

ANNUAL SURVEY ON INFOCOMM USAGE BY ENTERPRISES FOR 2008



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PART I

SURVEY COVERAGE, METHODOLOGY AND COMPANY PROFILE

1. INTRODUCTION

This Survey seeks to determine the level of infocomm adoption and usage by enterprises in Singapore.

This Survey is the tenth in the series of such annual surveys carried out by IDA since 1999.

2. SURVEY OBJECTIVE

This survey aims to gauge the nature and level of infocomm usage in enterprises; and identify the barriers to infocomm adoption.

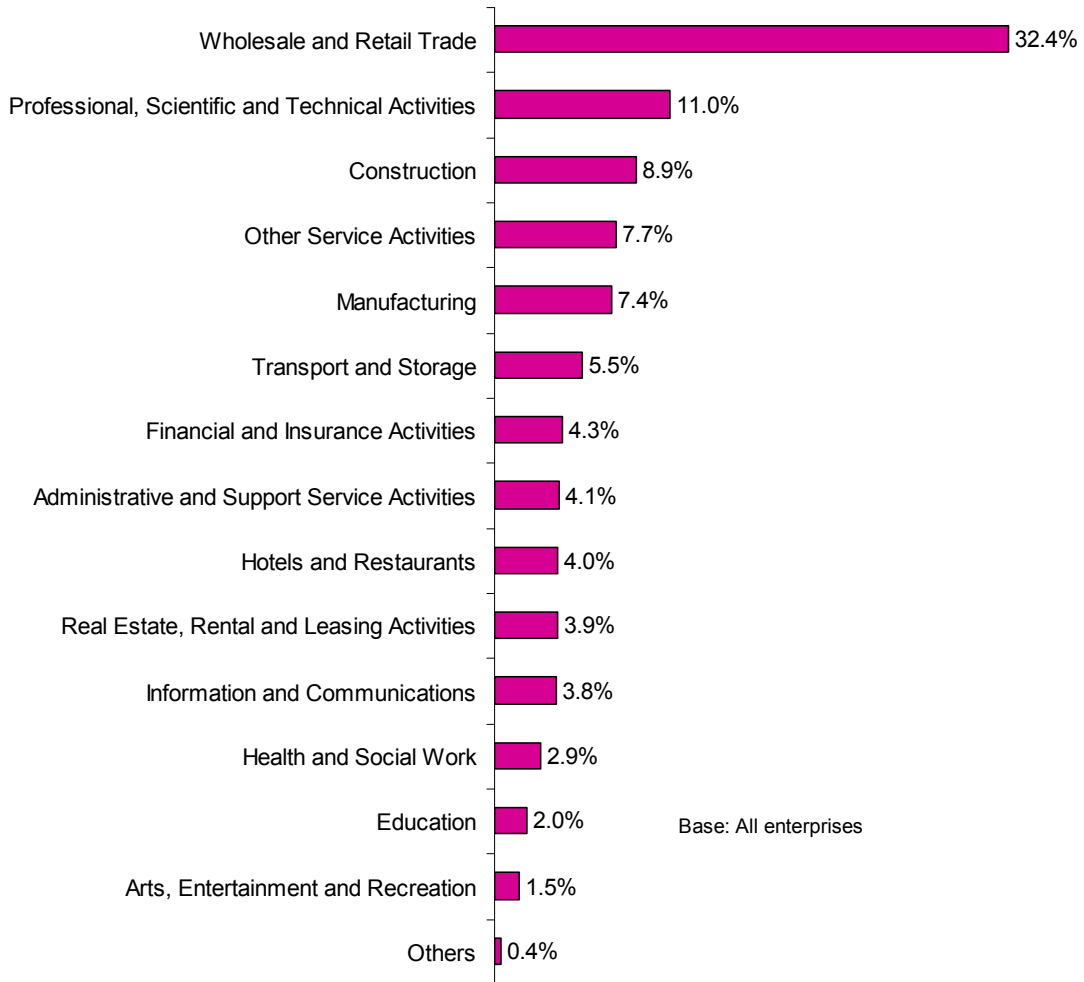
3. METHODOLOGY

Representative samples of infocomm and end-user enterprises were selected from the Department of Statistics' (DOS) Establishment Sampling Frame.

4. COMPANY PROFILE

Chart 0.1 provides a profile of the enterprises sampled.

Chart 0.1: Distribution of enterprises by sector



PART II

SURVEY FINDINGS

1. SUMMARY

2008 saw a general improvement in infocomm adoption among enterprises across all employment sizes, though the digital divide remains between the larger enterprises and the smaller ones. Computer usage rose to 76% (from 73%) and Internet usage reached 72% (from 67%). Broadband adoption and web presence also saw progress, growing to 65% (from 52%) and 36% (from 33%) respectively.

The sectors with high infocomm adoption and usage are *Information & Communications; Financial and Insurance Activities; and Professional, Scientific & Technical Activities*.

For Internet connection, *xDSL* (54%) is the most common mode used by enterprises, followed by *Wireless Access* (42%), *Cable Modem* (24%), *Dedicated Private Leased Line* (16%), *Analogue Modem* (13%) and *ISDN* (6%).

Virus Checking/Protection Software is the mostly adopted security measure by enterprises, followed by *Anti-Spyware Software* and *Firewall*.

The greatest barriers to infocomm usage and adoption amongst enterprises are lack of perceived benefits, supply of infocomm technology does not match the infocomm needs of the organisation and technology is too complicated.

2. INFOCOMM USAGE

2008 saw a general improvement in infocomm adoption among enterprises across all employment sizes, though the digital divide remains between the larger enterprises and the smaller ones.

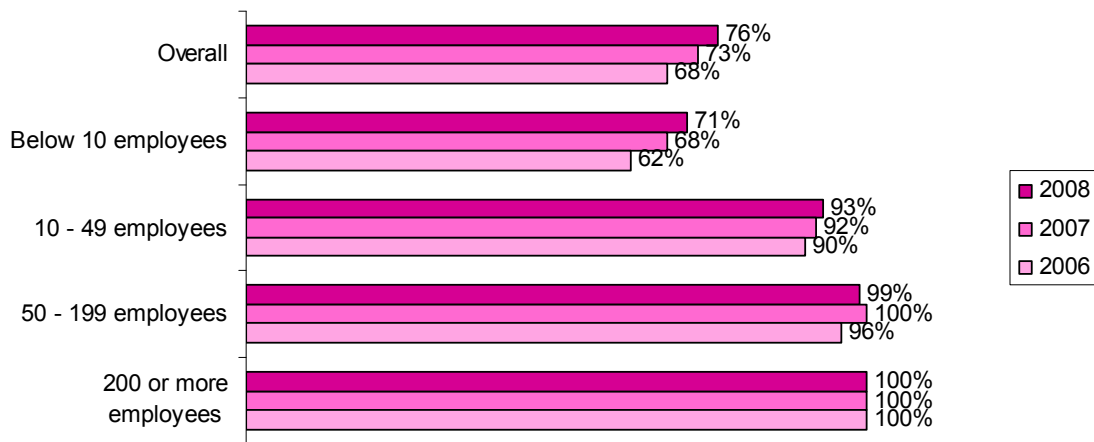
2.1 By Employment Size

Widespread progress in infocomm usage by enterprises

Usage of Computers

Computer usage among enterprises grew by 3 percentage points to reach 76% in 2008 ([Chart 2.1](#)). Computer usage by enterprises with 50 or more employees has reached saturation level.

