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THE ROLE OF JOB SATISFACTION IN TURNOVER AND TURN-AWAY INTENTION OF IT STAFF IN SOUTH AFRICA

Brenda Scholtz*	Nelson Mandela University, Port Elizabeth, South Africa	Brenda.scholtz@mandela.ac.za
Jean-Paul Van Belle	University of Cape Town, Cape Town, South Africa	jean-paul.vanbell@uct.ac.za
Kennedy Njenga	University of Johannesburg, Johannesburg, South Africa	knjenga@uj.ac.za
Alexander Serenko	University of Toronto, Toronto, Canada	a.serenko@utoronto.ca
Prashant Palvia	University of North Carolina, Greensboro, USA	pcpalvia@uncg.edu

* Corresponding author

ABSTRACT

Aim/Purpose: This study forms part of the World IT Project, which aims to gain a deeper understanding of individual, personal and organisational factors influencing IT staff in a modern, work environment. The project also aims to provide a global view that complements the traditional American/Western view. The purpose of this study is to investigate and report on some of these factors, in particular, the role that job satisfaction has in turnover intention (i.e., changing jobs within the IT industry) and turn-away intention (i.e., moving to another industry other than IT) in South Africa.

Background: Several studies have reported on the importance of an employee's job satisfaction to organisation success, and the various factors that influence it. Most studies on job satisfaction adopted a Westernised and not a global view. Very few empirical studies have been conducted on job satisfaction of IT workers in South Africa. This paper reports on the individual, personal and organisational factors that influence the job satisfaction of IT staff in South Africa.

Methodology: The study uses statistical analysis of survey data acquired through the World IT Project. Both online and paper based questionnaires were used. A sample size of 301 respondents was obtained from the survey, which was conducted over a period of 6 months during 2017. The factors that influence IT job satisfaction

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	were analysed using correlation analysis, multiple regression analysis and discriminant analysis. The factors investigated were employee and organisational demographics, aspects of occupational culture, and various job-related individual issues.
Contribution	This paper presents the only study focused specifically on turnover and turn-away intention amongst IT staff in South Africa. The final proposed model, grounded in the empirical dataset, clearly shows job satisfaction as a strong mediating construct explaining most of the variance in the IT professional's intention to leave the organisation (i.e. their turnover intention) and the industry (i.e. their turn-away intention).
Findings	The findings revealed that there was a significant correlation between job satisfaction and turnover intention as well as between job satisfaction and turn-away intention of IT staff. Perceived professional self-efficacy, strain and experience were also highly correlated with turnover intention. Professional self-efficacy was also significantly correlated with turn-away intention. Based on the analyses that were conducted, a research model is presented that shows the relationships between the various antecedents of turnover and turn-away intention.
Recommendations for Practitioners	Managers in organisations dealing with the shortage of IT skills can use the model to plan interventions to reduce IT staff turnover rates by focussing on addressing the identified individual issues such as strain, job (in)security and work load as well as the personal value and IT occupational culture issues.
Recommendations for Researchers	Researchers in the field of IT staff recruitment and management can find value for their research in the proposed refined model of IT job satisfaction and turnover intention. Future research could possibly replicate the study in other countries or could focus on different factors.
Impact on Society	IT skills play a crucial role in society today and are therefore in high demand. However, this demand is not being satisfied by the current rate of supply. Research into what factors influence IT staff to leave the organisation or the industry can assist managers with improving their employee relations and job conditions so as to reduce this turnover and increase organisations' and society's competitiveness and economic growth.
Future Research	It would be interesting to determine if the findings are similar for a sample of smaller organisations and/or younger IT employees since this study focussed on larger organisations and more experienced staff. Future research could also compare the findings of South African organisations with those in other countries.

Keywords turnover intention, job satisfaction in IT staff, IS personnel, workforce, burnout, exhaustion

INTRODUCTION

The research project that this paper reports on is part of a larger, global project, the World IT Project. This paper extends our previous study (Van Belle, Scholtz, Njenga, Serenko, & Palvia, 2018) by reporting on additional literature reviewed and further statistical findings and analyses. The World IT Project, formally launched in 2013, is one of the largest projects of this nature ever conducted, with its main goal being to collect empirical data that considers a global view of Information Technologies (IT)/Information Systems (IS) issues rather than an American/Western view (Palvia et al., 2017). IT has spread all over the world, and a global approach is required because studies conducted in the U.S. with the use of U.S. data, may not reflect the full picture and generalise to other countries. For exam-

ple, it is unlikely that the factors influencing turnover (i.e., changing jobs within the same industry), turn-away (i.e., changing jobs to another industry), and job satisfaction of IT workers in South Africa are the same as those in the U.S. The problem is that the vast majority of IT studies were done in the West, and their findings may not apply to the context of other countries, including South Africa.

The World IT Project attempted to address this lack of studies. It included around 90 individual researchers who collected data in 37 countries by administering a standardised, 160-item research instrument (note that only a subset of these questions was used in the present study). The objective of the World IT Project was to gain a deeper understanding of individual, personal and organisational factors influencing IT staff in a modern, global work environment (Palvia, Ghosh, Jacks, Serenko, & Turan, 2018). In particular, the purpose of this paper is to identify the key factors that influence job satisfaction, turnover intention and turn-away intention of IT staff in South Africa. The paper reports on an analysis of data obtained from the South African part of the project, where 301 responses from IT professionals in South Africa were obtained. The project addresses gaps in research related to turnover intention and job satisfaction in South Africa. The project benefits those responsible for managing IT professionals in South Africa's unique job context, since dysfunctional turnover has been costly for organisations (Carlson, Carlson, Zivnuska, Harris & Harris, 2017). The literature review revealed that some studies have reported on turnover intention and job satisfaction among IT staff in other countries, and others have reported on studies conducted in South Africa, but these were in non-IT related industries (Stoermer, Hitotsuyanagi-Hansel, & Froese, 2017). No studies were identified that focused specifically on turnover and turn-away intention amongst IT staff in South Africa.

The research questions to be answered in this paper are:

1) What factors influence turnover and turn-away intention of IT staff in South Africa?
2) What individual, occupational and environmental factors influence the job satisfaction of IT staff in South Africa?
3) What is the role of job satisfaction in turnover and turn-away intention of IT staff in South Africa?

In order to answer the above research questions, the paper is structured as follows. An analysis of the findings of the literature review is provided in order to provide an overview of the status of research in this field and to highlight the key factors cited by the research community. This is followed by an explanation of the research methodology adopted in this study and details related to the survey conducted. Afterwards an analysis and discussion of the survey findings is provided. These findings are used to develop a grounded research model and several conclusions are drawn.

LITERATURE REVIEW

In order to function effectively, management in organisations need to have a good knowledge and understanding of the critical issues that are faced within their companies and by their IT staff within their environment and context (Palvia et al., 2017). From an organisational perspective, this knowledge can assist management in compiling competitive organisational and IT policies and strategies. From a national level, stakeholders such as policy makers, governments and vendors are more equipped to address the important and pressing issues of the times. Internationally, this knowledge can assist companies operating in a global environment with comparisons that can facilitate cooperation, understanding and knowledge transfer amongst different nations. This knowledge can also provide researchers with an improved understanding of the international IT environment and issues in different cultures and contexts and with a framework to assist with future research studies.

