

ANNUAL SURVEY ON INFOCOMM MANPOWER FOR 2007



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PART I: SURVEY COVERAGE AND METHODOLOGY

1. INTRODUCTION

Infocomm manpower surveys have been carried out by IDA annually since 1999. This is the 9th in the series.

Infocomm manpower is a person engaged primarily in infocomm-related work either in an IT or telecommunication equipment and/or services provider, or 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:

- a. may include the development, distribution, implementation, support, operation, sales or marketing of telecommunication, computer hardware/software, IT services or multimedia contents; and
- b. is classified under one of the job categories listed in Annex A.

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

2. SURVEY OBJECTIVE

To determine the demographic and employment profiles of Singapore's infocomm manpower.

3. METHODOLOGY

Representative samples of infocomm and end-user organizations were selected from the Department of Statistics' Establishment Sampling Frame.

PART II: SURVEY FINDINGS

1. SUMMARY

The strong economy in 2007 helped generate robust employment growth. Employed infocomm manpower grew by 8.9% to reach 130,400 in 2007¹. This is comparable with the 9.4% growth of Singapore's employed labour force. With 4,700 infocomm job vacancies, the total infocomm jobs in 2007 reached 135,100 compared to 121,800 in 2006. This represented a growth of 10.9%, or 13,300 in terms of the number of infocomm jobs created.

85% of employed infocomm manpower were local residents i.e. citizens and permanent residents.

Almost 6 in 10 of the infocomm manpower worked in infocomm organisations with the rest in end-user organisations. *Infrastructure Support* (18%), *Infocomm Sales & Marketing* (16%) and *Software Development* (14%) were the three largest infocomm job categories in 2007.

About two-thirds of the infocomm job vacancies were in infocomm organisations with the remaining one-third in end-user organisations. *Software Development* (20%), *Infocomm Sales & Marketing* (16%) and *Infrastructure Support* (9%) were the top three job categories with the highest vacancies, comprising almost half the number of the total vacancies.

The profile of infocomm manpower remained fairly unchanged from 2006. The male to female ratio of infocomm manpower employed remained at 2 to 1. Age-wise, infocomm manpower in their 30s remained the largest group amongst the employed infocomm manpower. 82% of infocomm manpower had tertiary education (i.e. diploma and above).

¹ All manpower figures in the report for the 2007 Survey refer to Jun 2007 figures unless otherwise specified.

2. EMPLOYMENT

Record high infocomm employment

Infocomm employment rate growth reached a new high. The number of employed infocomm manpower grew by 8.9% to reach 130,400 ([Table 2.1](#)).

Table 2.1: Infocomm Manpower and Overall Employment in Singapore

	2004	2005	2006	2007
Infocomm Manpower ('000)	108.0	111.4	119.7	130.4
Annual Growth	3.5%	3.1%	7.5%	8.9%

2.1. Employment in Sectors / Segments

56% of the infocomm manpower worked in infocomm organisations and the rest in end-user organisations ([Chart 2.1](#)). Employment by market segment in infocomm organisations and by sector in end-user organisations are shown in [Tables 2.2](#) and [2.3](#).

Chart 2.1: Infocomm Manpower by Organisation Type

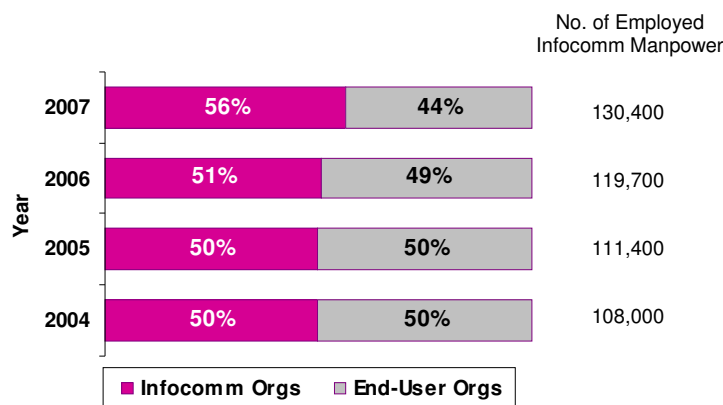


Table 2.2: Infocomm Manpower in Infocomm Organisations by Segment

Segment	2004	2005	2006	2007
IT Services	25%	22%	23%	35%
Software	21%	20%	19%	25%
Hardware	25%	26%	28%	22%
Telecommunication Services	19%	23%	22%	16%
Content Services	10%	9%	8%	2%
Total	100%	100%	100%	100%

