

# SINGAPORE COMPUTER SOCIETY INFOCOMM SURVEY 2010

## EXECUTIVE SUMMARY

### Key Partners:



Nanyang Business School



### Supporting Organisations:



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## 1. EXECUTIVE SUMMARY

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The objective of the annual Singapore Computer Society Infocomm Survey 2010 is to understand the needs and issues of infocomm professionals in Singapore. The survey serves as a guide for SCS, relevant government agencies and organizations to shape Infocomm policies and strategies in Singapore.

This executive summary presents the key highlights of the SCS Infocomm Survey 2010. Following chapters will provide:

- The detailed discussion of the key findings of the survey and their implications;
- Survey methodology; and
- Detailed tabulated and graphed results that support the key findings and the implications arising from these findings.

### 1.1. Methodology

The sample of the SCS Infocomm survey comprises ICT professionals and ICT students. Data was collected via a web survey conducted between November 2010 and January 2011. The survey questions covered areas such as attraction, retention, detraction, career self-efficacy, job satisfaction, turnover and turnaway, professional development, work life conflict, work culture, and career aspirations. All survey questions were based on validated measures identified through a comprehensive review of the existing ICT literature.

We obtained 1,024 usable responses from ICT professionals and 692 usable responses from ICT students. The sample size obtained for this study allows a more refined estimate of effects.

#### Profile of ICT Professional Respondents

The profile of ICT professional respondents is consistent with the Infocomm Development Authority's Annual Infocomm Manpower Survey, 2010. The responding ICT professionals are mostly males (77%; females 23%); 40 years old and younger (72%); with a bachelor's degree or higher (85%; diploma and below 15%).

In addition, the majority of responding ICT professionals are married (60%; singles 40%) and are Singaporeans (70%; PRs and non-citizens 30%). Slightly more than a quarter (27%) of the ICT professionals reported earning more than \$100,000 per annum.

The ICT professional respondents work mainly in multinational corporations (36%), public sector organizations (28%), large local organizations (12%) and the remaining (24%) in small-medium sized enterprises, non-profit and other types of organizations; and hold jobs in project management (20%); software development (12%) and ICT management (including CIO, 14%; all other job roles 57%).

## Profile of ICT Student Respondents

The ICT student respondents are mainly 25 years old and younger (96%); male (64%; female 36%); single (98%; married 2%); pursuing a bachelor's degree or higher (24%) or diploma (61%; remaining 15% pursuing other certification); and Singaporeans (83%; PR and non-citizens 17%).

## 1.2. Summary of Results & Implications

### 1.2.1. Attraction, Retention & Detraction

- a) Both ICT professionals and students consistently ranked the two most important factors that attract them to and keep them in the ICT profession as:
- Salaries in the ICT profession compared to salaries in other occupations
  - Opportunities for Career Advancement

**Table 1 - Attraction, Retention & Detraction**

Rank	ICT Professionals			ICT Students
	Top Reasons that Attract	Top Reasons that Retain	Top Reasons that Detract	Top Reasons that Attract
1	Salary compared to those in other occupations	Salary compared to those in other occupations	Salary compared to those in other occupations	Salary compared to those in other occupations
2	Opportunities for Career Advancement	Opportunities for Career Advancement	Opportunities for Career Advancement	Opportunities for Career Advancement
3	Demand for ICT Jobs	Demand for ICT jobs	Need for a Balanced Lifestyle	Fit with Personality
4	Fit with Personality	Fit with Personality	Need to do Meaningful Work	Need for a Balanced Lifestyle
5	Respect and Prestige of IT Job	Need to do Meaningful Work	Respect and Prestige of IT Job	Respect and Prestige of IT Job

### 1.2.2. Career Self Efficacy

- a) 9 in 10 ICT professionals reported moderate to high self-efficacy<sup>1</sup>.

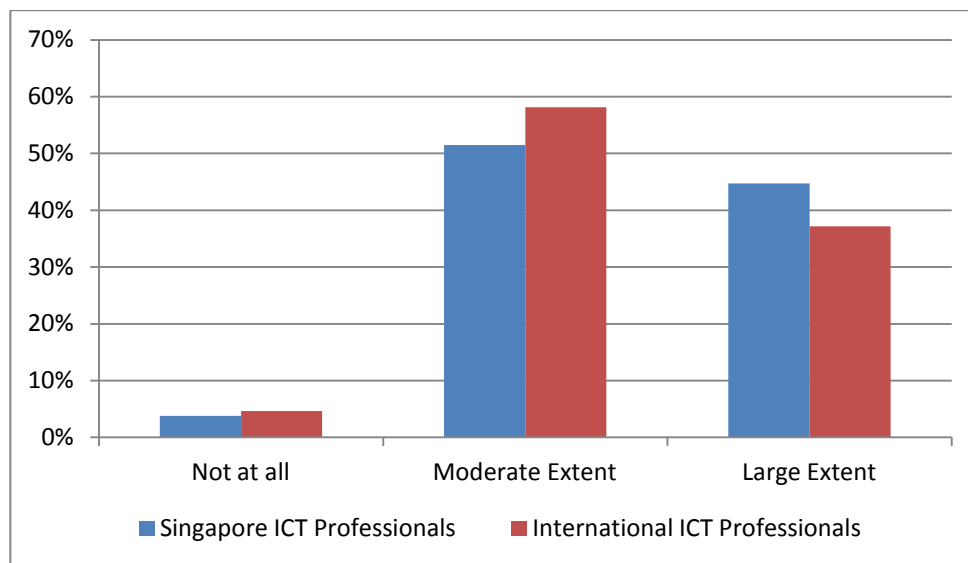


Figure 1 - Career Self Efficacy

- b) ICT professionals with a bachelors or postgraduate degree reported higher levels of self-efficacy compared to those with a diploma or secondary certification.

