

ANNUAL SURVEY ON INFOCOMM USAGE BY ENTERPRISES FOR 2016



Infocomm Media Development Authority of Singapore
10 Pasir Panjang Road
#10-01 Mapletree Business City
Singapore 117438
Republic of Singapore
Tel: (65) 6211-0888
Fax: (65) 6211-2222
Website: www.imda.gov.sg

Copyright © 2017 IMDA

All rights reserved. No part of this material may be stored in a retrieval system, transmitted, or reproduced in any way, including but not limited to photocopy, photograph, magnetic or other record, without the prior agreement and written permission of the Infocomm Media Development Authority of Singapore.

Notwithstanding the above, part or parts of this publication may be used with the proper acknowledgement of its source without having to first obtain the prior agreement and written permission of the Infocomm Media Development Authority of Singapore.

CONTENTS

| | |
|---|----|
| PART I: SURVEY COVERAGE, METHODOLOGY AND COMPANY PROFILE..... | 3 |
| 1. INTRODUCTION..... | 4 |
| 2. SURVEY OBJECTIVE AND COVERAGE..... | 4 |
| 3. NOTES ON DATA..... | 4 |
| 4. INDUSTRY PROFILE..... | 4 |
| | |
| PART II: SURVEY FINDINGS..... | 6 |
| 1. SUMMARY..... | 7 |
| 2. INFOCOMM USAGE..... | 9 |
| 2.1 By Employment Size..... | 9 |
| 2.2 By Sector..... | 11 |
| 3. INTERNET USAGE..... | 12 |
| 3.1 Internet Activities..... | 12 |
| 3.2 E-payment..... | 13 |
| 3.3 E-commerce..... | 14 |
| 4. INFOCOMM SECURITY..... | 16 |
| 4.1 Infocomm Security Adoption..... | 16 |

TABLES

| | |
|--|----|
| TABLE 3.1 TOP FIVE BARRIERS TO E-PAYMENT ADOPTION..... | 14 |
| TABLE 3.2 REASONS FOR NOT ENGAGING IN E-COMMERCE ACTIVITIES..... | 15 |
| TABLE 4.1 INFOCOMM SECURITY MEASURE | 16 |

CHARTS

| | |
|---|----|
| CHART 1.1: DISTRIBUTION OF ENTERPRISES BY SECTOR | 4 |
| CHART 1.2: DISTRIBUTION OF ENTERPRISES BY EMPLOYMENT SIZE | 5 |
| CHART 2.1: COMPUTER USAGE BY EMPLOYMENT SIZE..... | 9 |
| CHART 2.2: INTERNET USAGE BY EMPLOYMENT SIZE | 9 |
| CHART 2.3 BROADBAND USAGE BY EMPLOYMENT SIZE | 10 |
| CHART 2.4 WEB PRESENCE BY EMPLOYMENT SIZE..... | 10 |
| CHART 2.5 INFOCOMM USAGE BY SECTOR..... | 11 |
| CHART 3.1 DEVICES USED FOR INTERNET ACTIVITIES..... | 12 |
| CHART 3.2 TOP 10 INTERNET ACTIVITIES ON DESKTOP PCs AND LAPTOPS | 12 |
| CHART 3.3 TOP 10 INTERNET ACTIVITIES ON MOBILE/SMART PHONES OR TABLETS..... | 13 |
| CHART 3.4 ENTERPRISES THAT USED E-PAYMENTS..... | 13 |
| CHART 3.5 ENTERPRISES THAT USED E-PAYMENTS BY EMPLOYMENT SIZE | 14 |
| CHART 3.6 ENTERPRISES THAT ENGAGED IN E-COMMERCE ACTIVITIES | 15 |
| CHART 4.1 ENTERPRISES THAT HAD INFOCOMM SECURITY MEASURE IN PLACE | 16 |

PART I: SURVEY COVERAGE, METHODOLOGY AND COMPANY PROFILE

1. INTRODUCTION

The Annual Survey on Infocomm Usage by Enterprises for 2016 is the eighteenth in the series of such annual surveys conducted out by the Research and Statistics Unit of the Infocomm Development Authority of Singapore since 1999, and the first edition since the formation of the Infocomm Media Development Authority of Singapore in 2016. This survey is conducted under the Statistics Act (Chapter 317) which empowers the Director of the Research and Statistics Unit to collect data on the infocomm activities in Singapore. The Act also guarantees the confidentiality of individual information obtained from the survey.

2. SURVEY OBJECTIVE AND COVERAGE

This survey aims to gauge the levels and types of infocomm adoption and usage in enterprises in Singapore; and identify the barriers to infocomm adoption. Representative samples of infocomm media and end-user enterprises were selected from the Department of Statistics' (DOS) Establishment Sampling Frame.

