

# ANNUAL SURVEY ON INFOCOMM MANPOWER FOR 2010

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# **PART I: SURVEY OBJECTIVE AND METHODOLOGY**

## **1. Introduction**

Infocomm manpower surveys have been carried out by IDA annually since 1999. This is the 12th in the series.

An infocomm manpower is a person engaged primarily in infocomm-related work either in an IT or telecommunication equipment and/or services provider, or end-user organisation. He/She must be employed by the Singapore-based organisation on a full-time/part-time basis either as a permanent or direct contract staff to work in Singapore or to station overseas.

The work of the person may include the development, distribution, implementation, support, operation, sales or marketing of telecommunication, computer hardware/software, IT services or multimedia contents.

The definition does not include infocomm manpower under the employment of contractors and subcontractors.

## **2. Survey Objective**

The objective of the Survey is to assess the infocomm manpower pool and its profile in Singapore as at **1 Jun 2010**.

## **3. Methodology**

The sample, covering all industrial sectors, was selected from the Establishment Sampling Frame maintained by the Department of Statistics. The sample was stratified by the Singapore Standard Industrial Classification (SSIC). Data collection (via self-administered questionnaires by mail/email/Internet submission) and processing for the Survey was carried out from Aug to Dec 2010.

## **4. Notes on Data**

Past years' data are included for comparison purposes where available. Due to the rounding of figures to the nearest whole number, the sum of individual figures may not add up to the total or 100%.

## **PART II: SURVEY FINDINGS**

## 1. SUMMARY

- The number of employed infocomm manpower grew by 0.4% to reach 141,300 as at Jun 2010<sup>1</sup>. Together with 16,100 infocomm job vacancies, total infocomm demand reached 157,400 in 2010 as compared to 143,500 in 2009. This represented an increase of 9.7%, or 13,900 infocomm jobs created.
- More than half (58%) of infocomm manpower were found in infocomm organisations, with the remaining from end-user organisations. *Operations & Support, Infocomm Sales & Marketing, and Application Engineering* were the three largest infocomm job categories in 2010.
- 74% of infocomm job vacancies were in infocomm organisations, with the remaining from end-user organisations. *Operations & Support, Infocomm Sales & Marketing, and Application Engineering* were the top three job categories with the highest vacancies.
- The profile of infocomm manpower remained largely unchanged. About 8 in 10 infocomm manpower were residents, i.e. Singapore citizens and permanent residents (PRs).
- The proportion of male to female infocomm manpower was fairly constant at the ratio of 2:1. About 7 in 10 infocomm manpower were below 40 years old. About 8 in 10 infocomm manpower possessed tertiary education (i.e. diploma and above).

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<sup>1</sup> Data in this report are as at 1 Jun of the respective years (unless otherwise specified).

## 2. EMPLOYMENT

### *Moderate infocomm employment growth*

The number of employed infocomm manpower grew by 0.4% to reach 141,300 in 2010 ([Table 2.1](#)).

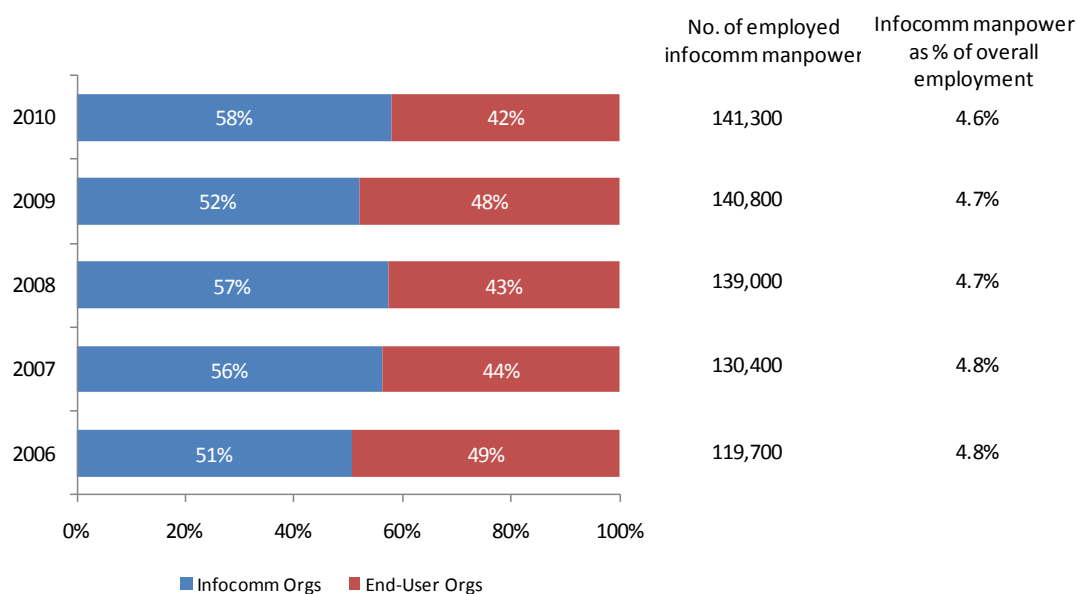
**Table 2.1: Infocomm Manpower in Singapore<sup>2</sup>**