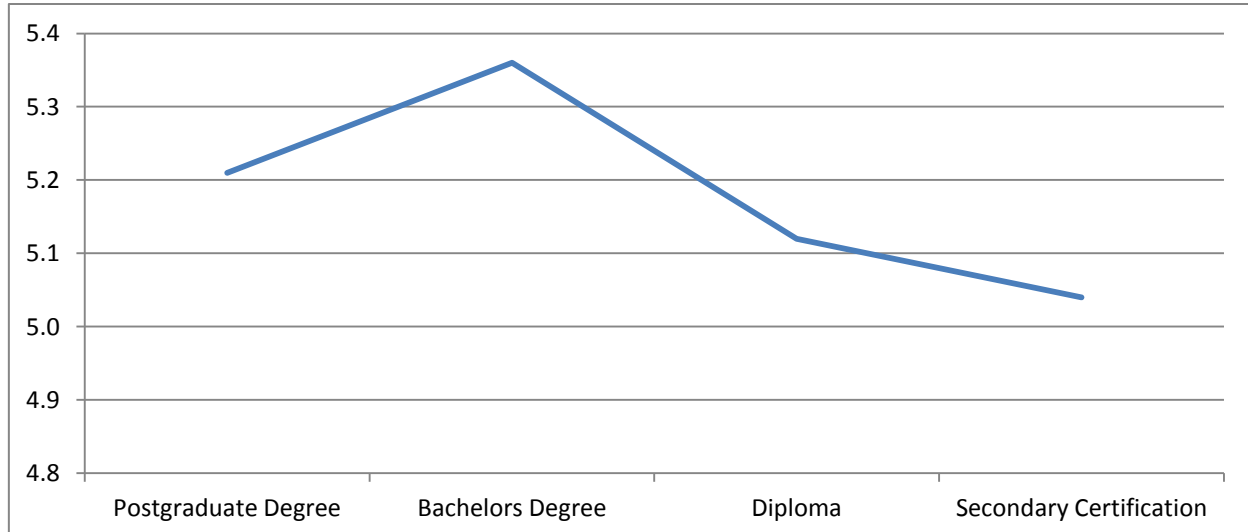


Figure 2 - Career Self Efficacy by Highest Education Level Attained

<sup>1</sup> Perceived self-efficacy is defined as people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives (Bandura, 1994). Self-efficacy. In V. S. Ramachaudran (Ed.). *Encyclopedia of human behavior*, 4, 71-81.

- c) For both ICT professionals and students, females reported lower levels of self-efficacy compared to males.

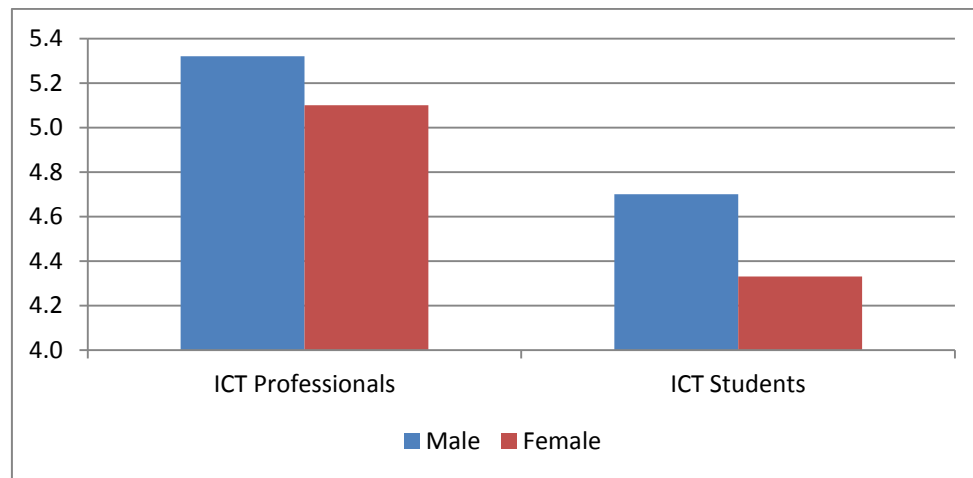


Figure 3 - Career Self Efficacy by Gender

### 1.2.3. Job Satisfaction

- a) Over 3 in 5 ICT professionals reported that they are satisfied with their job.

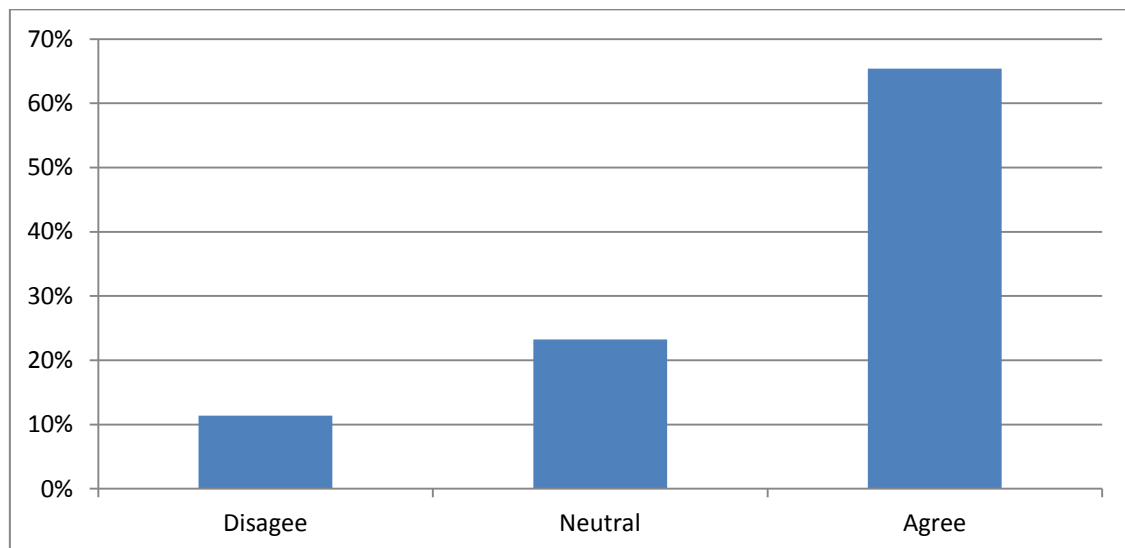


Figure 4 - Job Satisfaction

b) On average, ICT professionals' job satisfaction increases with age.

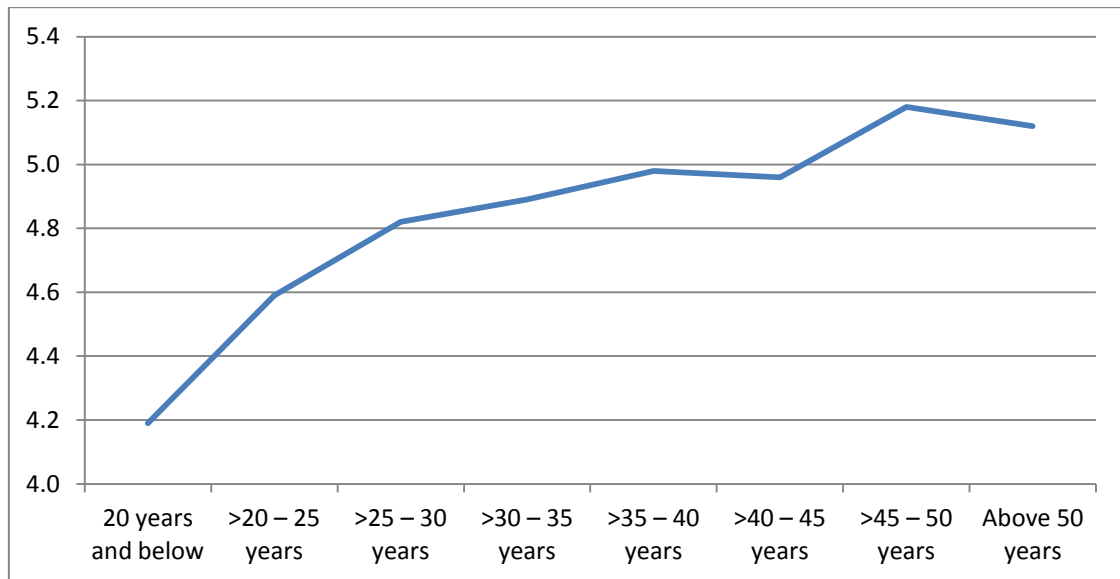


Figure 5 - Job Satisfaction by Age

c) ICT professionals with diplomas and below reported lower job satisfaction, compared to their peers who have higher qualification.

