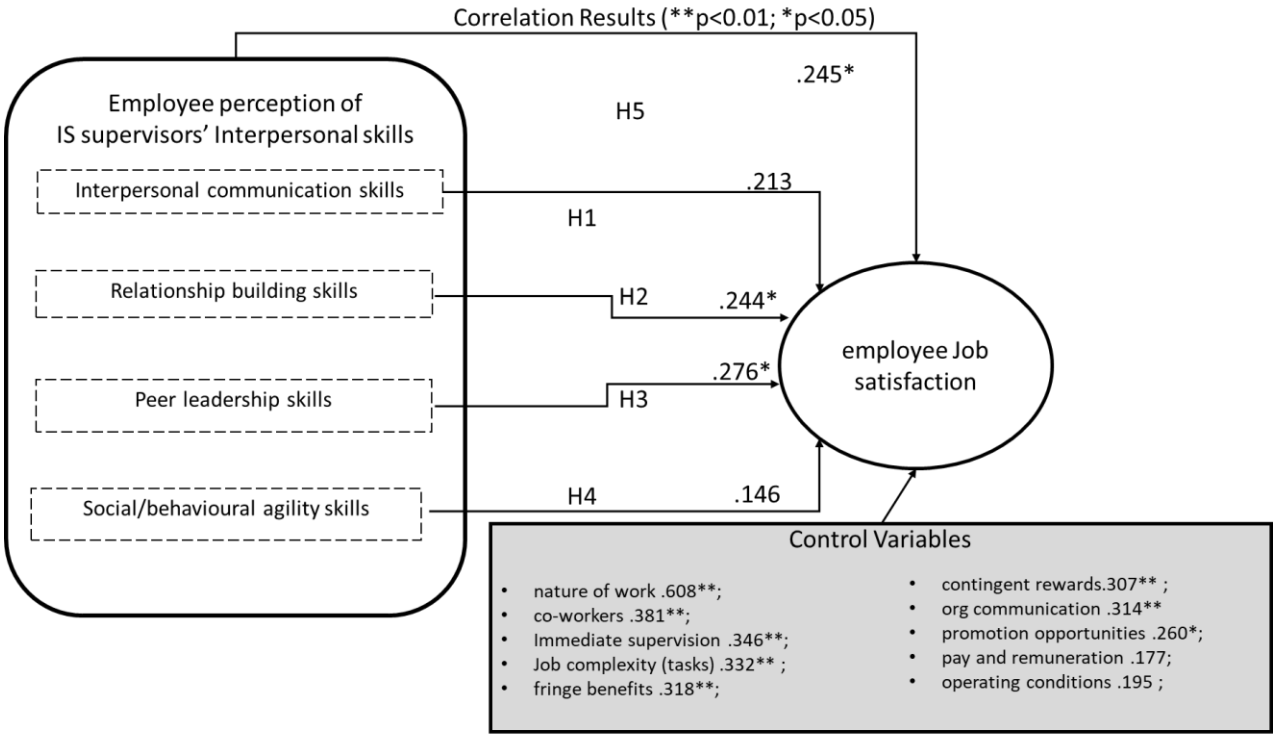
Moreover, satisfaction with supervision was significantly correlated with JIG, while the global IPS construct along with the four IPS dimensions, were all strongly correlated with supervision.

Given that respondents were responding about the IPS of their supervisors, it does appear that greater interpersonal skills of a supervisor may be very important to an employee’s satisfaction with that supervisor and the supervision experience.

There may be both direct and indirect implications of IPS for job satisfaction.

Below is a summary diagram containing correlation testing results.

Figure 5 - Schematic results of research model



In addition to the correlation tests, one-way ANOVA tests were performed using JIG as the dependant variable and the categorical data (sector, gender, education level, levels below CIO and frequency of interaction with CIO) as the factors. Results showed no significant differences in means across the groups formed by the categorical data. This indicates that sector, gender, education level, levels below CIO and frequency of interaction with CIO do not have a significant relationship with JIG.

Consequently, these are dropped as controls in the subsequent multiple regression tests.

5.6 Multiple Linear Regression

While the correlation analysis provides evidence of bivariate relationships between job satisfaction (JIG) and the RBS and PLS dimensions of interpersonal skills and with overall

IPS, it does not provide an indication of their combined effects and their unique effects over the other controls (JSS facets and complexity). Therefore, multiple linear regression was carried out as a further test of the study's hypotheses. In particular, the ordinary least squares (OLS) method was the regression method used as only one dependant variable exists in the research model and that dependant variable is assumed continuous in nature. The goal is to estimate relationships between one or more independent variables to one dependant variable by decomposing the unique contribution of each independent variable as a predictor to the dependant variable.

5.6.1 *Preparation*

a. *Selection of variable*

All main effect variables in the research model, namely the four IPS constructs along with global IPS composite scores were tested regardless of whether they were significantly correlated to the dependant variable. The only exception being the one component of job complexity related to decisions. It was not included in the model as it did not correlate significantly with JIG, leaving only one complexity variable as a control.

b. *The multiple regression tests*

Five multiple regression tests were run:

1. A model with only controls
2. A model entering the individual IPS subconstructs in the presence of controls
3. A model entering the global IPS super construct in the presence of controls.
4. An exploratory stepwise regression model using all variables.
5. An exploratory model that regresses only the global IPS as the predictor variable of JIG, without the presence of controls

The second and third models (2 & 3) were implemented as hierarchical multiple regressions with the controls entered first, followed by the relevant IPS constructs. This

approach allows for the change in R^2 to be determined so as to evaluate the significance of the introduction of the additional IPS predictor/s over the control variables alone.

The fourth model, an exploratory model used stepwise regression. Stepwise regression adds the most significant variables into a model and stops when there are no more significant predictors to add. This was considered useful for narrowing down the large number of predictors to the most significant subset that accounts for the majority of variance in the dependent JIG score.

The fifth model, an exploratory model was used to obtain an overall sense of the variance in JIG accounted for by the global IPS construct.

5.6.2 *Testing of multiple regression assumptions*

Before relying on the results of the OLS testing, certain assumptions must be met about the data in concern (Classnotes,2016). These are collinearity, linear relationships between independent variables and the dependant variable, heteroscedasticity and normality of residual distribution. Additionally, checking for outliers that can create bias should also be tested as this may affect the findings of the OLS regression.

The results of the tests of the assumption are found detail in appendix 9.11. The results reveal that mild collinearity may exist between the IPS sub constructs, otherwise all the other assumptions were met.

5.6.3 *Regression models results*

a. *Models 1, 2 & 3*

i. Summary

The table below contains the summaries for models 1, 2 and 3.

Table 50 - Regression model summary: models 1,2 & 3

Model Summary[d]										
					Change Statistics					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Predictors
1	.703[a]	0.494	0.423	6.566	0.494	6.927	10	71	0.000	1=JSS_Supervisor, 2=Complexity_Subgroup_Task, 3=JSS_Fringe_benefits, 4=JSS_Promotion, 5=JSS_Pay, 6=JSS_Communication, 7=JSS_Operating_conditions, 8=JSS_Rewards, 9=JSS_Nature_of_work, 10=JSS_Co-workers, 11=IPS_IPC, 12=IPS_RBS, 13=IPS_PLS, 14=IPS_SBS, 15=IPS
2	.729[b]	0.532	0.434	6.499	0.038	1.371	4	67	0.253	
3	.712[c]	0.507	0.429	6.527	0.013	1.855	1	70	0.178	
a. Predictors: (Constant), 1,2,3,4,5,6,7,8,9,10.										
b. Predictors: (Constant),1,2,3,4,5,6,7,8,9,10,11,12,13,14										
c. Predictors: (Constant),1,2,3,4,5,6,7,8,9,10,15										
d. Dependent Variable: JIG										

The first model regressed was the control variables as predictors to the dependant variable of job satisfaction represented by the score of JIG. The reason for this was to create a base line of the variance explained, so that it may be compared to subsequent models to ascertain significance of the changes in R^2. R^2 for this model containing only the control variables is 0.494 or in other words 49.4% percentage of the variability in the dependant variable can be explained by the JSS job facets and other control variables.

Model 2, introduced the four subconstructs of IPS namely interpersonal communication skills (IPC), relationship building skills (RBS), peer leadership skills (PLS) and social and behavioural agility skills (SBS). R^2 for this model has been calculated at 0.532 or in other words 53.2 % of the variance in the dependant variable is explained by the predictor variables. While this is an increase on the baseline model, representing a change in R^2 by 0.038, is not a statistically significant increase given that the significant value of 0.253 is above a p-value of 0.05.

Model 3 examines the control variables and the global IPS variable. The table above indicates that there was an increased change in R^2 of 0.013 (from .494 to .507) which means 50.7 % of the variability in the dependant variable is explained by the predictor

variables. However, this change is not significant as the significant value reads 0.178 above the p-level of 0.05 for this research. This suggests that the IPS constructs do not have unique independent effects on job satisfaction. Given the significance of the earlier observed correlations between JIG and peer leadership, relationship building, and global IPS, the results suggest that the perceptions of the leaders' interpersonal skills may operate through and interact with the various JSS facets to influence satisfaction.

The beta coefficients for the above three models are presented next to gain insights into the relative contributions of the variables to the explanation of job satisfaction (JIG).

ii. Regression equations

The goal of OLS regression is to estimate relationships between one or more independent variables to one dependant variable by decomposing the unique contribution of each variable as a predictor to the dependant variable. This is achieved by mapping the coefficients of the predictors to the liners regression formula.

The linear regression formula is

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 \ldots + \beta_n x_n + \varepsilon$$

Where x is the predictor or independent variable. β is the coefficient calculated by the regression testing. ε is the error represented in the model. The table below presents the beta coefficients for the variables included in models 1,2 and 3.

Table 51 - Regression results: Coefficients for models 1,2 & 3

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	9.019	5.893		1.530	0.130
	Complexity_Subgroup_Task	1.184	0.366	0.293	3.234	0.002
	JSS_Pay	0.099	0.149	0.062	0.661	0.511
	JSS_Promotion	-0.050	0.146	-0.035	-0.340	0.735
	JSS_Fringe_benefits	0.227	0.139	0.154	1.635	0.107
	JSS_Rewards	0.054	0.148	0.038	0.367	0.714
	JSS_Operating_conditions	-0.113	0.149	-0.076	-0.758	0.451
	JSS_Co-workers	0.147	0.233	0.078	0.633	0.528
	JSS_Nature_of_work	0.658	0.160	0.439	4.110	0.000
	JSS_Communication	0.103	0.142	0.071	0.722	0.472
	JSS_Supervisor	0.158	0.228	0.086	0.692	0.491
2	(Constant)	6.046	6.345		0.953	0.344
	Complexity_Subgroup_Task	1.355	0.388	0.335	3.497	0.001
	JSS_Pay	0.141	0.155	0.089	0.909	0.367
	JSS_Promotion	-0.034	0.146	-0.024	-0.233	0.817
	JSS_Fringe_benefits	0.224	0.145	0.152	1.540	0.128
	JSS_Rewards	0.040	0.148	0.029	0.271	0.787
	JSS_Operating_conditions	-0.106	0.150	-0.072	-0.708	0.481
	JSS_Co-workers	0.129	0.238	0.068	0.540	0.591
	JSS_Nature_of_work	0.721	0.167	0.481	4.315	0.000
	JSS_Communication	0.049	0.154	0.034	0.316	0.753
	JSS_Supervisor	-0.135	0.291	-0.073	-0.463	0.645
	IPS_IPC	-1.841	1.708	-0.199	-1.078	0.285
	IPS_RBS	-0.188	1.722	-0.020	-0.109	0.913
	IPS_PLS	3.206	1.704	0.360	1.882	0.064
	IPS_SBS	0.780	1.155	0.084	0.675	0.502
3	(Constant)	6.472	6.149		1.053	0.296
	JSS_Pay	0.160	0.155	0.101	1.031	0.306
	JSS_Promotion	-0.037	0.146	-0.026	-0.255	0.799
	JSS_Fringe_benefits	0.181	0.142	0.123	1.271	0.208
	JSS_Rewards	0.035	0.148	0.025	0.235	0.815
	JSS_Operating_conditions	-0.127	0.148	-0.086	-0.856	0.395
	JSS_Co-workers	0.183	0.233	0.097	0.788	0.433
	JSS_Nature_of_work	0.726	0.167	0.485	4.353	0.000
	JSS_Communication	0.040	0.149	0.027	0.266	0.791
	JSS_Supervisor	-0.088	0.290	-0.048	-0.303	0.763
	Complexity_Subgroup_Task	1.188	0.364	0.294	3.264	0.002
	IPS	0.466	0.342	0.182	1.362	0.178

a. Dependent Variable: JIG

Significance of each β coefficient is found in the Sig. column. These values when lower that a p-value of 0.05 indicate that they are statistically significant. The only two significant

predictors in all three models were Complexity related to tasks (Complexity_Subgroup_Task) and the Nature of work (JSS_Nature_of_work). Peer leadership is only significant at the $p<0.1$ level in model 2.

The research also notes that some coefficients are negative, for example operating conditions/procedure. This seems to suggest that when they are more prevalent then satisfaction will decrease.

iii. Final outcomes for testing effects of IPS on JIG

Table 52 - Hypotheses results

Hypothesis	Correlation Result	Multiple Regression Result
Hypothesis 1: The greater the interpersonal communication skills (IPC) of an IS/T leader as perceived by the follower, the greater will be the follower's job satisfaction.	Positive not significant	No unique effect
Hypothesis 2: The greater the relationship building skill (RBS) of an IS/T leader as perceived by the follower, the greater will be the follower's job satisfaction.	Positive significant	No unique effect
Hypothesis 3: The greater the peer leadership skill (PLS) of an IS/T leader as perceived by the follower, the greater will be the follower's job satisfaction.	Positive significant	No unique effect
Hypothesis 4: The greater the social and behavioural agility skill (SBS) of an IS/T leader as perceived by the follower, the greater will be the follower's job satisfaction.	Positive not significant	No unique effect
Hypothesis 5: The greater the interpersonal skill (IPS) of an IS/T leader as perceived by the follower, the greater will be the follower's job satisfaction.	Positive significant	No unique effect

In order to further explore the effects of job facets and IPS on job satisfaction (JIG), a step-wise analysis was performed. Results are presented next.

b. ***Model 4: The exploratory stepwise model***

Table 53 - Regression results: model summary - Stepwise

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.608[a]	0.370	0.362	6.903	0.370	46.906	1	80	0.000
2	.657[b]	0.432	0.417	6.595	0.062	8.640	1	79	0.004
3	.691[c]	0.478	0.458	6.364	0.046	6.854	1	78	0.011

a. Predictors: (Constant), JSS_Nature_of_work

b. Predictors: (Constant), JSS_Nature_of_work, Complexity_Subgroup_Task

c. Predictors: (Constant), JSS_Nature_of_work, Complexity_Subgroup_Task, IPS_PLS

d. Dependent Variable: JIG

Within the model summary table, we can observe the most significant contributors to the model. The other non-performing variables in terms of contribution to the model are disregarded. Peer leadership skills is part of the final model, allowing for R^2 to be at .478 with significance.

Below is the coefficients table from the stepwise regression test. This shows that all variables are significant contributors to the equation.

Table 54 - Regression results: Coefficients - Stepwise

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
3	(Constant)	12.185	5.128		2.376	0.020
	JSS_Nature_of_work	0.809	0.125	0.540	6.463	0.000
	Complexity_Subgroup_Task	1.089	0.335	0.269	3.248	0.002
	IPS_PLS	1.931	0.737	0.217	2.618	0.011

a. Dependent Variable: JIG

These results confirm that the nature of work, complexity of task prevalent in the job and the peer leadership skills of the supervisor impact the level of job satisfaction for employees in IS/T context more so than any of the other variables used in this research.

c. *Model 5: The exploratory model of Global IPS only*

Table 55 - Regression results: Model summary - IPS Only

Model Summary									
					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.245[a]	0.060	0.048	8.429	0.060	5.115	1	80	0.026

a. Predictors: (Constant), IPS

In model 5, R^2 is reported at .06 meaning IPS explains 6% of the variability in job satisfaction. IPS is considered statistically significant at $p<0.05$ levels with a reading of 0.026.

Table 56 - Regression results: coefficients - IPS only

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	38.148	3.950		9.658	0.000
	IPS	0.627	0.277	0.245	2.262	0.026

The standardised β coefficients reads 0.245 and given that it is the only predictor is significant at $p<0.05$ levels.

Therefore, the global IPS composite, in and of its self is a significant single predictor of job satisfaction.

i. Further analysis

Multivariate regression analysis was performed to determine if IPS works through other variables to impact job satisfaction. In SPSS (the tool used by this research to analyse data) this can be done by performing a one-way MANOVA. This test determines if there are any differences between independent groups (IPS) on more than one dependant variable (contingent rewards, operating conditions, co-workers and supervision). These were chosen for the MANOVA due to each having been found significantly correlated to

IPS when the bivariate analysis was performed. Results (See appendix 9.12) of the MANOVA show the only significant difference of mean is for supervision and not for the other dependant variables or collectively so. Future work should continue to examine the factors through which IPS comes to influence job satisfaction.

