

ANNUAL SURVEY ON INFOCOMM USAGE BY ENTERPRISES FOR 2019



Infocomm Media Development Authority of Singapore
10 Pasir Panjang Road
#03-01 Mapletree Business City
Singapore 117438
Republic of Singapore
Tel: (65) 6211-0888
Fax: (65) 6211-2222
Website: www.imda.gov.sg

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PART I: SURVEY COVERAGE, METHODOLOGY AND COMPANY PROFILE

1. INTRODUCTION

The Annual Survey on Infocomm Usage by Enterprises for 2019 is the twentieth 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 third 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 a quarter of all sectors.

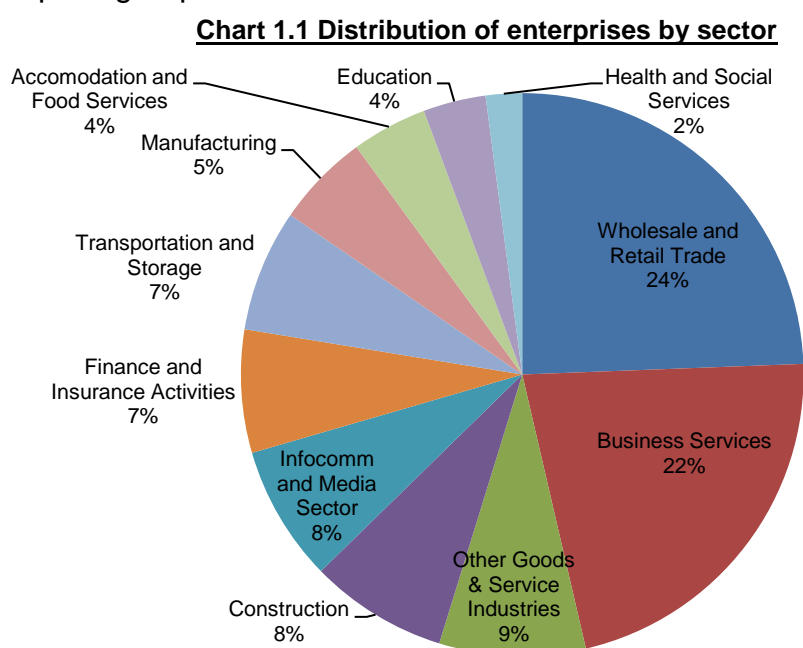
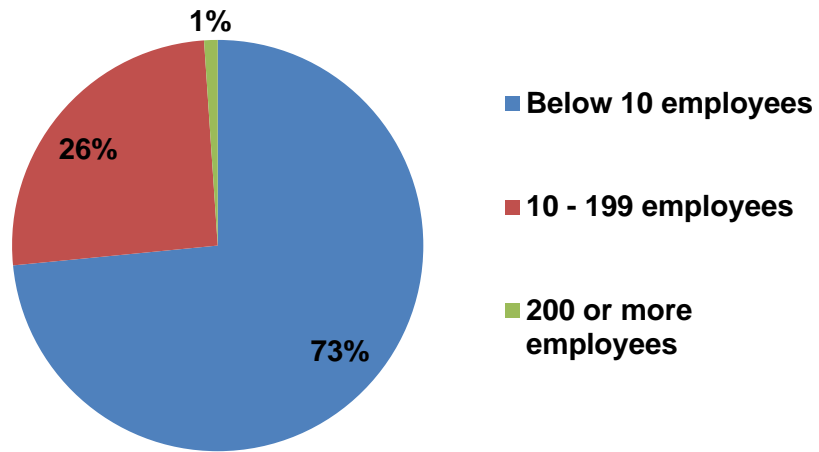


Chart 1.2 provides a profile of the respondents by employment size, with 73% of the enterprises having fewer than 10 employees.

Chart 1.2 Distribution of enterprises by employment size



PART II: SURVEY FINDINGS

1. SUMMARY

Usage of Computer, Internet, and Broadband among enterprises continued to increase in 2019

- The proportion of enterprises that used:
 - Computer increased from 90% in 2017 to 92% in 2019
 - Internet increased from 89% in 2017 to 95% in 2019
 - Broadband increased from 88% in 2017 to 94% in 2019
 - Cloud computing service increased from 17% in 2017 to 22% in 2019
- Education, Health and Social Services, and Business Services were the three sectors with the highest infocomm adoption in 2019.

More enterprises used mobile devices and services to do business

- Mobile phones became more and more popular as the device to access the Internet, increased from 67% in 2017 to 74% in 2019.
- While ‘*Sending and receiving emails*’ and ‘*Information Search*’ were still 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), and use mobile equipment for communications.

Usage of e-payments in enterprises continued to grow in 2019, with larger enterprises leading the pack

- Enterprises that had used e-payments in their businesses grew from 57% in 2017 to 81% in 2019, with higher adoption rates among the larger enterprises.
- The most common modes of e-payments used by enterprises are Giro and bank fund transfer instruction.

The adoption of e-invoicing by enterprises was 21% in 2019, with highest adoption in the Education, Infocomm and Media, and Manufacturing sectors.

- Amongst the 21% of enterprises who used e-invoicing in 2019, most enterprises sends/receives electronically, but were unclear which standard was used.
- The most popular reason of e-invoicing adoption by enterprises was to save printing and postage costs (67%), followed by the initiative to go “paperless” (63%), and to improve invoice-processing time (62%).

The proportion of enterprises engaged in e-commerce activities increased to 19% in 2019 from 13% in 2017.