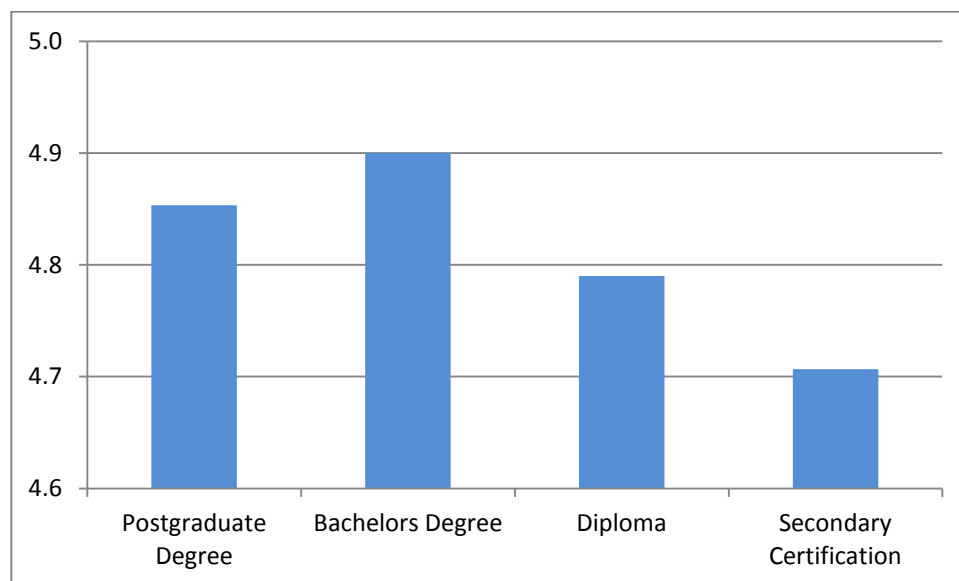


Figure 6 - Job Satisfaction by Highest Educational Level Attained

- d) The job satisfaction levels are the highest among ICT professionals in multinational corporations (MNCs) and public sector organizations; and lowest in large local organizations.

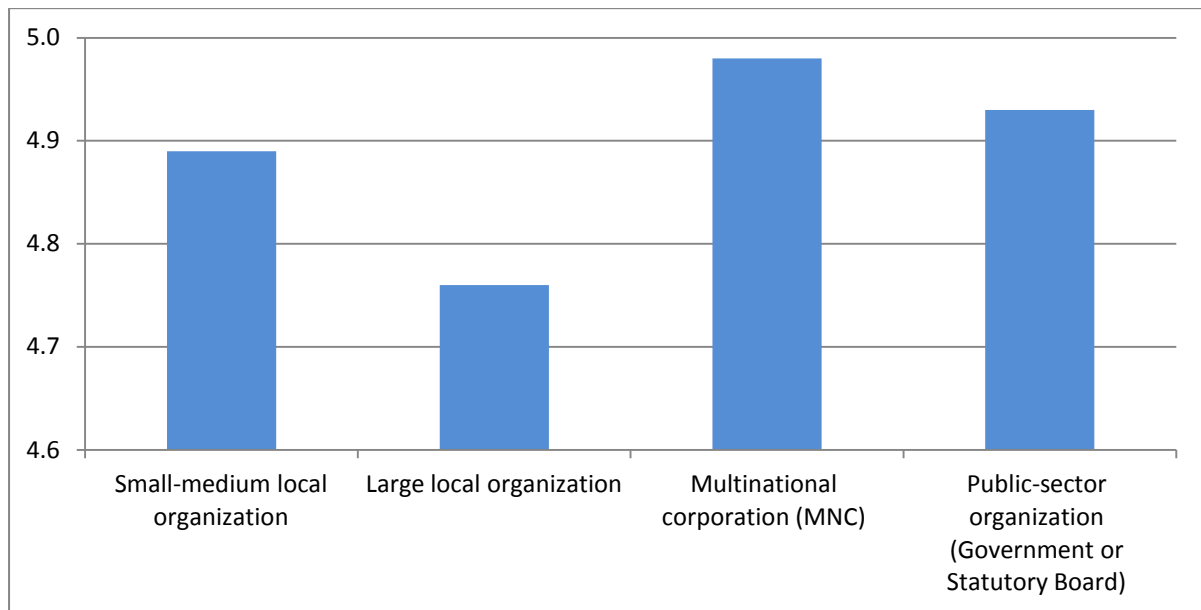


Figure 7 - Job Satisfaction by Organization Type

#### 1.2.4. Turnover and Turnaway

- a) About 3 in 10 ICT professionals reported holding intentions of leaving their current organization/employer.

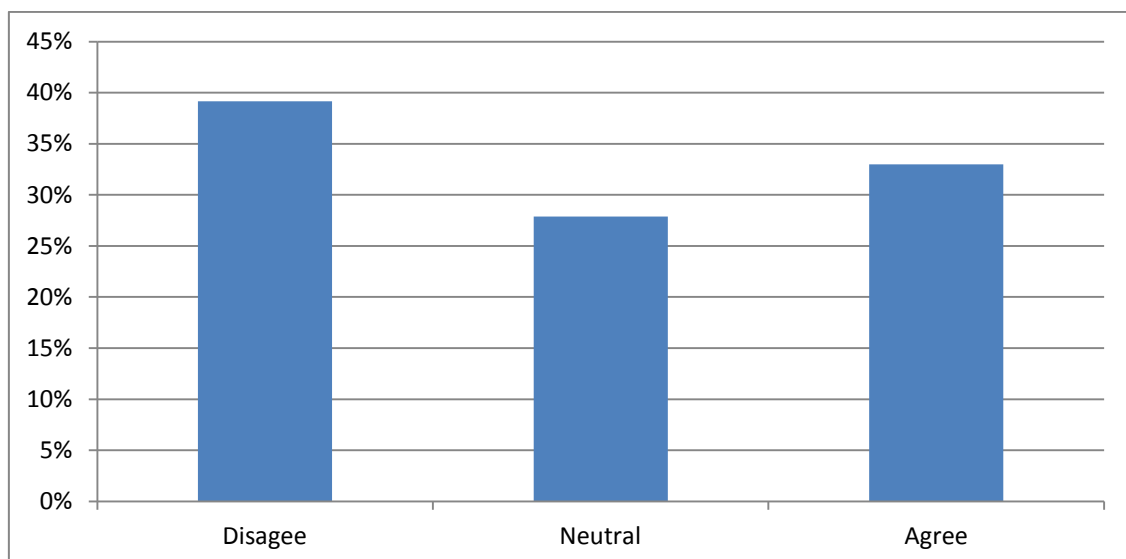


Figure 8 – Turnover Intention



b) About 1 in 5 ICT professionals reported holding intentions of leaving the ICT profession.