5.7 Chapter conclusion

This chapter has presented the statistical results performed on the data collected for this research. The data was cleaned, coded and treated for missing values. The data profile was then presented. Validity and reliability tests were performed, followed by, univariate, bivariate and multiple regression analysis. These tests revealed the nature of the relationship between the independent variables and the dependant variable of job satisfaction. Three hypotheses set out in the research were supported by the analysis carried out, while two were not. Specifically, peer leadership, relationship building, and global interpersonal skills are important to job satisfaction either directly or indirectly.

The next chapter will discuss the results with reference to past literature.

6 DISCUSSION

6.1 Introduction

IS/T professionals are often undeservedly categorised as social misfits or “IT geeks” with poor interpersonal skills. Yet there is an identified gap in the literature on the notion of interpersonal skills, its components, and especially its relationship to outcomes such as job satisfaction. Thus, this study was motivated by a need to conceptualise and then examine the relationship between the four dimensions of interpersonal skills of IS/T supervisors (e.g. supervisor, managers CIOs) and the job satisfaction of followers. It was expected that all components of IPS would be found important and statistically influential on job satisfaction.

In the previous chapter, results of data analysis were presented, and it was shown that interpersonal skills as well as some of its dimensions, do correlate with job satisfaction of IS/T employees. This chapter discusses those findings in detail.

6.2 The link between Interpersonal Skills and Job Satisfaction

It should not be surprising that the perceived interpersonal skills of a leader influences employee job satisfaction, given the past work embodied in ‘Followership’ literature which acknowledges the interplay between follower and leader (Uhl-Bien *et al.,* 2013). In Lorinkova, Pearsall and Sims (2013), the leadership styles of supervisors, which encompasses their interpersonal skills, was found linked to employee job performance. This study’s finding of a positive link between interpersonal skills of supervisors and employee job satisfaction in the IS/T context, supports and corroborates such past work. Within the IS/T domain, the past works of Goldstein & Rockart (1984), Chen (2008), Reid, Riemenschnedier & Allen (2008), Volmer, Nieseen, Spurk, Linz & Abele (2011), Zolbanin & Sarathy (2014) and Kowal & Roztocki (2015), had intimated that IS/T supervisor’s managerial characteristics have a relationship with employee job satisfaction. This study has now provided some of the empirical evidence required to support those assertions in

the South African context. Specifically, the link between the global measure of interpersonal skills and job satisfaction of sampled employees which was positive and significant. Furthermore, the effects of specific dimensions, namely peer leaderships skills and relationship building skills were found to correlate with job satisfaction. The theory that supports this notion is the Affective Events Theory (AET). A psychological model that links emotions and feelings in the workplace to job satisfaction.

For the purpose of this research, the research reviewed literature from many domains and adopted a conceptualisation of interpersonal skills not specific to IS/T but rather to a broader domain. While it was suited for a broader domain, there were no specifics to interpersonal skills within the IS/T discourse, it did however, improve the understanding of interpersonal skills for the IS/T domain. From this point of view, this research has extended the IS/T body of knowledge with respect to interpersonal skills. Notwithstanding this, the results of the correlation performed in this research may suggest that collinearity may exist between sub concepts of interpersonal skills. Meaning conceptually, the definitions provided in this research regarding interpersonal skills subcomponents overlap in the mind of the employee forming these perceptions about their supervisor/leader.

As a succinct reminder, interpersonal skills have broadly been defined as the ability of a person to interact effectively with other people (Spitzberg & Cupach 1989).

The following four dimensions of interpersonal skills were defined and found to be empirically distinct but inter-related dimensions.

First, peer leadership was defined as “the set of abilities necessary not only to be part of a group, but to lead it. The skill set includes the propensity to coach, teach, counsel, motivate, and empower group members; to readily interact with one’s team, earning trust and respect; to actively contribute to problem solving and decision making; and to be sought out by peers for expertise and counsel.” (Hutchins *et al.,* 2013, p. 10)

It was measured as eight sub-scales comprising of phrases that encapsulate the essence of peer leadership skills. These measures reflect a follower’s perception that they have placed trust in a role model who is helpful, and who effectively rewards and energises

those in their teams, be it permanent or ad-hoc teams. Previous work of Kennerly (1989) and Wong & Laschinger (2012) on leadership style, found leadership styles to be important in improving job satisfaction. Embodied in the definition of peer leadership style is the concept of trust. Earning of trust is a key factor in enabling a successful leadership style. Dong & Howard (2006) specifically showed a positive relationship with trust in supervisors to job satisfaction in employees, thus this research also corroborates their assertions. In the IS/T context, Bassellier & Benbasat, (2004) recognises peer leadership skills. They rank it as the most important skill for an IS/T leader. Zolbanin & Sarathy (2014) acknowledges this when they say leadership skills is more important than technical skills for IS/T supervisors. In addition, team building skills which includes coaching, motivating, role modelling and team norming are additionally imperatives of IS/T managers (Haselberger, 2016). Without peer leadership skills, leaders may find it difficult to create an enabling & supportive team environment, as team members would be distrustful of each other, and work would remain incomplete due to poor motivation and not enough counselling to drive goals and outcomes. The importance of peer leadership to employee outcomes in the South African IS/T context is empirically confirmed.

Second, interpersonal communication as a dimension of interpersonal skills was defined as “the set of abilities needed in the interpersonal exchange of information; a two-way exchange requiring skill in both expressing and assimilating information. They not only involve listening, speaking, writing, and sending/receiving nonverbal signals, but doing so empathetically, attentively, responsively, directly, and confidently during the social interaction” (Hutchins *et al.*, 2013 p. 7).

Its measurement encapsulates the essence of communication skills, by reflecting a follower’s perception of attentiveness and empathy displayed and the ability of the leader to offer timely instructions.

In the IS/T context, Bassellier & Benbasat (2004), Sector, Smaltz, Sambamurthy & Agarwal (2006), Cohen & Dennis (2010), Peppard (2010), Correia & Joia (2014), Shao, Feng, Choudrie & Liu (2010), Hooper & Bunker (2013) Yokkhun, Quirchmayr, Chutimasakul, (2014) and Haselberger (2016) all posit that communication skills is an

important skill for supervisors to have. This is because the better the skill, the better the perceived organisational support given by the leader which signals that the leaders cares about the employee. A cared for employee is more likely to reciprocate and care about the goals the leader has set for them. However, this research, could not find evidence that interpersonal communication skills of leaders as perceived by followers improves their job satisfaction. The hypothesis was thus not supported. One explanation might be that majority of communication with supervisors are usually technical in nature and thus occurring among similar individuals who are well versed in the technical nomenclature found related to the tools, techniques and notations prevalent within IS/T departments. These tools, techniques and notations may negate the need for strong interpersonal communication skills in supervisors as they embed and reinforce good communication in itself. If IS/T supervisors engaged in less technical communication, perhaps interpersonal communication skills would become more important. Future work may wish to test this contingent relationship.

Another explanation might be that interpersonal communication skills of supervisors are more important when interacting with stakeholders outside of the IS/T department. Prior works in IS/T cited above were mostly focused on how IS/T leaders related to business leaders, and therefore the focus of communication was externally oriented, i.e. communicating outward. Future work should continue to explore how communication patterns between IS/T managers and their subordinates influences outcomes.

Third, relationship building skills was defined as “the set of abilities needed to develop and maintain bonds with others, relate to and support others, foster ongoing relationships, and build strong beneficial alliances. These skills are imperative for team performance. Beyond the forming of interpersonal associations, relationship building skills also involve the management and resolution of conflicts and getting to get what you want from others.” (Hutchins *et al.*, 2013 p. 8).

Its measurement reflected a follower’s perception of conflict management and negotiation skills in relation to the longer-term value that can gained by both supervisor and employee.

Leadership writers of the past such as Ewen, Wihler, Blickle, Oerder, Ellen III, Douglas & Ferris (2013) inform us that relationship building is a pivotal cog in a supervisor's effectiveness and in turn supervisor effectiveness is linked to follower satisfaction. Zolbanin & Sarathy (2014) in the IS/T context also acknowledge the relationship between supervisor and employee and how this relates to employee job satisfaction. Thus, past writers have established this link between relationship building skills and follower job satisfaction.

Haselberger (2016) acknowledges relationship building skills indirectly when describing the lack of interpersonal relationships of supervisors leads to poor performance and dissatisfaction. Hooper & Bunker (2013) directly acknowledges relationship building skills as a skill required by IS/T supervisors while other IS/T writers such as Smaltz, Sambamurthy & Agarwal (2006), Cohen & Dennis (2010), Peppard, (2010) and Yokkhun, Quirchmayr & Chutimasakul (2014) may embody relationship building skills needed by a IS/T supervisor in what they call political skills or political savvy.

These views have now been corroborated by this research, which has found that relationship building skills of supervisors are statistically important for IS/T employee job satisfaction in the South African context. Relationship building skills are thus an important part of how interpersonal skills are defined. They provide for better conflict management where participants feel part of an enduring relationship. At a particular moment in time, when conflict arises, parties will be cognisant that the relationship may be on the line if differences are not reconciled. Unreconciled differences may lead to a break down in trust and eventually an irretrievable breakdown of the relationship in which mutual benefits will cease.

Fourth, social and behavioural agility skills are "the set of interrelated abilities needed in order to monitor and interpret both one's own and other's behaviours and flexibly adapt presentation of self to others during social interactions for the purpose of social influence and control over the interaction" (Hutchins *et al.*, 2013 p. 11).

Its measurement encapsulates the essence of social and behavioural agility skills by reflecting a follower's perception of their supervisor's emotional intelligence and social facility to engage in an interaction with employees and other stakeholders.

The link between social and behavioural agility skill has been established by past organisational writers such as Dong & Howard (2006) who found a relationship between emotional intelligence and job satisfaction. In the IS/T context, Muller & Turner (2010) and Cheruvelil *et al.* (2014) found that IS/T supervisors with high levels of self-awareness, emotional resilience, sensitivity in interaction and conscientiousness are most likely to be seen as successful. However, this study could not find that social and behavioural agility skills of IS/T supervisor are important to IS/T employees. Perhaps a reason to why this skill is less important than peer leadership or relationship building is because at its heart this skill is the ability to modify one's own behaviour depending on the situation or environment. The need for this skill among IS/T leaders may be less pronounced if the environment in which the sample of IS/T employees interact with their IS/T supervisors are quite stable. Another reason that could be considered plausible is perhaps the population sample comprised of a homogeneous culture set between leaders and employees which facilitated for easier interactions rather than leaders having to be aware of diversity in their interaction. Future work on diversity and job satisfaction could provide more answers.

In summary, of the four interpersonal skills, peer leadership and relationship building were found significantly correlated with job satisfaction. While social and behavioural agility and interpersonal communication skills were not. However, the global interpersonal skills construct taken as an aggregate over all four skills was found to significantly correlate with job satisfaction. When considering Pickett-Rathjen & Foreyt (1980) comments that the environment in which one finds themselves determines what interpersonal skills should be used, then this research can assert that within the IS/T department (environment) the repertoire of interpersonal skills that needs to be at elevated levels for supervisors are peer leadership and relationship building skills. This does not mean interpersonal communication and social behavioural agility skills in supervisors are not needed. For

example, they may represent basic/hygiene factors such that the absence of these skills may have negative effects. It may also be that such skills improve satisfaction only to a point beyond which they are superfluous to continued increase in satisfaction. Future research should continue to explore the conditions under which these skills are important.

For example, one might postulate that in other circumstances or environments such as when IS/T supervisors interact with senior top management outside of IS/T (Cohen & Dennis, 2010), the need for interpersonal communication skills is more important than when dealing with technical subordinates. Or another example, when IS/T supervisors interact with external suppliers perhaps relationship building skills are more important. The point being that the environment in which the IS/T supervisor finds themselves in, may be relevant in relation to the heightened use of a particular dimension of interpersonal skills.

6.3 Other determinants of job satisfaction

In this research, a number of known predictors of job satisfaction were included among the control variable. All controls were significantly correlated to job satisfaction except for two job facets, namely pay and operating conditions. This was surprising in light of past research identifying job facets such as pay as extremely important to overall job satisfaction.

The majority of respondents in this study were highly satisfied. Perhaps ‘Pay’ may increase satisfaction but only up to a point, thereafter other factors may become important. Given that South African IS/T resources are a scarcity, IS/T employees are probably well remunerated when compared to other professions and this may have contributed to why Pay did not significantly correlate. This may lead to the conclusion that in the general working population, the effects of pay may not be linear.

Satisfaction with operating conditions i.e. the level of rules and procedures to adhere to, did not significantly correlate with overall job satisfaction. One explanation for this finding that IS/T work is at the cutting edge of technology, where the ‘rule book’ has not yet been

written. The conditions the IS/T employee operate in are not as simple as other professions where procedures and policies are standardised and nearly universal. This means that IS/T supervisors cannot impose standardised procedure and policies as there are few and as such, IS/T employees operate with a certain degree of freedom and the absence of policy does not impede their job or influence their job satisfaction.

For both these two surprising non-significantly correlated items, one also cannot discount that the sample size was a factor and that the relationship may hold in a larger sample.

Of the remaining control variables in this study, nature of work, and complexity of role were highly significant for satisfaction. Discussion on these important determinants of job satisfaction continues in the next section.

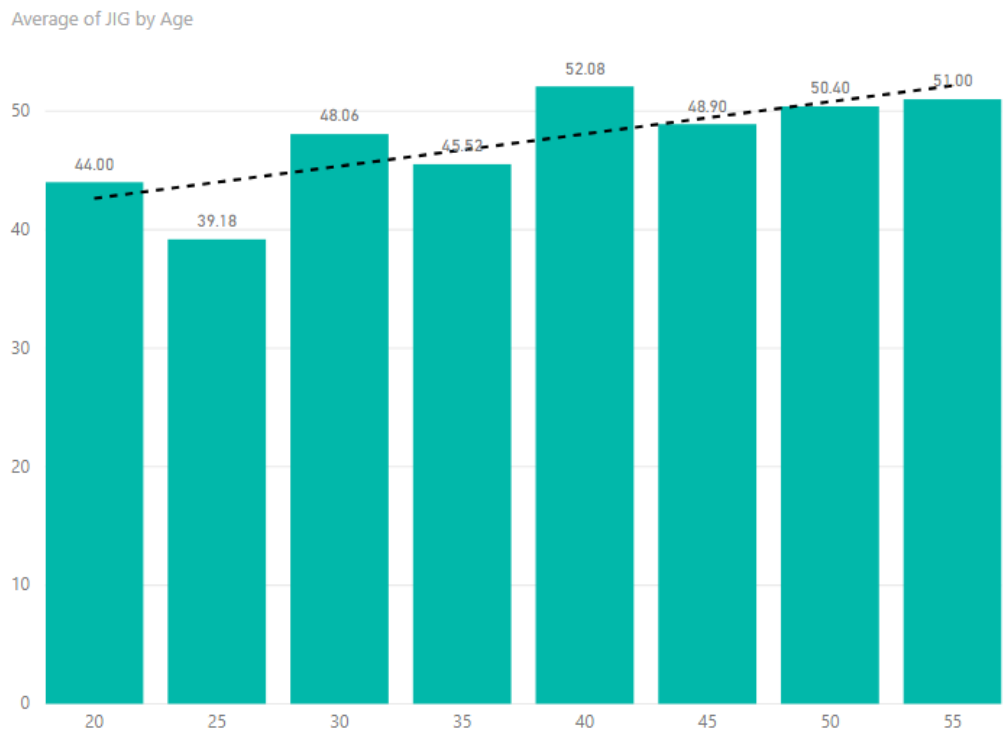
6.4 Discussion of exploratory findings

This section discusses finding of the results that were exploratory in nature and thus beyond the research objectives per se. This section of the discussion is based on results which are thought-provoking but yet maintain relevant to the overall purpose of the study to examine job satisfaction as an outcome among IS/T employees in South Africa. The average job satisfaction score is 46.83 out of a possible 54 which does suggest high overall satisfaction.

6.4.1 *Age*

It was noted that age correlated significantly with overall job satisfaction. The average age of the respondents was 37.1. Making them likely to be 15 to 20 years into their careers and such they are likely to be more experienced, have higher ranking positions and have more autonomy at work, which in turn are factors that may translate into more job satisfaction. The link between autonomy and job satisfaction was made by Chen (2008). The figure below contains average job satisfaction scores per age group, the figure clearly shows the younger the age groups, and by implication less experienced workers, as having the lowest job satisfaction score.

