

ANNUAL SURVEY ON INFOCOMM USAGE BY ENTERPRISES FOR 2007



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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 ninth in the series of such annual surveys carried out by IDA since 1999.

2. SURVEY OBJECTIVE

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

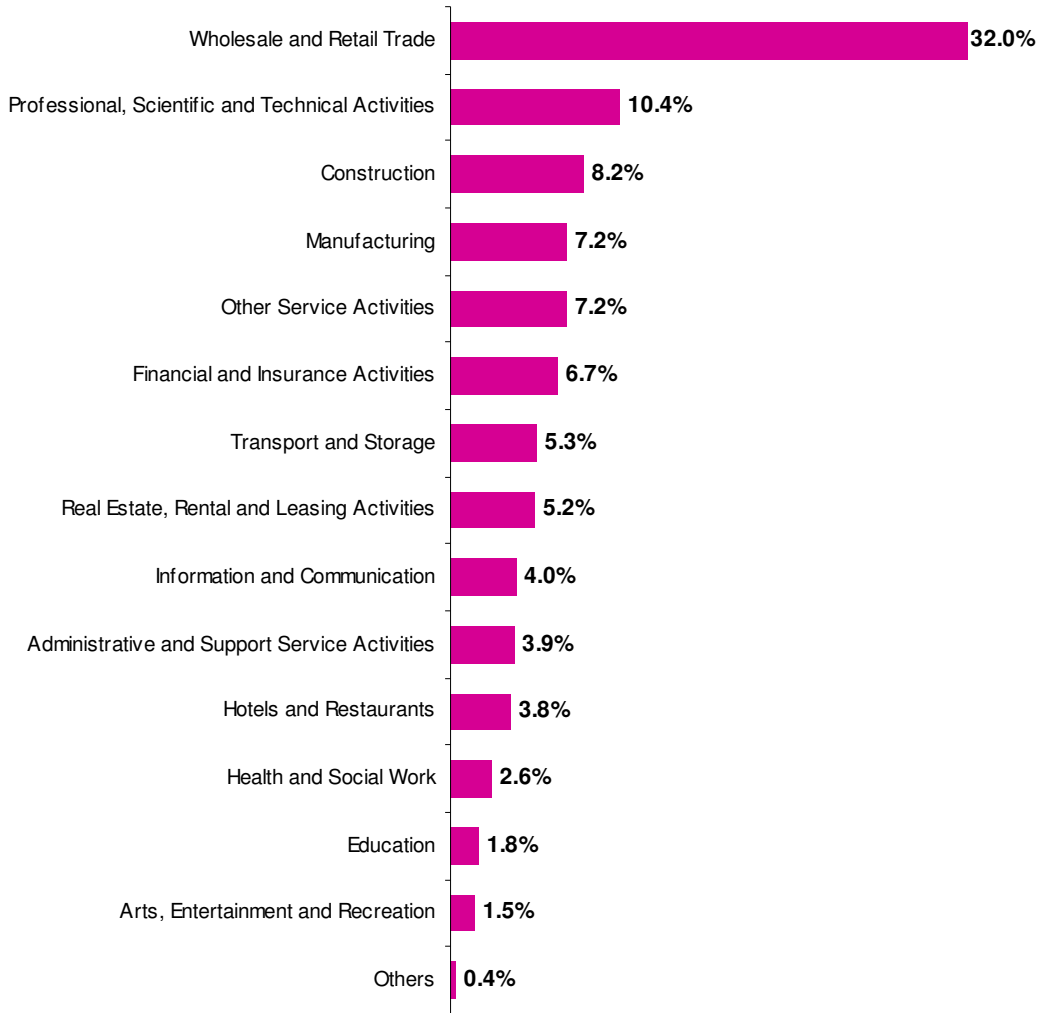
3. METHODOLOGY

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

4. COMPANY PROFILE

Chart 0.1 provides a profile of the enterprises sampled.

Chart 0.1: Distribution of Enterprises by Sector



Base: All Enterprises

PART II

SURVEY FINDINGS

1. SUMMARY

2007 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 73% (from 68%) and Internet usage reached 67% (from 62%). Broadband adoption and web presence also saw progress, growing to 52% (from 49%) and 33% (from 30%) respectively.

The sectors with high infocomm adoption and usage are consistently *Information & Communications; Professional, Scientific & Technical Activities, Education and Administrative & Support Service*.

For Internet connection, *xDSL* (54%) is the most common mode used by enterprises, followed a far distant by *Wireless Access* (27%), *Cable Modem* (21%), *Analogue Modem* (18%), *Dedicated Private Leased Line* (14%) and *ISDN* (7%).

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 costs, lack of skilled staff and frequency of software updates.

2. INFOCOMM USAGE

2007 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.

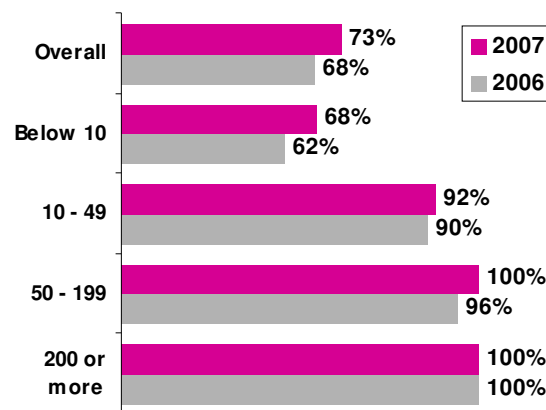
2.1 By Employment Size

Widespread progress in infocomm usage by enterprises

Usage of Computers

Computer usage among enterprises grew by 5% to reach 73% in 2007 ([Chart 2.1](#)), driven largely by the smaller companies.

