

# ANNUAL SURVEY ON BUSINESS INFOCOMM USAGE FOR 2006

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# 1 SUMMARY

Infocomm usage correlates with the size of the enterprise. The larger enterprises with employment size greater than 200 registered nearly pervasive or full adoption levels for computer usage (100%), Internet adoption (100%), broadband access (99%) and web presence (86%). The smaller firms with less than 10 employees reached lower adoption levels instead at 62%, 56%, 44% and 23% respectively.

Similarly, in the deployment of network infrastructure, the smaller enterprises saw low deployment rates of LAN (23%), Intranet (8%) and Extranet (3%). The same forms of network stood at 86%, 61% and 28% for the larger businesses.

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

The most ubiquitous mode of connection to the Internet for businesses was via *xDSL* (53%), followed by *Wireless Access* (29%), *Analogue Modem* (27%), *Cable Modem* (22%), *Frame Relay/ Dedicated Leased Line* (17%) and *ISDN* (9%).

Most businesses used the Internet for sending and receiving emails (95%), to perform information search (91%) and for dealings with the government (61% to 68%).

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

The greatest barriers to infocomm use and adoption amongst businesses are the perception of little tangible benefits, costs and the complexity of technology.

## **2. INTRODUCTION**

Business infocomm usage surveys have been carried out by IDA annually since 1999. This is the 8th in the series.

### **2.1 Survey Objectives**

Essentially, to gauge the level of business infocomm usage; and to identify the barriers to infocomm adoption.

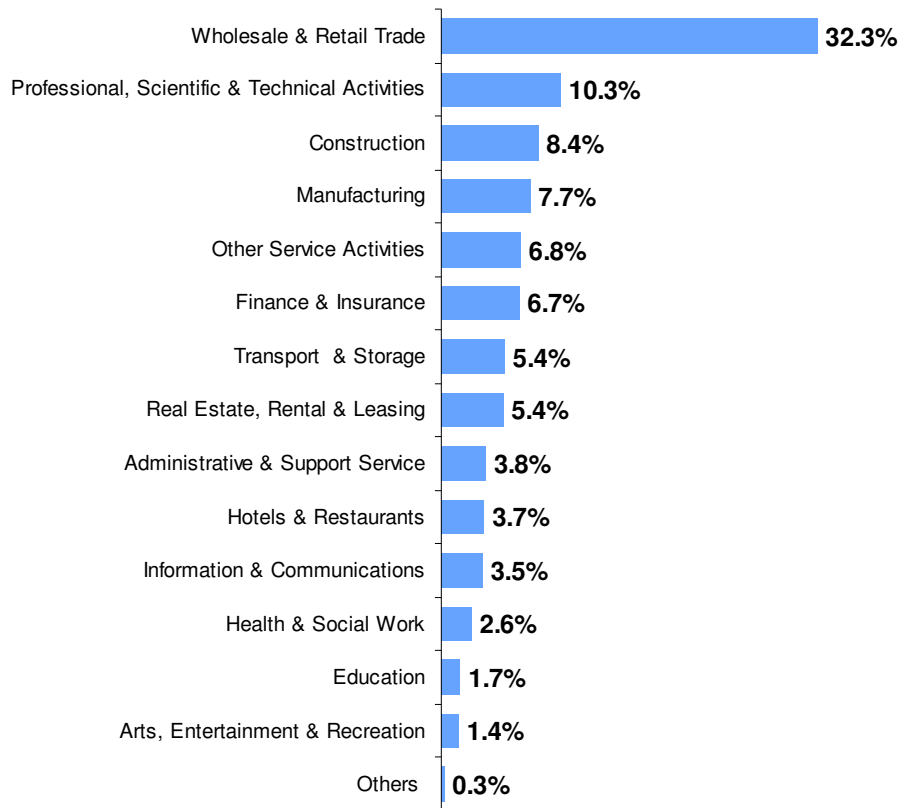
### **2.2 Methodology**

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

### 3. COMPANIES' PROFILE

Figure 3.1 summarises the profile of companies sampled.

**Figure 3.1: Distribution of Companies By Sector**



Base: All Enterprises

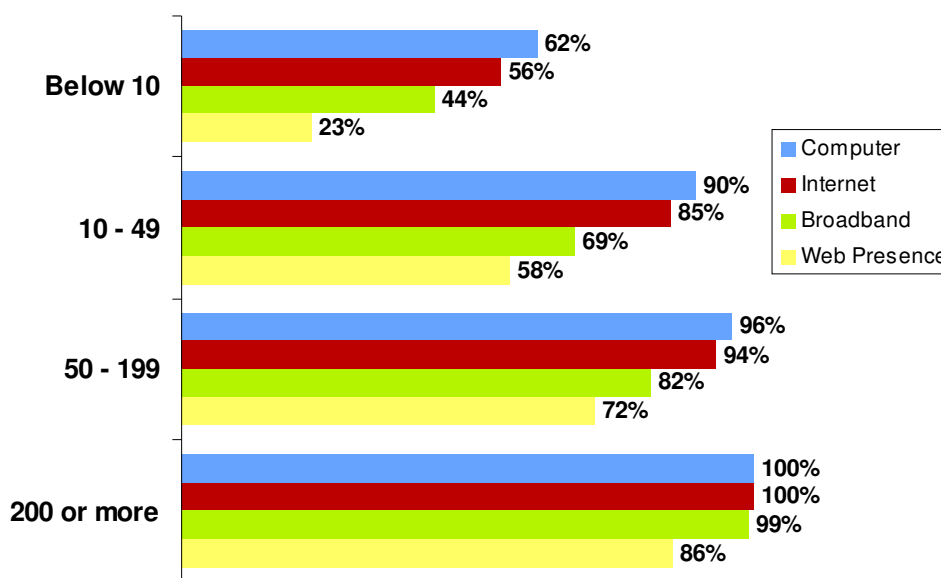
## 4. INFOCOMM USAGE

This chapter presents the infocomm usage of companies in 2006, in terms of computer, Internet, broadband usage and web presence.