3. NOTES ON DATA

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

4. INDUSTRY PROFILE

Chart 1.1 provides a profile of the respondents by sector, with *Wholesale and Retail Trade* comprising about a quarter of all sectors.

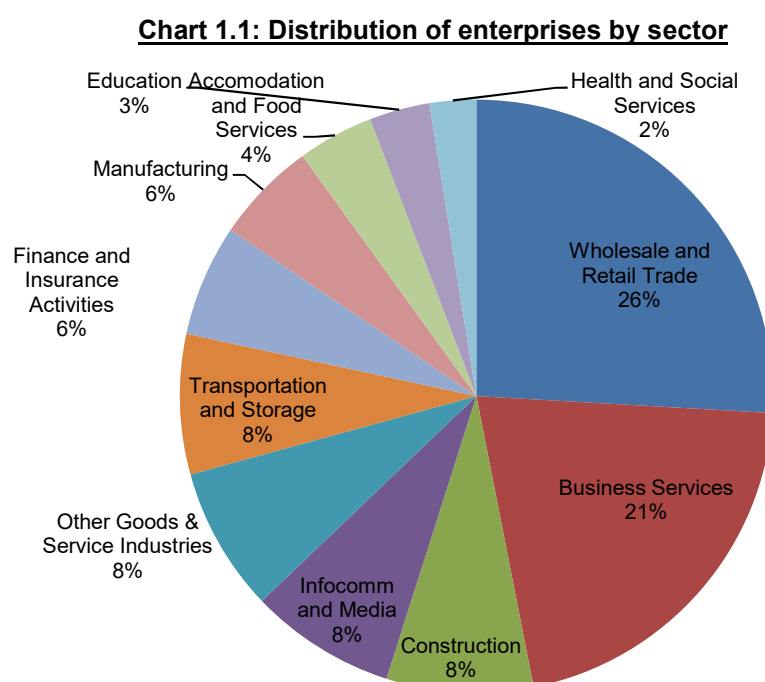
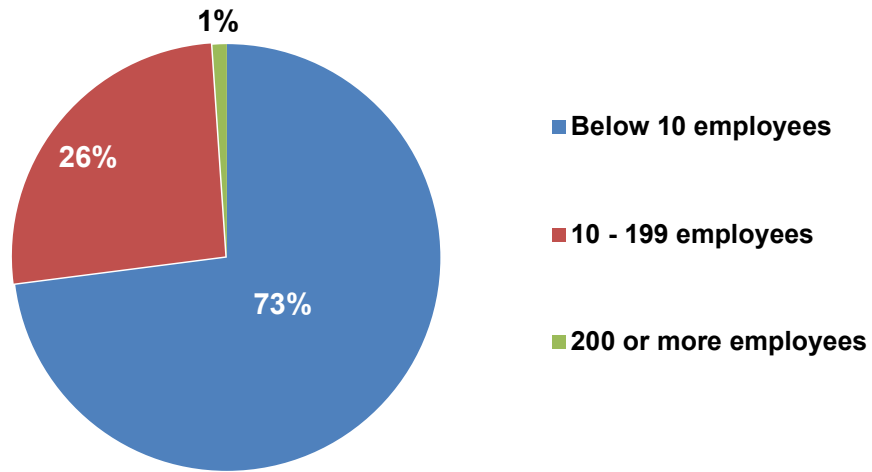


Chart 1.2 provides a profile of the respondents by employment size, with 73% of the enterprises having fewer than 10 employees.

Chart 1.2: Distribution of enterprises by employment size



PART II: SURVEY FINDINGS

1. SUMMARY

Usage of Internet, Broadband and Web presence among enterprises continued to increase in 2016

- The proportion of enterprises that used:
 - Computer maintained at 90% from 2014 to 2016
 - Internet increased from 87% in 2014 to 89% in 2016
 - Broadband increased from 86% in 2014 to 88% in 2016
 - Web presence increased from 49% in 2014 to 56% in 2016
- Infocomm and Media, Health and Social Services, and Manufacturing were the three sectors with highest infocomm adoption in 2016.

More enterprises used mobile devices and services to do business

- Mobile phones remained as a popular mode for accessing the Internet with the proportion of enterprises accessing the Internet via mobile phone maintaining at around 67% from 2014 to 2016.
- While ‘*Sending and receiving emails*’ and ‘*Information Search*’ were the two most common Internet activities on computers and mobile equipment, enterprises still preferred to use computers for government transactions (i.e. obtaining information from government organizations, download/request/complete/send government forms).