Chart 2.1: Computer usage by employment size



Base: All enterprises

Usage of Internet and Broadband

Similar to computer usage, Internet penetration for enterprises with 50 or more employees has also reached saturation level ([Chart 2.2](#)). Overall broadband access grew by 13 percentage points, largely contributed by enterprises with less than 50 employees ([Chart 2.3](#)).

Chart 2.2: Internet usage by employment size

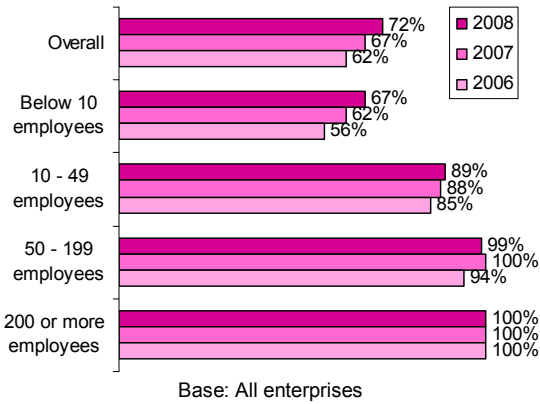


Chart 2.3: Broadband usage by employment size

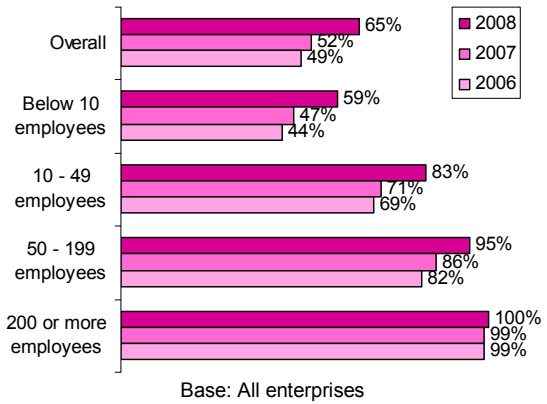
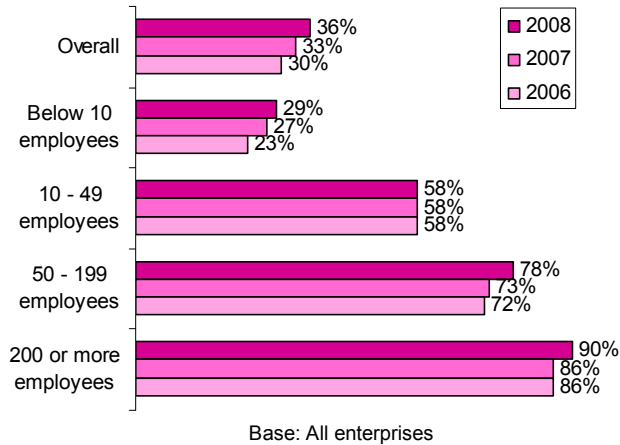