	2006	2007	2008	2009	2010
Infocomm manpower ('000)	119.7	130.4	139.0	140.8	<b>141.3</b>
- Annual growth (%)	7.5	8.9	6.6	1.3	<b>0.4</b>

### 2.1. Employment in Segments / Sectors

In 2010, 58% of the infocomm manpower was found in infocomm organisations, with the remaining from end-user organisations ([Chart 2.1](#)). Among infocomm organisations, more than half of infocomm manpower was from the *IT Services* and *Software* segments ([Table 2.2](#)). Among end-user organisations, the *manufacturing, real estate, renting and business activities* and *wholesale and retail trade* sectors continued to lead in the hiring of infocomm manpower ([Tables 2.3](#)).

**Chart 2.1: Infocomm Manpower by Organisation Type**



<sup>2</sup> As at 1 Jun of the respective years.

**Table 2.2: Infocomm Manpower in Infocomm Organisations by Market Segment**

Segment	2006	2007	2008	2009	2010
IT Services	23%	35%	33%	32%	37%
Software	19%	25%	21%	24%	25%
Hardware	28%	22%	27%	22%	20%
Telecommunication Services	22%	16%	18%	21%	16%
Content Services	8%	2%	1%	1%	1%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Base: Infocomm manpower in infocomm organisations

**Table 2.3: Infocomm Manpower in End-User Organisations by Economic Sector**

Sector	2006	2007	2008	2009	2010
Manufacturing	14%	22%	17%	19%	19%
Real Estate, Renting and Business Activities <sup>3</sup>	13%	20%	18%	21%	19%
Wholesale and Retail Trade	18%	18%	18%	21%	18%
Financial Services	37%	11%	12%	10%	17%
Construction	2%	6%	7%	5%	4%
Transport and Storage	3%	5%	4%	4%	4%
Education	4%	5%	5%	3%	3%
Others <sup>4</sup>	10%	11%	18%	17%	16%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Base: Infocomm manpower in end-user organisations

## 2.2. Job Category

The top three job categories with the highest number of employed infocomm manpower were *Operations & Support*, *Infocomm Sales & Marketing*, and *Application Engineering* (Chart 2.2).

<sup>3</sup> "Real Estate, Renting and Business Activities" include Real Estate, Rental and Leasing Activities; Administrative and Support Service Activities; and Professional, Scientific and Technical Activities.

<sup>4</sup> "Others" include Accommodation and Food Service Activities; Agriculture and Fishing, Arts, Entertainment and Recreation; Electricity, Gas and Air-Conditioning Supply; Health and Social Services; Other Service Activities; Public Sector; and Water Supply, Sewerage and Waste Management and Remediation Activities.

**Chart 2.2: Infocomm Manpower by Job Category (in thousands)**

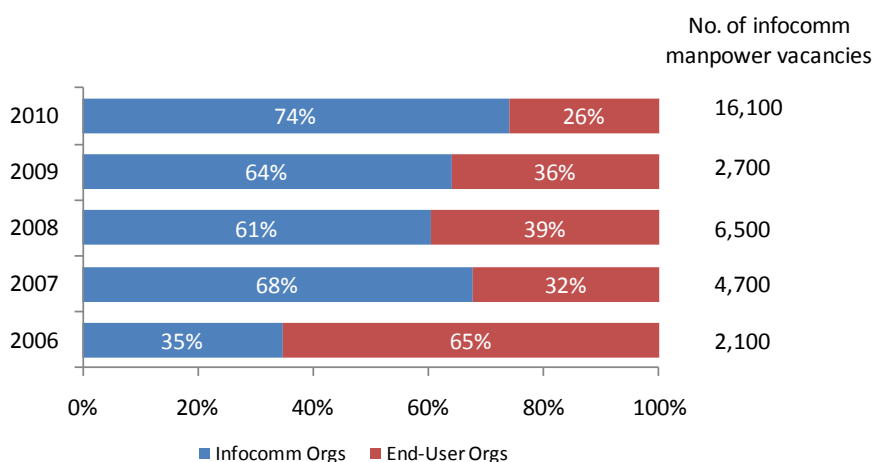


### 3. JOB VACANCIES

#### *More vacancies in infocomm organisations*

In Jun 2010, the number of infocomm job vacancies stood at 16,100 ([Chart 3.1](#)), with 7 out of 10 from infocomm organisations. This significant increase in job vacancies reflected the economic recovery.