Factors Influencing Turnover, Turnover Intention and Turn-away Intention

Employers of IT staff are constantly looking for ways to attract, develop and retain skilful workers who are needed for the greater success of the organisation (Joo & Park, 2010). It is therefore important to understand the factors that influence IT staff leaving the organisation (turnover), since turnover can negatively impact the financial state of the organisation (Lambert, Hogan, & Barton, 2001). One of the factors most often reported as influencing turnover is turnover intention (Lee & Mowday, 1987; Michaels & Spector, 1982; Mobley, Griffeth, Hand, & Meglino, 1979). Turnover intention is defined as the "last in a sequence of withdrawals" that ultimately results in an employee looking for employment elsewhere outside of the organisation (Lu & Gursoy, 2016). It is the degree of resolution that a staff member has to leave an organisation (Mobley, Horner, & Hollingsworth, 1978).

Turnover intention can negatively impact an organisation, since it results in the loss of key skills, knowledge and abilities and ultimately in high replacement costs and a reduction of revenue (current and/or future). Therefore, managers should be aware that regardless of the reasons for turnover, a high turnover rate decreases the gains of the organisation in both the short and long term (Heavey, Holwerda, & Hausknecht, 2013). Using the Job Demands Resources (JDR) model, Carlson et al., (2017) predicted a negative relationship between job satisfaction and turnover intention, which was supported in their findings. Other factors influencing turnover intention include, work environment, organisational factors, and personal employee characteristics (Mobley et al., 1979). Job satisfaction has been reported to have a negative correlation with turnover intention in a large survey study conducted in the U.S. (Lambert et al., 2001). Another study in Pakistan conducted amongst teachers, confirmed that turnover intention is strongly influenced by job/career satisfaction (Shah & Jumani, 2015). A more recent investigation that was conducted amongst workers in the hospitality industry found a significant negative relationship between job satisfaction and turnover intention (Lu & Gursoy, 2016). Job satisfaction has been defined as one's overall assessment of all aspects of his or her job, through an affective or emotional reaction culminated from the comparison of actual outcomes against the required outlined outcomes (Locke, 1976). Similarly, De Witte, and Buitendach (2005) describe job satisfaction as the evaluation and perception of an employee's job that is influenced by the unique needs, circumstances, values, and expectations that are faced by employees in their work environment.

In addition to factors influencing intention to leave the organisation (turnover intention), intention to leave the IT industry altogether (turn-away intention) is gaining increased interest in the research community (Colomo-Palacios, Casado-Lumbreras, Misra, & Soto-Acosta, 2014; Palvia et al., 2017). Joseph, Tan, and Ang (2011) define turn-away intention as an individual's resolution to change his or her profession or occupation. The findings of the World IT study conducted among 311 IT professionals in Canada by Serenko, Bontis, and Palvia (2015) revealed that both turnover and turn-away intention are influenced by job satisfaction. However, the relationship between the factors is stronger at the organisation level (turnover intention) than at the industry/occupation level (turn-away intention). One possible reason for this is that IT employees that have low job satisfaction may find it easier and less stressful to look for employment in the same industry rather than to leave the IT industry altogether.

Organisational culture has been shown to influence job satisfaction amongst staff. In particular, the learning culture of an organisation has been reported to positively influence job satisfaction amongst IT staff (Egan, Yang, & Bartlett, 2004). It can be deduced therefore that an organisation that provides opportunities for IT staff to learn can expect to have higher rates of job satisfaction.

Job security is another factor that influences job satisfaction (Greenhalgh & Rosenblatt, 1984; Serenko et al., 2015). Job security can be described as the aspects of a job that result in the assurance that employment will continue in the same organisation or in the same profession (Herzberg, Mausner, &

Snyderman, 1959). Therefore, security can relate to the organisation (organisational security) or the industry (occupational security). The Canadian World IT Project (Serenko et al., 2015) revealed that job security impacts job satisfaction, which has an impact on turnover intention and turn-away intention. One explanation for this could be that once IT employees feel threatened in their current job, their loyalty to their current employer decreases and they start searching for employment in alternate positions in the IT industry or even in other industries.

Burnout is another factor that has been correlated with turnover intention (Lu & Gursoy, 2016; Moore, 2000a, 2000b) and turn-away intention (Armstrong, Brooks, & Riemenschneider, 2015). Feeling emotionally and physically exhausted can be described as burnout, and this can manifest when an employee feels continually tired, weak, and run down (Moore, 2000a, 2000b. Outcomes such as burnout are frequently encountered in dynamic environments. The Armstrong et al. (2015) study was conducted in the United States and identified that individuals in their focus groups highlighted the importance of exhaustion and turn-away intention for IS professionals. Their interviews with 29 IS professionals and a survey of 203 IS professionals revealed that exhaustion from IS career experience and affective commitment to the IS profession are key factors influencing turn-away intention.

Three dimensions of burnout are proposed by the MBI-General Survey of Maslach, Jackson, and Leiter (1996). These dimensions are exhaustion, cynicism and professional efficacy. Exhaustion consists of any sources that can lead to an individual's fatigue, whereas cynicism means apartness and indifferent attitude towards work in general. Professional efficacy comprises of non-social and social aspects of job accomplishment. A study by Lu and Gursoy (2016) of staff in hospitality and tourism used these three dimensions of burnout in their study and confirmed that it was a key predictor of both job satisfaction and turnover intention.

South African ICT Context

The advent of democracy in South Africa coupled with the rapid use, growth, and transition of ICT has given rise to a new generation of leaders and professionals in the sector. Figure 1 illustrates the National ICT Trend in South Africa from 2001 to 2017. From this figure it is clear that the South African economy has noticed a positive shift in the ICT service sector, with ICT service exports as a percentage of total exports increasing from 12.8% to 16.9% in 2016. It is also evident that there has been a downward trend in industry employment, from 2001 until 2016. A similar downward trend took place in overall ICT goods exports, with the percentage of total goods exports falling from 1.7% of total exports to 1.4 % of total exports. This volatility exemplifies falling trends on the one end (ICT goods exports) and rising trends on the other (ICT service exports and ICT industry employment), which provides insight into the complex socio-economic and political environment faced by ICT professionals. South Africa is in a volatile transitional state whose diverse demographic and ethnicity mix makes it a challenge to create sustainable jobs across its various sectors (Horwitz & Mellahi, 2018; Peilin, Gorshkov, Scalon, & Sharma, 2013). It has a unique social stratification with economic inequality amongst its populace in the labour market. This presents interesting perspectives that highlight job (in)security and job satisfaction concerns within the ICT profession. Notwithstanding, is the paradox of the country having an over-represented unskilled/semi-skilled labour market coupled with a shortage of high-level skills particularly in the ICT sector (Horwitz, 2017).

ICT professionals in South Africa, particularly those in lower levels (e.g., helpdesk tech support and IT technicians), do not feel adequately compensated nor respected for the work they perform (Mohlala, Goldman, & Goosen, 2012). Jackson (2014) explains this from the viewpoint of the weakness of trade unions. He postulates that there are generally weak trade unions and ineffective institutionalised regulatory processes for collective bargaining and dispute resolution, with many organisations perceiving trade unions with suspicion (Jackson, 2014). Many foreign organisations in need of local ICT skills have taken advantage of institutional weakness to adopt low wage – low cost strategies. The controversies around these strategies often involve accusations of foreign exploitation of local ICT workers (Horwitz, 2017).

