AITI
Authority for Info-communications Technology Industry of Brunei Darussalam

BRUNEI DARUSSALAM
INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT)
HOUSEHOLDS AND INDIVIDUALS REPORT 2022

DISCLAIMER

This report contains information based on the responses to the Brunei Darussalam ICT Households and Individuals Survey 2022. It is not the opinion of Authority for Info-communications Technology Industry of Brunei Darussalam (AITI) or of the organisation(s) involved in the study. Whilst every effort has been made to ensure that the results reported herein are complete, accurate and true, the AITI or other organisation(s) involved in the study do not provide any warranty that the information contained herein is complete, accurate and true. In no event will the AITI or other organisation(s) involved in the study be responsible for any loss or damage, including indirect or consequential loss or damage whatsoever arising from the use of this report or the information contained herein.

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Message from the Chief Executive

I am pleased to present the fifth edition of the Information and Communication (ICT) Households and Individuals Report 2022 for Brunei Darussalam released by Authority for Info-communications Technology Industry of Brunei Darussalam (AITI) in collaboration with Universiti Teknologi Brunei (UTB). This report highlights the evolving landscape of ICT access and usage among households and individuals in Brunei Darussalam, reflecting advancements driven by national efforts to develop Brunei Darussalam's digital economy, influence from global digital trends, and also the advent of the COVID-19 pandemic that spurred the need for rapid and novel digital technology adoption from 2020 to 2022.

Since the launch of the Digital Economy Masterplan 2025 by the Digital Economy Council in June 2020, this survey provides essential ICT statistics to gauge the current state of ICT access and usage as an invaluable resource to relevant stakeholders working towards realising the goals of Wawasan Brunei 2035 and the Digital Economy Masterplan 2025.

This report showcases various aspects of emerging ICT trends, including digital well-being, which has gained prominence as technology permeates every aspect of life.

Globally, the focus on digital access has shifted towards ensuring the universality of access, reliability and safety of ICTs, in line with the trajectory of the United Nations Sustainable Development Goals (SDGs), the International Telecommunication Union (ITU), ASEAN and other initiatives.

In Brunei Darussalam, the proportion of individuals who are able to access the internet from home has risen to 98% in 2022 from 65.6% in 2019. In fact, broadband internet access is now a necessity for 96% of respondents.

The access to internet and devices available is bound to have an impact on household and individual behaviours in relation to ICT usage. Device ownership patterns have shown a significant increase in comparison to previous years. Smartphones, now owned by 92% of individuals surveyed, have become the main device for accessing the internet.

The principle of universal access also extends to those with special needs, and thus this report seeks to explore ICT access among this demographic. From the households surveyed with at least one (1) special needs member, 69% indicated ICT devices are used to perform daily activities.

I hope that this report will provide valuable insights for policy makers, academia, researchers and social business community organisations, particularly to prepare for the future and to accelerate the growth of Brunei Darussalam's digital economy. Lastly, I would like to express my deepest appreciation to all respondents, and everyone who has contributed to the successful completion of this survey.

Haji Jailani bin Haji Buntar
Chief Executive
Authority for Info-communications Technology Industry for Brunei Darussalam

Executive Summary

The Information and Communication Technology (ICT) sector has witnessed a number of dramatic shifts in recent years, with widespread impact across the global and local society. This underscores the importance of the ICT sector and a need for accurate and up-to-date data on the present state of ICT usage in Brunei Darussalam.

The Brunei Darussalam ICT Households and Individuals surveys have been conducted by the Authority for Info-communications Technology Industry of Brunei Darussalam (AITI) every three (3) years since 2010, and now in 2022, to provide key statistics and valuable insights on ICT access and usage among households and individuals across Brunei Darussalam.

The reference and sampling period for the Brunei Darussalam ICT Households and Individuals Survey 2022 was 16 May 2022 to 31 October 2022, through online questionnaires due to restrictions and challenges during the COVID-19 pandemic, with 4,033 respondents. The survey covered individuals aged 15 years and above.

Among the notable trends that have emerged based on the data collected are as follows:

- 95% of households have access to the internet, where fixed broadband was the primary type of connection among 62% of households.
- Among the population, the quality of internet services has been perceived as having improved from previous years. Nonetheless, the most commonly cited barriers to internet access are related to cost of services and other associate costs (for example, registration and installation) being too high.
- Device ownership patterns have undergone a shift, with smartphones becoming the dominant device for access to the internet, and are owned by 92% of individuals.
- Laptop ownership has risen to 91%.
- Smart device ownership has seen a jump since the last survey period in 2018, particularly wearable devices (from 11% in 2018 to 67% in 2022).
- Around 32% of individuals have up to Advanced ICT skills (i.e. skills required for a profession in ICT)
- The use of ICT devices on a daily basis has become more widespread and incorporated into daily lifestyles, particularly smartphones This has contributed to social pressure among individuals, where 52% feel like they are missing out on something important if they fail to check their phones.
- Households with Special Needs members also require the use of ICT device, with 69% of those with Special Needs using ICT devices on a daily basis. Communicative devices and computer access devices are the top devices required.
- During the advent of the COVID-19 pandemic, online learning or e-learning and work from home had been temporarily mandated upon schools and organisations respectively. In light of this, respondents indicated that this shift was relatively feasible despite challenges with transition to this form of study and work, with 78% of respondents indicating that they have the knowledge and tools to use the online tools for them to work or learn remotely and 77% had the necessary resources (devices and connection) that support these online tools.

Overall, the results from the ICT Households and Individuals Survey provide a valuable foundation for policymakers, industry stakeholders, and service providers by providing insights to better understand the evolving ICT access and usage across Bruneian individuals and households. The trends identified

can aid more targeted strategic decision-making, enabling the development of initiatives and policies that cater to the changing needs and preferences of the population while promoting digital inclusion and socio-economic growth.

Key Findings

4,033
respondents

95%
Households access to the internet

Type of Internet Connection Used

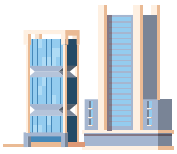
62%
Fixed Broadband

8%
Mobile broadband

95%
Both Fixed and Mobile broadband

Individuals' Place of Use

98%
Home



72%
Work

37%
School

Limiting Factors of Internet Access

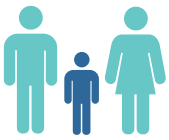
49%
Cost of Services

31%
One-time registration and installation cost

25%
Limited plan and insufficient data capacity

Children Using Internet

94%
Use Internet



6%
Does Not Use Internet

Quality of Internet Access

75%
Good, Very Good and Excellent Speed

20%
Very Expensive

Level of ICT Skills

31.9%
Up to Advanced ICT skills

99.4%
have at least Basic ICT skills

Ownership of selected ICT equipment or devices

92%	91%	88%	72%	70%
Smart Phone	Laptop	Home Storage Device	Radio	Fixed Telephone

Top activities performed over the internet

Seeking information and general knowledge	95%
Work	89%
Education	87%

Uses of Mobile Phone Applications

Entertainment	90%
Social Media	89%
Communication	89%

Social Media Applications

Whatsapp	99%
Instagram	69%
YouTube	69%

Mobile App Categories

Entertainment	90%
Communication	89%
Social Media	89%

52%	Feel like they are missing something important at work/university/school if they don't check their phone.
47%	Find internet can increase social pressure and stress.
39%	Spend more time on social media than they'd like.

9% Household members with special needs

69% Household members with special needs use ICT Devices for daily use

Types Devices used by household members with special needs

- **41%** Communication Devices
- **27%** Computer Access Devices
- **22%** Adaptive Toys and Games
- **14%** Mobility Assistive Devices
- **2%** Others

Top 3 Specific Assistive Features Required

18% require accessibility features

17.3% require speech recognition features

16.5% require Audio feedback

COVID-19 Specific Trends

38% Work From Home

39% Online Learning From Home

1

Introduction

1 Introduction

There is a pressing need for timely, reliable and accurate statistics on the ICT sector as Brunei Darussalam seeks to drive digital economy development and spur industrial growth support the goals of Wawasan Brunei 2035.

According to data released by the Department of Economic Planning and Statistics (DEPS), Ministry of Finance, at the end of 2022, the Gross Domestic Product (GDP) contribution from the ICT sector accounted for BND 478.3 million or 4.3% of the nation's total GDP. Based on AITI's records for December 2022, national 3G and 4G mobile network coverage spanned 99% of the population, and 94% of homes had Fibre to the Home (FTTH) coverage.

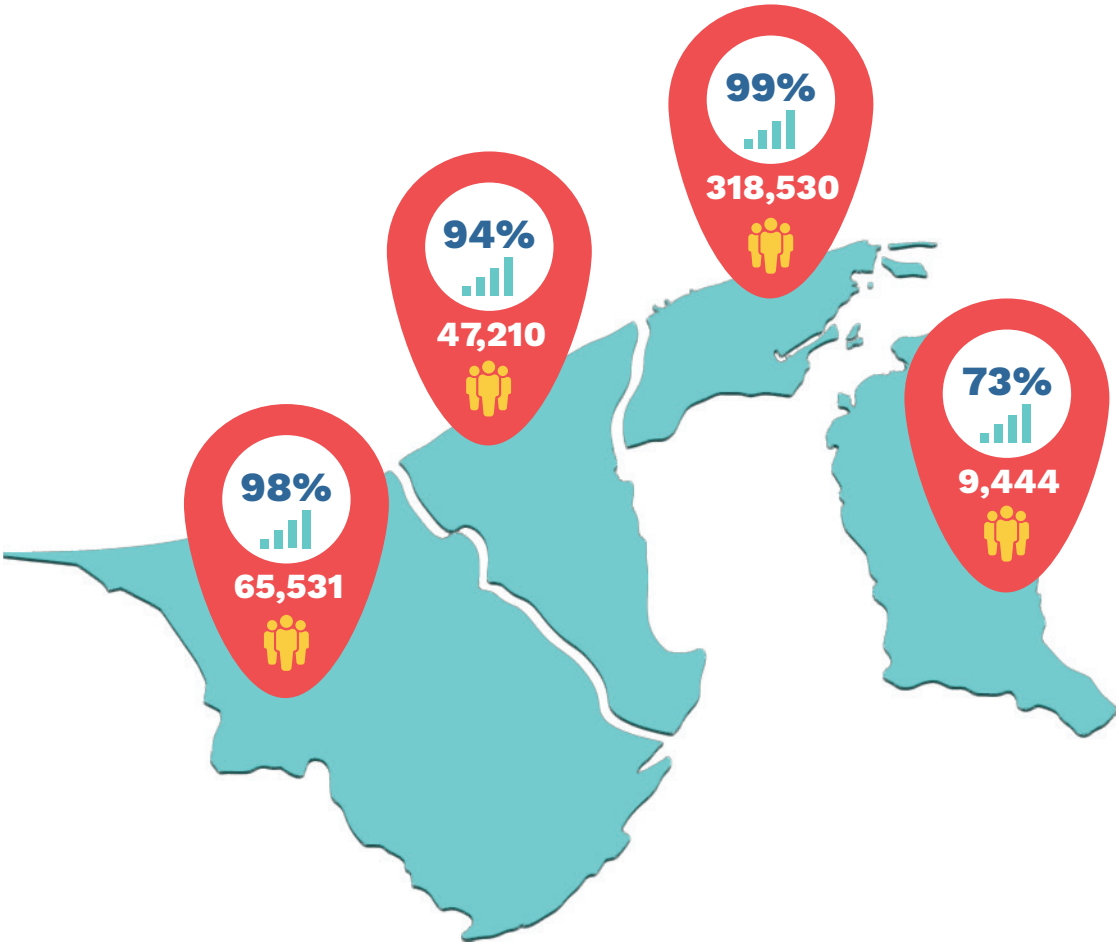


Figure 1: Mobile Network Coverage and Number of Subscribers

To meet the demand for data from various stakeholders, a survey was conducted on ICT access, usage, skills and impact to wellbeing at the individual and household level in Brunei Darussalam.

The survey was conducted online in May until October 2022 and captured responses from 4,033 respondents from an online survey due to data collection challenges in the wake of the COVID-19 pandemic.

1.1 Objectives

The objectives of the Brunei Darussalam ICT Households and Individuals 2022 Survey are:

- To collect and analyse data on meaningful ICT statistics on the ICT access, usage, and skills among individuals and households in Brunei Darussalam;
- To identify and analyze the gaps and issues relating to the adoption of ICT among individuals and households in Brunei Darussalam; and
- To understand the progress and evolving trends of ICT in Brunei Darussalam including digital wellbeing, remote work and learning, and digital inclusivity for the special needs community.

1.2 Methodology

The Brunei Darussalam ICT Households and Individuals 2022 Survey was fully conducted online from 16 May 2022 to 31 October 2022 during the COVID-19 pandemic, and was taken as a pragmatic approach to reach a wider audience in light of restrictions and challenges during the pandemic.