Usage of e-payments in enterprises continued to grow in 2016, with larger enterprises leading the pack

- Enterprises that had used e-payments in their businesses grew from 46% in 2014 to 57% in 2016, with higher adoption rates among the larger enterprises.
- The most common reason for not adopting e-payment service was that enterprises felt that the nature of their business was not a good fit for e-payment.

Proportion of enterprises that engaged in e-commerce activities remained steady over the years.

- The engagement of e-commerce activities among enterprises had maintained around 13% from 2014 to 2016.
- Enterprises from Infocomm and Media sector, and Transportation and Storage sector were more likely to engage in e-commerce activities compared to the other sectors.
- The most common reason was that e-commerce was not a good fit to their business nature, and with a higher proportion of enterprises from the Construction, and Finance and Insurance Activities sectors indicating so.

Infocomm security adoption grew from 48% in 2014 to 52% in 2016, with Firewall being the most commonly adopted infocomm security measure among all enterprises.

- The adoption of infocomm security measures by enterprises who used computer for work grew from 48% in 2014 to 52% in 2016.
- Firewall was the most pervasive infocomm security measure among all enterprises, followed by Virus Checking or Protection Software.
- Approximately 32% of all enterprises felt that they were at risk of a cyberattack, regardless of whether they have implemented infocomm security measure or not.
- 63% of enterprises who had infocomm security measures in place indicated that they were adequately prepared to respond to a cyberattack.

2. INFOCOMM USAGE

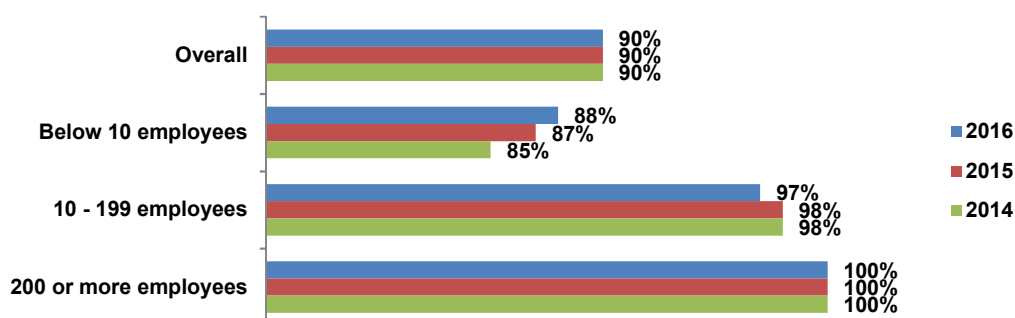
2.1 By Employment Size

Usage of Internet, Broadband and Web presence among enterprises continued to increase in 2016

Usage of Computers¹

Computer usage among enterprises maintained at 90% in 2016 ([Chart 2.1](#)). When analysed by employment size, all enterprises with 200 or more employees used computers.

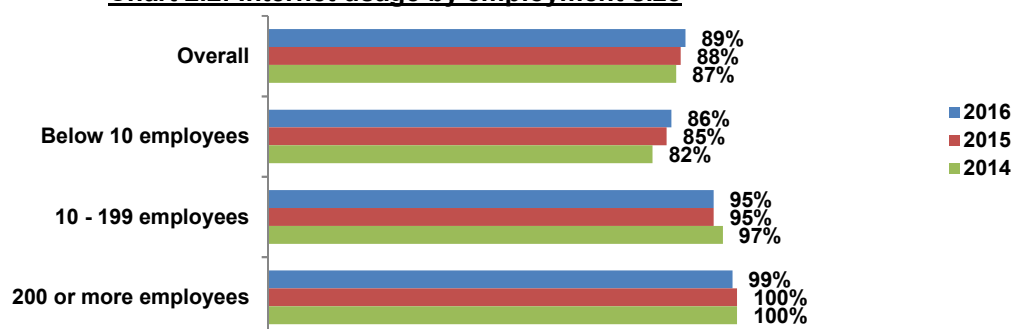
Chart 2.1: Computer usage by employment size



Usage of Internet and Broadband

Internet usage amongst enterprises increased from 87% in 2014 to 89% in 2016. Similar to computer usage, almost all enterprises with 200 or more employees used the Internet ([Chart 2.2](#)). Enterprises that connected to the Internet via broadband grew from 86% in 2014 to 88% in 2016 ([Chart 2.3](#)). The proportion of enterprises with web presence increased from 49% in 2014 to 56% in 2016. ([Chart 2.4](#)).

Chart 2.2: Internet usage by employment size



¹ A computer includes a desktop, laptop, netbook, tablet, tablet computer, portable or handheld computer (e.g. a personal digital assistant), minicomputer, mainframe, workstation.