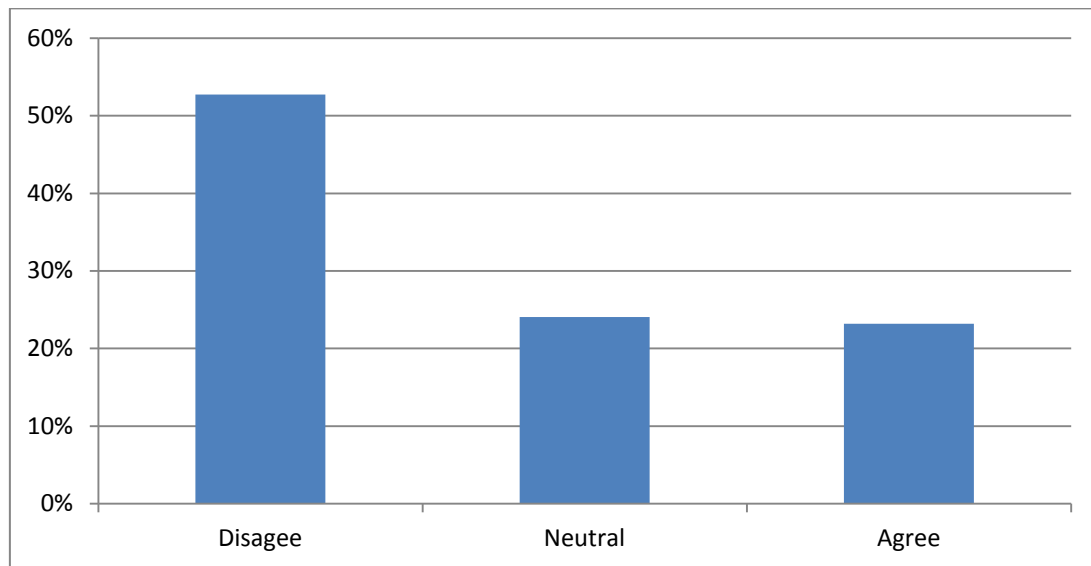


Figure 9 – Turnaway Intention

c) Younger ICT professionals, especially new entrants into the profession, hold stronger intentions to turn away from the ICT profession.

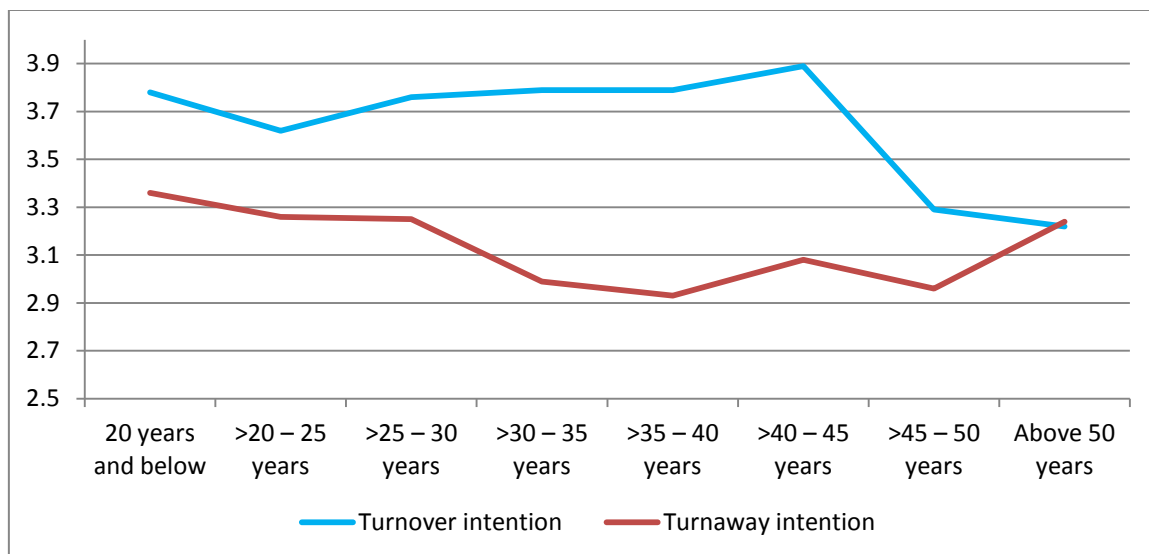


Figure 10 - Turnover and Turnaway Intention by Age

d) New entrants and ICT professionals between the ages 40-45 hold stronger intentions to leave their current employer; ICT professionals over the age of 50 are least likely to leave their current employer but more likely to leave the ICT profession.

e) ICT professionals with bachelors degrees hold stronger intentions to leave their organizations/employers compared to ICT professionals with other educational qualifications.

- f) ICT professionals with secondary school certifications hold the strongest intentions to leave the ICT profession compared to ICT professionals with other educational qualifications.