**Chart 3.1: Infocomm Job Vacancies by Organisation Type**



The top three job categories with the highest number of infocomm manpower vacancies were *Operations & Support*, *Infocomm Sales & Marketing*, and *Application Engineering* (Chart 3.2).

**Chart 3.2: Infocomm Job Vacancies by Job Category (nearest ten)**

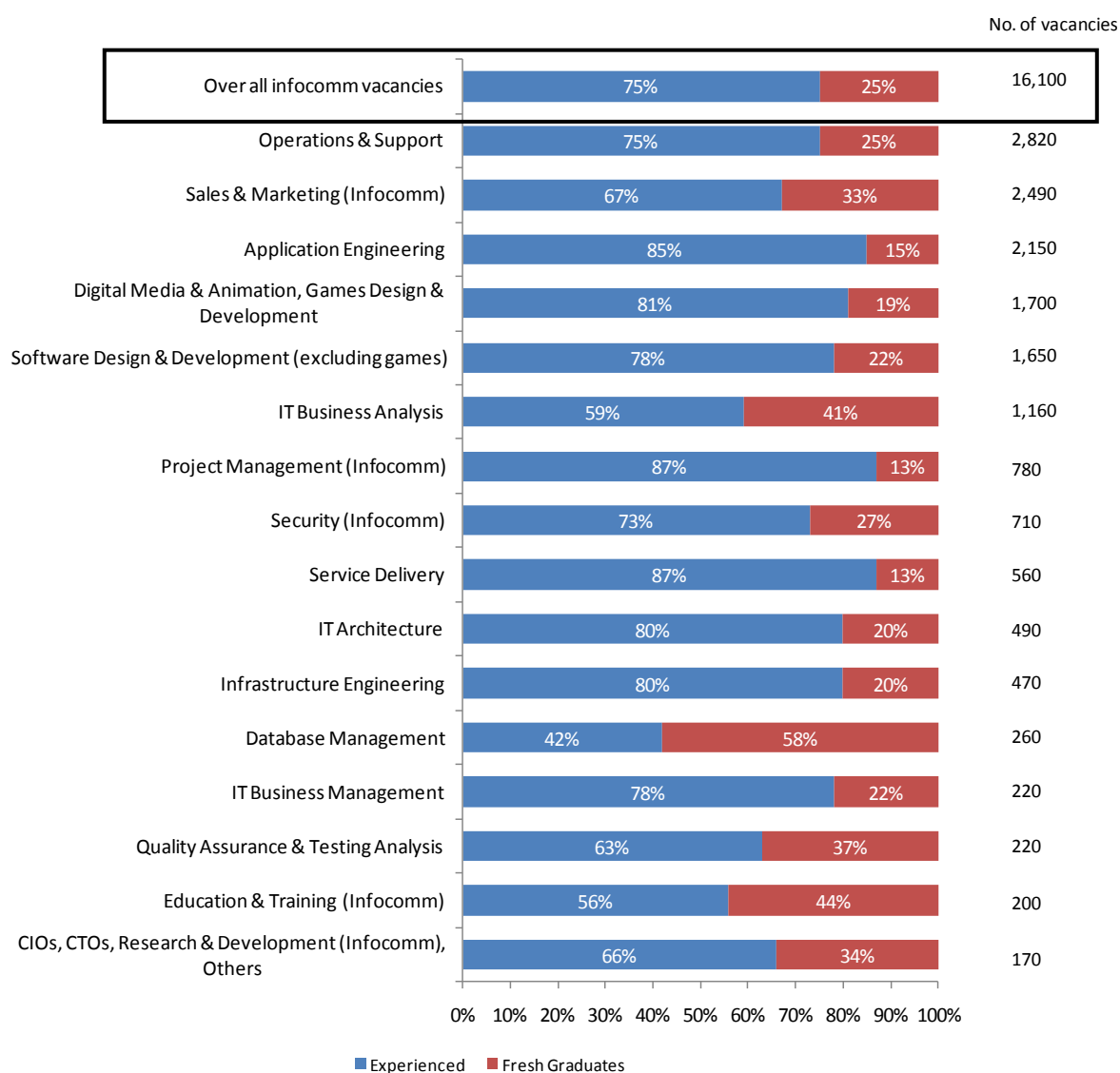


## Experienced staff preferred over fresh graduates

About 3 out of 4 (75%) infocomm vacancies required experienced manpower (Chart 3.3).