A two-step approach was taken towards conducting the survey, for which sampling was randomized and respondents would participate in the survey on a voluntary basis. Firstly, the survey link was circulated to households and individuals through the use of email, mass WhatsApp text messages and social media. Awareness of the survey was raised through electronic, broadcasting, and printed media to encourage the public and individuals to take part in the survey during the period. During the second stage, as COVID-19 restrictions gradually lessened, small-scale in-person promotion of the survey was undertaken at a number of public gatherings such as the Mid-Year Conference Exhibition (MYCE) held in the International Convention Centre, Brunei Darussalam in June 2022 and the Universiti Teknologi Brunei (UTB) campus in July 2022 during the UTB convocation week, to increase sample size.

The total number of respondents was 4,033, with 36% producing complete responses. Given the number of incomplete responses, it is important to note a degree of variance in responses is expected.

1.3 Demography

From the 4,033 respondents sampled, 50% comprised of males and 50% females with an average household size of 5-6 members across the four districts of Brunei Darussalam (Brunei-Muara, Tutong, Belait and Temburong). The survey only includes respondents aged 15 years and above.

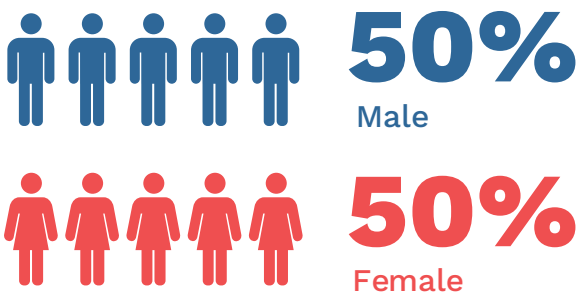


Figure 2: Respondent's Gender

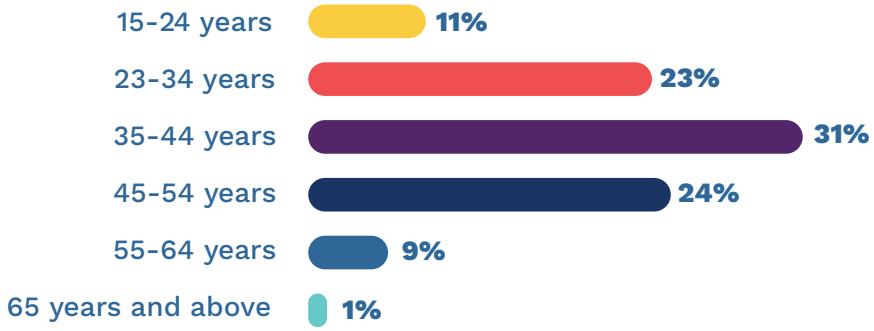


Figure 3: Respondent's Age Group

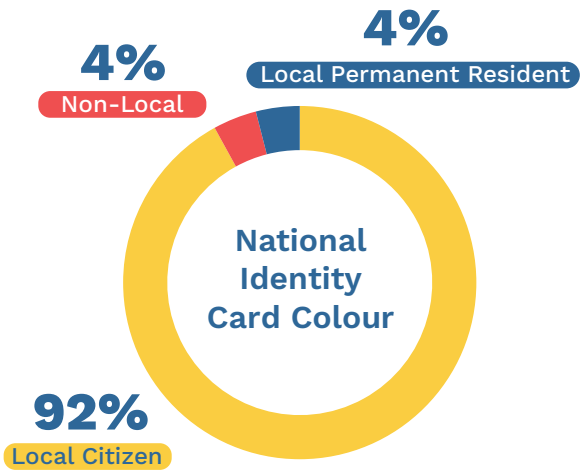


Figure 4: Respondent's National Identity Card Status

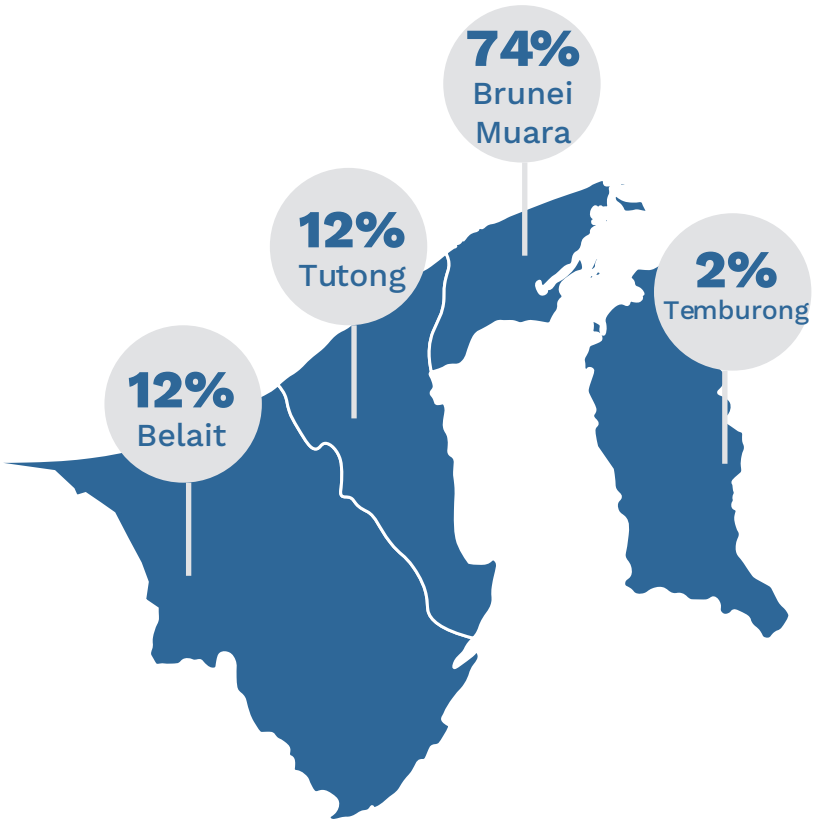


Figure 5: Respondents by Districts

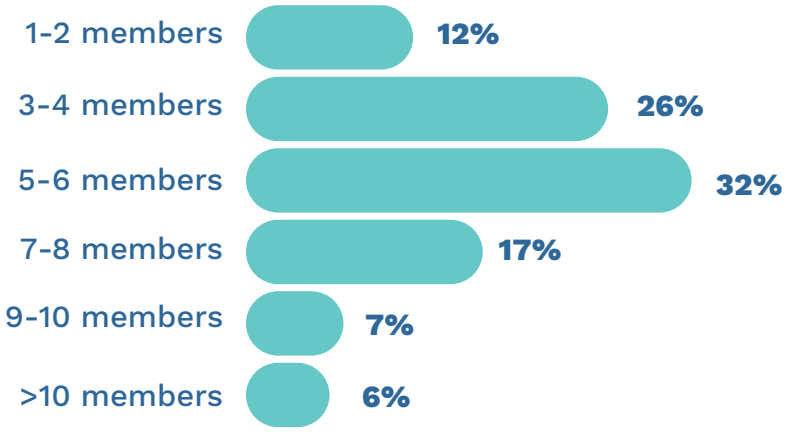


Figure 6: No. of Household Members

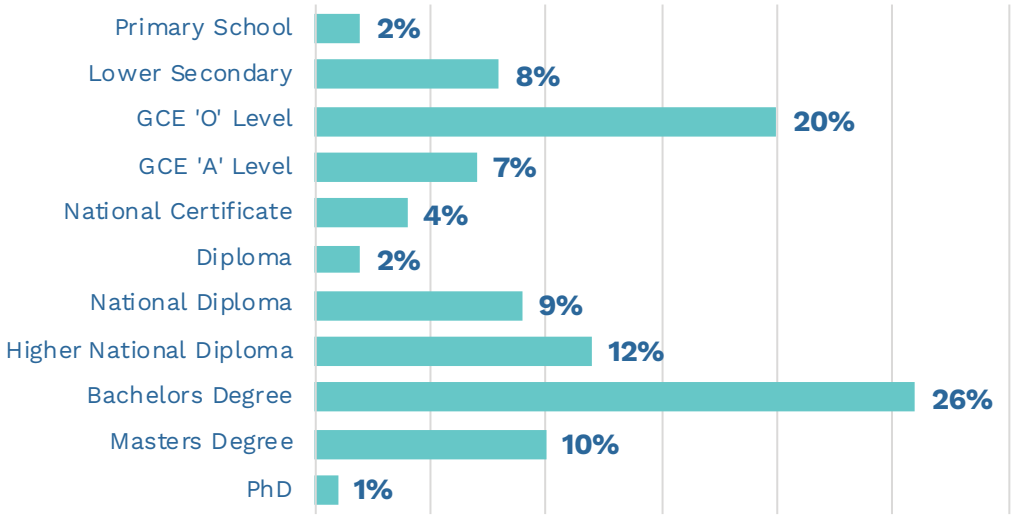


Figure 7: Educational Background

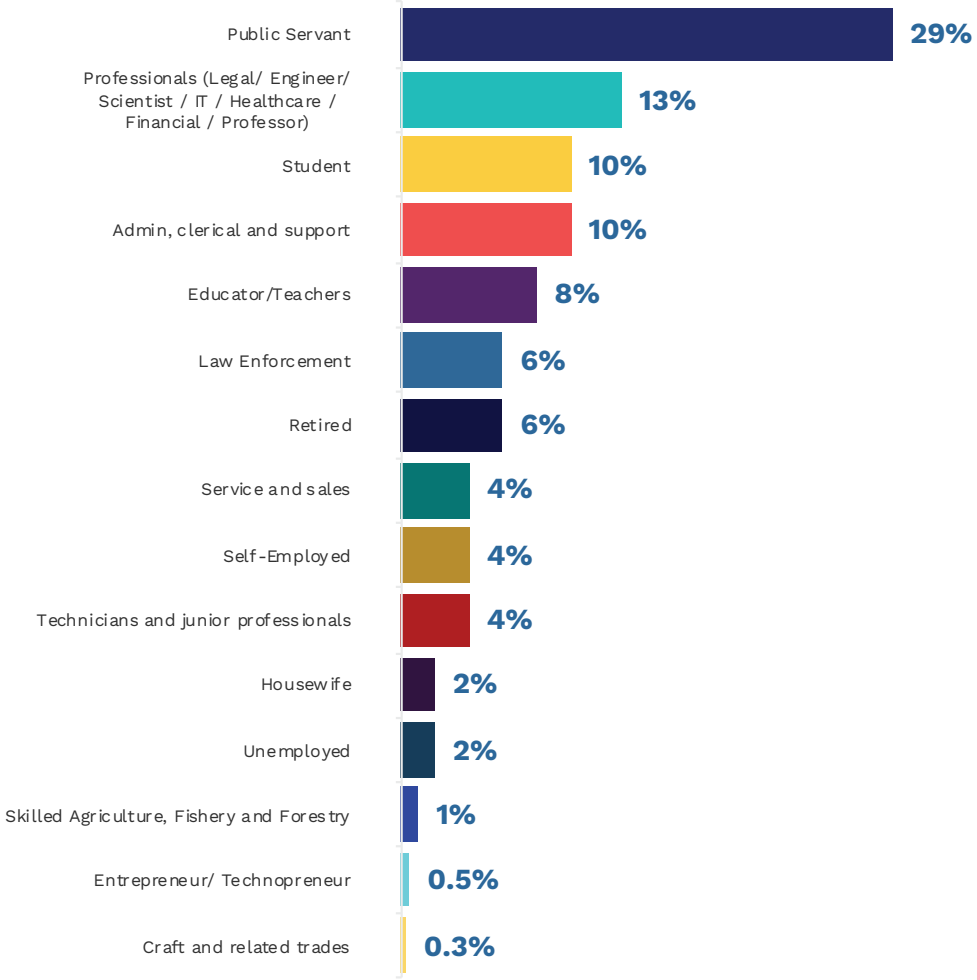


Figure 8: Respondent's Occupation

2

Access to Internet

2 Access to Internet

This section provides information on the access and usage of internet among households and individuals, and along with activities performed on the internet.

2.1 Household Internet Access

The survey asked respondents if their households had used the internet (from any location) in the survey period.

95% of households sampled have access to the internet.

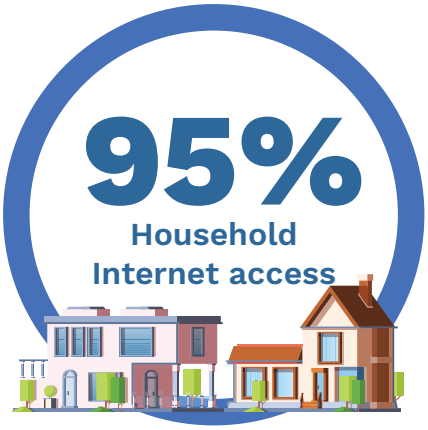


Figure 9: Household Access to the Internet

2.2 Type of Internet Connection in Households

From those households with internet access, 62% have fixed broadband, 8% have mobile broadband and 30% have both.