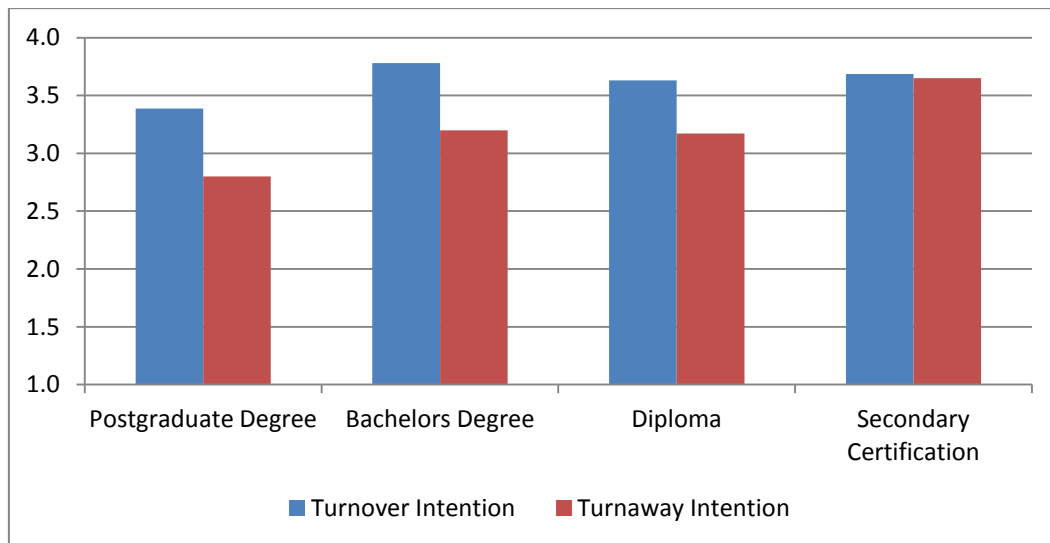


Figure 11 - Turnover and Turnaway Intention by Highest Educational Level Attained

### 1.2.5. Job Preferences

- a) Project management and CIO/CTO are ICT professionals' most preferred job roles.

Table 2 - Top 5 Job Preferences

Rank	ICT Professionals Current Top 5	ICT Professionals Preferred Top 5	ICT Students Preferred Top 5
1	Project Management (20%)	Project Management (19%)	Sales and Marketing (10%)
2	Software Development (12%)	Chief Information Officer / Chief Technology Officer (11%)	Games Development (10%)
3	ICT Management (ex-CIO/CTO) (11%)	ICT Management (ex-CIO/CTO) (11%)	IT Security and Audit (8%)
4	IT Infrastructure Support (7%)	ICT Solutioning and Architecting (7%)	Software Development (8%)
5	IT Research & Development (5%)	Software Development (6%)	Chief Information Officer / Chief Technology Officer (6%)

- b) Both ICT professionals and students prefer to be employed by multinational corporations.

**Table 3 - Job Preferences by Organization Type**

Rank	ICT Professionals Current Top 5	ICT Professionals Preferred Top 5	ICT Students Preferred Top 5
1	Multinational Corporations (36%)	Multinational Corporations (59%)	Multinational Corporations (38%)
2	Public Sector Organization (28%)	Public Sector Organization (15%)	Large Local Organizations (17%)
3	Large Local Organizations (12%)	Large Local Organizations (8%)	Small-Medium Sized Local Organization (15%)
4	Small-Medium Sized Local Organization (9%)	Start-Up Organization (5%)	Public Sector Organization (15%)
5	Non-Profit Organization (5%)	Small-Medium Sized Local Organization (3%)	Start-Up Organization (8%)

- c) Both ICT professionals and students prefer working in the financial services sector.

**Table 4 - Job Preferences by Sector**

Rank	ICT Professionals Current Top 5	ICT Professionals Preferred Top 5	ICT Students Preferred Top 5
1	IT Services (23%)	Financial (21%)	Financial (22%)
2	IT Software Development (11%)	IT Services (18%)	IT Software Development (14%)
3	Education (11%)	IT Software Development (12%)	Public Sector (8%)
4	Public Sector (11%)	IT Research & Development (7%)	Education (8%)
5	Financial (8%)	Education (7%)	IT Research & Development (8%)

### 1.2.6. Professional Development

- a) ICT professionals in SMEs and the public-sector reported undertaking more training than those in other sectors.

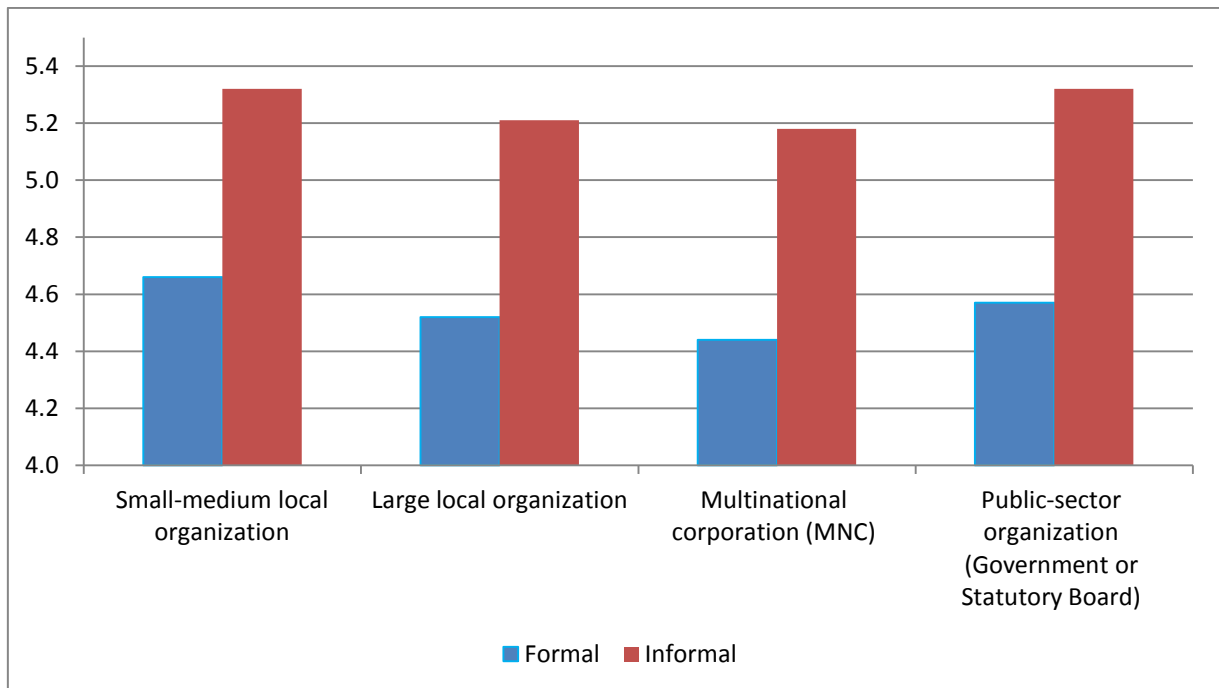


Figure 12 - Formal and Informal Training by Organization Type

- b) ICT professionals above the age of 45 years reported receiving less formal training.

