

National ICT Workforce Survey

e-SRI LANKA DEVELOPMENT PROJECT

Cr : 3986-CE

ICTA/CON/QCBS/P1/248

January 2010

Survey conducted on behalf of the ICT Agency of Sri Lanka

and implemented by

MG Consultants (Pvt) Ltd.

ACKNOWLEDGEMENTS

We wish to acknowledge the Information and Communication Technology Agency of Sri Lanka (ICTA) for taking an initiative to conduct a national survey on the ICT workforce in Sri Lanka in the year 2009 and the World Bank for their support and assistance. We also take this opportunity to thank all institutions and individuals for their valuable contributions and assistance extended to us in successfully carrying out the 3rd successive Workforce Survey.

We thank Mr Lalith Weeratunga, Secretary to His Excellency the President for his support in encouraging the respondents to furnish timely and accurate information in compiling this survey.

We greatly appreciate the unstinted support given by Mr. Reshan Dewapura, Chief Operating Officer and Mr. Jayantha Fernando, Programme Director/ Legal Advisor of the Information and Communication Technology Agency of Sri Lanka (ICTA) and the cooperation extended to us to complete this study successfully.

We are grateful to Mr. Jagath Seneviratne, Program Head, Monitoring and Evaluation, ICT Agency for his professional support, technical guidance, encouragement and continuous feedback extended to us throughout the study. We also wish to thank Mr. Fayaz Hudah, Program Head, Private Sector Development and Mr. Indika Siriwardhana, Monitoring and Evaluation Consultant of ICT Agency of Sri Lanka for the comments and the assistance given to ensure the completion of this study in a highly satisfactory manner.

We would like to express our special gratitude to Mr. Nalina Wijesundara, members of the SLASCOM, IT and BPO Industry Experts and the steering committee members for their valuable contribution, technical guidance and feedback in questionnaire development, sample selection and data validation.

The IT, Non IT, BPO, Government and IT Training Institutes who provided the information and responded to our questionnaire, undoubtedly served as the nucleus of this study. We sincerely thank all of them and highly appreciate their contribution towards this venture of national importance.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	i
TABLE OF CONTENTS	ii
LIST OF FIGURES	iv
LIST OF TABLES.....	v
EXECUTIVE SUMMARY	vi
CHAPTER 1 - INTRODUCTION	1
1.1 e-Sri Lanka Development Project (e-SLDP)	1
1.2 National ICT Workforce Survey	2
CHAPTER 2 - SURVEY METHODOLOGY	4
2.1 Sample Frame Development and Sample Selection.....	4
2.2 Design of the Questionnaires and Field Testing	6
2.3 Survey Field Staff Training and Awareness Creation.....	6
2.4 Data Collection, Field Monitoring and Quality Assurance.....	6
2.5 Data Entry and Processing, Analysis and Reporting.....	8
2.6 Limitations of the Survey	8
CHAPTER 3 - DEMAND AND SUPPLY OF IT WORKFORCE.....	10
3.1 Highlights of the Previous 'National ICT Workforce' Survey	10
3.2 Overall Growth of ICT Workforce.....	11
3.2.1 Growth of IT Workforce by Sector.....	12
3.2.2 Growth of IT Workforce by Job Category	13
3.2.3 IT Workforce by Job Category in each Sector.....	15
3.2.4 IT Workforce by Gender and by Level of Experience	17
3.2.5 Attrition and Brain Drain of IT Workforce by Sector.....	18
3.3 Demand and Supply of IT Professionals.....	18
3.3.1 Demand and Supply of IT Graduates	18
3.3.2 Supply of IT Professionals with Other Qualifications.....	21
3.3.3 Recruitment and Retention of IT Professionals.....	22
3.3.4 Salary Scales of IT Professionals	23
3.4 Courses Conducted, Skills and Training Provided by Training Institutes.....	24
3.4.1 Improving the Quality of Courses offered by Training Institutes	25
CHAPTER 4 - ITES / BPO SECTOR.....	27
4.1 Global ITES / BPO Industry	27
4.2 ITES / BPO Industry in Sri Lanka.....	27
4.2.1 ITES / BPO Sector Composition	28
4.2.2 ITES / BPO Services Provided	29
4.3 ITES / BPO Workforce.....	29
4.3.1 ITES / BPO Employees by Gender and Age.....	30
4.3.2 ITES / BPO Employees by Job Category.....	30
4.3.3 ITES / BPO Employees by Level of Experience.....	31
4.3.4 Attrition of ITES / BPO Sector Employees	31

4.4	Education and Retention of ITES / BPO Sector Employees.....	31
4.4.1	Academic Qualifications of ITES / BPO Sector Employees.....	32
4.4.2	Recruitment of ITES / BPO Sector Employees	32
4.4.3	Entry Level Credentials for ITES / BPO Sector Employees.....	33
4.4.4	Skills Deficient in New Recruits in ITES / BPO Sector	33
4.4.5	Skills Required in ITES / BPO Sector Employees	33
4.4.6	Means of Skills Development in ITES / BPO Sector Employees	34
4.4.7	Means of Retaining ITES / BPO Sector Employees.....	34
4.4.8	Salaries of ITES / BPO Sector Employees	35
4.4.9	Period of Employment of ITES / BPO Sector Employees.....	35
CHAPTER 5 - ICT USAGE IN SRI LANKA.....		37
5.1	ICT Usage in Business	37
5.1.1	Usage of Internet and Websites.....	39
5.1.2	Services Offered through Websites	41
5.1.3	Business with Customers via Electronic - Commerce	41
5.2	Usage and Awareness of Licensed Software.....	43
5.3	Awareness on Intellectual Property Laws and Acts of Sri Lanka.....	45
5.4	Connectivity and Networking	47
5.5	Analysis of Budget Allocations for ICT Activities	48
5.6	Benefits to the Organization by interventions of ICT	50
CHAPTER 6 - CONCLUSIONS.....		51
REFERENCES		57
ANNEX		
Annex 1	- Questionnaire for ICT Human Resources and ICT Usage in IT, Non IT and Government Organizations	
Annex 2	- Questionnaire for ICT Human Resources, BPO Human Resources and ICT Usage in BPO Sector	
Annex 3	- Questionnaire for ICT Human Resources and ICT Usage in Training Organizations	

LIST OF FIGURES

Figure 1 : Overall IT Workforce Growth Trend 2003 - 2010	11
Figure 2 : Growth of the IT Workforce by Sector 2003-2010	12
Figure 3: IT Workforce by Job Category in 2006 and 2009	14
Figure 4 : Overall IT Workforce in 2009 by Sector.....	15
Figure 5 : Overall IT Workforce by Job Category.....	15
Figure 6 : Programming / Software Engineers in each Sector.....	16
Figure 7 : IT Workforce by Job Category in the IT Sector	16
Figure 8: IT Technical Support in each Sector.....	17
Figure 9: IT Workforce by Level of Experience.....	18
Figure 10: Breakdown of the Supply of IT Graduates.....	20
Figure 11: Demand and Supply of IT Graduates	20
Figure 12: Sector wise Demand for IT Graduates in 2010	21
Figure 13 : Graduates with IT Masters Degrees and Post Graduate Diplomas	21
Figure 14: Academic Qualifications of Teaching Staff	25
Figure 15 : Level of Experience of the Academic Staff	26
Figure 16: Course Delivery Arrangement of IT Teaching Staff.....	26
Figure 17 : BPO Services Provided	29
Figure 18 : Growth of ITES / BPO Workforce	29
Figure 19: ITES / BPO Employees by Age Group	30
Figure 20 : Percentage of ITES / BPO Employees by Job Category	30
Figure 21: ITES / BPO Employees by Level of Experience.....	31
Figure 22: Relationship between Education and Retention	31
Figure 23 : Academic Qualifications of ITES / BPO Employees.....	32
Figure 24 : Usage of computers in day to day Business Activities	37
Figure 25 : Purpose of Using ICT	38
Figure 26 : Use of ICT for Back Office Operations	38
Figure 27: Use of ICT for Business with Customers.....	39
Figure 28 : Purpose of Using Internet by Sector.....	39
Figure 29 : Availability of Websites	40
Figure 30 : Use of Websites in Government Sector	40
Figure 31 : Languages of Websites	40
Figure 32 : Services offered through Websites.....	41
Figure 33 : Services Offered through Websites by Sector.....	41
Figure 34 : Areas of Business with Customers via Electronic - Commerce by Sector	42
Figure 35 : Organizations having Secured Transaction Certificates	43
Figure 36 : Awareness on Software Licence	44
Figure 37 : Awareness on Types of Licensed Software	44
Figure 38 : Usage of Licensed Software by Sector	45
Figure 39: Awareness on Intellectual Property Laws.....	46
Figure 40 : Awareness on Intellectual Property Act of Sri Lanka.....	46
Figure 41 : Sources of Information on Intellectual Property Act	46
Figure 42 : Types of Connectivity used by Organizations	47
Figure 43 : Types of Networking Systems Used in Organizations.....	48
Figure 44: Benefits to the Organization by Interventions of ICT	50

LIST OF TABLES

Table 1: Information Sources for Developing the Sample Frame	4
Table 2: Summary Details of the Sample	5
Table 3: Questionnaires for Different Sectors	6
Table 4: Questionnaire Response Rate	7
Table 5: Most Frequently Requested Minimum Academic Qualification	19
Table 6 : Skills in Demand for IT Professionals	22
Table 7: Means of Retaining Employees	23
Table 8 : Salaries of Entry Level IT Recruits.....	23
Table 9: Most Featured IT Related Courses and Skills Taught by Training Institutes	24
Table 10 : Preferred Channels of Recruiting ITES / BPO Sector Employees	32
Table 11: Preferred Entry Level Credentials for ITES / BPO Sector Employees	33
Table 12 : Skills Deficient in New Recruits in the ITES / BPO Sector	33
Table 13 : Primary and Complementary Skills Required in the ITES / BPO Sector	34
Table 14: Means of Skills Development for Career Advancement	34
Table 15 : Means of Retaining ITES / BPO Sector Employees	35
Table 16 : Salary range of ITES / BPO Sector Employees by Job Category	35
Table 17: Acceptable Period of Employment by Job Category	36
Table 18 : Barriers Faced by Organizations	42
Table 19 : Use of Software Applications	43
Table 20 : Awareness on Types of Software Licences	44
Table 21 : Mean Expenditure per Year (2008).....	49
Table 22 : Mean Budget Allocation per Year (2009).....	49
Table 23 : Mean Expenditure per Year (2009).....	49
Table 24 : Mean Budget Allocation per Year (2010).....	50

EXECUTIVE SUMMARY

ICT is pivotal for the socio economic development of the country. To plan for future development, it is necessary to determine the available employment opportunities, human resources and the level of ICT usage in the country. The present survey is conducted by the ICT Agency of Sri Lanka, not only for comparison with the previous surveys conducted in 2004 and 2007 but also to capture necessary information on the workforce of the Business Process Outsourcing (BPO) / IT Enabled Services Sector (ITES) and level of ICT usage in business.

The sampling frame used in this survey covered all the economic sectors; IT, non-IT, Government, BPO / ITES and IT Training. Sector specific questionnaires were developed to gather more relevant data and information. The average response rate of all sectors improved vis -a-vis the last survey from 72% on average to 86%.

Growth of ICT Workforce

The average annual growth rate of the IT workforce from 2003 to 2006 is 25% with an increase of nearly 4,800 entrants each year. From 2006 to 2009 it reduced to 12.5% which is an increase of merely 4,200 each year. However, the IT workforce in 2009 was 42,821 and it is estimated to grow to about 50,000 by the end of 2010, which is an estimated growth rate of about 17%. Highlights of this survey are as follows:

- An increase in the workforce by 7,338 is estimated for 2010, with a distribution of 4,087 (56%) in IT, 2096 (29%) in non-IT, 614 (8%) in the Government and 541 (7%) in the BPO sectors.
- In the IT Enabled Services (ITES) / Business Process Outsourcing (BPO) sector an increase from 1,201 in 2008 to 1,677 in 2009 is observed, which is an increase of almost 40%. From 2009 to 2010 it is estimated to climb up to 2,218 which is an increase of 33%.
- Programming and Software Engineering accounts for about one fourth (26%) of the IT workforce and Technical Support is the second largest job category with 17% followed by 11% of System and Network Administrators across all sectors in the IT workforce.
- From 2006 to 2009, Management Information System/IT Management and Systems workforce increased from 5% to 9% and Network Administration workforce increased from 7% to 11%. However, Software Quality Assurance Professionals decreased from 13% in 2006 to 7% in 2009.
- 55% of the IT professionals have more than 3 years experience and the balance 45% are with less than 3 years experience.
- The overall attrition rate is about 7% and the brain drain is about 4% among the IT Workforce in 2009. The attrition rate of IT Workforce in the IT Sector is relatively high with 11%.

Demand and Supply of IT Professionals

A “Good Compensation Plan” is the key factor to retain employees within all the sectors. In IT and non-IT sectors the work environment is also important, whereas, in the Government sector it is job security which is considered as the other most important factor. From the point of view of the employers, the findings related to employment and training are;

- Bachelor’s Degree is the preferred minimum academic qualification required for MIS / IT Management, Solutions & Technical Architect, IT Research & Development, Business Analysis & Systems Integration, Programming / Software Engineering and Software Quality Assurance job categories of IT professionals.
- The demand for IT Graduates for all the sectors for 2010 is predicted to be about 3,970, which is less than the estimated supply of 4,473 (3,681 IT and 792 IT Major).
- Most organizations in IT, non-IT and BPO sectors consider that soft skills are important in recruiting IT employees although the Government sector gives higher priority to the Core Skills in recruitment. Employers find that essential soft skills are lacking in employees, with Communication Skills being the most wanting.
- Based on the responses in all the sectors, the salaries offered for newly recruited IT professionals range from Rs. 10,000/- to 20,000/- in most of the job categories. With experience, the salary scales of IT personnel increase at a faster rate especially in the IT sector followed by the non-IT sector. However, in the Government sector the salaries increase at a slower pace.
- It is observed that the most experienced teaching staff is attached to the Government Universities and private degree awarding institutions. Teaching staff with 4 - 7 years of experience is about 27% and over 8 years experience is 20%. However 30%-40% of the most experienced IT teaching staff is working on part-time basis.

ITES / BPO Sector

The BPO industry began circa 2000 in Sri Lanka with many companies emerging within the last 5 years. With the addition of Sri Lanka to the Global Services Location Index (GSLI) in 2007 and Sri Lanka’s GSLI ranking climbing up from 29th to 16th from 2007 to 2009, a steady expansion is shown in the BPO sector with Sri Lanka being recognized as an outsourcing destination. The status of the BPO sector according to the information obtained is as follows

- The ITES/BPO sector in Sri Lanka provides 20% on-shore services, 44% off-shore services, and 36% both services. 48% of operators are captive market operators and 52% are non-captive market operators.
- Transaction processing / document management is the most popular with 32% of the services provided, where accounting services is about 31% and call centre services is 20%.
- The projected total ITES/BPO workforce was 11,384 at the end of 2009 and the average annual growth is determined to be 42%. In this sector the male to female ratio is 57% to 43% and employees are mainly in the age groups of 21 - 25 years (37%) and 26 – 30 years (33%).

- The BPO sector being relatively new and an emerging industry in Sri Lanka, nearly 88% of the employees are operational staff with 1-3 years experience and have an attrition rate of about 17%. They are mainly recruited through newspaper advertisements.
- The BPO industry provides employment for people with varying skills and academic qualifications. 43% are GCE A/L qualified, 24% are Diploma or Higher Diploma holders, 15% are with professional qualifications whilst only 13% and 2.5% are graduates with Bachelor's Degree and Master's respectively.
- In the ITES / BPO sector, managerial employees are mainly recruited by references. English is the essential primary qualification and proficiency in communication is the most important complementary skill needed in these employees.
- For operational staff, technical skills are primarily essential whilst positive attitude is a very important complementary skill to perform their jobs effectively. However, these skills are the most wanting in new recruits to the ITES/BPO sector.
- Most BPO companies consider "On the job Training" as the best means of skills development followed by "Formal In-house Training" and "BPO Related Trade Certification" as the next preferred method of skills development in the BPO sector.

ICT Usage in Business

The use of computers in day to day business activities is a key factor in ascertaining the usage of ICT in business. Therefore, the findings of this study given below are expected to provide information and data on the usage of ICT in business in Sri Lanka which will be useful for policy level decision making in the Private Sector Organizations and in the Government Sector.

- Over 50% of all Senior and Middle level staff in all the sectors use computers for more than 75% of day to day activities. Over 70% – 90% of all Senior, Middle and Junior level staff in IT and BPO sectors use computers for more than 75% of day to day activities.
- Nearly 90% in IT and BPO sectors use ICT for both "Back Office Operations" and "Business with Customers", whereas the usage for both purposes by other sector is in the range of 52% to 64%.
- Around 85 % of the respondents use ICT for financial management, 60% for human resource management and 52% for inventory management in their day to day back office operational activities.
- On average 63% out of the Organizations which use ICT for Business with Customers use ICT for Customer Services/help desk, 62% use for Information and Marketing and 57% use websites for Promotional Activities.
- About 94% of the organizations use the internet for communication purposes, 55% for business activities with customers followed by 45% for research purposes.
- More than 95% of BPO and IT sector organizations and nearly 90% of Government and IT Training organizations maintain websites.
- 86.7% of the websites are available only in English. However, 30% of Government organizations maintain their websites in all three official languages.

- On average nearly 90% of the websites are used to provide information, 43% of organizations provide facilities to download files and application forms and 35% of websites offer customer services. Files and application forms can be downloaded from more than 60% of Government organizations and IT Training Institutes.
- Data indicate a limited usage in areas of business activity via electronic – commerce, with internet marketing being the most prominent with an average of 29%. The high cost of infrastructure followed by the high cost of bandwidth are the main barriers faced in using electronic - commerce in business activities.
- 44% of the BPO companies followed by 28% of the IT companies have obtained secured transaction certificates (SSL, TLS, etc.) in carrying out business transactions in electronic commerce.
- Use of proprietary operating systems and productivity tools are very high in all sectors with an average of 96%. Free and open source software is also commonly used in all sectors with an overall average of 30%.
- 95% of the organizations are aware on the restrictive use of software and the need to use licensed software.
- It is a notable fact that almost all the respondents of the BPO sector have stated that they use only licensed software, whereas 80% of the IT sector respondents have stated that only about 75% of the software they use are licensed.
- 90% of the respondents are aware of Intellectual Property Laws and 75% are aware of the Intellectual Property Act of Sri Lanka.
- Media (Print, TV, Radio, etc.) is found to be the most prominent source of information on the Intellectual Property Act for about 66% of the respondents.
- It is observed that 37% of the organizations use 2 Mbps ADSL connectivity followed by 32% of the organizations using 512 Kbps ADSL connectivity.
- Nearly 1/3rd of organizations have wide area networks (LAN/WAN) but only about 22% of the Government organizations have access to wide area network (LAN/WAN).
- Analysis of Budget Allocations for ICT activities shows that investment / spending on ICT is high in IT and non-IT sectors compared to other sectors. Budget on ICT training is low in all sectors other than in the IT sector. Budget allocated for ICT software, (upgrades and maintenance) and hardware (upgrades and maintenance) is comparatively high.

CHAPTER 1 - INTRODUCTION

1.1 e-Sri Lanka Development Project (e-SLDP)

During the past three decades, the economy of Sri Lanka has aligned more towards the service sector and ICT skills are a fundamental requirement of a service and industry oriented economy. The Government of Sri Lanka has clearly identified ICT as a priority area and interventions are made through various projects and programs to popularise ICT education. The e-Sri Lanka initiative of the Government is the most notable as it promotes ICT awareness at grass root level and ICT literacy thus developing the economy of the country, reducing poverty and improving the quality of life. This initiative will be realized through a programme strategy which encompasses ICT Policy, Leadership and Institutional Development, Information Infrastructure, Re-engineering Government, ICT Human Resource Development, ICT Investment and Private Sector Development, and e-Society.

The task of implementing the e-Sri Lanka Programme has been entrusted to the Information and Communication Technology Agency of Sri Lanka (ICTA). ICTA was established in July 2003 and it is the apex ICT institution of the Government, funded by World Bank and other donors, presently functioning within the purview of the Presidential Secretariat. Since the e-Sri Lanka Programme requires coordination among various government agencies, the legal mandate given to it ensures the coordination of work across Ministries and levels of Government to implement the e-Sri Lanka programme.