Chart 2.4: Web presence by employment size

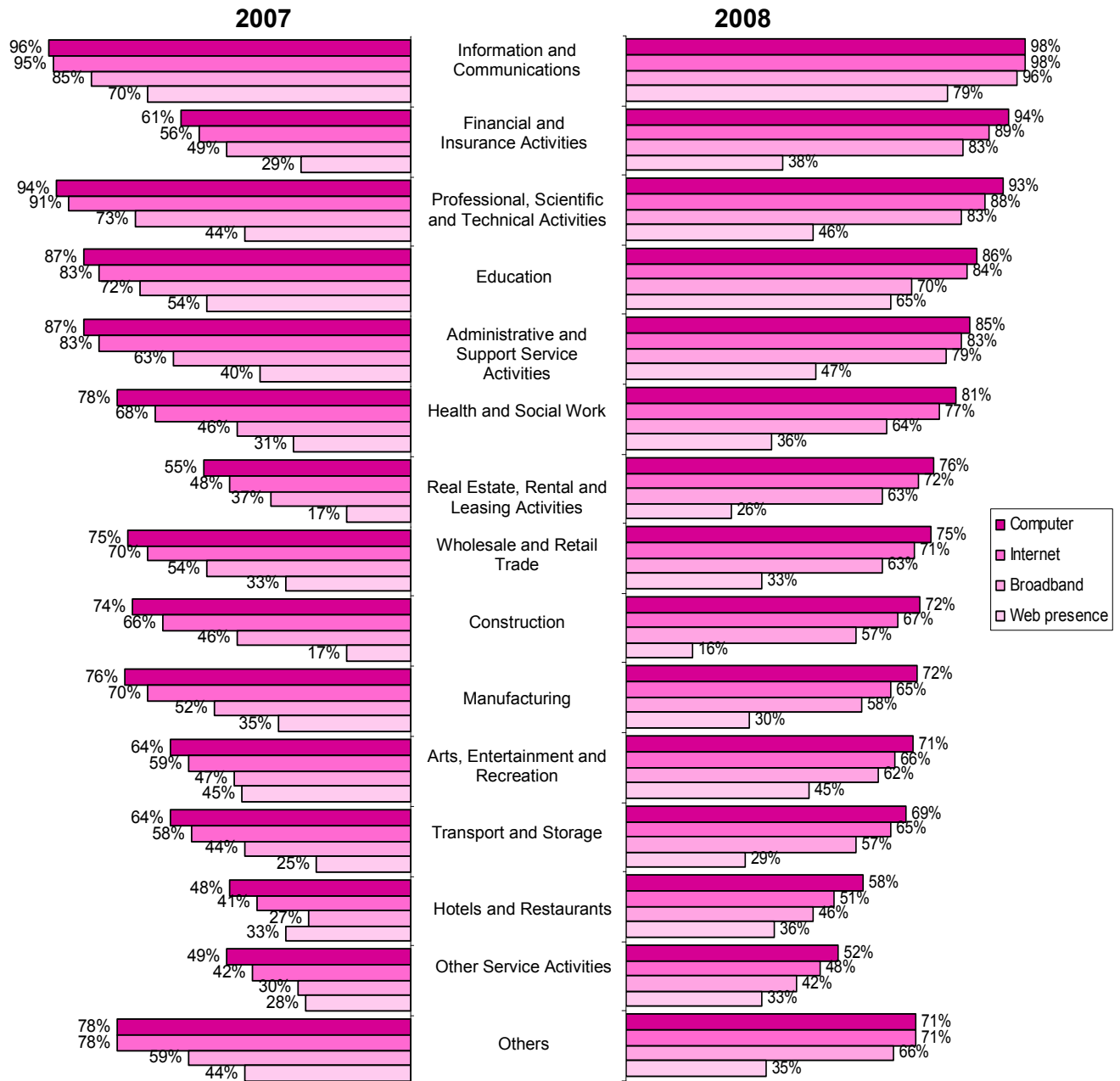


2.2 By Sector

Good growth in selected sectors

The *Information and Communications* sector is the leader in infocomm adoption in all aspects (Chart 2.5). Enterprises in *Financial and Insurance Activities*; *Real Estate, Rental and Leasing Activities*; and *Hotels and Restaurants* sectors saw the best improvements in infocomm usage.

Chart 2.5: Infocomm use by sector



Base: All enterprises

2.3 Frequency of Usage

Among enterprises with less than 10 employees, more than 60% reported that their entire work force used the computer and Internet at least once weekly (Charts 2.6 and 2.7).

Chart 2.6: Proportion of employees who used the computer at work (at least once a week)

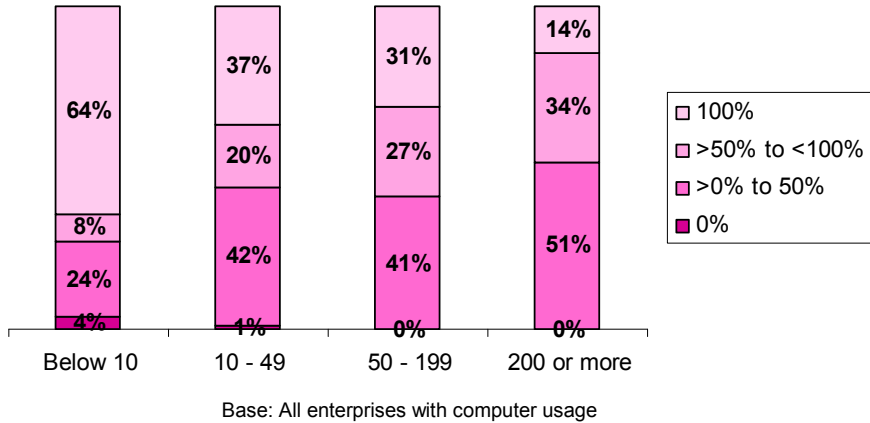
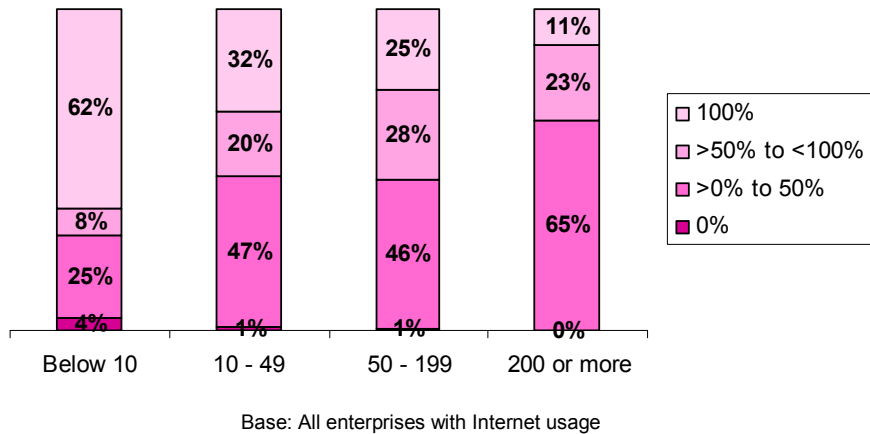


Chart 2.7: Proportion of employees who used the Internet at work (at least once a week)



3. INTERNET USAGE

3.1 Connection Type and Speed

xDSL most common mode of Internet connection

The most common mode of Internet connection is *xDSL*, followed by *Wireless Access*¹, *Cable Modem*, *Dedicated Private Leased Line*, *Analogue Modem* and *ISDN* (Table 3.1). *xDSL* remains as the most common, with at least half of the enterprises choosing this mode of Internet connection. *Wireless Access* saw the highest growth and analogue modem connection is clearly in decline. More than half of the enterprises with 50 or more employees accessed the Internet wirelessly while the smaller enterprise are not far behind, with 4 out of 10 having accessed the Internet wirelessly. Overall, the most popular mode of *Wireless Access* is via *Wi-Fi*.

¹ *Wireless Access* includes *Wi-Fi*, *3G/HSDPA* and *GPRS/GSM*.

Table 3.1²: Enterprises with Internet usage by connection type and employment size

Internet Access Mode and Speed	Below 10	10 - 49	50 - 199	200 or more	Overall
Analogue Modem					
Overall	14.6%	9.0%	5.7%	4.8%	12.9%
ISDN					
Overall	5.4%	8.0%	7.7%	18.4%	6.2%
Dedicated Private Leased Line					
Overall	14.0%	20.5%	30.3%	37.7%	16.5%
- Lower than 256 kbps	2.3%	1.2%	0.1%	0.6%	1.9%
- Between 256 kbps and 2 Mbps (inclusive)	9.0%	12.1%	14.4%	23.5%	10.1%
- More than 2 Mbps	2.7%	7.7%	15.9%	15.6%	4.6%
xDSL					
Overall	50.7%	65.3%	58.7%	66.7%	54.2%
- Lower than 256 kbps	3.9%	4.2%	4.3%	7.8%	4.0%
- Between 256 kbps and 2 Mbps (inclusive)	31.8%	42.0%	24.0%	41.9%	33.5%
- Between 2 Mbps and 10 Mbps (inclusive)	12.7%	16.4%	26.7%	24.6%	14.4%
- More than 10 Mbps	2.6%	3.5%	4.4%	1.1%	2.8%
Cable Modem					
Overall	26.7%	17.4%	12.9%	17.8%	24.0%
- Lower than 2 Mbps	8.4%	3.4%	3.3%	1.0%	7.1%
- Between 2 Mbps and 10 Mbps (inclusive)	12.4%	10.1%	5.1%	11.4%	11.6%
- Between 10 Mbps and 30 Mbps (inclusive)	3.9%	2.9%	1.2%	5.3%	3.6%
- More than 30 Mbps	2.1%	1.0%	3.3%	0.3%	2.0%
Wireless					
Overall	40.6%	45.0%	55.9%	55.5%	42.5%
- GPRS / GSM	8.7%	9.9%	18.1%	19.9%	9.6%
- 3G / HSDPA	6.7%	12.8%	10.5%	23.6%	8.3%
- Wi-Fi	31.9%	34.6%	40.9%	41.5%	33.0%