Base: All infocomm manpower in infocomm organisations

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

Sector	2004	2005	2006	2007
Manufacturing	13%	12%	14%	22%
Real Estate, Renting and Business Activities	14%	13%	13%	20%
Wholesale and Retail Trade	17%	21%	18%	18%
Financial Services	20%	20%	37%	11%
Construction	4%	1%	2%	6%
Education	13%	11%	4%	5%
Transport and Storage	7%	10%	3%	5%
Others	11%	12%	10%	11%
Total	100%	100%	100%	100%

Base: All infocomm manpower in end-user organisations

2.2. Residential Status

Meeting businesses' need with foreign manpower

The strong economy in 2007 boosted robust employment growth of 10,700 infocomm manpower with foreign manpower helping to meet demand (Table 2.4).

Table 2.4: Infocomm Manpower by Residential Status

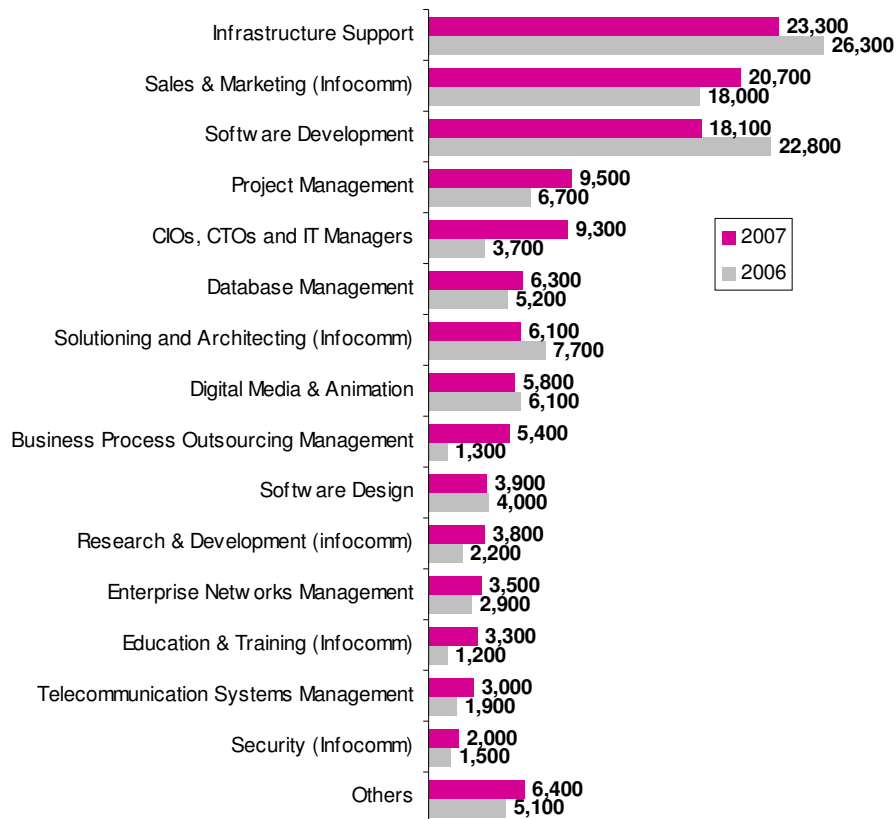
Residential Status	2006		2007		Growth	
	Number	Proportion	Number	Proportion	Number	Proportion
Locals	105,200	87.9%	111,000	85.1%	5,800	54.1%
Foreigners	14,500	12.1%	19,400	14.9%	4,900	45.9%
Total	119,700	100.0%	130,400	100.0%	10,700	100.0%

2.3. Job Category

Changing nature of infocomm employment

In 2007, while the top three job categories with the highest number of employed infocomm manpower remained *Infrastructure Support*; *Infocomm Sales & Marketing*; and *Software Development*, there is a general shift in the nature of infocomm employment (Chart 2.2).