- The engagement of e-commerce activities among enterprises that used Internet for working purpose had increased to 19% in 2019, from an average of 13% for years prior to 2017.
- Enterprises from the Education sector, Wholesale and Retail Trade sector, and Infocomm and Media 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 Finance and Insurance Activities, Business Services, and Health and Social Services sectors indicating so.

Cybersecurity adoption remained the same at 42% in 2019, after a decrease from 52% in 2017. Virus Checking or Protection Software was the most commonly adopted cybersecurity measure among all enterprises.

- The adoption of cybersecurity measures by enterprises who used Internet for work remained the same at 42% in 2019, after a decrease from 52% in 2017.

- Virus Checking or Protection Software was the most pervasive cybersecurity measure among all enterprises, followed by Anti-spyware software.

Enterprises that engaged in digital investment remained similar at 39% in 2019, with an average of 40% since 2017.

- Digital investment by enterprises in 2019 remained at 39%, maintaining an average of 40% since 2017.
- Most common areas of digital investment by enterprises are hardware/network, cloud computing services, and cybersecurity software.
- Top benefits from digital investment claimed by enterprises was reduction in operating costs through automation and streamlining of existing business processes (48%), followed by the ability to use manpower more efficiently (46%).

2. INFOCOMM USAGE

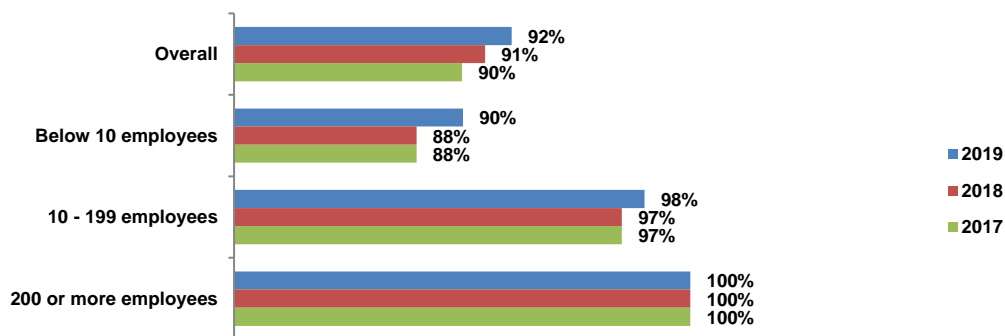
2.1 By Employment Size

Usage of Computer, Internet, and Broadband among enterprises continued to increase in 2019

Usage of Computers¹

Computer usage among enterprises increased to 92% in 2019 (Chart 2.1). When analyzed by employment size, all enterprises with 200 or more employees used computers.

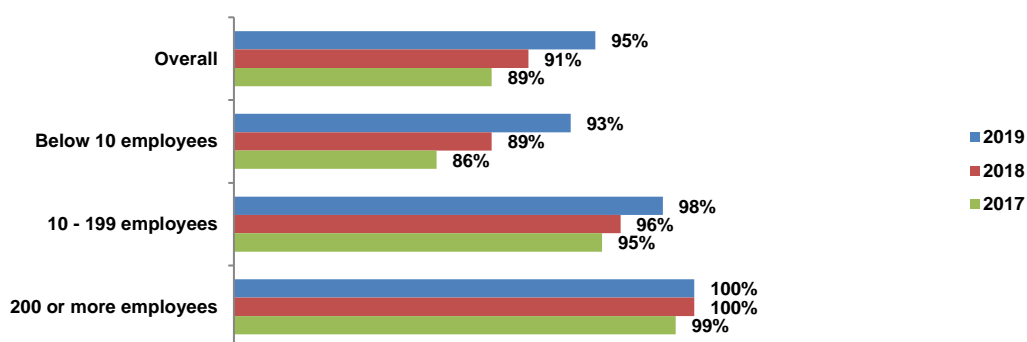
Chart 2.1 Computer usage by employment size



Usage of Internet and Broadband

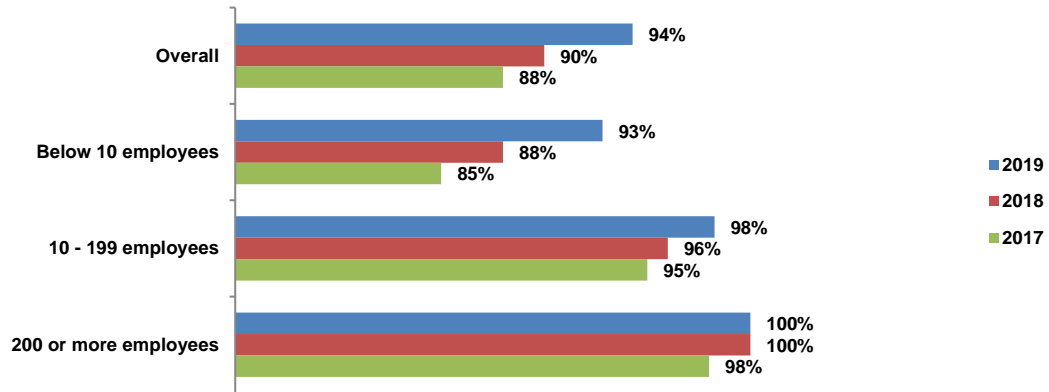
Internet usage amongst enterprises increased from 89% in 2017 to 95% in 2019. Similar to computer usage, all enterprises with 200 or more employees used the Internet (Chart 2.2). Enterprises that connected to the Internet via Broadband grew from 88% in 2017 to 94% in 2019 (Chart 2.3).

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.