Base: All enterprises with Internet usage

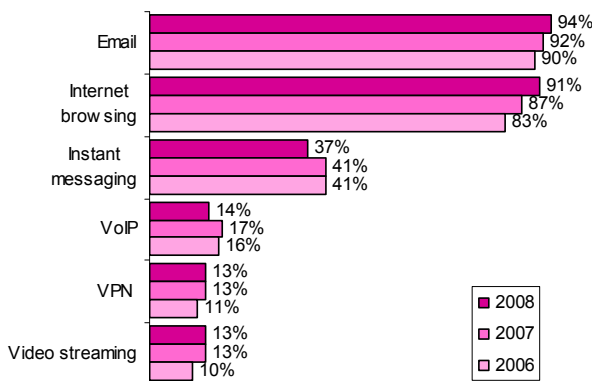
² The percentages for each row will add up to more than 100% because an enterprise may have multiple modes of Internet access.

3.2 Mobile Devices and Services

Preference for laptops and 3G phones

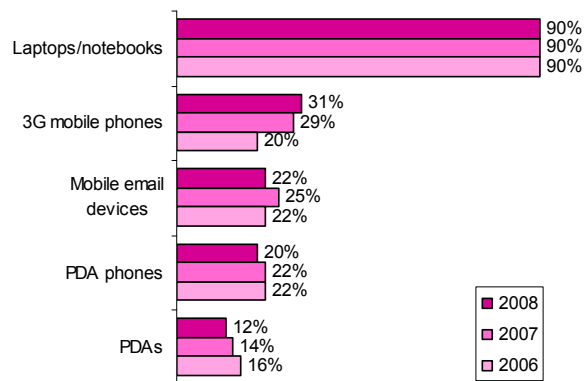
The services most commonly accessed wirelessly using mobile devices are *Email*, *Internet Browsing* and *Instant Messaging* (Chart 3.1). Laptops remain as the most widely used mobile devices (Chart 3.2) for wireless access, followed by 3G mobile phones.

Chart 3.1: Services accessed using mobile devices



Base: Enterprises with wireless access

Chart 3.2: Mobile devices used for wireless access



Base: Enterprises with wireless access

3.3 Internet Usage

Increase in e-Government dealings

The top Internet applications/services used by enterprises remained *Sending or Receiving Mails* and *Information Search*, followed by activities to do with dealing with government organisations (Table 3.2).

Table 3.2: Internet usage

	Internet Applications / Services	Proportion of Enterprises		
		2008	2007	2006
1	For sending or receiving mails	96%	96%	95%
2	For information search	92%	92%	91%
3	For obtaining information from government organisations (e.g. from web sites or via e-mail)	84%	77%	70%
4	For downloading or requesting government forms	81%	74%	68%
5	For completing government forms online or sending completed government forms	78%	69%	60%
6	For making online payments to government organisations	58%	48%	42%
7	For banking and financial services	56%	48%	44%
8	For placing orders for goods/services	40%	37%	35%
9	For market monitoring purposes (e.g. prices)	39%	33%	29%
10	For receiving orders for goods/services	37%	37%	34%
11	For marketing/promotion activities	37%	35%	33%
12	As a platform to deliver contents/services	34%	33%	31%
13	Other communications (e.g. instant messaging)	31%	27%	24%
14	For payment of goods/services	29%	26%	27%
15	For finding information about employment opportunities (recruitment and search)	28%	27%	24%
16	To access collaborative tools (e.g. file sharing)	23%	20%	21%
17	For telephoning over the Internet (VoIP)	21%	20%	21%
18	For telecommuting/remote access	18%	18%	17%
19	For formal education or training activities	12%	12%	13%
20	For managing inventory and supplies with others	12%	12%	N.A.
21	Track and manage customer relationship (CRM)	10%	11%	N.A.
22	Video streaming	9%	8%	10%
23	Video conferencing	8%	6%	11%
24	For rich media creations	6%	5%	9%
25	Internet Data Centre (IDC) services	5%	5%	8%
26	Blogging	5%	4%	8%

Base: All enterprises with Internet usage

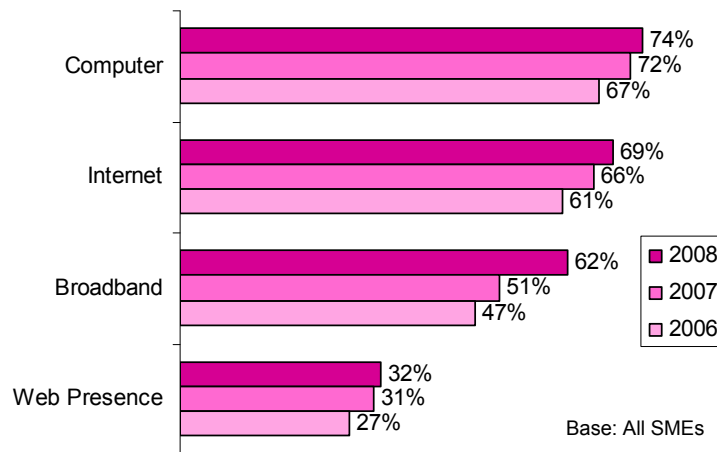
4. INFOCOMM USAGE AMONG SMEs

Overall progress in infocomm adoption

Chart 4.1 shows a general rise in infocomm usage among SMEs, with the largest growth in the area of broadband usage.

Infocomm Usage

Chart 4.1: Infocomm usage by SMEs



Accounting & Finance; Human Resource (HR) & Payroll and Point of Sales (POS) are the top software services adopted by SMEs (Table 4.1).

Table 4.1: Software services used by SMEs

	Internet Applications / Services	Currently using	Not using	
			Plans to use	No plans to use
1	Accounting & Finance	36%	8%	48%
2	Human Resource (HR) & Payroll System	11%	7%	74%
3	Point of Sales (POS) System	8%	4%	80%
4	Computer Aided Design (e.g. AutoCAD etc)	7%	4%	81%
5	Customer Relationship Management (CRM) System	5%	6%	82%
6	Supply Chain Management, Execution	3%	5%	84%
7	Integration with Suppliers, Manufacturers, etc	3%	4%	85%
8	Enterprise Resource Planning (ERP)	3%	4%	86%
9	Material Requirements Planning (MRP)	2%	4%	86%
10	Supply Chain Management, Planning	2%	5%	86%
11	Construction Project Cost Estimation System	2%	3%	87%

Base: All SMEs

Table 4.2 shows the preferred business models to implement infocomm for SMEs. Table 4.3 shows the sources of information and updates on infocomm for SMEs.