Chart 2.2: Infocomm Manpower by Job Category



3. JOB VACANCIES

More vacancies in infocomm organisations

The number of infocomm job vacancies stood at 4,700 ([Chart 3.1](#)) in 2007. The majority of the vacancies were in infocomm organisations. [Chart 3.2](#) shows the distribution of the vacancies among the various job categories.

Chart 3.1: Infocomm Job Vacancies by Organisation Type

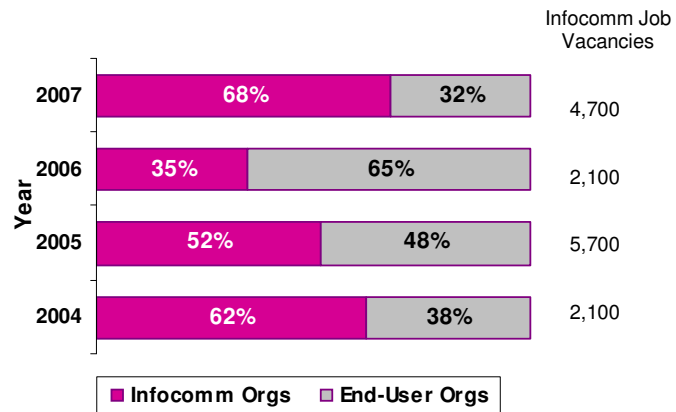
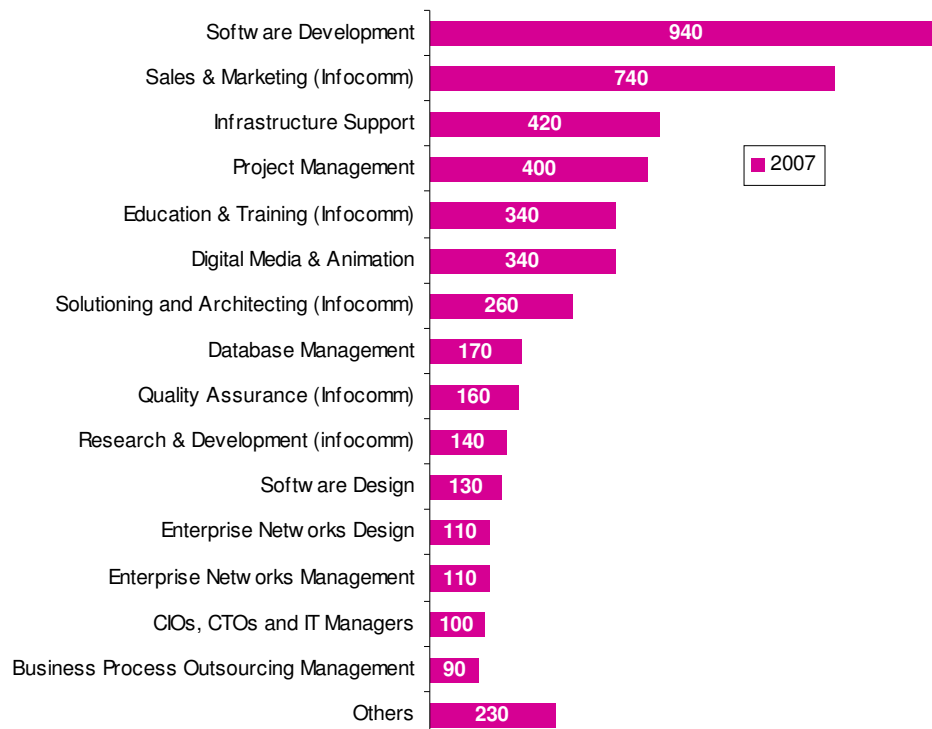