Graph 3 - Average job satisfaction score by age



6.4.2 *Results of the step-wise analysis*

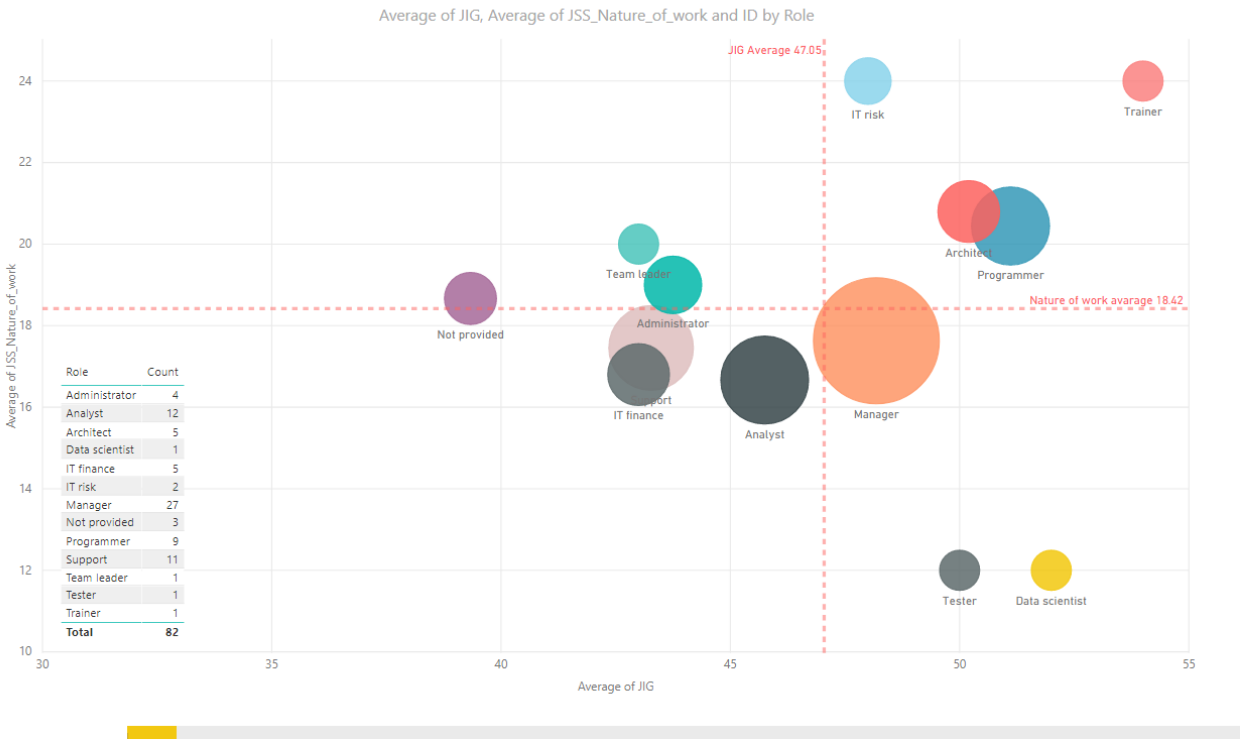
An exploratory stepwise model was run (refer Section 5.6.3(b)). The results of which confirmed that the nature of work, complexity of task prevalent in the job and peer leadership skills of the supervisor impacted the level of job satisfaction for employees in IS/T more so than any of the other variables used in this research.

Of all the other control factors, nature of work recorded the highest correlation. The nature of work variable captured the employee's perception of whether or not they considered their work meaningful. The concept of a meaningful job has not escaped academics attention. There are many perspectives on what constitutes meaningful work or jobs. One perspective is inherent personality traits, another perspective is job characteristics and another perspective are how employees frames their relationship to work (Wrzesniewski,

2003). Chalofsky (2003) describes job characteristics that can provide for meaningful work as being autonomy, empowerment, challenging work and allowing for levels of creativity with continuous learning. All which intuitively and generally can describe IS/T work.

Graph 4 continues to explore the interaction between job roles in IS/T, the nature of work and job satisfaction. The figure shows a scatterplot of roles where the y axis measures average score for nature of work and the x axis measures job satisfaction. As you move to the right job satisfaction scores increase and as you move to the top natures of work scores increase. The size of the bubble indicates the number of respondent who have that role.

Graph 4 - Job satisfaction scores, Nature of work by role

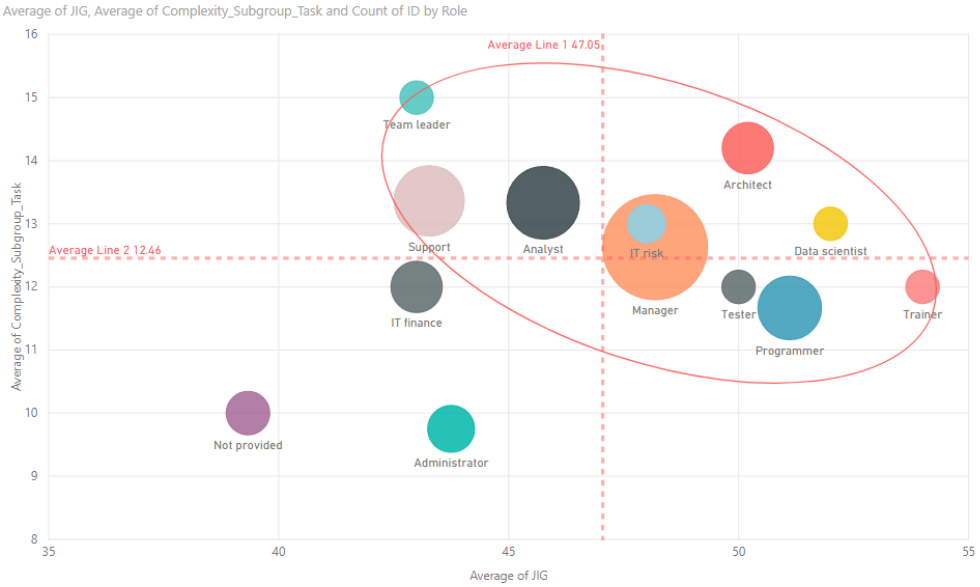


Roles was selected to be a proxy for job characteristics. For roles in the top right quadrant, levels of autonomy may be very high and so job satisfactions score are higher. For example, the programmers score their nature of work as an above average. The analysts however a below average in job satisfaction score. Perhaps a reason to why analysts have

lower scores is because there is less space for them to be creative when compared to programmers. Programmers have at their disposal many more ways to manifest their creativity, given the innumerable ways to solve particular technical challenges, which also includes new tools and improved techniques. While the analyst's creativity is subjected to the influence of functional approval by business stakeholders. Future work should continue to explore how job characteristics or roles define the meaning of work and the impact on job satisfaction in the IS/T context.

Complexity relating to job tasks has long been researched as part of job satisfaction (Nedelkoska & Patt, 2015). Some have suggested a positive rather than negative effect of complexity on job satisfaction such that employees may be satisfied with their jobs because the job is complex (Judges *et al.,* 2001). The positive correlation observed in this research seems to confirm this view that IS/T employees are more satisfied when the job has more tasks that are complex. IS/T employees seem to enjoy the complexity of tasks, possibly due to the challenge brought about by complexity. Complexity should thus be seen differently to negative characteristics of work such as role ambiguity, which leads to negative outcomes such as work exhaustion (Moore, 2000). However, this line of thinking may have its limits in the IS/T context. One interpretation of this line of thinking can be seen in the below figure when plotting complexity in task (y axis) vs job satisfaction (x axis) by role. There appears to be a grouping (marked by oval) that follows the trend of lower complexity in task, the higher job satisfaction. Future work should continue to explore how complexity in task by roles impact on job satisfaction in the IS/T context.

Graph 5 – Job satisfaction, complexity by role



The step-wise regression procedure revealed that the interpersonal skill of peer leadership was one of the most important determinants of satisfaction. This provided strong support for Hypothesis 3 of this study. Thus, suggesting that leadership matters in promoting job satisfaction of IS/T employees. If a supervisor understands the importance of their role and how peer leadership skills matter alongside important characteristics of the job itself, then they are better positioned to harness this skill to their advantage and improve employee satisfaction.

6.4.3 *Exploring the Mechanism through which interpersonal skills impact job satisfaction*

Results showed that the global IPS construct without any other controlling variables being present was significant for job satisfaction. However, it lost significance in the presence of other controls.

Further analysis (refer section 5.6.3(ci)) suggested that the global interpersonal skill factor may influence job satisfaction through one of the job facets. Such as the employee's satisfaction with supervision.

With this in mind the search for meaningful facets that account for job satisfaction still continues. Certain dimensions of interpersonal skills of supervisors have been shown to be a direct predictor to job satisfaction of IS/T employees but may also interact with other factors as part of an employee's overall response to their job.

6.5 Chapter Conclusion

This chapter discussed the results of the study, first by engaging the literature that suggested interpersonal skills of leaders influenced job satisfaction of their employees. The most important dimension of interpersonal skills were peer leadership and relationship building skills. Interpersonal skill of peer leadership is among the most important determinants of job satisfaction, but other factors such as the meaningfulness of work were described as most salient to satisfaction. Interpersonal skills appear also to interact with other job facets in influencing satisfaction.

The next chapter concludes the study.

7 CONCLUSIONS

7.1 Overview of Study

The purpose of this study was to examine the relationship between four dimensions of interpersonal skills of IS/T leaders (e.g. supervisors, managers, CIOs) and the job satisfaction of IS/T employees as followers. Research was conducted using a positivist, relational design, that quantitatively analysed data collected from an online survey instrument completed by a sample of IS/T employees. The findings showed that the interpersonal skills dimensions of peer leadership and relationship building are most important. Further, interpersonal skills of peer leadership is among the most important determinants of job satisfaction, and other factors such as the meaningfulness of work and complexity of tasks emerged as most salient for satisfaction. Interpersonal skills of IS/T leaders appear also to interact with other job facets such as satisfaction with supervision in influencing job satisfaction.

This chapters concludes the research by summarising how this research contributes to theory and practice, and how limitations may affect generalisation of findings to all IS/T employees and leaders. It then provides recommendations to future researchers interested in this topic.

7.2 Contribution to Theory

Extending the study of the interpersonal skills of leaders into the information systems and technology context has been an important theoretical contribution of this research. Specifically, it has extended work of Hutchins *et al.* (2013) to offer the conceptual definitions of the underlying dimensions of interpersonal skills, namely communication skills, relationship building skills, peer leadership skills and social and behavioural agility skills and then operationalised them for the use in the IS/T context.

Business performance is improved, in part, by increasing employee job performance and job satisfaction. Job satisfaction is an affective response by an employee to their job and

can be improved by improving the employee's attitudes to the various determinants of job satisfaction. Supervision is one such determinant. Given that a great part of the supervisor's role involves interreacting with their followers, supervisors as leaders require the necessary interpersonal skills. It logically follows that interpersonal skills of leaders are important for business performance.

This may be especially so in the IS/T context because IS/T budget spend is on the increase, and leaders of these departments have to show returns. This research thus contributes by demonstrating whether the interpersonal skills of IS/T leaders can be part of the process of affecting IS/T employees job satisfaction as a precursor to performance.

The results showed that peer leadership skills in an IS/T leader ranks highly as a determinant of employee job satisfaction. The underlying concept of peer leadership is that leaders are trustworthy, act as role models, are helpful and able to effectively reward and energise those in their teams. This is important to their job satisfaction and is an especially useful finding that can mark the starting point for further research. For example, the implication of such leadership for employees can be explored for effects on other outcomes such as intention to turnover, recognition and rewards, ethical leadership and team performance.

This study also extends the position of the implicit leadership theorists (Epitropaki, Sy, Martin, Tram-Quon & Topakas, 2013) by reporting on the extent to which followers' schemas of leadership may affect their own job satisfaction. In other words, the study has shown that IS/T employees do develop perceptions about their leaders, including the extent of their leaders' interpersonal skills. These perceptions are then part of a broader process of developing an affective response (e.g. satisfaction) toward their jobs in the IS/T context. This study has shown that some of these perceptions of leaders are important over-and-above perceptions they develop about the characteristics of their work and other facets such as promotion or the people they work with.

7.3 Contribution to Practice

This work has offered practitioners a better working definition of interpersonal skills to enable them to craft skill development programs for IS/T leaders and supervisors. When recruiting supervisors in practice the field now has a good sense for what skills to look for. Supervisors themselves will be more informed of what is needed to maintain employee satisfaction. Specifically, recruiters should look and test for peer leadership and relationship building skills and their underlying concepts in candidates for IS/T supervisor roles. For example, conflict management abilities, negotiation, team norming skills, mentoring, coaching and teaching dispositions. Where necessary, developing these capabilities further will be important to ensuring good outcomes.

Educators can also use the results of this research to be better informed on the skills actually required for the job of supervision in the IS/T workplace. For example, to develop peer leadership and relationship building skills, educators should use and create curriculum that include topics such as leadership styles, motivation, contingent rewards and team/group dynamics, negotiation, mentoring and conflict management.

Practitioners can also benefit from other results. Pay was not found important to satisfaction, and so attempts to improve satisfaction only through an extrinsic reward structure is unlikely to succeed. IS/T employees do appear to respond positively to jobs where complexity may add to the challenge experienced, and where individuals are able to find meaning in their job. Practitioners can also contribute to the business when they develop programs for the younger workforce to enhance job satisfaction in conjunction with findings for generational cohort's theory, to ascertain what generations value.

7.4 Limitations and Threats to Internal and External Validity

It is important to acknowledge that the above-mentioned contributions to theory and practice should be considered in light of the study's limitations. The first limitation arises largely because of the relational research design and the data collection and analysis methods adopted. The relationships between the variables were examined within the IS/T

context of South Africa and one should be cautious in extending the findings beyond this context.

The study was also carried out as a cross-sectional survey, which means that temporal precedence has not been established in the data and any causal inferences can only be made with respect to theory. The study has not established the possibility for reciprocal causality e.g. that more satisfied employees think better about their leaders.

The length of the questionnaire is also recognised as giving rise to limitations. Many incomplete responses were observed towards the end of the questionnaire, which suggests length was a factor. This may have introduced bias in the response, which is a concern especially for social and behavioural agility skills as this was towards the end of the instrument.

Other limitations arise because the invitations to employees to participate were sent through relevant CIOs/ managers, and then via them to the IS/T employee. This could have resulted in a non-response bias from the IS/T employee such that those employees less satisfied with their jobs and less positive about their leaders and supervisors were less inclined to respond. Also, many CIOs are very busy in their days and opted not to assist in this research. Any non-response bias present in the data would limit the generalisability of the study's findings. Potential limitations also arise because a large number of respondents (34%) reported maximum scores on job satisfaction. This introduces a response bias arising possibly from the way the respondent was invited (i.e. receiving the invitation from their supervisor). This fact, even though the survey instrument stressed anonymity, could have induced demand characteristic response bias, i.e. that only more satisfied employees were willing to take part in the study.

Additionally, the sample size is a limitation. Only 129 responses were received after 20 weeks of solicitation. This was after sending invitations to managers and supervisors to give to their subordinates, it was estimated that there was a potential for over 1000 participants who could have been invited to take part (roughly four per manager). That

makes the response rate around 10%. To add to this, 47 responses were discarded due to insufficient responses for items. That's a 36% item non-response rate. The small sample size lowered the statistical power of the analysis. Without the advantage of a large sample to improve power, certain relationships were concluded to be non-significant.

When all these limitations of the sample are considered, generalisability may be limited. The study does however offer important insights into the effects of leadership on employees within a relevant sample of IS/T employees working in the South African environment in roles such as analysts, programmers and IT managers.

It is also useful to mention that the research focused on job satisfaction not dissatisfaction. The determinants of dissatisfaction and association with interpersonal skills of IS/T supervisors should be examined in future work.

7.5 Recommendations for Future Research

This study aimed to determine why some IS/T employees are more satisfied than others. The main contribution was to test the importance of the interpersonal skills of leaders. However, other factors included in the study emerged as more important. These included 'nature of work' and 'complexity of tasks'. Future research should continue to explore job satisfaction of IS/T employees. When juxtaposed with the growing budgets of the IS/T department, managers need to understand how to better the work-life of IS/T staff, increase their job performance and reduce negative emotions that lead to exhaustion and turnover.

The findings related to job complexity is interesting as it suggests that rather than reducing job satisfaction, complexity is embraced in the IS/T context and leads to more satisfied employees. Future work should continue to study these effects with other job characteristics.

The finding related to the nature of work (do employees feel their job has meaning) is also compelling given the importance derived from the statistical testing. Future work could benefit academics and practitioners alike if further investigations ratify these findings.

By focussing deeper on peer leadership skills, future work may further refine its conceptual definition and identify key determinants of peer leadership skills and its effects on other variables.

Future work, may wish to shift focus to explain the determinants of dissatisfaction. This, may also be of benefit to the IS/T context.

Future researcher could also consider the contingent effects of interpersonal skills of IS/T supervisors where different interpersonal skills have more or less significance based on the organisational environment and the characteristics of the employees they lead.

7.6 Conclusion

This study has identified four dimensions of interpersonal skills of IS/T leaders and examined their effects on the job satisfaction of followers. By finding that peer leadership followed by relationship building are the most important of the interpersonal skills for IS/T leaders, this study has contributed to our understanding of how attributes of leaders come to influence their followers in the IS/T context. Other important factors influencing IS/T employee's satisfaction include complexity in job tasks and the nature of work. Future work can extend these findings to explore the consequences of interpersonal skills of leaders for other IS/T outcomes, and to examine additional determinants of the job satisfaction of IS/T employees.