**Chart 3.3: Infocomm Job Vacancies by Job Category and Hire Type**

(Job categories arranged in descending order of number of vacancies)

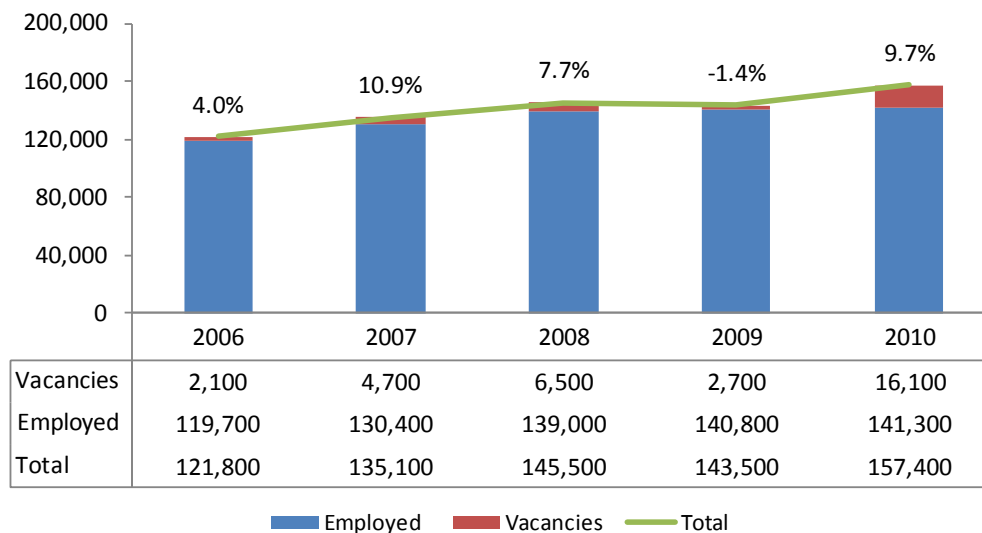


## 4. TOTAL JOBS

### *Infocomm demand driven by increase in vacancies*

With the economic recovery, total infocomm demand<sup>5</sup> increased by 9.7% (+13,900) from 2009 ([Chart 4.1](#)), due to increase in the number of infocomm job vacancies.

**Chart 4.1: Total Infocomm Demand (employed and vacancies)**



The job categories of *Operations & Support* and *Sales & Marketing (Infocomm)* formed the two largest proportions of total infocomm demand ([Table 4.1](#)).

**Table 4.1: Total Infocomm Demand (employed and vacancies) By Job Category**

Job Category	Infocomm Manpower in 2010		
	Total Demand	Employed	Vacancies
<b>Overall</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
Operations & Support	19.9%	20.2%	17.6%
Sales & Marketing (Infocomm)	15.5%	15.4%	15.5%
Application Engineering	9.2%	8.7%	13.5%
Software Design & Development (excluding games)	8.9%	8.7%	10.3%

<sup>5</sup> Total infocomm demand is the sum of employed infocomm manpower and infocomm vacancies.

Job Category	Infocomm Manpower in 2010		
	Total Demand	Employed	Vacancies
Infrastructure Engineering	7.7%	8.2%	3.0%
Project Management (Infocomm)	5.1%	5.1%	4.9%
Service Delivery	4.6%	4.8%	3.5%
Digital Media & Animation, Games Design & Development	4.5%	3.9%	10.6%
IT Business Analysis	4.0%	3.6%	7.2%
IT Business Management	3.2%	3.4%	1.3%
Database Management	2.9%	3.0%	1.6%
IT Architecture	2.5%	2.4%	3.1%
CIOs, CTOs	2.4%	2.6%	0.5%
Security (Infocomm)	2.1%	1.9%	4.4%
Quality Assurance & Testing Analysis	2.0%	2.0%	1.3%
Education & Training (Infocomm)	1.7%	1.8%	1.2%
Research & Development (Infocomm)	1.4%	1.5%	0.3%
Others	2.4%	2.7%	0.3%

Base: Total – 157,400; Employed – 141,300; Vacancies – 16,100

Infocomm organisations made up more than half of total infocomm manpower demand, employed and vacancies (Table 4.2). Amongst infocomm organisations, the *IT Services* segment led with the largest proportion of total infocomm demand.