Chart 3.2: Infocomm Job Vacancies by Job Category

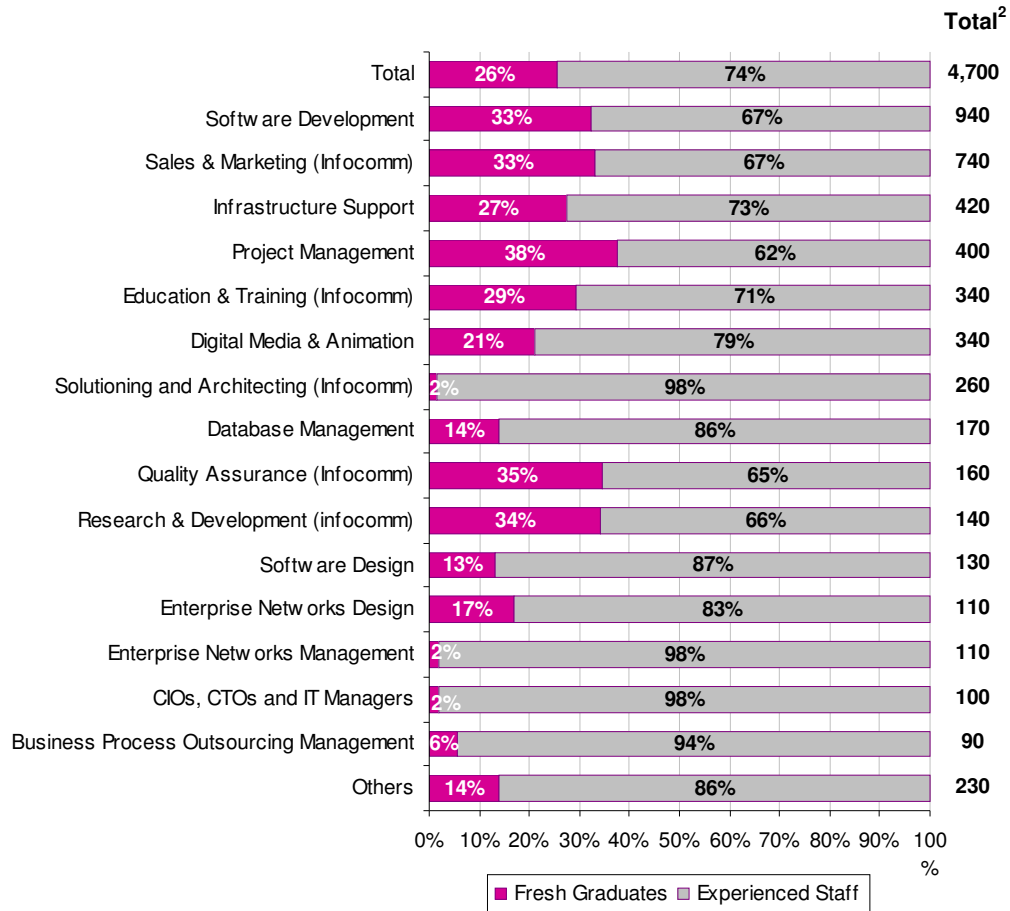


Experienced staff preferred over fresh graduates

Though there was demand for fresh graduates, most job vacancies required prior job experience (Chart 3.3).

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

(Job categories arranged in descending order of total vacancies)



Tables 3.1 and 3.2 show the infocomm manpower employment and vacancies by job categories and by segments or sectors.

² Numbers may not add up due to rounding.

Table 3.1³: Total Infocomm Manpower (Employed and Vacancies) by Job Category

Job Category	Infocomm Manpower in 2007		
	Total	Employed	Vacancies
Overall	100.0%	100.0%	100.0%
Infrastructure Support	17.6%	17.9%	9.0%
Sales & Marketing (Infocomm)	15.8%	15.8%	15.8%
Software Development	14.1%	13.9%	19.9%
Project Management	7.4%	7.3%	8.6%
CIOs, CTOs and IT Managers	7.0%	7.1%	2.1%
Database Management	4.8%	4.8%	3.6%
Solutioning and Architecting (Infocomm)	4.7%	4.7%	5.5%
Digital Media & Animation	4.5%	4.4%	7.2%
Business Process Outsourcing Management	4.1%	4.1%	1.9%
Software Design	3.0%	3.0%	2.8%
Research & Development (infocomm)	2.9%	2.9%	3.0%
Enterprise Networks Management	2.7%	2.7%	2.3%
Education & Training (Infocomm)	2.7%	2.5%	7.4%
Telecommunication Systems Management	2.2%	2.3%	1.4%
Security (Infocomm)	1.6%	1.6%	1.3%
Others	5.0%	4.9%	8.1%

Base: Total – 135,100; Employed – 130,400; Vacancies – 4,700

³ Numbers may not add up due to rounding.