8 REFERENCES

Adair, J. (2013). Confucius on leadership, *Macmillan.*

Agarwal, R., Ferratt, T.W. (2001). Crafting an Hr Strategy to Meet the Need for IT Workers, *Communications of the ACM*, Vol. 44 No. 7, Pages 58-64.

Anderson, J., Ball, N. (2015). The Educational and Career background of CIOs, *Issues in Information systems,* Vol.16, Issue IV, pp. 178-182.

Al-Rubaish, A. M., Rahim, S. I. A., Abumadini, M. S., & Wosornu, L. (2011). Academic job satisfaction questionnaire: Construction and validation in Saudi Arabia. *Journal of Family and Community Medicine*, 18(1), 1–7. http://doi.org/10.4103/1319-1683.78630

Astrauskaitė, M., Vaitkevičius, R., & Perminas, A. (2011), Job Satisfaction Survey: A Confirmatory Factor Analysis Based on Secondary School Teachers' Sample, *International Journal of Business and Management*, Vol. 6, No. 5.

Bassellier, G. & Benbasat, I. (2004), Business competence of information technology professionals: conceptual development and influence on IT-business partnership. *MIS Quarterly*, 28(4): 673–694.

Bedwell, W.L., Fiore, S.M. & Salas, E. (2014) Developing the Future Workforce: An Approach for Integrating Interpersonal Skills into the MBA Classroom, *Academy of Management Learning & Education*, Vol. 13, No. 2, 171–186.

Beenen, G., Pichler, S., (2016)," A discussion forum on managerial interpersonal skills ", *Journal of Management Development*, Vol. 35, No. 5 pp. 706 – 716.

Bhattacherjee, A. (2012). Social Science Research: Principles, Methods, and Practices. Textbooks Collection. 3. Retrieved from http://scholarcommons.usf.edu/oa_textbooks/3

Bligh, M.C., Kohles, J.C., Pearce, C.L., Justin, J.E., and Stovall, F. (2007). When the Romance is Over: Follower Perspectives of Aversive Leadership, *Leadership Institute Faculty Publications.* Paper 21.

Bowen, P., Cattell, K. (2008). Job satisfaction of South African quantity surveyors, *Engineering, Construction and Architectural Management,* Vol.15 (3), pp. 260-269.

Bowen, P., Cattell, K., Distiller, G., Edwards, P.J. (2008). Job satisfaction of South African quantity surveyors: An empirical study, *Construction Management and Economics,* Vol.26 (7), pp. 765-780.

Bowen, P., Edwards, P. and Lingard, H. (2013). 'Workplace stress among construction professionals in South Africa: The role of harassment and discrimination', *Engineering, Construction and Architectural Management*, Vol. 20, no. 6, pp. 620-635.

Boyatzis, A. R. (1982). The competent manager: A model for effective performance, *Wiley.*

Brodke, M.R.H., Sliter, M.T., Balzer, W.K., Gillespie, J., Gillespie, M., Gopalkrishnan, P., Lake, C.J., Oyer, B., Withrow, S. & Yankelevich, M. (2009). The Job Descriptive Index and Job in General: Quick Reference Guide, *Bowling Green State University.*

Buhrmester, D., Furman, W., Wittenberg, M. T., & Reis, H. T. (1988). Five domains of interpersonal competence in peer relationships. Journal of Personality and Social Psychology 1988, Vol. 55, No. 6, 991-1008.

Calisir, F. & Gumussoy, C.A. (2007). Determinants of job satisfaction in the IT industry, *Proceedings of the 2007 IEEE IEEM*.

Carnegie, D. (1937). How to win friends and to influence people, *Simon and Schuster*.

Chakrabarty, S., & Whitten, D. (2011). The Side-lining of Top IT Executives in the Governance of Outsourcing: Antecedents, Power Struggles, and Consequences*, IEEE Transaction on Engineering Management*, Vol. 58, No. 4.

Chalofsky, N. (2003). An emerging construct for meaningful work, *Human Resource Development International*, 6:1, 69-83.

Chen, L-H. (2008). Job satisfaction among Information systems personnel, *Computers in Human Behavior*, 24 (2008) 105–118.

Chen, D., Preston, DS. & Xia, W. (2010). Antecedents and Impacts of CIO Supply-side and Demand-side Leadership: A Staged Maturity Model, *Journal of Management Information Systems,* Vol. 27 (1), 231-271.

Cheruvelil, K.S., Soranno, P.A., Weathers, K.C., Hanson, P.C., Goring, S.J., Filstrup, C.T. & Read, E.K. (2014). Creating and maintaining high-performing collaborative research teams: the importance of diversity and interpersonal skills, *Front Ecol Environ 2014, Vol.12(1): 31–38.*

Chun, M. & Mooney, J (2009). CIO roles and responsibilities: Twenty-five years of evolution and change, *Information & Management,* Vol, 46 (2009) 323–334.

Cohen, J.F, Dennis, C.M. (2010). Chief information officers: An empirical study of competence, organisational positioning and implications for performance, *SAJEMS NS* 13 (2010) No 2.

Correia, J.C. & Joia, L.A. (2014). CIO Competencies: A social representation analysis, *Proceedings of Twentieth Americas Conference on Information Systems, Savannah*.

Dansereau, F., Seitz, S.R., Chiu, C-Y., Shaughnessy, B., & Yammarino, F.J. (2013). What makes leadership, leadership? Using self-expansion theory to integrate traditional and contemporary approaches., *The Leadership Quarterly*, Vol. 24 (2013) 798–821.

Delva, M.D., Kirby, J.R., Knapper, C.K. & Birtwhitsle, R.V. (2002). Postal survey of approaches to learning among Ontario physicians: Implications for continuing medical education. *British medical Journal*, 325, 1218-1222.

De Vries, R.E., van den Hooff, B., de Ridder, J.N. (2006). Explaining knowledge sharing: The role of team communication styles, Job satisfaction and performance beliefs, *Communication Research*, Vol.33 No.2, April 2006 115-135.

Dong, Q. & Howard, T. (2006). "Emotional Intelligence, Trust and Job Satisfaction", *Competition Forum*, Vol. 4, No. 2, pp. 381-388.

Dong, Q., Koper, R.J., Collaço, C.M. (2008). Social Intelligence, Self-esteem, and Intercultural Communication Sensitivity, *Intercultural Communication Studies,* XVII: 2.

Douglas, A., Lubbe, B.A. (2010). An empirical investigation into the role of personal-related factors on corporate travel policy compliance, *Journal of Business Ethics*, 92:451–461.

du Plooy-Cilliers, F., Davies, C., Bezuidenhout, R-M. (2014) Research matters, *Juta.*

Duhachek, A., Coughlan, A.T., Lacobucci, D. (2005). Results on the Standard error of the coefficient alpha index of reliability, *Marketing science*, Vol 24, No.2, pp. 294-301.

Epitropaki, O., Sy, T., Martin, R., Tram-Quon, S., Topakas, A. (2013). Implicit Leadership and Followership Theories "in the wild": Taking stock of information-processing approaches to leadership and followership in organisational settings, *The Leadership Quarterly,* Vol 24, 858-881.

Ewen, C., Wihler, A., Blickle, G., Oerder, K., Ellen III, B.P., Douglas, C., Ferris, G.R (2013) Further specification of the leader political skill–leadership effectiveness relationships: Transformational and transactional leader behavior as mediators, *The Leadership Quarterly*, Vol 24, 516-533.

Faraj, S., Sambamurthy, V., (2006) Leadership of Information Systems Development Projects*, IEEE Transactions on Engineering Management*, Vol. 53, No. 2.

Ferris, G. R., Perrewe, P. L., Douglas, C. (2002). Social effectiveness in organizations: Construct validity and research directions. *Journal of Leadership and Organisational Studies*, Vol. 9. No.1.

Fisher, R.J. (1993), Social desirability bias and the validity of indirect question. *Journal of consumer research*, Vol. 20.

Florentine, S. (2016), 2017 IT forecast: Budgets will rebound, CIO.com URL: http://www.cio.com/article/3150928/hiring/2017-it-forecast-budgets-will-rebound.html, Accessed 2017-03-06.

Ford, M.E., Tisak, M.S. (1983), A further search for social intelligence, *Journal of Educational Psychology*, Vol.75, No. 2, 196-206.

Fuchs, C, & Diamantopoulos, A, (2009). Using Single-Item Measures for Construct Measurement in Management Research: Conceptual Issues and Application Guidelines. *Die Betriebswirtschaft*, 69 (2), 197-212.

George, D., & Mallery, P. (2003). SPSS for Windows step by step: A simple guide and reference. 11.0 update (4th ed.). *Allyn & Bacon*.

Ghazzawi, I., (2010). Gender role in job satisfaction: The case of the U.S information technology professionals, *Journal of Organizational Culture, Communications and Conflict;* Vol. 14, Is. 2, 1-34.

Greene, J.O., Burleson, B.R. EDS (2003). Handbook of Communication and Social Interaction Skills, *Psychology Press.*

Goleman, D. (2006). Social Intelligence, *Arrow books.*

Goldstein, D.K., & Rockart, J.F. (1984). An examination of work-related Correlates of Job Satisfaction in Programmer/Analysts, *MIS Quarterly*, June.

Gonzalez, P.A. & McKeen, J. (2013). Is the CIO 'last among equals'? Students' perceptions of the stereotype profile of CIOs, CFOs and CMOs, *Thirty Fourth International Conference on Information Systems, Milan 2013.*

Harter, J.K., Schmidt, F.L., & Hayes, T.L. (2002). Business-Unit-Level Relationship Between Employee Satisfaction, Employee Engagement, and Business Outcomes: A Meta-Analysis, *Journal of Applied Psychology*, Vol. 87, No. 2, 268–279.

Haselberger, D. (2016). A literature-based framework of performance-related leadership interactions in ICT Project teams, *Information and Software Technology,* 70 (2016)1–17.

Hetland, H., Sandal, G.M. & Johnsen, T.B. (2007). Burnout in the information technology sector: Does leadership matter?, *European Journal of Work and Organisational Psychology*, 16:1, pp.58-75.

Hoffmann, T. (1999). The meanings of competency, *Journal of European Industrial Training*, Vol. 23, No.6, pp. 275 – 286.

Hooper, V. & Bunker, B. the Role and Requisite Competencies of the Public-Sector CIO: A Two-sided Perspective, *The Electronic Journal Information Systems Evaluation,* Vol. 16 No 3, pp.189-200.

Hsieh, S-C., Lin, J-S., Lee, H-C. (2012). Analysis on Literature Review of Competency, *International Review of Business and Economics,* Vol.2 pp.25-50.

Hunter, J. E., Schmidt, F. L., and Judiesch, M. K. (1990). Individual differences in output variability as a function of job complexity. *Journal of Applied Psychology*, 75(1):28.

Hutchins, S., McDermott, P., Carolan, T., Gronowski, M., Fisher, A. & DeMay, M. (2013). Interpersonal skills summary report, *U.S. Army Research Institute for the Behavioral and Social Sciences.*

Igbaria, T., & Guimaraes, M. (1993). Antecedents and consequences of job satisfaction among Information Center Employees, *Journal of Management Information Systems.*

Ironson, G. H., Smith, P. C., Brannick, M. T., Gibson, W. M., & Paul, K. B. (1989). Construction of a Job in General scale: A comparison of global, composite, and specific measures. *Journal of Applied Psychology*, 74(2).

Jackson, C.J. & Corr, P.J (2002), Global Job Satisfaction and Facet Description: The Moderating Role of Facet Importance, *European Journal of Psychological Assessment*, Vol. 18, Issue 1, pp. 1–8.

Judge, T.A., Thoresen, C.J., Bono, J.E. & Patton, G.K (2001), The Job Satisfaction-Job Performance Relationship: A Qualitative and Quantitative Review, *Psychological Bulletin*, Vol. 127. No. 3. 376-407.

Kamalanabhan, T.J., Prakash, L. & Mayuri, D. (2009). Employee engagement and job satisfaction in the IT industry, *Psychological reports*, Vol.105, 759-770.

Kennerly, S.M. (1989). Leadership Behaviour and Organisational Characteristics: Implications for Faculty Satisfaction, *Journal of nursing education*, Vol. 28, No. 5.

Kim, C., Kim, E., Yoo, H., Yoo, K. (2007). The Importance and the Developability of Interpersonal Competency at Work: Implications for Higher Education, *SNU Journal of Education research*, Vol.16.9.

Kowal, J., & Roztocki, N. (2015). Do Organizational Ethics Improve IT Job Satisfaction in the Visegrád Group Countries? Insights from Poland, *Journal of Global Information Technology Management,* 18:2, pp.127-145.

Kowal, J., & Roztocki, N. (2016). Gender and job satisfaction of information technology professionals in Poland, *Proceedings of 49th Hawaii International Conference on System Science.*

Kuhn, T. S. (1962). The Structure of Scientific Revolutions, *The University of Chicago Press.*

Lee, A., Martin, R., Thomas, G., Guillaume, Y. & Maio. G. (2015). Conceptualizing leadership perceptions as attitudes: Using attitude theory to further understand the leadership process, *The Leadership Quarterly,* Vol. 26, 910–934.

LeRouge, C., Nelson, A. & Blanton, J.E. (2006). The impact of role stress fit and self-esteem on the job attitudes of IT professionals, *Information & Management,* 43 (2006) 928–938

Lim, S. (2008). Job satisfaction of information technology workers in academic libraries, *Library & Information Science Research*, Vol. 30 (2008) 115–121

Lorinkova, N.M., Pearsall, M.J., Sims Jr., H.P. (2013). Examining the differential longitudinal performance of directive versus empowering leadership in teams, *Academy of Management Journal*, 2013, Vol. 56, No. 2, 573–596.

Lounsbury, J.W., Moffitt, L., Gibson, L.W., Drost, A.W., & Stevens, M. (2007). An investigation of personality traits in relation to job and career satisfaction of information technology professionals, *Journal of Information Technology,* (2007) 00, 1–10.

Lynch Jr., J.G. (1982). On the external validity of experiments in consumer research, *Journal of consumer research*, Vol. 9.

Macdonald, S., & Macintyre, P. (1997). The Generic Job Satisfaction Scale: Scale Development and Its Correlates, *Employee Assistance Quarterly,* Vol. 13(2).

McMurtrey, M.E., Grover, V., Teng, J.T.C., & Lightner, N.J. (2002). Job satisfaction of information technology workers: the impact of career orientation and Task Automation in a CASE environment, *Journal of Management Information Systems.*

Moore, J.E. (2000). One Road to Turnover: An Examination of Work Exhaustion in Technology Professionals, *MIS Quarterly*, Vol. 24, No. 1 (Mar. 2000), pp. 141-168.

Moser, C.R. (2000). Interpersonal Competencies Fundamental to Effective Leadership: A Model for Leadership Training, PhD, *The Union Institute.*

Muller, R. & Turner, R. (2010). Leadership competency profiles of successful project managers, *International Journal of Project Management*, Vol 28, 437–448

Mumford, T.V., Campion, M.A., & Morgeson. F.P. (2007). The leadership skills strata plex: Leadership skill requirements across organisational levels, *The Leadership Quarterly*, Vol. 18, 154–166

Nedelkoska, L., Patt, A. (2015) Job Complexity and Lifelong Learning, *LLLightinEurope Research Consortium,* Accessed 14-05-2017, Retrieved from URL: http://www.lllightineurope.com/fileadmin/lllightineurope/download/LLLight_Job_Complexity_and_LLL_thematicreport_TR3_20150922.pdf

Newstrom J.W., Scannell E.E. (2006). Supervision: Managing for Results, *McGraw-Hill/Irwin.*

Neves, P. & Eisenberger, R. (2012). Management Communication and Employee Performance: The Contribution of Perceived Organizational Support, *Human Performance*, 25:5, 452-464.

Oc, B. & Bashshur, M.R. (2013). Followership, leadership and social influence, *The Leadership Quarterly*, Vol. 24, 919–934.

Ostroff, C. (1992). The Relationship Between Satisfaction, Attitudes, and Performance: An Organisational Level Analysis, *Journal of Applied Psychology*, Vol. 77, No. 6, 963-974.

Pearce, C.L., Sims, H.P. (2002). Vertical Versus Shared Leadership as Predictors of the Effectiveness of Change Management Teams an Examination of Aversive, Directive, Transactional, Transformational, and Empowering Leader Behaviours, *Group Dynamics: Theory, Research, and Practice*, June 2002 Vol. 6, No. 2, 172-197.

Peppard, J. (2010). Unlocking the Performance of the Chief Information Officer (CIO) *California Management Review* Vol. 52, No. 4.

Pickett-Rathjen, D. Foreyt, J.P., EDS (1980). Social Competence: Interventions for Children and Adults, *Pergamon press.*

Pigott, T. D. (2001). A review of methods for missing data, *Educational Research and Evaluation* Vol. 7, No. 4, pp. 353-383.

Ply, J.K., Moore, J.E, Williams, C.K. & Thatcher, J.B. (2012). IS employee attitudes and perceptions at varying levels of software process maturity, *MIS Quarterly*, Vol. 36 No. 2 pp. 601-624.