The e-Sri Lanka programme is supporting mass IT literacy through the e-Government, e-Citizen, International Computer Driving License programmes (ICDL) and Nenasala Programmes. The preliminary phase targets 100,000 citizens in an initial bid to increase ICT literacy level which is currently estimated to be around 20%. It is expected that an additional 400,000 citizens will have mastered basic ICT skills in the next 3 years with a view to achieving a national target of 60% ICT literacy¹. Under the e-Sri Lanka programme three Nenasalas will be set up in each Divisional Secretariat making a total of almost 1000 across the country and to date, about 600 have been established. Nenasalas are Tele-centres, equipped with 2-4 computers with UPS, a scanner, a printer and subsidized internet connectivity, which provide computing services to the community.

Beside these interventions, the Government has established the e-government programme through which all Government Departments are expected to develop web access for public use. Already some Government Departments, such as the Sri Lanka Customs, the Department of Immigration and Emigration, and District and Divisional Secretariats use computers and internet effectively. Similarly most of the Sri Lankan News Papers, Television and Radio channels are now accessible through the World Wide Web. ICTA also facilitated the development of most of the Government websites. To make it more effective, most citizens have to acquire basic IT skills to use these websites.

The World Economic Forum's Global Information Technology Report of 2008-2009 highlights its Networked Readiness Index (NRI) of 134 countries². The NRI is defined as the degree of preparedness of a nation or community to participate in and benefit from ICT developments and is composed of three indices which assess the following: the environment for ICT offered by a given country or community, readiness of the community's key stakeholders (individuals, businesses, and Governments), and usage of ICT among these stakeholders. Sri Lanka ranked 83rd in 2005/6 out of 115, 79th in 2007/8 out of 127 and 72nd in 2008/9 out of 134 improving its ranking progressively during the past 3 years. However, it is lagging behind other middle income countries, viz. Malaysia, Thailand, India, China, Mexico, and Vietnam and in order to improve the environment to provide ICT accessibility to all, the Government through its e-Sri Lanka initiative will also support the subsidized roll-out of a national backbone by 2012 which will be readily available to all telecommunication companies including those who have not previously ventured into rural areas because of perceived cost-effectiveness issues.

As evidenced by the increasing importance of the service sector, Sri Lanka's future in the global knowledge economy depends critically on the country's intellectual and human capital. Currently, Sri Lanka ranks 88th out of 145 countries on the Knowledge Economy Index (KEI) with a value of 4.17 in 2009, which measures the overall development of a country towards the knowledge economy³. This is higher than the average KEI for lower middle-income countries (3.78), and also has the highest KEI among South Asian countries, which is an average of 2.58. To ascend to a higher level from the current position, it is necessary to strengthen economic activities and thereby improve the socio economic development of the country⁴.

1.2 National ICT Workforce Survey

As explained above, ICT is pivotal for the socio economic development of the country and to plan for the future it is necessary to determine the available employment opportunities, human resource availability, and ICT usage in the country. However, until the first national ICT workforce survey was carried out, the quantity and quality of information about the ICT workforce of Sri Lanka has been limited and fragmented. Sri Lanka ICT Association (SLICTA) initiated the '2004 ICT Workforce Survey'⁵, in close collaboration with the USAID sponsored 'The Competitiveness Programme' (TCP) in order to gain a clear understanding of the extent and the composition of IT workforce in Sri Lanka and to evaluate it against the extent of the supply of skilled personnel.

In 2006, the second survey was implemented by SLICTA and TCP with the technical support and financial contribution of ICTA⁶. This survey enabled the IT suppliers, ICT user organizations and the public sector to obtain a realistic picture of the overall demand and supply of IT human resources.

It has been realized that the demand for both survey reports was very high from universities and other IT training institutions so that what they offer could be improved, students could make better course selections that will lead to employment

in the IT Industry, IT training organizations could align their training courses in-line with the market requirements, potential investors could have very important information about the IT workforce which would help them make their investment decisions. Donors of development projects could evaluate impacts of their programmes.

For the continuation of the survey ICT Agency of Sri Lanka (ICTA) has decided to carry out the third ICT workforce survey in 2009 considering it as a national requirement and as one of its mandates. The present survey is aimed at bridging the information gap between demand and supply of ICT workforce in Sri Lanka by having access to information such as, overall size of the ICT workforce, its composition, jobs in demand, the skills required to perform each job category, the state of the supply pipeline of IT professionals provided to the IT industry and methods in use for retaining IT workers. The survey will also capture necessary information on the workforce of the BPO / IT Enabled Services Sector and the level of ICT usage in business.

The “ICT Usage in Business” subcomponent has been added to the survey while keeping the possibility of comparing the “workforce component” with previous survey rollouts. The secondary objective of adding this section is to gather necessary information to evaluate outcomes and impacts of ICTA programmes, specially industry promotion and private sector development initiatives coming under ICT Capacity Building Program (ICBP) as ICTA is successfully completing several project activities towards development of private sector, ICT industry and BPO sector.

Therefore, this survey will replicate and build on the two surveys already completed in 2004 and 2006 which would enable a longitudinal study of the nature of the ICT workforce and training. Information on ICT usage in business would also enable for multi-country comparison of the status of ICT usage by businesses. However, the information on BPO sector and ICT usage in business will become a baseline as these sectors have not been captured in the previous surveys.

CHAPTER 2 - SURVEY METHODOLOGY

2.1 Sample Frame Development and Sample Selection

A comprehensive sampling frame was developed to include all the economic sectors relevant to the survey covering the following sub samples.

- Government Bodies (Ministries, Departments, Statutory Bodies)
- IT (Information Technology) Companies
- Non IT Sector (agriculture including fisheries; apparel; freight forwarding; financial services, insurance & banking; construction & architecture; hotels, services, & tour operators; whole-sale & retail-trade, and manufacturing)
- IT BPO (Business Process Outsourcing) /IT Enabled Services (ITES) Companies
- IT Training Organisations (Universities, Degree Awarding and Non-Degree Awarding Private Institutions, Government Technical Colleges)

A comprehensive list of organisations was developed for the previous ICT workforce survey. Therefore, the 2006 sample frame as well as information from sources given in Table 1 was used to develop the sample frame for this survey. In addition, the BPO company list was compiled using the lists provided by IT Enabled Services Alliance (ITESA) and ICTA.

Table 1: Information Sources for Developing the Sample Frame

Sub Population	Information Sources
IT Training Institutes	<ul style="list-style-type: none"> • Association of Computer Training Organization in Sri Lanka (ACTOS) • Tertiary and Vocational Education Commission (TVEC) • Database - National ICT Workforce Survey 2006 • SLT Rainbow Pages • Newspapers
Government Institutes	<ul style="list-style-type: none"> • Government Website (www.gov.lk)
BPO	<ul style="list-style-type: none"> • Sri Lanka Association of Software and Service Companies (SLASSCOM) • List provided by ICTA
Non-IT	<ul style="list-style-type: none"> • Ceylon Chamber of Commerce • Sri Lanka Export Development Board • Board of Investment (BOI) • Shipping Association • KOMPASS Directory • Database - National ICT Workforce Survey 2006 • www.mbendi.com • www.hotelsinsrilanka.org.uk • www.asiatours.net • www.slaito.com
IT Companies	<ul style="list-style-type: none"> • Sri Lanka Association for The Software Industry (SLASI) • Sri Lanka Association of Software and Service Companies (SLASSCOM) • Database - National ICT Workforce Survey 2006 • Sri Lanka Export Development Board • Newspapers

Since the information on IT, non-IT, and BPO sector population was limited and fragmented, the total population for each sector was decided in consultation with ICTA, steering committee members and industry experts. Thereafter, the updated lists were validated through consultations with industry specialists and experts in collaboration with ICTA. Stratification was adapted in sampling since details on strata are available in the sample frame itself.

A representative sample that reflects the overall characteristics of the population to include a variety of population members was systematically selected by the consultant in close cooperation with ICTA, steering committee members and industry experts. It was decided to purposively select the IT and BPO Companies which could have more than 300 IT and BPO Workforce and also IT and BPO companies which have 5 or more IT Professionals and 5 BPO staff.

During this exercise, it was also decided to include all the main IT/IT Major Degree awarding institutes in order to estimate the supply of IT graduates and the IT companies with a higher number of IT professionals to get more accurate information / projections on IT workforce and employment.

Selected strata for the survey and the sample sizes of each stratum are given in Table 2.

Table 2: Summary Details of the Sample

Stratum	Sample
IT Companies	75
Non IT Sector	250
Agriculture including Fisheries (AGR)	45
Apparel (APP)	45
Freight Forwarding Services (FRE)	18
Financial Services, Insurance and Banking	17
Construction and Architecture	15
Hotels and Tour Operators	41
Wholesale and Retail Trade	18
Manufacturing	51
Government Sector	80
Ministries	10
Departments	13
Statutory Bodies	57
IT BPO / ITES Companies	30
IT Training Organizations	75
Total	510

2.2 Design of the Questionnaires and Field Testing

Three comprehensive questionnaires as indicated in Table 3 and given in Annex 1 - 3 were developed to gather required data / information separately from each of the above mentioned sub samples.

Table 3: Questionnaires for Different Sectors

Sector	Questionnaire
IT, non-IT and Government Sector	Questionnaire for ICT Usage and Human Resources in IT, Non IT and Government Organizations
BPO / ITES Sector	Questionnaire for ICT Usage and Human Resources in BPO Sector
IT Training Organizations	Questionnaire for ICT Usage and Human Resources in Training Organizations

The survey questionnaires were developed in English in close collaboration with the IT industry and ICTA experts. Subsequent to field-testing, questionnaires were revised, finalized and duplicated to meet the requirement of collecting data from the sample institutions.

2.3 Survey Field Staff Training and Awareness Creation

Qualified and experienced enumerators of undergraduate level who were fluent in English were recruited and trained to carry out the survey. The training was conducted in close collaboration with ICTA to ensure that the enumerators,

- understand all the questionnaire formats,
- possess the skills needed for administering the survey, and
- possess skills to deal effectively with respondents

An initial awareness creation session was conducted by ICTA with the aim of introducing the survey and its objectives to industry groups. In addition, awareness was created among the sample institutions by making an introductory call and to identify the key contact person of each organization. Appointments with the respective persons were made during the second call and followed up by the respective enumerators. Appointment making and follow-up processes were closely monitored by the Team Leader.

2.4 Data Collection, Field Monitoring and Quality Assurance

Following the confirmation of the appointment, the relevant enumerators visited the organizations and conducted face to face interviews with the respondents. The respondents of the survey were CEOs, CIOs, HR Managers, IT Managers, IT

Trainers, etc. Monitoring of data collection was also accompanied by regular meetings with field staff, during which the enumerators were encouraged to discuss the problems encountered during the data collection process.

Daily progress and information such as the number of organizations completed (Sector wise), quality checking details, institutions which need to be revisited, cross checking of information and responsible teams were updated on the database. The database also contained information of contact details, addresses, etc. of organizations and was continuously updated by the survey coordinators.

All completed questionnaires were checked for completeness to ensure accuracy and effectiveness in data entry and thereafter, serial numbers were given to ensure the identification of completed questionnaires. Missing data and incompatible data were corrected by referring to the respective enumerators.

Data were collected to satisfy the sample sizes recommended by the TOR for all the strata in the IT, IT Training and non-IT and Government sectors as given in Table 2. However, only 25 responded out of the identified 30 companies in the IT BPO Sector.

The questionnaire return rates achieved are shown below in Table 4. The response from all sectors shows an improvement as against the last survey of 72% on average to an overall response rate of 86% in this survey. A notable factor is the Government sector response rate, which has increased from 74% to 94%. This is mainly attributed to the e-Government programmes initiated by ICTA with the Government sector and the appointment of CIO's in the Government organizations. It is important to note that only 505 completed and validated questionnaires were accepted and used for data analysis.

Letters of appreciation were sent to all those who participated in the survey, in order to acknowledge their effort for this venture of national importance.

Table 4: Questionnaire Response Rate

Sector	Questionnaires Sent	Received	Response Rate	Questionnaires Accepted
IT Companies	87	75	86%	75
Non IT Sector	303	255	84%	250
Government Sector	108	102	94%	80
IT Training Organizations	95	75	79%	75
IT BPO / IT Enable Service (ITES) Companies	26	25	96%	25
Total	619	532	86%	505

2.5 Data Entry and Processing, Analysis and Reporting

The questionnaires were validated during the quality checking process and entered into a SPSS database. The data entry process was closely monitored and the database was randomly checked to compare the entered data with the completed questionnaires. The data entered were then coded, cleaned and thereafter, data analysis was carried out. The final database in Microsoft Excel format was submitted to ICTA.

Data analysis (e.g. frequencies, percentage tabulations, and cross tabulations) and statistical significance tests of key survey variables and their correlations were carried out. In order to determine some important information of IT and BPO workforce, the data was extrapolated into the population in consultation with the ICTA, steering committee members and IT and BPO industry experts.

Tabulated data and the initial findings are presented in this report which contains descriptive statistics of all variables of the survey, cross tables, and graphs. Selected variables are presented by graphs and/or correlation measures. A critical review of the methodology and results are also given, together with recommendations for improvement.

The sample selection, questionnaire design and the results generation has been examined and validated by a qualified Statistician.

The results of the IT and BPO sectors have an overall sampling variability of plus (+) or minus (-) 10.04 and plus (+) or minus (-) 17.42 at the 95 % confidence level respectively and the sample can be projected to all organizations with more than 5 IT/BPO employees. The Non IT sector and Government Institutions have an overall sampling variability of plus (+) or minus (-) 6 and plus (+) or minus (-) 9.87 at the 95 % confidence level respectively and the IT Staff of those organizations is projectable to all organizations. For the training sample the overall sampling variation is plus (+) or minus (-) 9.49 at 95 % level of confidence.

2.6 Limitations of the Survey

- 1) After the total sample frame was developed, it was found that some of the IT and non-IT sector companies were nonexistent; may be due to the global economic crisis situation and the domestic civil and economic instability. This was a major set-back at the initial implementation of the survey. Difficulties arising from the lack of a unified registry in all sectors were felt acutely during this process.
- 2) The non-IT sector was split into and limited to 8 sectors. They are Agriculture including Fisheries; Apparel; Freight Forwarding Services; Financial Services, Insurance and Banking; Hotel Services, Hotels and Tour Operators; Whole-sale and Retail-trade; and Manufacturing. Due to the lack of a listing of companies by sector, the companies were selected from the available accepted sources. Therefore, it was found that some of the

important IT using companies were not listed in any of the accepted sources. It was also noted that some of the major IT using companies did not fall into any of the identified non-IT sub-sectors of this survey.

- 3) Some of the large companies were involved in providing services covering many sub-sectors and IT support services were centralized. Similarly, some large companies having a network of subsidiary companies had the IT support services decentralized. Due to this situation, there were discrepancies in the data obtained.
- 4) Only the main Government Agencies including Ministries, Departments and Statutory bodies were used for the sample frame. Provincial Government Organizations in which e-Government initiatives are underway may need to be considered in the future to reflect the demand for job categories required in Provincial Government Organizations.
- 5) Questionnaires were sent exclusively to employers and not to employees and hence the opinion on salary concerns, training requirements etc. may not reveal the accurate status from the point of view of employees.
- 6) The IT Training organizations sample included Universities, Degree awarding and Non-Degree awarding private institutions as well as Vocational and Technical Training Institutes which conduct IT courses. However, there are a large number of private training institutes which conduct certificate and diploma level IT courses which need to be considered.
- 7) A clear categorization and a standard for the diploma, higher diploma and certificate courses were not available in most of the training institutes. Hence, it is difficult to estimate the supply of the level of professionals entering the job market.
- 8) In the Technical and vocational training sector (VTA, NAITA, SLIATE, DTET, NIBM) and some private institutes, branches/network of institutes and training centres conduct IT courses which are mainly certificate and diplomas of various levels and fields. Therefore, from the selected sample it is difficult to gather and estimate the accurate information, such as the number of professionals entering the job market, number of available teaching staff etc.
- 9) It was also observed that some of the key IT, BPO and IT training institutes which could contribute significantly to the findings have not responded to some of the important questions.
- 10) There were very limited verification measures on responses to some of the questions, such as the salaries of IT Professionals and BPO staff and usage of software licences by different sectors. The analysis and the interpretations are mainly based on the responses received.

CHAPTER 3 - DEMAND AND SUPPLY OF IT WORKFORCE

3.1 Highlights of the Previous 'National ICT Workforce' Survey

There has been an unprecedented increase in access to ICT since the late 1990's. However, until the first National ICT Workforce Survey was carried out in 2004⁵, the quantity and quality of information about the ICT workforce of Sri Lanka was limited and fragmented. Thereafter, in 2006, the second National ICT Workforce Survey was carried out⁶. The two surveys enabled the IT suppliers, ICT user organizations and the public sector to gain a realistic picture of the overall demand and supply of IT human resources. From both surveys, it shows that the ICT has a rising demand and expects a high industry growth.

It was also found that the overall IT workforce of approximately 15,000 in 2003 grew by about 20% annually, but the supply of IT professionals was inadequate to meet the demand. In the first survey there were signs of reducing the gap between demand and supply. However, the expectation of narrowing the demand-supply gap failed to materialize and in the second survey it showed that the gap has widened, which was a major hindrance to the growth of the IT industry.

The highlights derived from the second survey were:

- There was a demand for 7,672 IT workers in 2007, and nearly 14,500 IT workers were required by 2008, giving an estimated total IT workforce of 45,000 in 2008.
- A total of 5,755 graduates were needed but only 2,216 IT major graduates would be added to the workforce in 2007.
- Programming/Software Engineering was the largest job category with 27% of the overall workforce.
- Testing and Quality Assurance engineers had increased from 4% of the total workforce in 2004 to 13% in 2006, the largest increase across all job categories.
- The overall attrition rate for the IT workforce had doubled from 6.6% in 2004 to 13% in 2006.
- Employers found that essential soft skills were scarce in employees with communication skills being the most deficient.
- IT training organizations had open vacancies for qualified trainers and the government training institutions in particular struggled to attract trainers due to salary constraints.
- A good compensation plan was essential to retain IT workers at any level of experience, according to employers.
- The initial salary of an IT worker was between Rs. 10,000 and 20,000 across all job categories. However with experience his capacity to earn increased at a higher rate if employed in the IT sector.

3.2 Overall Growth of ICT Workforce

Figure 1 shows the overall growth of IT workforce. The workforce figures given for 2003 to 2006 were from the previous two surveys. From the second survey, the projected number for 2007 and 2008 were 37,792 and 44,600 respectively, however from the trend pattern of all three surveys it is found that IT workforce had been around 33,702 in 2007 and 39,107 in 2008, which is less than the projected number.

The first survey showed an IT workforce growth of 30% and 25% in the years 2003 to 2004 and 2004 to 2005, respectively. In the second survey the IT workforce growth was observed to be about 20% from 2005 to 2006. Therefore, right throughout the period from 2003 to 2006, an increase of nearly 4,800 was observed each year which is an average annual growth rate of 25%.

Since 2006, the year-to-year growth rate of IT workforce has been 12% (2006 – 2007), 16% (2007 – 2008) and 9% (2008 – 2009). It shows that the average annual growth rate of IT workforce from 2006 to 2009 has fallen to about 12.5%, which is an increase of only 4,200 per year. This may be attributed to several reasons, such as economic and political instability, terrorism and global economic recession. This is further confirmed by the statement made at the WITSA Global Public Policy Summit 2009 in Bermuda⁷ at which it was stated that “ICT spending remained stable from 2003 to 2006, and from 2007 onward ICT sector has been affected by the global economic slow-down and ICT spending is expected to reach 6.3% by 2011 (down from 7.3% in 2000)” as a total of GDP. Further, it states that “ICT must be used to accelerate the global recovery as it is the key infrastructure for the 21st century for broader sustainable economic growth.”