### 4.1 By Employment Size

The smaller companies generally lag behind the larger ones in infocomm adoption and usage. Enterprises with at least 50 employees saw high penetration rates of at least 70% for all four forms of infocomm use. In particular, their computer and Internet adoption rates, which exceeded the 90% mark, with the larger companies (more than 200 employees) achieving full adoption ([Figure 4.1](#)).

Figure 4.1: Infocomm Use by Employment Size

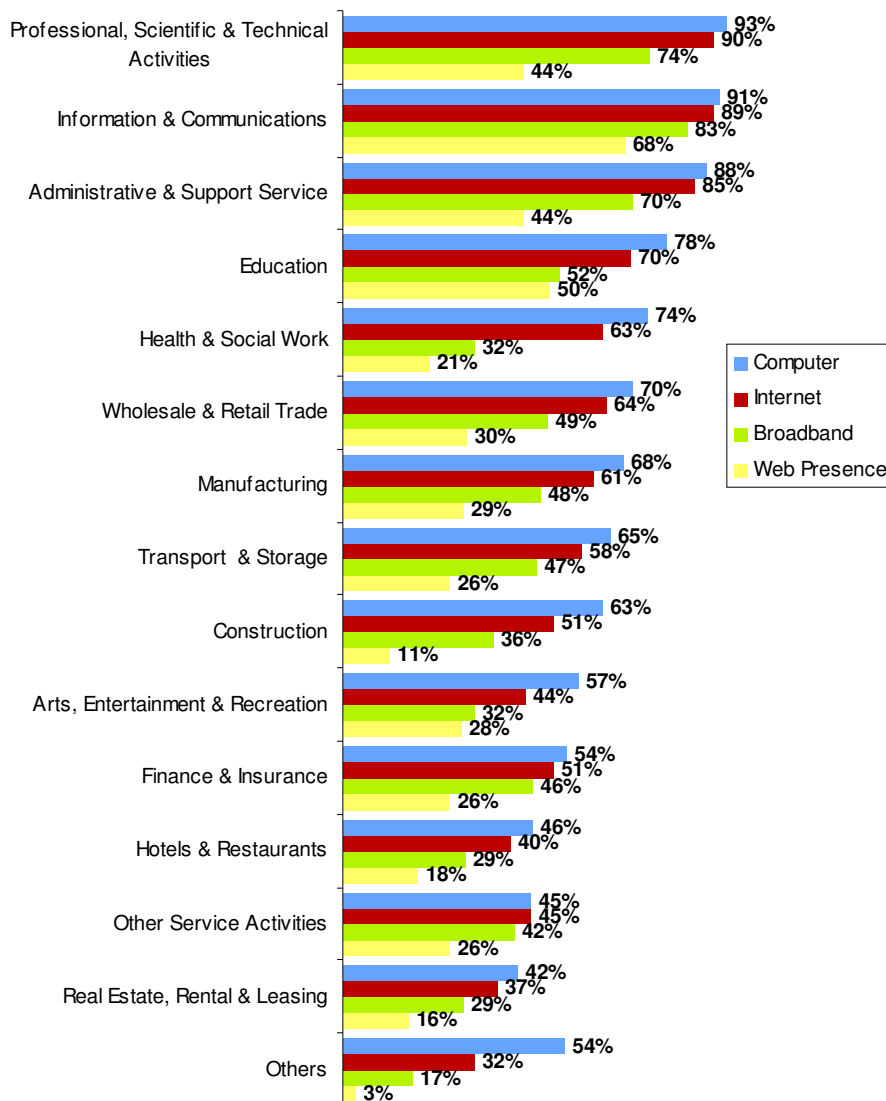


Base: All Enterprises

## 4.2 By Sector

Infocomm is more prevalent in some industries than others. *Professional, Scientific & Technical Activities; Information & Communications; Administrative & Support Service* and *Education* have the highest adoption for all the four forms of infocomm use surveyed (Figure 4.2).