**Table 4.2: Preferred business models by SMEs
(More than one choice is allowed)**

	Preferred Business Model	Proportion of SMEs
1	No Preferred Model	60%
2	User-owned Model	19%
3	Pay as You Use Model	11%
4	Fully Outsourced	10%

Base: All SMEs

Table 4.3: Source of information and updates on infocomm for SMEs

	Source of Information and Updates on Infocomm for SMEs	Proportion of SMEs
1	Newspaper, magazines	53%
2	Internet	38%
3	Friends or business associates' recommendations	37%
4	Vendors	23%
5	Infocomm exhibitions, trade fairs, talks, seminars organised by solution providers	16%
6	Trade association and chambers	8%
7	Infocomm courses	5%

Base: All SMEs

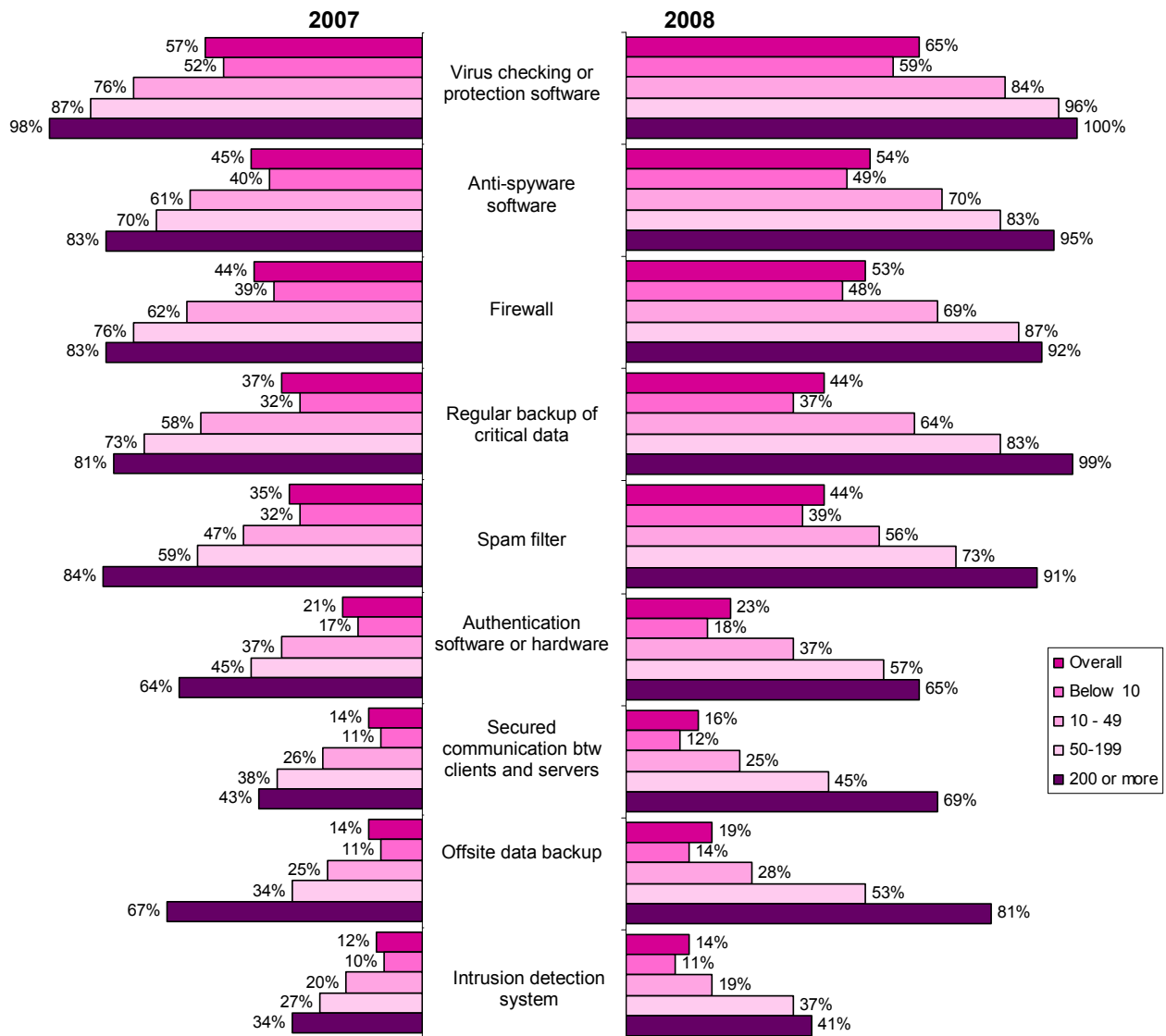
5. INFOCOMM SECURITY

5.1 By Employment Size

Infocomm security adoption on the rise

There is a notable rise in the adoption of infocomm security measures by enterprises. *Virus Checking or Protection Software* was the most pervasive infocomm security measure among enterprises (Chart 5.1); with *Anti-spyware Software* and *Firewall* the next most commonly deployed infocomm security measures.