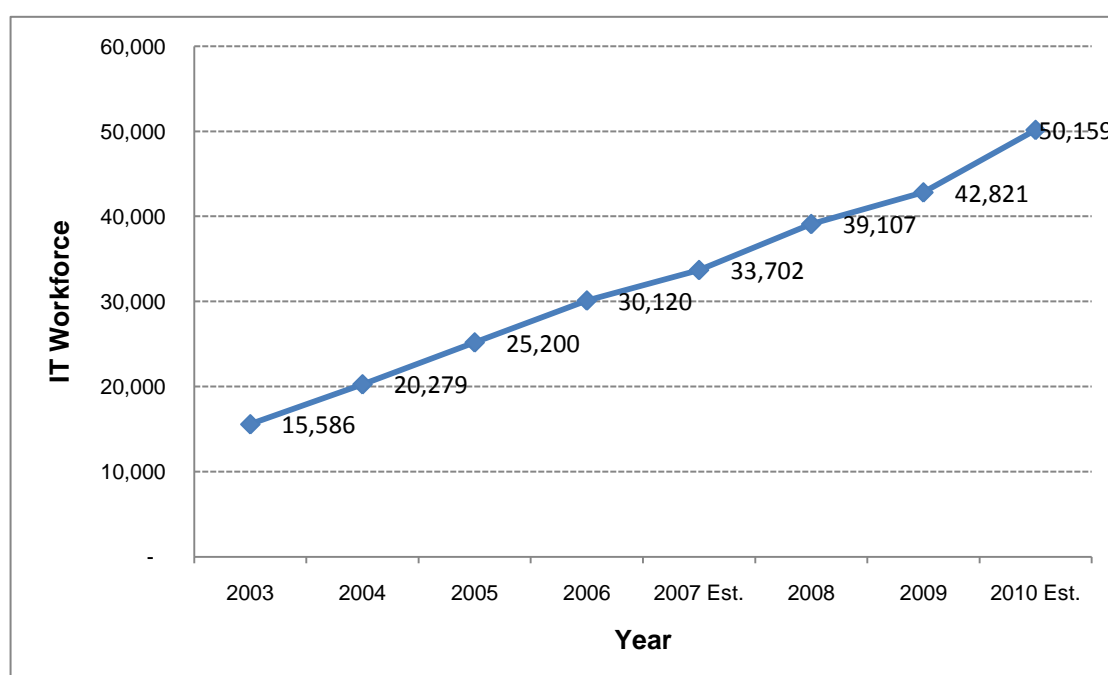


Figure 1 : Overall IT Workforce Growth Trend 2003 - 2010

It is important to note that this situation is bound to change in the coming years in Sri Lanka with the demand for IT workforce growing from 42,821 in 2009 to 50,159 by the end of 2010, which is an estimated growth rate of about 17% according to the survey findings. The implementation of IT related programmes by ICTA in the areas of strategic priorities; such as, ensuring access to ICT infrastructure for populace in rural areas, mainstreaming of ICT to improve the delivery of public and private sector services across various economic and social sectors, human resource capacity development, and support given to the development of local information technology (IT) industries will undoubtedly increase the access and usage of IT, thereby increasing the actual demand to a higher value than the estimation.

The importance given to ICT in Sri Lanka is also indicated by the ICT sector performance values given in the report published by the World Bank on "2009 Information and Communications for Development: Extending Reach and Increasing Impact"⁸. A notable fact is that 6.0% of GDP is spent on ICT expenditure which is higher than the average value of 5.7% of GDP in the South Asian region.

3.2.1 Growth of IT Workforce by Sector

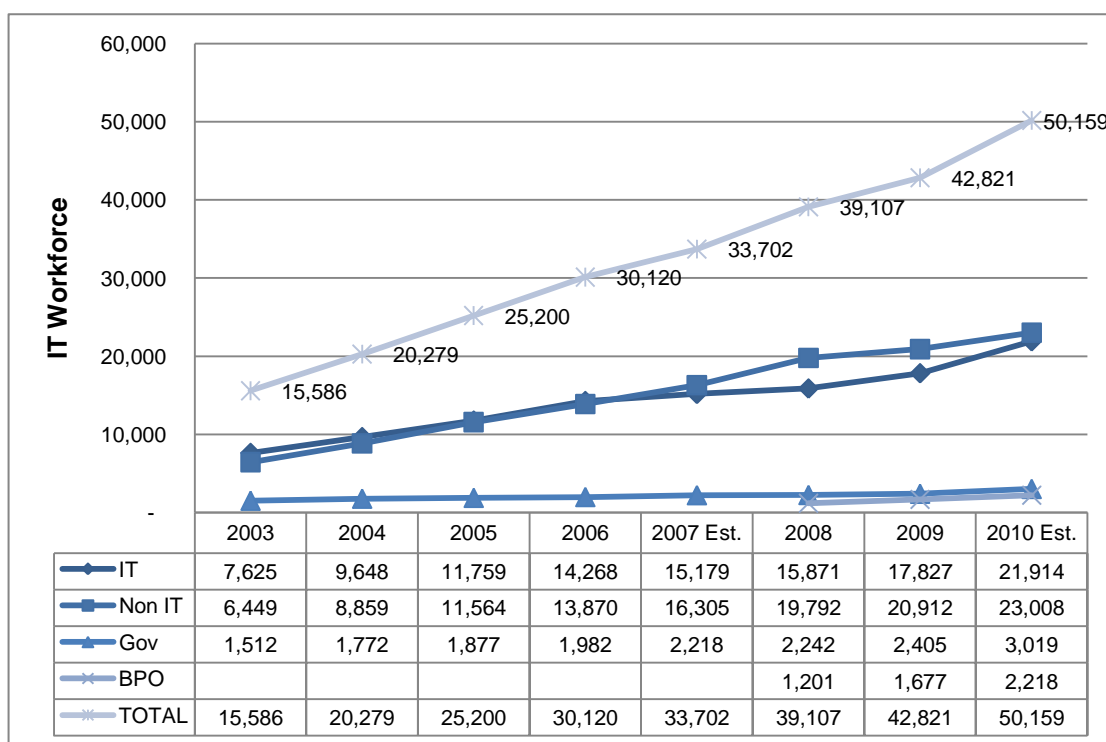


Figure 2 : Growth of the IT Workforce by Sector 2003-2010

As pointed out earlier, the IT workforce has been growing by about 5,000 every year since 2003. Every year this increase in IT workforce has been almost equally distributed between the IT and non-IT sectors up to 2008. However, a change has been observed during this survey. From 2008 to 2009, the increase in IT workforce,

which is about 3,700, is distributed as 53%, 30%, 4% and 13% in the IT, non-IT Government and BPO sectors, respectively.

In the IT Enabled Services (ITES) / Business Process Outsourcing (BPO) sector, an increase from 1,201 in 2008 to 1,677 in 2009 is observed, which is an increase of almost 40% and from 2009 to 2010 it is estimated to climb up to 2,218 which is an increase of 33%. However, since the BPO sector has been emerging as a growing area during the past 5 years, the total number of companies as well as the IT workforce in the sector is relatively small compared with other sectors and does not have any effect on the overall workforce percentages.

In the projections for 2010 from 2009, an increase in the workforce by 7,338 is estimated. This is distributed as 4,087 (56%) in IT sector, 2,096 (29%) in non-IT sector, 614 (8%) in the Government sector and 541 (7%) in the BPO sector. The estimated increase of 8% from the total increase in the Government sector shows that the Government backed IT initiatives which are mainly driven by ICTA aimed at public services is on the rise. For a sustainable economic growth, the power of ICT should be harnessed to improve the efficiency, effectiveness, accountability and transparency of public sector organizations. One of the main programmes implemented by ICTA is the re-engineering Government programme, which includes re-engineering of Government business processes and improving the delivery of government services to citizens, businesses, and other Government agencies. Moving to e-government is a major transformational and change management exercise. In addition to overcoming resistance to process and organizational changes, attracting IT professionals to the Government sector due to the lower pay structure is a hindrance to growth in this sector which needs to be addressed at the policy level.

3.2.2 Growth of IT Workforce by Job Category

IT jobs were classified into fourteen high-level categories in order to keep the questionnaire to a manageable size. Many individual job titles were grouped into each job category, disregarding the level of seniority. Respondents were asked to categorize each of their IT staff into only one category. In situations where a single person was responsible for functions relating to more than one job category, the respondents were instructed to classify them according to the most dominant job function.

The fourteen job categories with IT Research and Development included as a new job category in this year's survey are:

1. Database Administration and Development
2. Digital Media and Animation
3. Business Analysis and System Integration
4. Systems and Network Administration
5. Programming / Software Engineering
6. Project and Programme Management

7. Software Quality Assurance
8. IT Sales and Marketing
9. Technical Support
10. Technical Writing
11. Web Development
12. Management Information Systems / IT Management
13. Solutions and Technical Architect
14. IT Research and Development

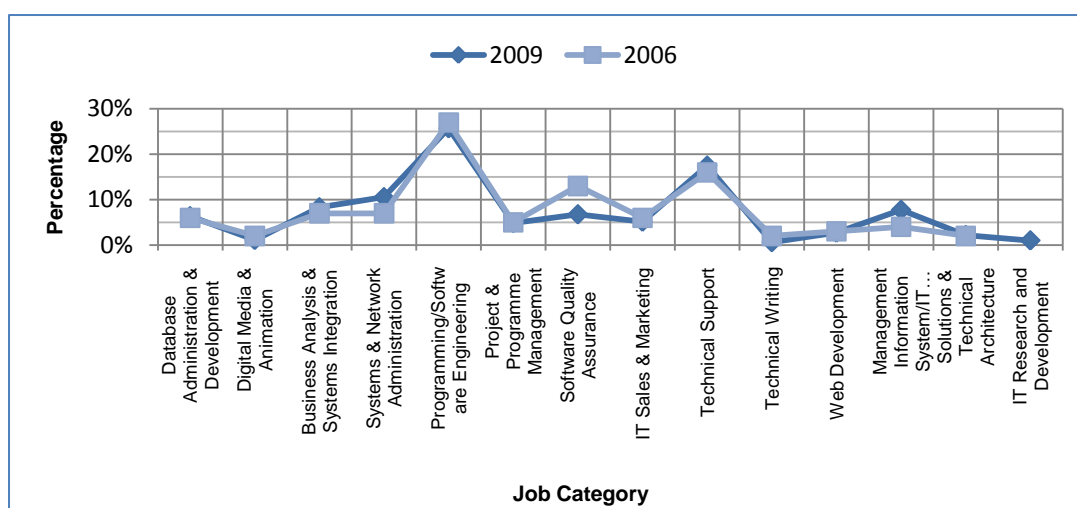


Figure 3: IT Workforce by Job Category in 2006 and 2009

As observed in Figure 3, Programming and Software Engineering accounts for nearly one fourth of the workforce across all sectors; IT, non-IT, Government and BPO. This has slightly decreased from 27% in 2006 to 26% in 2009. It is also to be noted that Technical Support is the second largest job category in the IT workforce, which accounts for 17% of the IT workforce which is a slight increase from 16%. Over the past three years, from 2004 to 2006 the Software Quality Assurance category increased from 4% to 13%. However, it has decreased to 7% in 2009. The ratio of Programming and Software Engineering to Software Quality Assurance is better than 4:1 which is typically the expected ratio in the industry. Both, Management Information System/IT Management and Systems and Network Administration Workforce have increased by 4% each since 2006. The IT Workforce in other job categories does not show significant variations when compared with 2006.

The smallest numbers in the IT workforce are Digital Media and Animation, Technical Writing, and IT Research and Development, which accounts for 1% in each category and Solutions and Technical Architect and Web Developers accounts for 2% and 3%, respectively. Including IT Research and Development (R & D) as a new job category is timely as Research and Development in ICT is a priority area and crucial to technological advances and innovation to address pressing socio economic challenges.

3.2.3 IT Workforce by Job Category in each Sector

Sector wise analysis of the IT workforce in 2009 showed that there were 49%, 42%, 5% and 4% distributions of the IT workforce, in the Non-IT, IT, Government and BPO sectors, respectively. Similarly, the sector wise analysis of the estimated workforce in 2010 shows a distribution of 46%, 44%, 6% and 4% of the IT workforce, in the Non-IT, IT, Government and BPO sectors respectively. Due to this distribution of the IT workforce and also since 14 job categories have been considered, sector wise analysis of job categories for the total IT workforce highlights only a few significant information.

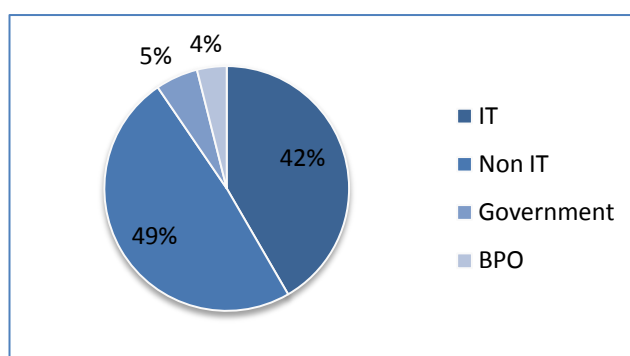


Figure 4 : Overall IT Workforce in 2009 by Sector

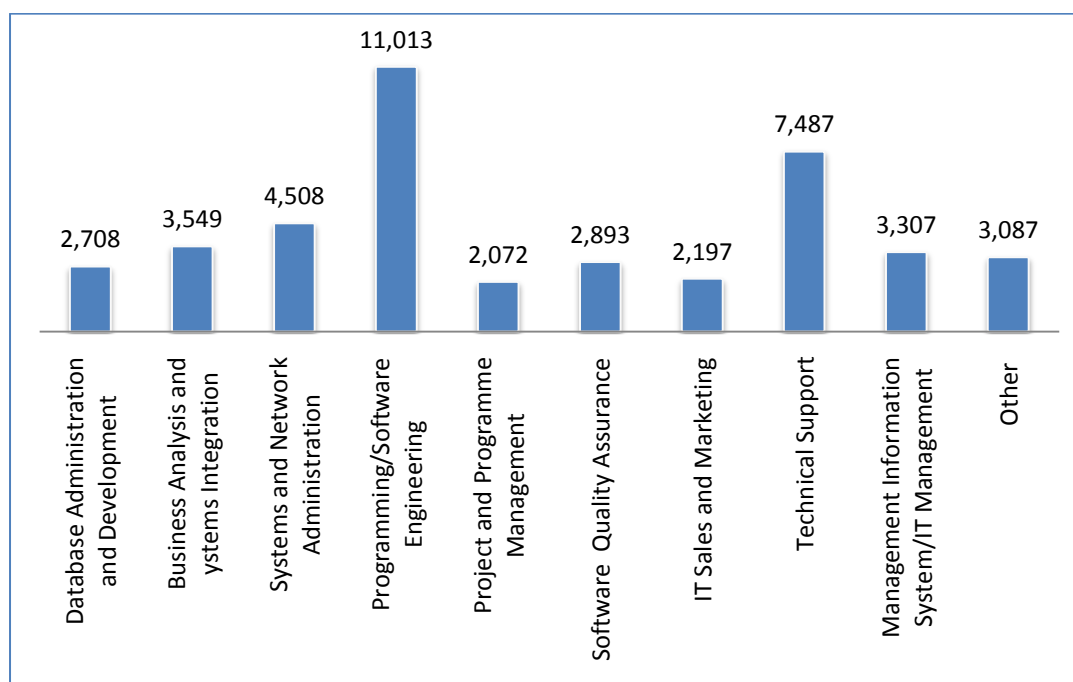


Figure 5 : Overall IT Workforce by Job Category

As pointed out in the previous section and from Figures 3 and 5 it can be observed that Software Engineering and Programming accounts for 26% of the total IT

workforce and Technical Support is the second largest job category with 17% across all sectors, followed by 11% of System and Network Administrators. The above mentioned three categories account for about 54% of the total IT workforce and the balance 46% are distributed among the other eleven job categories with percentages ranging from 1% to 7% in each job category.

From the overall IT workforce in 2009, nearly 11,000 employees are Programming / Software Engineers and as a single job category, 72% are employed in the IT sector as shown in Figure 6. This is about 37% of the total IT workforce in the IT Sector, which is the highest in the sector (Figure 7). Technical Support, which is the overall second highest, is also the second highest in the IT sector (14%). Software Quality Assurance is the third highest in the IT sector which is about 11% of IT workforce. It is to be noted that 81% in the Software Quality Assurance category are employed in the IT sector itself and the balance 18% are in the non-IT sector.

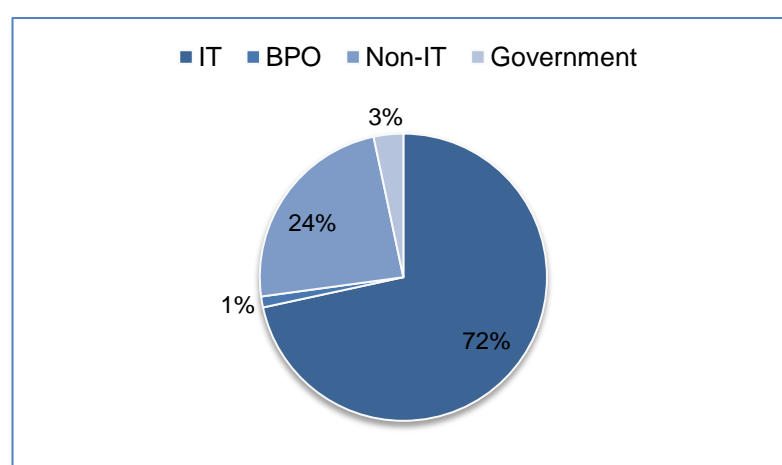


Figure 6 : Programming / Software Engineers in each Sector

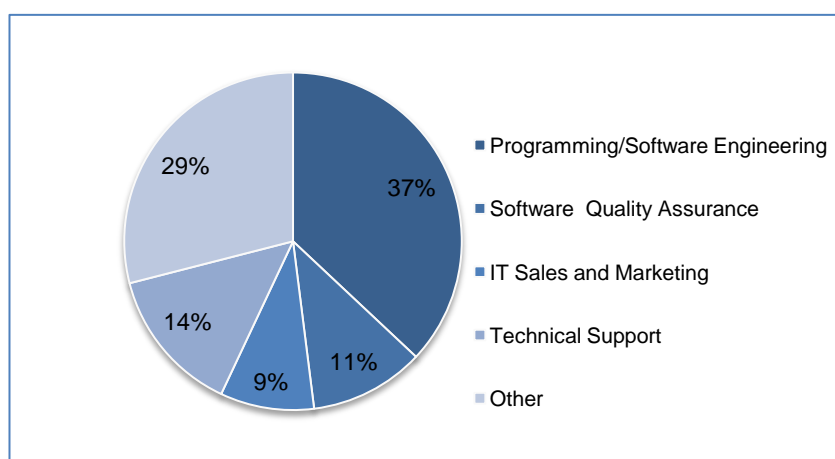


Figure 7 : IT Workforce by Job Category in the IT Sector

Technical Support staff is the second highest category in the total IT workforce, and 51% is attached to the non-IT sector and 41% is in the IT sector. In the non-IT sector the largest number of IT employees (20%) are in Technical Support category.

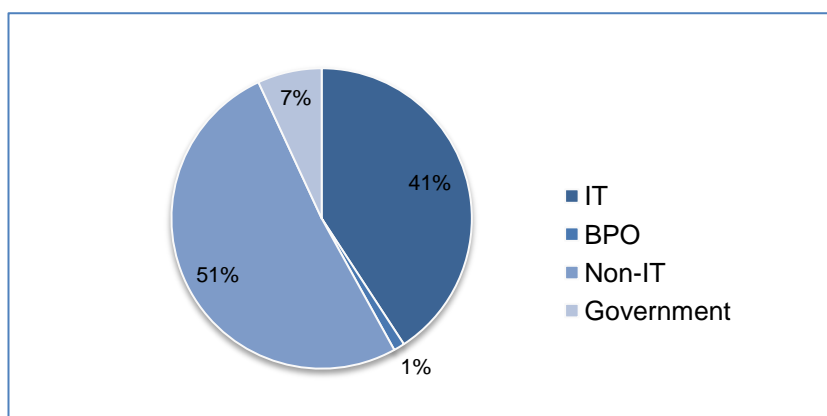


Figure 8: IT Technical Support in each Sector

In the BPO sector IT workforce, 20% are in Programming / Software Engineering, 18% in Web development and 13% in Technical Support as at the end of 2009. The balance IT workforce in the BPO sector is distributed in small numbers among the 11 other job categories.

However, it is also to be noted that the following three categories, Business Analysis and System Integration, Systems and Network Administration and Database Administration and Development account for about 25% from the overall workforce. About 39% of the non-IT workforce, 38% of the BPO workforce and 27% of Government sector are in these categories.

In the Government sector the largest number of workforce (24%) is in Technical Support, followed by 19% in Management Information Systems (MIS) and 17% in Programming / Software Engineering. This information shows that the MIS / IT Management which was not a significant job category in the 2006 survey has emerged as a job category which has a high demand in the Government sector. This is a clear indication that the e-Government programmes initiated and implemented by ICTA has given rise to a high demand in MIS / IT Management.

3.2.4 IT Workforce by Gender and by Level of Experience

As in the previous survey the male to female ratio is the same. 21% of the overall IT workforce is female while 79% is male dominated. As in the previous survey, the government sector has the highest ratio of female IT workers. However, it has dropped from 36% to 28%.

As shown in Figure 9, it is to be noted that 55% of the IT professionals have more than 3 years experience and 45% are with less than 3 years experience. Therefore it

is observed that the number of young IT professionals in the workforce is growing. It is also to be noted that the number of IT professionals with 1-5 years experience is about 53% and professionals with more than 5 years experience is 34%.