**Figure 4.2: Infocomm Use by Sector**

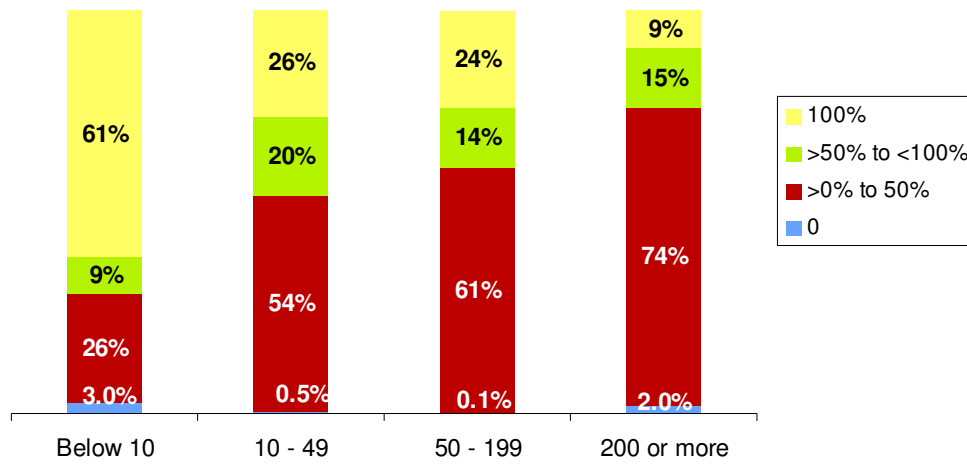


Base: All Enterprises

### 4.3 Frequency of Use

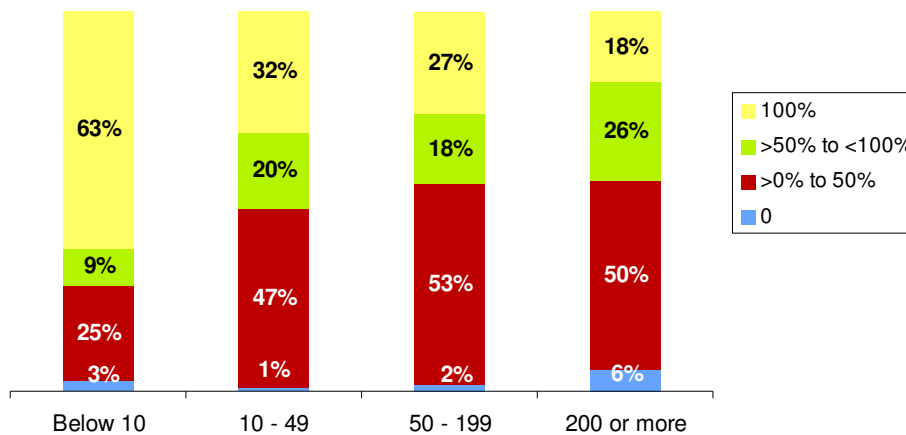
Higher proportion of employees used the computer and Internet at least once a week in the smaller enterprises. For those companies with below 10 staff, 63% and 61% reported that their entire work force used the computer and Internet respectively, at such frequency (Figure 4.3 & 4.4).

**Figure 4.3: Proportion of Employees Who Used The Computer At Work (at least once a week)**



Base: All Enterprises with Computers

**Figure 4.4: Proportion of Employees Who Used The Internet At Work (at least once a week)**



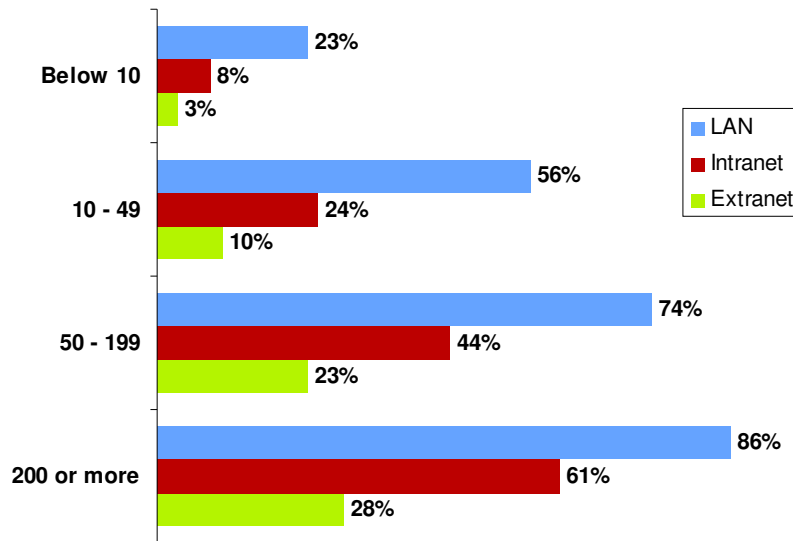
Base: All Enterprises with Internet Access

## 5. INFOCOMM INFRASTRUCTURE

### 5.1 By Employment Size

Almost 9 in 10 (86%) have in place a LAN for the larger firms with 200 staff or more, while this is so only for 1 in 5 (23%) in the firms with less than 10 staff (Figure 5.1). There is a similar trend for the deployment of Intranet and Extranet.

Figure 5.1: LAN, Intranet & Extranet Penetration by Employment Size

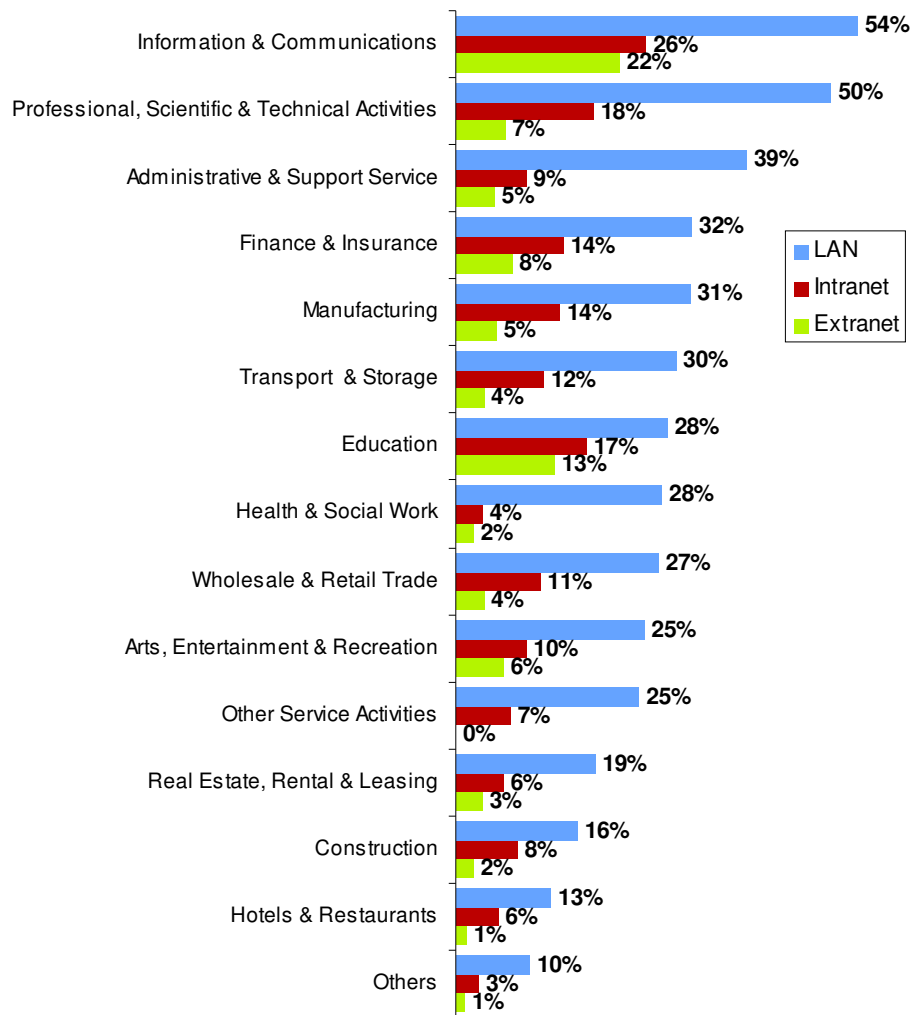


Base: All Enterprises

## 5.2 By Sector

Infocomm network infrastructure is more developed in some sectors than others. Firms in the *Information & Communications*; *Professional, Scientific & Technical Activities* and *Administrative & Support Service* sectors are most likely to have deployed LAN, Intranet and Extranet (Figure 5.2).