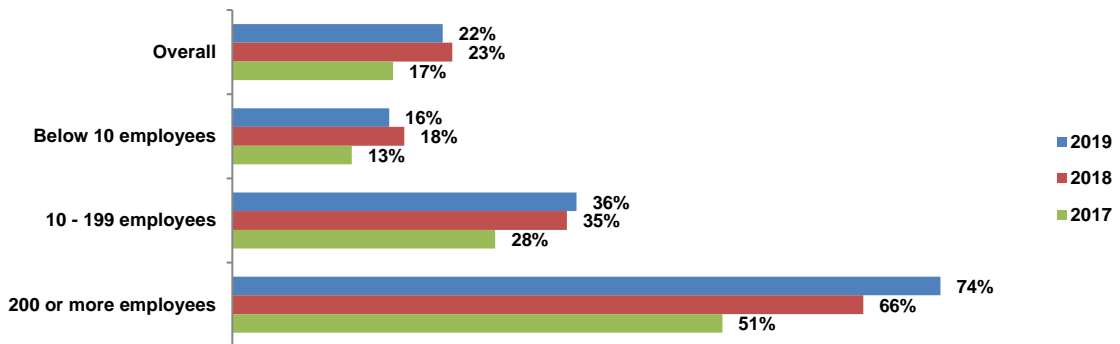
Chart 2.3 Broadband usage by employment size



Usage of Cloud Computing Services²

The usage of cloud computing services was 22% in 2019, increased from 17% in 2017. Similar to computer or Internet usage, larger enterprises registered higher usage of cloud computing services from 2017 to 2019. Flat growth was shown among enterprises with less than 200 employees, while there was a rise in usage among larger enterprises. (Chart 2.4).

Chart 2.4 Cloud Computing Services usage by employment size



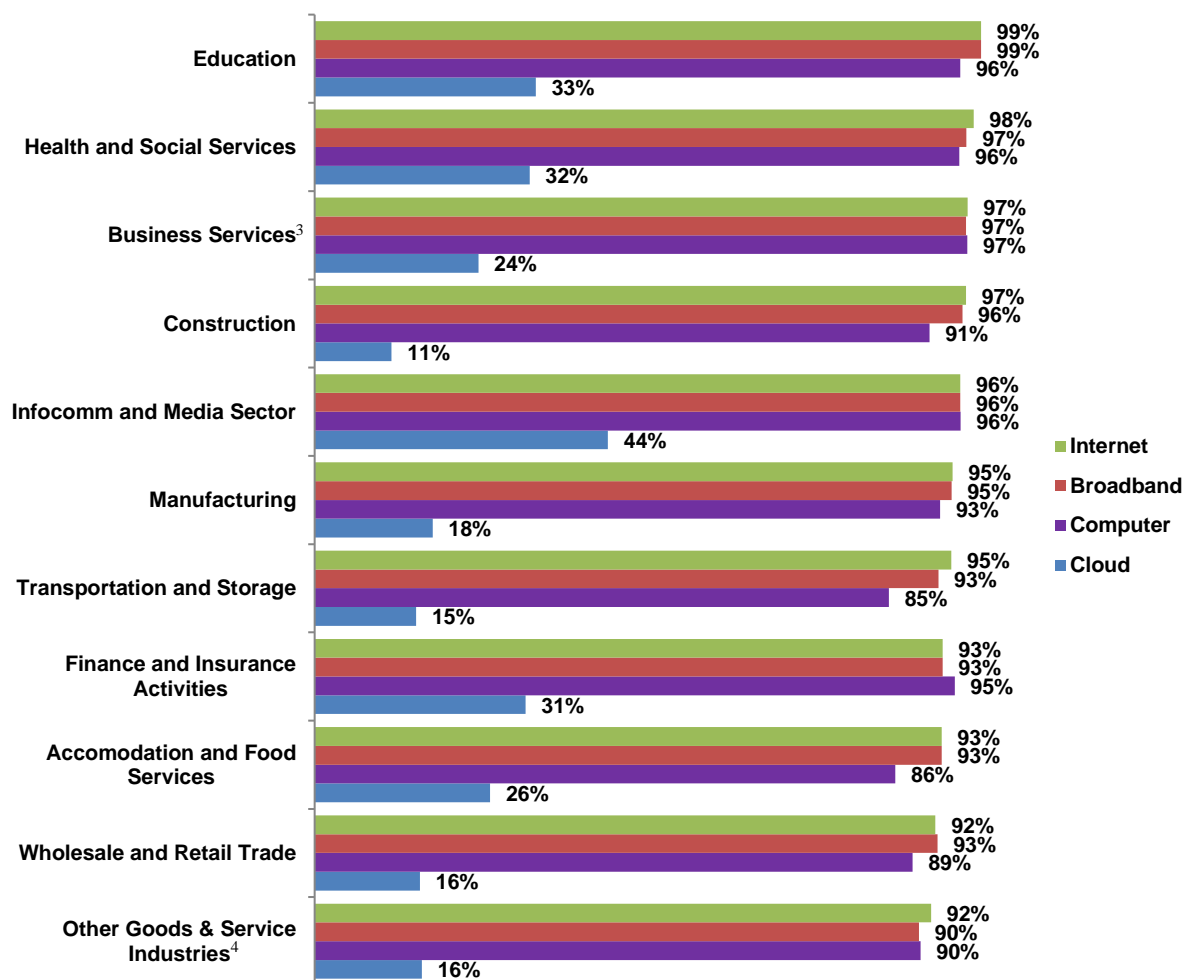
² Cloud computing service models are Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS). IMDA just started to collect data on usage of cloud computing services, 2018 will be the base year for it. For years prior to 2017, this report is using the adoption of SaaS as proxy for cloud computing services adoption.