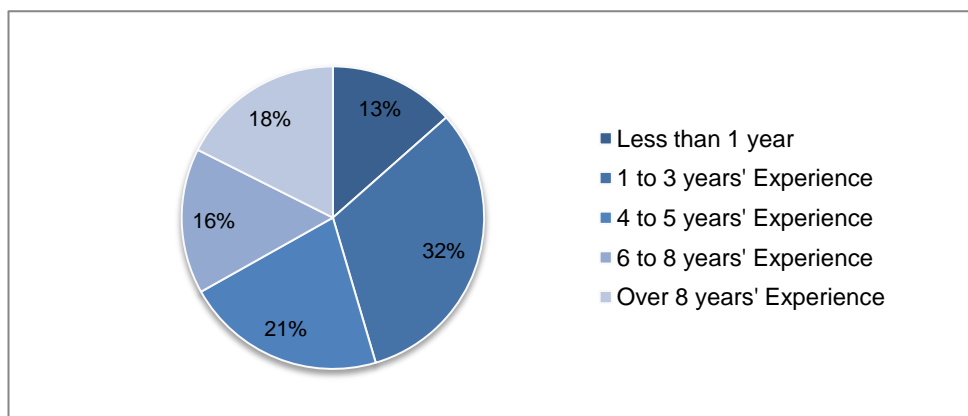


Figure 9: IT Workforce by Level of Experience

3.2.5 Attrition and Brain Drain of IT Workforce by Sector

In general, the attrition rate among the IT Workforce is about 7%. It is significant that the attrition rate of IT Workforce in the IT Sector is relatively high and it is 11%. The attrition rate of IT Workforce in both BPO and Non IT Sectors is 4% each and it is 2% in the Government Sector.

In general, the brain drain among the IT Workforce is about 4%. Sector wise, the brain drain of IT Workforce in IT and BPO sectors is 4% each whereas it is only 1% in the Non IT and Government sectors.

3.3 Demand and Supply of IT Professionals

According to the survey findings, the demand for IT workforce is expected to grow from 42,821 in 2009 to about 50,000 by the end of 2010, which gives a demand of 7,350 with an estimated growth rate of about 17%. This increase is distributed as follows: 4,087 (56%) for IT, 2096 (29%) for non-IT, 614 (8%) for Government and 541 (7%) for the BPO sectors as given in Figure 2. By the end of 2010 the demand for IT workforce may be higher than predicted, with the recovery of the global and national economy, growing demand for ITES/BPO services and the implementation of e-Sri Lanka programs.

3.3.1 Demand and Supply of IT Graduates

As given in Table 5, the most frequently requested minimum academic qualification varies with the Job Category and the Sector. For the Job Categories such as MIS / IT Management, Solutions & Technical Architect, IT Research & Development, Business Analysis & Systems Integration, Programming / Software Engineering and

Software Quality Assurance the most frequent response given for the minimum academic qualification required for different job categories is a Bachelors' Degree. With the expected growth of the economy, the growth of IT/BPO industry, and the supply of IT Graduates being higher than the demand, employment is expected to be guaranteed for all those who graduate with the right skills and knowledge.

The total supply of IT Graduates includes those who follow IT and IT Major Courses with at least 50% of IT component. The breakdown of the supply of graduates of IT and IT Major Courses from 2005 to 2010 is given in Figure 10.

Table 5: Most Frequently Requested Minimum Academic Qualification

Job Category	Minimum Academic Qualification			
	BPO	IT	Non IT	Government
Database Administration & Development	Higher Diploma	Bachelors Degree	Higher Diploma	Bachelors Degree
Digital Media & Animation	Diploma	Higher Diploma	Diploma	
Business Analysis & Systems Integration	Bachelors Degree			
Systems & Network Administration	Higher Diploma	Bachelors Degree	Diploma / Higher Diploma	Bachelors Degree
Programming / Software Engineering	Bachelors Degree		Higher Diploma	Bachelors Degree
Project & Programme Management	Bachelors Degree			
Software Quality Assurance	Bachelors Degree		Higher Diploma	N/A
IT Sales & Marketing	Diploma / Higher Diploma	Diploma		N/A
Technical Support	Diploma/Higher Diploma		Diploma	Bachelors Degree
Technical Writing	Higher Diploma	Bachelors Degree	Diploma	N/A
Web Development	Diploma	Higher Diploma		Higher Diploma / Bachelors Degree
MIS / IT Management	Bachelors Degree			
Solutions & Technical Architect	Bachelors Degree			
IT Research & Development	Bachelors Degree			

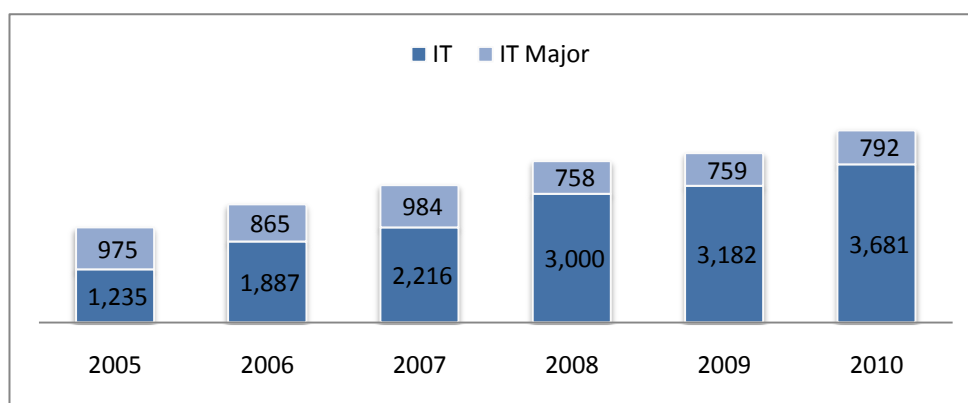


Figure 10: Breakdown of the Supply of IT Graduates

Figure 11 shows the demand and supply of IT Graduates from year 2005 to 2010. As per the previous survey a high demand for IT Graduates was predicted for 2007. However, by looking at the rate of increase of the IT workforce during this period, the actual recruitment of IT Graduates would have been lower than predicted. Although there was an increase in the supply of IT graduates, as observed from Figure 11, the actual recruitment of IT Graduates in 2008/9 has been low. This may be due to various reasons ranging from lack of required knowledge, skills, and attitudes, political and economical instability, and low attrition due to economic recession.

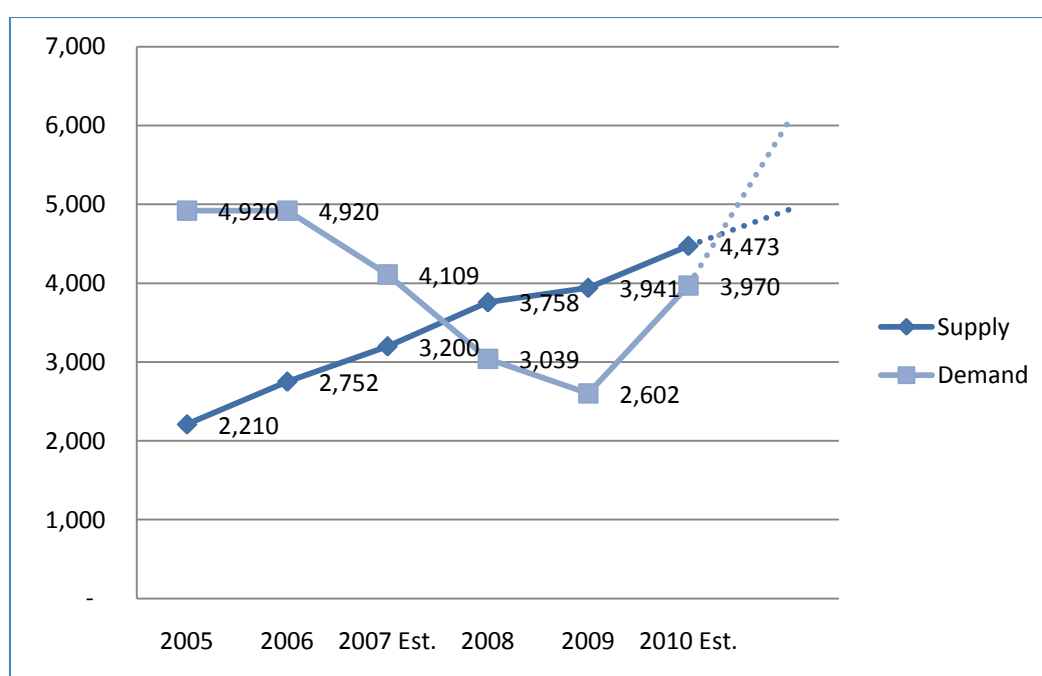


Figure 11: Demand and Supply of IT Graduates

As pointed out earlier, the overall demand for IT professionals is around 7,350 and the demand for IT Graduates for all the sectors for 2010 is predicted to be about 4000. With the recovery of the global and national economy and the increase in

usage of ICT in business, it is expected that the demand for IT Graduates will increase considerably in the next few years. The estimated demand of IT Graduates is about 56% for the IT sector alone, followed by 26% for the non-IT sector companies as illustrated in Figure 12.

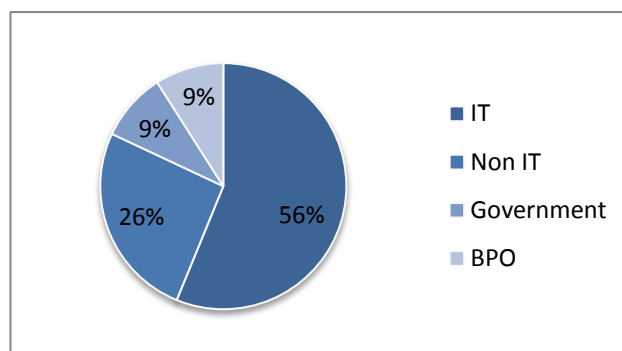


Figure 12: Sector wise Demand for IT Graduates in 2010

3.3.2 Supply of IT Professionals with Other Qualifications

Figure 13 shows the number of Graduates completing IT Degrees, Post Graduate Diplomas and Master's Degrees from Universities and Private Degree awarding institutions over the years 2005 to 2010. Compared with the number of Graduates, the number of persons who complete Post Graduate and Master's Degrees is very low. This implies that higher qualifications are not mandatory for IT professionals. The supply of holders of IT Certificates, Diploma and Advanced Diplomas was not estimated due to the differences in IT courses and variation in the standards of the courses.

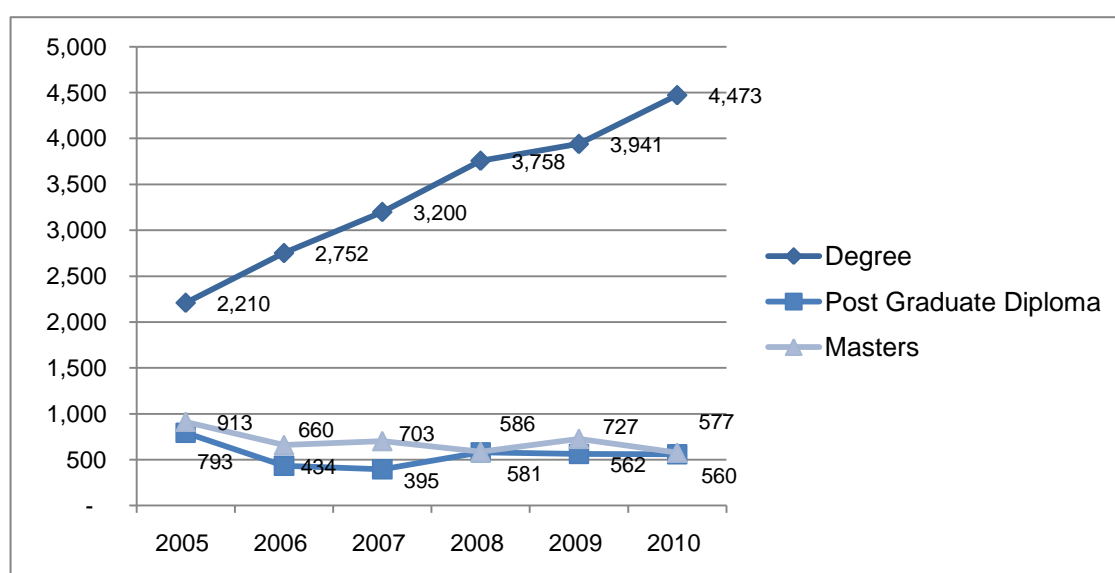


Figure 13 : Graduates with IT Masters Degrees and Post Graduate Diplomas

3.3.3 Recruitment and Retention of IT Professionals

In an environment where demand outpaces supply, employers have the work defined to attract the best talent, with good compensation plans and work environments to retain them. However, in return the employers look for qualifications, qualities, skills etc. from the employees. During the survey, employers were asked about their preferences when recruiting IT professionals, what they thought motivated and retained them in employment.

When recruiting IT personnel, in addition to academic qualifications the most important skills identified by the responses given from the organizations as a percentage are given in Table 6. When analysing skills, it is observed that most organizations in IT, non-IT and BPO sectors - other than in the Government sector - consider soft skills as being most important when recruiting IT employees. The Government sector gives higher priority to the Core Skills in recruitment. It is also noted that Technical Skills required by IT personnel differ by sector and the nature of the business.

Table 6 : Skills in Demand for IT Professionals

IT		BPO		Non-IT		Government	
Skill	%	Skill	%	Skill	%	Skill	%
Team Working	52	Proficiency in English Language	36	Team Working	44	Database Design & Administration	40
Programming	43	Network Design	28	Hardware Engineering	31	Team Working	38
Communication & Presentation Skills	37	Hardware Engineering	28	Creative Thinking Skills	28	Programming	36
Sales & Marketing	32	Communication & Presentation Skills	28	Interpersonal Skills	26	Network Implementation	33
Interpersonal Skills	32	Java	28	Communication & Presentation Skills	24	Hardware Engineering	33

The most frequent 1st priority and the most frequent answer given as the two main aspects considered by employers for employee retention are given in Table 7. Similar to the last survey, a “Good Compensation Plan” is the key factor that helps retain employees throughout all the sectors. However, when considering the most number of responses, it is noted that in IT and non IT sectors the work environment is the most important factor, whereas, in the Government sector the job security is considered the most important factor.

Table 7: Means of Retaining Employees

Sector	Most Frequent 1 st Priority	Most Frequent Answer
IT	Good Compensation Plan	Good Work Environment
BPO	Good Compensation Plan	Good Compensation Plan
Non IT	Good Compensation Plan	Good Work Environment
Government	Good Compensation Plan	Job Security

3.3.4 Salary Scales of IT Professionals

Salaries of IT personnel are probably the best when compared with all other industries in the country. During the survey, for each job category the salary band most cited by employees was given by the employers. The salary bands that were indicated by the employers at the highest frequency are shown in Table 8. Some of the job categories are not required or relevant for some of the sectors.

In all the sectors salary ranges offered for newly recruited IT professionals in all job categories are more or less similar.

Table 8 : Salaries of Entry Level IT Recruits

Job Category	Salary Range								
	IT/BPO			Non IT			Government		
	Min	Mode	Max	Min	Mode	Max	Min	Mode	Max
Database Administration & Development	10000 - 15000	10000 - 15000	65000+	10000 - 15000	10000 - 15000	56000 - 60000	16000 - 20000	21000 - 25000	36000 - 40000
Digital Media & Animation	10000 - 15000	10000 - 15000	21000 - 25000	10000 - 15000	10000 - 15000	16000 - 20000	10000 - 15000	16000 - 20000	16000 - 20000
Systems & Network Administration	10000 - 15000	10000 - 15000	65000+	10000 - 15000	16000 - 20000	56000 - 60000	10000 - 15000	16000 - 20000	36000 - 40000
Programming / Software Engineering	10000 - 15000	10000 - 15000	56000 - 60000	10000 - 15000	10000 - 15000	60000 - 65000	21000 - 25000	21000 - 25000	36000 - 40000
Software Quality Assurance	10000 - 15000	10000 - 15000	46000 - 50000	10000 - 15000	10000 - 15000	21000 - 25000	NA	NA	NA
IT Sales & Marketing	10000 - 15000	10000 - 15000	36000 - 40000	NA	NA	NA	NA	NA	NA
Technical Support	10000 - 15000	10000 - 15000	31000 - 35000	10000 - 15000	16000 - 20000	46000 - 50000	10000 - 15000	16000 - 20000	31000 - 35000
Technical Writing	10000 - 15000	26000 - 30000	31000 - 35000	10000 - 15000	10000 - 15000	10000 - 15000	16000 - 20000	16000 - 20000	16000 - 20000
Web Development	10000 - 15000	10000 - 15000	36000 - 40000	10000 - 15000	16000 - 20000	51000 - 55000	10000 - 15000	16000 - 20000	21000 - 25000

With experience the salary scales of IT personnel increase at a faster rate especially in the IT sector followed by the non-IT sector. In contrast to IT and non-IT sectors, salaries of IT personnel in the Government sector increase only gradually. This may

be due to the Government's gazetted salary scales which are fixed and not based on the knowledge and experience gained. This explains the low growth of the IT workforce in the Government sector over the past two years.

Experienced professionals in IT companies, with over 4 years of experience in any of the above job categories, are remunerated with more than Rs. 66,000 per month. It is important to note that the information was based on the responses of the industry and the measures of verification were limited due to the nature of the question.

3.4 Courses Conducted, Skills and Training Provided by Training Institutes

The courses conducted, skills taught, and the status of teaching staff, are important aspects to look into for improving the quality of IT personnel who join the workforce. The most featured IT related courses offered by training institutes and the skills taught most frequently in the courses offered by these training institutes are given in Table 9.

Table 9: Most Featured IT Related Courses and Skills Taught by Training Institutes

Category	Most Featured IT Related Courses	Most Featured Essential Skills	Most Featured Complementary Skills
Diploma	1. Diploma in ICT/Computer Studies	1. System Analysis	1. System Analysis
	2. Diploma in Web Designing	2. Programming	2. System Design
	3. Diploma in Hardware Engineering	3. Communication and Presentation Skills	3. Programming
	4. Diploma in Network Administration	4. System Design	4. Java
	5. Diploma in Multimedia	5. Network Design	5. Visual Basic
Advanced Diploma	1. Professional Diploma in Software Engineering	1. System Analysis	1. Communication and Presentation Skills
	2. Advanced Diploma in IT	2. System Design	2. Team Working
	3. National Voc. 6	3. Programming	3. HTML
	4. Higher National Diploma in IT	4. Communication and Presentation Skills	4. Customer Service
	5. Higher Diploma in Computer Based Information Systems	5. Database Design and Administration	5. Interpersonal Skills
Degree	1. B.Sc. in IT	1. System Analysis	1. Interpersonal Skills
	2. B.Sc. in Software Engineering	2. Programming	2. SAP
	3. B.Sc. Computer Science	3. System Design	3. Visual Basic
	4. B.Sc. Computer Engineering	4. Database Design and Administration	4. Communication and Presentation Skills
	5. B.Sc. in Information Systems	Project management	5. Java
Post Graduate Diploma	1. P.G. Diploma in IT	1. System Analysis	1. Professional Ethics
	2. B.Sc. (Level 1) Software Engineering	2. System Design	2. C++
	3. P.G. Diploma in Business Administration (IT)	3. Interpersonal Skills	3. Creative Thinking Skills
	4. P.G. Diploma in Geo Informatics	4. Programming	4. Visual Basic

	5. P.G. Diploma in Business Administration (Computer Science)	5. Database Design and Administration	5. SAP
Masters	1. M.Sc. in IT	1. System Analysis	1. Creative Thinking Skills
	2. M.Sc. Software Engineering	2. System Design	2. Professional Ethics
	3. M.Sc. in Computer Science	3. Professional Ethics	3. Team Working
	4. M.Sc. in Technology Management	4. Programming	4. Interpersonal Skills
	5. MBA in e-Governance	5. Project Management	5. Communication and Presentation Skills

3.4.1 Improving the Quality of Courses offered by Training Institutes

The quality of training conducted by training institutes depends on the academic qualifications and experience of academic staff.

Academic qualifications are essential for teaching staff of IT training institutions. From Figure 14, it is observed that nearly 50% of the teaching staff are either diploma or advanced diploma holders working in the capacity of instructors with 1-3 year experience and 35% are Degree holders. This is not satisfactory since teaching is the key for producing quality IT professionals. However, it is observed that most of them conduct diploma and certificate courses in the technical and vocational training institutes. The number of Ph.D. qualified staff in ICT training institutes is very low and most are attached to the Government Universities and ICT Degree Awarding Institutes.