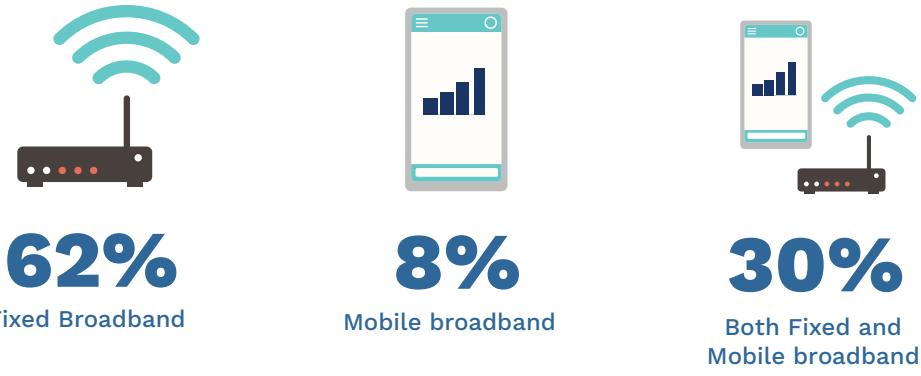


Figure 10: Type of Internet Connection

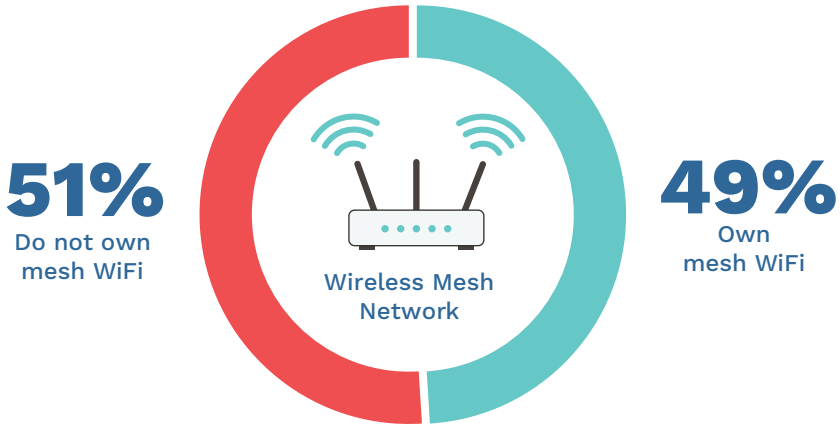


Figure 11: Wireless Mesh Network Ownership

A Wireless Mesh Network helps to increase coverage of the internet within a certain area and can maintain the highest speed throughout the area of coverage. 49% of respondents have installed a wireless Mesh Network in their houses.

2.3 Location of Access to the Internet

98% of individuals indicated the internet is accessible from home and 72% could access the internet from work.

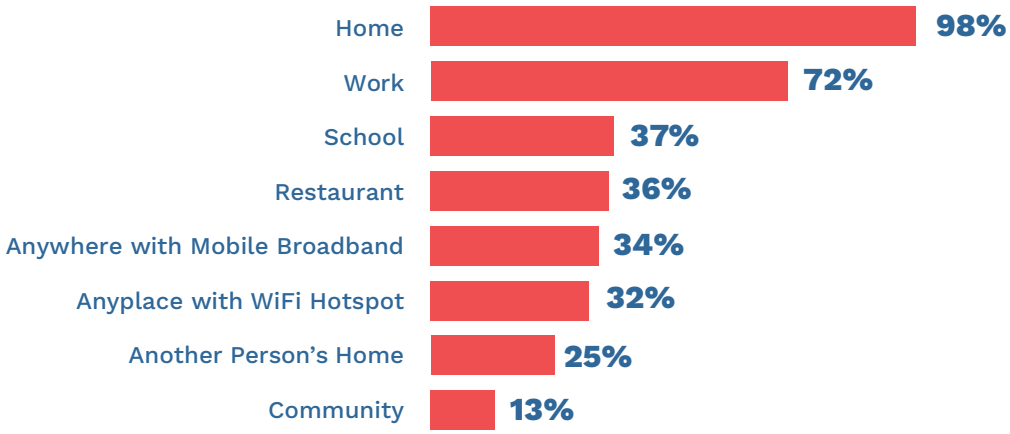


Figure 12: Location of Individual Access to the Internet

Given that the majority of respondents are public servants, the majority of workplace referred to by respondents refers to government offices (56%) followed by private sector offices (17%) and schools or educational institutions (13%). 9% of the respondents claim that their workplace is from home, in line with requirements to work from home during the COVID-19 pandemic.

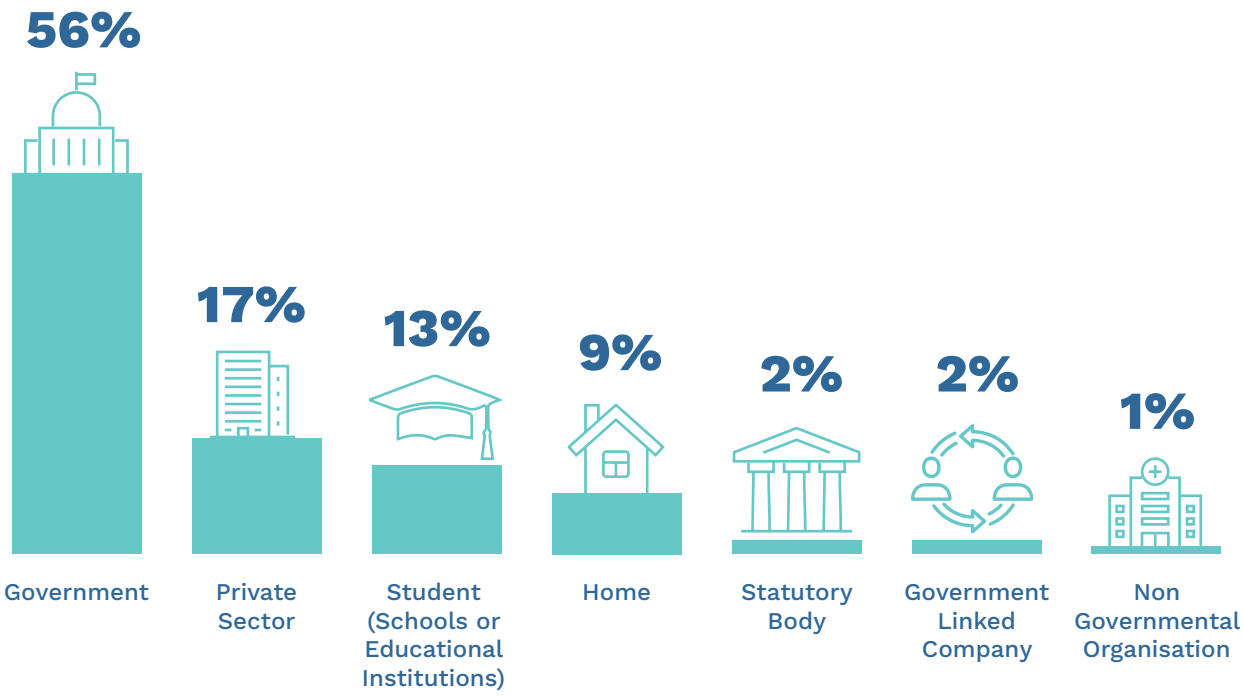


Figure 13: Workplace of Respondents

Internet accessibility from home, work and school have steadily increased since 2010.

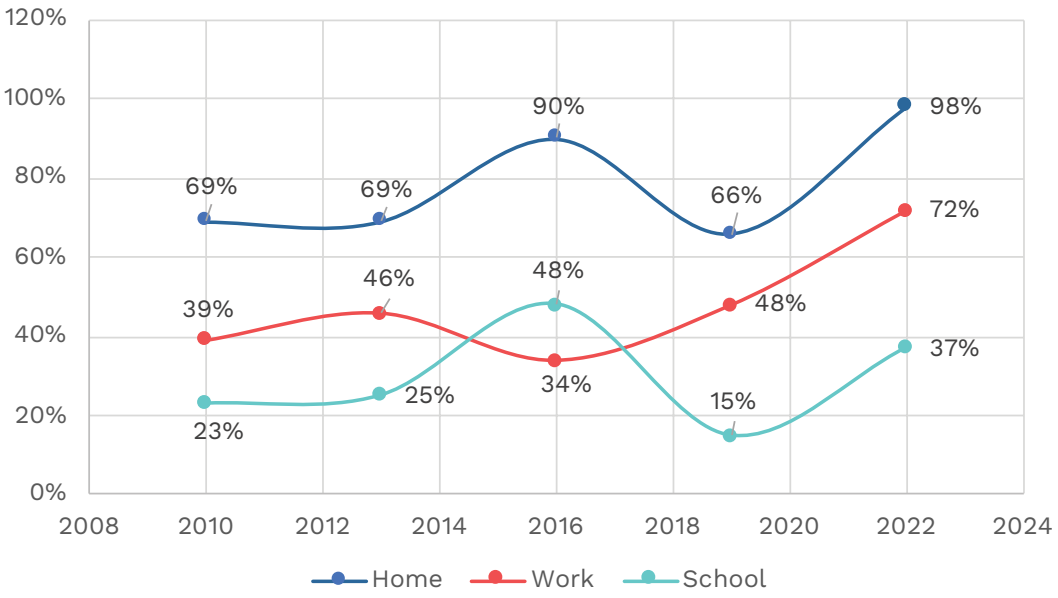
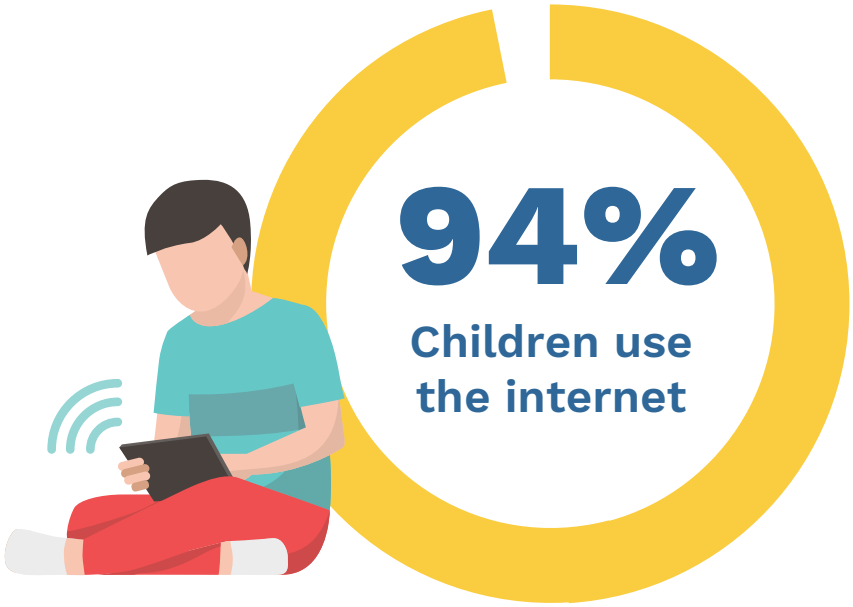


Figure 14: Proportion of Individuals Accessing the Internet by Type of Location, from 2010 to 2022

2.4 Children Accessing the Internet

Out of the respondents who are parents participating in the survey, 94% indicated that their children use the internet. It is consistent with high percentages of accessibility and internet penetration in the country.



2.5 Limiting Factors of Internet Access

The top limiting factors for internet access as indicated by respondents are the high cost of the internet services (49%) and the high cost of the one-time registration and installation (31%). Other limiting factors include data plans offered by the Internet providers are limited and insufficient (25%), and the household area has low-quality internet speed and is not up to expectation (24%).