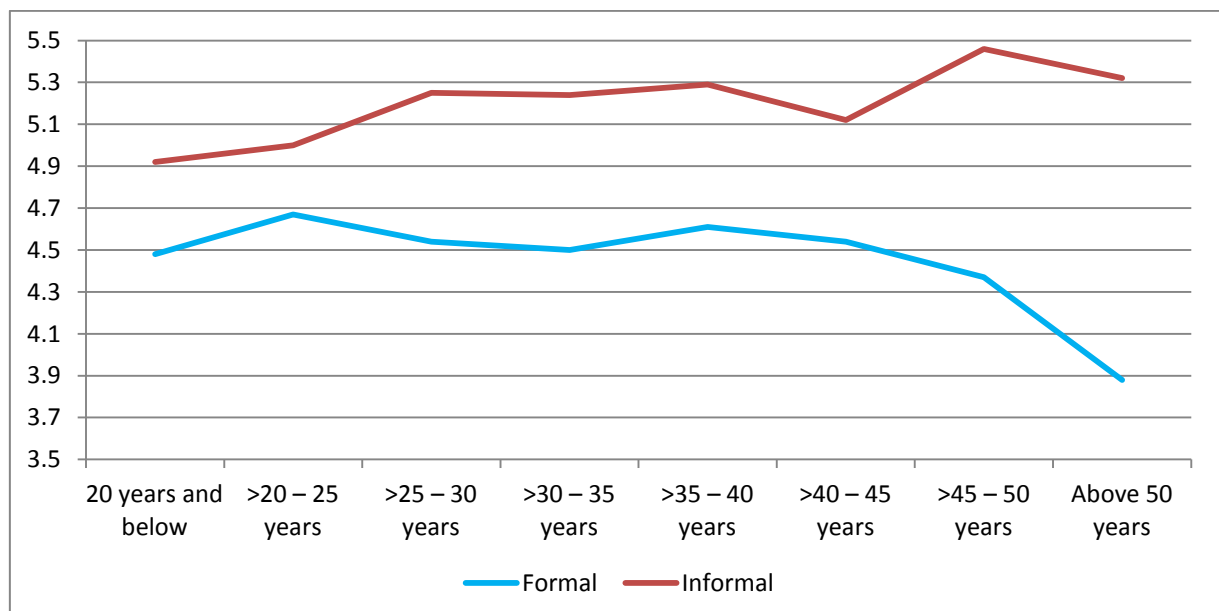


Figure 13 - Formal and Informal Training by Age

### 1.2.7. Training Effectiveness

ICT professionals indicate class room training as the most effective training method; while webinars are perceived to be the least effective training method.

Table 5 - Effectiveness of Training

Rank	Effectiveness of Training Methods
1	Classroom
2	Publications
3	eLearning
4	Seminars / Talks
5	Webinars

### 1.2.8. Perceived Work Life Conflict in Comparison to Other Occupations

We surveyed ICT professionals on their perceptions of the level of work life conflict they experienced, in terms of time-based<sup>2</sup> and strain-based<sup>3</sup> conflicts.

- a) About 1 in 2 ICT professionals reported that they experienced more work life conflict compared to people they know in other occupations.

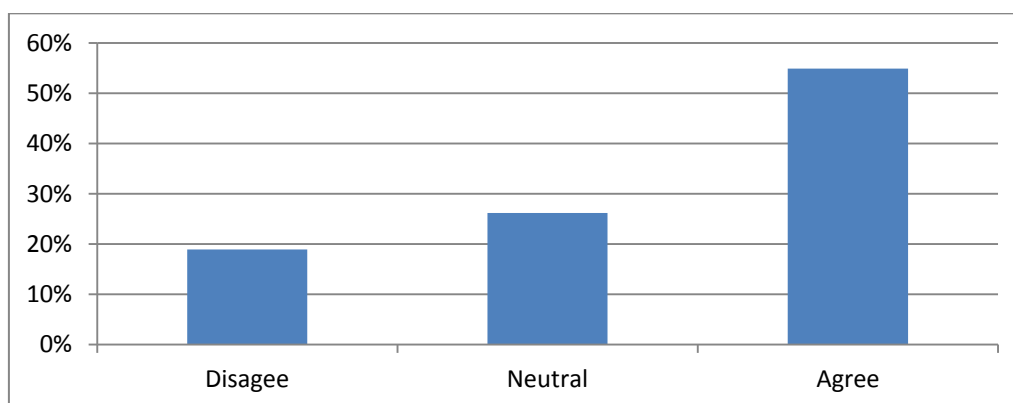


Figure 14 - Work-Life Conflict Compared to Those in Other Professions

<sup>2</sup> Time-based conflict occurs when time pressures of one role prevents an employee from being able to allot time to meet the demands of another role (Greenhaus & Beutell, 1985). Sources of conflict between work and family roles. *Academy of Management Review*, 10, 76-88.

<sup>3</sup> Strain-based conflict occurs when pressure or strain from one role affects how a person performs in another role (Greenhaus & Beutell, 1985). Sources of conflict between work and family roles. *Academy of Management Review*, 10, 76-88.

- b) Overall, work life conflict increases with the age of ICT professionals until they are 45 years.

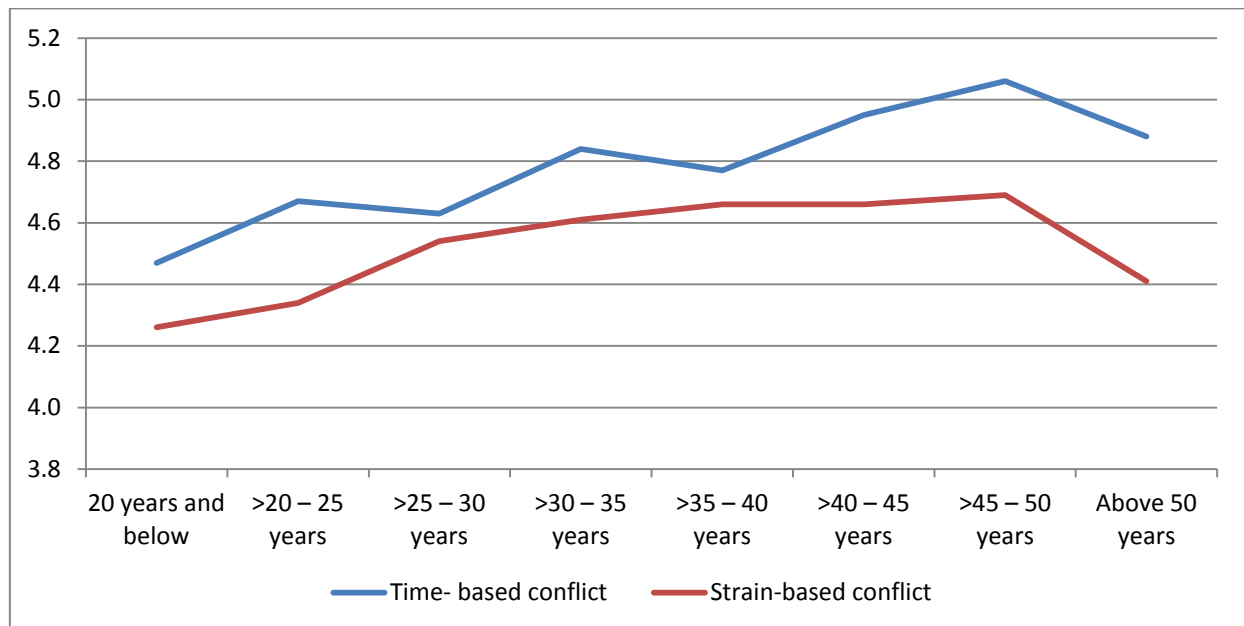


Figure 15 - Time and Strain Based Conflict

- c) ICT professionals reported similar levels of work life conflict (time and strain) across all organization types.