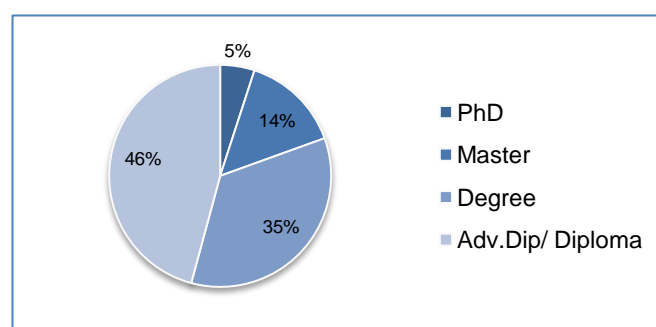


Figure 14: Academic Qualifications of Teaching Staff

Figure 15 indicates the level of experience of IT training staff: 31% have 1 - 3 years of teaching experience, followed by 27% with 4 - 7 years of experience and 20% with over 8 years experience. It is also noted that 22% of the teaching staff are instructors. The most experienced staff is attached to the Government Universities and Private Degree awarding institutes.

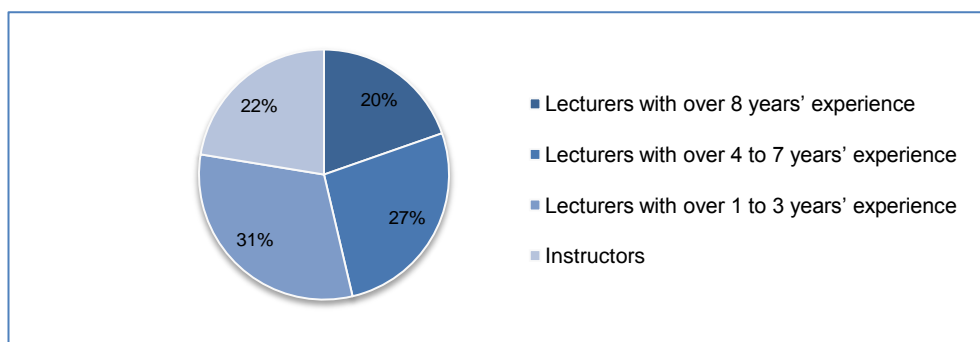


Figure 15 : Level of Experience of the Academic Staff

It is important to note that a reasonable percentage of IT teaching staff is working on part-time basis as shown in Figure 16. Conducting courses on part-time basis is increasing with experienced lecturers. However, this arrangement is not observed in the Government Universities. The number of IT lecturers and instructors recruited during the year is very low and not significant.

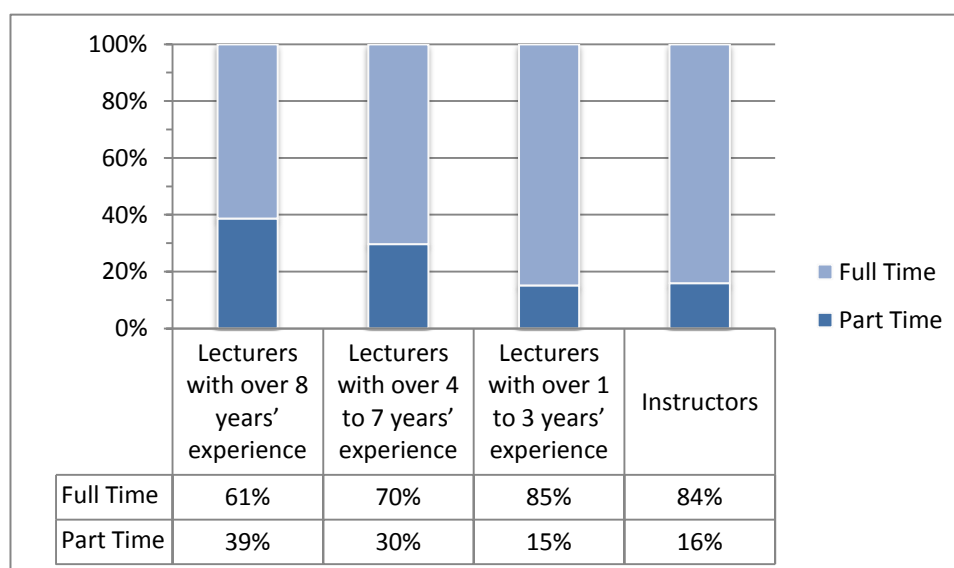


Figure 16: Course Delivery Arrangement of IT Teaching Staff

CHAPTER 4 - ITES / BPO SECTOR

4.1 Global ITES / BPO Industry

Information Technology Enabled Services (ITES) / Business Process Outsourcing (BPO) has emerged as one of the major forms of international trade under the current wave of globalization. The total worldwide outsourcing market, including ITES and BPO was almost US \$300 billion at the end of 2007, which is an increase of about 19% over the previous year². Findings in the 2009 A.T. Kearney Global Services Location Index (GSLI)⁹ show that countries in low-cost regions such as Southeast Asia and the Middle East are the best destinations for providing ITES / BPO activities. Central and Eastern European countries that were global leaders a few years ago have declined in the rankings mainly because of the rapid increases in costs due to currency appreciation against the dollar, and wage inflation.

The three countries, which ranked highest in this field, India, China and Malaysia have remained the same since the inception of the GSLI in 2004. Financial attractiveness (wage, infrastructure, tax and regulatory costs), people and skills availability (human resource availability, education and language, attrition risk) and business environment (political and economic stability, government support, geographical location, telecommunication infrastructure and security of intellectual property) are the factors considered in deriving the GSLI and India is expected to remain the leader for the foreseeable future.

It is a notable fact that the Philippines is the second largest off shoring destination in the world, capturing around 15% of the global market and 7th position in the GSLI. Together with India, the two countries account for 50% of the world's BPO market.

Another major trend is a move away from captive centres toward more outsourcing providers. This is because many captive centres failed to contain costs efficiently and more companies are opting to buy the services they need from outsourcing providers. While cost remains a major factor, quality of the workforce is gaining importance and Governments around the world are investing in human capital.

4.2 ITES / BPO Industry in Sri Lanka

The BPO industry began in the year 2000 with many companies emerging during the past 5 years. Currently Sri Lanka is being increasingly recognized as an emerging outsourcing destination. This sudden growth would have been due to the developments in the telecommunications infrastructure on which BPO is highly dependent. This is also reflected by the addition of Sri Lanka to the Global Services Location Index (GSLI) in 2007 for the ranking of the top 50 locations worldwide that provide ITES / BPO services¹⁰. Low labour costs, widespread use of English, strong educational systems and increasingly open and well-regulated business environment have been cited as reasons for Sri Lanka being considered as a BPO destination.

From 2007 to 2009, Sri Lanka's GSI ranking has climbed from 29th to 16th showing a steady expansion in the BPO sector. This improvement is mainly due to the financial attractiveness and a supply of Chartered Accountants trained on the same accounting standards used in the United Kingdom. This industry has potential to grow in Sri Lanka with the favourable political and business environment prevailing in the country in addition to the factors highlighted earlier.

For this study, the BPO company list was compiled using the lists provided by IT Enabled Services Alliance (ITESA) and ICTA which amounted to a total of 35. However, during data collection it was found that only about 28 out of the identified 35 companies provided BPO services. A company was considered as a BPO service provider if the company engages in business processes outsourced by another company which could have been conducted internally. For this baseline study 90% of the BPO industry participated, i.e. 25 companies from the identified 28. From the data, it can be highlighted that the total number of companies providing these services have not increased during the last few years, which may be due to global economic recession., However the existing companies seem to have diversified in the services they provide and the local non-IT companies have also increased spending on outsourcing most of their activities to other local BPO companies.

4.2.1 ITES / BPO Sector Composition

A total of 25 companies in the IT BPO Sector responded to the survey. From the services offered it is found that 20% provide on-shore services, i.e. a company located in Sri Lanka outsources business processes, to another company that is also located in Sri Lanka. 44% offer off-shore services, i.e. business processes are outsourced to a company in Sri Lanka by a company located in another country and 36% offer both on- shore and off-shore services.

In the baseline sector study of the business process outsourcing industry of Sri Lanka conducted by Lirneasia in 2006 for ICTA¹¹, it is observed that 38% provided on-shore services, 52% provided off-shore services and 10% provided both on-shore and off-shore services. When compared with the data collected in this survey it can be observed that Sri Lanka is emerging as a competitor in the ITES / BPO sector as most of the companies provide both on-shore and off-shore services. As pointed out in the previous section, outsourcing is becoming increasingly popular in Sri Lanka and local companies are also spending on outsourcing the services to other companies.

When the initial baseline study was conducted in 2006 by ICTA, the captive operators (the parent company that is outsourcing the business process owns the company that is set up in Sri Lanka to receive the outsourced work and the receiving company services only the parent company) and the non-captive operators (independent third party receiver of outsourced business processes, which take on outsourced work from any other company including the parent company) were equally split as 48% each. In this survey also it is observed that these markets remain almost the same; captive market 48% and non-captive market 52%.

4.2.2 ITES / BPO Services Provided

Most BPOs offer more than one type of work in general. Since the commencement of the BPO sector in Sri Lanka, accounting and related services have been the most popular products and services offered in Sri Lanka due to the large number of Chartered Accountants trained on the same accounting standards used in the United Kingdom. In the 2006 survey it was found that 43% of the companies listing it as a main service. However, with the growth of the industry the services provided have diversified as shown in Figure 17. As a percentage of all the different types of services provided, the accounting services reduced to about 31% in 2009 with transaction processing / document management and call centre services being the other most popular areas, with 32% and 20% of the companies offering these services.

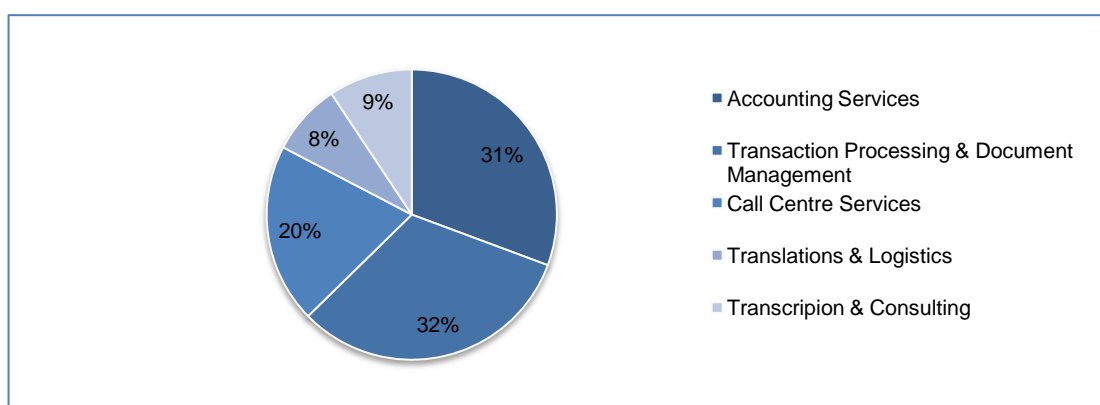


Figure 17 : BPO Services Provided

4.3 ITES / BPO Workforce

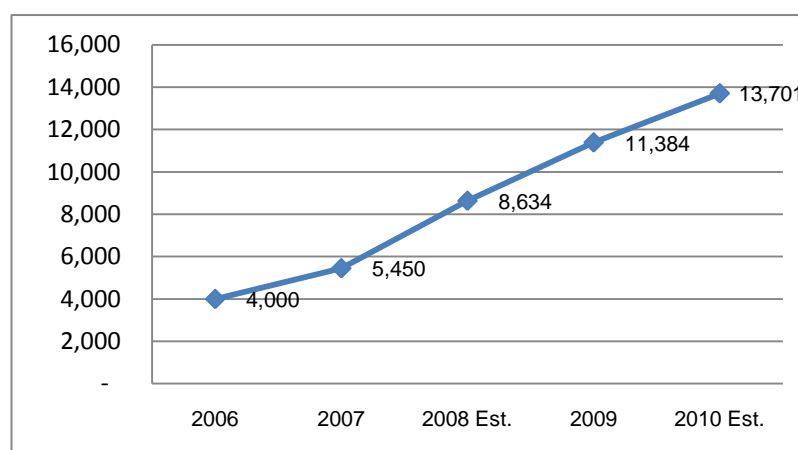


Figure 18 : Growth of ITES / BPO Workforce

As per the Baseline Sector Analysis of BPO Industry of Sri Lanka¹¹ published in 2006, the total workforce in 2006 was around 4000 and according to the Export Value Survey 2007 of Sri Lankan IT/ITES Industry¹² published in 2008, the total workforce in ITES Export industry was estimated at 5450. In this survey, the projected total ITES/BPO workforce is 11,384 at the end of 2009 and hence the average annual growth is determined to be 42% from Figure 18.

4.3.1 ITES / BPO Employees by Gender and Age

The BPO sector has a male to female ratio of 57% to 43%. As shown in Figure 19, the ITES / BPO sector employees are mostly in the age groups of 21 - 25 years (37%) and 26 – 30 years (33%). This is very much similar to the age group distribution of the BPO industry employees in India¹³.

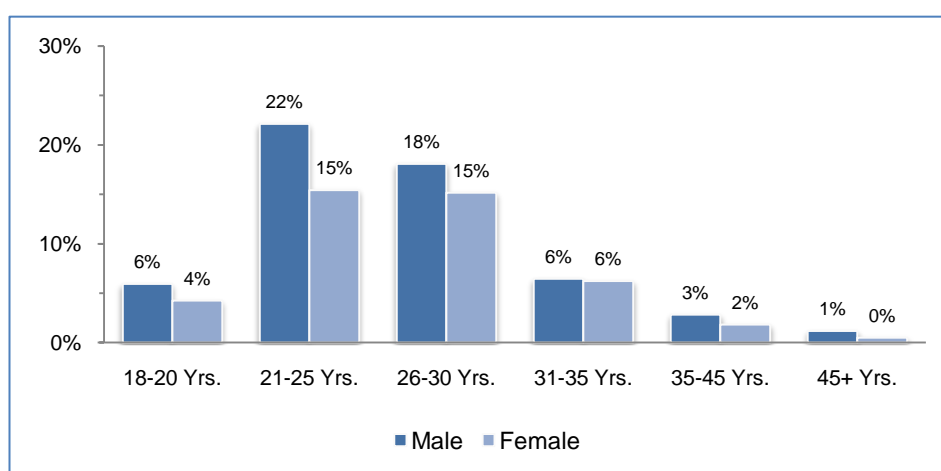


Figure 19: ITES / BPO Employees by Age Group

4.3.2 ITES / BPO Employees by Job Category

A significant fact is that nearly 88% of the BPO employees are Operational Staff (Figure 20) whereas, only 12% are in the management, out of which only 2% are in the category of Executive Managers and Senior Executives. The attrition in the BPO sector is about 17% and it is relatively high compared with the other sectors.

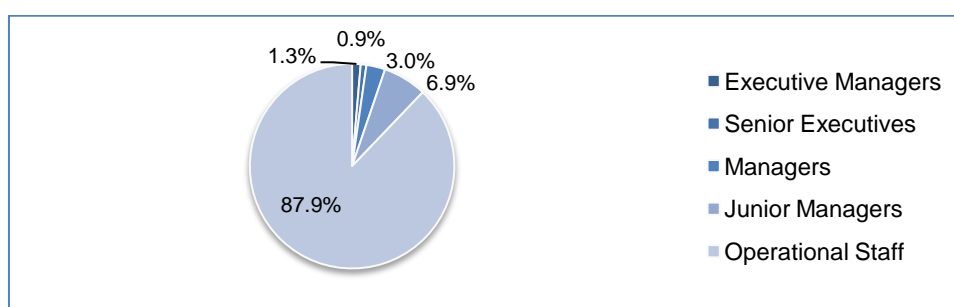


Figure 20 : Percentage of ITES / BPO Employees by Job Category

4.3.3 ITES / BPO Employees by Level of Experience

ITES/BPO is a relatively new and emerging industry to Sri Lanka. As shown in Figure 21, nearly 70% of the employees have less than three years experience and out of these 96.5% are operational staff.

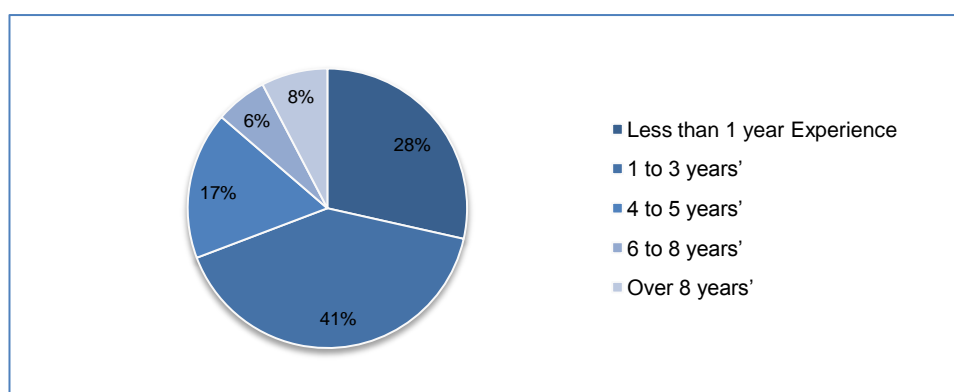


Figure 21: ITES / BPO Employees by Level of Experience

4.3.4 Attrition of ITES / BPO Sector Employees

The attrition rate in the ITES / BPO sector operational staff is relatively high and it is about 17%. The attrition rate determined for the managerial staff is not realistic as the percentage employed is only about 2% of the total employees.

4.4 Education and Retention of ITES / BPO Sector Employees

In the ITES / BPO sector, 40% of respondents perceive that *“better educated/ trained people stay shorter”* and 30% perceive that *“lesser educated/trained people stay longer,”* together 70% perceive that education and retention have a negative relationship whereas, 25% of the respondents perceive that *“better educated/trained people stay longer.”* Only 5% of the respondents stated that *“BPO Trade Certified professionals stay longer”* (Figure 22).

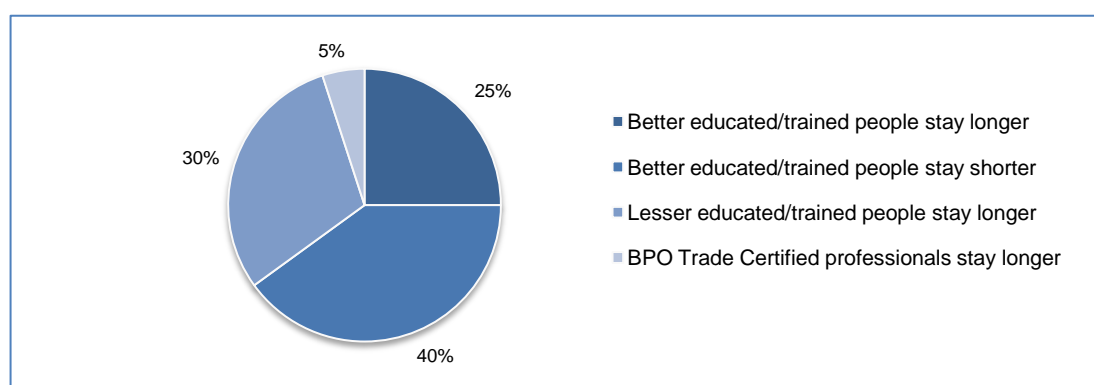


Figure 22: Relationship between Education and Retention

4.4.1 Academic Qualifications of ITES / BPO Sector Employees

The BPO industry provides employment for people with varying skills and academic qualifications. As shown in Figure 23, among the ITES / BPO sector employees, 43% are GCE A/L qualified, 24% are Diploma or Higher Diploma holders, 15% are with professional qualifications whilst only 13% and 2.5% are graduates with Bachelor's and Master's Degree respectively. It is also to be noted that employees with GCE O/L and other qualifications are less than 3%.