Podsakoff, P.M Mackenzie, S.B., Lee, J-Y., Podsakoff, N.P. (2003). Common method Biases in behavioural research: A critical review of the literature and recommended remedies, *Journal of applied Psychology*, Vol. 88. No. 5 pp 879-903.

Pouliakas, K. & Russo, G. (2015). Heterogeneity of Skill Needs and Job Complexity: Evidence from the OECD PIAAC Survey, *The Institute for the Study of Labor (IZA)*, Discussion Paper No. 9392.

Ramdass, K., Pretorius, L. (2008). The Clothing Industry for Growth in South Africa, *PICMET 2008 Proceedings Cape Town.*

Reid, M.F., Riemenschnedier, C.K., Allen, M.W. (2008). Information Technology Employees: A Study of Affective Organizational Commitment, Job Involvement, and Job Satisfaction, *The American review of public administration,* Vol.38 No.1.

Reio, T. G., & Sutton, F. C. (2006). Employer assessment of work-related competencies and workplace adaptation, Human Resource Development Quarterly, Vol 17, No. 3.

Rice, R.W., Gentile, D.A., Mcfarlin, D.B. (1991). Facet Importance and job satisfaction, *Journal of Applied Psychology*, Vol. 76. No.1, 31-39.

Riggio, R.E., Chaleff, I. & Lipman-Blumen, J. EDS (2008). The Art of Followership, *Jossey-Bass.*

Riggio, R.E., Lee, J. (2007). Emotional and interpersonal competencies and leader development, *Human Resource Management Review,* Vol. 17, 418–426.

Robbins, S.P. & Judge, T.A. (2007). Organisational behaviour 12th Edition, *Pearson Prentice Hall*

Roberts, B., Kivilu, M. & Davids, Y.D. (2010). South African Social Attitudes 2nd reports: Reflections on the age of hope, *HSRC Press*

Robles, M.M. (2012). Executive perceptions of Top 10 Soft Skills needed in today's workplace, *Business Communication Quarterly*, 75(4) 453–465.

Rogelberg, S.G., Allen, J.A., Shanock, L., Scott, C., Shuffler, M. (2010). Employee satisfaction with meetings: A contemporary facet of job satisfaction, *Human Resource Management*, March–April 2010, Vol. 49, No. 2, Pp. 149–172

Rutner, P.S., Hargrave, B.C. & Mcknight, D.H. (2008). Emotional Dissonance and the information technology professional, *MIS Quarterly*, Vol. 32 No.3.

Russel, S.S., Spitzmuller, C., Lin, L.F, Stanton, J.M. Smith, P.C. & Ironson, G.H. (2004). Shorter can Also be Better: The Abridged Job in General Scale, *Educational and Psychological Measurement,* Vol.64, 878.

Rychen, D.S., Salganik, L.H. (2000). Definition and selection of Key Competencies, *Deseco INES general Assembly 2000.*

Samaranayake, V. & Gamage, C. (2011). Employee perception towards electronic monitoring at work place and its impact on job satisfaction of software professionals in Sri Lanka, *Telematics and Informatics*, Vol. 29 (2012) 233–244.

van Saane, N., Sluiter, J. K.,Verbeek, J. H. A. M., Frings-Dresen, M. H. W. (2003) Reliability and validity of instruments measuring job satisfaction—a systematic review, *Occupational Medicine* Vol 53 pg. 191–200

Simon, M.K. & Goes, J. (2013). Dissertation and scholarly research: Recipes for success, *CreateSpace Independent Publishing Platform*

Shao, Z., Feng, Y., Choudrie, J., and Liu, Y. (2010). The Moderating Effect of a Chief Information Officer's Competence on IT Investment and Firm Performance, *PACIS 2010 Proceedings.* Paper 109*.*

Smaltz, D.H., Sambamurthy, V., Agarwal, R. (2006). The Antecedents of CIO Role Effectiveness in Organizations: An Empirical Study in the Healthcare Sector, *IEEE Transaction on Engineering Management*, Vol. 53, No. 2,

Smith, P.C., Kendallt, L.M & Hulin, C.L. (1969). The Measurement of Satisfaction in Work and Retirement, *Rand Mc Nally*.

Soley-Bori, M. (2013). Dealing with missing data: Key assumptions and methods for applied analysis, *Boston University.*

Spector, P. (1997). Job Satisfaction: Application, Assessment, Causes, and Consequences, *Sage Publications*.

Spitzberg, B., Cupach, W. (1989). Handbook of Interpersonal Competence Research, *Springer Science & Business Media*.

Stoermer, S., Hitotsuyanagi-Hansel, A., Froese, F.J. (2017). Racial harassment and job satisfaction in South Africa: the moderating effects of career orientations and managerial rank, *International Journal of Human Resource Management.*

Strobel, N. (1998). Method for finding scientific truth. [Online document]. http://www.astronomynotes.com/scimethd/scimethd.htm

Tagliavini, M., Moro, J. Ravarini, A. Guimaraes, T. (2001). Exploring the impact of CIO competence on company performance. *Proceedings of Information Resources Management Association Annual Conference*, 20–23 May, Toronto, Canada.

Tee, E.Y.J., Paulson, N., Ashkanasy, N.M. (2013). Revisiting followership through a social identity perspective: The role of collective follower emotion and action, *The Leadership Quarterly*, Vol. 24 (2013) 902–918.

Terre Blanche, M., Durrheim, K. & Painter, D. (2008). Research in Practice, *UCT Press*.

Thorndike, E.L. (1920). Intelligence and its uses, *Harper's Magazine*, Vol. 140, 1920, pp. 227-235.

Tomovska–Misoska, A., Tefanovska–Petkovska, M., Ralev, M. & Krliu-Handjiski, V. (2014). Workspace as a factor of job satisfaction in the banking and ICT industries of Macedonia, *Serbian Journal of Management*, 9 (2) (2014) 159 – 171.

Trauth, E.M. (2013). The role of theory in gender and information systems research, *Information and organization* (2013) 277-293.

Uhl-Bien, M., Riggio, R.E., Lowe, K.B. & Carsten, M.K (2014). *Followership theory: A review and research agenda*, The Leadership Quarterly, Vol. 25, 83–104.

Van den Broeck, J., Argeseanu, C.S., Eeckels R., Herbst K. (2005). *Data cleaning: Detecting, diagnosing, and editing data abnormalities*. PLoS Med 2(10): e267.

Vermeulen, W. (2003). Benchmarking as an enabler of business excellence in the South African financial sector, *Benchmarking: An International Journal*, Vol. 10 Issue: 1, pp.65-72.

Volmer, J., Nieseen, C., Spurk, D., Linz, A., & Abele A.E. (2011). Reciprocal Relationships between Leader–Member Exchange (LMX) and Job Satisfaction: A Cross-Lagged Analysis, *Applied Psychology: An International Review*, 2011, 60 (4), 522–545.

Ward, J., & Peppard, J. (2002). *Strategic Planning for Information Systems*, 3rd Edition. *Wiley: Chichester*.

Wegge, J., van Dick, R., Fisher, G.K. West, M.A. & Dawson, J.F. (2006). A Test of Basic Assumptions of Affective Events Theory (AET) in Call Centre Work, *British Journal of Management,* Vol. 17, 237–254.

Weiss, J.W., Adams, S.M. (2010). Changing roles of technology leaders: Strategic partners or High-Level Mechanics, *Proceedings of the 43rd Hawaii International Conference on System Sciences, IEEE.*

Weiss, H.M., & Cropanzano, R. (1996). Affective Events Theory: A theoretical discussion of the structure, causes and consequences of affective experiences at work, *Research in Organisational behaviour*, Vol. 17,1-74.

Weiss, D.J., Dawis, R.V England, G.W. & Lofquist, H. (1967). Manual for the Minnesota satisfaction questionnaire, Minnesota Studies in Vocational Rehabilitation, Vol 22, 120.

Wöcke, A., Sutherland, M. (2008). The impact of employment equity regulations on psychological contracts in South Africa, *International Journal of Human Resource Management, 19 (4), pp. 528-542.*

Wood, R. E. (1986). Task complexity: Definition of the construct. *Organizational behaviour and human decision processes,* 37(1):60-82.

Wong, C.A & Laschinger, H.K.S. (2012). Authentic leadership, performance, and job satisfaction: the mediating role of empowerment, *Journal of Advanced Nursing*, 69(4), 947–959.

Wrzesniewski, A. (2003). Finding Positive Meaning in Work. In Cameron, K.S., Dutton, J.E. and Quinn, R.E., Eds., Positive Organizational Scholarship Foundations of a New Discipline, *Barrett-Koehler Publishers*, San Francisco, 296-308.

Xu, W. (2009). The study of the relationship between Organizational Justice and Job Satisfaction on Y-Generation in Chinese IT Industry, *The 1st International Conference on Information Science and Engineering (ICISE2009).*

Yokkhun, A., Quirchmayr, G., Chutimasakul, W. (2014). Effects of CIOs' Positive Characteristics and Competencies on their Perceived Management Effectiveness in a Transformed IS Organization, *Proceedings of global conference on engineering and technology Management 2014*

Zaccaro, S. J., Gilbert, J. A., Thor, K. K., & Mumford, M. D. (1991), Leadership and social intelligence: Linking social perceptiveness and behavioral flexibility to leader effectiveness, *The Leadership Quarterly*, 2(4), 3 17-342.

Zikmund, W. G. (2003). Business Research Methods, *Thomson South Western.*

Zimmermann, K., Petrikina, J., Schroeder, N. (2016). The CIO Leadership Mosaic – Results from a qualitative survey in the Silicon Valley and San Francisco Bay Area, *49th Hawaii International Conference on System Sciences.*

Zhou, J., Wang, Q., Tsai, S-B., Xue, Y., & Dong, W. (2016). How to Evaluate the Job Satisfaction of Development Personnel, *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 2168-2216.

Zhu, Y. (2013). A Review of Job Satisfaction, *Asian Social Science*; Vol. 9, No. 1;

Zolbanin, H.M., Sarathy, R. (2014). Job Satisfaction of IT/IS Professionals: The Impact of Top Management and IT Managers, *Twentieth Americas Conference on Information Systems, Savannah, 2014*

9 APPENDICES

9.1 Articles reviewed for interpersonal skills with leadership & management domain

Year	Identity	Purpose	Findings relative to this paper
1936	How to win friends and influence people. Carnegie (1936).	Practical ways to improve communication and social skills also enduring likability	4 steps to improve likability and skills: Basic skills, How to make people like you, Influencing and leading change.
1982	The competent manager: A model for effective performance. Boyatzis, A. R. (1982).	To develop a model for manager competence	Model includes 21 characteristics: accurate self-assessment, conceptualization, concern for close relationships, concern with impact, developing others, diagnostic use of concepts, efficiency orientation, logical thought, managing groups, memory, perceptual objectivity, positive regard, proactivity, self-confidence, self control, specialised knowledge, spontaneity, stamina, use of oral presentations, socialised power and use of unilateral power.
1988	Five domains of interpersonal competence in peer relationships. Buhrmester, D., Furman, W., Wittenberg, M. T., & Reis, H. T. (1988).	To find if there are different types Interpersonal competence based on different contexts	Findings suggest it is useful to describe types of interpersonal competences based on context
1991	Leadership and social intelligence: Linking social perceptiveness and behavioural flexibility to leader effectiveness. Zaccaro, S. J., Gilbert, J. A., Thor, K. K., & Mumford, M. D. (1991).	To examine social intelligence as a quality of organisational leaders	Social perceptiveness and behavioural flexibility are key sub components of social intelligence.
1999	The meanings of competency. Hoffmann (1999).	To find the meaning of Competency	Topology of definitions based on UOA and inputs vs outputs.
2000	Interpersonal Competencies Fundamental to Effective Leadership: A Model for Leadership Training. Moser (2000).	To determine essential interpersonal competency areas fundamental to effective leadership	1) Relationship building, 2) Communication skills 3) Social insight
2001	Defining and selecting key competencies (DeSeCo). Rychen, D. S., & Salganik L. H. (Eds.). (2001).	To develop a framework of competencies for different facets of life	Competencies can be grouped into three categories : the ability to relate well to others, the ability to cooperate and the ability to manage and resolve conflict.
2002	Social effectiveness in organizations: Construct validity and research directions. Ferris, G. R., Perrewe, P. L., Douglas, C. (2002).	To understand the nature of social effectiveness	Social effectiveness' is a broad umbrella term and there are very little meaningful constructs that move the field of study forward.
2006	Employer assessment of work-related competencies and workplace adaptation. Reio, T. G., & Sutton, F. C.(2006).	Identity and evaluate work-related competencies	Interpersonal competencies are needed in the workplace.
2007	Emotional and interpersonal competencies and leader development. Riggio, Lee (2007)	Review existing leadership developmental programs intended to improve leader emotional and interpersonal competencies and the research regarding the effectiveness of these programs.	Interpersonal skills training cannot be separated from Emotional skill training. Must be underpinned by clinical remediation of communication skills and underpinned by theories emanating out of the discipline of psychology.
2007	The Importance and the Developability of Interpersonal Competency at Work: Implications for Higher Education. Kim, Kim, Yoo, Yoo (2007)	To derive behaviour indicators of interpersonal competencies	19 indicators grouped into categories of communication, managing problems, leadership, relating to theirs.
2012	Analysis on Literature Review of Competency. Hsieh, Lin, Lee (2012)	To analysis and review competency	A competency is a cluster of related knowledge, skills and attitude that affects a major part of one's job.
2013	Interpersonal Skills Summary Report by Hutchins, McDermott, Carolan, Gronowski, Fisher & DeMay (2013)	To provide an update on the current state of the science on interpersonal skills	28 individual IPS which they grouped into 4 high level categories of Interpersonal communication skills, relationship building skills, peer leadership skills and social/behavioural agility skills.
2014	Developing the Future Workforce: An Approach for Integrating Interpersonal Skills into the MBA Classroom Bedwell, Fiore, Salas, (2014)	To help instructors of Interpersonal Competencies	Framework based on reliable theoretical underpinnings.
2016	A discussion forum on managerial interpersonal skills, Beenen & Pichler (2016)	To propose five core IPS for managers	Grouped into categories of managing-self, communicating, supporting, motivating and managing conflict.

9.2 Articles reviewed for interpersonal skills with IS management domain

No.	Identity	Method	Interpersonal skills label	Definition extracted	Measure as part of CIO competency	Outcome
1	Shaping CIO's competencies and activities to improve company performance: an empirical study. (Tagliavini, Ravarini & Guimaraes, 2003)	Primary Quant study	Know how to be: Interpersonal skills	Mental, physics and basic sense attitudes, value system, factors linked to personal identity.	Yes	High impact across all IS sub functions
2	Business competence of information technology professionals: conceptual development and influence on IT-business partnership. (Bassellier & Benbasat, 2004)	Primary Quant study	Interpersonal, communication skills	Do not offer direct definition, co-existed in model with Leadership and knowledge networking.	No part of business competency	Influential on business competence
3	Chief information officers: An empirical study of competence, organisational positioning and implications for performance. (Cohen & Dennis, 2010)	Primary Quant study	Interchangeable interpersonal and political competence/ or just interpersonal competence	The ability to plan, organise, lead and interact with customers, peers, business partners and employees.	Yes	Found to be statistically significant
4	Unlocking the Performance of the Chief Information Officer (Peppard, 2010)	Primary Qual study	Personal Skill, Communication skills, political skills, Skill was interchangeable with competency	Do not offer direct definition.	Yes	Recommended to be included in a Quant study
5	The Antecedents of CIO Role Effectiveness in Organizations: An Empirical Study in the Healthcare Sector, (Smaltz, Sambamurthy, & Agarwal, 2006)	Primary Quant study	Political savvy, Communicative ability but used interchangeable with interpersonal communication skill	Political savvy: an CIO ability to negotiate, influence, and persuade. Communicative ability : CIO's ability to communicate clearly, persuasively, and in business terms is another important capability.	Yes	Statistically significant Positive relationship with CIO role effectiveness
6	CIO Competencies: A social representation analysis (Correia & Joia, 2014)	Primary Quant study	Capacity to influence the organization, Interpersonal relationship	The CIO must have to influence the organization by means of basing advice on sound financial principles.	Yes	Congruence between CIO and IT staff on Influencing but not on interpersonal relationships.
7	The Moderating Effect of a Chief Information Officer's Competence on IT Investment and Firm Performance. (Shao, Feng, Choudrie & Liu, 2010)	Concept paper	Interpersonal Communicative Ability, Political Skills	CIO's ability to establish and maintain effective relationships and communication both inside and outside the company. CIO's ability to effectively understand others at work, and influence others to act in ways that enhance organizational objectives.	Yes	Conceptual model offered not tested.
8	The Role and Requisite Competencies of the Public Sector CIO: A Two-sided Perspective. (Hooper & Bunker, 2013)	Primary Qual study	Interpersonal skills	Interpersonal skills include People skills (Emotional Intelligence), General communication skills, Ability to communicate in a non-technical language, Ability to communicate with technical staff/vendors, Relationship building skills, Team Work (with peers)	No, part of business skill	Interpersonal skills and personal attributes were seen as being particularly important for both roles although each role might require slightly different attributes. In particular, both technical and non-technical communication were valued in both categories of roles.
9	Effects of CIOs' Positive Characteristics and Competencies on their Perceived Management Effectiveness in a Transformed IS Organization. (Yokkhun, Quirchmayr, Chutimasakul, 2014)	Primary Quant study	Interpersonal Skill, EQ	Represent the ability of a CIO to motivate other people, articulate visions and preferences and communicate them to others, handle negotiations, and manage conflicts. Moreover, as the top leader of IS organization and agent of change, team building and jargon-free communication also were added to this domain.	No part of management competency	Statistically significant Positive relationship with management competency
10	The CIO Leadership Mosaic – Results from a qualitative survey in the Silicon Valley and San Francisco Bay Area. Zimmermann, Petrikina, Schroeder, (2016)	Primary Qual study	Personal and skills	No formal definition	No, overlapping between personal and skills	new framework which focussed on the cross cutting nature of personal relationships with the role of CIO