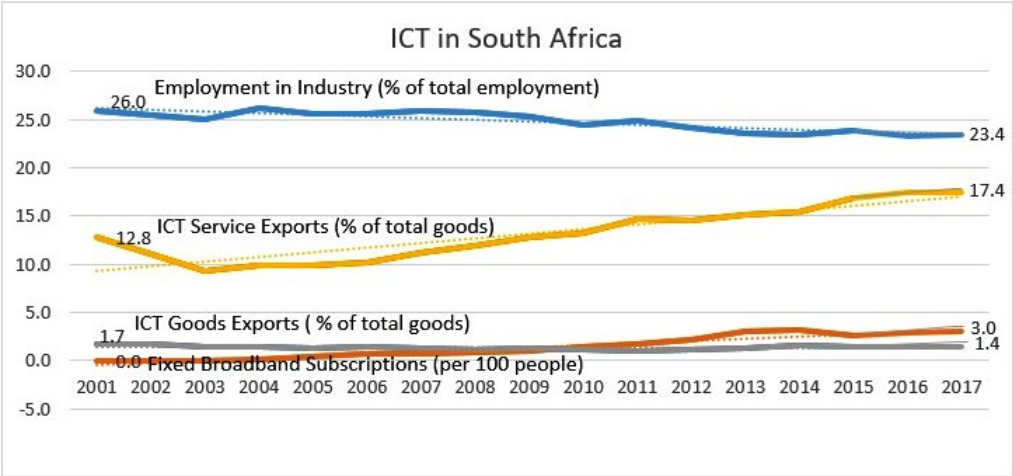

Figure 1. National ICT Trend in South Africa Source: World Development Indicators Database (World Bank, 2017)

There is a lack of rigorous understanding of the role of personal and organisational factors in a modern, global IT work environment, and, specifically, on the factors affecting turnover decisions of ICT professionals in South Africa. In the absence of such knowledge, and as part of the broader World IT Project, our work explores the influence of individual, personal and organisational factors on job satisfaction, turnover, and turn-away intention. Due to the exploratory nature of this study and a lack of empirical evidence in the context of South Africa, we do not propose particular hypotheses or a research model. Instead, we propose an exploratory study to answer three research questions pertaining to: 1) factors influencing turnover and turn-away intention of IT workers; 2) individual, occupational and environmental factors impacting the job satisfaction of IT staff; and 3) the role of job satisfaction in turnover and turn-away intention of IT staff. This choice of the use of an exploratory study has been informed by our need to understand the structure of data elicited from the World IT project and to uncovering empirical relationships that would address the questions raised above. As Jebb, Parrigon, and Woo (2017 p. 267) points out, exploration is "essential to the scientific process and helps establish the validity of scientific conclusions". Later we develop a research model which is grounded in the findings of the exploratory analyses. The section that follows explains the exploratory approach in detail.

RESEARCH METHODOLOGY

An exploratory approach was adopted in this study in order to explain and understand the turnover and turn-away intention of IT staff and specifically to investigate the role that job satisfaction plays in influencing these two constructs. Quantitative data was collected from IT employees by means of a survey using a cross-sectional timeframe. The sampling approach was a mixture between stratified, convenience, and purposive sampling. Three South African researchers were each assigned a geographic region of the country based on the location of their home university. The researchers used their personal contact lists to target organisations as well as individuals.

The standardised questionnaire designed and prescribed by the World IT Project was used in this study which allowed for international comparability. For most of the attitudinal variables, a 5-point Likert scale response was required. The motivation for and list of factors used, as well as their sources, are described in detail in Palvia et al. (2017). The instrument was presented as an online survey (205 responses) as well as a paper-based format (105 responses) over a period of 6 months during 2017. Only nine of the 310 responses had to be excluded because of insufficient quality, leaving a net sample size of 301. Generally, the quality of responses was very high as evidenced by a number

of validity tests as well as the high reliability of the sub-constructs, which included both positively and negatively phrased items.

Pairwise deletion was used where selected questions were not answered. Pairwise deletion is preferable to means substitution if you have enough data points since it does not assume that the missing observations are close to the average of the other observations. Since we have 301 observations, we have sufficient data. Data was cleaned in two steps: first by the local researchers and then by the World IT project coordinators. Statistica software was used for statistical analysis and MS-Excel for some of the descriptive analysis. Ethics approval was obtained from the home universities of the researchers as well as the corporates who agreed to participate officially (i.e., in a named capacity) with the survey.

DATA ANALYSIS AND DISCUSSION

FACTORS IDENTIFIED AS CONSTRUCTS

In line with the literature review and the research objectives, several factors identified were used as constructs for the analysis. These constructs and their sources are described in detail in Palvia et al. (2017). The ones reported on in this paper are as follows:

- Personal demographics: gender, education level, years of work experience and IT experience.
- Individual issues: job satisfaction, job (in)security, perceived work load, work/home conflict, strain, professional self-efficacy, turnover intention, and turn-away intention.
- Environmental turbulence: speed of change, complexity of change, newness of change, and predictability of change.
- Organisational demographics: demographics and size.
- Occupational culture: autonomy, structure, precision in communication, innovation, reverence for knowledge and fun/enjoyment.

The mediating variable is job satisfaction and the ultimate dependent constructs are turnover intention and turn-away intention, which were measured through three items each. These items were:

- Short-term intention to stay (STITS) - "I will be with this organisation/IT industry one year from now"
- Short-term intention to leave (STITL) – "I will take steps during the next year to secure a job at a different organisation/industry"
- Long-term intention to stay (LTITS) – "I will be with this organisation/IT industry five years from now"

Descriptive analysis

Respondents were generally young (37% aged 30 to 39 years and a further 32% aged 21 to 29 years), mostly male (72%) and well-educated since 47% had a bachelor's degree, 16% had a masters or PhD and only 11% had a high-school education or less (Table 1). This corresponds well with the IT industry's overall demographic profile (Horwitz & Mellahi, 2018; Peilin et al., 2013) and thus the sample can be seen to be representative of the IT industry, albeit with perhaps a slight bias towards better educated employees.

The respondents appear to be fairly experienced (Table 2) with one-third of them having between 10 and 19 years of work and IT experience. Most of the respondents work for large organisations, i.e., those with more than 1000 employees but with medium-sized IT departments (51 to 100 IT staff). The sample obtained therefore represents a slight bias towards the larger organisations. However, the sample still contains a significant number of employees working in small and medium-sized organisations (Table 3).