Chart 2.1: Computer Usage by Employment Size

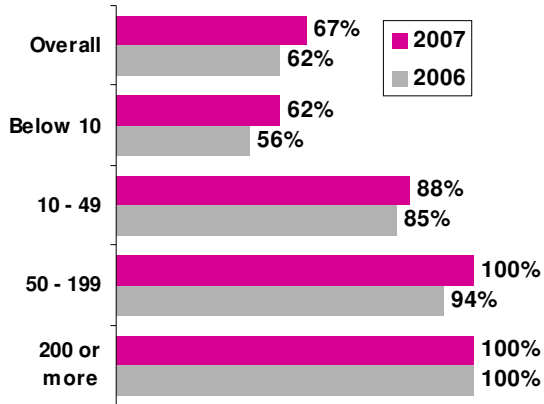


Base: All Enterprises

Usage of Internet and Broadband

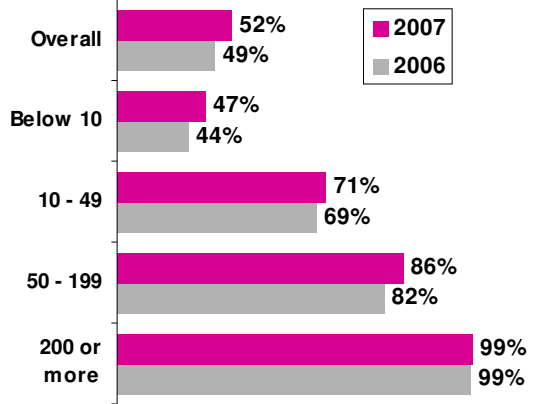
Both Internet usage and broadband mode of access have increased generally; similarly for web presence. While there is a general increase in adoption by smaller enterprises, there remains a sizeable gap between them and the bigger enterprises ([Charts 2.2, 2.3 and 2.4](#)).