**Table 4.2: Total Infocomm Demand (employed and vacancies) by Segment / Sector**

Segment / Sector	Infocomm Manpower in 2010		
	Total Demand	Employed	Vacancies
<b>Overall</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Infocomm Organisations (Segment)</b>			
IT Services	22.9%	21.4%	35.9%
Software	15.2%	14.5%	21.5%
Hardware	11.1%	11.3%	9.3%
Telecommunication Services	8.9%	9.2%	5.9%
Content Services	0.9%	0.8%	1.7%
<b>Infocomm Organisations Overall</b>	<b>59.3%</b>	<b>57.5%</b>	<b>74.3%</b>
<b>End-User Organisations (Sector)</b>			
Real Estate, Renting and Business Activities <sup>6</sup>	7.9%	8.0%	7.3%
Manufacturing	7.7%	8.2%	3.1%
Financial and Insurance Activities	7.0%	7.3%	4.1%
Wholesale and Retail Trade	7.0%	7.6%	1.6%
Construction	1.8%	1.8%	1.8%
Transport and Storage	1.7%	1.6%	2.6%
Education	1.2%	1.1%	1.7%
Others <sup>7</sup>	6.6%	6.9%	3.6%
<b>End-User Organisations Overall</b>	<b>40.7%</b>	<b>42.5%</b>	<b>25.7%</b>

Base: Total – 157,400; Employed – 141,300; Vacancies – 16,100

<sup>6</sup> “Real Estate, Renting and Business Activities” include Real Estate, Rental and Leasing Activities; Administrative and Support Service Activities; and Professional, Scientific and Technical Activities.

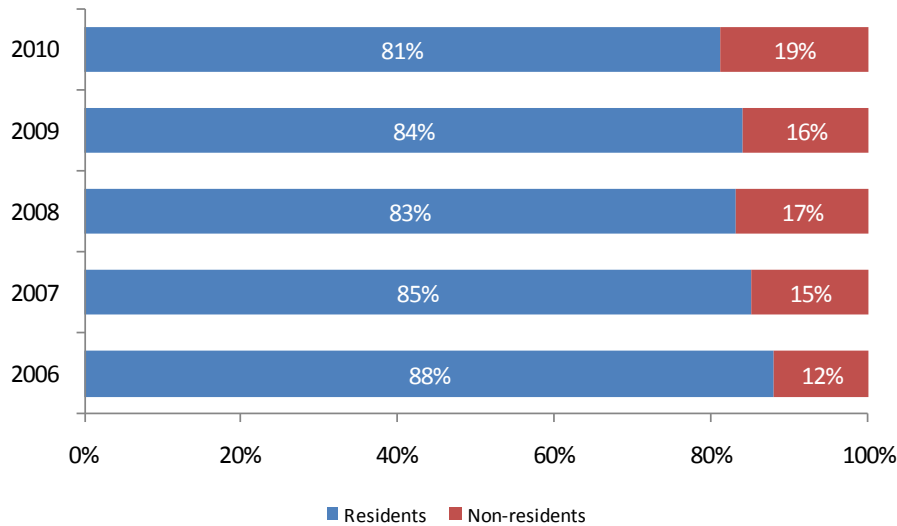
<sup>7</sup> “Others” include Accommodation and Food Service Activities; Agriculture and Fishing, Arts, Entertainment and Recreation; Electricity, Gas and Air-Conditioning Supply; Health and Social Services; Other Service Activities; Public Sector; and Water Supply, Sewerage and Waste Management and Remediation Activities.

## 5. DEMOGRAPHIC PROFILE

### ***Residents continue to form majority of infocomm manpower***

Residents (Singapore citizens and permanent residents) made up more than 80% of infocomm manpower (Chart 5.1).

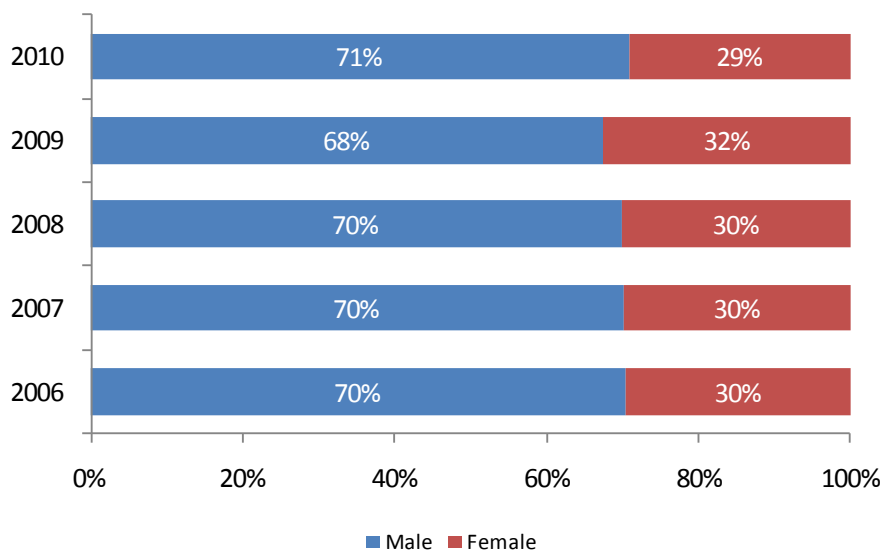
**Chart 5.1: Infocomm Manpower by Residential Status**