Table 1. Age, gender, and education profile of respondents

Characteristic			Characteristic			Characteristic		
Age	**N**	**%**	**Gender**	**N**	**%**	**Education**	**N**	**%**
18 - 20	0	0				High School or less	32	11
21 - 29	95	32	Men	218	72	Some higher (<2 years)	74	25
30- 39	112	37	Women	83	28	Bachelor's	141	47
40- 49	63	21				Master's degree	37	12
50- 59	28	9				Ph.D.	13	4
Unknown	3	1				Unknown	4	1
TOTAL	**301**	100	**TOTAL**	**301**	**100**	**TOTAL**	**301**	**100**

Table 2. Experience demographics of respondents

Characteristic		
Work Experience	**N**	**%**
0-4	62	21
5-9	68	23
10-19	99	33
20-29	46	15
30 +	22	7
Unknown	4	1
TOTAL	**301**	**100**

Characteristic		
IT Experience	**N**	**%**
0-4	83	28
5-9	72	24
10-19	95	32
20-29	36	12
30 +	14	5
Unknown	1	0
TOTAL	**301**	**100**

Table 3. Size of organisation profile

Organisation Size	# Employees
0-10	20
11-25	18
26-50	19
51-100	16
101-200	28
201-500	27
501-1000	11
1001-2000	42
2001-5000	53
5001-10,000	28
> 10,000	37
TOTAL	**301**

Organisation Size	# IT Staff
0-5	16
6-10	28
11-25	49
26-50	37
51-100	60
101-200	29
201-500	29
501-1000	12
>1000	38
Unknown	3
TOTAL	**301**

Table 4 summarises the descriptive statistics regarding the respondents' turnover and turn-away intention. The first item related to turnover intention was "I will be with this organisation one year from now", also referred to as Short Term Intention to Stay (STITS). Encouragingly, the majority of respondents (n = 188) agreed or strongly agreed with this statement, whilst quite a large number (n = 75) were undecided. This means that only 36 respondents (12%) had turnover intention (intend to leave their current employer) before the next year. The second item stated that "I will take steps during the next year to secure a job at a different organisation". For this item, 67 respondents (22%) think of leaving by the following year (i.e., strongly disagree or disagree that they are "Not trying to leave next year"). The figure increases marginally to a total of 81 respondents (27%) that have Long Term Intention to Leave (LTITS – "I will be with this organisation five years from now"). This finding compares fairly favourably with the current research reporting high staff turnover in IT staff. However, in both the short and medium term, a full quarter of respondents is undecided about their intention to leave the organisation, whilst less than 32% (n = 95) is confident that they will still work for the same employer in five years' time.

Table 4. Turnover Intention

IT Job Leave	Short Term Intention to Stay (STITS)		Short Term Intention to Leave (STITL)		Long Term Intention To Stay (LTITS)	
	N	%	N	%	N	%
strongly disagree	20	7	28	9	37	12
disagree	16	5	39	13	44	15
undecided	75	25	76	26	124	41
agree	111	37	93	31	63	21
strongly agree	77	26	61	21	32	11
TOTAL	**299**	**100**	**297**	**100**	**300**	**100**

Reliability and validity analysis

Reliability and validity analysis were performed for the multi-item perception items namely IT occupational culture and individual issues. The items for the individual issues generally loaded almost perfectly on their respective constructs as shown in Table 5. This testifies to the high quality of the data set, especially since a number of items were reverse-coded. The independent variables of work load, work/home conflict, strain, perceived professional self-efficacy as well as the mediating job satisfaction and the dependent variables (turnover intention or turn-away intention) all load perfectly on a single, separate factor. The only exception is job (in)security where one item did not load and was therefore omitted from subsequent analysis.

Table 5: Factor loadings for individual issues (Varimax normalised rotation, principal components)

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
Job Satisfaction	**-0.78**	-0.09	-0.18	-0.21	-0.14	-0.01	-0.20	0.04
Job Satisfaction	**-0.76**	-0.04	-0.05	-0.20	-0.19	-0.07	-0.33	0.05
Job Satisfaction	**-0.79**	-0.11	-0.05	-0.16	-0.07	-0.18	-0.15	0.08
Work Load	0.05	**0.83**	0.08	0.22	0.00	0.03	0.01	-0.03
Work Load	0.02	**0.78**	0.23	0.17	0.06	0.09	-0.01	0.05
Work Load	0.08	**0.75**	0.32	0.28	-0.03	0.08	-0.04	0.03
Work Load	0.08	**0.66**	0.23	0.46	-0.04	-0.03	0.05	0.02
Work-Home Conflict	0.09	0.22	**0.85**	0.21	-0.04	0.02	-0.02	0.03
Work-Home Conflict	0.15	0.37	**0.76**	0.31	0.03	0.03	-0.01	-0.06
Work-Home Conflict	0.05	0.31	**0.75**	0.39	0.03	0.06	-0.03	-0.01
Strain	0.23	0.39	0.27	**0.72**	0.04	0.07	0.10	0.07
Strain	0.23	0.34	0.22	**0.77**	-0.01	0.01	0.03	0.03
Strain	0.12	0.16	0.19	**0.78**	0.17	0.12	0.11	-0.03
Strain	0.14	0.29	0.20	**0.83**	0.04	0.08	0.06	0.01
Self-Efficacy	-0.34	0.09	0.17	-0.01	**-0.66**	-0.16	-0.06	0.15
Self-Efficacy	-0.07	-0.09	0.04	-0.10	**-0.78**	-0.14	0.12	0.20
Self-Efficacy	-0.07	0.08	-0.10	0.06	**-0.82**	-0.06	-0.20	0.04
Self-Efficacy	-0.04	-0.07	-0.05	-0.13	**-0.86**	0.01	-0.07	0.05
Job Security	0.18	0.15	-0.05	0.16	0.14	**0.65**	-0.26	-0.06
Job Security	0.10	-0.04	0.04	0.05	0.07	**0.88**	0.07	-0.03
Job Security	-0.02	0.07	0.05	0.05	0.08	**0.85**	0.12	-0.05
STITS-Org	0.43	-0.10	0.11	0.08	0.16	-0.07	**0.66**	-0.14
STITL-Org	0.37	0.08	0.00	-0.03	0.01	0.35	**0.71**	-0.07
LTITS-Org	0.16	0.02	-0.13	0.18	0.07	-0.06	**0.82**	-0.08
STITS-Industry	0.10	-0.07	-0.01	-0.04	0.19	0.13	-0.06	**-0.82**
STITL-Industry	0.07	0.01	0.10	-0.09	0.07	0.44	0.27	**-0.58**
LTITS-Industry	0.04	0.01	-0.03	0.04	0.12	-0.10	0.15	**-0.85**

The occupational culture issues (autonomy, structure, precision in communication, innovation, reverence for knowledge and fun/enjoyment), as possible explanatory independent variables, generally also loaded nicely, although slightly less perfectly. Three questions were omitted after the factor analysis and semantic inspection of the test items in question; but this still left at least four test items per construct. The detailed analysis is omitted given their generally low significance for this study apart from the construct about the reverence for knowledge. The test items for this construct loaded strongly on three separate factors and were therefore broken down into three sub-constructs, namely: importance of technical and critical thinking skills, importance of intelligence, and the importance of learning opportunities. After these minor adjustments, the Cronbach alpha reliability coefficients were all more than satisfactory. Future research should explore the occupational culture construct relating to "reverence for knowledge" in more detail in other settings.

Factors Influencing Job Satisfaction of IT Staff

The literature review section of this paper highlighted that job satisfaction amongst IT staff is one of the important factors influencing turnover intention and other variables (Carlson et al., 2017; Lambert et al., 2001; Lu & Gursoy, 2016; Serenko et al., 2015; Shah & Jumani, 2015). Thus, the constructs that influence IT job satisfaction are important and were investigated by means of correlation analysis and a multiple regression analysis.