9.3 Adopted interpersonal skills taxonomy[7]

Category Skill	Definition
Interpersonal Communication Skills	Interpersonal communication skills are the set of abilities needed in the interpersonal exchange of information; a two-way exchange requiring skill in both expressing and assimilating information. They not only involve listening, speaking, writing, and sending/receiving nonverbal signals, but doing so empathetically, attentively, responsively, directly, and confidently during the social interaction.
Active listening	Active listening can be defined as listening attentively, responsively, and non-judgmentally in a two-way exchange for the purpose of meaning-making and understanding; that is, paying attention to both what is being said as well as what is being done (i.e., nonverbal behaviors) and responding or reciprocating appropriately to questions, ambiguities, and nonverbal cues.
Oral communication	Oral communication is the ability to express verbal messages and ideas clearly and precisely, in a manner appropriate to the audience, so that information can be accurately and easily understood.
Written communication	Similar to oral communication, written communication carries many of the same attributes, e.g., expressing messages clearly, concisely, and appropriately for reader/receiver understanding; however, written communication skill additionally involves an understanding of the limitations of text or printed communication and requires a careful phrasing of messages so intent and meaning can be clearly understood by the reader.
Assertive communication	Assertive communication skill can be defined as the ability, willingness, and readiness to appropriately and succinctly express emotions, preferences, opinions, concerns, or needs positively, directly, and with self-confidence without being offensive or hostile during the social interaction towards the other person.
Nonverbal communication	Nonverbal communication (NVC) can be defined as the encoding and decoding of body language, postures, gestures, facial expressions, proximity, and other nonverbal behaviors/signals to enhance, reinforce, modify, or replace the verbal messages of an interpersonal communication.
Informing	Informing is an intent-based ability that involves utilizing interpersonal communication skills for the transmission, or conveying, of the critical information needed by others to gauge expectations and do their work. Key to only transmitting critical information is selectively refraining from sharing information that is unnecessary for the receiver.
Information gathering	information gathering is the accumulation of information that one's self, others, or an organization needs and disregarding unnecessary/irrelevant information.

[7] Sourced from Hutchins et al., (2013, pp. 7-12)

Category Skill	Definition
Relationship Building Skills	Relationship building skills are the set of abilities needed to develop and maintain bonds with others, relate to and support others, foster ongoing relationships, and build strong beneficial alliances.These skills are imperative for team performance. Beyond the forming of interpersonal associations, relationship building skills also involve the management and resolution of conflicts, and getting to get what you want from others.
Team cooperation and coordination	Team cooperation and coordination is a broadly defined sub-skill of relationship building. As one might expect, team cooperation and coordination is the ability to organize and work interdependently to solve problems and achieve goals that could not be achieved by working in isolation, However, the ability also carries a team dynamic involving willingness to identify, affiliate, and find common ground That is, the ability to promote healthy group dynamics among the [group] members; have character, integrity, and the ability to uphold their beliefs; and strive to achieve the goals and objectives of the organization or institution of which they are a part.
Courtesy	Courtesy has a do unto others undertone within the context of the interactions had with those whom relationships are held. The skill involves being considerate, cooperative, helpful, and supportive as a team member. Furthermore, courtesy is fundamentally about respect, including treating others as one would want to be treated.
Amicability	Amicability concerns how friendly and sociable one is towards group members. The degree of pleasantness versus unpleasantness exhibited in interpersonal relations. Exhibits goodwill towards others and an absence of antagonism. Is tactful and helpful rather than defensive, touchy, and generally contrary.
Trust	Trust is a two-way interaction. Having trust for others involves faith or belief in the integrity or reliability of another person or thing; willingness of a party to be vulnerable to the actions of another party based on the expectation that certain actions important to the trust or will be performed Credibility plays a large part in being trusted; that is, being ethical, trustworthy, authentic, sincere, honest, open, and free of hidden motives.
Dependability	Being trusted plays a part in dependability; that is, the peer group believes the team member is trustworthy and fair.However, one's dependability further involves the peer group's perception that the team member will follow through, that the individual is disciplined, well organized, planful, and respectful of laws and regulations.
Intercultural/ Interpersonal sensitivity (empathy)	Intercultural and interpersonal sensitivity in a large part has to do with empathy for others. It involves appreciating individual differences among people being sensitive to others' priorities, interests, and values and skill at adopting the perspective of the counterpart. Intercultural and interpersonal sensitivity involves respecting diversity, understanding others' feelings, and having a caring intent, as well as, a genuine curiosity, acceptance, and interest in the other's ideas, values, and concerns.
Service orientation	A primary element of customer relations, service orientation entails the inclination to provide service, to be courteous and helpful in dealing with customers, clients, and associates.
Negotiation	As a process, negotiating refers to the use of bargaining to resolve conflict or the bringing out of a solution through discussion and compromise. It can include resolving disputes with unions, customers, suppliers, consultants, peers, supervisors, or subordinates As an ability, negotiation skills refer to a subset of knowledge and behaviors that influence bargaining performance,these skills are effective when they achieve negotiation goals or when they grow out of an understanding of the process that surpasses minimal performance.
Conflict Resolution	Conflict resolution can be defined as a process in which interpersonal communication is used to allow two conflicted parties to reach an amicable and satisfactory point of agreement The conflict resolution process involves bargaining and compromise to manage incompatibilities and identify mutually acceptable solutions. Successful conflict resolution involves advocating one's position with an open mind, not taking personally other members' disagreements, putting oneself in the other's shoes, following rational argument and avoiding premature evaluation, and trying to synthesize the best ideas from all viewpoints and perspectives. This ability to support different perspectives and address disagreements constructively without harmful conflict has the benefit of preserving good relationships and enhancing trust.

Category Skill	Definition
Peer Leadership Skills	Peer leaderships skills are the set of abilities necessary not only to be part of a group, but to lead it. The skill set includes the propensity to coach, teach, counsel, motivate, and empower group members; to readily interact with one's team, earning trust and respect; to actively contribute to problem solving and decision making; and to be sought out by peers for expertise and counsel.
Acts as a role model	Acting a role model includes more than simply modeling desired behaviors. Being a role model also involves presenting an image of ethical conduct, self-confidence, positive attitude, and professionalism that inspires subordinates . Good leaders set an example for their followers by, among other things, personally observing common courtesies, being polite, listening to other points of view, and behaving in an honest and ethical manner.
Helping others	Helping others is both the ability and willingness to coach, assist, guide, tutor, counsel, or otherwise promote the growth of the critical aspects of group members' personal development that result in improved performance. In this sense, as a peer leadership skill, helping others is mentoring and encouraging peers to achieve more than they thought they were capable of achieving.
Task leadership	Task leadership is the ability to direct and motivate others to stay on task, goal-directed, and focused on the team mission for purpose of ensuring mission completion.
Energizing others	Energizing others is the ability to "energizing the behavior of others using rational persuasion, inspirational appeals, consultation, ingratiation, personal appeals, or exchange. It includes creating enthusiasm to work hard and put forth a strong effort; empowering the team towards a common goal; and motivating and inspiring group members to achieve a shared vision.Energizing others requires leading with optimism. Taking the positive viewpoint has much more leverage for leaders. Optimism cascades down to those whom you are leading, enabling them to stay motivated and keep reaching for better outcomes.
Rewarding others	Rewarding others is how peer leaders express appreciation, provide tangible rewards, and offer the incentives desired by peers for effective performance. Providing praise and recognition is means to energizing group members to achieve, and overcome barriers to, high levels of performance.
Controlling	As a peer leader, controlling is related to task leadership, but more specifically involves the ability to exert an influence over cognitive control and regulate the activities of team members for the purpose of maintaining discipline, enforcing rules, and correcting behavior to better align with team goals
Formal staffing	Some team roles are well defined and organizational protocols exist for how to staff those team roles, i.e., recruiting, hiring, promotion, etc. Formal staffing is the ability to, or activity of, matching individuals to role demands using established protocols for doing so based on the needs of the role and the knowledge, skills, and abilities of the individual
Informal staffing	Other team roles and activities are not well defined and lack explicit staffing protocols, but remain critical to team task performance. For these informal staffing situations (e.g., forming ad hoc teams, delegating tasks to the appropriate team member(s), etc., peer leaders still need to be able to choose the right team member for the right task. Informal staffing is the ability to, or activity of, matching individuals to role demands based on the needs of the role and the knowledge, skills, and abilities of the individual when no official process for doing so exists

Category Skill	Definition
Social/Behavioral Agility Skills	Social and behavioral agility skills are the set of interrelated abilities needed in order to monitor and interpret both one's own and other's behaviors and flexibly adapt presentation of self to others during social interactions for the purpose of social influence and control over the interaction.
Social perceptiveness	Social perceptiveness is both an inward and outward ability. Socially perceptive individuals have self-knowledge of their own emotions, nonverbal behaviors, opinions and thinking, but can also discriminate between them. In addition, socially perceptive individuals can also keenly observe and comprehend the same about others during social interactions and use the information to influence the interaction.
Self-presentation	Self-presentation is the ability to use knowledge of social situations to control, redirect, and management one's own impulses, emotions, and expressions for the purpose of influencing others' impressions of self during a social interaction.
Social influence	Social influence is the ability to not only appeal to and manage the perceptions of others, but doing so specifically with the intent of influencing and guiding the adoption of specific behaviors, beliefs, opinions, or attitudes by others within the social interaction for the purpose of getting buy in and achieving one's own goals.
Adaptability/Flexibility	The adaptability and flexibility of an individual is skill in relational versatility within social interactions. It involves the ability to respond and react to rapidly to changing social situations, adjusting one's behavior to fit the dynamic social environment.

9.4 Job satisfaction questionnaire

9.4.1 *JIG*

Job in General
Think of your job in general. All in all, what is it like most of the time? In the blank beside each word or phrase below, write
Y for "Yes" if it describes your job
N for "No" if it does not describe it
? for "?" if you cannot decide

__ Pleasant
__ Bad
__ Great
__ Waste of time
__ Good
__ Undesirable
__ Worthwhile
__ Worse than most
__ Acceptable
__ Superior
__ Better than most
__ Disagreeable
__ Makes me content
__ Inadequate
__ Excellent
__ Rotten
__ Enjoyable

__ Poor

9.5 Interpersonal skills of leader's questionnaire[8]

Please rate the following questions in regard to your IS leader's interpersonal skills please you a scale of 1 – 5: (1) poor, (2) fair, (3) good, (4) very good and (5) excellent;

[8] Sourced from Hutchins et al., (2013, pp. 7-12)

9.5.1 *Interpersonal communication skills*

1) Active listener
2) Oral communication
3) Written communication
4) Assertive communication
5) Non-verbal communication
6) Informing
7) Information gathering

9.5.2 *Relationship building skills*

8) Team cooperation and coordination
9) Courtesy
10) Amicability
11) Trust
12) Dependability
13) Intercultural/ interpersonal sensitivity (empathy)
14) Service orientation
15) Negotiation
16) Conflict resolution

9.5.3 *Peer leadership skills*

17) Acts as a role model

18) Helping others

19) Task leadership

20) Energising others

21) Rewarding others

22) Controlling

23) Formal staffing

24) Informal staffing

9.5.4 *Social and behavioural agility skills*

25) Social perceptiveness

26) Self-presentation

27) Social influence

28) Adaptability/flexibility

9.6 Demographics Questionnaire

29) Age

30) Gender M/F/prefer not to say

31) Number of years in current role

32) Industry

33) Number of years at organisation

34) Number of levels below CIO

35) Frequency of interaction with CIO

- Every day,
- At least once a week,
- At least once a month
- Less than once a month
- Never

36) Highest education level passed.

- School leaver
- Matric
- Degree
- Honours
- Masters
- Doctorate
- Prefer not to say

9.7 Controls Questionnaire

37) JSS – Job satisfaction facets

	JOB SATISFACTION SURVEY Paul E. Spector Department of Psychology University of South Florida Copyright Paul E. Spector 1994, All rights reserved.	
	PLEASE CIRCLE THE ONE NUMBER FOR EACH QUESTION THAT COMES CLOSEST TO REFLECTING YOUR OPINION ABOUT IT.	Disagree very much Disagree moderately Disagree slightly Agree slightly Agree moderately Agree very much
1	I feel I am being paid a fair amount for the work I do.	1 2 3 4 5 6
2	There is really too little chance for promotion on my job.	1 2 3 4 5 6
3	My supervisor is quite competent in doing his/her job.	1 2 3 4 5 6
4	I am not satisfied with the benefits I receive.	1 2 3 4 5 6
5	When I do a good job, I receive the recognition for it that I should receive.	1 2 3 4 5 6
6	Many of our rules and procedures make doing a good job difficult.	1 2 3 4 5 6
7	I like the people I work with.	1 2 3 4 5 6
8	I sometimes feel my job is meaningless.	1 2 3 4 5 6

9	Communications seem good within this organization.	1 2 3 4 5 6
10	Raises are too few and far between.	1 2 3 4 5 6
12	My supervisor is unfair to me.	1 2 3 4 5 6
21	My supervisor shows too little interest in the feelings of subordinates.	1 2 3 4 5 6
30	I like my supervisor.	1 2 3 4 5 6

38) Job complexity

Please response with either, Every day, At least once a week, At least once a month

Less than once a month or Never

- How often do you make difficult decision independently
- How often do you have to close knowledge gaps
- How often do you react to unforeseen problems
- How often do you perform many different tasks
- How often do you improve or try out something new
- How often do you deal with new tasks

9.8 Outcomes of Pre-test and pilot

Of the pre-testers and pilot takers 4 commented on the length of the instrument and how this might deter potential respondents from completing the survey. It was decided that 23 questions that pertained to the research controls be dropped. However, the remaining 13 questions still ensured coverage for the control variables.

All questions dropped originated out of the JSS instrument. Each question dropped had asked for the respondent to answer on a 6-point Likert scale ranging from Disagree to agree very much. The numbers in the table represent the order they would have been presented.

Table 57 - Question dropped after pilot

11	Those who do well on the job stand a fair chance of being promoted.
13	The benefits we receive are as good as most other organizations offer.
14	I do not feel that the work I do is appreciated.
15	My efforts to do a good job are seldom blocked by red tape.
16	I find I have to work harder at my job because of the incompetence of people I work with.
17	I like doing the things I do at work.
18	The goals of this organization are not clear to me.
19	I feel unappreciated by the organization when I think about what they pay me.
20	People get ahead as fast here as they do in other places.
22	The benefit package we have is equitable.
23	There are few rewards for those who work here.
24	I have too much to do at work.
25	I enjoy my coworkers.
26	I often feel that I do not know what is going on with the organization.
27	I feel a sense of pride in doing my job.
28	I feel satisfied with my chances for salary increases.
29	There are benefits we do not have which we should have.
31	I have too much paperwork.
32	I don't feel my efforts are rewarded the way they should be.
33	I am satisfied with my chances for promotion.
34	There is too much bickering and fighting at work.
35	My job is enjoyable.
36	Work assignments are not fully explained.

9.9 Correspondence to CIO

Request Participation of subordinates (SPS)

Date: 10 August 2017

Good Day

My name is Yusuf Aboobaker and I am a master's student in the Information Systems Division at the University of the Witwatersrand, Johannesburg. For my degree, I am conducting research on the relationship between the interpersonal skills of IS leaders and the job satisfaction of their employees.

As the executive of IT within your organisation, I would like to request your permission to survey IT employees within your organisation for the purposes of my study. If you are agreeable and you consent, I would like to invite you to please forward the attached invitation letter to your IT staff.

The survey asks IT employees to provide their perceptions of the interpersonal skills of their immediate supervisor and asks about attributes of their job satisfaction. Participation is completely voluntary and there is no risk, penalty, or loss of benefits whether employees choose to participate. Responses are also anonymous, and employees are not required to identify themselves or their company.

The survey was approved by the School of Economic and Business Sciences Ethics Committee (Non-Medical), Protocol Number: CINFO/1150.