Chart 2.2: Internet Usage by Employment Size



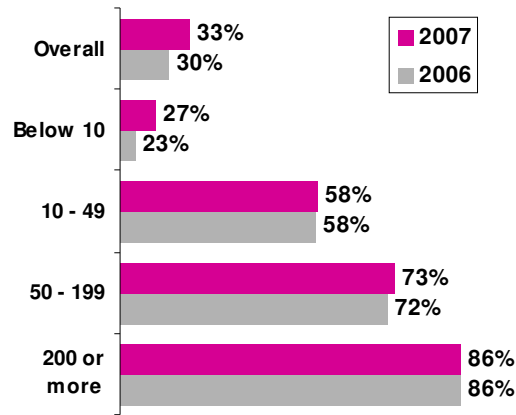
Base: All Enterprises

Chart 2.3: Broadband Usage by Employment Size



Base: All Enterprises

Chart 2.4: Web Presence by Employment Size



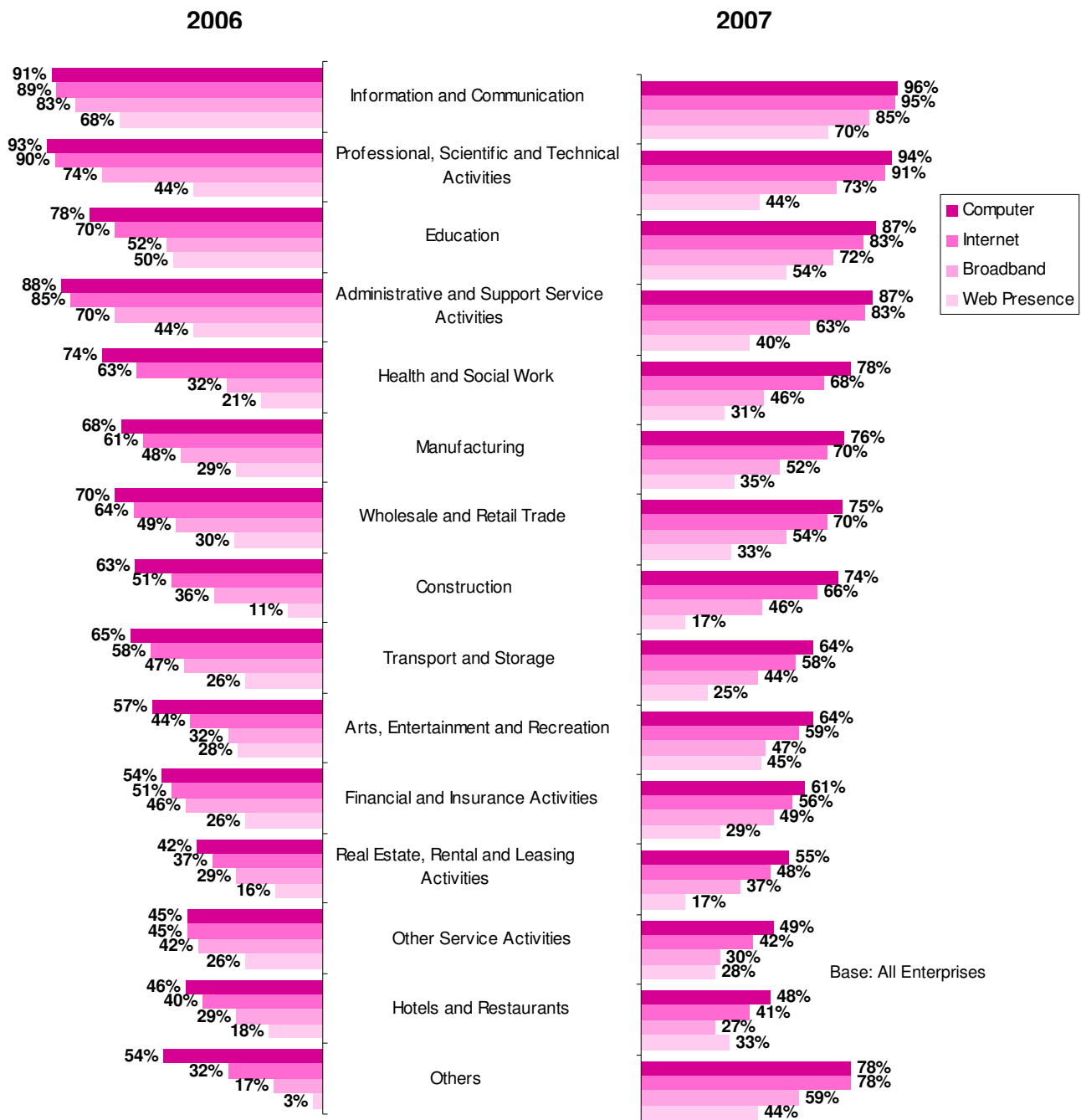
Base: All Enterprises

2.2 By Sector

Good growth in sectors with relatively lower adoption

Information & Communications leads in infocomm adoption ([Chart 2.5](#)). Enterprises in *Real Estate, Rental & Leasing Activities* sectors; *Construction*; *Arts, Entertainment & Recreation*; and *Health & Social Work* saw the best improvements in infocomm usage.

Chart 2.5: Infocomm Use by Sector



2.3 Frequency of Usage

A higher proportion of employees used the computer and Internet at least once a week in the smaller enterprises. For those enterprises with below 10 employees, more than 50% 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)

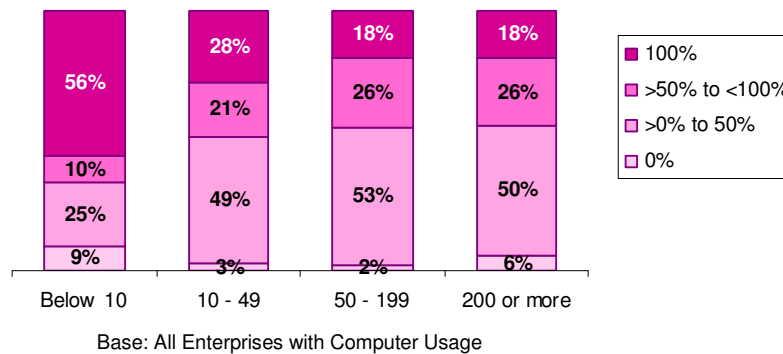
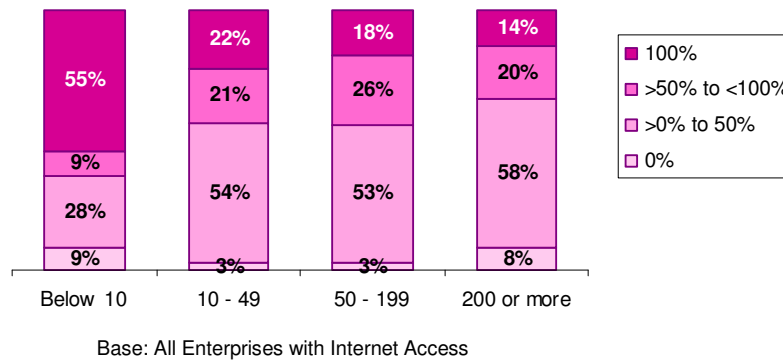


Chart 2.7: Proportion of Employees who used the Internet at Work (at least once a week)



3. INTERNET USAGE

3.1 Connection Type and Speed

xDSL most common mode of Internet access

The most common mode of connection to the Internet is via *xDSL*, followed by *Wireless Access*¹, *Cable Modem*, *Analogue Modem*, *Dedicated Private Leased Line* and *ISDN*. Though *xDSL* remains the primary connection type for all employment sizes, usage of *Wireless Access* is also rising, with adoption by the larger enterprises progressively increasing. At least half of the larger enterprises accessed the Internet wirelessly compared with 25% of enterprises with less than 10 employees.

The trends vary by connection speeds for each connection mode. For the most common form of connection *xDSL*, the mid-tier band of between 256 kbps and 2 Mbps is most popular connection plan with the proportion of adoption increasing for the larger enterprises.