**Figure 5.2: LAN, Intranet & Extranet Penetration by Sector**



Base: All Enterprises

## 6. INTERNET USAGE

### 6.1 Connection Type and Speed

The most ubiquitous mode of connection to the Internet adopted is via *xDSL*, followed by *Wireless Access*, *Analogue Modem*, *Cable Modem*, *Frame Relay/Dedicated Leased Line* and *ISDN*. Though *xDSL* remains the dominant connection type for all employment sizes, the use of *Wireless Access* is also apparent, and adoption builds up progressively for bigger firms. Almost half of the larger firms (47%) accessed the Internet wirelessly compared with 3 in 10 (28%) in the firms with less than 10 staff. In contrast, access via *Analogue Modem* and *Cable Modem* declines as the employment size increases.

For the most common form of connection *xDSL*, the mid-tier band of between 256 kbps and 2 Mbps is most popular and the proportion of use increases for the bigger firms. However, for high speed connections exceeding 10 Mbps, the largest enterprises only registered 0.3% penetration, whereas for enterprises with 10 to 49 employees, the penetration rate stood at 3.5%.

**Table 6.1: Enterprises With Internet Access By Connection Type and Employment Size**

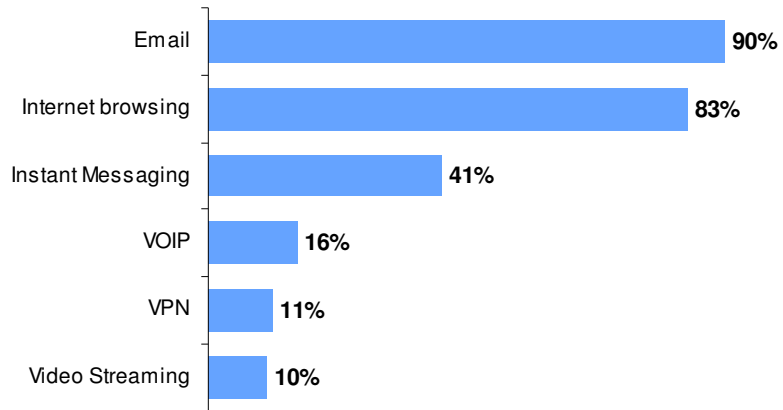
	<b>Below 10</b>	<b>10 - 49</b>	<b>50 - 199</b>	<b>200 or more</b>	<b>Overall</b>
<b>Analogue Modem</b>	<b>30.0%</b>	<b>20.7%</b>	<b>15.9%</b>	<b>4.7%</b>	<b>27.2%</b>
<b>ISDN</b>	<b>7.7%</b>	<b>12.9%</b>	<b>12.2%</b>	<b>11.7%</b>	<b>9.0%</b>
<b>Frame Relay / Dedicated Pte Leased Line</b>	<b>16.6%</b>	<b>14.8%</b>	<b>25.5%</b>	<b>43.7%</b>	<b>16.9%</b>
- Lower than 256 kbps	5.4%	2.6%	2.0%	1.4%	4.6%
- Between 256 kbps and 2 Mbps (inclusive)	10.1%	11.2%	17.4%	28.2%	10.8%
- More than 2 Mbps	1.2%	1.1%	6.2%	16.1%	1.5%
<b>xDSL</b>	<b>49.8%</b>	<b>61.8%</b>	<b>61.7%</b>	<b>69.9%</b>	<b>53.0%</b>
- Lower than 256 kbps	4.6%	3.3%	4.4%	1.5%	4.3%
- Between 256 kbps and 2 Mbps (inclusive)	40.6%	47.9%	52.1%	59.5%	42.8%
- Between 2 Mbps and 10 Mbps (inclusive)	3.4%	7.3%	4.3%	10.5%	4.3%
- More than 10 Mbps	1.3%	3.5%	1.0%	0.3%	1.7%
<b>Cable modem</b>	<b>26.1%</b>	<b>13.0%</b>	<b>5.3%</b>	<b>2.0%</b>	<b>22.3%</b>
- Lower than 256 kbps	14.1%	4.9%	3.4%	0.9%	11.6%
- Between 256 kbps and 2 Mbps (inclusive)	10.2%	7.0%	1.8%	1.2%	9.1%
- More than 2 Mbps	1.9%	1.0%	0.1%	0.5%	1.6%
<b>Wireless</b>	<b>28.3%</b>	<b>30.4%</b>	<b>40.2%</b>	<b>47.0%</b>	<b>29.4%</b>
- GPRS / GSM	4.7%	6.5%	10.5%	12.1%	5.4%
- 3G	5.3%	4.8%	8.7%	5.4%	5.4%
- Wi-Fi	23.9%	26.5%	34.6%	44.2%	25.1%
- Others	0.3%	0.3%	0.1%	0.2%	0.3%