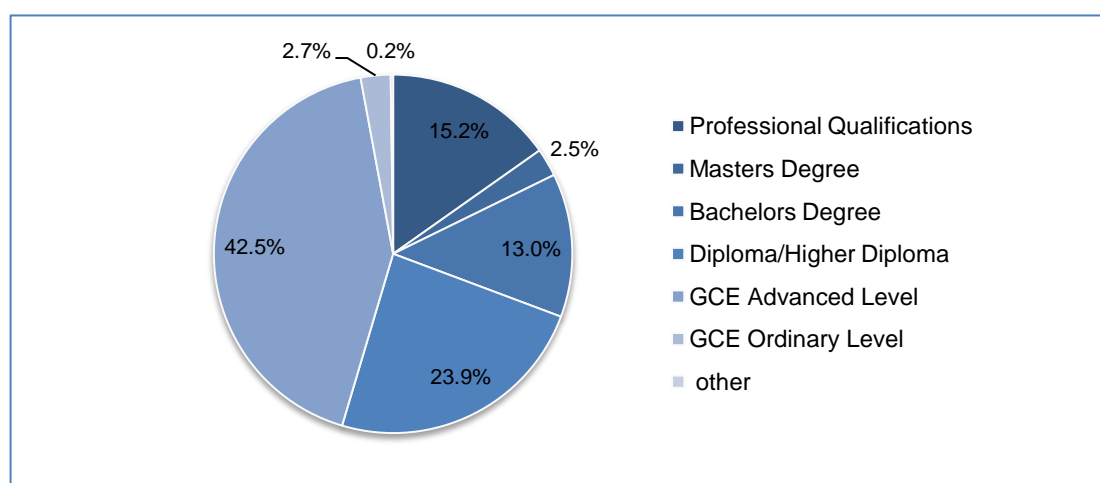


Figure 23 : Academic Qualifications of ITES / BPO Employees

4.4.2 Recruitment of ITES / BPO Sector Employees

Preferred channels of recruitment in the ITES / BPO Sector by employee category are given in Table 10. The ITES / BPO sector managerial employees are mainly recruited by references, whilst the operational staff is mainly recruited through newspaper advertisements.

Table 10 : Preferred Channels of Recruiting ITES / BPO Sector Employees

Job Category	First Priority	Second Priority	Third Priority
Executive Managers	References	Word of mouth	Newspaper
Senior Executives	References	Internet	Newspaper
Managers	References	Word of mouth	Recruiters
Junior Managers	References	Internet	Recruiters
Operational Staff	Newspaper	Internet	Word of mouth

4.4.3 Entry Level Credentials for ITES / BPO Sector Employees

It is observed that the preferred entry level credentials for Managers and above in the ITES / BPO sector is the specific experience in the ITES/BPO sector with the second priority being professionalism as given in Table 11. The most preferred entry level credentials for Junior Managers are specific experience / academic qualifications followed by general experience. Academic qualifications are mostly preferred as the entry level credentials for operational staff.

Table 11: Preferred Entry Level Credentials for ITES / BPO Sector Employees

Job Category	First Priority	Second Priority
Executive Managers	Specific Experience	Professionalism
Senior Executives	Specific Experience	Professionalism
Managers	Specific Experience	Professionalism
Junior Managers	Academic /Specific Experience	General Experience
Operational Staff	Academic	General Experience

4.4.4 Skills Deficient in New Recruits in ITES / BPO Sector

Table 12 shows the Primary Skills and Complementary Skills that are lacking in new recruits in the ITES / BPO sector. In general, English is the most scarce primary skill and communication skills are the most deficient complementary skill among the Managers, Junior Managers and the Operational Staff in new recruits.

Table 12 : Skills Deficient in New Recruits in the ITES / BPO Sector

Job Category	Primary Skills		Complementary Skills	
	Most Deficient	Next Deficient	Most Deficient	Next Deficient
Managers	Written English	Analytical Skills	Communication Skills	Professionalism
Junior Managers	Written English / Analytical Skills	Spoken English	Communication Skills	Professionalism
Operational Staff	Spoken English	Written English	Communication Skills	Positive Attitude

4.4.5 Skills Required in ITES / BPO Sector Employees

As stated by the Employers and given in Table 13, except for operational staff, English is the most important primary skill and communication skills is the most

important complementary skill needed in the ITES / BPO Sector. Technical skills are primarily essential whilst positive attitude is an important complementary skill in operational staff to perform their jobs effectively. However, as identified in Table 12, these skills are the most deficient in new recruits in the ITES/BPO sector.

Table 13 : Primary and Complementary Skills Required in the ITES / BPO Sector

Job Category	Primary Skills		Complementary Skills	
	First Priority	Second Priority	First Priority	Second Priority
Executive Managers	Spoken English	Written English	Communication	Professionalism
Senior Executives	Spoken English	Written English	Communication	Professionalism
Managers	Spoken English	Written English	Communication	Positive Attitude
Junior Managers	Spoken English	Written English/ Analytical Skills	Communication	Positive Attitude
Operational Staff	Technical Skills	English Spoken	Positive Attitude	Communication

4.4.6 Means of Skills Development in ITES / BPO Sector Employees

Table 14 shows the rank with regard to the means of skills development in the ITES / BPO Sector. Most of the BPO companies consider “On the job Training” as the best means of skills development followed by “Formal In-house Training” and “BPO Related Trade Certification” as the next ranked method of skills development in the BPO sector.

Table 14: Means of Skills Development for Career Advancement

Means of Skills Development	Rank
On the Job Training	1
Formal In-house Training Courses	2
BPO Related Trade Certification	3
Professional Qualifications	4
External Short-term Professional Courses	5
Academic Qualifications	6

4.4.7 Means of Retaining ITES / BPO Sector Employees

Table 15 shows the most important means of retaining ITES / BPO employees. Providing a “good compensation plan” is identified as the best way of retaining employees at all levels in the ITES / BPO Sector. Other means of retaining employees slightly differ with the level of experience of the employees, such as, good work environment, clear career path, a challenging job and stability of the company.

Table 15 : Means of Retaining ITES / BPO Sector Employees

Incentives	Rank According to Level of Experience		
	Up to 3 years' Experience	4 to 8 years' Experience	Over 8 years' Experience
Good Compensation Plan	1	1	1
Challenging Job		4	2
Good Work Environment	2		2
Rapid Promotion		2	
Job Responsibility			2
Image of the Company / Status	3		
Clear Career Path	5	2	
Stability of Company		5	5
Good Employer-Employee Relationship	3		

4.4.8 Salaries of ITES / BPO Sector Employees

Salary ranges of the ITES / BPO Sector employees by industry category and job category based on the mean response are presented in Table 16. There is no major difference of salaries observed in On-shore and Off-shore BPO companies. Other than for operational staff of BPO, salaries of all other employ categories fall into a similar range.

Table 16 : Salary range of ITES / BPO Sector Employees by Job Category

Job Category	BPO Category	Salary Range (SLR)
Executive Managers	On-shore	201,000 – 300,000
	Off-shore	201,000 – 300,000
Senior Executives	On-shore	100,000 – 150,000
	Off-shore	100,000 – 150,000
Managers	On-shore	61,000 – 100,000
	Off-shore	61,000 – 100,000
Junior Managers	On-shore	41,000 – 60,000
	Off-shore	41,000 – 60,000
Operational Staff	On-shore	10,000 - 20,000
	Off-shore	21,000 - 40,000

4.4.9 Period of Employment of ITES / BPO Sector Employees

As stated by the employers, the average period of employment of their employees by job category acceptable to the ITES / BPO industry is given in Table 17. The acceptable period of employment on average of operational staff of both captive and

non-captive BPO companies is the lowest, which is about 16 months, whereas the acceptable period of employment on average for the senior managers and senior executives of both captive and non-captive BPO companies is more than 2 years. This explains the high attrition rate of 17% observed in the operational staff of the ITES/BPO sector.

Table 17: Acceptable Period of Employment by Job Category

Job Category	Average (Months)	
	Captive BPO	Non Captive BPO
Executive Managers	39.0	26.0
Senior Executives	26.0	30.7
Managers	20.4	22.6
Junior Managers	23.2	18.7
Operational Staff	15.7	16.2

CHAPTER 5 - ICT USAGE IN SRI LANKA

There has been an exceptional increase in information and communication technology (ICT) usage in Sri Lanka since the late 1990s. The quantity and quality of information available on ICT usage in business is limited and fragmented. A national survey on “ICT Usage in the Government Sector” was carried out in 2007¹⁴ by ICTA to ascertain the general level of ICT usage in the Government Sector. Apart from the said study, ICT usage in business has not been studied in detail. The lack of information on usage can be identified as a significant barrier to the development of ICT in Sri Lanka. Therefore, the findings of this study are expected to provide information and data on the usage of ICT in business in Sri Lanka which will be useful for policy level decision making in Organizations and by the Government.

5.1 ICT Usage in Business

The use of computers in day to day business activities is a key factor in ascertaining the usage of ICT in business. It is a notable fact that more than 50% of all Senior and Middle level staff use IT in all sectors including the Government sector where the usage is more than 75% of day to day activities. More than 70% – 90% of all Senior, Middle and Junior level staff in IT and BPO sectors use computers for more than 75% of day to day activities. As shown in Figure 24 use of IT by all staff and especially the junior level staff can be further improved and encouraged in non-IT, IT-Training and Government sectors.

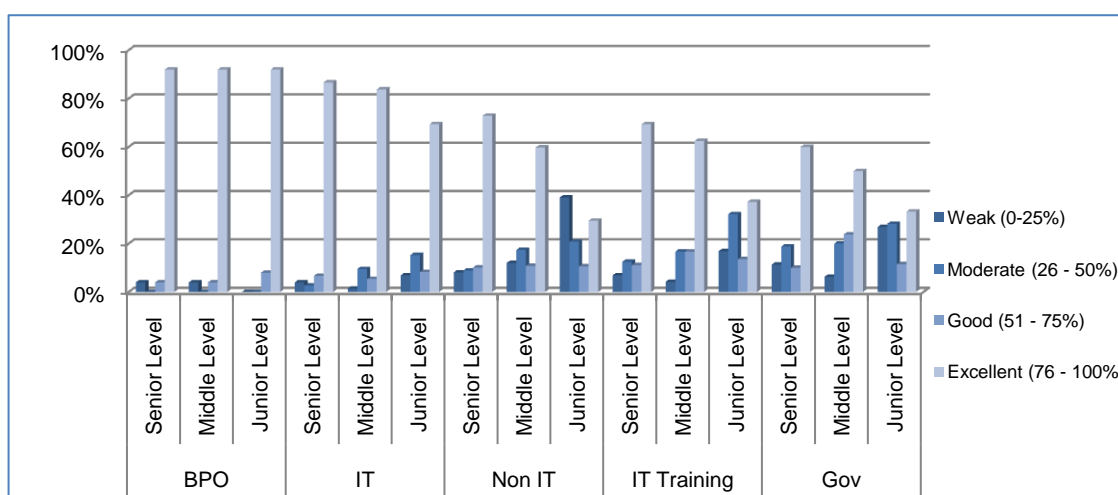


Figure 24 : Usage of computers in day to day Business Activities

The ICT usage in business can be mainly categorised into two broad areas, namely, “Back Office Operations” and “Business with Customers” and most of the selected organizations use ICT for both these purposes. As indicated in Figure 25, nearly 90% in IT and BPO sectors use ICT for both purposes whereas the usage for both purposes by other sectors is in the range of 52% to 64%. However, ICT usage only for “Business with Customers” is less than 5% in all sectors.

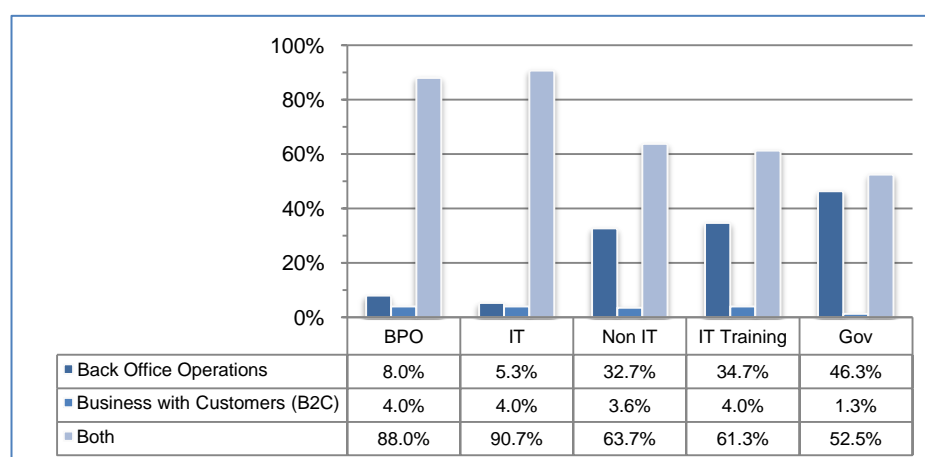


Figure 25 : Purpose of Using ICT

The percentage use of ICT for Back Office Operations and Business with Customers by the areas of business is shown in detail in Figure 26 and Figure 27 respectively. It is interesting to note that on average about 85 % of the respondents use ICT for financial management, about 60% use ICT for human resource management and 52% for inventory management in their day to day back office operational activities (Figure 26). From the respondents who use ICT for Business with Customers, 63% use ICT for Customer Services/help desk, 62% use for Information and Marketing and 57% use websites for Promotional Activities (Figure 27).

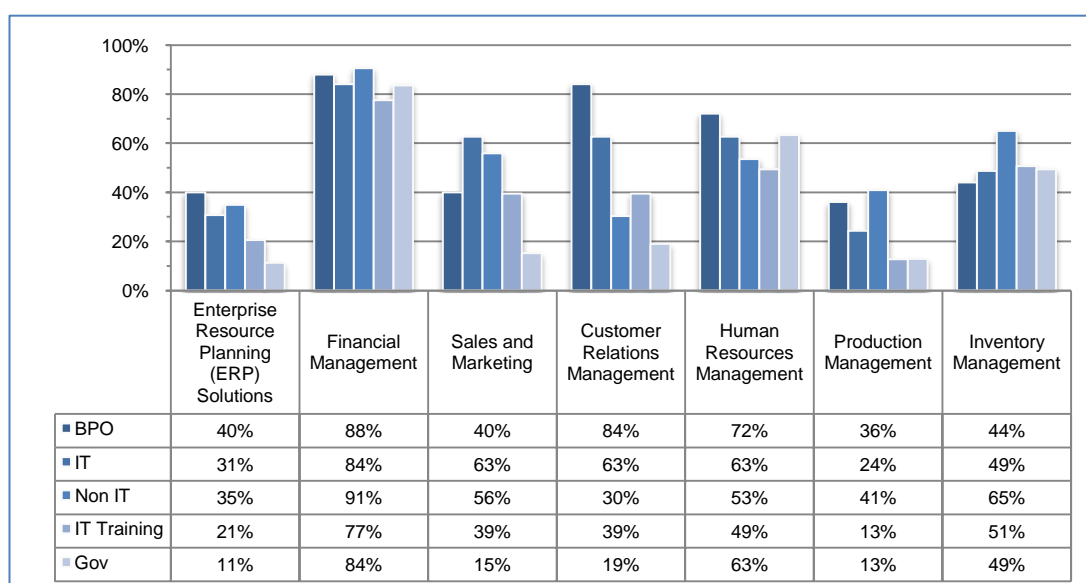


Figure 26 : Use of ICT for Back Office Operations

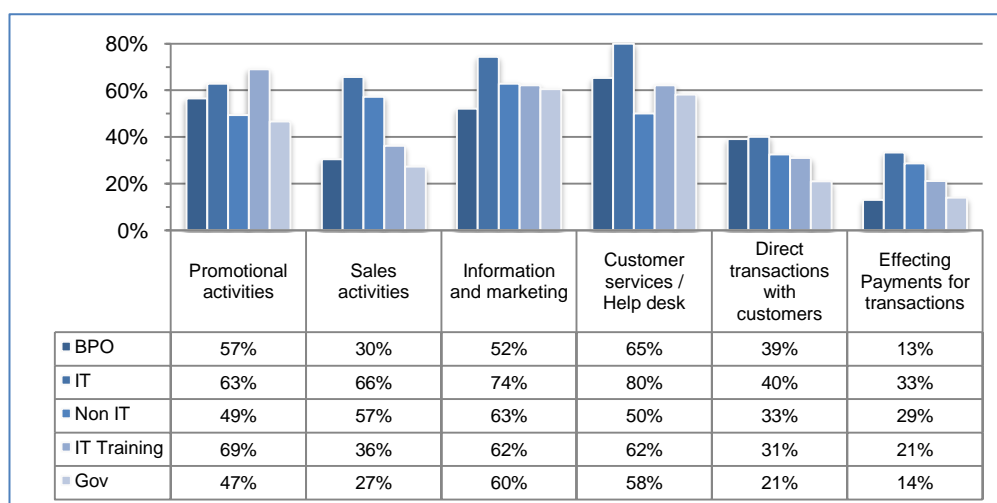


Figure 27: Use of ICT for Business with Customers

5.1.1 Usage of Internet and Websites

It is generally accepted that ICT or more specifically the internet is now becoming the most cost effective medium that helps manage business activities. As given in Figure 28, on average about 94% of the organizations use the internet for communication purposes, 55% of the organizations use for business activities with customers followed by 45% using for research purposes.

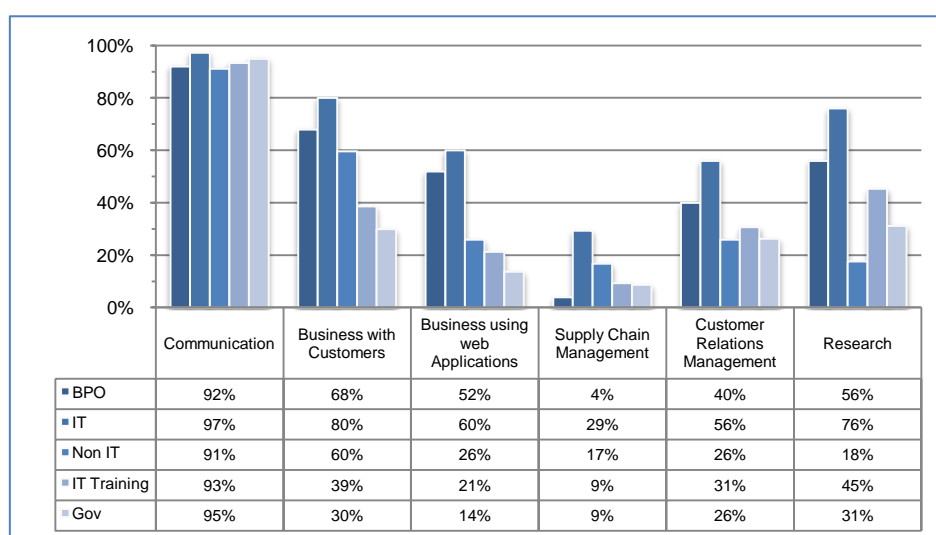


Figure 28 : Purpose of Using Internet by Sector

Data indicate that more than 95% of BPO and IT sector organizations and nearly 90% of Government and IT Training organizations maintain websites as shown in Figure 29. The Survey of ICT Usage in Government sector in 2008¹⁴ estimated the percentage of websites in Government Departments, Ministries and Statutory Boards

to be 78%, 65% and 63%, respectively, which has now increased to 100%, 90% and 84%, respectively as illustrated in Figure 30.

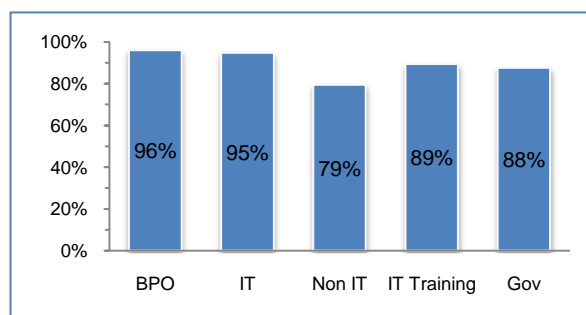


Figure 29 : Availability of Websites

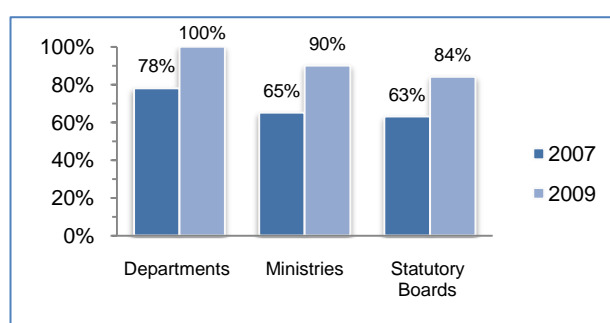


Figure 30 : Use of Websites in Government Sector

A notable fact is that 86.7% of the websites are available only in English (Figure 31). This may have an adverse effect if the purpose of the website is for information and marketing. However, collected data reveal that 30% of government organizations maintain their websites in all three official languages.