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

Table 3.1²: Enterprises with Internet Access by Connection Type and Employment Size

Internet Access Mode and Speed	Below 10	10 - 49	50 - 199	200 or more	Overall
Analogue Modem					
Overall	19.1%	14.5%	13.8%	13.1%	17.9%
ISDN					
Overall	5.4%	10.3%	10.7%	13.2%	6.6%
Dedicated Private Leased Line					
Overall	12.0%	18.7%	23.9%	41.1%	14.1%
- Lower than 256 kbps	2.1%	2.8%	1.0%	1.2%	2.2%
- Between 256 kbps and 2 Mbps (inclusive)	7.3%	12.3%	18.1%	28.1%	9.0%
- More than 2 Mbps	2.7%	3.6%	5.8%	14.8%	3.1%
xDSL					
Overall	51.4%	61.3%	55.9%	59.2%	53.6%
- Lower than 256 kbps	3.2%	4.1%	3.1%	0.3%	3.4%
- Between 256 kbps and 2 Mbps (inclusive)	38.5%	44.7%	40.8%	47.9%	39.9%
- Between 2 Mbps and 10 Mbps (inclusive)	8.4%	9.0%	10.6%	5.6%	8.6%
- More than 10 Mbps	1.6%	3.7%	2.3%	7.6%	2.1%
Cable Modem					
Overall	22.4%	14.5%	15.9%	13.9%	20.5%
- Lower than 2 Mbps	6.7%	5.1%	5.3%	0.7%	6.3%
- Between 2 Mbps and 10 Mbps (inclusive)	10.5%	7.3%	10.6%	6.8%	9.8%
- Between 10 Mbps and 30 Mbps (inclusive)	3.2%	0.8%	0.7%	0.6%	2.6%
- More than 30 Mbps	2.1%	1.4%	0.0%	6.3%	1.9%
Wireless					
Overall	24.9%	33.0%	34.6%	50.5%	27.2%
- GPRS / GSM	6.7%	8.0%	14.4%	12.4%	7.3%
- 3G	4.6%	4.5%	8.7%	9.5%	4.8%
- Wi-Fi	19.3%	27.4%	25.2%	47.1%	21.4%

Base: Enterprises with Internet Access

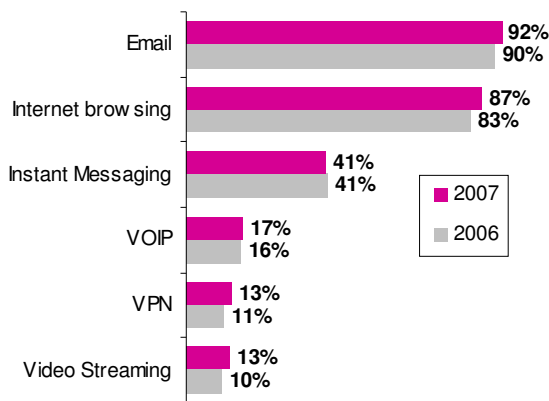
² The percentages for each row will add up to more than 100% because an enterprise may have multiple modes of Internet access.

3.2 Mobile Devices and Services

3G phones on the rise

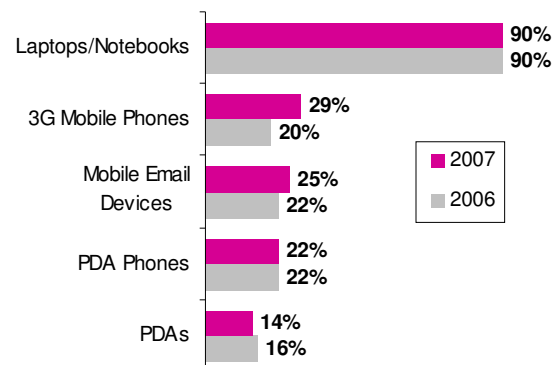
The services most commonly accessed wirelessly using mobile devices are *Email*, *Internet Browsing* and *Instant Messaging* ([Chart 3.1](#)). Laptops are the most widely used mobile devices ([Chart 3.2](#)) for wireless access; with good growth in the use of 3G mobile phones for this purpose.

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

The top Internet applications/services used by the companies are *Sending or Receiving Mails* and *Information Search*, followed by activities involving dealing with government organisations ([Table 3.2](#)).

Table 3.2: Internet Usage

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

Base: Enterprises with Internet Usage

4. INFOCOMM USAGE AMONG SMEs

Overall progress in infocomm adoption

Chart 4.1 shows a rise in infocomm usage generally among SMEs in 2007.

Infocomm Usage

Chart 4.1: Infocomm Usage by SMEs

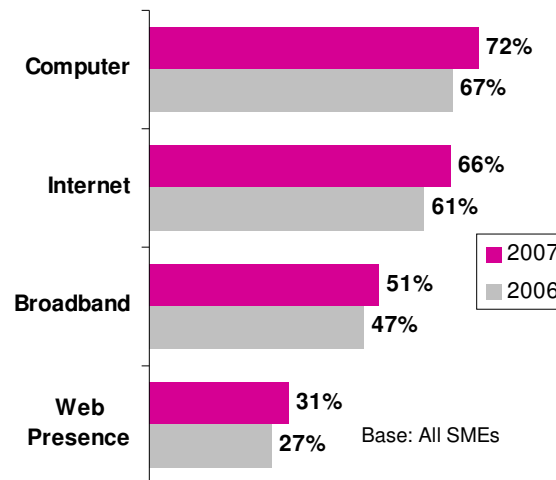


Table 4.1 shows the sources of information and updates on infocomm for SMEs.