### ***Male to female ratio of infocomm manpower remained unchanged***

The proportion of male to female infocomm manpower remained fairly constant at the ratio of 2:1 (Chart 5.2).

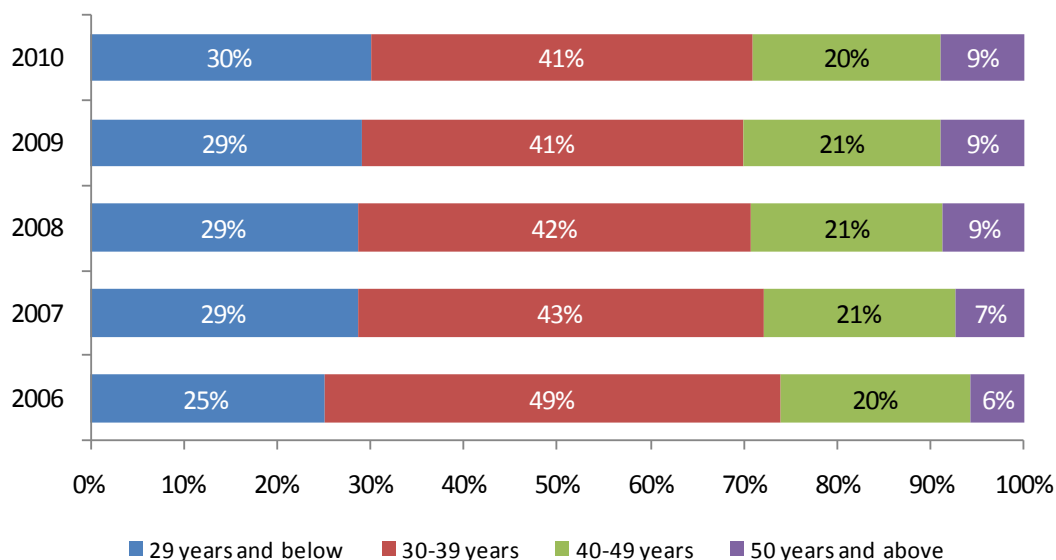
**Chart 5.2: Infocomm Manpower by Gender**



## 7 in 10 infocomm manpower were below 40 years old

About 7 in 10 infocomm manpower were below the age of 40 (Chart 5.3). The largest proportion of infocomm manpower continued to be those aged between 30 to 39 years.

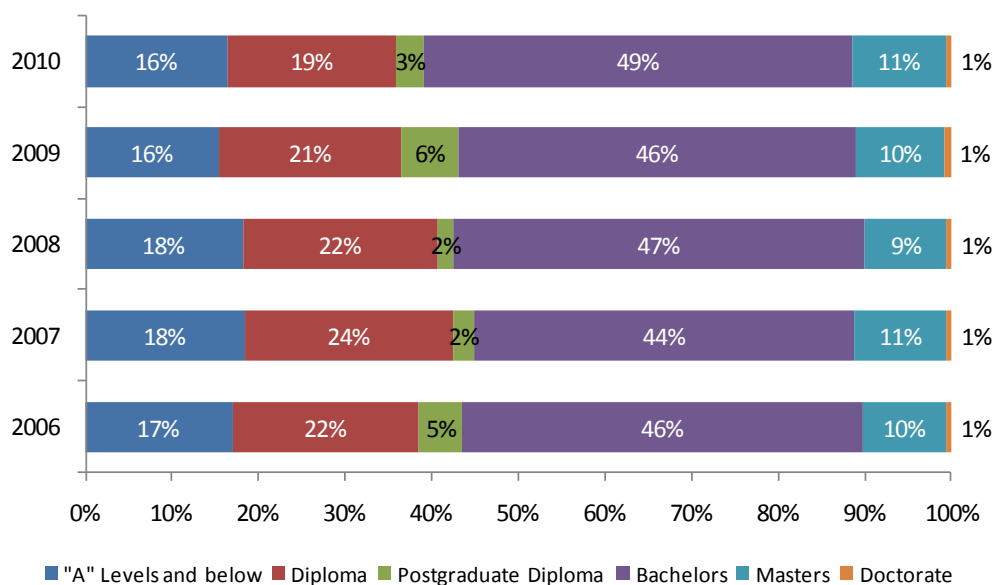
**Chart 5.3: Infocomm Manpower by Age**



## Highly qualified infocomm manpower

About 8 in 10 of the infocomm manpower were tertiary qualified (i.e. having at least diploma qualifications) (Chart 5.4).