Correlation analysis was conducted and revealed that eight factors were highly and significantly correlated with job satisfaction. Correlation is an effect size and so we can verbally describe the strength of the correlation using the guide that Evans (1996) suggests for the absolute value of r where.*00-.19 is "very weak", .20-.39 is "weak", .40-.59 is "moderate", .60-.79 is "strong" and .80-1.0 is "very strong".*

The correlated factors are listed and discussed in decreasing order of magnitude of the Pearson correlation coefficient and are:

- Strain (-);
- Professional self-efficacy (+);
- Work/home conflict (-);
- Fun/enjoyment (+);
- Work load (-);
- Speed of change (-);
- Job (in)security (-); and
- Gender.

A strong negative correlation (-0.44) with strain was identified. The degree of strain experienced by employees is the most highly (negatively) correlated independent variable with job satisfaction. Although the correlation itself is intuitively evident, the important fact remains that it is the most important determinant. A strong positive correlation (+0.38) with perceived professional self-efficacy was revealed. It can be deduced therefore that job satisfaction increases as perceived self-efficacy increases. A small but still very significant negative correlation (-0.26) with work/home conflict was identified. A small correlation (+0.25) with how much fun/enjoyment of working can be noted. The pre-occupation of high-tech organisations with making the workplace fun/enjoyable seems to be confirmed by the highly significant positive correlation. A significant negative correlation (-0.22) with work load was revealed. Although the negative correlation between job satisfaction and work load is to be expected, it is important and perhaps surprising to note that the actual strain experienced is much more important, and even factors such as 'fun' can outweigh heavy work load. Speed of change, which is an element of the environmental turbulence construct, is negatively correlated with job satisfaction (-0.20). Thus, as the speed of change increases, job satisfaction decreases, which is to be expected; some of these effects are subsumed through secondary correlations with the five highest correlated factors (strain; self-efficacy; work/home conflict; fun/enjoyment; and work load). A

significant negative correlation (-0.17) between job (in)security and job satisfaction is noted. This validates the model proposed by Serenko et al. (2015) weakly. There is also a very small but significant correlation (0.14) with gender, with female IT staff reporting lower job satisfaction levels than males (the t-test for difference of means is significant at $p < 0.04$). This finding is interesting and should be researched further if validated. Interestingly, this is only one of a larger number of gender-based differences in the entire data set, as measured through (difference of means) t-tests. Another interesting finding is that job satisfaction does not appear to be correlated significantly with any of the occupational culture factors such as autonomy, structure, innovation, etc.

A multiple regression analysis was performed to take into account the secondary between-variable correlations and to determine to what extent the IT job satisfaction variance can be explained from the independent variables. Overall, 40% of the variance can be explained (adjusted $R^2 = 0.3349$). The eight significant variables are summarised in Table 6.

Table 6. Multiple regression analysis for IT job satisfaction

Variable	b*	t-value	p-value
Strain	-0.393	-5.326	0.000***
Professional self-efficacy	0.220	3.816	0.000***
Work experience	-0.282	-2.734	0.007**
IT Experience	0.267	2.603	0.010**
un/enjoyment	0.138	2.470	0.014*
Education level	-0.126	2.215	0.028*
Gender	0.116	2.157	0.032*
Speed of change	-0.123	-1.959	0.051
n=272; 28 variables in model; $R^2 = 0.404$; Adjusted $R^2 = 0.335$ $F(28,243)=5.874$; $p<0.000$			

Of the eight highly correlated factors identified in the correlation analysis, the majority (n = 5) also appear as significant in the multiple regression analysis. However, there are some notable differences. The work/home conflict and work load variables have disappeared, due to their high correlation with strain (at 60% and 63% respectively). Personal demographic variables, such as work/IT experience and educational level, were significant explanatory constructs, whereas they were not significantly correlated. What is interesting is the negative result for work experience, whereas IT experience provides a positive contribution; thus, motivating for further research on these factors. It should also be noted that the speed of change (an organisational factor) is not significant at the 5% significance level when taken into account with the other variables. However, on its own, it is significantly correlated.

Factors Influencing IT Staff Turnover Intention

A number of measured factors are significantly correlated with the turnover intention construct when intention is measured as the average of the three test-items (short, medium, and long-term turnover intention – i.e., intention to leave one's organisation). In particular, the following significant correlations were found:

- Job satisfaction (-);
- Professional self-efficacy (+);
- Strain (+);
- Work experience (+) and IT experience (+);
- Age (+);
- Fun/enjoyment (-); and
- Organisational size (-).

A very high negative correlation (-0.62) between job satisfaction and turnover intention validates one of the core arguments of the paper (and prior research) that job satisfaction is a key cause for IT staff turnover intention. The high positive correlation for perceived professional self-efficacy (+0.26) is slightly surprising. One possible explanation could be the fact that IT staff that are skilled have more job opportunities, i.e., can find new jobs relatively easy (particularly in an otherwise fairly constrained South African job market but where good IT skills are relatively scarce). Strain (+0.23) was the third-highest correlated factor; this is to be expected given its high influence on job satisfaction. Work Experience (+0.23) and IT experience (+0.18) are both positively correlated, which means that more experienced employees are more likely to leave. Age (+0.22) was positively correlated with turnover intention. The fact that older staff have slightly higher turnover intention is perhaps counter-intuitive but may be related to the positive correlations with experience. The negative correlation (-0.15) between fun/enjoyment and turnover intention agrees strongly with the finding that a fun working environment provides high job satisfaction, and ultimately reduces staff turnover. Organisational size (-0.13) has a small negative correlation with turnover intention, i.e., staff working in smaller organisations are less likely to leave. The speed of change has a small (but still statistically significant) positive correlation (+0.13).

Another important finding is that turnover intention is ***not*** significantly *correlated* with gender, environmental turbulence (except marginally at 0.13 for speed of change) or any of the occupational culture factors (autonomy, structure, innovativeness, etc.) except for a small -0.13 negative correlation with the importance of skills - critical thinking and technical problem solving.

To account for the inter-construct correlations, a multiple regression analysis was run in order to uncover those variables that collectively explain the most variance of intention to leave. Only one variable, job satisfaction, is significant in both the correlation analysis and the regression analysis. Although 29 variables were added in the model, only three variables (job satisfaction, organisation size and IT department size) exhibit a p-value of less than 5%. Job satisfaction explains the huge majority of the variance in turnover intention with the secondary factors of organisation size (+) and IT department size. Only two other variables have a significance level of p less than 10%, namely work/home conflict (-) and learning opportunities (+). However, the signs of the relationship are counter-intuitive. Table 7 lists the five most significant influencing variables (in order of t/p-value).