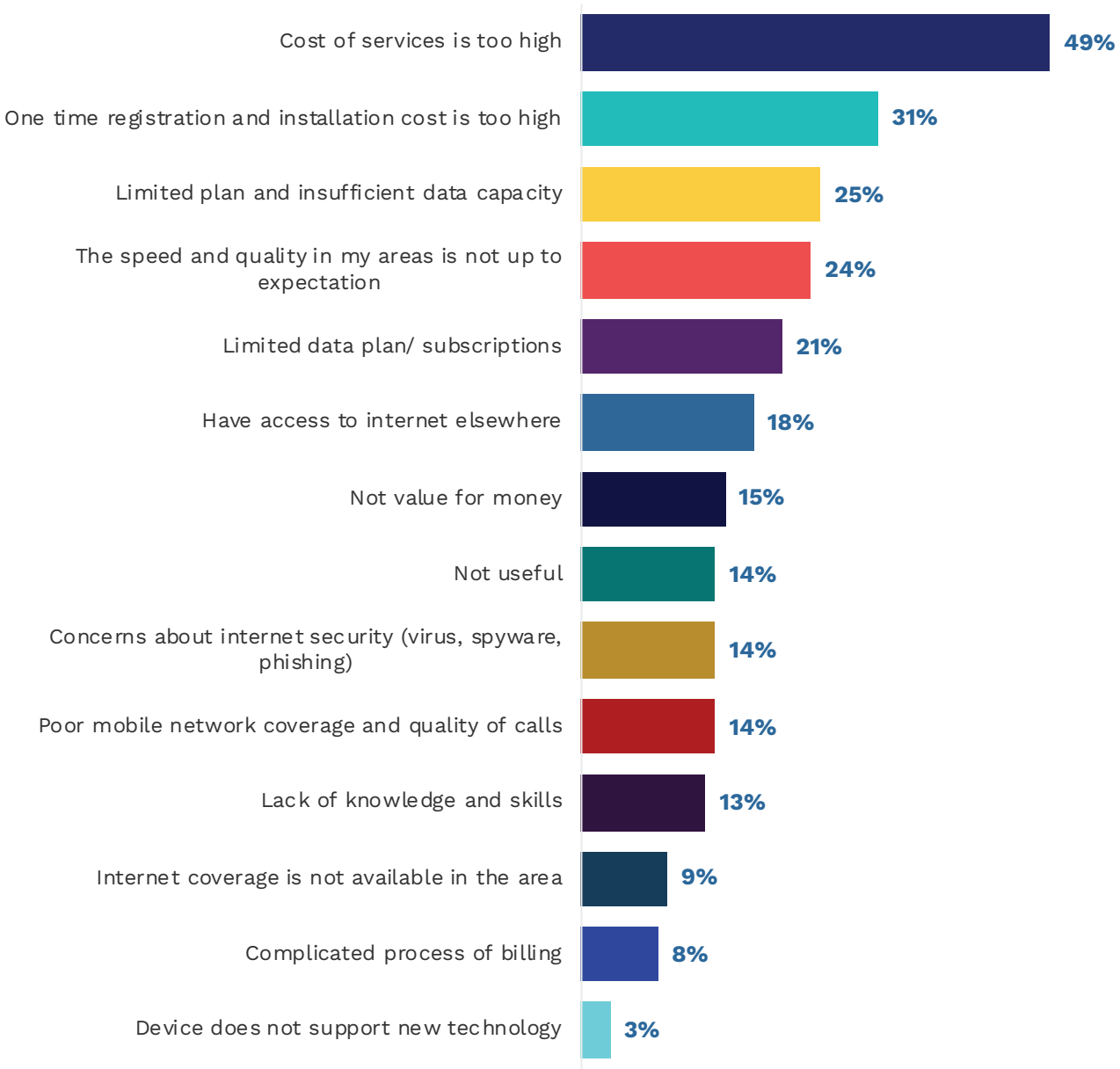


Figure 15: Limiting Factors for Internet Access

3

Fixed Broadband and Mobile Broadband Access and Usage

3 Fixed Broadband and Mobile Broadband Access and Usage

3.1 Perception on Internet Broadband Connection

The survey revealed 96% of respondents believe internet broadband is essential in their daily life.

Figure 16: Necessity of Broadband

3.2 Fixed Broadband Internet

3.2.1 Fixed Broadband: Overall Data Usage

The average household data usage (fixed broadband internet) is between 500GB-800GB. 23% indicated that they use more than 800GB of data per month

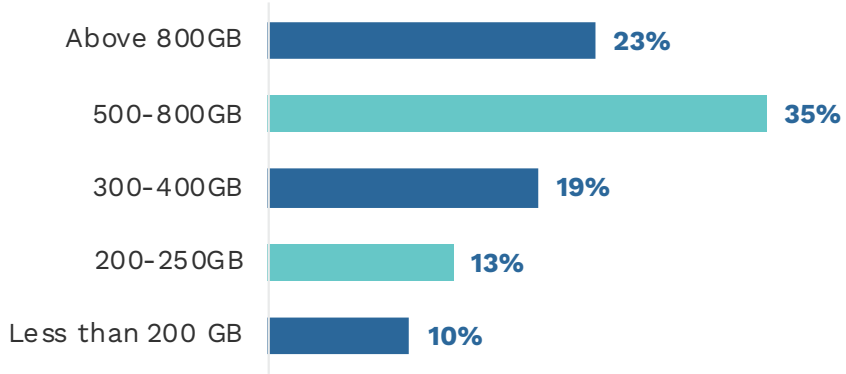


Figure 17: Fixed Broadband: Overall Data Usage

3.2.2 Fixed Broadband: Overall Speed

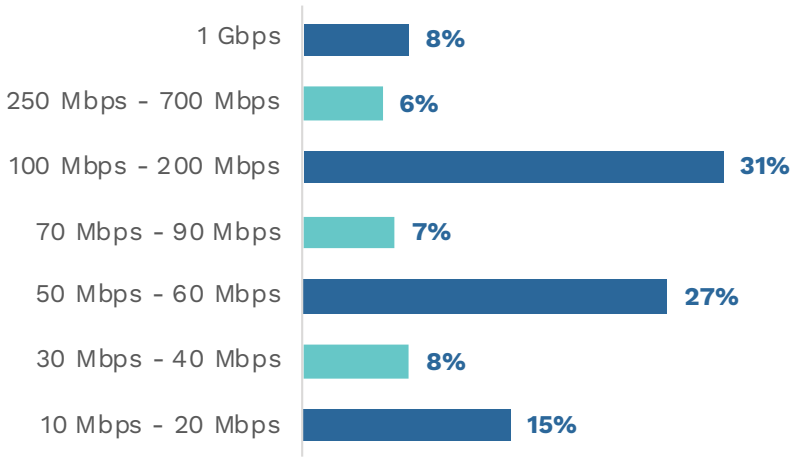


Figure 18: Fixed Broadband: Overall Speed

The households' choice of speed is between 100Mbps to 200Mbps as represented by 31% of the respondents. 27% of the respondents claim the overall speed of their fixed broadband is between 50 Mbps to 60 Mbps while 15% claim that their overall speed is less than 20 Mbps.

3.3 Mobile Broadband Internet

3.3.1 Mobile Broadband: Overall Data Usage

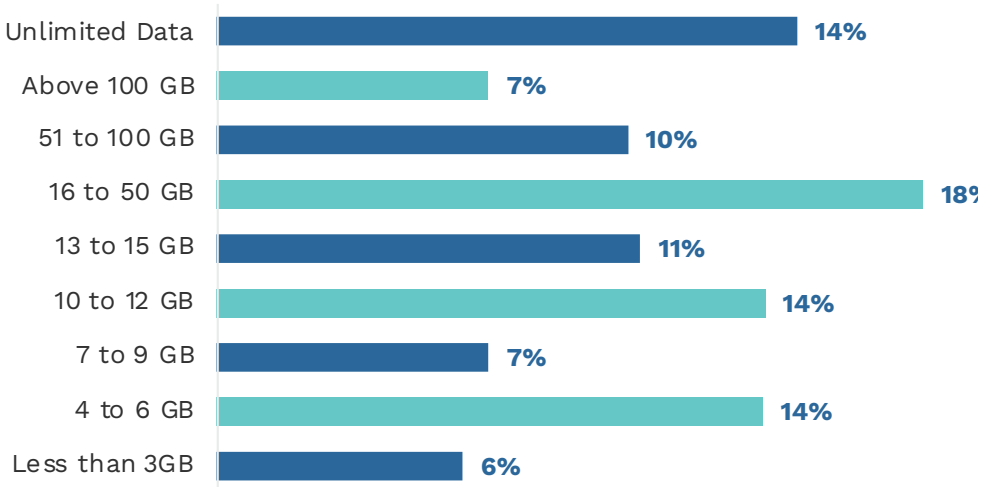


Figure 19: Mobile Broadband: Overall Data Usage

70% of respondents estimate that their monthly usage of mobile broadband data is 50GB and below, while 10% claim that their overall data usage reaches up to 100GB per month and only 21% of the respondent use above 100GB of data. 14% of respondents use unlimited data.

3.4 Quality of Broadband Internet Access

The survey asked respondents about their perceptions of quality of internet speed for fixed and mobile broadband.

3.4.1 Quality of Speed for Fixed Broadband & Mobile Broadband

The quality of speed for fixed broadband and mobile broadband were rated as being 'Fair' to 'Excellent' by 92% and 95% of the households, respectively.

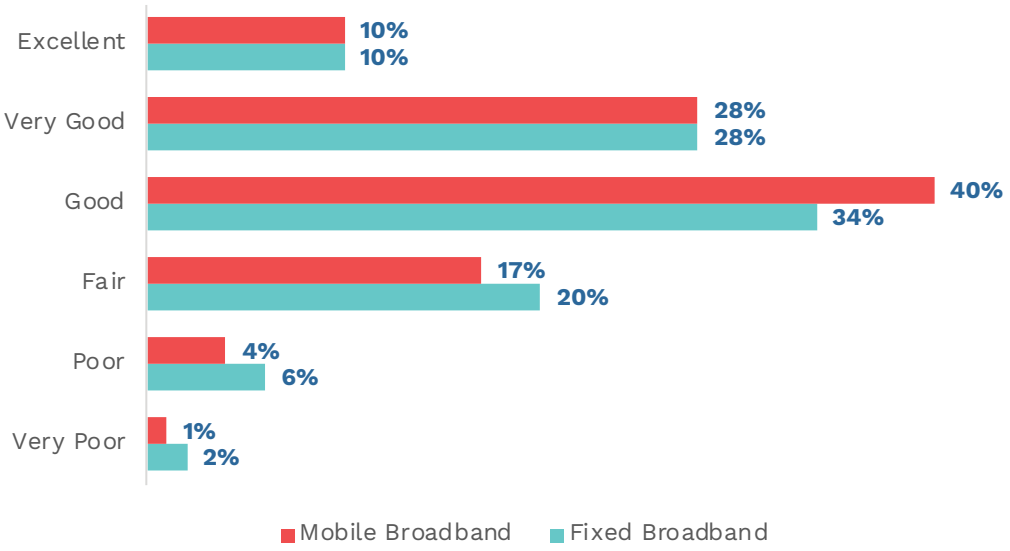


Figure 20: Quality of Speed for Fixed Broadband & Mobile Broadband

4

Expenditure and Affordability

4 Expenditure and Affordability

4.1 Monthly Expenditure on Telecommunications Services Subscriptions

The average monthly expenditures among respondents subscribing for the following services are as follows:

Average Household Expenditure

- Fixed Broadband: BND51 – BND 100 per month
- Fixedline Telephone: Less than BND 50 per month

Average Individuals Expenditure

- Postpaid Dedicated Mobile Broadband: BND51 – BND 100 per month
- Prepaid Dedicated Mobile Broadband: Less than BND 50 per month
- Postpaid Mobile with Data: BND 51 – BND 100 per month
- Prepaid Mobile with Data: Less than BND 50 per month

Pricing	Less Than BND50	BND51 - BND100	BND101 - BND150	BND151 - BND200	BND201 - BND250	BND251 - BND300	Above BND300
Fixed Broadband	19%	55%	13%	9%	2%	1%	1%
Fixedline Telephone	81%	15%	2%	2%	0%	0%	0%
Prepaid Dedicated Mobile Broadband	48%	37%	9%	3%	0%	1%	2%
Postpaid Dedicated Mobile Broadband	30%	52%	9%	6%	1%	1%	1%
Prepaid Mobile With Data	52%	30%	9%	5%	2%	1%	1%
Postpaid Mobile With Data	36%	39%	14%	6%	2%	1%	2%

Table 1 Monthly Expenditure on Data

4.2 Broadband Affordability

The survey indicated that 80% of respondents found monthly expenses for broadband internet (both fixed and mobile broadband) to be 'Just right', 'Cheap' or 'Very Cheap'. This is an increase from just 59% in 2010.

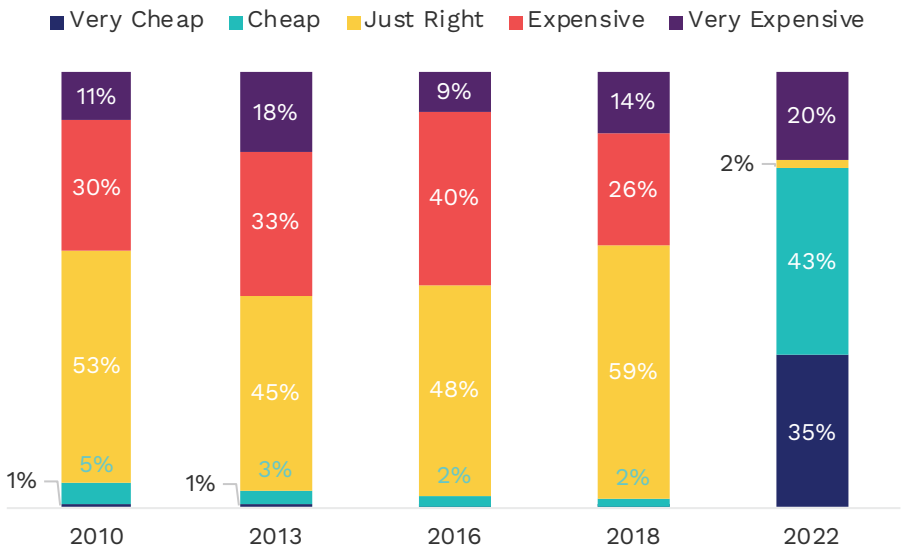


Figure 21: Perception of Monthly Expenses on Broadband

From those that did still consider broadband expenses to be expensive or very expensive, the top reason cited for this negative perception was inconsistent or slow data speed (compared to the price given), as indicated by 29% of respondents. However, it is essential to recognise that opinions on broadband pricing can vary among individuals based on factors such as income and personal preferences.