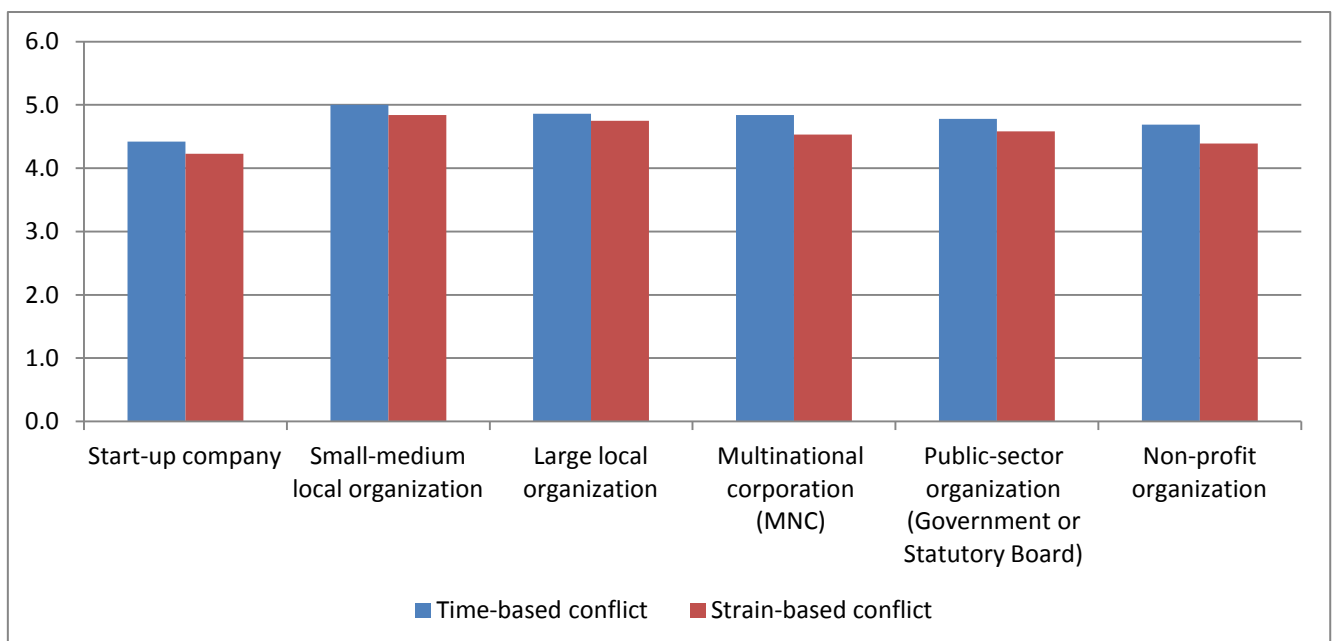


Figure 16 - Time and Strain Based Conflict

### 1.2.9. Work Culture

- a) 1 in 3 ICT professionals reported having temporal flexibility<sup>4</sup>, i.e. having the discretion to schedule work to accommodate non-work issues.

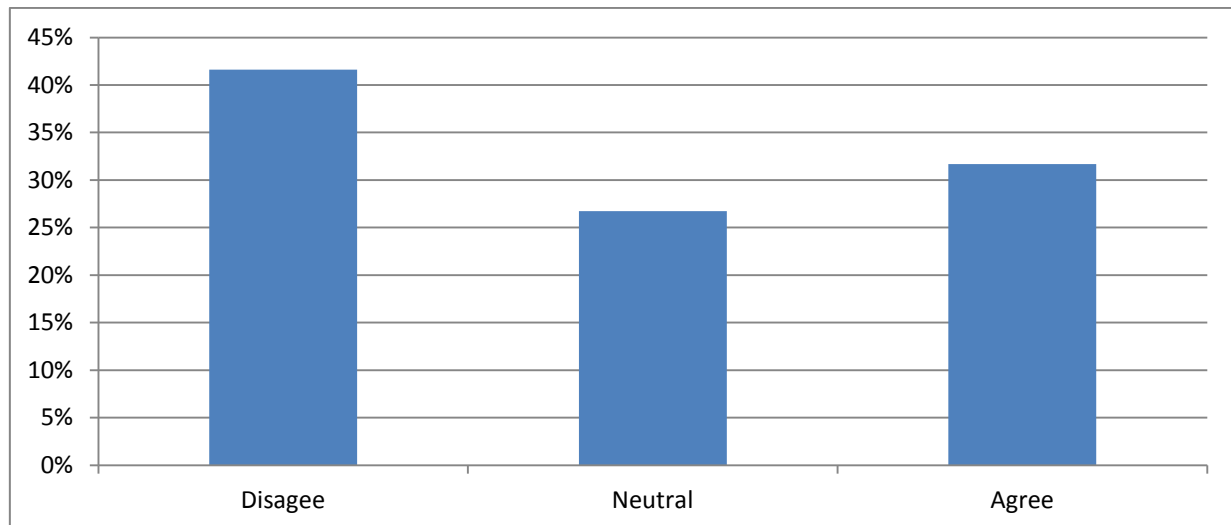


Figure 17 - Temporal Flexibility

- b) About 1 in 2 ICT professionals reported having operational flexibility, i.e. having the discretion to perform work tasks to accommodate non-work issues.