Table 7. Multiple regression analysis for IT staff turnover intention

Influencing Variable	b*	t-value	p-value
Job satisfaction	-0.6403	-10.677	0.000***
Organisation size (number of employees)	0.1782	2.081	0.038*
IT department size (number of employees)	-0.1569	-1.981	0.049*
Work/home conflict	-0.1306	-1.955	0.052
Learning opportunities	0.1153	1.880	0.061
n=272; 29 variables in model; $R^2 = 0.48$; Adjusted $R^2 = 0.42$ $F(29,242)=7.732$; $p<0.000$			

The multiple regression analysis for turnover intention took into account all 29 relevant factors and treats the dependent construct as a continuous variable. However, turnover intention can also be seen as a binary variable with many people having no such intention, a relatively small number indicating such intention (agree or strongly agree) and a significant portion undecided. We ignored the undecided respondents (see Table 4) and performed a discriminant analysis to see which variables discriminate maximally between those who intend to leave their organisation and those who do not.

We ran the analysis on the responses for two test-items: a short-term (1 year) intention to leave (STITL) and a long-term (5 year) intention to stay (LTITS). The analysis conducted was a forward stepwise discriminant analysis and the findings. The findings of the stepwise discriminant analysis are shown in Table 8 for STITL.

As seen in Table 8, for turnover intention in the next year (STITL), job satisfaction, perceived job (in)security, and learning opportunities are the three highest significant discriminators. This finding is of interest since perceived job (in)security was only a minor determinant for job satisfaction, which is the key mediating variable in the model. Most of the other variables in the discriminant model (fun/enjoyment, the degree of work/home conflict, and gender) were previously uncovered as significant determinants, either indirectly of job satisfaction or else directly of turnover intention. The only additional construct in the model is an occupational culture variable namely 'precision in communication'.

Table 8. Discriminant analysis for short-term intention to leave (STITL) the organisation

	Discriminant Function Analysis Summary Step 7, N of variables in model: 7; Grouping: 2 grps, Wilks' Lambda: 0.57 approx. F (7,191)=20.627 p<0.000					
n=199	**Wilks'**	**Partial**	**F-remove**	**p-value**	**Toler.**	**1-Toler.**
Job satisfaction	**0.85**	**0.67**	**94.91**	**0.00**	**0.76**	**0.24**
Job (in)security	**0.62**	**0.92**	**15.71**	**0.00**	**0.96**	**0.04**
Learning opportunities	**0.63**	**0.91**	**18.86**	**0.00**	**0.78**	**0.22**
Fun/enjoyment	0.58	0.98	3.51	0.06	0.89	0.11
Work/home conflict	0.58	0.98	3.00	0.08	0.83	0.17
Precision in communication	0.58	0.99	2.25	0.14	0.81	0.19
Gender	0.57	0.99	1.13	0.29	0.93	0.07

Table 9. Discriminant analysis for long term intention to stay (LTITS) with the organisation (in 5 years' time)

	Discriminant Function Analysis Summary Step 12, N of variables in model: 12; Grouping: 2 grps, Wilks' Lambda: .61 approx. F (12,145)=7.6581 p< .000					
n=158	**Wilks'**	**Partial**	**F-remove**	**p-value**	**Toler.**	**1-Toler.**
Job satisfaction	**0.74**	**0.83**	**30.67**	**0.00**	**0.59**	**0.41**
Work/home conflict	**0.66**	**0.93**	**10.58**	**0.00**	**0.52**	**0.48**
Education level	**0.65**	**0.94**	**9.22**	**0.00**	**0.87**	**0.13**
Innovation	**0.64**	**0.95**	**7.76**	**0.01**	**0.86**	**0.14**
Management level	**0.63**	**0.97**	**4.02**	**0.05**	**0.74**	**0.26**
Structure of IT department	0.62	0.99	1.21	0.27	0.83	0.17
Gender	0.62	0.98	2.66	0.11	0.85	0.15
Predictability of change	0.62	0.99	1.44	0.23	0.93	0.07
Work experience	0.62	0.99	1.14	0.29	0.86	0.14
Fun/enjoyment	0.62	0.99	1.47	0.23	0.88	0.12
Strain	0.62	0.99	1.25	0.26	0.48	0.52
Organisational IT maturity	0.62	0.99	1.19	0.28	0.91	0.09

The findings of the stepwise discriminant analysis are shown in Table 9 for LTITS. The three highest significant discriminators for LTITS were job satisfaction, work/home conflict, and education level.

FACTORS INFLUENCING IT STAFF TURN-AWAY INTENTION

The correlation analysis revealed that several factors are significantly correlated with turn-away intention when it is measured as the average of the three test-items (short, medium, and long-term turn-away intention, i.e., intention to leave the IT industry). The significant correlations are:

- Age (+);
- Work experience (+);
- IT experience (+);

- Complexity of change (+);
- Knowledge/skills (-);
- Job satisfaction (-);
- Professional self-efficacy (-); and,
- Job insecurity (+).

A surprising finding was that there was a small, but still statistically significant positive correlation between age (+0,14) and turn-away intention. Thus as IT employees get older their experience and perceived professional self-efficacy increases and this leads to them leaving the IT industry. This finding is confirmed by the positive correlations with both work experience (+0,13) and IT experience (+0,17). Thus it can be deduced that the more experience (in IT and in general) an employee has, the more inclined they are to leave the IT industry. A positive correlation (+0,13) with complexity of change (as a construct of environmental turbulence) was identified. Whilst it is small, it is still statistically significant. This implies that the higher the complexity of change in an organisation, the greater the rate that employees will want to leave the IT industry. A significant positive correlation (-0,13) was also identified between knowledge/skills (+0,13) and turn-away intention. The reason for this is not clear but could be that employees that value knowledge/skills are more inclined to leave the industry to explore other opportunities. However, further research would need to be done in order to confirm this hypothesis. A small, but still statistically significant negative correlation (-0.13) between job satisfaction and turn-away intention was identified, which validates one of the core arguments of the paper (and prior research) that job satisfaction is a key cause for IT staff turn-away intention. A negative correlation with perceived professional self-efficacy (-0,19) was revealed . One possible explanation could be the fact that IT staff that are skilled (or believe they are skilled) have more job opportunities, i.e., they can find new jobs relatively easily (particularly in an otherwise fairly constrained South African job market but where good IT skills are relatively scarce). A high positive correlation with job (in)security was identified (+0,36). A deduction from this finding could be that the more insecure an employee feels in his job, the more inclined he/she will be to leave the IT industry.

A multiple regression analysis was conducted to consider the secondary between-variable correlations and to determine the extent that job satisfaction can be explained by the independent variables. The most significant variables are summarised in Table 10.

Table 10. Multiple regression analysis for IT staff turn-away intention

	Regression Summary for Turn-away Intention R= 0.52, R^2= 0.27, Adjusted R^2= 0.17 F(30,240)=2.889 p<.000, Std.Error of estimate: 0.452		
n=271	**b***	**t-value**	**p-value**
Intercept		**5.065**	**0.000**
Job (in)security	**0.37**	**5.659**	**0.000**
Skills	**-0.14**	**-2.018**	**0.045**
Precision in communication	**0.16**	**2.106**	**0.036**
Structure	**-0.21**	**-2.732**	**0.007**
Autonomy	**0.15**	**2.216**	**0.028**
IT experience	**0.26**	**2.183**	**0.030**

Job (in)security (+) is a highly significant predictor for turn-away intention; however, surprisingly it was not so for turnover intention. One possible reason for this correlation could be that the more people believe they lack the technical skills, the more likely they are to leave IT. However, additional research would be required to confirm this finding. Skills (-) is the belief in the importance of technical problem solving and critical thinking skills and is a negative predictor for turn-away intention.