Reasons	Frequency
Inconsistent/Slow data speed	29.18%
Expensive in comparison to other countries	23.93%
Excessive pricing	9.82%
Small amount of data (for the price)	8.17%
Income	7.59%
Quality	6.91%
Necessity	4.96%
Data consumption	4.96%
Other responsibilities/expenses	3.99%
Extra charge	3.31%
Unsatisfactory	2.82%

Table 2 Reasons for Rating Monthly Expenses on Broadband as 'Expensive' or 'Very Expensive'

4.2.1 Perception of Fixed Broadband Prices

The results show how much people are willing to pay for their overall usage and the speed of their fixed broadband services regardless of whatever packages i.e., bands and speed being offered by the telecommunication companies. The highest price that respondents are willing to pay is BND250 per month, and most think paying BND100 or less is reasonable for their usage.

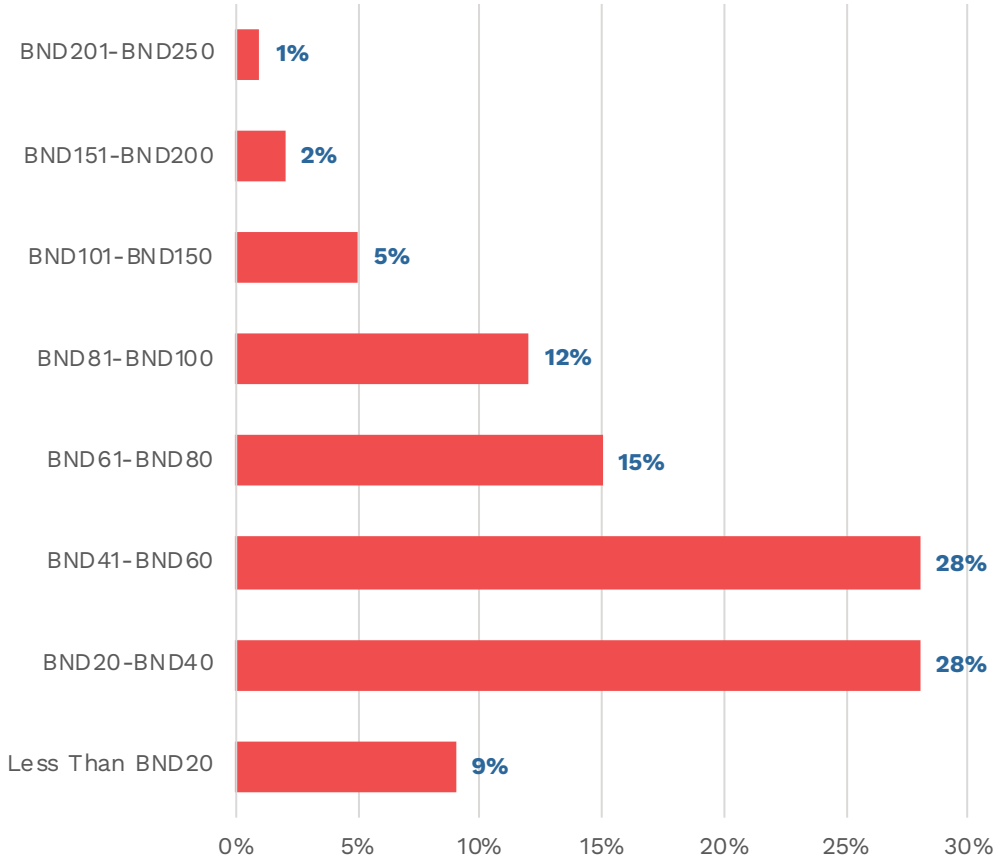


Figure 22: Fixed Broadband: Price Worth Paying for Overall Usage & Speed

4.2.2 Perception of Mobile Broadband Prices

11% of respondents are willing to pay up to BND5 per 1 GB of mobile broadband data, with the majority (59%) of respondents only willing to pay below BND3 per 1 GB of mobile broadband data. Only 10% are willing to pay BND10 per 1 GB.

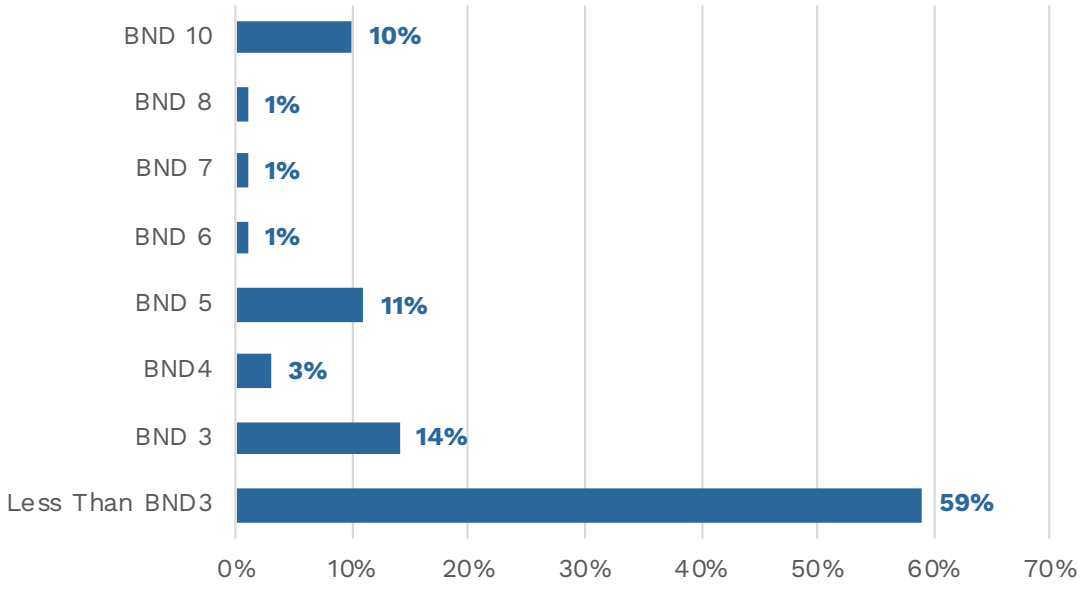


Figure 23: Mobile Broadband: Price Worth Paying for 1GB Data

5

Internet Usage

5 Internet Usage

This section provides information on the usage of Internet among individuals.

5.1 Reasons for Internet Use

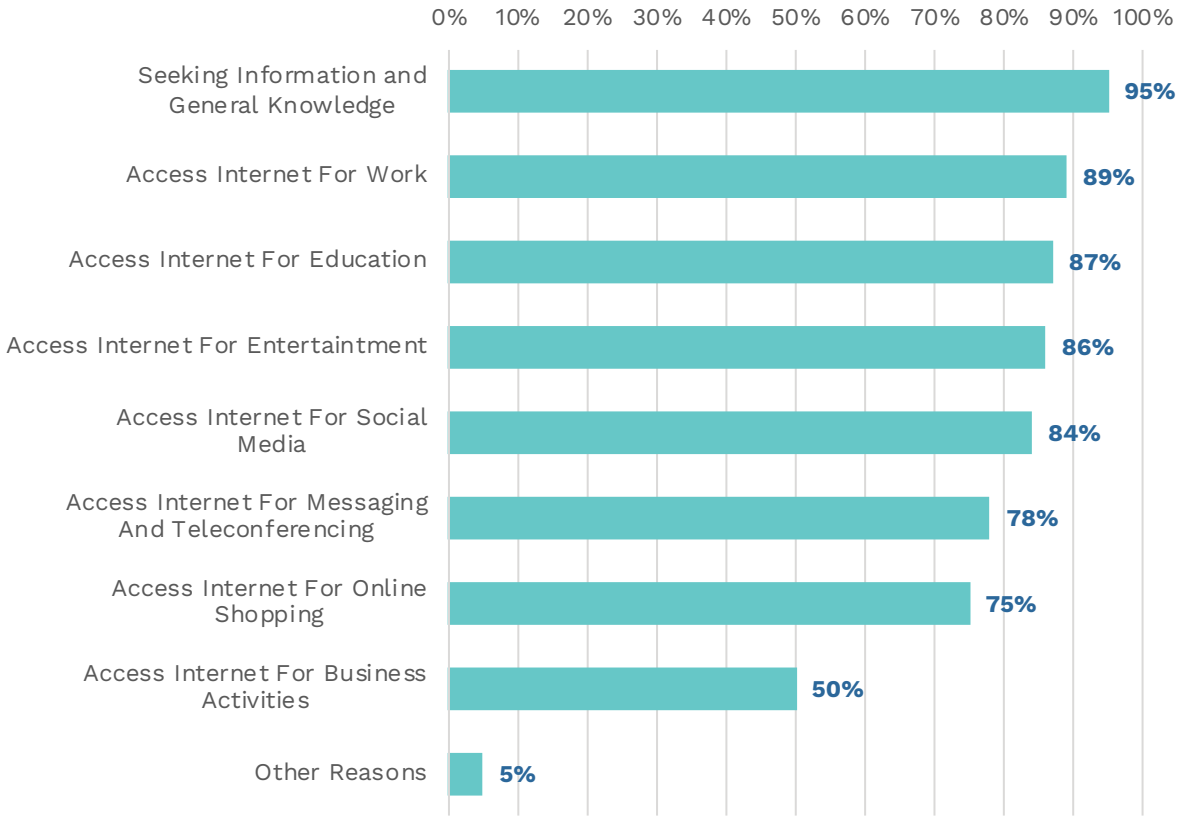


Figure 24: Reasons for Internet Use

95% of individuals aged 15 years and above use the internet to seek information and general knowledge, while 89% use the internet for work, 87% for education, and 86% indicated they used the internet for entertainment. Other significant uses of the internet include for social media (84%), messaging and teleconferencing (78%) and online shopping (75%).

5.2 Activities Performed on the Internet

5.2.1 Daily General Online Activities

When asked about online activities that are performed on a daily basis, the top activity performed by respondents is seeking information or surfing the internet (93%), followed by sending and receiving emails (91%); streaming video / movie / music / tv series (e.g. Netflix, iFlix) (80%); Online shopping (66%); and using storage space on internet (e.g. Dropbox, iCloud, Google Drive, One Drive) (66%).