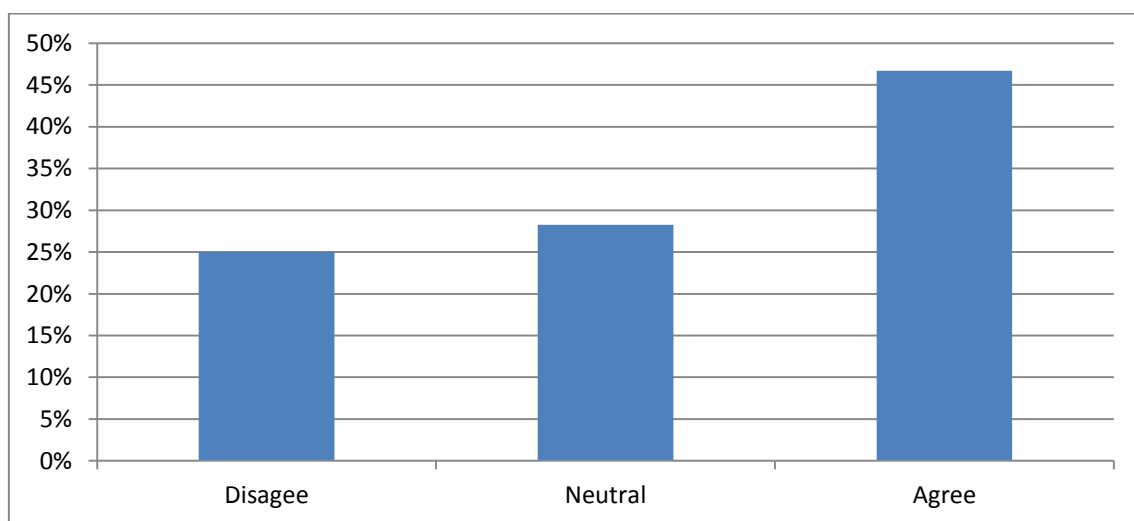


Figure 18 - Operational Flexibility

- c) 4 in 5 ICT students expect to have temporal, operational flexibility and supervisory support.

<sup>4</sup>Temporal flexibility - individuals being able to adjust working hours or work schedules, Clark, S. C. (2001). Work cultures and work/family balance. *Journal of Vocational Behavior*, 58, 348-365

### 1.2.10. National Infocomm Competency Framework (NICF)

- a) 1 in 4 ICT professionals reported that their organizations have adopted the NICF competencies.
- b) Overall, ICT professionals perceived the following as competencies that they were most confident in.

**Table 6 - Top 5 NICF Competencies (most confident)**

Rank	Top 5 Most Confident NICF Competencies
1	Project Management
2	Information Technology Management
3	Requirements Gathering and Process Design
4	ICT Application Design
5	ICT Development and Deployment

- c) ICT professionals perceived the following as competencies that they were least confident in.

**Table 7 - Top 5 NICF Competencies (least confident)**

Rank	5 Least confident NICF Competencies
1	Computer Forensics
2	Network Planning
3	IT Audit
4	Database Management
5	ICT Marketing

### 1.2.11. Source of Career Information

- a) Top 5 sources of career information for ICT students are:

**Table 8 - Top 5 Sources of Career Information**

Rank	Sources of Career Information
1	Teachers
2	Peers
3	Mass Media
4	Books/Magazines/Career Guides
5	Job Advertisements



- b) Top 5 sources of positive and negative information for ICT students are:

**Table 9 - Top 5 Positive and Negative Information**

Rank	Sources of Positive Career Information	Sources of Negative Career Information
1	Teachers	Peers
2	Peers	Family members
3	Mass Media	Mass Media
4	Books/Magazines/Career Guides	Other family members
5	Job Advertisements	Books Magazines

### 1.2.12. Role Model

- a) 8 in 10 ICT students consider role models as important.
- b) Top 5 characteristics of a role model for polytechnic and university students include:

**Table 10 - Characteristics of a role model**

Rank	Characteristics of role model – Polytechnic	Characteristics of role model - University
1	A high flier in the ICT profession	Professionally competent
2	A visionary in the ICT profession	A technology expert in the ICT profession
3	Commitment to acting for others' good	Honesty/integrity
4	Interest outside the ICT profession similar to my own	A visionary in the ICT profession
5	A technopreneur in the ICT profession	Communicates well with others

### 1.3. Concluding Remarks

1. Following the findings, workforce agencies could device more nuanced strategies towards attracting and retaining valued ICT professionals and students (Figure 19):
  - a. Salary and career advancement may be considered as fundamental factors as these are the top two consistent factors in attracting and retaining ICT professionals.
  - b. The remaining factors may be considered as differentiators in motivating ICT professionals towards a long career in the ICT profession.

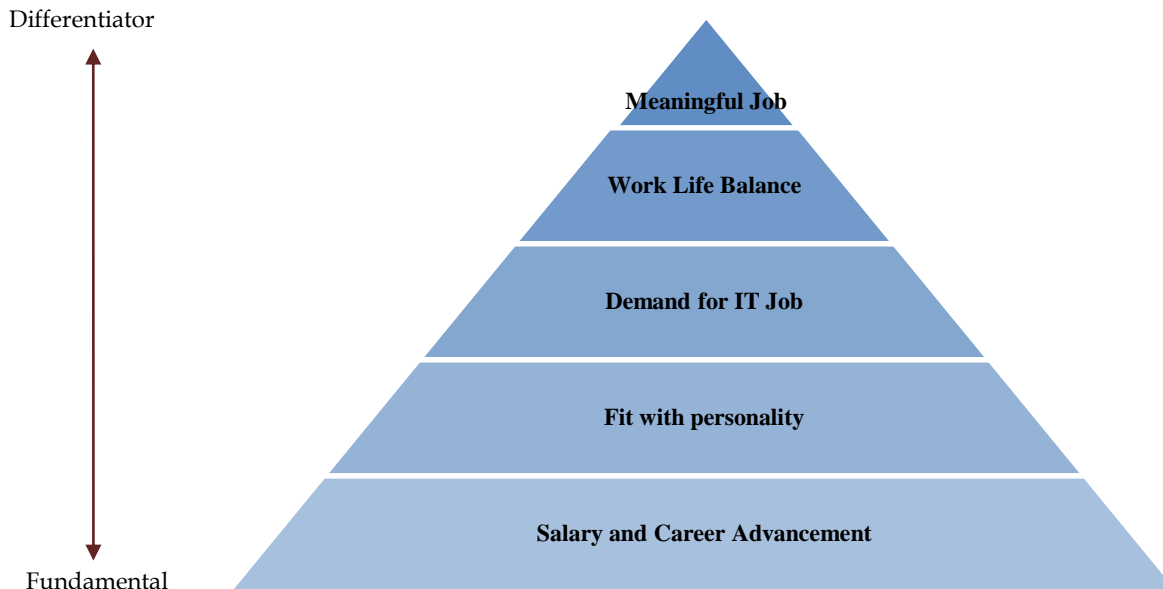


Figure 19

In addition, the results show that ICT professionals who report receiving more training (formal and informal) and mentoring/development opportunities (e.g. being tasked with challenging assignments) also report higher levels of self-efficacy compared to ICT professionals who report receiving less training and development. In turn, ICT professionals who are confident in their ICT competencies are also more satisfied with their job and careers.

The implication of the above findings is that organizations which provide and/or support training and development opportunities are more likely to retain valuable IT talent (as depicted in the graph below).



Figure 20