Chart 2.3 Broadband usage by employment size

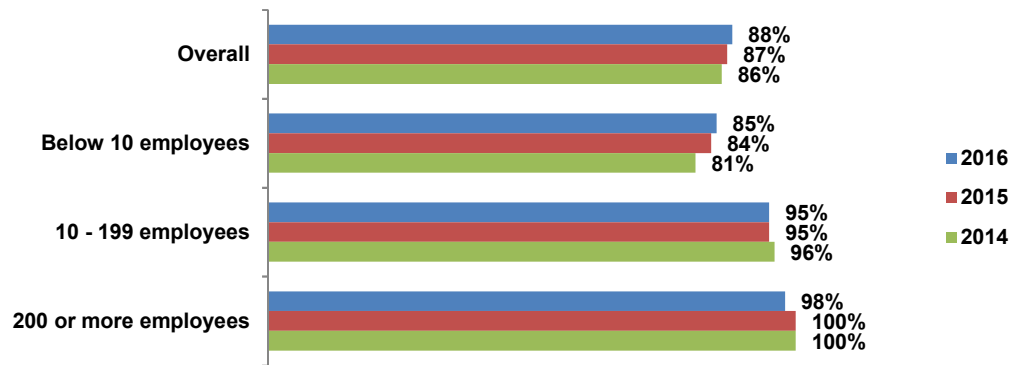
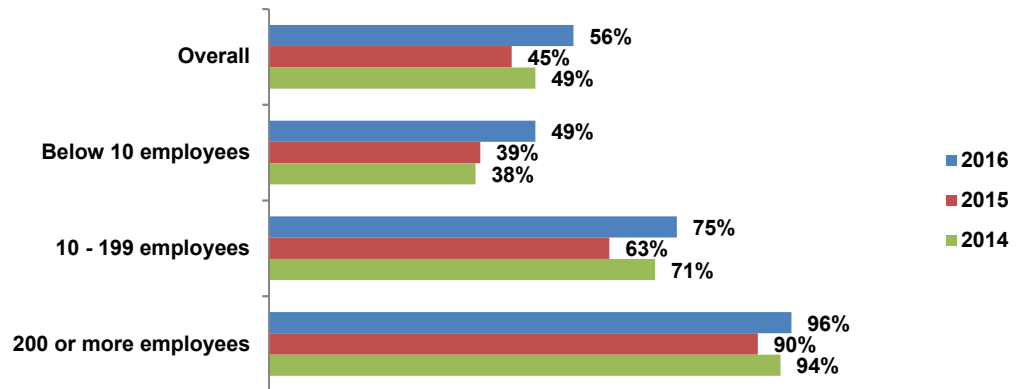