Thank you for considering assisting. Should you have any questions, or should you wish to obtain a copy of the results of the survey, please contact me on (011) 700-0000 or at 310034@students. wits.ac.za
My contact details: Cell number: 082 829 6148
My supervisor's name and email are: Jason Cohen – jason.cohen@wits.ac.za

(Researcher's Signature)

Kind regards
Yusuf Aboobaker
Masters Student: Division of Information Systems
School of Economic and Business Sciences
University of the Witwatersrand, Johannesburg

9.10 Correspondence to employee

Sample Participation Letter (SPL)

Date: 10 February 2017

Good Day

My name is Yusuf Aboobaker and I am a master's student in the Information Systems Division at the University of the Witwatersrand, Johannesburg. I am conducting research on the relationship between leadership and job satisfaction

As someone who is being supervised in the IS department, you are **invited** to take part in this survey. The purpose of this survey is to explore your perceptions of the interpersonal skills of your supervisor and attributes of your job satisfaction.

Your response is important and there are no right or wrong answers. This survey is both confidential and anonymous. Anonymity and confidentiality are guaranteed by not needing to enter your name on the questionnaire. Your participation is completely voluntary and involves no risk, penalty, or loss of benefits whether you participate. Your responses will not be shared with any third-party or anyone within the organisation You may withdraw from the survey at any stage.

The first part of the survey comprises 29 statements. Please indicate the extent to which you agree with each statement, by ticking in the appropriate box. The second part of the survey captures some demographic data. Please tick whichever boxes are applicable. The entire survey should take between 10 to 15 minutes to complete. The survey was approved by the School of Economic and Business Sciences
Ethics Committee (Non-Medical), Protocol Number: CINFO/1150.

If you consent to participate, please click on the following link to access the survey:

https://www.surveymonkey.com/r/Wits-IT_employee_job_satisfaction

Thank you for considering participating. Should you have any questions, or should you wish to obtain a copy of the results of the survey, please contact me at 310034@students. wits.ac.za.
My contact details: Cell number: 082 829 6148
My supervisor's name and email are: Jason Cohen – jason.cohen@wits.ac.za

(Researcher's Signature)

Kind regards
Yusuf Aboobaker
Masters Student: Division of Information Systems
School of Economic and Business Sciences
University of the Witwatersrand, Johannesburg

9.11 Multiple regression assumption testing

9.11.1 *Collinearity*

Collinearity refers to a situation in a regression model where a number of independent or predictor variables are closely related to one another, this has the implication reducing confidence in the model that is being tested.

There are two predominate ways collinearity can be checked, the first is to look at the correlation between independent variables, in a correlation table if the correlation between variable exceed a value of 0.8 then that might suggest Collinearity. The second way to check for collinearity is to check variance inflation factor (VIF) or Tolerance value. Tolerance value is the unique variance in the independent variable associated with the independent variable, independent of the other variables. Once there is less than 20% of the variance associated with the independent variable which is not unique, there may be concerns about the standard errors in your analysis and less confident about the significance value.

The correlation matrix as in table 50 presents interpersonal communication skills, relationship building skills and peer leadership skills have correlations greater than 0.8 which may suggest collinearity, however when checking the Tolerance levels in model 1 for these variables only Peer leadership skills is below the 20% mark.

Table 58 - Collinearity statistics: model 2

Collinearity Statistics			
Model		Tolerance	VIF
2	(Constant)		
	JSS_Pay	0.641	1.561
	JSS_Promotion	0.549	1.821
	JSS_Fringe_benefits	0.646	1.548
	JSS_Rewards	0.626	1.598
	JSS_Operating_conditions	0.630	1.586
	JSS_Co-workers	0.432	2.315
	JSS_Nature_of_work	0.552	1.810
	JSS_Communication	0.601	1.665
	JSS_Supervisor	0.279	3.581
	Complexity_Subgroup_Task	0.666	1.501
	IPS_IPC	0.201	4.982
	IPS_RBS	0.206	4.861
	IPS_PLS	0.179	5.598
	IPS_SBS	0.450	2.223
a. Dependent Variable: JIG			

Even though the general rule of thumb is 20%, the subtlety of the concepts in interpersonal skills, warrants that this variable still be included in model 2 despite statistically only contributing 17.9 % of uniqueness.

In Model 3, the regression model that introduces only the global IPS variable displays in the presence of controls the collinearity statistics present them self as normal and above the 20% rule of thumb.

Table 59 - Collinearity statistics: model 3

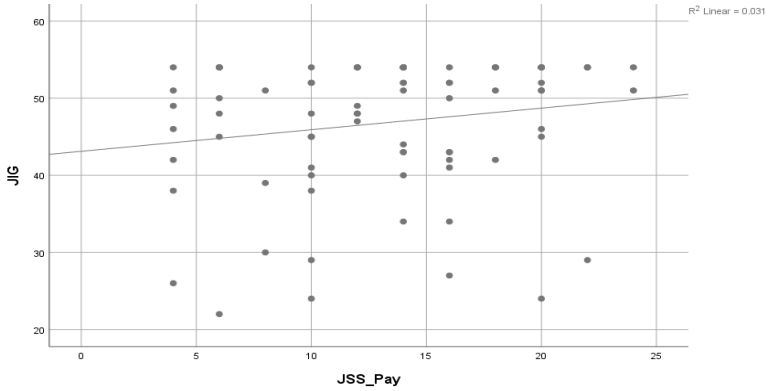
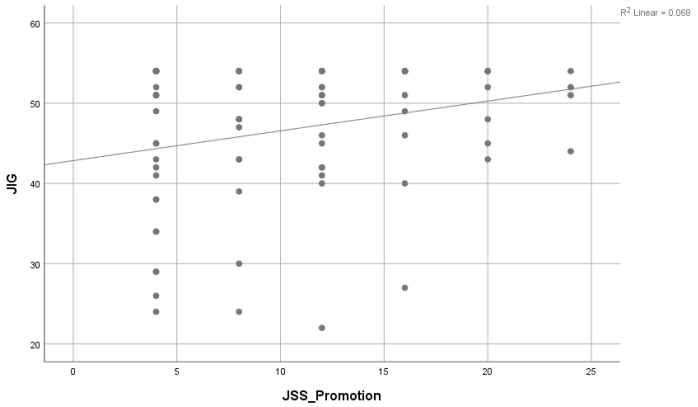
Collinearity Statistics[a]			
		Collinearity Statistics	
Model		Tolerance	VIF
3	(Constant)		
	JSS_Pay	0.754	1.325
	JSS_Promotion	0.726	1.378
	JSS_Fringe_benefits	0.755	1.324
	JSS_Rewards	0.653	1.533
	JSS_Operating_conditions	0.724	1.381
	JSS_Co-workers	0.464	2.153
	JSS_Nature_of_work	0.572	1.750
	JSS_Communication	0.664	1.506
	JSS_Supervisor	0.286	3.503
	IPS	0.394	2.538

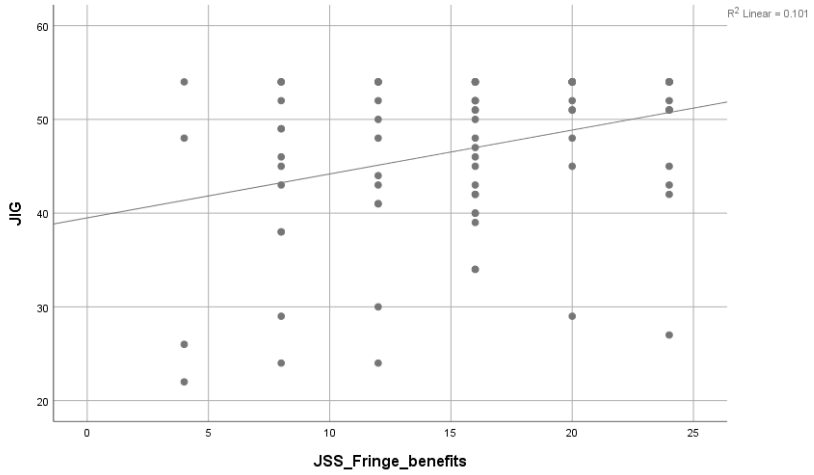
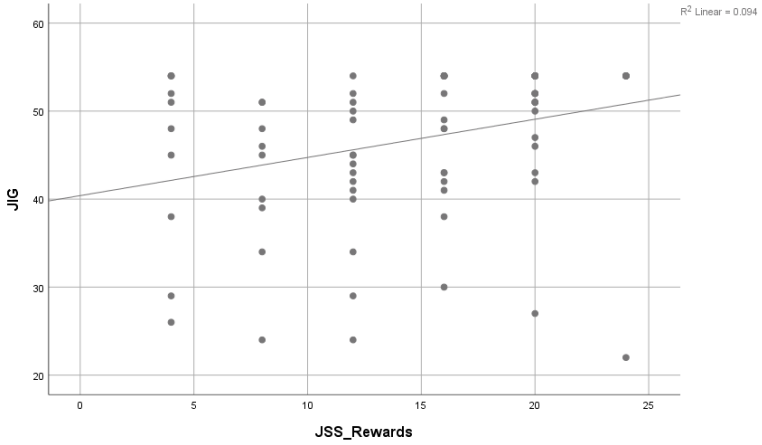
9.11.2 *Linear relationship*

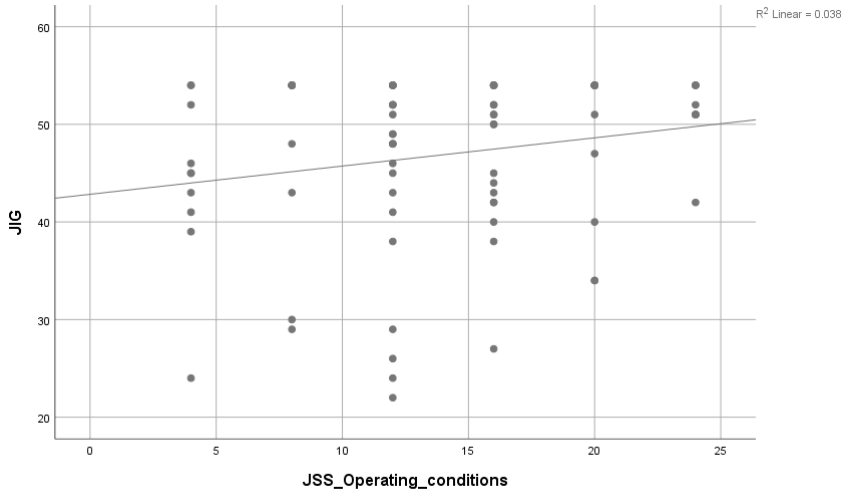
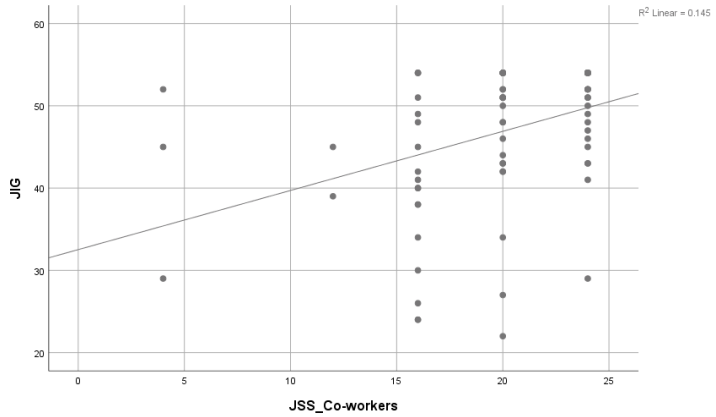
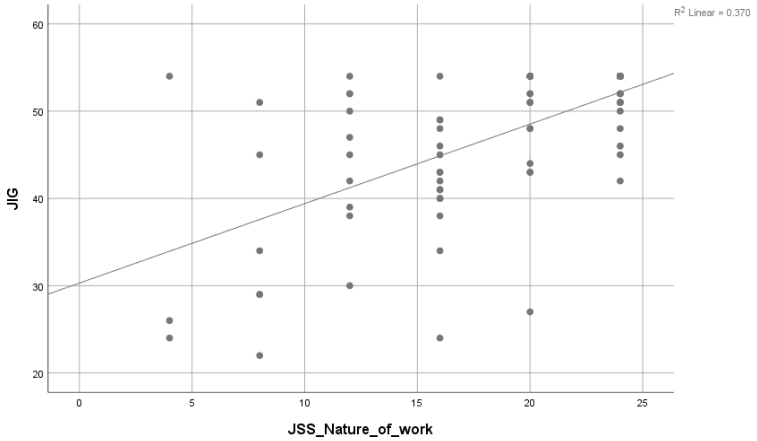
Multiple linear regression works on the premise that a linear relationship exists between independent variables and the dependant variable, if this is not present then non-linear regression test for modelling predictions should be used.

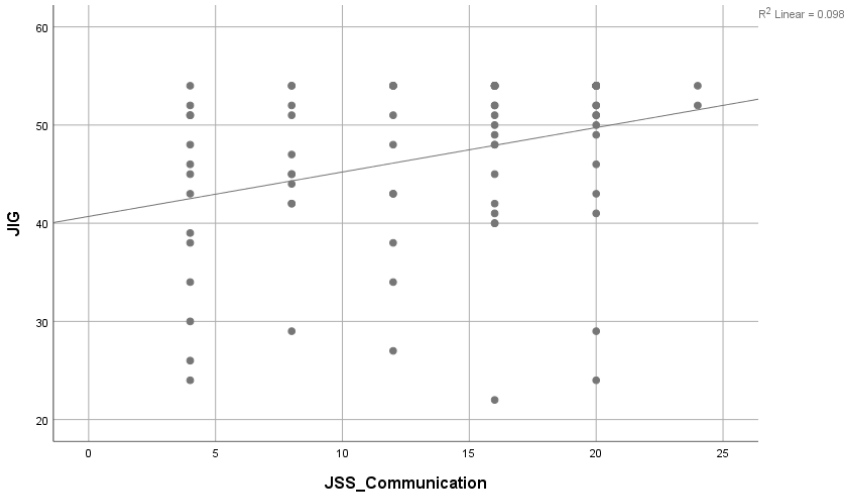
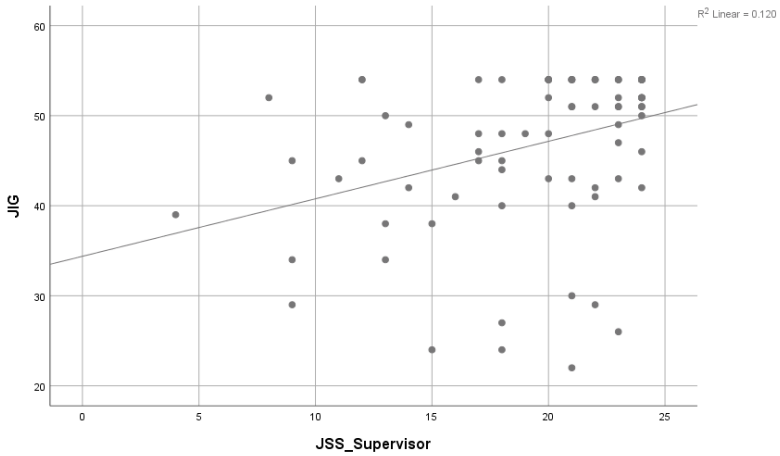
Linear relationships can be seen in figures in table 62, R^2 in each is not zero, while it must be noted they are low, partly due to the scales being more interval like than continuous, and the surprising characteristics of the results of 28 out of the 82 scoring a maximum in JIG (satisfaction score of 54 for the Job in general) despite, the underlying facets not reflecting those maximums in those facets it measures.