Base: Enterprises With Internet Access

## 6.2 Mobile Devices and Services

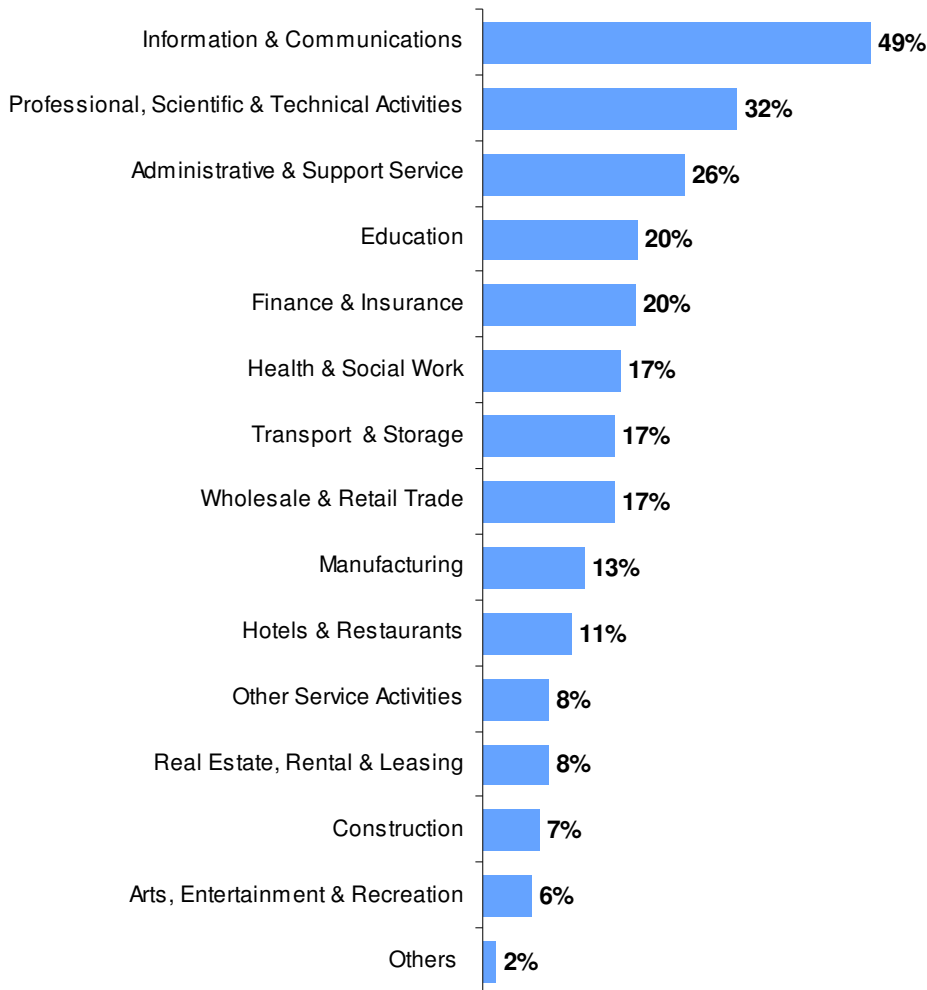
The services most commonly accessed wirelessly using mobile devices are *Email, Internet Browsing* and *Instant Messaging* (Figure 6.1). The industries more receptive to such services are *Information & Communications; Professional, Scientific & Technical Activities* and *Administrative & Support Service* (Figure 6.2). Laptops are the most widely used mobile devices (Figure 6.3).

**Figure 6.1: Services Accessed Using Mobile Devices**



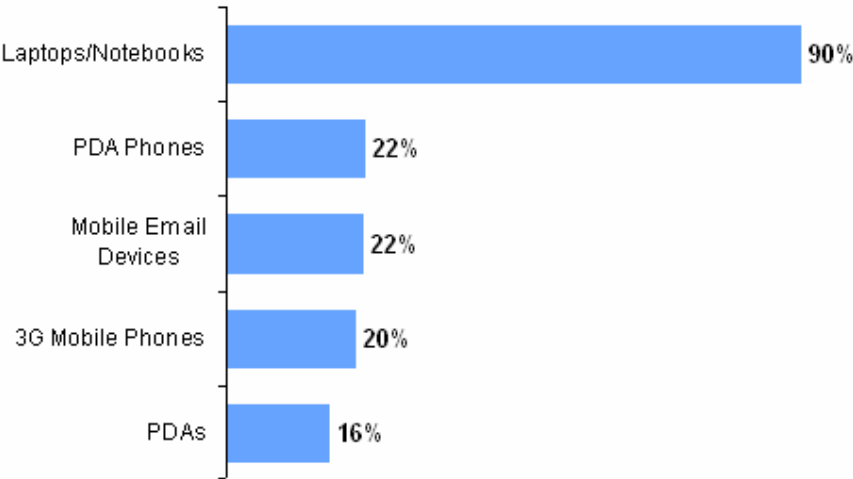
Base: Enterprises With Wireless Access

**Figure 6.2: Mobile Devices Usage by Sector**



Base: Enterprises With Wireless Access

**Figure 6.3: Mobile Devices Used For Wireless Access**



Base: Enterprises With Wireless Access

**6.3 Uses of Internet**

Other than general communications (Sending or Receiving Mails) and information search, dealing with government agencies drove Internet usage as evident by [Table 6.2](#) below listing the Internet applications/ services used by companies. Internet usage was also higher for companies with broadband Internet access.

**Table 6.2: Uses of Internet**

		Proportion of Companies		
		Internet	Broadband Internet Access	Narrowband Internet Access
1	For sending or receiving mails	95.0%	90.4%	80.4%
2	For information search	90.7%	87.6%	73.8%
3	For obtaining information from government organisations (e.g. from web sites or via e-mail)	70.0%	68.8%	48.9%
4	For downloading or requesting government forms	67.5%	66.3%	48.3%
5	For completing government forms online or sending completed government forms	60.5%	60.1%	39.7%
6	For banking and financial services	44.2%	45.8%	25.9%
7	For making online payments to government organisations	42.0%	42.5%	27.8%
8	For placing orders for goods/services	35.3%	36.4%	22.2%
9	For receiving orders for goods/services	33.8%	34.8%	20.7%
10	For marketing/promotion activities	32.8%	33.9%	18.2%
11	As a platform to deliver contents/services	30.8%	30.8%	18.2%
12	For monitoring purposes	28.9%	30.3%	15.1%
13	For payment of goods/services	26.8%	27.7%	16.2%
14	Other communications (e.g. instant messaging)	24.2%	26.6%	8.0%
15	For finding information about employment opportunities (recruitment and search)	24.1%	25.7%	10.5%
16	For telephoning over the Internet (VoIP)	21.1%	22.7%	6.5%
17	To access collaborative tools (e.g. file sharing)	20.7%	22.3%	7.6%
18	For telecommuting/remote access	17.0%	18.3%	5.8%
19	For formal education or training activities	12.8%	13.5%	6.7%
20	Video-conferencing	10.9%	11.8%	4.0%
21	Video-streaming	9.7%	10.2%	4.1%
22	For rich media creations	9.2%	9.8%	4.8%
23	Internet Data Centre (IDC) services	8.5%	9.3%	3.9%
24	Blogging	7.8%	8.2%	2.7%
25	Other dealings with government	5.9%	5.7%	0.5%