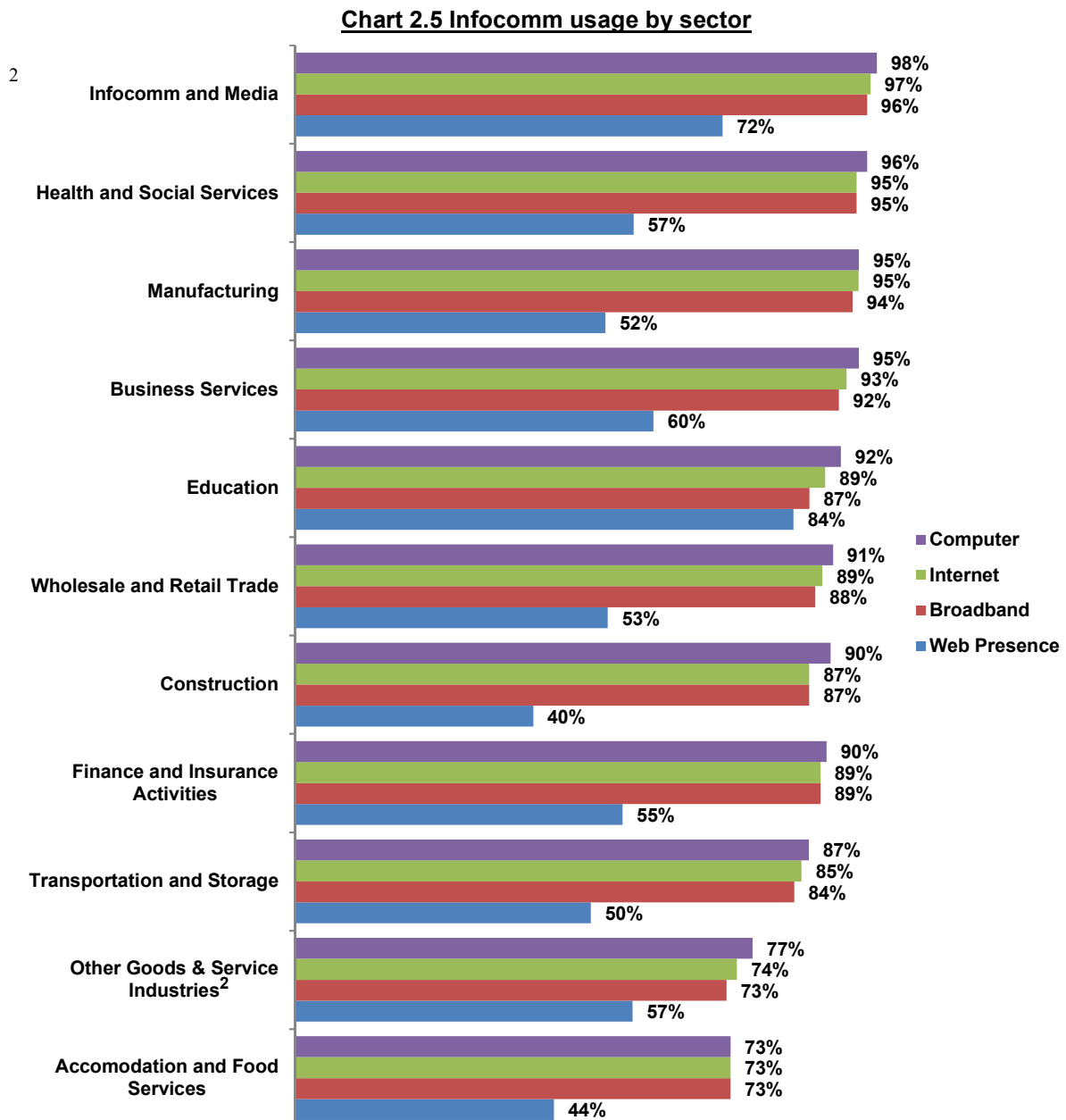
Chart 2.4 Web presence by employment size



2.2 By Sector

Infocomm and Media, Health and Social Services, and Manufacturing were the top three sectors with highest infocomm adoption in 2016

The Infocomm and Media sector led in infocomm adoption in all aspects, with 98% computer usage and 97% Internet usage (Chart 2.5). This was followed by *Health and Social Services sector and Manufacturing sector*.



² *Other Goods and Service Industries include personal and household services not elsewhere classified such as hairdressing shops, beauty salons and spas, repair and maintenance of motor vehicles, activities of other membership organisations (Churches, country clubs, charity organisations).*

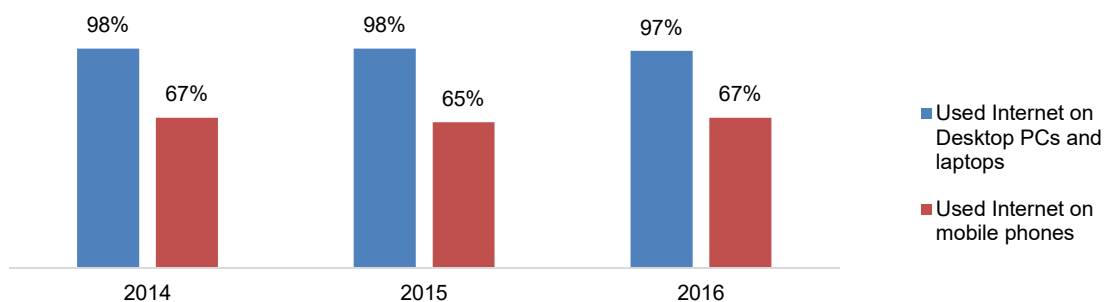
3. INTERNET USAGE

3.1 Internet Activities

Mobile phones remained as a popular device for accessing the Internet

Among the 89% of enterprises that used the Internet (Chart 2.2), close to all used computers for their Internet activities (Chart 3.1), compared with mobile phones (67%).