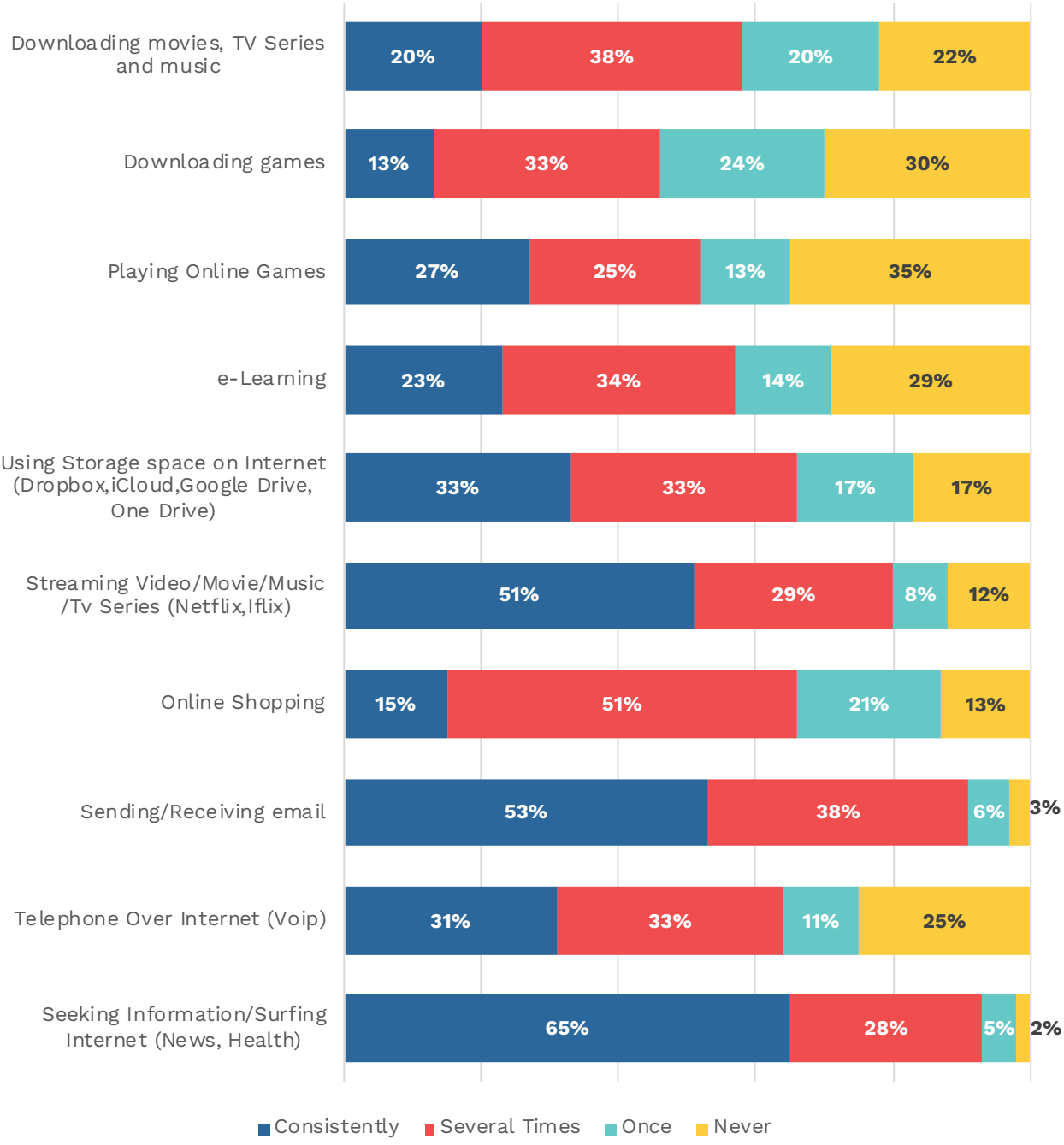


Figure 25: Daily General Online Activities

5.2.2 Preferred Language When Using the Internet

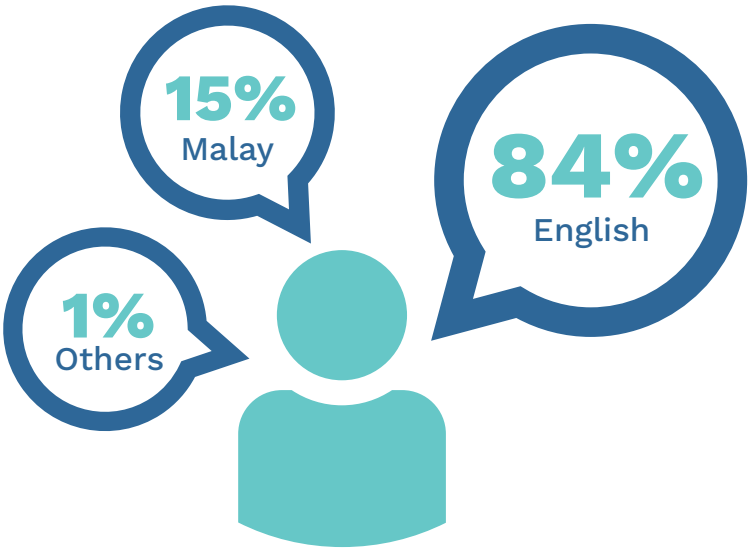
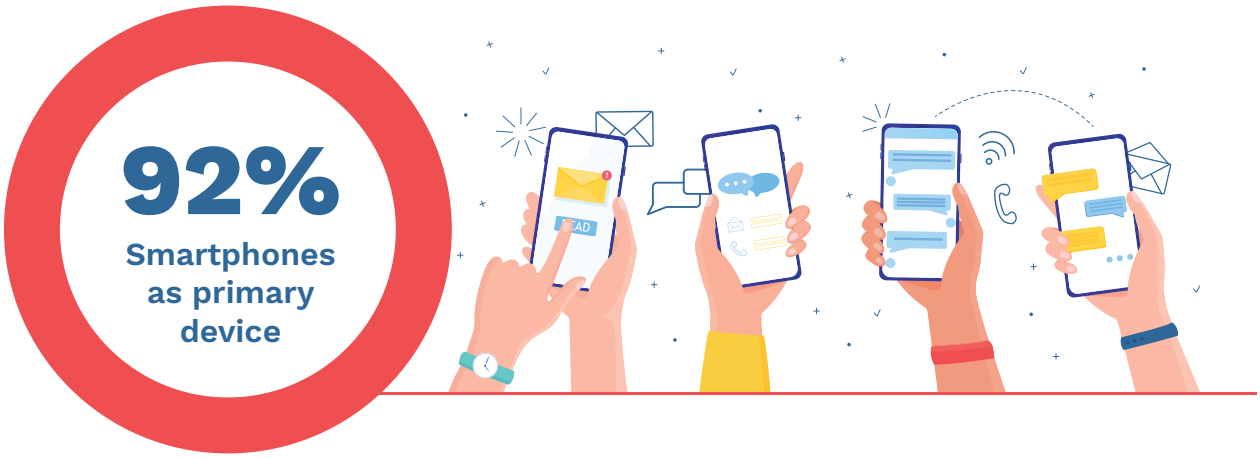


Figure 26: Preferred Language when Using the Internet

English is also the preferred language when using the internet for 84% of respondents, followed by Malay and other languages (such as Chinese and Indian).

5.2.3 Devices to Access the Internet



Smartphones are the primary device used to access the internet (used by 92% of individuals).

Access through computers (laptops and desktop computers) account for 6%, while Tablets only account for 1%.

6

Individual Ownership and Usage of ICT

6 Individual Ownership and Usage of ICT

This section provides information on the ownership and usage of ICT, including information on device ownership, and activities performed on these devices.

6.1 Device Ownership

The top device owned is the smart phone, with 92% of respondents indicating they own at least 1 smart phone. This is followed by laptop ownership (91%), home storage devices (88%), radio (72%), fixed line telephone (70%) and regular TV sets (67%).

Ownership of other smart devices such as wearable devices (e.g. smart watch) (67%), SMART TV (65%) and tablets (64%) have seen growing popularity compared to previous years.

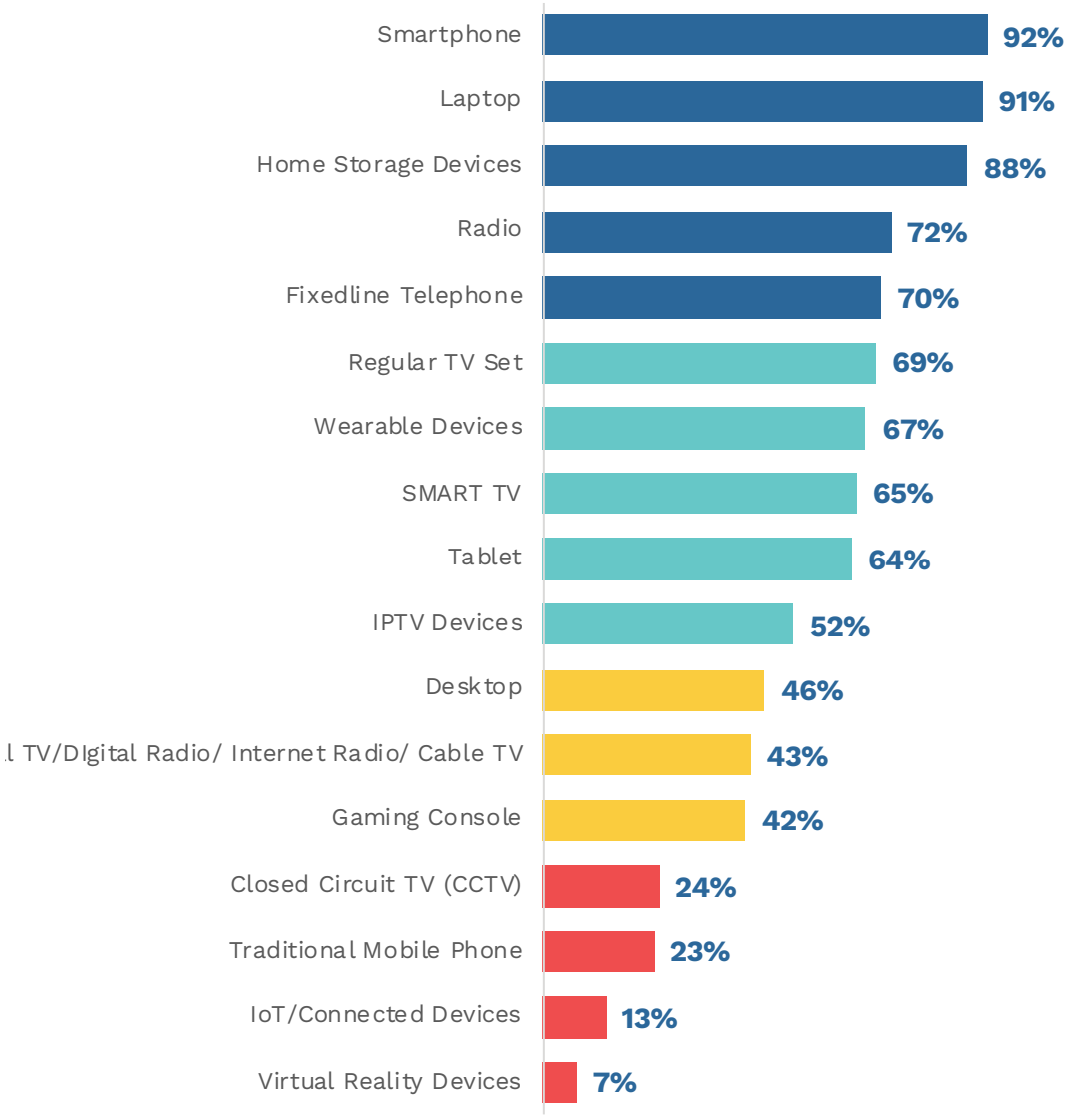


Figure 27: Device Ownership

Devices	2010	2013	2016	2018	2022
Mobile Phone/Smart Phone	99%	98%	99%	88%	92%
Laptop	76%	80%	93%	61%	91%
Home Storage Devices	-	-	52.9%	42%	88%
Radio	83%	77%	75%	63%	72%
Fixed line Telephone	63%	50%	49%	34%	70%
Regular TV Set	99%	83%	64%	36%	69%
Wearable Devices	-	-	-	11%	67%
Smart TV Set	-	7%	32%	23%	65%
Tablet	-	44%	62%	33%	64%
IPTV	-	-	18%	2%	52%
Desktop	51%	38%	39%	18%	46%
Digital TV Set	-	67%	40%	54%	43%
Gaming Console	-	-	40.7%	18%	42%
CCTV	-	-	-	6%	24%
Traditional Mobile Phone	-	-	-	12%	23%
IoT/Connected Devices	-	-	-	1%	13%
Virtual Reality Devices	-	-	-	1%	7%

Note: the dash (-) refers to data not collected for that particular year.

Table 3 Daily Device Usage

From comparison with previous years, device ownership patterns have undergone a significant transformation, with smart phones and laptops becoming the dominant devices in 2022, which allow for greater internet access and mobility.

This is a contrast from device ownership in 2010, where Regular TV Set was the top device owned (99%), while laptop ownership was only at 76%. In 2010, Laptop ownership stood at 76%, while Regular TV Set ownership was high at 99%.

In addition, by 2022 a sharp increase in the ownership of smart and emerging technology devices has been observed, particularly wearables, SMART TV sets, IoT/ connected devices and Virtual Reality devices.

6.2 Device Usage Frequency

The top devices used daily are smartphones (89%), laptops (51%), Smart TVs (46%), radios (45%) and wearable devices (such as smart watches and fitness trackers) (44%).