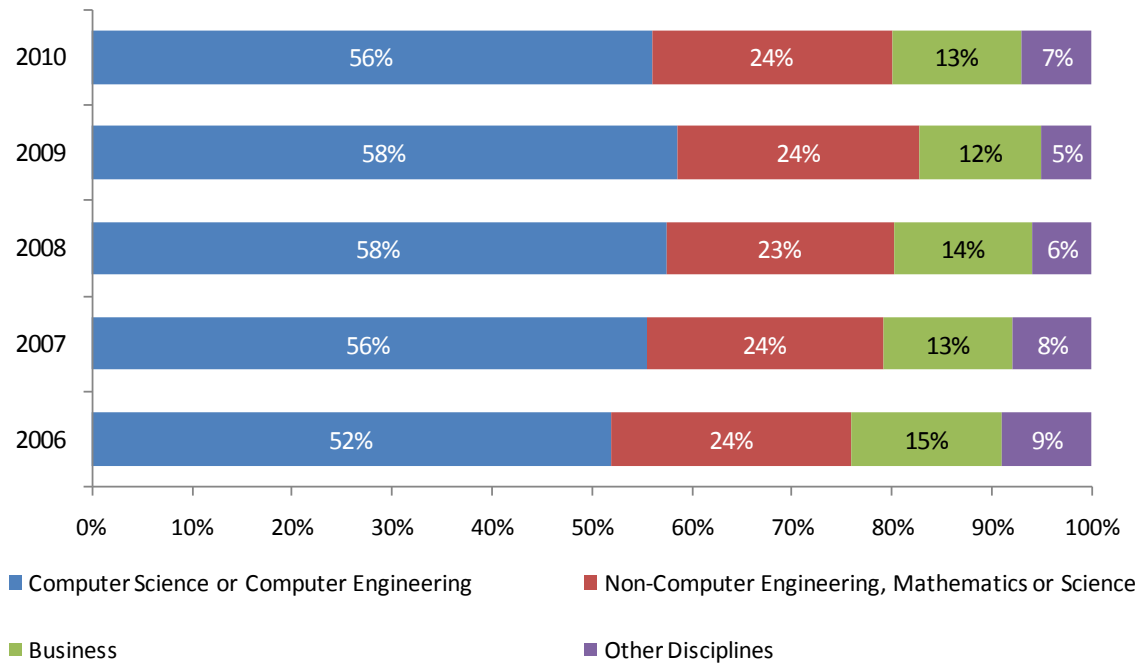
**Chart 5.4: Infocomm Manpower by Highest Qualification Attained**



## Computer studies still the dominant discipline

Computer studies continued to be the dominant discipline, with more than 5 in 10 infocomm manpower with tertiary qualification, who were trained in this discipline (Table 5.5).

**Chart 5.5: Infocomm Manpower by Discipline of Study<sup>8</sup>**



Base: Infocomm manpower with tertiary education

<sup>8</sup> "Other Disciplines" include Humanities, Design, etc.