Chart 3.1 Devices used for Internet activities

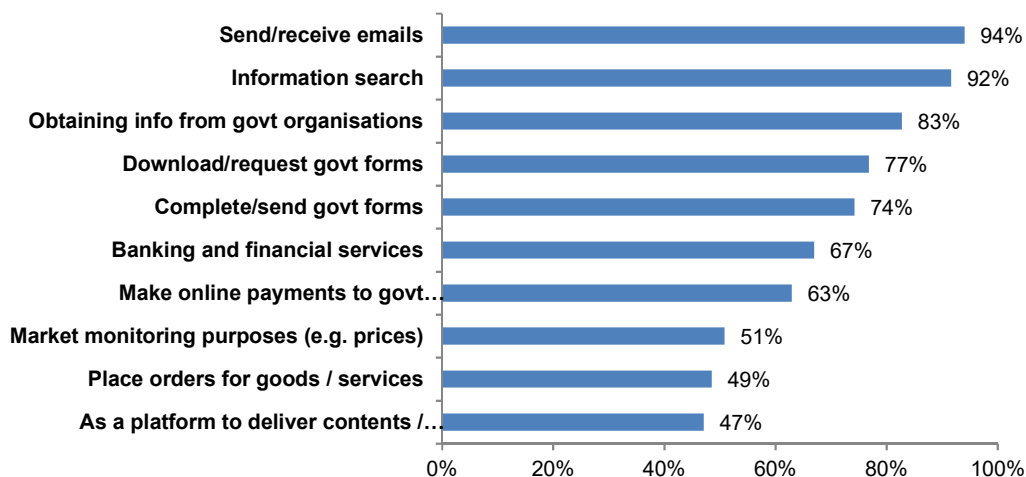


Base: Enterprises with Internet Usage

While sending and receiving emails and information search were the two most common Internet activities on computers and mobile equipment, enterprises still preferred to use the computers for government transactions

When using the Internet on computers, the most common Internet activities were sending and receiving emails (94%), information search (92%) and getting information from government organizations (83%) (Chart 3.2).

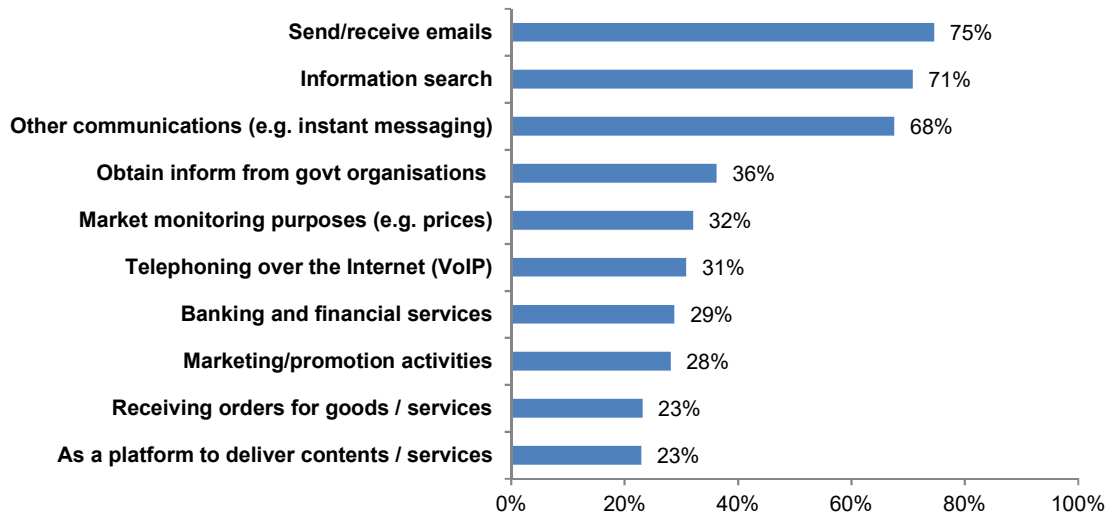
Chart 3.2 Top 10 Internet Activities on Desktop PCs and Laptops



Base: Enterprises with Internet Usage on Desktop PCs and laptops

Similar to Internet activities on desktop PCs and laptops, the top two Internet activities on mobile/smart phones or tablets were sending and receiving mails (75%) and information search (71%). The third activity on mobile/smart phones or tablet was other communications (68%) (Chart 3.3).

Chart 3.3 Top 10 Internet Activities on Mobile/Smart Phones or Tablets



Base: Enterprises with Internet Usage on mobile/smart phones or tablets

3.2 E-payment

Proportion of enterprises that used e-payments in their businesses grew in 2016, with larger enterprises more likely to use e-payments

Enterprises that had used e-payments in their businesses grew from 46% in 2014 to 57% in 2016 (Chart 3.4), with higher adoption rates among the enterprises with more employees (Chart 3.5).