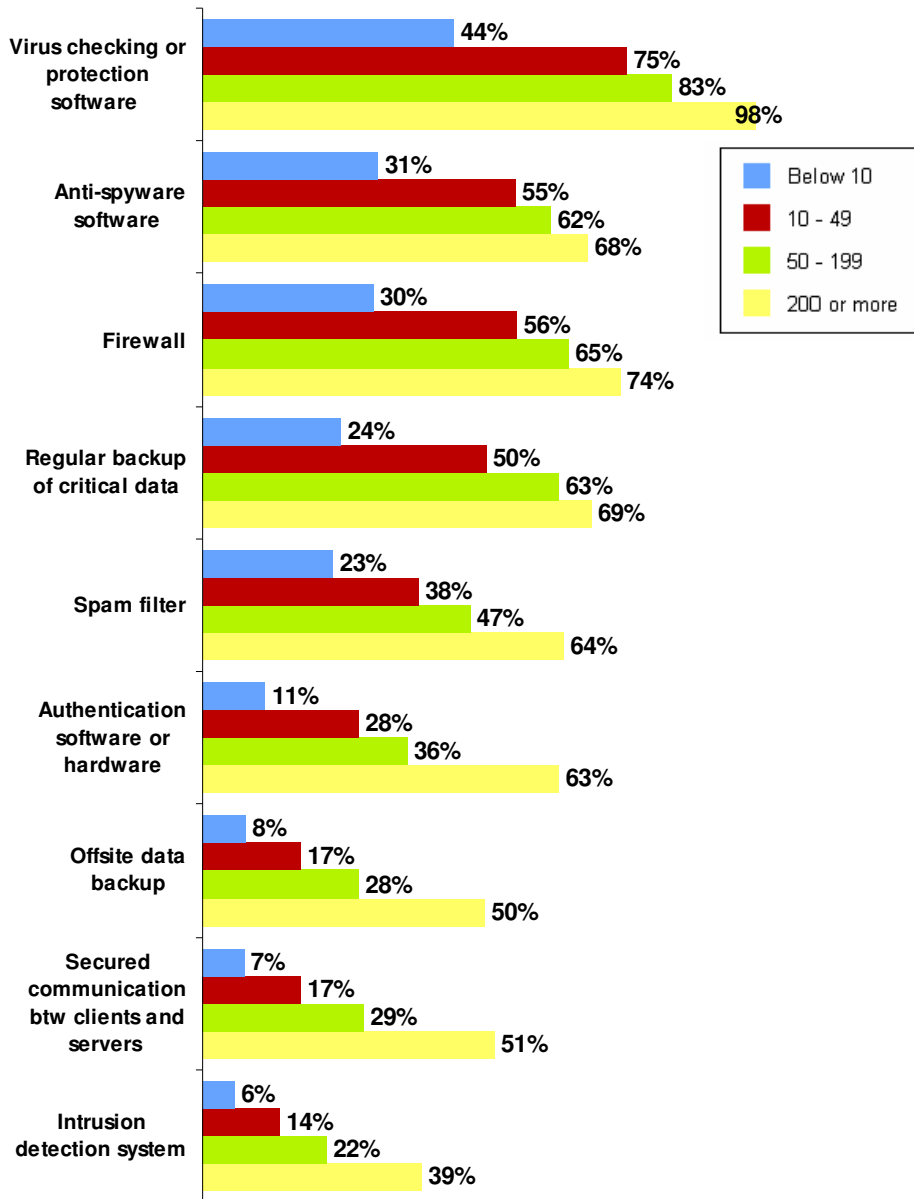
Base: Internet: All Enterprises with Internet Access  
Narrowband: All Enterprises with Narrowband Access  
Broadband: All Enterprises with Broadband Access (Enterprises with both broadband and narrowband access are categorized under broadband.)

## 7. INFOCOMM SECURITY

### 7.1 By Employment Size

*Virus Checking Or Protection Software; Anti-Spyware Software and Firewall* are the most deployed infocomm security measures.