Table 3.2⁴: Total Infocomm Manpower (Employed and Vacancies) by Segment / Sector

Segment / Sector	Infocomm Manpower in 2007		
	Total	Employed	Vacancies
Overall	100.0%	100.0%	100.0%
Infocomm Organisations (Segment)			
IT_Services	20.4%	19.8%	37.3%
Software	14.1%	14.0%	19.4%
Hardware	11.9%	12.1%	7.1%
Telecommunication_Services	8.7%	8.9%	3.3%
Content_Services	1.1%	1.2%	0.7%
Infocomm Organisations Overall	56.5%	56.1%	67.7%
End-User Organisations (Sector)			
Manufacturing	9.7%	9.7%	8.3%
Real Estate, Renting and Business Activities	8.7%	8.8%	6.9%
Wholesale and Retail Trade	7.8%	8.0%	3.5%
Financial Services	4.9%	5.0%	1.8%
Construction	4.9%	4.9%	2.5%
Education	2.8%	2.8%	3.0%
Transport and Storage	2.5%	2.4%	4.2%
Others	2.2%	2.2%	1.9%
End-User Organisations Overall	43.5%	43.9%	32.3%

Base: Total – 135,100; Employed – 130,400; Vacancies – 4,700

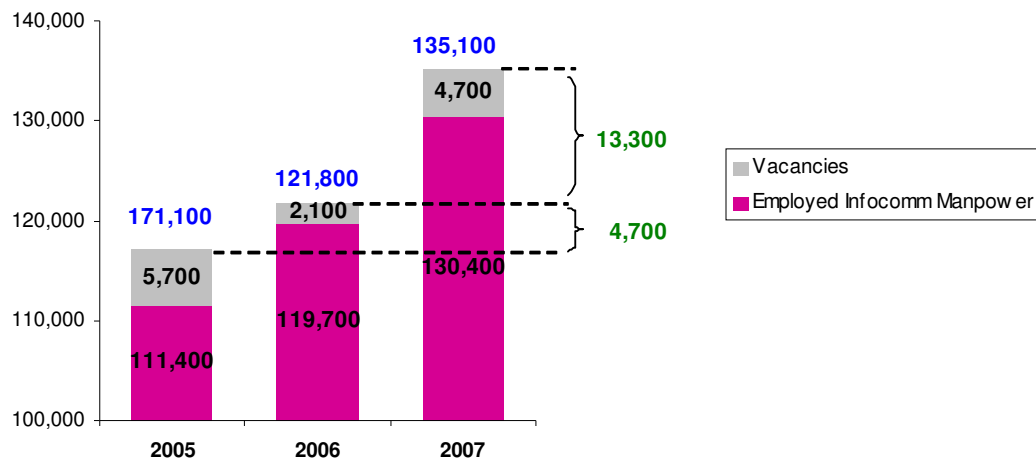
⁴ Numbers may not add up due to rounding.

4. TOTAL JOBS & PROJECTED DEMAND

4.1 Total Jobs

Overall, there is an 11% (13,300) growth of infocomm jobs, after taking into account employment and vacancies (Chart 4.1).

Chart 4.1: Total Infocomm Jobs, Employed and Vacant



4.2 Projected Growth of Infocomm Manpower

More employment opportunities in infocomm organisations

It is estimated that the overall demand for infocomm manpower jobs may grow by a Compound Annual Growth Rate (CAGR) of 11.8% over 2008 and 2009 (Table 4.1). Respondents indicated the largest growth to be in the job categories such as *Digital Media & Animation*, *Project Management* and *Research & Development*.

Both infocomm and end-user organisations indicated the need for additional infocomm headcounts in 2008/2009, although in end-user organisations where fresh graduates are in equal demand as experienced staff, the need is less strong than infocomm organisations (Table 4.2). Overall, the CAGR of demand by infocomm organisations is much higher than that of end-user organisations.