Table 4.1: SMEs' Source of Information and Updates on Infocomm

Source of Information and Updates on Infocomm		Proportion of SMEs
1	Newspaper	39%
2	Internet	36%
3	Friends or business associates' recommendations	34%
4	Vendors	23%
5	Infocomm exhibitions, trade fair, talks, seminars organised by solution providers	17%
6	Trade association and chambers	8%
7	Infocomm courses	5%

Base: All SMEs

Infocomm Services

Accounting & Finance; Human Resource (HR) & Payroll and Intranet are the top software services adopted by SMEs (Table 4.2).

Table 4.2: Software Services used by SMEs

Services		Already using	Not using	
			But planning to use	No plans to use
1	Accounting & Finance	44%	10%	46%
2	Human Resource (HR) & Payroll System	13%	8%	79%
3	Intranet	10%	5%	85%
4	Point of Sales (POS) System	9%	6%	85%
5	Computer Aided Design (e.g. AutoCAD etc)	7%	5%	87%
6	Customer Relationship Management (CRM) System	6%	7%	87%
7	Supply Chain Management, Execution (Inventory, Warehouse and/or Transport Management System)	5%	5%	90%
8	Integration with Suppliers, Manufacturers, etc	4%	5%	92%
9	Enterprise Resource Planning (ERP)	3%	5%	92%
10	Supply Chain Management, Planning (Demand Forecasting, Planning and Scheduling, others)	3%	5%	92%
11	Material Requirements Planning (MRP)	3%	5%	92%
12	Construction Project Cost Estimation System	3%	4%	93%

Base: SMEs with Computer Usage

Table 4.3 shows the preferred business models to implement infocomm.

Table 4.3: SMEs' Preferred Business Models

Preferred Business Model (s)		Proportion of SMEs
a	User-owned Model	44%
b	Fully Outsourced	36%
c	Pay as You Use Model	27%

Base: SMEs with Computer Usage

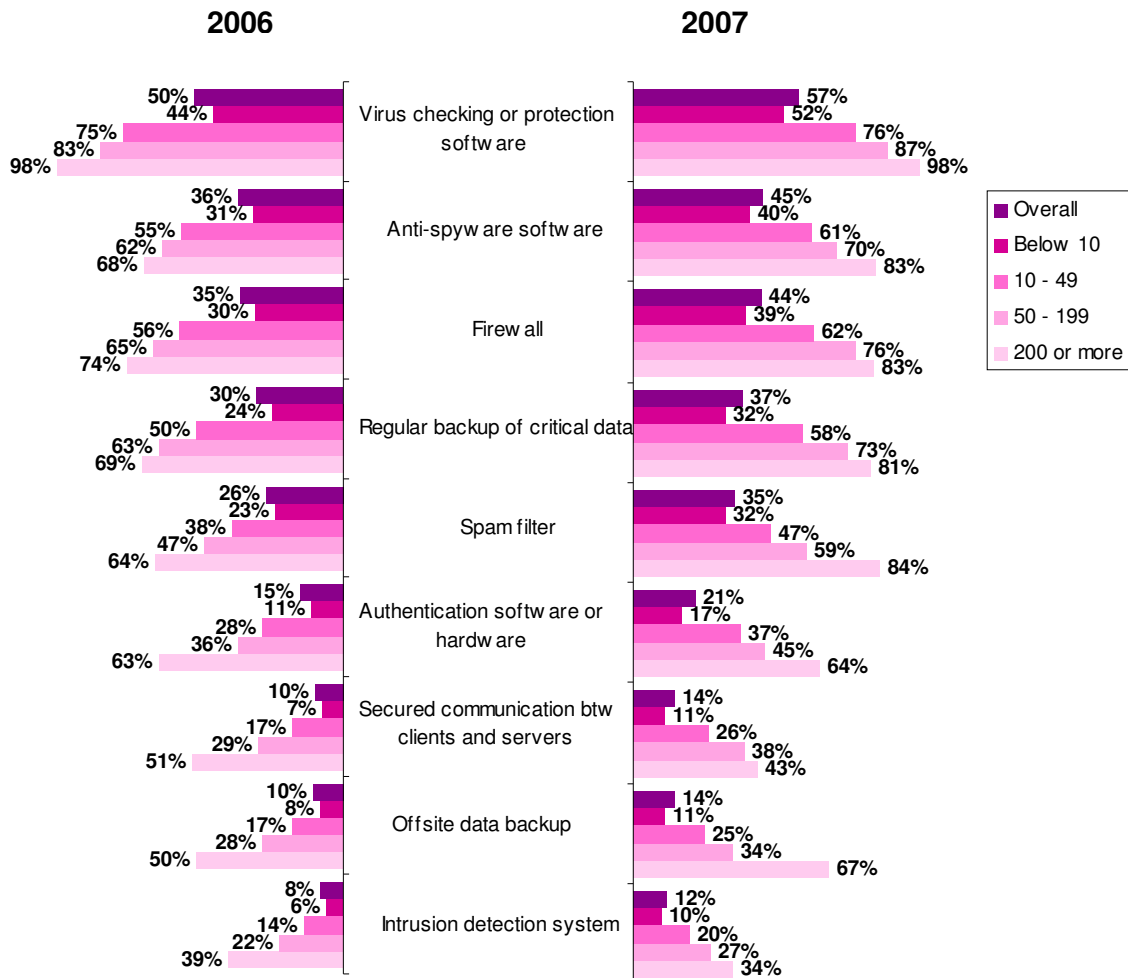
5. INFOCOMM SECURITY

5.1 By Employment Size

Rising infocomm security adoption

There is a notable rise in the adoption of infocomm security measures by enterprises. *Virus Checking or Protection Software* was the most pervasive measure adopted by companies ([Chart 5.1](#)), with *Anti-Spyware Software* and *Firewall* the next most commonly deployed measures.