Chart 5.1: Usage of infocomm security measures by employment size

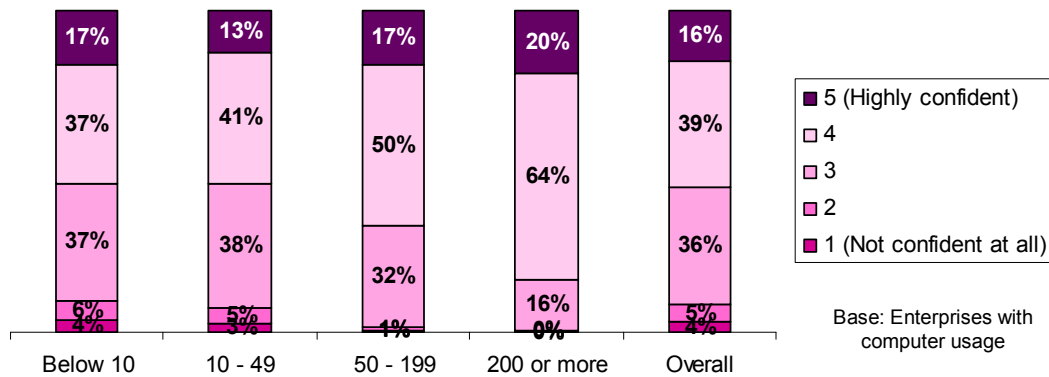


Base: All enterprises

5.2 Confidence Level

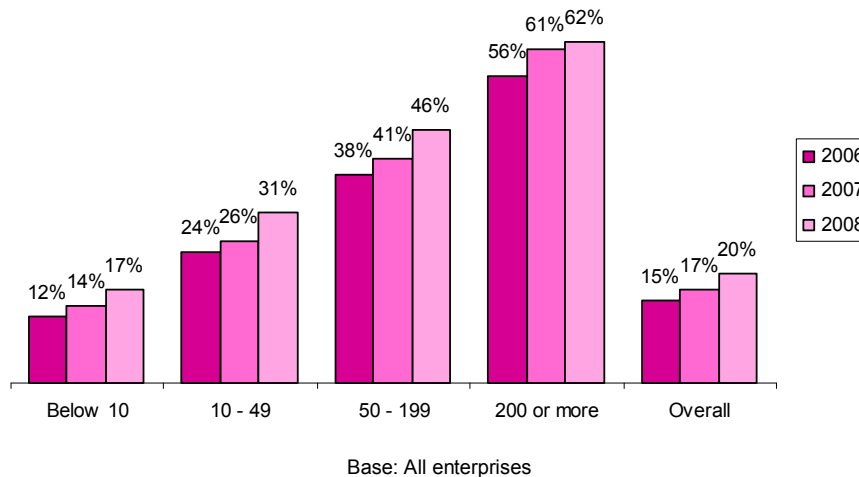
Enterprises were polled to rate their level of confidence in Singapore as a trusted environment to conduct business in cyberspace (Chart 5.2). More than half of the enterprises with computer usage expressed confident sentiments on cyberspace security. Only 9% cited that they are not confident or not confident at all in relation to online transactions.

Chart 5.2: Confidence level in Singapore as a trusted environment to conduct business in cyberspace



Infocomm security education (i.e. education of employees on the security habits and practices to protect the enterprise's information and computers) is practised in 62% of the enterprises with more than 200 employees and only 17% in those with less than 10 employees (Chart 5.3).

Chart 5.3: Infocomm security education by employment size
(Includes seminars, courses, newsletters and email bulletins)



Enterprises with less than 10 employees clocked the highest average number of days on infocomm security education (8.6) (Chart 5.4). The same group of enterprises spent approximately \$1,800 per year, per enterprise, on educating employees on infocomm security (Chart 5.5). Due to the larger pool of manpower, enterprises with 200 or more employees spent an average of \$47,500 per year, per enterprise, to educate employees on infocomm security.

Chart 5.4: Average number of days received per employee on infocomm security education

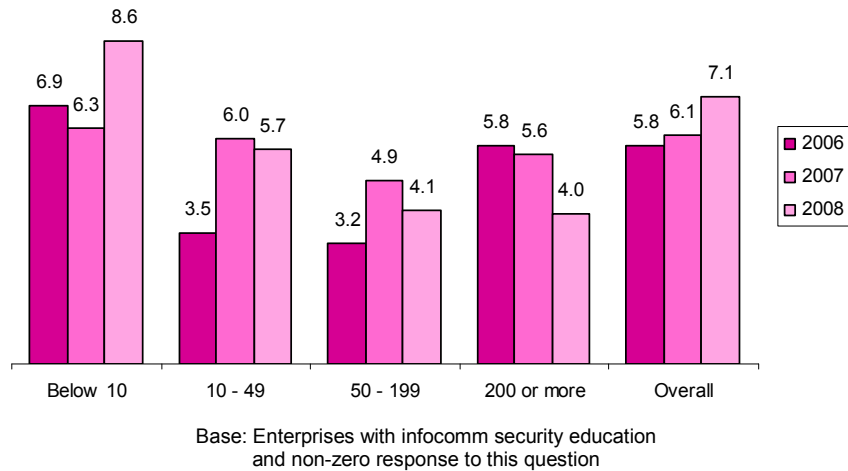
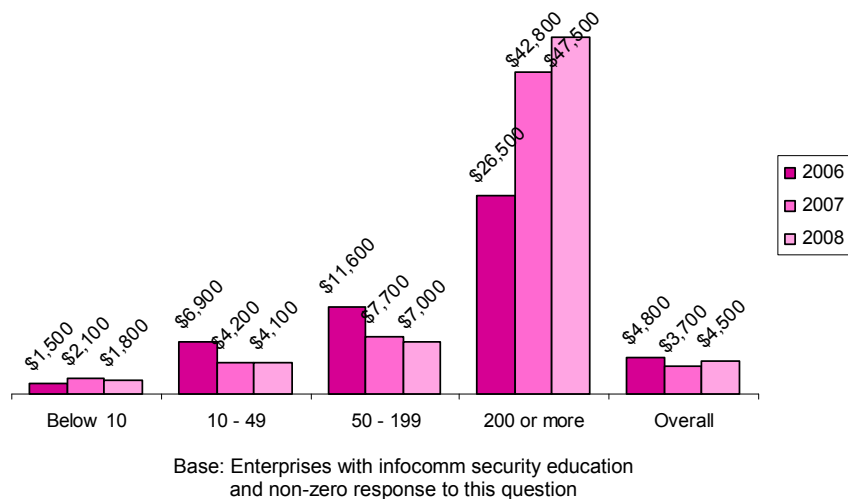


Chart 5.5: Estimated amount spent in educating employees on infocomm security education per enterprise by employment size



The enterprises were further asked to rank the 3 biggest impediments/constraints they faced in educating their employees on infocomm security (Table 5.1).

Table 5.1: Impediments/constraints enterprises faced in educating employees on infocomm security

Impediment / Constraint	2008 Ranking	2007 Ranking	2006 Ranking
Cost of conducting infocomm security education to the enterprise	1	2	1
Lack of internal resources to conduct infocomm security education	2	1	3
Difficulty in measuring the benefits of infocomm security education	3	3	2
Lack of external suppliers who can conduct infocomm security education	4	4	4

Base: All enterprises with non-zero response to this question

6. BARRIERS TO INFOCOMM USAGE

6.1 Barriers to Infocomm Usage in General and Internet

Tables 6.1 and 6.2 list the top five barriers to the usage of infocomm in general and Internet, as cited by enterprises with no computer and Internet usage respectively.

Table 6.1: Top five barriers to infocomm usage in general

Barrier to Infocomm Usage	2008 Ranking	2007 Ranking	2006 Ranking
Lack of perceived benefits	1	5	1
Supply of infocomm technology does not match the infocomm needs of the organisation	2	6	6
The level of infocomm skills is too low among the employed personnel	3	2	4
Cost of infocomm expenditure is too high	4	1	2
Existing personnel are reluctant to use infocomm technologies	5	4	3

Base: Enterprises with no computer usage

Table 6.2: Top five barriers to Internet usage

Barrier to Internet Usage	2008 Ranking	2007 Ranking	2006 Ranking
Lack of perceived benefits	1	5	1
Technology is too complicated	2	1	2
Cost of Internet connectivity is too high	3	3	3
Security concerns (e.g. hacking and viruses)	4	2	5
Cost of development and maintenance of web sites is too high	5	4	4

Base: Enterprises with no Internet usage

A new question was posed to enterprises regarding the barriers for present or future adoption of e-payments (both in offering over-the-counter e-payments and remote payments). Enterprises polled listed "Types of transactions not suitable for e-payment" as the top barrier (Table 6.3).