Chart 3.4 Enterprises that used e-payments

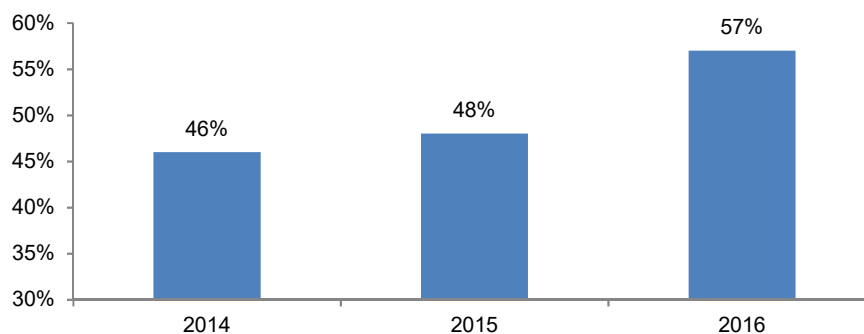
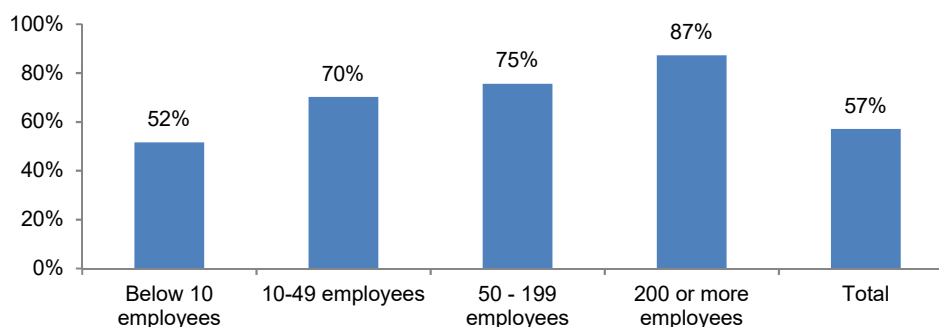


Chart 3.5 Enterprises that used e-payments by employment size



Base: Enterprises that use e-payment

Amongst the enterprises that did not use e-payments, the top reason for not using it was that they felt that the nature of their business was not a good fit for e-payment (Table 3.1), of which a high proportion were from the *Other Goods and Service Industries*, and *Health and Social Services* sectors.

Table 3.1 Top five barriers to e-payment adoption

| Barriers to E-payment Adoption | 2016 | 2015 | 2014 |
|---|------|------|------|
| Nature of business is not a good fit for e-payment | 1 | 1 | 1 |
| Cash and Cheque are still the preferred mode of payment | 2 | - | - |
| Not sure of e-payment benefits to business | 3 | 2 | 2 |
| Cost of transaction fees | 4 | 5 | 3 |
| Worry about cybersecurity risks in accepting e-payment | 5 | - | - |

Base: Enterprise who did not use e-payment

Note: The options "Cash and Cheque are still the preferred mode of payment" and "Worry about cybersecurity risks in accepting e-payment" were newly added in 2016.

3.3 E-commerce

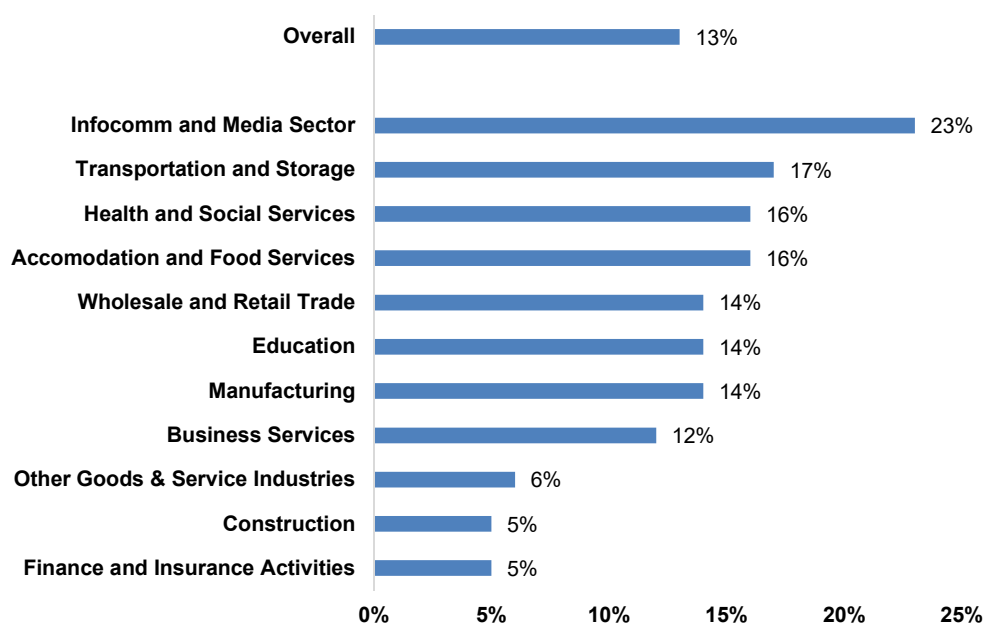
Proportion of enterprises engaged in e-commerce activities remained steady at 13% since 2014.