2.2 By Sector

Education, Health and Social Services, and Business Services were the three sectors with the highest infocomm adoption in 2019.

The Education sector led infocomm adoption in all aspects, with 99% Internet usage and 96% Computer usage (Chart 2.5). The Infocomm and Media sector remained as one of the top 5 sectors in terms of infocomm adoption, with 96% for both Internet and Computer usage respectively.

Chart 2.5 Infocomm usage by sector



³ Business Services include enterprises from the following segments: Real Estate; Professional Services; Scientific and Technical Activities; Environmental Services; Security; Other Administrative and Support Services; Employment Activities; Travel Agencies.

⁴ 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 organizations (Churches, country clubs, charity organizations).

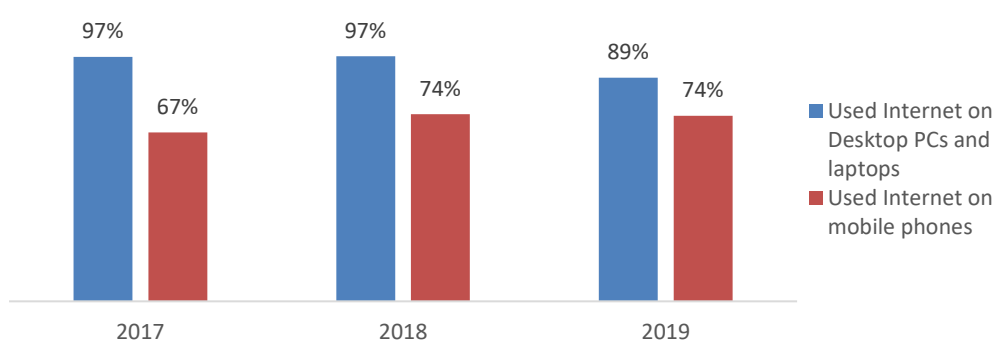
3. INTERNET USAGE

3.1 Internet Activities

More enterprises used mobile devices and services to do business

Among the 95% of enterprises that used the Internet (Chart 2.2), three quarters used Internet on mobile phones (Chart 3.1), which was an increase from 67% in 2017, while 89% of the enterprises used computers for their Internet activities.

Chart 3.1 Devices used for Internet activities

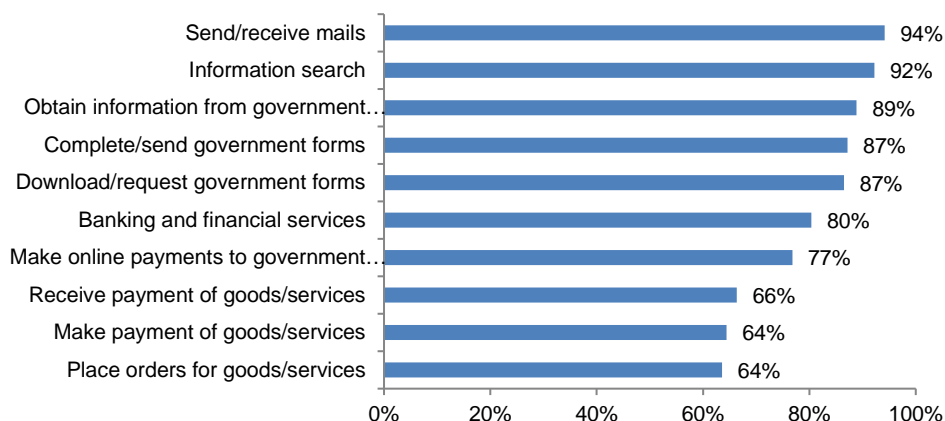


Base: Enterprises with Internet Usage

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

When using the Internet on computers, the most common Internet activities were sending and receiving mails (94%), information search (92%) and getting information from government organizations (89%) (Chart 3.2).

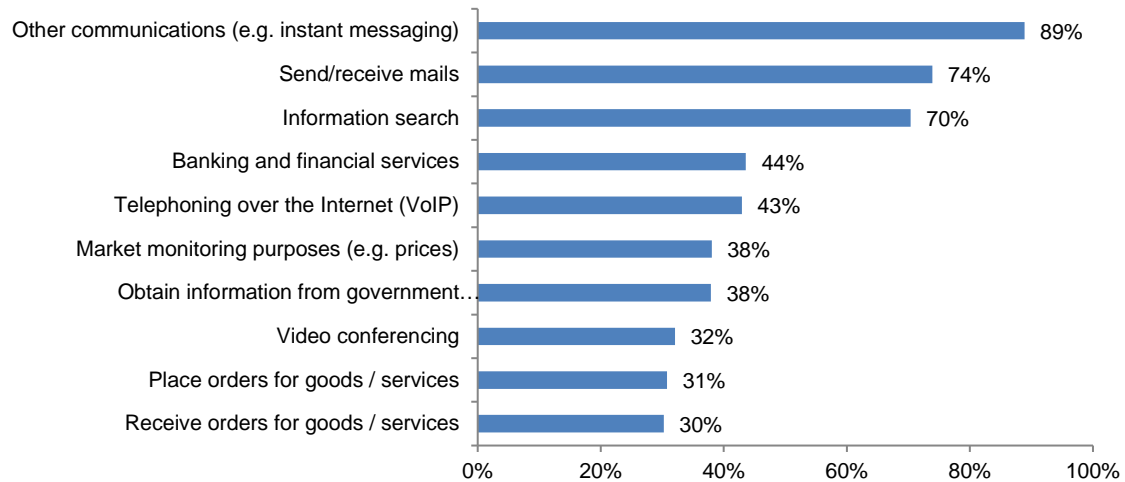
Chart 3.2 Top 10 Internet activities on desktop PCs and laptops, 2019



Base: Enterprises with Internet Usage on Desktop PCs and laptops

Similar to Internet activities on desktop PCs and laptops, the top three Internet activities on mobile/smartphones or tablets were other communications (89%), sending and receiving mails (74%) and information search (70%) (Chart 3.3).