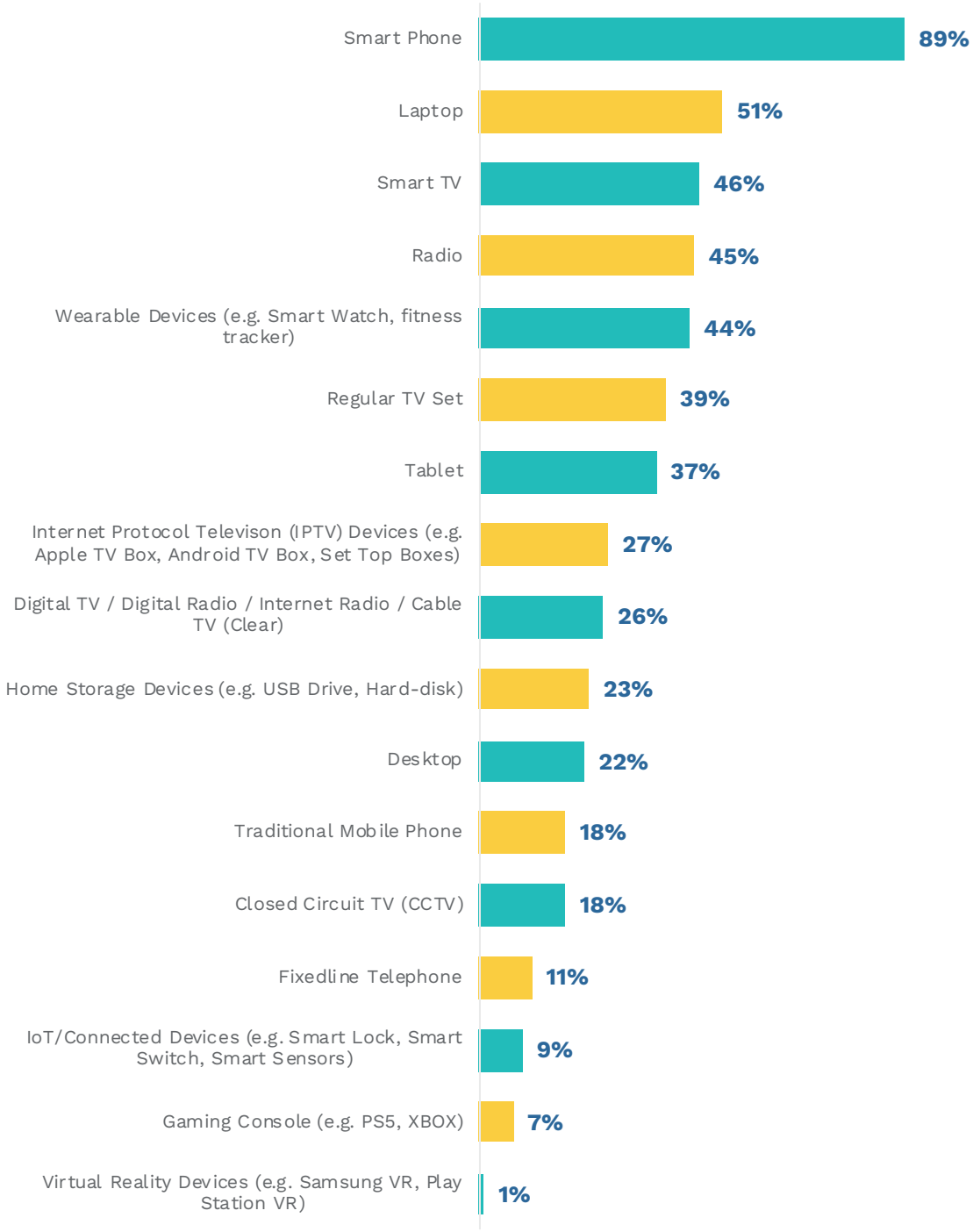


Figure 28: Daily Device Usage

6.3 Mobile Phone Activities

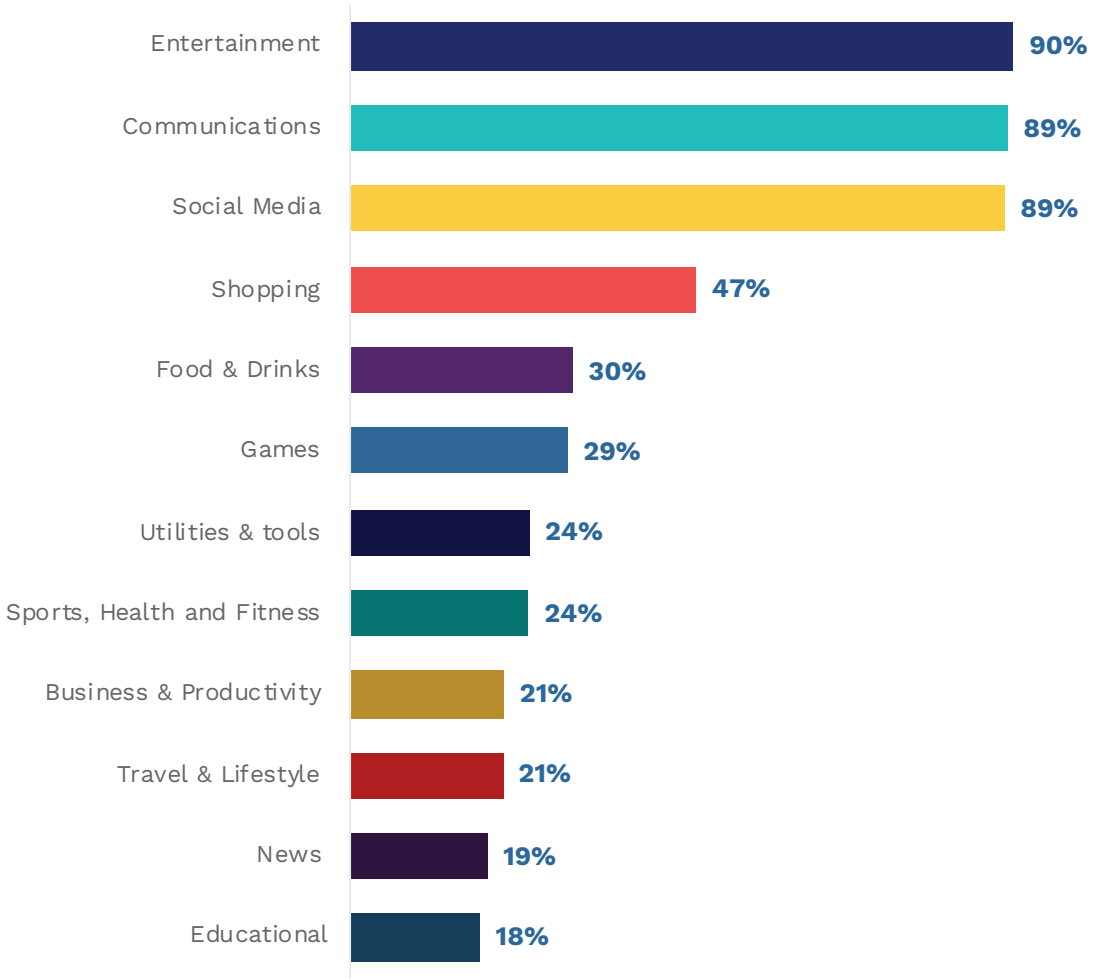


Figure 29: Mobile Application Categories

The top five mobile applications most used by individuals are for the following purposes: 1) Entertainment (89.8%); 2) Communication (89.0%); 3) Social Media (88.6%); 4) Shopping (46.8%); and 5) Food and Drinks (30.1%).

6.4 Social Media Activities

6.4.1 Types of Social Media Activities

Respondents were asked to indicate the purpose of utilising social media applications and the frequency of such use.

Social media is most frequently used (on a daily basis and several times in a week) for receiving news feeds (73%) and general social media use (72%), which includes status updates, sharing video, photo, music, keeping in touch with friends. Other uses are less frequent in comparison.

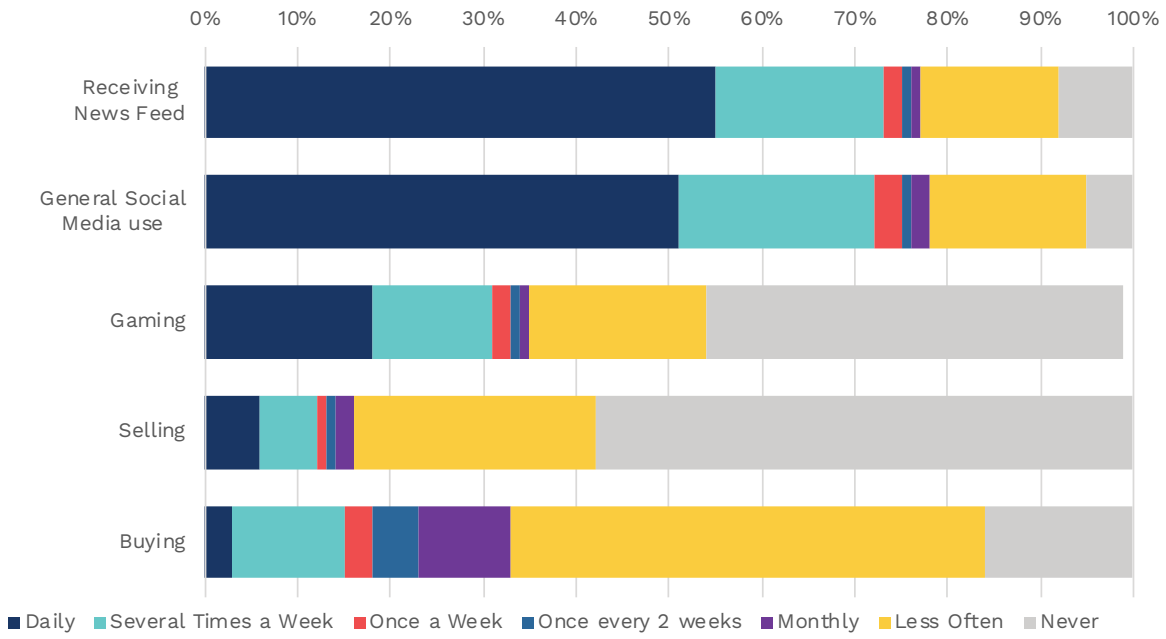


Figure 30: Frequency of Social Media Activities, by Type

Type of Activity	Daily	Several Times a Week	Once a Week	Once every 2 weeks	Monthly	Less Often	Never
Receiving News Feed	55%	18%	2%	1%	1%	15%	8%
General Social Media use (e.g. status up-dates, sharing video, photo, music, keeping in touch with friends)	51%	21%	3%	1%	2%	17%	5%
Gaming	18%	13%	2%	1%	1%	19%	45%
Selling	6%	6%	1%	1%	2%	26%	58%
Buying	3%	12%	3%	5%	10%	51%	16%

Table 4 Frequency of Social Media Activities, by Type

6.4.2 Duration of Daily Social Media Activities

The average daily time spent on social media activities is 1.9 hours per day.

The survey revealed that most daily social media activities were focused on 'Receiving News Feeds' (or browsing through social media), which had the highest average amount of time spent daily on this activity (3.35 hours per day), followed by 'General Social Media Use' with an average of 2.25 hours per day, then gaming, selling and buying through social media.

Activity	Duration of Activity				
	10 – 12 hours	6-9 hours	3-5 hours	1-2 hours	0 hours
Receiving News Feed	4%	4%	17%	64%	11%
General Social Media use (.e.g status up-dates, sharing video, photo, music, keeping in touch with friends)	8%	11%	27%	46%	8%
Gaming	2%	3%	16%	32%	47%
Selling	1%	1%	7%	31%	60%
Buying	1%	2%	12%	64%	21%

Table 5 Duration of Social Media Activities

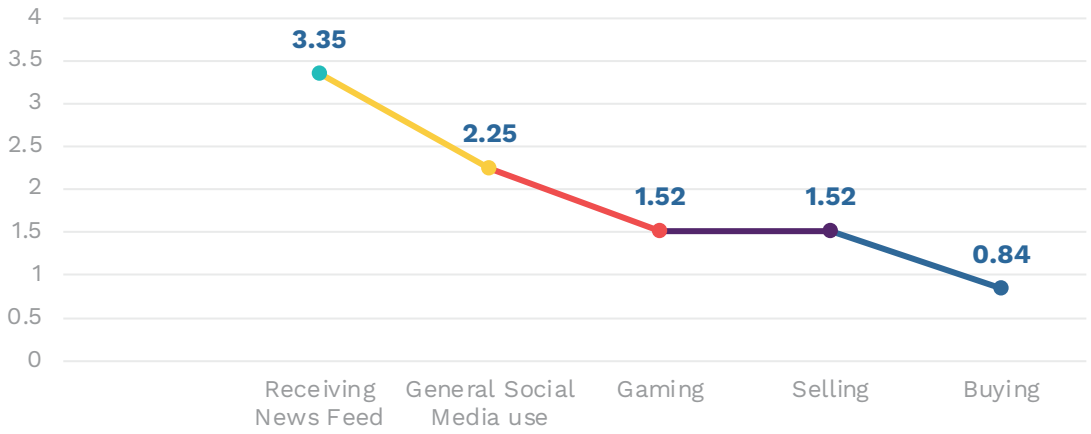


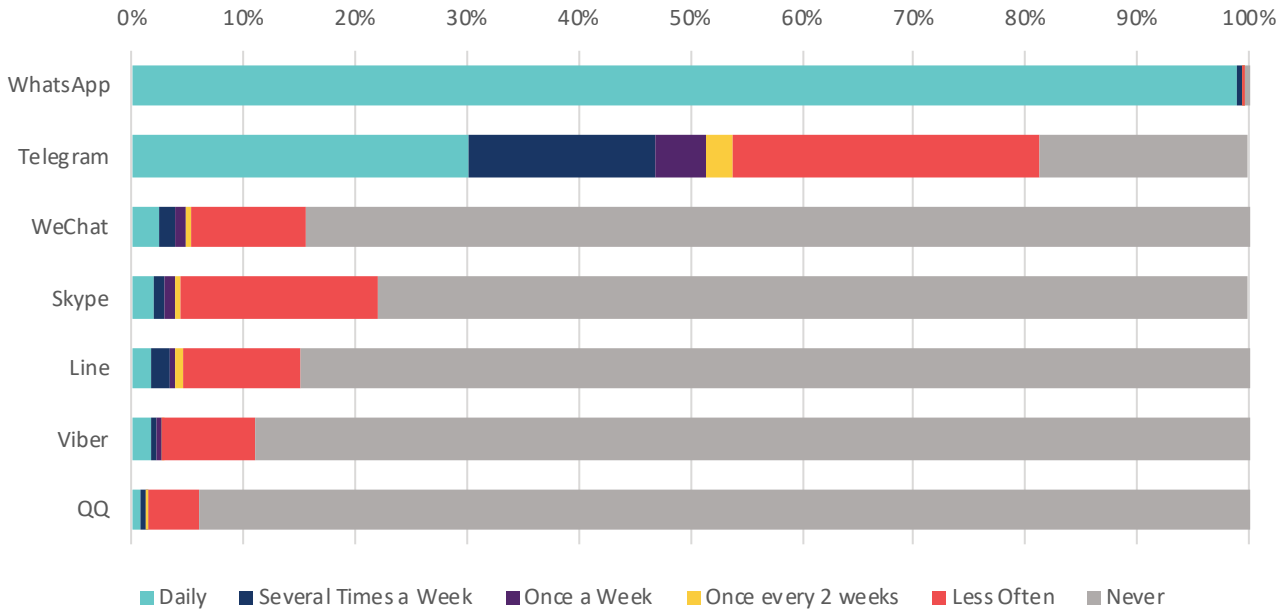
Figure 31: No. of Hours Spent Daily on Social Media Activities