Chart 5.1: Usage of Infocomm Security Measures by Employment Size

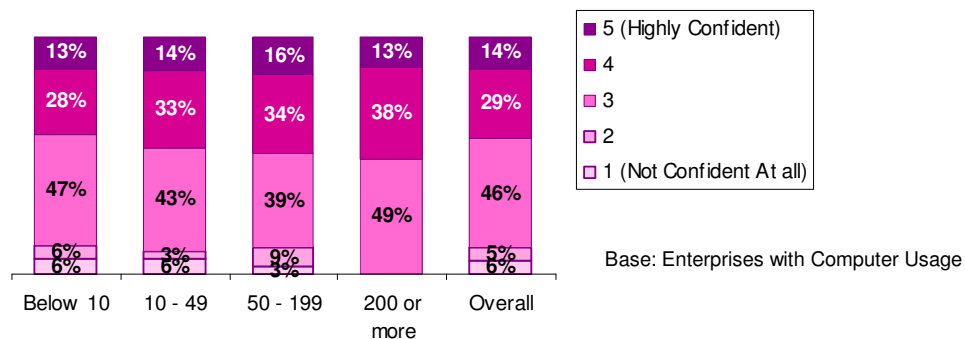


Base: All Enterprises

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](#)). Though about half maintained a neutral stand, sentiments on cyberspace security are generally positive on the whole. Only 11% cited that they are not confident or not confident at all in online transactions.

Chart 5.2: Confidence Level in Singapore as a Trusted Environment to conduct Business in Cyberspace

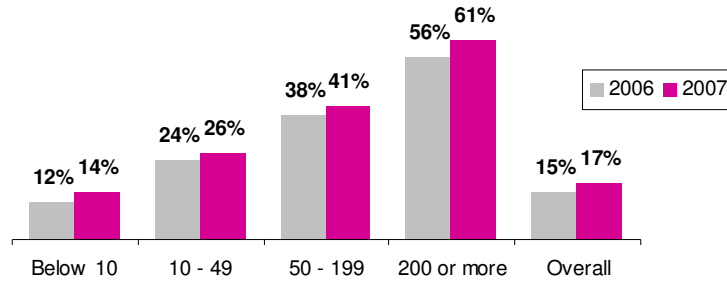


Infocomm security education (i.e. education of employees on the security habits and practices to protect the enterprise's information and computers) has been done in 61% of the enterprises with more than 200 employees although only 14% in those with below 10 staff ([Chart 5.3](#)) have done so.

The smaller enterprises tend to invest more in training (as seen in their higher training days per staff for seminars, courses and other avenues such as newsletters and small bulletins) compared to the larger enterprises. They clocked 6.3 days on average for each employee during the period 1st June 2006 to 31st May 2007 ([Chart 5.4](#)). These small enterprises spent approximately \$2,100 on educating employees on infocomm security during the same period ([Chart 5.5](#)). The largest enterprises, with a bigger pool of manpower to impart the security knowledge to, spent almost 20 fold, at \$42,800.

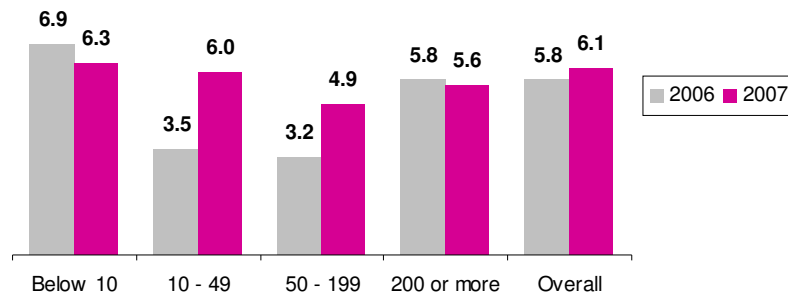
Chart 5.3: Infocomm Security Education by Employment Size

(Includes seminars, courses, newsletters and email bulletins)



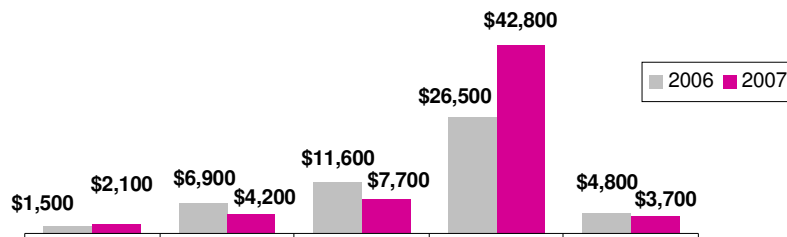
Base: All Enterprises

Chart 5.4: Average Number of Days Received per Employee on Infocomm Security Education



Base: Enterprises with Infocomm Security Education
And Non-Zero Response to This Question

Chart 5.5: Estimated Amount Spent In Educating Employees on Infocomm Security Education per Enterprise by Employment Size



Base: Enterprises with Infocomm Security Education
And Non-Zero Response to This Question

The enterprises were further asked to rank the 3 biggest impediments/ constraints they faced in educating their employees on infocomm security. It is notable that lack of internal resources to conduct infocomm security education was identified as the top drawback for 2007.