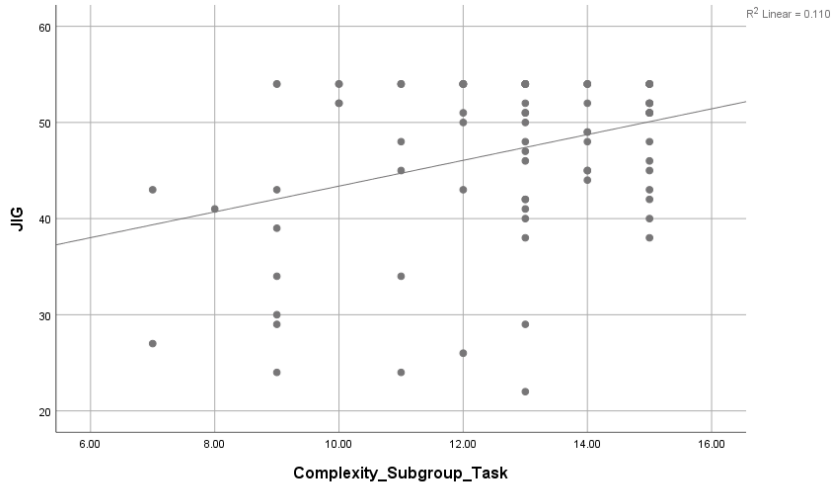
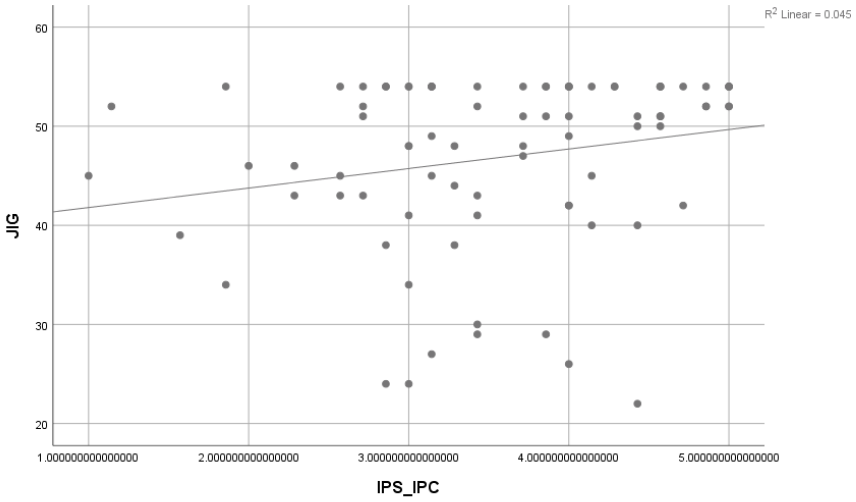
Table 60 - Linear relationships

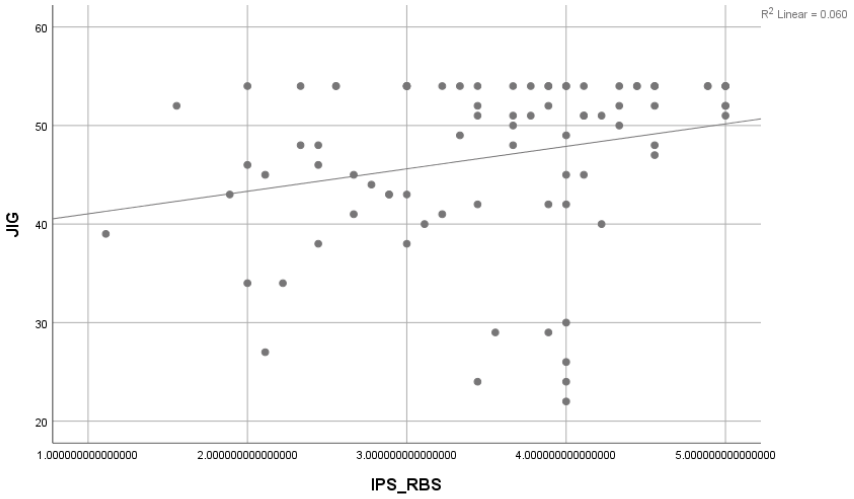
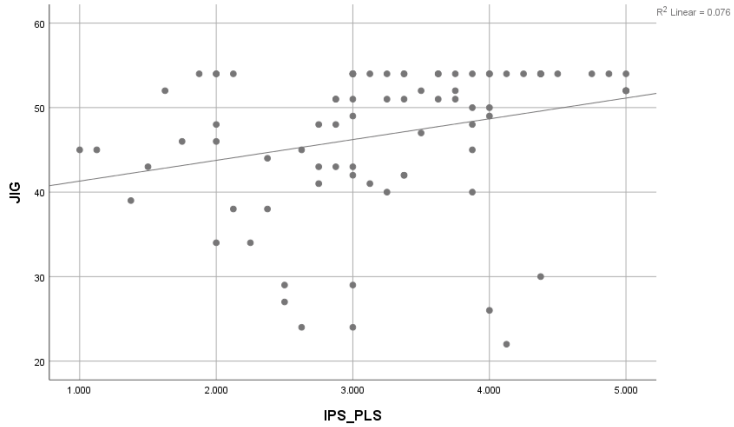
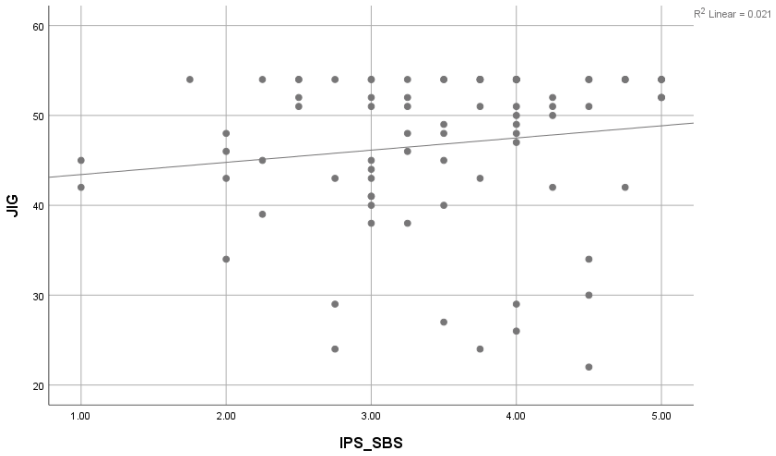
Predictor	Scatterplot for testing Linear relationship with dependant variable
Pay	
Promotion	

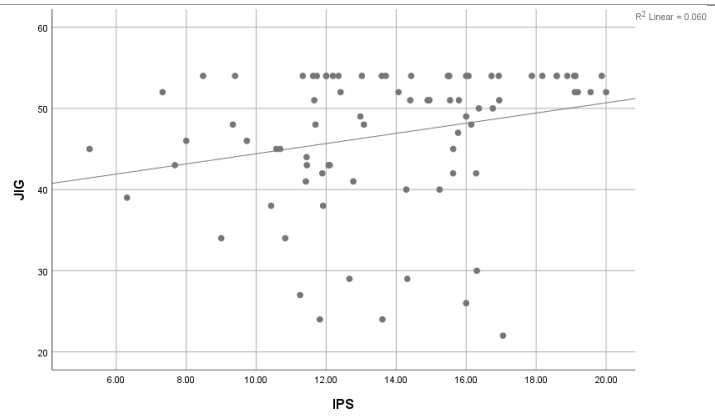
Fringe benefits	
Rewards	

Operating conditions	
Co-workers	
Nature of work	

Organisational communication	
Supervisor	

Complexity of task	
Interpersonal communication Skills	

Relationship Building Skills	
Peer leadership skills	
Social and behavioural agility skills	

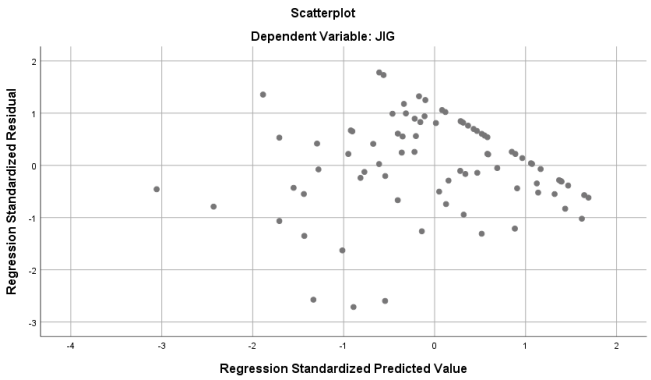
Global IPS	

9.11.3 *Heteroscedasticity*

Heteroscedasticity Is present when the variance associated with the residuals of the dependant variable are not homogeneous across levels of the independent variables, so basically the strength of the predication of the regression equation should be equally strong across all levels of the independent variables. A way to look at this is to plot the residuals of the dependant variables and the residual to the predictors.

An ideal plot will look like a bird's nest and not a funnel shape as this may pose as problem. If the funnel shape exists, then there might be less confidence in the standard errors of the beta weights/ coefficients.

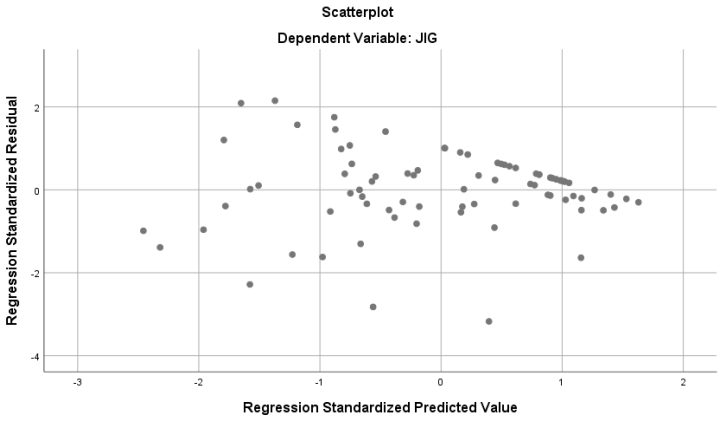
Graph 6 - Residuals plot: model 2



In model 2, while there seem to be a grouping in the top right quadrant of the graph, the other quadrants paper to be randomly plotted. This pattern suggest prediction of satisfaction is better at higher levels of the dependent variable than at lower levels. In other words, the research model is somewhat better at explaining job satisfaction as opposed to dissatisfaction.

for model three, a similar pattern has emerged

Graph 7 - Residuals plot: model 3



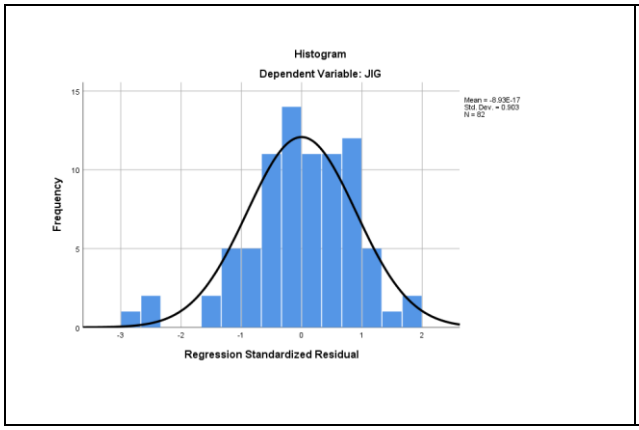
9.11.4 *Normality of residual distribution*

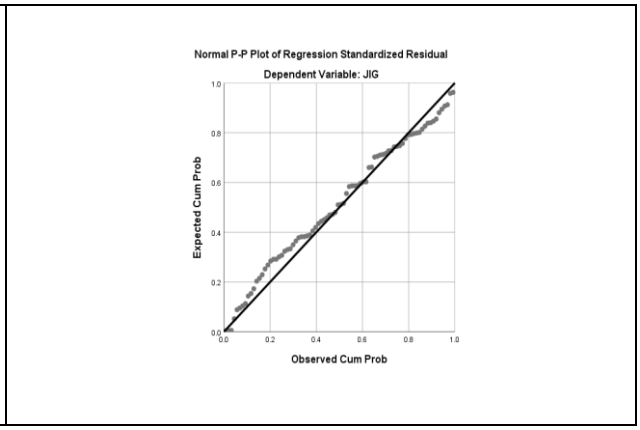
Violations of normality may create problems for determining whether model coefficients are significantly different from zero, so it is somewhat important to review this assumption.

A histogram of the regression standardised residual plot can be used to see if the frequency's fit a normal curve or the P-P plot for the model to see if the plots hug the normal diagonal line.

The table below for model 2 show the respective plots for model one. In each of the plots, normality seems good.

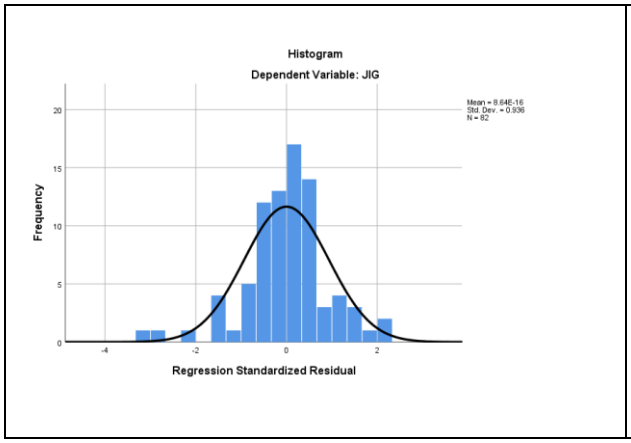
Graph 8 - Normality plots: model 2

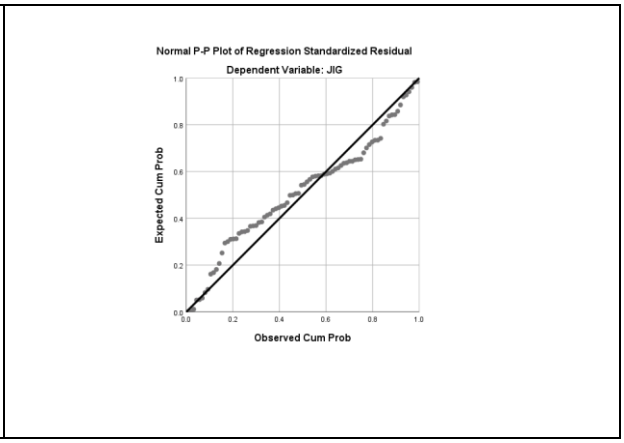




Model 3 also has good normality.

Graph 9 - Normality plots: model 3





9.11.5 *No influential cases to introduce bias*

Sometimes outliers exist in the data set, which may bias the result of the model, a way to check for extreme outliers Cooks distance value can be checked when performing the regression. If an observation reports a value over 1, there may be a significant outlier. In this model, no outliers were detected.

9.12 MANOVA test results

Wilks' lambda was checked to determine whether the one-way MANOVA was statistically significant. The Sig. columns contains the value 0.195 this is not less than the alpha of 0.05. Therefore, it is concluded that the four variables as a collective to not significantly dependant on IPS.

Table 61 - MANOVA summary

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[d]
Intercept	Pillai's Trace	1.000	6330.317[b]	3.000	1.000	0.009	1.000	18990.950	1.000
	Wilks' Lambda	0.000	6330.317[b]	3.000	1.000	0.009	1.000	18990.950	1.000
	Hotelling's Trace	18990.950	6330.317[b]	3.000	1.000	0.009	1.000	18990.950	1.000
	Roy's Largest Root	18990.950	6330.317[b]	3.000	1.000	0.009	1.000	18990.950	1.000
IPS	Pillai's Trace	2.934	1.702	234.000	9.000	0.193	0.978	398.298	0.553
	Wilks' Lambda	0.000	2.486	234.000	3.956	0.195	0.993	580.646	0.345
	Hotelling's Trace			234.000					
	Roy's Largest Root	1051.928	40.459[c]	78.000	3.000	0.005	0.999	3155.783	0.998

a. Design: Intercept + IPS

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

d. Computed using alpha = ,05

The table below presents the Univariate ANOVA results for the MANOVA Test, it will show how the dependant variables differ from the independent variable. Boxed in a red outline, supervision is significant with a value of 0. 013. Other variables are above the alpha value of 0.05 indicating no significance.

Table 62 - Univariate ANOVAs

Tests of Between-Subjects Effects									
Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[e]
Corrected Model	JSS_Supervisor	1777.321[a]	78	22.786	21.587	0.013	0.998	1683.778	0.952
	JSS_Operating_conditions	2738.211[b]	78	35.105	5.642	0.088	0.993	440.070	0.492
	JSS_Rewards	2884.943[c]	78	36.986	0.800	0.702	0.954	62.415	0.111
	JSS_Co-workers	1655.220[d]	78	21.221	1.592	0.401	0.976	124.141	0.177
Intercept	JSS_Supervisor	30187.298	1	30187.298	28598.493	0.000	1.000	28598.493	1.000
	JSS_Operating_conditions	15451.963	1	15451.963	2483.351	0.000	0.999	2483.351	1.000
	JSS_Rewards	17567.543	1	17567.543	380.067	0.000	0.992	380.067	1.000
	JSS_Co-workers	31830.527	1	31830.527	2387.290	0.000	0.999	2387.290	1.000
IPS	JSS_Supervisor	1777.321	78	22.786	21.587	0.013	0.998	1683.778	0.952
	JSS_Operating_conditions	2738.211	78	35.105	5.642	0.088	0.993	440.070	0.492
	JSS_Rewards	2884.943	78	36.986	0.800	0.702	0.954	62.415	0.111
	JSS_Co-workers	1655.220	78	21.221	1.592	0.401	0.976	124.141	0.177
Error	JSS_Supervisor	3.167	3	1.056					
	JSS_Operating_conditions	18.667	3	6.222					
	JSS_Rewards	138.667	3	46.222					
	JSS_Co-workers	40.000	3	13.333					
Total	JSS_Supervisor	32922.000	82						
	JSS_Operating_conditions	18384.000	82						
	JSS_Rewards	21056.000	82						
	JSS_Co-workers	34176.000	82						
Corrected Total	JSS_Supervisor	1780.488	81						
	JSS_Operating_conditions	2756.878	81						
	JSS_Rewards	3023.610	81						
	JSS_Co-workers	1695.220	81						

a. R Squared = .998 (Adjusted R Squared = .952)

b. R Squared = .993 (Adjusted R Squared = .817)

c. R Squared = .954 (Adjusted R Squared = -.238)

d. R Squared = .976 (Adjusted R Squared = .363)

e. Computed using alpha = ,05