In other words, the more employees place importance on these skills, the less likely they are to leave the IT industry. IT experience (+) is a positive predictor of turn-away intention. Therefore, the more IT experience employees have, the more likely they are to leave the IT industry. This finding is slightly surprising. This could possibly be due to the fact that the more experience one has, the higher burnout could be. Another reason could be that after so many years, boredom sets in and employees want a change in career. Precision in communication (+) is a key predictor of IT turn-away intention. Employees that place a lot of importance on communication have a stronger tendency to leave the industry. This confirms research arguing that communication would support an organisation with achieving job satisfaction and work motivation among its employees (Lee & Jablin, 1995). So if communication is poor, job satisfaction will be poor and ultimately turnover and turn-away intention will increase.

Amount of structure (-) is negatively related to IT turn-away intention. Therefore, employees who regard structure as important are less likely to leave the IT industry. Degree of autonomy (+) is positively related to IT turn-away intention. This means that employees who value freedom and flexibility at work are more likely to leave the IT industry. This confirms the finding related to structure, since the more structure there is in an organisation usually impacts the degree of autonomy. Again, it is possible that this could hint at the fact that the IT industry is not conducive to high degrees of autonomy (e.g., flexibility and freedom in doing one's job and in decision-making). However, more research would be required to confirm this hypothesis.

PROPOSED RESEARCH MODEL

Combining the findings from the correlation, multiple regression and discriminant analysis, we propose the following research model (Figure 2). Only factors that were statistically significant in at least two of the analyses have been included in the model.

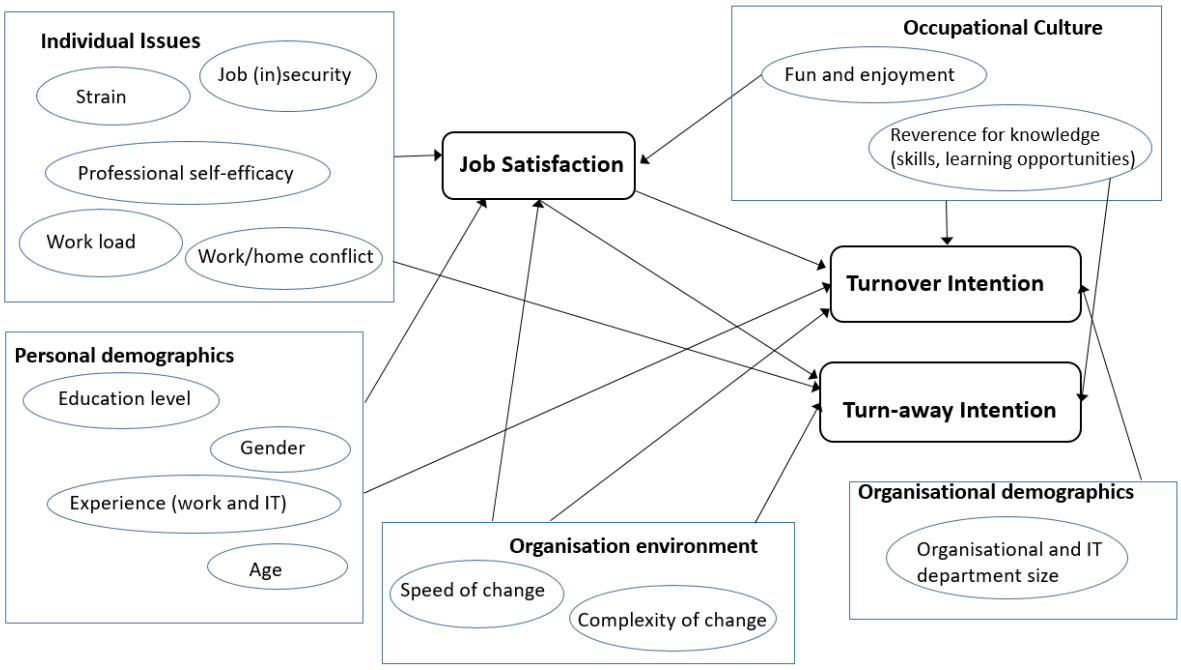

Figure 2. Model for turnover and turn-away intention with job satisfaction as mediator.

The final proposed model, grounded in the empirical dataset, shows that in the sample obtained from South African IT employees, job satisfaction as a strong mediating construct explaining most of the variance in the IT professional's turnover intention. This finding supports that of earlier studies (Carlson et al., 2017; Lambert et al., 2001; Lu & Gursoy, 2016; Serenko et al., 2015; Shah &

Jamani, 2015) that reported a negative relationship between job satisfaction and turnover intention. Job satisfaction is determined mainly by selected personal demographics such as those identified by Mobley et al. (1979); individual issues experienced such as strain/work exhaustion, job (in)security, professional self-efficacy, and work/life conflict. Selected elements of occupational culture, specifically the opportunity to learn and fun/enjoyment also have a positive relationship with job satisfaction. Individual issues (strain, job (in)security, professional self-efficacy, work load, and work/home conflict) as well as the occupational culture (in terms of fun/enjoyment) can impact the turnover intention, as does organisation environment (specifically speed of change) and IT department size.

The model also indicates that the findings revealed job satisfaction as a strong construct influencing turn-away intention. This finding supports that of the Canadian study of the World IT Project reported on by Serenko et al. (2015). Strain was found to have the highest correlation (negative) with job satisfaction, which could support the findings of Armstrong et al. (2015), who found that exhaustion impacted turn-away intention of IT employees since the concepts of exhaustion and strain are related and job satisfaction has been shown to impact turn away intention. However, additional studies should be conducted to provide additional evidence and a closer link between the various definitions of stain and exhaustion.

It is evident that the proposed model supports, synthesises and expands previous findings that were reported in our literature review. It also introduces new constructs that have possible impacts on turnover and turn-away intention; thus it provides a more complete nomological network of the related constructs. For example, the inclusion of turn-away intention along with turnover intention is perhaps among first search endeavours. Other new constructs included are personal demographics, certain individual issues and organizational demographics. Another notion introduced in the model is the "centrality" of the job satisfaction in the network; it provides the major link to various antecedents and consequents. Finally, the model proposes new relationships that have not been explored in the past.

Conclusions and Recommendations

This study set out to answer three research questions. The first question related to the factors influencing South African IT employees' turnover intention and turn-away intention. The second question related to the individual, occupational, and environmental factors that influence job satisfaction of IT staff in South Africa. The third research question concerned the role of job satisfaction in turnover and turn-away intention of IT staff in South Africa. A data set with 301 respondents was collected as part of the World IT Project (Palvia et al., 2017). The availability of a large number of valid factors enabled us to answer the proposed research questions through correlation, multiple regression, and discriminant analysis. We managed to explain more than 33% of the variance in both job (in)security and 41% of the turnover intention. Job satisfaction is influenced by a large number of constructs, including personal demographics (gender, education level, and experience); individual issues experienced (strain/exhaustion, job (in)security, perceived professional self-efficacy and work/home conflict); fun/enjoyment in the workplace. Turnover intention is mainly determined by job satisfaction although organisation size, individual issues and occupational culture (reverence for knowledge and fun/enjoyment) also have small impacts (Figure 2). On the other hand, turn-away intention is determined by job (in)security, age, skills and IT experience.