**Figure 7.1: Usage of Infocomm Security Measures By Employment Size**

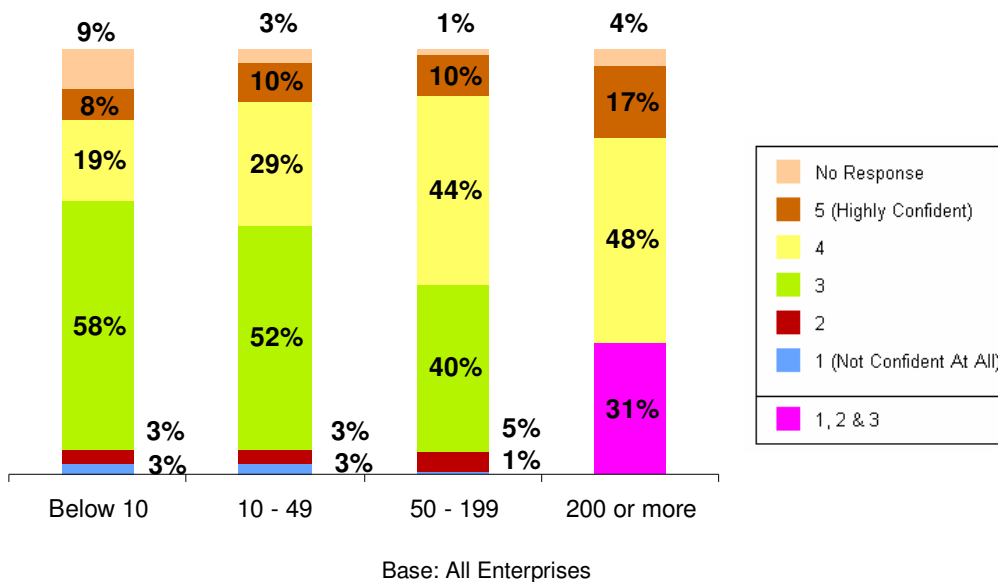


Base: All Enterprises

## 7.2 Confidence Level

Enterprises were polled to rate their level of confidence in Singapore as a trusted environment to conduct business in cyberspace. The level of confidence rises with the size of the firm. Only 3 in 10 of the firms with less than 10 staff are confident or highly confident compared to almost 7 in 10 of the largest-sized businesses ([Figure 7.2](#)). Sentiments on cyberspace security are positive on the whole, with no more than 6% citing that they are not confident or not confident at all in online transactions.

**Figure 7.2<sup>1</sup>: Confidence Level in Singapore As A Trusted Environment To Conduct Business In Cyberspace**



## 7.3 Security Education

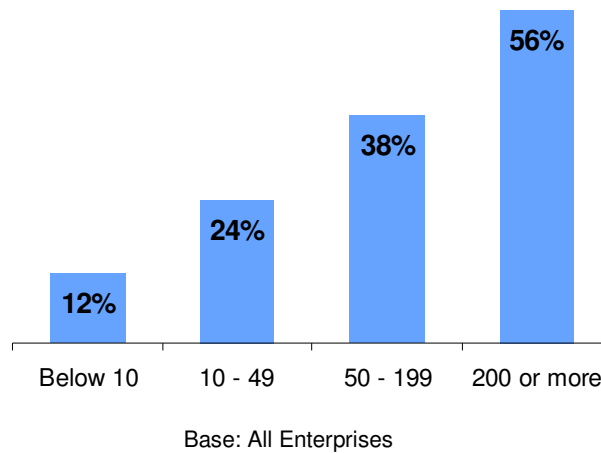
Infocomm security education (i.e. educate employees on the security habits and practices to protect the enterprise's information and computers) is practised in 56% of the enterprises with more than 200 employees and only 12% in those with below 10 staff ([Figure 7.3](#)). However, these small businesses tend to invest more training (e.g. seminars, courses, newsletters and small bulletins) days per staff than the bigger firms. They clocked 6.9

<sup>1</sup> For employment size of 200 or more, confidence levels 1, 2 & 3 have been merged for better statistical representation given low counts in the cells concerned.

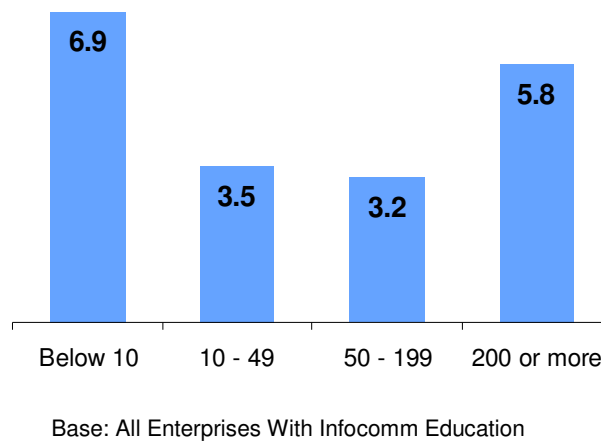
days on average for each employee during the period 1<sup>st</sup> June 2005 to 31<sup>st</sup> May 2006 (Figure 7.4). This may be attributed by the multiple roles which an employee has to undertake in the small businesses. This requires them to be more attuned to various aspects of infocomm security, hence the need for longer training duration.

As a result, they spent approximately \$1,500 on educating employees on infocomm security during the same period (Figure 7.5). The largest companies, with a bigger pool of manpower to impart the security knowledge to, spent almost 18 fold, at \$26,500.

**Figure 7.3: Infocomm Security Education by Employment Size**  
(Includes seminars, courses, newsletters and email bulletins)

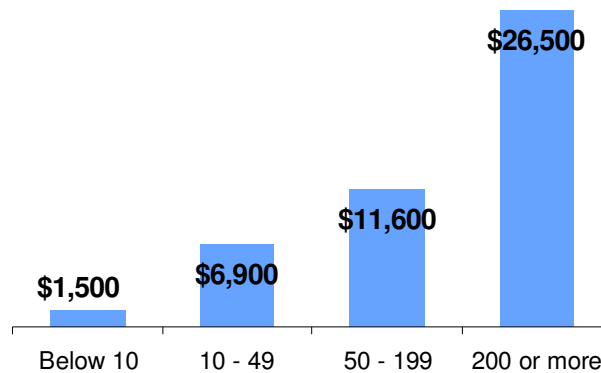


**Figure 7.4: Average Number of Days Received Per Employee on Infocomm Security Education**



(Below 10: 11% of base, 10 – 49: 23% of base; 50 – 199: 38% of base; 200 ore more: 56% of base)

**Figure 7.5: Estimated Amount Spent In Educating Employees on Infocomm Security Education Per Enterprise by Employment Size**



Base: All Enterprises With Infocomm Education  
And Non-Zero Response To This Question  
(Below 10: 3% of base, 10 – 49: 7% of base; 50 – 199: 9% of base; 200 ore more: 22% of base)

The enterprises were further asked to rank the 3 biggest impediments/constraints they faced in educating their employees on infocomm security. The cost of conducting infocomm security education emerged as the top barrier for businesses with fewer than 200 employees (Table 7.1). The largest firms on the other hand deemed the difficulty in measuring the benefits of infocomm security education as their greatest challenge.