Chart 3.3 Top 10 Internet activities on mobile/smart phones, 2019



Base: Enterprises with Internet Usage on mobile/smartphones

3.2 E-payment

The proportion of enterprises that used e-payments in their businesses continued to grow in 2019, with larger enterprises more likely to use e-payments.

Enterprises that had used e-payments in their businesses grew from 57% in 2017 to 81% in 2019 (Chart 3.4), with higher adoption rates among the enterprises with more employees (Chart 3.5).

Chart 3.4 Enterprises that used e-payments

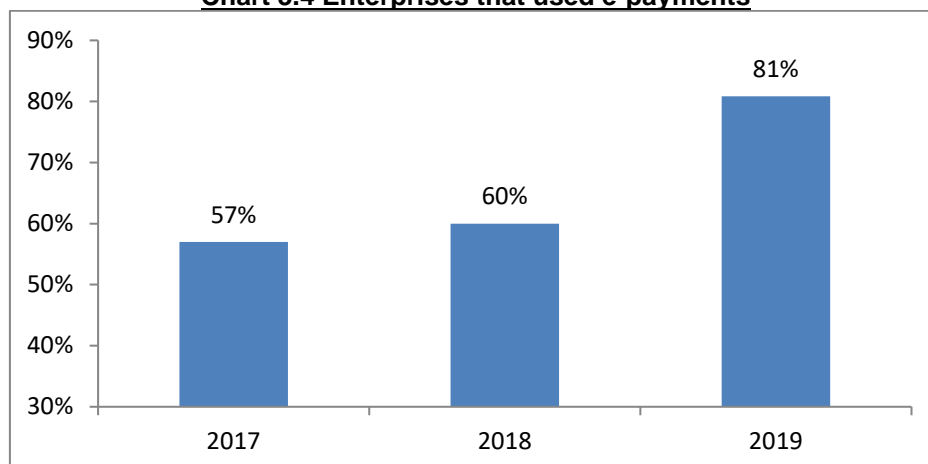
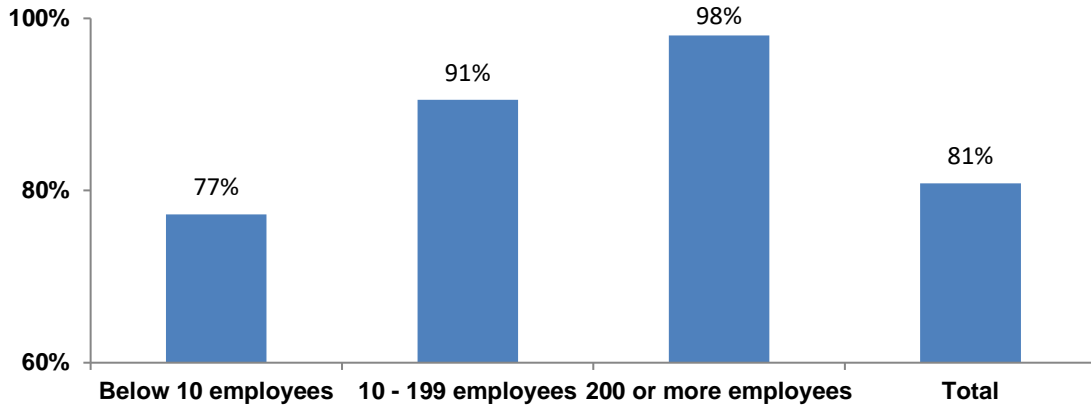


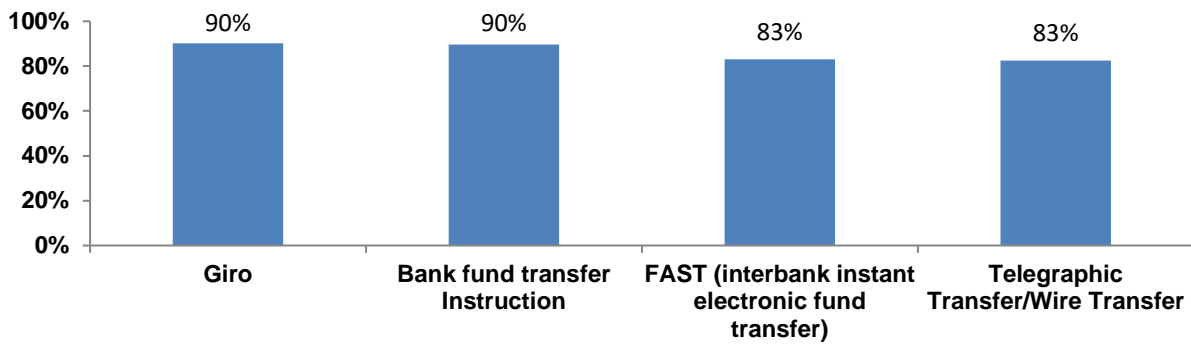
Chart 3.5 Enterprises that used e-payments by employment size, 2019



Base: Enterprises that used e-payment

Amongst the enterprises that use e-payments, the most common modes of e-payment are Giro and bank fund transfer instruction. (Chart 3.6)

Chart 3.6 Modes of e-payments used by Enterprises, 2019



Base: Enterprise that used e-payment

3.3 E-invoicing

The adoption of e-invoicing by enterprises was 21% in 2019, with highest adoption in the Education, Infocomm and Media, and Manufacturing sectors.