Table 5.1: Impediments/Constraints Enterprises faced in Educating Employees on Infocomm Security by Employment Size

Impediment / Constraint	2007 Ranking	2006 Ranking
Lack of internal resources to conduct infocomm security education	1	3
Cost of conducting infocomm security education to the enterprise	2	1
Difficulty in measuring the benefits of infocomm security education	3	2
Lack of external suppliers who can conduct infocomm security education	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, cited by survey respondents with no computer and Internet usage respectively.

Table 6.1: Top Five Barriers to Infocomm Usage In General

Barrier to Infocomm Usage	2007 Ranking	2006 Ranking
Cost of infocomm expenditure is too high	1	2
The level of infocomm skills is too low among the employed personnel	2	4
New versions of existing software are introduced too often	3	5
Existing personnel are reluctant to use infocomm technologies	4	3
Lack of perceived benefits	5	1

Base: Enterprises with No Computer Usage

Table 6.2: Top Five Barriers to Internet Usage

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

Base: Enterprises with No Internet Usage

PART III

ADDITIONAL STATISTICAL CHARTS & TABLES

1. CHARTS FOR ALL ENTERPRISES – ALTERNATIVE EMPLOYMENT SIZE BREAKDOWN

Chart SC01: Computer Usage by Employment Size

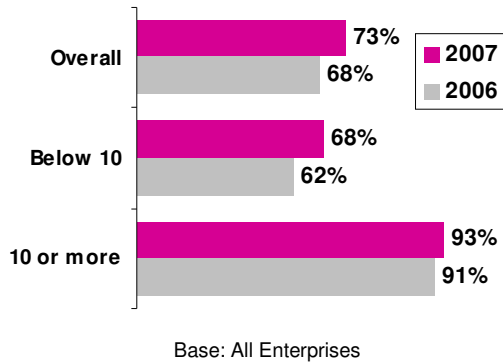


Chart SC02: Internet Usage by Employment Size

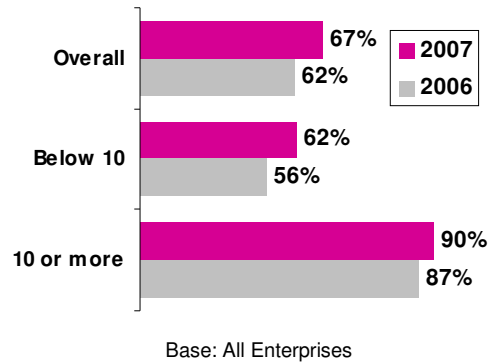


Chart SC03: Broadband Usage by Employment Size

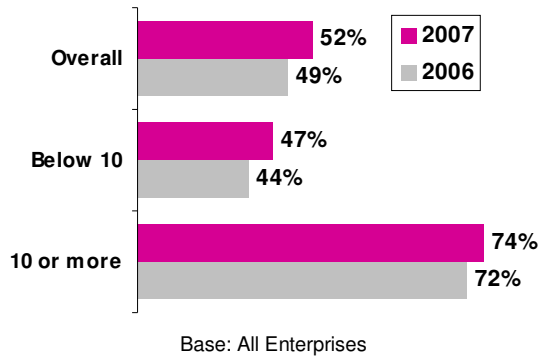
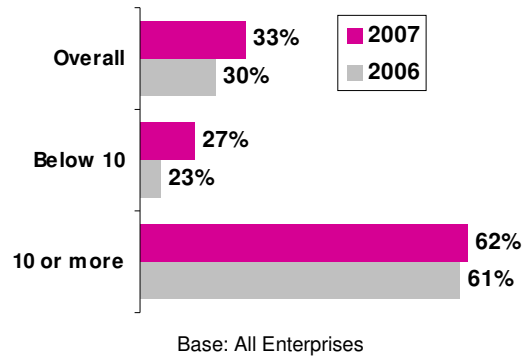