**Table 7.1: Impediments/Constraints Enterprises Faced In Educating Employees On Infocomm Security By Employment Size**

Impediment / Constraint	Below 10	10 - 49	50 - 199	200 or more	Overall
Cost of conducting infocomm security education to the enterprise	1	1	1	3	1
Difficulty in measuring the benefits of infocomm security education	2	2	2	1	2
Lack of internal resources to conduct infocomm security education	3	3	3	2	3
Lack of external suppliers who can conduct infocomm security education	4	4	4	4	4

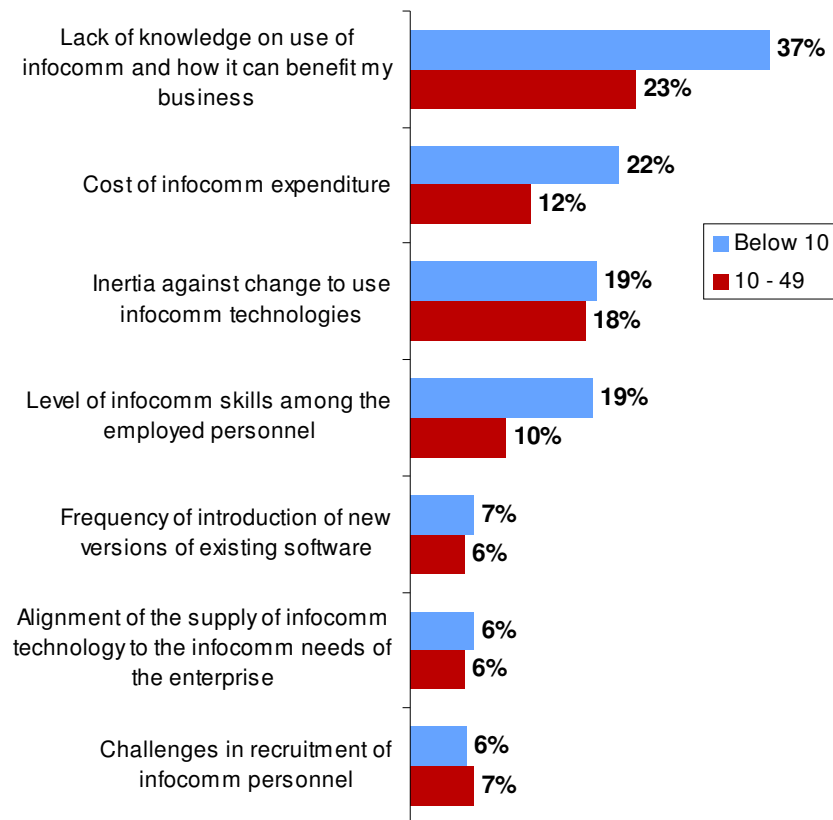
Base: All Enterprises With Non-Zero Response To This Question  
(Below 10: 46% of base, 10 – 49: 69% of base; 50 – 199: 68% of base; 200 ore more: 90% of base; Overall: 50%)

## 8. BARRIERS TO INFOCOMM USE

### 8.1 Barriers to Use of Infocomm in General

Respondents who had reported no use of computer were asked to rate the significance of barriers to infocomm technologies in general (Figure 8.1). For the smaller, lack of knowledge on the use of infocomm and how it is beneficial to their businesses was the top ranked barrier.

**Figure 8.1: Barriers to Infocomm Usage (Multiple responses) By Employment Size**

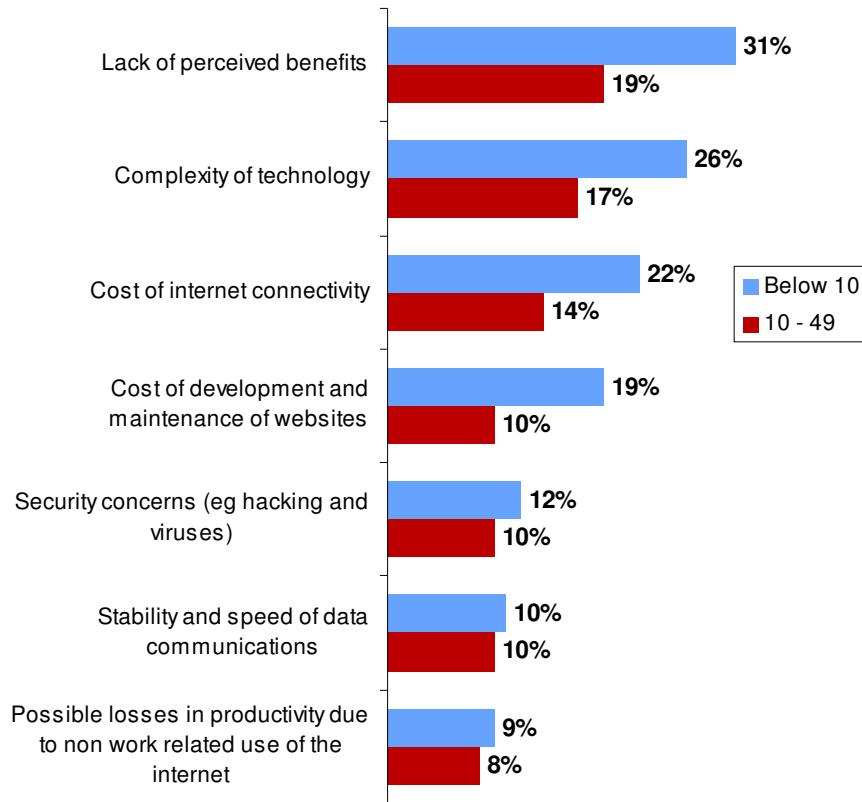


Base: All Enterprises with No Computers

## 8.2 Barriers to Use of Internet

Figure 8.2 shows that it is the lack of perceived benefits to Internet usage that holds back the smaller firms.

Figure 8.2: Barriers to Internet Usage (Multiple responses) By Employment Size



Base: All Enterprises with No Internet Access