E-invoicing adoption by enterprises in 2019 are the highest in the Education (31%), Infocomm and Media (28%), and Manufacturing (25%) sectors (Chart 3.7). Amongst the 21% of enterprises who used e-invoicing in 2019, most enterprises sends/receives electronically, but were unclear which standard was used (62%). (Chart 3.8)

Chart 3.7 Enterprises that used e-invoicing by sector, 2019

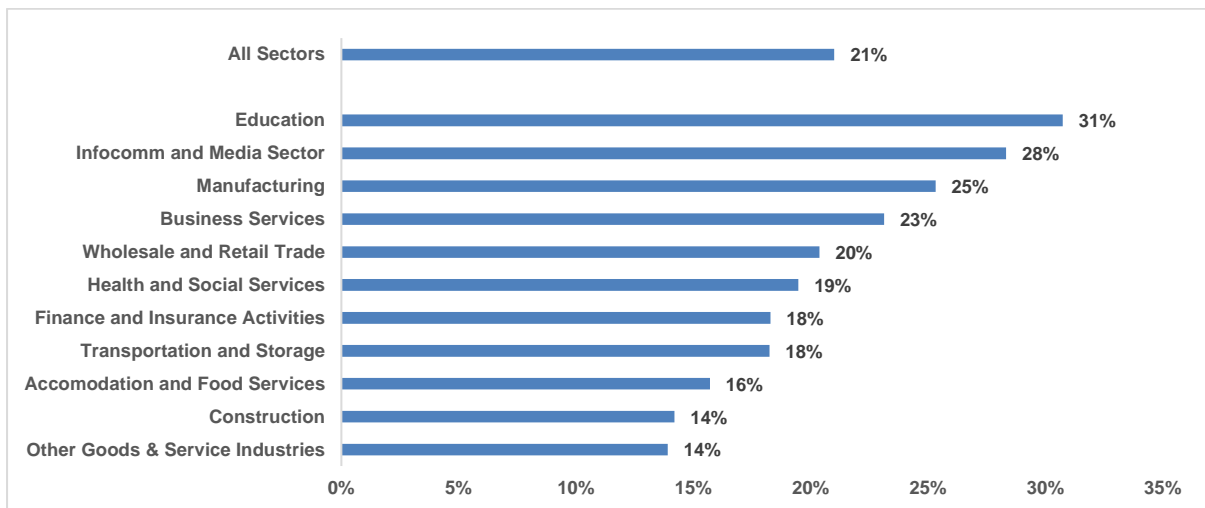
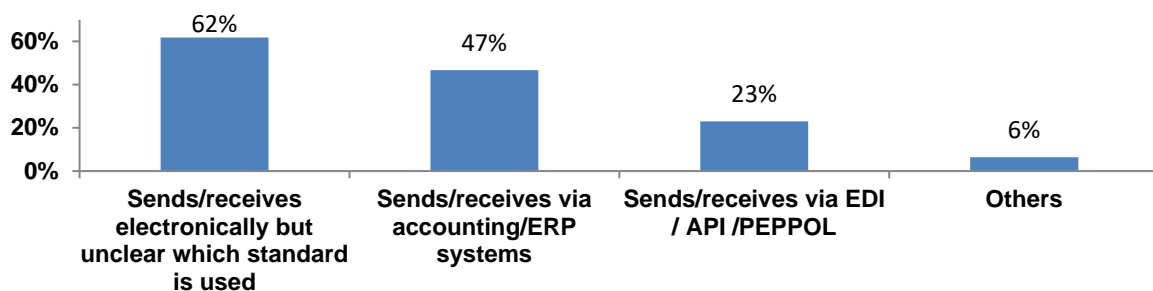


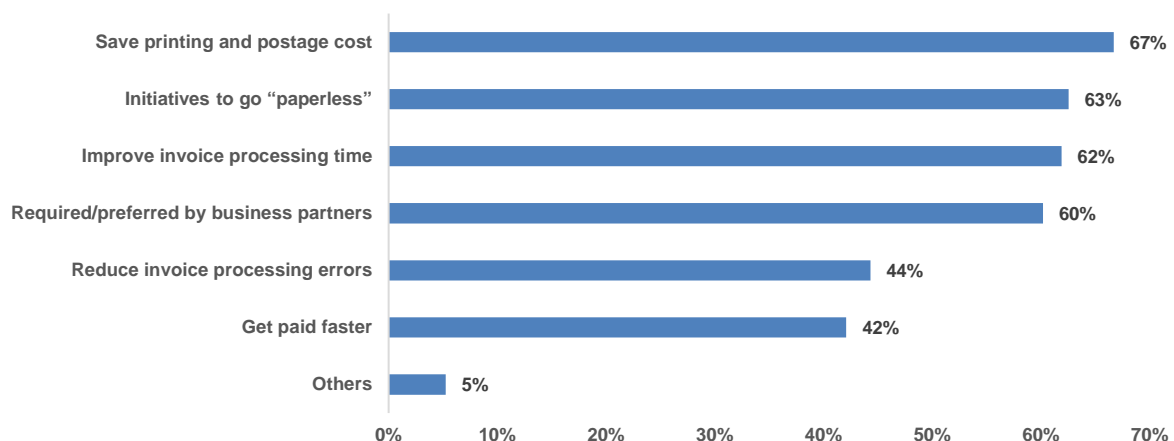
Chart 3.8 Modes of e-invoicing used by Enterprises, 2019