The engagement of e-commerce³ activities among enterprises had maintained at 13% since 2014. Enterprises from Infocomm and Media sector, and Transportation and

³ E-commerce activities: An e-commerce transaction is the sale or purchase of goods or services over computer mediated networks (broad definition)/ the Internet (narrow definition). Payment and delivery of the good or service can be offline. Orders received/placed by telephone, fax or normal mail are excluded (This definition was adopted from OECD).

Storage sector were more likely to engage in e-commerce compared to those in other sectors ([Chart 3.6](#)).

Chart 3.6 Enterprises that engaged in e-commerce activities



Amongst the enterprises that did not engage in e-commerce activities, the top reason for not doing so was that they felt that the nature of their business was not a good fit for e-commerce ([Table 3.2](#)). A higher proportion of them were from the *Construction and Finance and Insurance Activities*.

Table 3.2 Reasons for not engaging in e-commerce activities

| Barriers to E-payment Adoption | 2016 | 2015 | 2014 |
|---|------|------|------|
| Nature of business is not a good fit for e-commerce | 1 | - | - |
| Satisfied with sales through traditional channel such as physical stores | 2 | 1 | 1 |
| Cost of investing in e-commerce is too high | 3 | 2 | 4 |
| Do not have the knowledge on how to engage in e-commerce | 4 | 3 | 2 |
| Worried about cybersecurity risks in conducting e-commerce (e.g. online fraud) | 5 | - | - |
| Unable to find suitable logistics service providers to work seamlessly for order fulfilment | 6 | 4 | 3 |

Base: Enterprise who did not engage in e-commerce activities

Note: The options "Nature of business is not a good fit for e-commerce" and "Worried about cybersecurity risks in conducting e-commerce (e.g. online fraud)" were added in 2016.

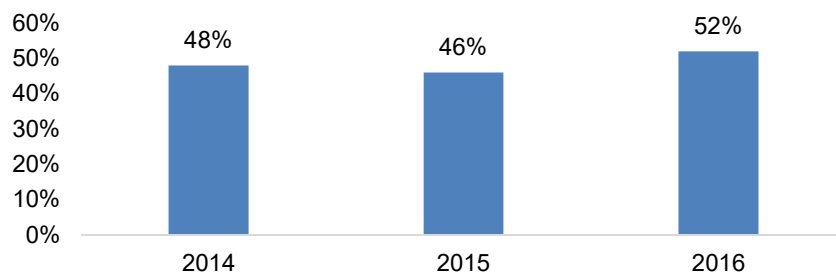
4. INFOCOMM SECURITY

4.1 Infocomm Security Adoption

Infocomm security adoptions grew from 48% in 2014 to 52% in 2016, with Firewall being the most commonly adopted infocomm security measure.

The adoption of infocomm security measures by enterprises that used computer for work grew from 48% in 2014 to 52% in 2016 (Chart 4.1).

Chart 4.1 Enterprises that had infocomm security measure in place



Base: Enterprise who used computer for work

Firewall was the most pervasive infocomm security measure among all enterprises, while Virus Checking or Protection Software was the next most commonly deployed infocomm security measures (Table 4.1).

Table 4.1 Infocomm security measure⁴

| | Infocomm Security Measure | 2016 | 2015 | 2014 |
|----|---|------|------|------|
| 1 | Firewall | 80% | 76% | 85% |
| 2 | Virus checking or protection software | 74% | 92% | 94% |
| 3 | Regular backup of critical data | 74% | 60% | 68% |
| 4 | Spam filter | 71% | 61% | 64% |
| 5 | Anti-spyware software | 55% | 68% | 70% |
| 6 | Automatic/regular update of operating systems and application software used in the organization | 54% | 40% | 49% |
| 7 | Access control software/hardware | 47% | 29% | 40% |
| 8 | Documented plan on how information assets are managed and secured | 39% | 22% | 28% |
| 9 | Intrusion detection system | 38% | 20% | 27% |
| 10 | Offsite data backup | 30% | 31% | 36% |
| 11 | Encrypted transmission of sensitive information (SSL) | 24% | 25% | 31% |
| 12 | End user training and awareness | 22% | - | - |

Base: All enterprises who used computer and adopt infocomm security measures

⁴ Respondents were allowed to select multiple options, whichever was applicable to them.

Approximately 32% of all enterprises felt that they were at risk of a cyberattack, regardless of whether they have implemented infocomm security measure or not. 63% of enterprises who had infocomm security measures in place indicated that they were adequately prepared to respond to a cyberattack.