The findings above provide valuable observations and contributions to practitioners, researchers, and society at various levels. At an organisational level, the findings can assist management in developing sound organisational and IT policies and strategies. Managers dealing with the shortage of IT skills or having difficulty retaining IT staff can use the proposed model to plan interventions to reduce IT staff turnover rates by focussing on the identified individual issues such as strain, job (in)security and work load as well as personal and IT occupational culture issues. At a national level, stakeholders such as policy makers, governments and vendors can use this knowledge to address issues relating to high turnover rates of staff and in this way improve the competitiveness of national organisations.

Internationally, organisations operating in a global environment have more knowledge regarding job satisfaction and turnover, which can facilitate cooperation, understanding and knowledge transfer amongst different nations. At a societal level, IT skills play a crucial role and are in high demand. However, this demand is not being satisfied by the current supply rate. Research into what factors cause IT staff to leave the organisation or the industry can assist managers with improving their employee relations and job conditions so as to increase organisations' and society's competitiveness and economic growth.

This study had several limitations. First, even though the data was collected from employees in multiple organisations located throughout South Africa, it was impossible to obtain a random sample. Second, because this study focuses on a single country, the findings may not be generalisable to other parts of the world. Third, the quantitative method employed in the present investigation does not allow establishing a cause-and-effect between independent and dependent variables. Fourth, since the present study relied on a convenience dataset, it is possible that some of the relationships documented above appeared by chance and they will not be confirmed in subsequent replication studies. Fifth, this study's sample focussed on larger corporate organisations even though there were several respondents who worked in smaller organisations. Most of the respondents were quite experienced. Thus, the responses of experienced employees from large organisations may differ from those of less experienced ones from smaller companies. Sixth, the present study identified the relationships between the constructs, but it did not explicate why the observed effect takes place.

Future researchers should keep the issues above in mind when extending the line of research proposed in the present investigation. Despite the limitations of the study, it is believed that it can improve the understanding of researchers and practitioners related to the IT staff environment and issues in different cultures and contexts. It also provides a research model/framework to assist with future research projects. Scholars in the field of IT staff recruitment and management can find value for their research in a refined model of IT job satisfaction and turnover intention.

The findings also indicate several future research opportunities related to IT employment issues. A few of these are suggested here. First, future researchers should attempt to validate the proposed model by using data from various organisations and regions of South Africa. Second, future scholars are also recommended to replicate this study by using data from other countries. Fortunately, the World IT Project makes this possible since it includes a dataset containing all of this study's variables for 37 individual countries. Third, to fully establish causality between the constructs of the proposed model, future researchers are advised to employ longitudinal data collection techniques. Fourth, the suggested model is not comprehensive and it likely omits other important variables, for example, organisational commitment. Thus, it may be interesting to extend this model by adding other variables depending on the context of the study. Fifth, future researchers may also focus on the role of organisational size, since it is possible that IT workers from smaller organisations could have a different viewpoint. It would therefore be interesting to determine if the findings are similar for a sample of smaller organisations and/or younger IT employees. Sixth, future scholars may want to unearth the factors explicating the causal mechanisms between the constructs within the proposed model. For example, the present study identified an impact of occupational culture on turnover and turn-away intentions. However, it is still largely unknown how exactly the occupational culture exerts its effect on employees' turnover and turn-away intentions. This underlying mechanism may be studied with the help of qualitative data analysis techniques, such as focus groups and interviews. In other words, different inquiry methods will help future scholars not only understand that the effect takes place but also comprehend why it occurs.

As such, this project represents one of the first well-documented attempts to understand the role of job satisfaction in turnover and turn-away intentions of IT staff in South Africa. It proposes a comprehensive model that may be re-validated and extended in future research within the country and internationally. The authors hope that future scholars will continue the line of inquiry above and offer additional insight for both theory and practice.

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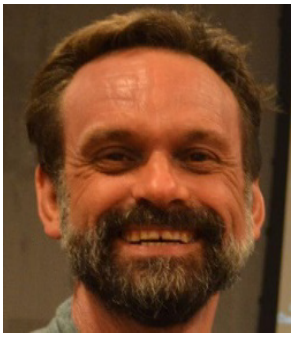
BIOGRAPHIES

Brenda Scholtz (Ph.D.) is an Associate Professor at the Nelson Mandela University in Port Elizabeth. She was awarded her PhD in Enterprise Systems in 2012. Her research interests include business process management, enterprise systems, business intelligence, data science and business analytics. She has over 70 accredited research publications and has supervised many Masters and Phd students. She is also currently serving as project manager for several research collaboration projects between South Africa and Germany.



Jean-Paul Van Belle is a professor in the Department of Information Systems at the University of Cape Town (UCT) and Director of the Centre for IT and National Development in Africa (CITANDA). His research areas are the adoption and use of emerging technologies in developing world contexts including mobile, cloud computing, open and big data. His passions are ICT4D – with a focus on emerging technologies as well as data for development (D4D) in an SDG context – and adoption of ICTs by small organisations. He has over 200 peer-reviewed publications including 25 chapters in books and about 40 refereed journal articles. He has been invited to give a number of keynote presentations at international conferences and holds an honorary professorship at Amity University. He currently supervises 15 Masters and PhD students and has graduated many more. Jean-Paul has active collaborations with researchers in India, UK, Ethiopia, Kenya and Mauritius. Research interests: ICT for development (ICT4D); emerging technologies; data revolution and SDGs; ICT use by small organisations. Own webpage: http://www.commerce.uct.ac.za/InformationSystems/StaffProfile/Jean-PaulVanBelle

Kennedy Njenga, PhD, is an Associate Professor at the Department of Applied Information Systems, University of Johannesburg in South Africa. He has published and presented his research both nationally and internationally in the field of information systems and technology. His research focuses on methodological, philosophical and behavioural issues related to privacy and the protection of data held by technology systems. He also has a special research interest on protecting technology around Internet of Things (IoTs). His work has been published in outlets such as the European Journal of information Systems (EJIS), the Interdisciplinary Journal of Information, Knowledge, and Management (IJIKM), the African Journal of Information Systems (AJIS) and in proceedings such as the Pacific Asian Conference on Information Systems (PACIS).

Dr. Alexander Serenko is a Visiting Professor in the Faculty of Information, the University of Toronto, Toronto, Canada. Dr. Serenko holds a Ph.D. in Management Information Systems from McMaster University. His research interests pertain to scientometrics, knowledge management, and technology addiction. Alexander has published more than 80 articles in refereed journals, including MIS Quarterly, European Journal of Information Systems, Information & Management, Communications of the ACM, and Journal of Knowledge Management. He has also won six Best Paper awards at Canadian and international conferences.

Prashant Palvia (Ph.D.) is Joe Rosenthal Excellence Professor at the University of North Carolina at Greensboro, USA. Professor Palvia is the Editor-in-Chief of the *Journal of Global Information Technology Management,* and Associate Editor for *Information & Management*. His research interests include global IT management, healthcare IT, security and privacy, virtual teams, and societal issues of IT. In 2013, he and his research team launched "The World IT Project", which examines important IT issues in 37 countries across the world.