Chart SC04: Web Presence by Employment Size



2. CHARTS AND TABLE FOR SMEs

Chart SC05: Computer Usage among SMEs by Employment Size

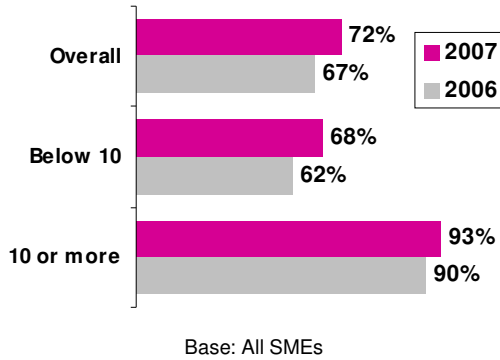


Chart SC06: Internet Usage among SMEs by Employment

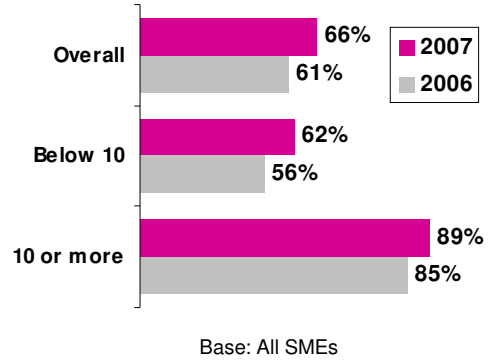


Chart SC07: Broadband Usage among SMEs by Employment Size

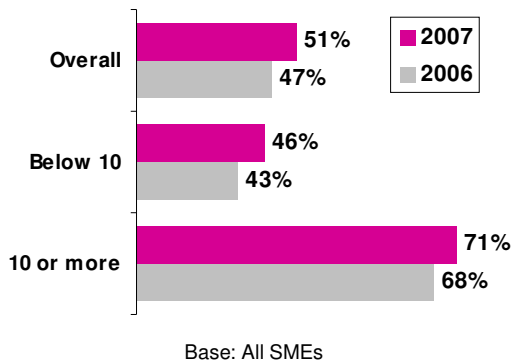


Chart SC08: Web Presence among SMEs by Employment

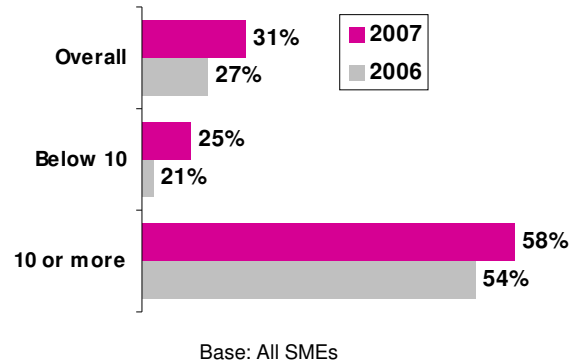
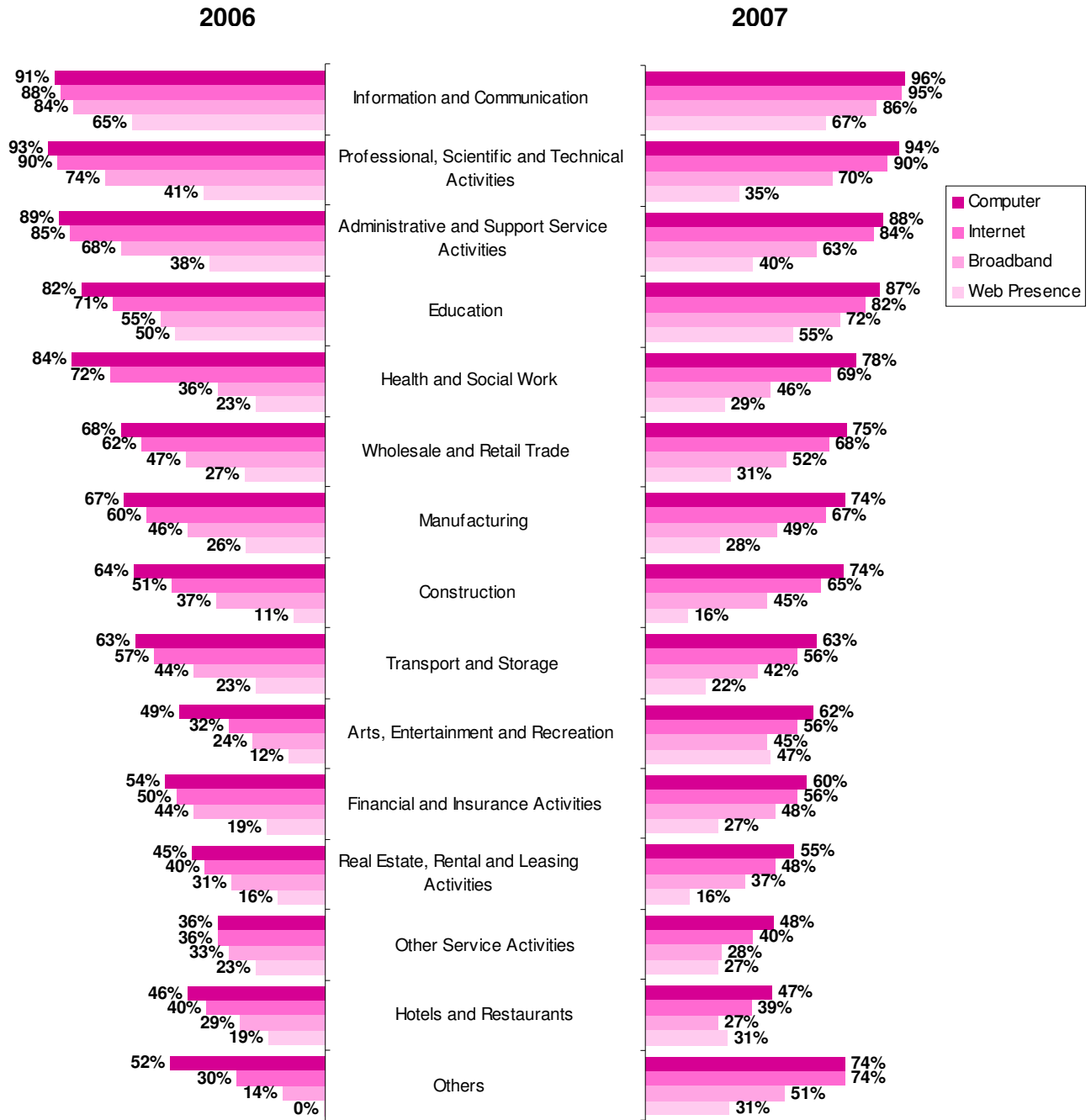


Chart SC09: Infocomm Use among SMEs by Sector



Base: All SMEs

Table ST01: Internet Usage among SMEs

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

Base: SMEs with Internet Usage