Table 4.1: Compound Annual Growth Rate by Job Category and Hire Type

Job Category	CAGR over 2008 - 2009		
	Total	Fresh Grads	Experienced Staff
Overall	11.8%	4.6%	7.5%
Digital Media & Animation	20.8%	11.9%	10.5%
Project Management	17.9%	7.8%	11.1%
Research & Development (Infocomm)	17.1%	7.8%	10.3%
Software Design	16.8%	5.6%	12.0%
Business Process Outsourcing Management	16.3%	5.5%	11.4%
Education & Training (Infocomm)	16.0%	7.9%	9.4%
Software Development	14.4%	4.6%	10.4%
Sales & Marketing (Infocomm)	12.7%	6.2%	7.0%
Database Management	12.3%	3.7%	9.0%
Enterprise Networks Management	9.8%	5.7%	4.5%
Solutioning and Architecting (Infocomm)	7.1%	1.4%	5.9%
Infrastructure Support	6.3%	1.8%	4.5%
Security (Infocomm)	6.2%	2.6%	3.8%
CIOs, CTOs and IT Managers	5.2%	1.1%	4.1%
Telecommunication Systems Management	3.5%	0.9%	2.7%
Others	9.7%	4.6%	5.6%

Table 4.2: Compound Annual Growth Rate by Segment / Sector and Hire Type

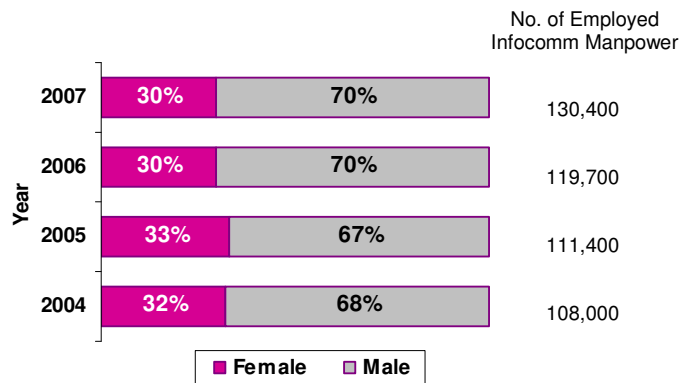
Segment / Sector	CAGR over 2008 - 2009		
	Total	Fresh Grads	Experienced Staff
Overall	11.8%	4.6%	7.5%
Infocomm Organisations (Segment)			
Content Services	22.0%	13.6%	9.7%
Software	18.1%	5.4%	13.6%
IT Services	16.4%	5.3%	12.1%
Hardware	9.4%	4.4%	5.3%
Telecommunication Services	4.3%	1.2%	3.1%
Infocomm Organisations Overall	13.7%	4.7%	9.6%
End-User Organisations (Sector)			
Construction	13.7%	7.8%	6.6%
Real Estate, Renting and Business Activities	12.5%	6.9%	6.1%
Wholesale and Retail Trade	10.5%	6.0%	4.8%
Transport and Storage	9.2%	2.1%	7.3%
Education	7.3%	5.6%	2.1%
Financial Services	6.7%	1.6%	5.3%
Manufacturing	3.8%	2.1%	1.8%
Others	13.2%	5.9%	7.8%
End-User Organisations Overall	9.3%	4.7%	4.9%

5. DEMOGRAPHIC PROFILE

More male infocomm manpower employed

The proportion of male to female employed infocomm manpower has remained fairly constant over the years ([Chart 5.1](#)).

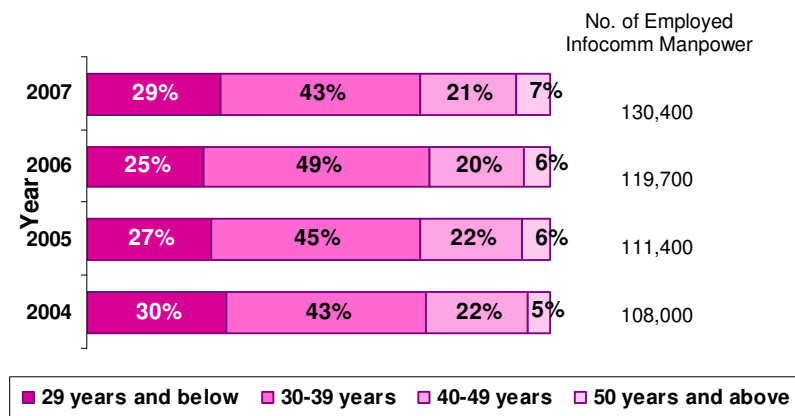
Chart 5.1: Infocomm Manpower by Gender



Relatively younger infocomm manpower

Despite a rapidly aging workforce, the cohort of infocomm employed manpower aged 29 years and below ([Chart 5.2](#)) has increased. The highest cohort of infocomm manpower remained those aged between 30-39 years.