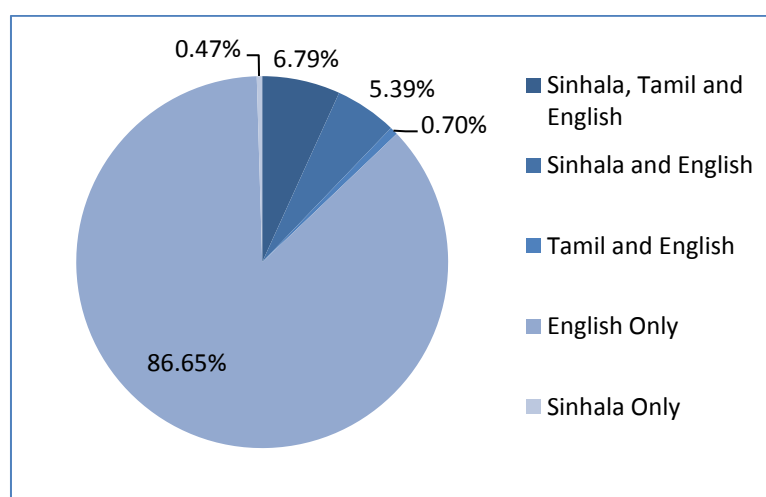


Figure 31 : Languages of Websites

5.1.2 Services Offered through Websites

As shown in Figure 32, nearly 90% of the websites are used to provide information. In addition, 43% of organizations provide facilities to download files and application forms and 35% of websites offer customer services. Use of web portals and websites for business transactions are comparatively low.

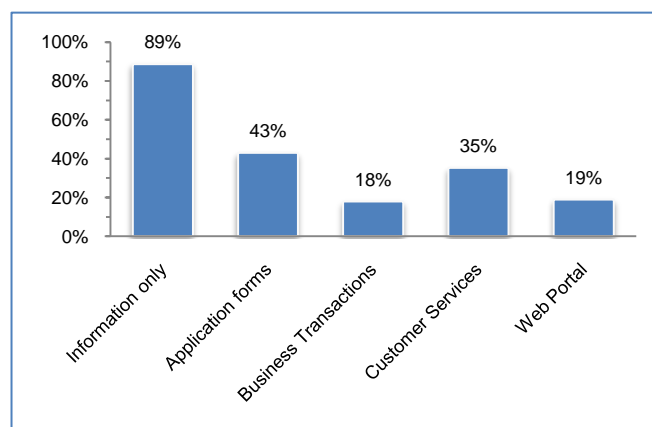


Figure 32 : Services offered through Websites

Sector wise, the services offered through websites are shown in Figure 33. Files and application forms can be downloaded from the websites of more than 60% of Government organizations and IT Training Institutes.

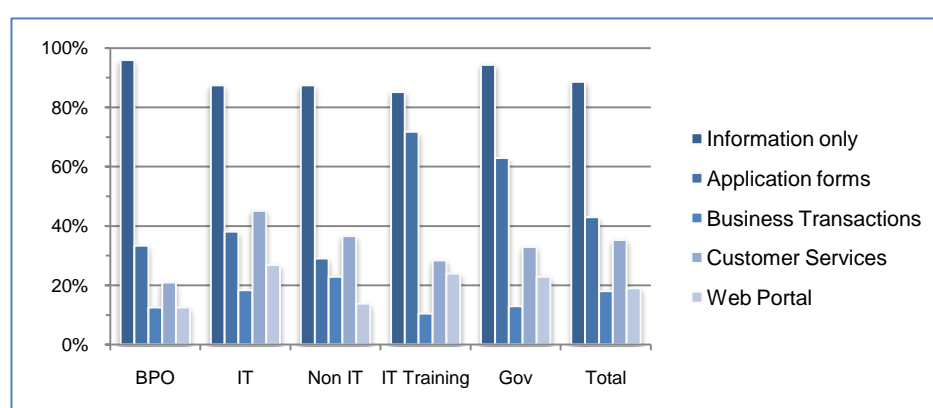


Figure 33 : Services Offered through Websites by Sector

5.1.3 Business with Customers via Electronic - Commerce

Data indicate a limited usage in areas of business activity via electronic commerce. As shown in Figure 34, the most commonly used method of business with customers via electronic commerce is internet marketing with an average of 29% whereas, other activities have shown considerably low percentages. A sector wise comparison

shows a very low use with less than 9% business with customers via electronic - commerce in Government sector compared with other sectors. With the increase of the overall use of ICT in the society, a growth in business with customers via electronic - commerce can be expected.

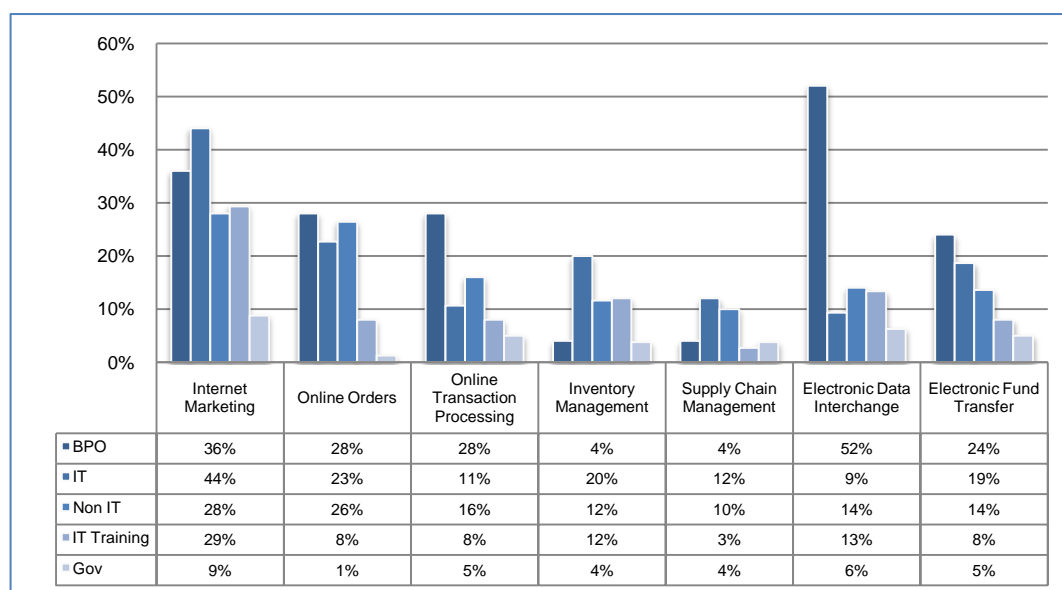


Figure 34 : Areas of Business with Customers via Electronic - Commerce by Sector

As given in Table 18, it is noted that most of the respondents have identified high cost of infrastructure as the main barrier faced in using electronic - commerce in business activities followed by the high cost of bandwidth.

Table 18 : Barriers Faced by Organizations

Barriers Faced by Organizations	Rank
Infrastructure cost	1
Cost of Bandwidth	2
Cost of maintaining payment gateways	3
Availability of options for payment gateways	4

Companies use secured transaction certificates (SSL, TLS, etc.) in carrying out business transactions in electronic commerce. As given in Figure 35, it is noted that 44% of the BPO companies followed by 28% of the IT companies have obtained secured transaction certificates, whilst it is only 6% in Government organizations.

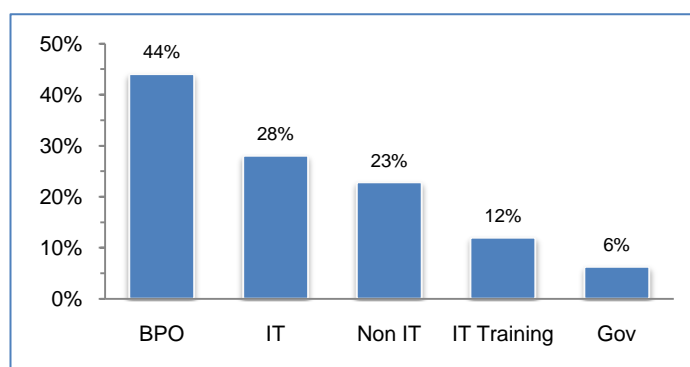


Figure 35 : Organizations having Secured Transaction Certificates

5.2 Usage and Awareness of Licensed Software

Software usage patterns are similar among all the sectors. Use of proprietary software is very high with an overall average of 86% as shown in Table 19. It is also noticeable that the use of proprietary operating systems and productivity tools are very high in all sectors with an average of 96%. Free and open source software is also commonly used in all sectors with an overall average of 30%. However, the use of open-source software is far below the average value in the non-IT sector (20%).

Table 19 : Use of Software Applications

		BPO	IT	Non IT	IT Training	Govt.
Proprietary Software	Operating Systems	100%	92%	96%	96%	98%
	Productivity Tools/ Application Software	100%	93%	95%	97%	96%
	Security Software	88%	81%	76%	80%	84%
	Software Solutions	84%	69%	66%	57%	78%
Open Source	Operating Systems	32%	52%	28%	47%	35%
	Open Office and other Software	36%	43%	21%	44%	29%
	Security Software	16%	32%	16%	24%	16%
	Software Solutions	32%	44%	16%	21%	15%

In this section, an analysis is made on awareness and use of licensed proprietary software and open source software including software applications in day to day activities in organizations. As shown in Figure 36, 95% of the organizations are aware of the fact that used software needs to be licensed.

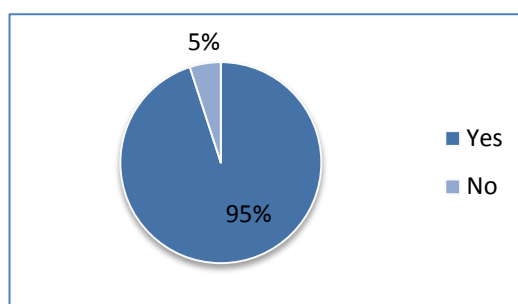


Figure 36 : Awareness on Software Licence

As shown in Figure 37, 95% is aware that proprietary software needs to be licensed whereas, only 77% is aware that free and open source software also needs to be licensed.

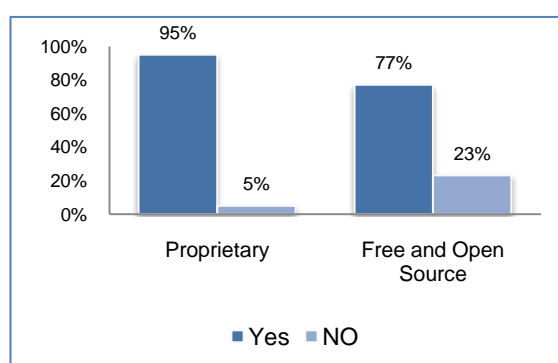


Figure 37 : Awareness on Types of Licensed Software

Table 20 below gives the awareness on restrictive use of unlicensed software. It is significant that most of the respondents are aware on the restrictive use of software without a license.

Table 20 : Awareness on Types of Software Licences

	Proprietary		Free and Open Source	
	Yes	No	Yes	No
It always costs money to get such a license	96%	4%	10%	90%
It gives you the right to use only	85%	15%	26%	74%
It gives you the right to modify	11%	89%	81%	19%

Even though organizations are aware of the fact that a licence is a must for the use of proprietary software, it is practised in breach. Figure 38 shows the usage of licensed software by each sector, and according to data, usage of licensed Security

Software and Software Solutions are higher across all sectors when compared to Operating Systems and Productivity Tools / Application Software. It is a notable fact that all the BPO sector organizations use only licensed software. In the IT sector more than 75% of the software used by about 80% of the organizations are licensed. A very limited number of responses were received from the IT Training Institutes for this section and out of the responses, it was found that the usage of licensed Operating Systems and Productivity Tools / Application Software are comparatively low in the sector. It is also noted that the responses received on usage of licensed software is comparatively low and it was lowest in IT Training Institutes. The analysis and the interpretation are mainly based on the responses received due to practical difficulties in physical verification.

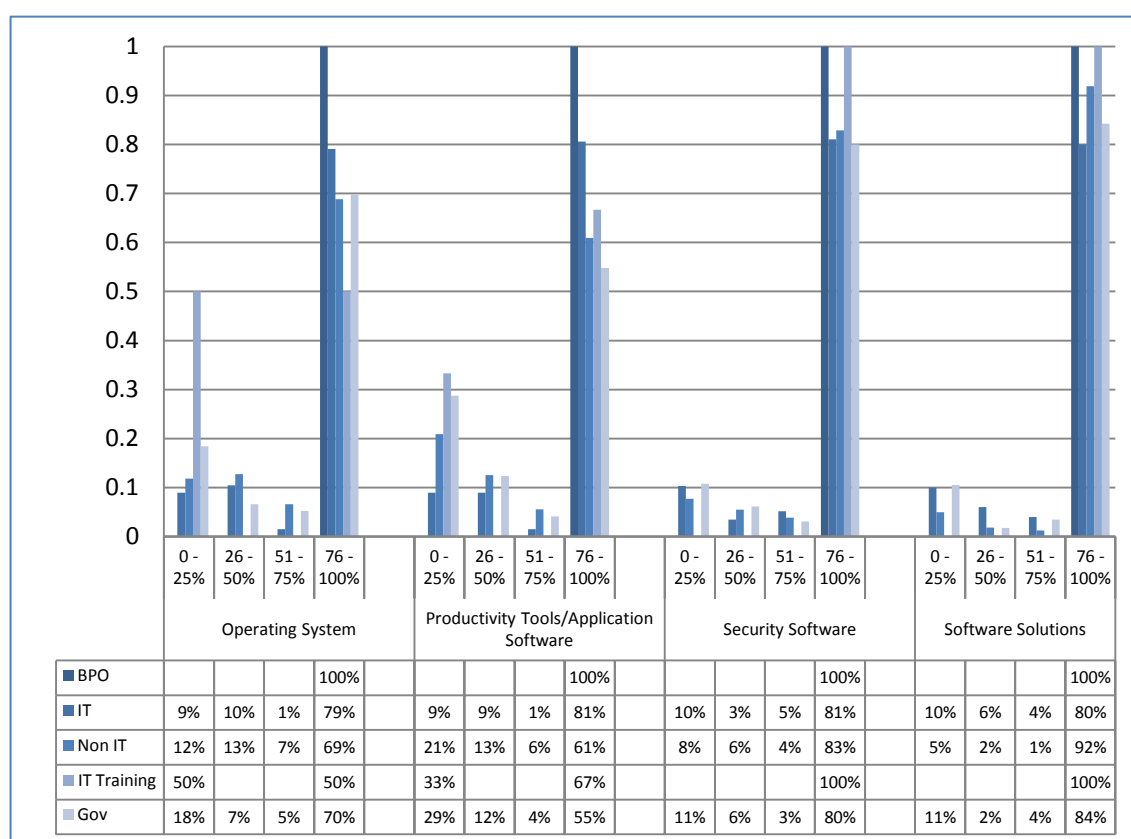


Figure 38 : Usage of Licensed Software by Sector

5.3 Awareness on Intellectual Property Laws and Acts of Sri Lanka

As shown in Figure 39, 90% of the respondents are aware of Intellectual Property Laws. When awareness is considered by sector, more than 95% of the IT, BPO and Government Sector respondents are aware of the laws.

As given in Figure 40, 75% of the respondents' are aware of the Intellectual Property Act of Sri Lanka. Sector wise, more than 88% of the IT, BPO and Government sector respondents and 67% of non-IT sector respondents are aware of the Intellectual Property Act of Sri Lanka. It is also noted that a reasonable number of respondents

are aware of the Computer Crimes Act No. 24 of 2007 and the E-transactions Act No. 19 of 2006.

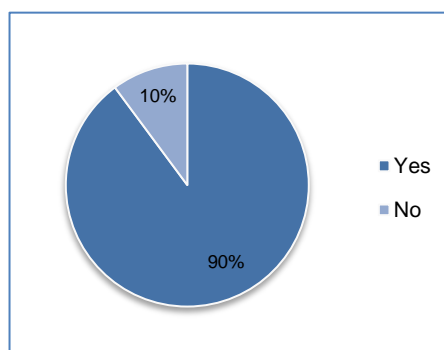


Figure 39: Awareness on Intellectual Property Laws

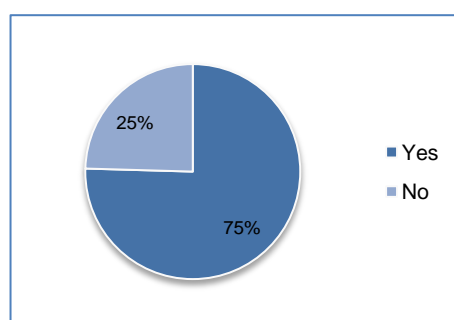


Figure 40 : Awareness on Intellectual Property Act of Sri Lanka

As shown in Figure 41, media (Print, TV, Radio, etc.) is found to be the most prominent source of information on the Intellectual Property Act with 66% followed by internet and email which is 47%. In addition to the above, data shows that workshops / training also has a positive impact.

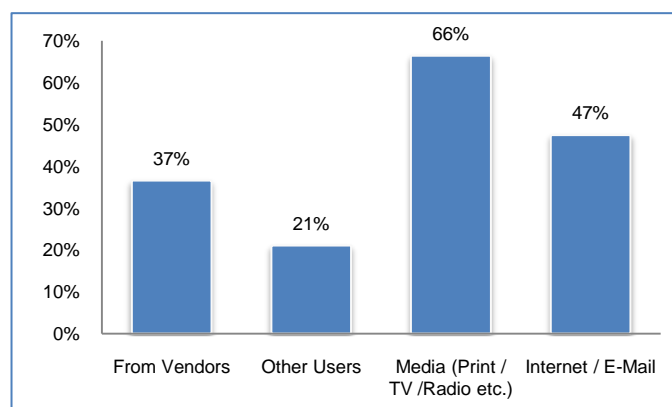


Figure 41 : Sources of Information on Intellectual Property Act

5.4 Connectivity and Networking

Requirement of connectivity differ with the nature of business, scale of business, use of computers / ICT, etc. As shown in Figure 42 various types of connectivity are used in organizations according to the requirements of the organization. It is observed that 37% of the organizations use 2 Mbps ADSL connectivity followed by 32% of the organizations using 512 Kbps ADSL connectivity. It is also noted that, at present Dial Up (Hardwired and Wireless) connectivity is hardly used by organizations.

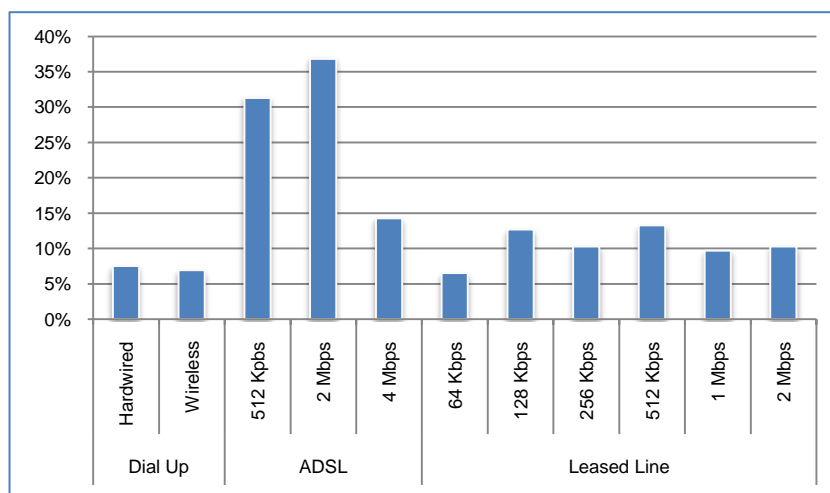


Figure 42 : Types of Connectivity used by Organizations

Details on the types of networks used in organizations are given in Figure 43. From the data obtained it is observed that 95% of the Government Organizations have a Local Area Network (LAN) which is a noteworthy fact and a very important step taken by the Government to improve the ICT usage in the country. This is also testimony of the e-government / Lanka Government Network (LGN) project currently implemented by ICTA which has assisted many Government organizations in computerizing systems and processes. However, the percentage of computers connected to the LAN in an organization was not physically verified in this survey.

When nearly 1/3rd of organizations in all other sectors have a wide area network (LAN/WAN) only about 22% of the Government organizations have access to a wide area network (LAN/WAN). The reason for the relatively high use of ICT among senior and middle level managers in day to day activities with the lowest percentage (1.4%) for business with customers is proof for the high LAN to WAN ratio in Government organizations.