Table 6.3: Top five barriers to e-payment adoption

Barrier to E-payments Adoption	2008 Ranking
Types of transactions are not conducive for e-payment	1
Lack of perceived benefits	2
Cost of implementing e-payment channels	3
Limited resources/capability/knowledge to develop e-payment program	4
Absence of a e-payment channel with comprehensive reach	5

Base: All enterprises

PART III

ADDITIONAL STATISTICAL CHARTS & TABLES

1. CHARTS FOR ALL ENTERPRISES – ALTERNATIVE EMPLOYMENT SIZE BREAKDOWN

Chart SC01: Computer usage by employment size

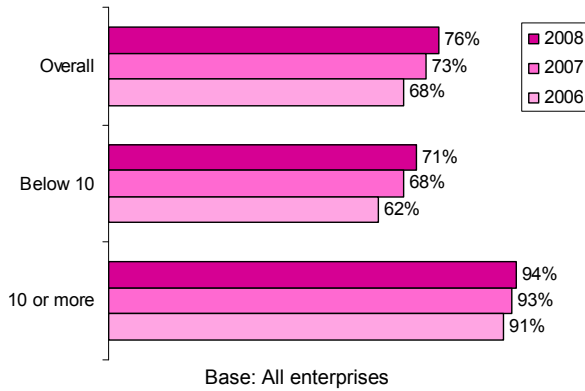


Chart SC02: Internet usage by employment size

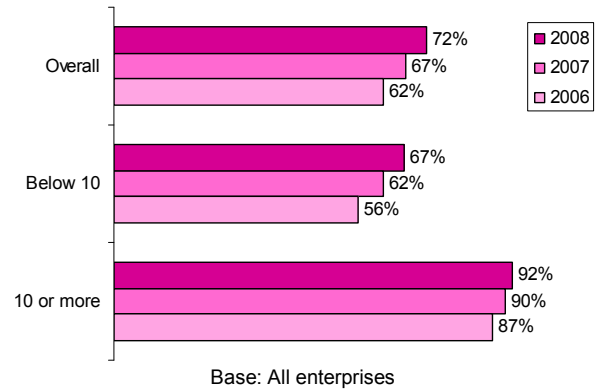


Chart SC03: Broadband usage by employment size

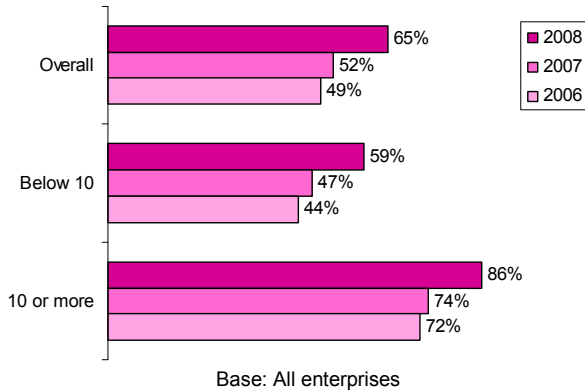
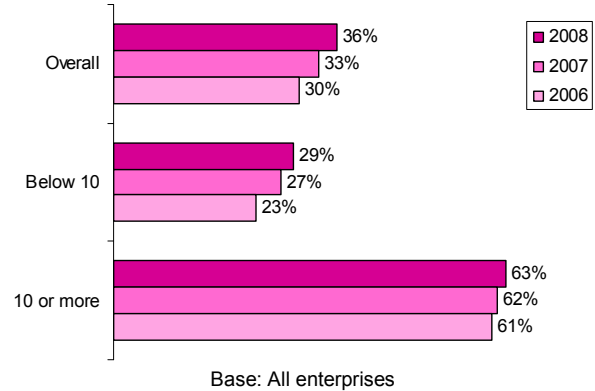