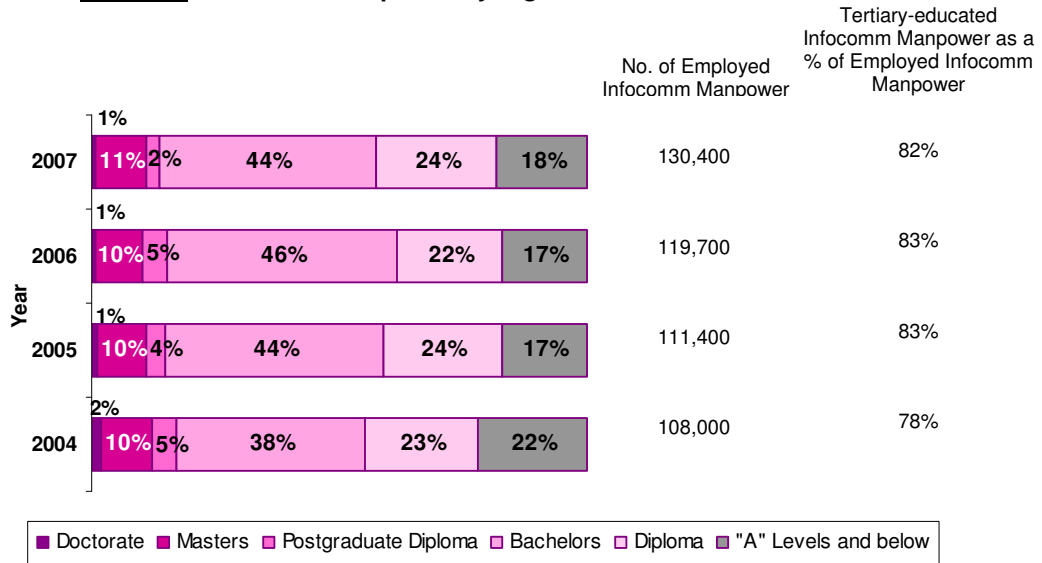
Chart 5.2: Infocomm Manpower by Age



Highly qualified infocomm manpower

The proportion of tertiary qualified (i.e. having at least diploma qualifications) infocomm manpower has also remained fairly constant at 82%.

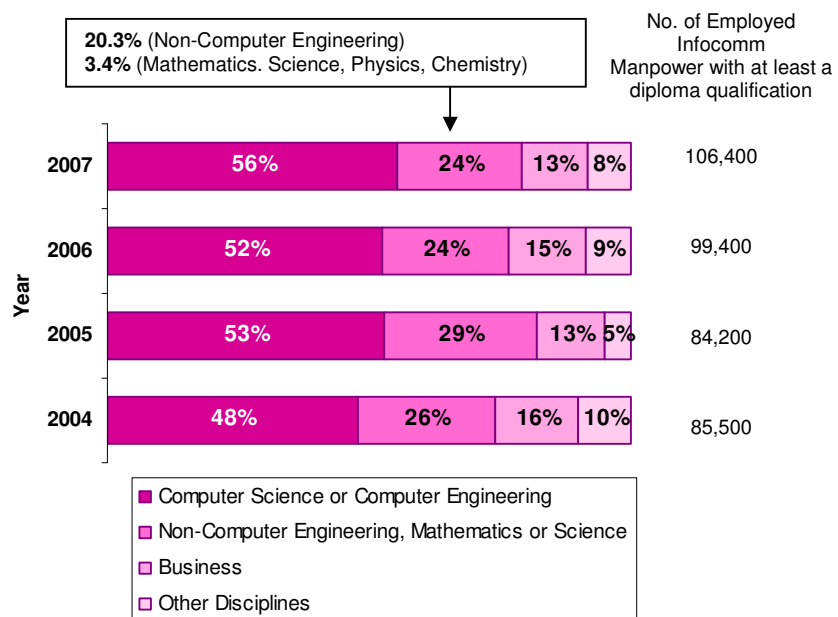
Chart 5.3: Infocomm Manpower by Highest Qualification Attained



Computer studies still the dominant discipline

Almost 6 in 10 of infocomm manpower were trained in computer studies (Chart 5.4).