Base: Enterprise that used e-invoicing

About two-thirds of the enterprises who use e-invoicing adopted it to save printing and postage costs (67%). Other popular reasons include the initiative to go “paperless” (63%), and to improve invoice-processing time (62%). (Chart 3.9)

Chart 3.9 Reasons for adopting e-invoicing, 2019



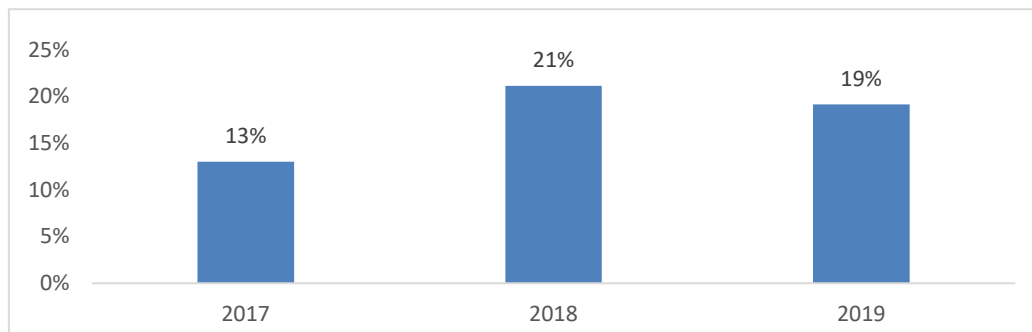
Base: Enterprise that used e-invoicing

3.4 E-commerce

The proportion of enterprises engaged in e-commerce activities increased to 19% in 2019 from 13% in 2017.

The engagement of e-commerce⁵ activities among enterprises that used Internet for working purpose had increased to 19% in 2019, from an average of 13% for years prior to 2017(Chart 3.10).

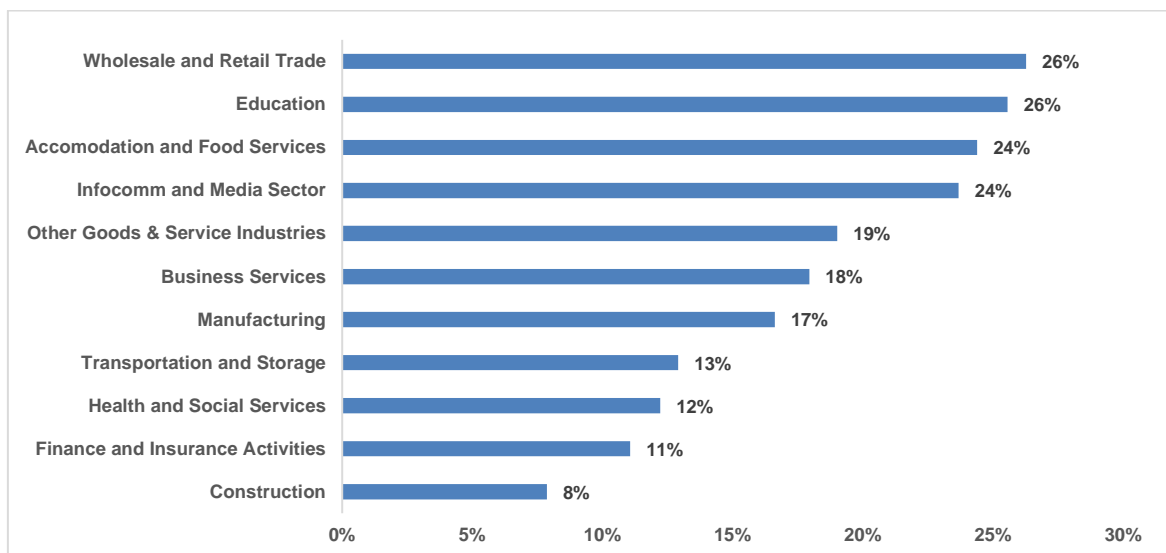
Chart 3.10 Enterprises that engaged in e-commerce activities



Base: Enterprises that used the Internet for work

Enterprises from the Education sector, Wholesale and Retail Trade sector, and Infocomm and Media sector were more likely to engage in e-commerce activities compared to the other sectors (Chart 3.11).

Chart 3.11 Enterprises that engaged in e-commerce activities by sector, 2019



Base: Enterprises that used the Internet for work

⁵ 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).

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 3.1). A higher proportion of them was from the Finance and Insurance Activities, Business Services, and Health and Social Services sectors.

Table 3.1 Reasons for not engaging in e-commerce activities

Reasons for not engaging in e-commerce activities	2017	2018	2019
Nature of business is not a good fit for e-commerce	1	1	1
Satisfied with sales through traditional channel such as physical stores	2	2	2
Cost of investing in e-commerce is too high	3	3	3
Do not have the knowledge on how to engage in e-commerce	4	4	4
Concern about cybersecurity risks in conducting e-commerce (e.g. fraud)	5	5	5
Do not know how to set up online payment or have difficulty in setting up online payment	-	-	6
Unable to find suitable logistics service providers to work seamlessly for order fulfilment	6	6	7

Base: Enterprises that did not engage in e-commerce activities

Note: The options "Do not know how to set up online payment or have difficulty in setting up online payment" was added in 2019.