Chart SC04: Web presence by employment size



2. CHARTS AND TABLE FOR SMEs

Chart SC05: Computer usage among SMEs by employment size

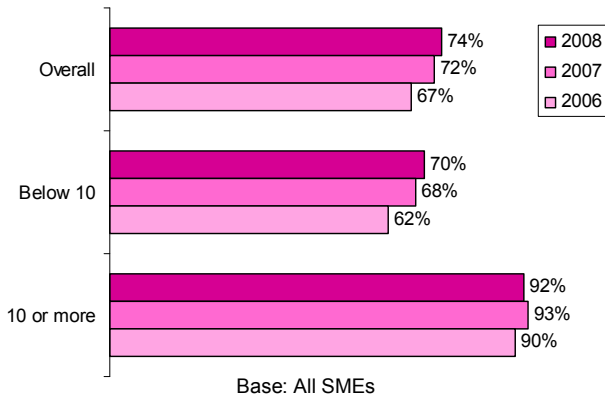


Chart SC06: Internet usage among SMEs by employment size

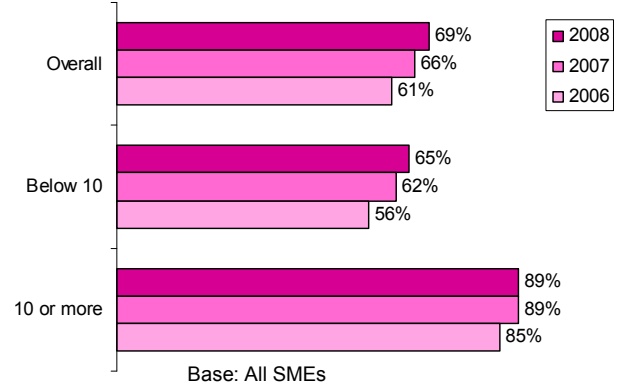


Chart SC07: Broadband usage among SMEs by employment size

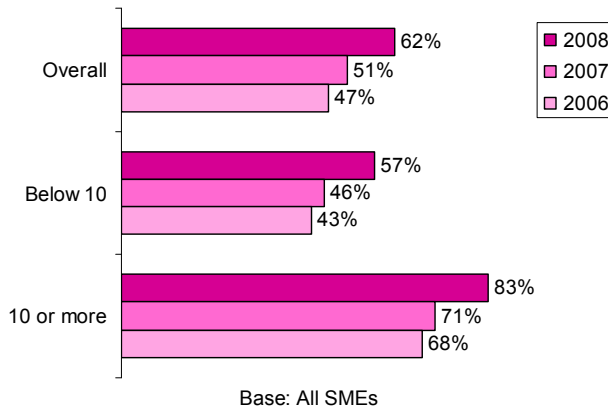


Chart SC08: Web presence among SMEs by employment size

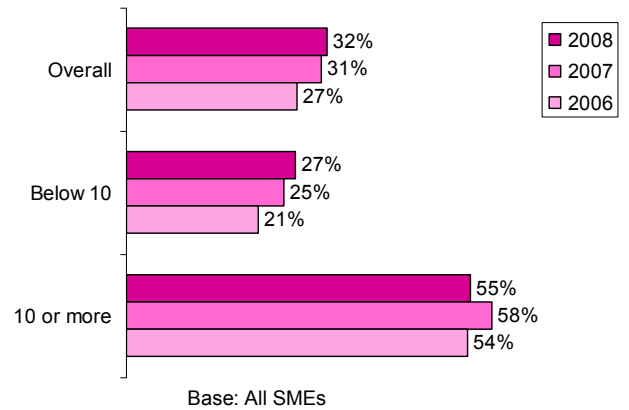
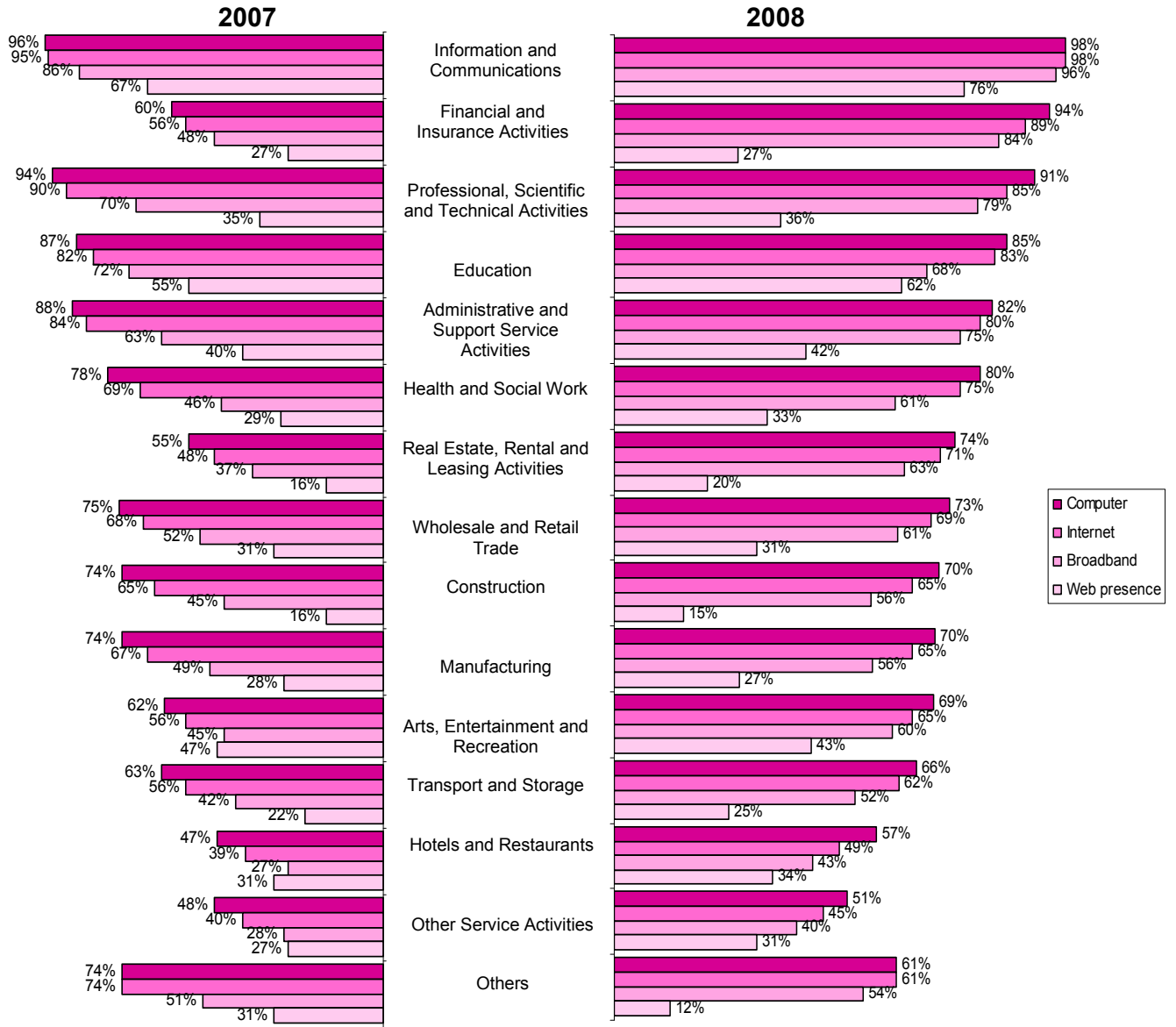


Chart SC09: Infocomm use among SMEs by sector



Base: All SMEs

Table ST01: Internet usage among SMEs

	Internet Applications / Services	Proportion of SMEs		
		2008	2007	2006
1	For sending or receiving emails	96%	96%	95%
2	For information search	92%	91%	91%
3	For obtaining information from government organisations (e.g. from web sites or via e-mail)	84%	77%	71%
4	For downloading or requesting government forms	81%	74%	67%
5	For completing government forms online or sending completed government forms	78%	69%	60%
6	For making online payments to government organisations	58%	49%	42%
7	For banking and financial services	54%	46%	42%
8	For placing orders for goods/services	39%	37%	34%
9	For market monitoring purposes (e.g. prices)	38%	32%	27%
10	For receiving orders for goods/services	37%	36%	32%
11	For marketing/promotion activities	35%	34%	32%
12	As platform to deliver contents/services	32%	31%	30%
13	For other communications (e.g. instant messaging)	29%	25%	22%
14	For payment of goods/services	28%	24%	26%
15	For finding information about employment opportunities (recruitment and search)	25%	24%	22%
16	To access collaborative tools (e.g. file sharing)	20%	17%	19%
17	For telephoning (VoIP)	18%	18%	20%
18	For telecommuting/remote access	15%	15%	14%
19	For formal education or training activities	11%	10%	11%
20	For managing inventory and supplies with others	11%	10%	N.A.
21	Track and manage customer relationship (CRM)	9%	10%	N.A.
22	Video streaming	8%	7%	10%
23	Video conferencing	6%	5%	9%
24	For rich media creations	6%	5%	9%
25	Internet Data Centre (IDC) services	5%	4%	8%
26	Blogging	5%	4%	7%

Base: SMEs with Internet usage