Chart 5.4: Infocomm Manpower by Discipline of Study



6. SKILLS SHORTAGE

Survey respondents indicated that the top three skills with the greatest shortage in 2007 were Web Programming, *Application Development* and *Project Management* (Table 6.1).

Table 6.1: Skills with the Highest Shortage in Ranking Order by Organisation Type

Infocomm Skill	Total	Infocomm	End-User
Web Programming	1	2	1
Application Development	2	1	2
Project Management	3	3	10
Architecture	4	5	4
Security Administration	5	11	3
Software Design	6	6	5
GUI Design / Human Computer Interaction (HCI)	7	7	8
Network Maintenance and Administration	8	10	6
IT Management	9	8	9
Business / Requirement Analysis	10	9	11
Infocomm Sales & Marketing	11	4	31
Network Engineering	12	13	13
Business Continuity / Disaster Recovery	13	23	7
Helpdesk / Customer Support	14	12	16
System Administration	15	20	12

7. INFOCOMM MANPOWER MOVEMENT

New infocomm manpower reached a new high of 31,900 in 2007 ([Table 7.1](#)). However, attrition rate also reached new high levels with 20,000 resignations and 2,300 retrenchments in 2007 ([Tables 7.2 and 7.3](#)).

Table 7.1: Newly Hired Infocomm Manpower

Period	Total
1st June 2003 to 31st May 2004	14,700
1st June 2004 to 31st May 2005	17,200
1st June 2005 to 31st May 2006	22,100
1st June 2006 to 31st May 2007	31,900

Table 7.2: Resigned Infocomm Manpower

Period	Total
1st June 2003 to 31st May 2004	12,200
1st June 2004 to 31st May 2005	12,300
1st June 2005 to 31st May 2006	14,200
1st June 2006 to 31st May 2007	20,000

Table 7.3: Retrenched Infocomm Manpower

Period	Total
1st June 2003 to 31st May 2004	1,000
1st June 2004 to 31st May 2005	1,500
1st June 2005 to 31st May 2006	600
1st June 2006 to 31st May 2007	2,300

The top reason cited by survey respondents with a decrease in infocomm manpower was *High Labour Costs*, followed by *Poor Business* and *Restructuring of Business Processes* ([Table 7.4](#)).

Table 7.4: Reasons for Decrease in Infocomm Manpower in Ranking Order

Reason for Decrease	Rank	
	2007	2006
High labour costs	1	1
Poor business	2	2
Restructuring of business processes for greater work efficiency	3	3
High operating costs other than labour costs	4	7
Reorganisation of businesses (i.e. merger or change in internal management)	5	5
Lack of availability of skilled infocomm manpower	6	6
Outsourcing of infocomm operations to enterprises located in Singapore	7	8
High productivity of infocomm manpower, hence smaller pool required	8	4
Outsourcing of infocomm operations to locations outside Singapore	9	9

PART III: ANNEX

ANNEX A

Job Categories

1. **Business Process Outsourcing Management**
2. **Chief Information Officers, Chief Technology Officers and IT Managers**
3. **Database Management**
4. **Digital Media & Animation**
5. **Education and Training (Infocomm)**
6. **Enterprise Networks Design**
7. **Enterprise Networks Management**
8. **Games Development**
9. **Infrastructure Support**
10. **Project Management**
11. **Quality Assurance (Infocomm)**
12. **Research & Development (Infocomm)**
13. **Sales & Marketing (Infocomm)**
14. **Security (Infocomm)**
15. **Software Design**
16. **Software Development**
17. **Solutioning and Architecting (Infocomm)**
18. **Telecommunication Systems Design**
19. **Telecommunication Systems Management**
20. **Technical Writing**