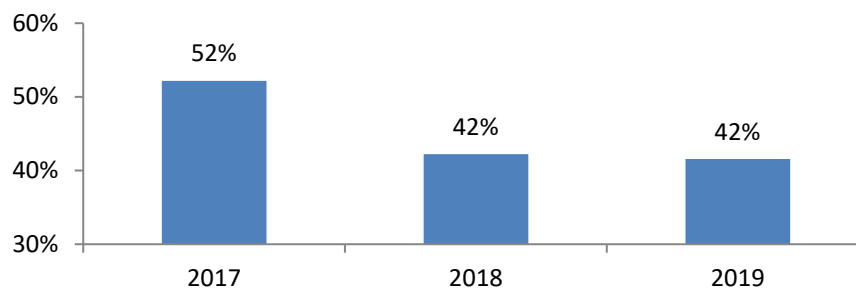
4. CYBERSECURITY

4.1 Cybersecurity Adoption

Cybersecurity adoption remained the same at 42% in 2019, after a decrease from 52% in 2017. Virus Checking or Protection Software was the most commonly adopted cybersecurity measure among all enterprises.

The adoption of cybersecurity measures by enterprises who used Internet for work remained the same at 42% in 2019, after a decrease from 52% in 2017. (Chart 4.1).

Chart 4.1 Enterprises that had cybersecurity measure in place



Base: Enterprise that used Internet for work

Virus Checking or Protection Software was the most pervasive cybersecurity measure among all enterprises, followed by Anti-spyware software (Table 4.1).

Table 4.1 Top 10 Cybersecurity measures⁶

Cybersecurity Measure		2019
1	Virus checking or protection software	93%
2	Anti-spyware software	80%
3	Firewall	79%
4	Spam filter and Anti-phishing protection	77%
5	Regular backup of data critical to your business operations	72%
6	Automatic / regular update of operating systems and application software used in the organization	60%
7	Access control software or hardware for internal and external users	51%
8	Transmission of sensitive information is always encrypted (e.g. Secure Socket Layer (SSL))	47%
9	Off-site data backup	47%
10	Policy to monitor and control access of the computer network to only authorised devices (e.g. desktop)	44%

Base: Enterprises that used Internet for work and adopted cybersecurity measures

⁶ Respondents were allowed to select multiple options, whichever was applicable to them.

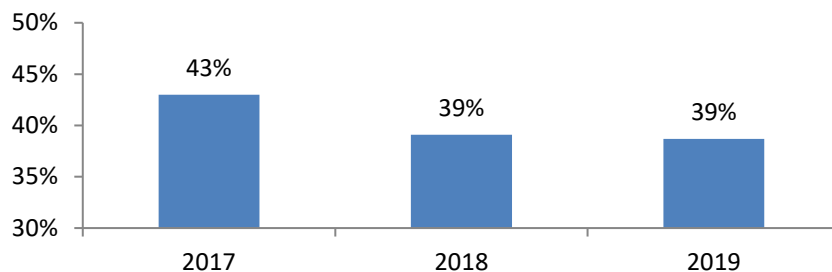
5. DIGITAL INVESTMENT

5.1 Enterprises' digital investment

Enterprises that engaged in digital investment⁷ remained similar at 39% in 2019, with an average of 40% since 2017. Most common areas of digital investment by enterprises are hardware/network, cloud computing services, and cybersecurity software.

Digital investment by enterprises in 2019 remained at 39%, maintaining an average of 40% since 2017 (Chart 5.1).

Chart 5.1 Enterprises that engaged in digital investment



Among the 39% of enterprises that engaged in digital investment in 2019, hardware/network is the top area of investment (86%), followed by cybersecurity software (42%) and cloud computing services (42%) (Table 5.1).

Table 5.1 Areas of digital investment

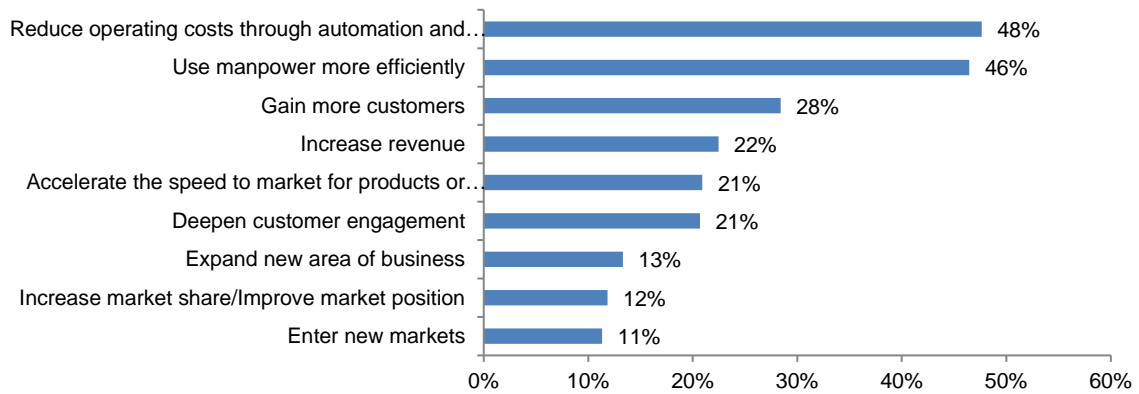
Areas of digital investment		2019
1	Hardware/Network	86%
2	Cybersecurity software	42%
3	Cloud computing services	42%
4	Internet of Things	25%
5	Data Analytics	18%
6	Cybersecurity Training	12%
7	ICT training	10%
8	Artificial Intelligence	5%
9	Immersive Media	4%

Base: Enterprises with digital investment in 2019

⁷ Digital investment including the use of Infocomm/digital product and services to improve existing businesses and processes; to develop new & better products/services, processes capabilities; including the infocomm technology training for employees

A reduction in operating costs through automation and streamlining of existing business processes is the top most indicated benefits by enterprises (48%). The ability to use manpower more efficiently is the second main benefit of digital investment indicated by enterprises (46%) (Chart 5.2).

Chart 5.2 Benefits from digital investment



Base: Enterprises with digital investment in 2019