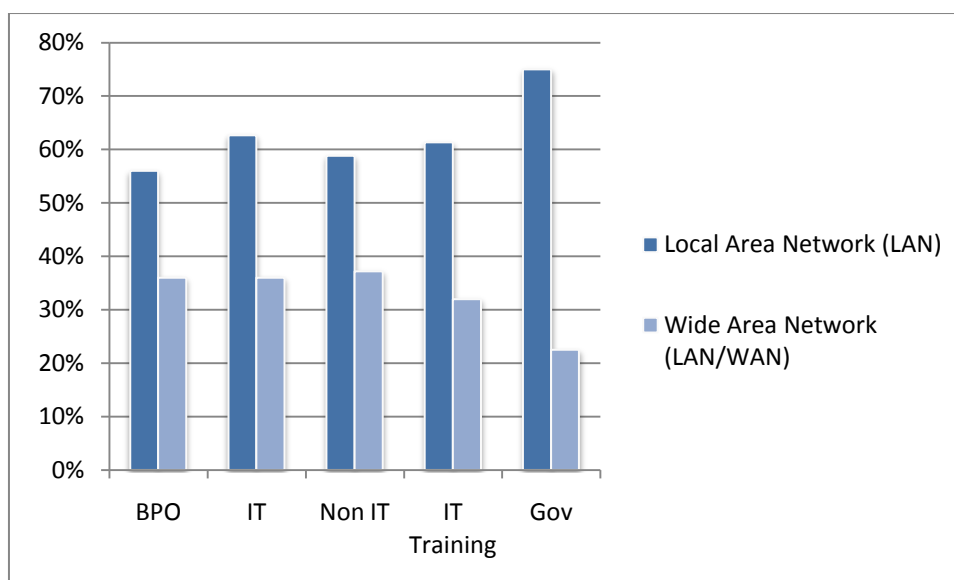


Figure 43 : Types of Networking Systems Used in Organizations

5.5 Analysis of Budget Allocations for ICT Activities

ICT related budget allocations, such as the amount spent in 2008, budget allocated for 2009, amount spent in 2009 and amount forecast for 2010 are presented in Tables, 21, 22, 23, and 24, respectively.

- Investment / spending on ICT is high in IT and non-IT sectors in comparison with the other sectors.
- Budgets on ICT Training are low in all sectors other than in the IT sector.
- Most of the organizations do not keep up to the forecast/ allocated budget and spend less in most instances.
- Budget allocated for ICT software, (upgrades & maintenance) and hardware (upgrades and maintenance) are comparatively high.
- In general, BPO sector has minimum budget allocations for ICT.
- Expenses for ICT consultancies are comparatively high in the IT sector
- Government sector has the highest budget allocation for ICT Hardware upgrades and hardware maintenance in year 2010

Table 21 : Mean Expenditure per Year (2008)

Sector	ICT training	ICT software, upgrades & maintenance	Hardware upgrades and maintenance	Network related maintenance cost	Connectivity Charges	Consultancy
BPO	92,500	887,500	400,000	137,500	800,000	.
IT	1,635,566	2,379,079	2,905,448	1,856,250	5,207,943	8,264,643
Non IT	541,500	3,269,242	2,448,508	1,921,461	452,550	394,909
IT Training	622,480	552,251	882,477	630,173	419,813	320,000
Government	157,017	434,375	2,062,121	607,387	1,035,263	90,571

Table 22 : Mean Budget Allocation per Year (2009)

Sector	ICT training	ICT software, upgrades & maintenance	Hardware upgrades and maintenance	Network related maintenance cost	Connectivity Charges	Consultancy
BPO	185,000	1,150,000	400,000	225,000	1,500,000	.
IT	4,056,154	2,815,025	3,852,917	1,170,000	5,920,167	2,949,333
Non IT	651,500	2,687,760	7,299,278	7,117,770	3,734,296	535,625
IT Training	474,667	939,273	1,392,100	769,475	552,758	337,500
Government	355,938	459,091	3,010,571	995,438	1,474,368	90,571

Table 23 : Mean Expenditure per Year (2009)

Sector	ICT training	ICT software, upgrades & maintenance	Hardware upgrades and maintenance	Network related maintenance cost	Connectivity Charges	Consultancy
BPO	7,000	200,000	383,333	87,500	693,000	.
IT	2,467,943	2,924,962	1,981,521	679,077	4,537,996	1,987,100
Non IT	319,405	3,118,769	3,815,047	943,288	617,622	1,138,692
IT Training	301,994	642,050	968,853	603,859	408,703	248,750
Government	306,469	380,471	3,006,286	803,969	1,375,686	92,357

Table 24 : Mean Budget Allocation per Year (2010)

Sector	ICT training	ICT software, upgrades & software maintenance	Hardware upgrades and hardware maintenance	Network related maintenance cost	Connectivity Charges	Consultancy
BPO	200,000	283,333	1,000,000	150,000	1,025,000	400,000
IT	2,597,727	2,937,500	5,203,636	3,471,429	6,940,091	2,828,000
Non IT	574,474	3,972,368	3,784,721	2,524,714	1,045,354	2,520,556
IT Training	756,786	606,944	1,729,688	624,583	290,921	160,000
Government	648,833	1,789,677	6,016,279	775,935	1,415,968	260,593

5.6 Benefits to the Organization by interventions of ICT

As shown in Figure 44, 93% of organizations in general accepted that intervention of ICT has benefited their organization as a whole.

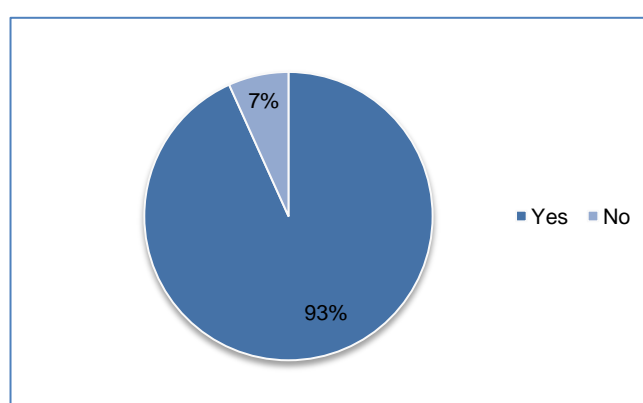


Figure 44: Benefits to the Organization by Interventions of ICT

CHAPTER 6 - CONCLUSIONS

This survey on 'ICT Usage in Business and Workforce' is a continuation on the two surveys already completed in 2004 and 2006 and gives a comprehensive analysis of the supply and demand of the ICT Workforce in the country and also provides information on the BPO sector and ICT Usage in business which will be required for policy making and future development of information and communication technology in the country. The conclusions and recommendations that could be derived from the findings of this survey are given below.

Growth of ICT Workforce

1. The average annual growth rate of IT workforce from 2003 to 2006 is 25% with an increase of nearly 4,800 each year and from 2006 to 2009 it has reduced to 12.5% which is an increase of merely 4,200 each year. This may be attributed to several reasons, such as global economic recession, economic and political instability etc. in Sri Lanka.
2. The IT workforce in 2009 is 42,821. It is estimated to grow to about 50,000 by the end of 2010, which is an estimated growth rate of about 17%. With the importance given to ICT by the Government of Sri Lanka with 6.0% of GDP spent on ICT and the implementation of IT related programmes by ICTA in areas of strategic priority; such as access to ICT infrastructure, ensuring access for populace in rural areas, mainstreaming of ICT to improve the delivery of public and private services across various economic and social sectors, human resource capacity development, and support given to the development of local information technology (IT) industries, will undoubtedly increase the access and usage of IT, thereby increasing the actual demand to a higher value than the estimation.
3. Year by year the increase in IT workforce has been almost equally distributed between the IT and non-IT sectors up to 2008. However, from 2008 to 2009, the increase in IT workforce, which is about 3,700, is distributed as 53%, 30%, 4% and 13% in the IT, non-IT Government and BPO sectors, respectively. In the projections for 2010, an increase in the workforce by 7,338 is estimated with a distribution of 4,087 (56%) in IT sector, 2096 (29%) in non-IT sector, 614 (8%) in the Government sector and 541 (7%) in the BPO sector. The estimated increase of 8% from the total increase in the Government Sector shows that the Government backed IT initiatives which are mainly driven by the ICTA aimed at public services is on the rise.
4. A sector wise analysis shows that the IT workforce in 2009 is distributed as 49%, 42%, 5% and 4% in the Non-IT, IT, Government and BPO sectors, respectively. Similarly, the sector wise analysis of the estimated workforce in 2010 shows a distribution of 46%, 44%, 6% and 4% distribution of the IT workforce, in the Non-IT, IT, Government and BPO sectors, respectively. This also shows an expected growth in the IT workforce in the IT and Government Sectors.
5. In the IT Enabled Services (ITES) / Business Process Outsourcing (BPO) sector an increase from 1,201 in 2008 to 1,677 in 2009 is observed, which is an increase of

almost 40% and from 2009 to 2010 it is estimated to increase to 2,218 which is an increase of 33%. Since the BPO sector has been emerging as a growing area during the past 5 years, the total number of companies as well as the IT workforce in the sector is relatively small compared with other sectors. However, the IT workforce growth in the sector is relatively high.

6. Programming and Software Engineering accounts for nearly one fourth (26%) of the IT workforce and Technical Support is the second largest job category with 17% followed by 11% of System and Network Administrators across all sectors in the IT workforce.
7. The largest increase across all job categories from 2004 to 2006 was identified to be Testing and Quality Assurance engineers from 4% to 13% of the total workforce. However, this has decreased to 7% in 2009. In this survey, both, Management Information System/IT Management and Systems and Network Administration Workforce have increased from 5% to 9% and 7% to 11% respectively from 2006 to 2009.
8. As in the previous survey the male to female ratio is the same with 21% of the overall IT workforce being female while 79% is male dominated.
9. In the IT workforce 55% of the IT professionals have more than 3 years experience and 45% are with less than 3 years experience. It is also to be noted that IT professionals with 1-5 years experience are about 53% and professionals with more than 5 years experience is 34%. Therefore, it is observed that there is a growing number of young IT professionals in the workforce.
10. The overall attrition rate for the IT workforce has changed from 6.6% in 2004 to 13% in 2006. However, the overall attrition rate is about 7% and the brain drain is about 4% among the IT Workforce in 2009. It is significant that the attrition rate of IT Workforce in the IT Sector is relatively high with 11%, both BPO and Non IT Sectors are 4% each and in the Government Sector 2%.

Demand and Supply of IT Professionals

1. The preferred minimum academic qualification required for an IT professional is a Bachelor's Degree. The overall demand for IT professionals is around 7,350 and the demand for IT Graduates for all the sectors for 2010 is predicted to be about 3,970, which is lower than the predicted supply of 4,473 (3,681 IT and 792 IT Major). In comparison to the IT Graduates, the number who completes Post Graduate Diploma (577) and Master's (560) programs are very low. This implies that higher qualifications are not mandatory for IT professionals.
2. It is observed that most organizations in IT, non-IT and BPO sectors other than the Government Sector consider soft skills as most important when recruiting IT employees, which gives a higher priority to the Core Skills in recruitment. Employers find that essential soft skills are lacking in employees with Communication Skills being the most deficient.

3. A “Good Compensation Plan” is the key factor to retain employees throughout all the sectors. In IT and non-IT sectors the work environment is also important, whereas in the Government sector it is the job security which is considered as the next most important factor.
4. In all the sectors the salary range offered for newly recruited IT professionals is Rs. 10,000/- to 20,000/- in all job categories. With experience the salary scales of IT personnel increase at a faster rate especially in the IT sector followed by the non-IT sector. However, in the Government sector the salaries increase gradually.
5. The levels of experience of the IT training staff are 31% with 1 - 3 years of teaching experience, 27% with 4 - 7 years of experience and 20% with over 8 years experience. The most experienced staff is attached to the Government Universities and Private Degree awarding institutions. However, it is observed that 30%-40% of the most experienced IT teaching staff is working on part-time basis.

ITES / BPO Sector

1. The BPO industry began in the year 2000 with many companies emerging during the last 5 years and currently Sri Lanka is been increasingly recognized as an emerging outsourcing destination. Low labour costs, widespread use of English, strong education systems and increasingly open and well-regulated business environment have been cited as reasons why Sri Lanka is considered as a BPO destination. This is also reflected by the addition of Sri Lanka to the Global Services Location Index (GSLI) in 2007 for the ranking of the top 50 locations worldwide that provide ITES / BPO services¹⁰ and from 2007 to 2009, Sri Lanka's GSLI ranking has climbed from 29th to 16th showing a steady expansion in the BPO sector.
2. The ITES/BPO sector in Sri Lanka provide 20% on-shore services, 44% off-shore services, and 36% both on-shore and off-shore services. 48% of operators are captive market operators and 52% are non-captive market operators.
3. Transaction processing / document management is the most popular with 32% of the services provided, accounting services is about 31% and call centre services is 20%.
4. The projected total ITES/BPO workforce is 11,384 at the end of 2009 and the average annual growth is determined to be 42%. In this sector the male to female ratio is 57% to 43% and employees are mostly in the age groups of 21 - 25 years (37%) and 26 – 30 years (33%).
5. The BPO sector being relatively new and an emerging industry in Sri Lanka, nearly 88% of the employees are Operational Staff of 1-3 years experience and has an attrition rate of about 17%. They are mainly recruited through newspaper advertisements.

6. The BPO industry provides employment for people with varying skills and academic qualifications. 43% are GCE A/L qualified, 24% are Diploma or Higher Diploma holders, 15% are with professional qualifications whilst only 13% and 2.5% are graduates with Bachelor's / Master's Degree respectively.
7. In the ITES / BPO sector managerial employees are mainly recruited by references. Fluency in English is the essential primary skill. Communication skills are the most important complementary skills needed in these employees.
8. For operational staff, technical skills are primarily essential whilst a positive attitude is a vital complementary skill needed for operational staff to perform their jobs effectively. However, these skills are the most deficient in new recruits in the ITES/BPO sector.
9. Most of the BPO companies consider "On the job Training" as the best means of skills development followed by "Formal In-house Training" and "BPO Related Trade Certification" as the next ranked method of skills development in the BPO sector.

ICT Usage in Business

1. Over 50% of all Senior and Middle level staff use IT in all sectors in more than 75% of day to day activities. Over 70% – 90% of all Senior, Middle and Junior level staff in IT and BPO sectors use computers for more than 75% of day to day activities. However, use of IT by all staff and especially the junior level staff can be further improved and encouraged in non-IT, IT-Training and Government Sectors.
2. Nearly 90% in IT and BPO sectors use ICT for both "Back Office Operations" and "Business with Customers, whereas the usage for both purposes by other sectors is in the range of 52% to 64%. However, ICT usage only for "Business with Customers" is less than 5% in all sectors.
3. On average about 85% of the respondents use ICT for financial management, 60% use ICT for human resource management and 52% for inventory management in their day to day back office operational activities.
4. From those who use ICT for Business with Customers, on average 63% of the organizations surveyed use ICT for Customer Services/help desk, 62% use for Information and Marketing and 57% use websites for Promotional Activities.
5. ICT or more specifically the internet is now becoming the most cost effective medium that helps manage business activities. On average about 94% of the organizations use the internet for communication purposes, 55% of the organizations on average use for business activities with customers followed by about 45% using for research purposes.
6. More than 95% of BPO and IT sector organizations and nearly 90% of Government and IT Training organizations maintain websites. The Survey of ICT Usage in Government Sector in 2008 estimated that the percentage of websites in Government

Departments, Ministries and Statutory Boards to be 78%, 65% and 63%, respectively, which has now increased to 100%, 90% and 84% respectively.

7. A notable fact is that 86.7% of the websites are available only in English which may have an adverse effect if the purpose of the website is for information and marketing. However, collected data indicate that 30% of Government Organizations maintain their websites in all three official languages.
8. On average nearly 90% of the websites are used to provide information, 43% of organizations provide facilities to download files and application forms and 35% of websites offer customer services. It is to be noted that files and application forms can be downloaded from websites of more than 60% of Government Organizations and IT Training Institutes.
9. Data indicate a limited usage in areas of business activity via electronic – commerce. The most commonly used method of business with customers via electronic-commerce is internet marketing with an average of 29% whereas, other activities has shown considerably low percentages. A sector wise comparison shows a very low use with less than 9% business with customers via electronic - commerce in Government Sector compared with other sectors. With the increase of the overall use of ICT in the society, a growth in business with customers via electronic - commerce can be expected.
10. Most of the respondents have identified high cost of infrastructure as the main barrier faced in using electronic - commerce in business activities followed by the high cost of bandwidth.
11. It is noted that 44% of the BPO companies followed by 28% of the IT companies have obtained secured transaction certificates (SSL, TLS, etc.) in carrying out business transactions in electronic commerce, whilst it is only 6% in Government Organizations.
12. Software usage patterns are similar among all the sectors. Use of proprietary software is very high with an overall average of 86%. It is also noticeable that the use of proprietary operating systems and productivity tools are very high in all sectors with an average of 96%. Free and open source software is also commonly used in all sectors with an overall average of 30%, however, the use of open-source software is far below the average value in the non-IT sector (20%).
13. 95% of the organizations are aware of the fact that software needs to be licensed. It is significant that most of the respondents are aware on the restrictive use of software without a license. 95% of the organizations are aware of the fact that proprietary software needs to be licensed whereas, only 77% are aware that free and open source software also needs to be licensed.
14. Even though organizations are aware of the fact that a licence is a must for the use of proprietary software, software with a valid licence is not necessarily used by those who are aware of the requirement. Usage of licensed Security Software and Software Solutions are higher across all sectors when compared to Operating Systems and Productivity Tools / Application Software. It is a notable fact that all the BPO sector

organizations use only licensed software and in the IT sector more than 75% of the software used by about 80% of the organizations are licensed. The usage of licensed Operating Systems and Productivity Tools / Application Software is comparatively low in the IT Training Institutes.

15. 90% of the respondents are aware of Intellectual Property Laws and 75% are aware of the Intellectual Property Act of Sri Lanka. Sector wise, more than 95% of the IT, BPO and Government Sector respondents are aware of the Intellectual Property laws, and more than 88% of the IT, BPO and Government sector respondents and 67% of non-IT sector respondents are aware of the Intellectual Property Act of Sri Lanka.
16. Media (Print, TV, Radio, etc.) is found to be the most prominent source of information on the Intellectual Property Act with 66% followed by internet and email which is 47%.
17. It is observed that 37% of the organizations use 2 Mbps ADSL connectivity followed by 32% of the organizations using 512 Kbps ADSL connectivity. It is also noted that, at present Dial Up (Hardwired and Wireless) connectivity is hardly used by organizations.
18. Even though a physical verification was not carried out, from the data obtained it is observed that 95% of the Government Organizations have a Local Area Network (LAN) which is a noteworthy fact and a very important step taken by the Government to improve the ICT usage in the Country. This is also testimony of the e-government / LGN project currently implemented by ICTA which has assisted many Government organizations in computerizing the systems and processes. However, when nearly 1/3rd of organizations in all other sectors have wide area networks (LAN/WAN) only about 22% of the Government organizations have access to a wide area network (LAN/WAN). The reason for the relatively high use of ICT among senior and middle level managers in day to day activities with the lowest percentage (1.4%) for business with customers is proof for the high LAN to WAN ratio in Government organizations.
19. Analysis of Budget Allocations for ICT Activities shows that
 - Investment / spending on ICT is high in IT and non-IT sectors in comparison with the other sectors.
 - Budgets on ICT Training are low in all sectors other than in IT sector.
 - Most of the organizations do not keep up to the forecast / allocated budget and spend less in most instances.
 - Budget allocated for ICT software, (upgrades & maintenance) and hardware (upgrades and maintenance) are comparatively high.
 - In general, BPO sector has the minimum budget allocation for ICT.
 - Expenses for ICT consultancies were comparatively high in the IT sector
 - Government sector has the highest budget allocation for ICT Hardware upgrades and hardware maintenance in year 2010

REFERENCES

1. <http://www.priu.gov.lk/mahindachintana/MahindaChintanaEnglish.pdf>, Mahinda Chintana, 2005.
2. The World Economic Forum's Global Information Technology Report of 2008-2009, 'Mobility in a Networked World.'
3. World Bank: <http://info.worldbank.org/etools>, Knowledge for Development, Sri Lanka, KEI Index, 2009.
4. World Bank (2008) :Building the Sri Lankan Knowledge Economy, Finance and Private Sector Development Unit, South Asia Region, The World Bank, March 2008
5. Geared for Growth: National IT Workforce Survey 2005, Sri Lanka ICT Association (SLICTA).
6. Rising Demand: National IT Workforce Survey 2007, Sri Lanka ICT Association (SLICTA).
7. World Information Technology and Services Alliance (WITSA) Global Public Policy Summit 2009, Bermuda, the "Bermuda Declaration" for the ICT Sector.
8. World Bank published report on '2009 Information and Communications for Development: Extending Reach and Increasing Impact.
9. The Shifting Geography of Off shoring: The 2009 A.T. Kearney Global Services Location Index
10. Off shoring for Long-Term Advantage, The 2007 A.T. Kearney Global Services Location Index
11. A baseline sector analysis of the business process outsourcing industry of Sri Lanka, LIRNEasia, September 2006
12. Export Value Survey of Sri Lankan IT/ITES Industry 2007, October 2008
13. Data Quest-IDC BPO Employee Satisfaction Survey, <http://dgindia.ciol.com/>, 2009
14. Final Report on the "Survey on ICT Usage in Government Sector," ICTA, March 2008