## **PART III: ANNEX**

## **Annex A: Infocomm Job Categories**

**Table A1: Infocomm Manpower Job Categories Descriptions**

<b>No.</b>	<b>Infocomm Manpower Job Category</b>	<b>Description</b>
1	IT Business Analysis	IT Business Analysis personnel improve on business processes by serving as a bridge between users and the IT team to understand business needs and communicating user requirements. They design and modify business processes to fully utilise the IT systems and drive business solutions. Positions can range from Associate Business Analyst to Principal Business Analyst.
2	IT Architecture	IT Architecture personnel are involved in designing a technical structure that matches the business needs and aligns with the strategies. Their jobs include researching, analysing, planning and delivering IT architecture solutions by collaborating with different business functions. Positions can range from IT Architect to Enterprise Architect.
3	Application Engineering	Application Engineers manage the lifecycle of an application, ranging from planning, designing, analysing, developing, testing, implementing to supporting after implementation. Positions can range from Associate Application Engineer to Principal Application Engineer.
4	Infrastructure Engineering	Infrastructure Engineers can be involved in any elements of infrastructure, ranging from designing, analysing, developing, testing, implementing to supporting after implementation. Positions can range from Associate Infrastructure Engineer to Principal Infrastructure Engineer.
5	Quality Assurance (QA) and Testing Analysis (Infocomm)	Quality Assurance (QA) and Testing Analysis personnel are concerned with ensuring product integrity and compliance with customer requirements or in maintaining consistent quality IT services within an organisation. Positions can range from Senior QA & Testing Analyst to Associate QA & Testing Analyst.
6	Service Delivery	Service Delivery personnel manage the implementation of technology changes that improve operations. They assess that the changes and the ensuing impact maintains operational integrity. Positions can range from Senior Service Delivery Analyst to Associate Service Delivery Analyst.
7	Operations & Support	Operations and Support personnel are involved in providing continuing management, fault detection, correction and enhancements to the IT systems. Their job also includes the management of corporate systems like servers and computing equipment and the maintenance of operating plans. Positions can range from Operations & Support Technician to Operations & Support Analyst.
8	Database Management	Database Managers are involved in managing and maintaining the components of a database system. They write, review, and debug database software code for data manipulation and assist users with research and data analysis questions. Their jobs include managing and maintaining storage and software as needed and ensure data integrity by coordinating and logging data exchanges. Positions can range from Database Management Analyst to Database Management Supervisors.

No	Infocomm Manpower Job Category	Description
9	Security (Infocomm)	<p>Infocomm Security personnel are involved in protecting the hardware, software, network and services of an organisation against unauthorised access, modification, destruction, or disclosure. Their jobs include designing the overall enterprise-wide security architecture, and integrating security principles, methods and techniques; monitoring, identifying and responding to key information security threats; installation, monitoring and maintenance of information security systems and infrastructure; and providing services such as audit &amp; compliance, computer forensics.</p> <p>Positions can range from Associate Security Engineer to Chief Information Security Officer</p>
10	Project Management (Infocomm)	<p>Project Managers ensure that targets are achieved while optimising the use of resources over the course of infocomm projects. They work on activities such as project scope and cost management, communications, timelines and risk assessments.</p> <p>Positions can range from Program Manager to Project Coordinator.</p>
11	IT Business Management	<p>IT Business Managers assess IT Service Delivery performance and work on improvement programmes while adhering to corporate and financial standards and regulations.</p> <p>Positions can range from Principal Business Management Analyst to Associate Business Management Analyst.</p>
12	Chief Information Officers (CIOs) and Chief Technology Officers (CTOs)	<p>The leadership management are involved in determining and formulating policies, best practices and/or business strategies. They manage activities at the highest level of management and are accountable for enterprise results or the business unit's effectiveness. They are the overall managers of infocomm resources and functions, and are responsible for technology strategy, product direction and technology standards. They also manage mega and/or multiple projects at a strategic level.</p>
13	Education & Training (Infocomm)	<p>Infocomm Educators and Trainers are those who teach or train people in infocomm skills/courses. Infocomm skills/courses include handling information technology and communications equipment, using software/design applications and Internet-based applications.</p>
14	Research & Development (Infocomm)	<p>Infocomm Researchers and Developers are those who are involved in research and experimental development (R&amp;D) work in the infocomm area. This comprises creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society and the use of knowledge to devise new applications.</p>
15	Sales & Marketing (Infocomm)	<p>Infocomm Sales and Marketing professionals are responsible for the sales and marketing activities of infocomm products (including telecommunication equipment) and/or services.</p>
16	Software Design and Development (excluding games)	<p>Software Designers are involved in planning and sourcing the components of a system.</p> <p>Their activities include analysis of needs; designing of system and components, including customisation of interfaces; and designing of data structure.</p> <p>Software Developers are involved in creating the components of a system.</p> <p>Their activities include designing, coding, debugging, and testing software components and products on various platforms independently in a high-availability, high performance environment; and coding of database query.</p>

No.	Infocomm Manpower Job Category	Description
17	Digital Media & Animation, Games Design & Development	<p>Digital Media personnel are concerned with the presentation and/or consumption of media and content in one or multiple or integrated digital manner. The content can include sound, graphics, video, text, animation or any other form of information representation.</p> <p>Digital animators are concerned with simulation of movement created by displaying a series of pictures, or frames. Examples of animation include television, commercials, films, Internet and interactive presentations, etc.</p> <p>Digital media and animation activities include drafting and design; 2D/3D illustration and modelling, visual effects; texture generation; rendering; and staging and movement. The activities may also include cross-platform modelling and other post production activities.</p> <p>Games Developers are concerned with software development specialising in digital technology that creates games for various platforms.</p>