6.4.3 Social Media & Communication Applications

The preferred communication or instant messaging application among Bruneians is WhatsApp, which is used by 99% of individuals on a daily basis. This is followed by Telegram (used by 30.2% daily) and WeChat (used by 2.4% daily).

Whereas, the top social media applications used outside of communication purposes (including visual content sharing and music streaming / sharing) are Instagram, which is used daily by 69.4% of individuals; YouTube (used daily by 68.5%); and Facebook (used daily by 51.8%).

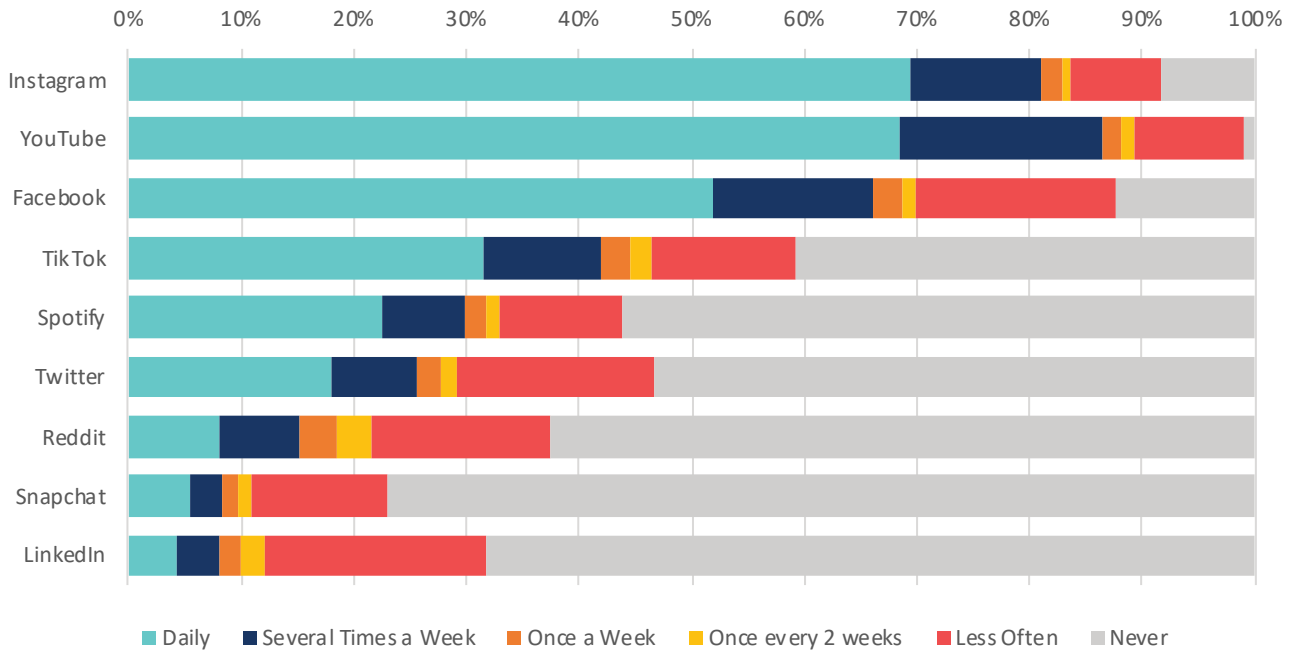
Use of Communication Applications



Application	Daily	Several Times a Week	Once a Week	Once every 2 weeks	Less Often	Never
WhatsApp	98.8%	0.5%	0.1%	0.1%	0.2%	0.3%
Telegram	30.2%	16.6%	4.6%	2.4%	27.4%	18.7%
WeChat	2.4%	1.4%	1.0%	0.4%	10.5%	84.4%
Skype	1.9%	1.1%	0.8%	0.5%	17.8%	77.8%
Line	1.8%	1.5%	0.7%	0.5%	10.7%	84.9%
Viber	1.7%	0.6%	0.4%	0.1%	8.2%	89.1%
QQ	0.7%	0.5%	0.1%	0.1%	4.7%	94.0%

Figure 32: Frequency of Use of Communication Applications

Use of Other Social Media Applications



Application	Daily	Several Times a Week	Once a Week	Once every 2 weeks	Less Often	Never
Instagram	69.4%	11.7%	1.7%	0.8%	8.0%	8.4%
YouTube	68.5%	18.0%	1.7%	1.0%	9.9%	0.8%
Facebook	51.8%	14.2%	2.7%	1.2%	17.7%	12.4%
TikTok	31.6%	10.3%	2.7%	1.9%	12.8%	40.7%
Spotify	22.5%	7.3%	1.9%	1.2%	10.9%	56.2%
Twitter	18.1%	7.5%	2.1%	1.5%	17.5%	53.3%
Reddit	8.0%	7.3%	3.2%	3.2%	15.7%	62.5%
Snapchat	5.5%	2.9%	1.3%	1.2%	12.0%	77.0%
LinkedIn	4.2%	4.0%	1.9%	2.0%	19.7%	68.2%

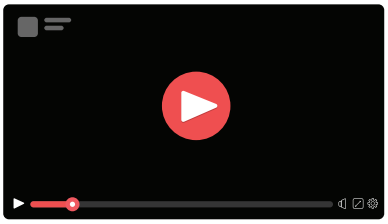
Figure 33: Frequency of Use of Other Social Media Applications

6.5 Streaming Services

45% of respondents subscribe to streaming services, with 92% of these respondents subscribing to video streaming services and only 44% to audio streaming services. This indicates a preference for video streaming services among Bruneians.

45%

of respondents subscribe to Streaming Services (Audio and/or Video)



92%

Subscribe to Video Streaming Services

44%

Subscribe to Audio Streaming Services

Figure 34: Streaming Services and Type of Services

6.6 Use of Local Web or Mobile Applications

The most frequently used local web / mobile applications that are used daily up to once every 2 weeks are online banking applications, BruHealth and MyDST.

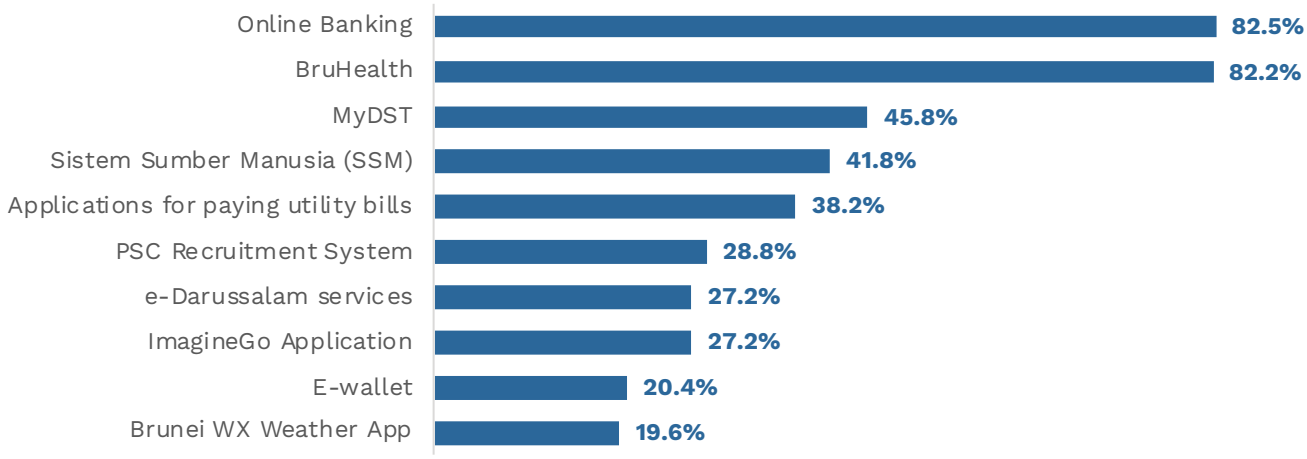


Figure 35: Top 10 Most Frequently Used Local Web or Mobile Applications

6.7 Digital Banking

The results show the preferred method of accessing banking services is mobile banking via smartphone, where 76% of respondents use this method daily up to once every 2 weeks.

Nonetheless there is still the need for physical services, such as the requirement for ATMs (frequented by 72% of individuals) and Visiting a Bank Branch (frequented by 22% of individuals).

Note: Due to data limitations, the analysis is based on the possibility of including those who do not have a bank account or access to banking services.

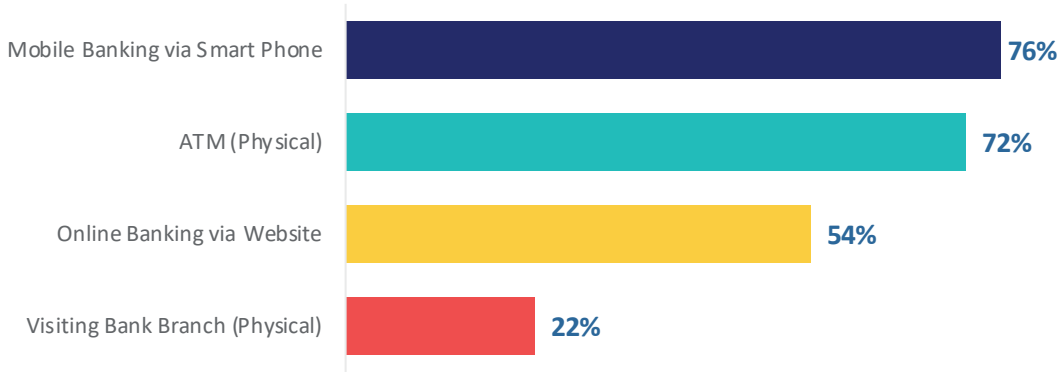


Figure 36: Most Frequently Used Methods of Accessing Banking Services (i.e. accessed on a daily basis up to once every 2 weeks)

7

ICT Skills

7 ICT Skills

This section focuses on the level of digital literacy among individuals, and uses ICT skills categories that are identified by the International Telecommunication Union (ITU) ICT skills framework, along with information on other digital skills.

7.1 Level of Digital Skills

Based on the ITU 2020 Digital Skills Assessment Guidebook digital skill levels can be divided into three (3) categories :

1. **Basic skills:** These provide the foundation for using ICTs. Basic skills cover hardware (for example using a keyboard and operating touch-screen technology), software (for example word processing, managing files on laptops, managing privacy settings on mobile phones), and basic online operations (for example email, search, or completing an online form). The proportion of individuals said to have Basic skills is based on those with any of the following activities:

    i. Copying or moving a file or folder,

    ii. Using copy and paste tools to duplicate or move information within a document,

    iii. Sending e-mails with attached files, and

    iv. Transferring files between a computer and other devices.

2. **Intermediate / Standard skills:** These skills enable people to use digital technology in “meaningful and beneficial ways”. The proportion of individuals said to have Intermediate/ Standard skills is based on those with any of the following activities:

    i. Using basic arithmetic formula in a spreadsheet;

    ii. Connecting and installing new devices;

    iii. Creating electronic presentations with presentation software;

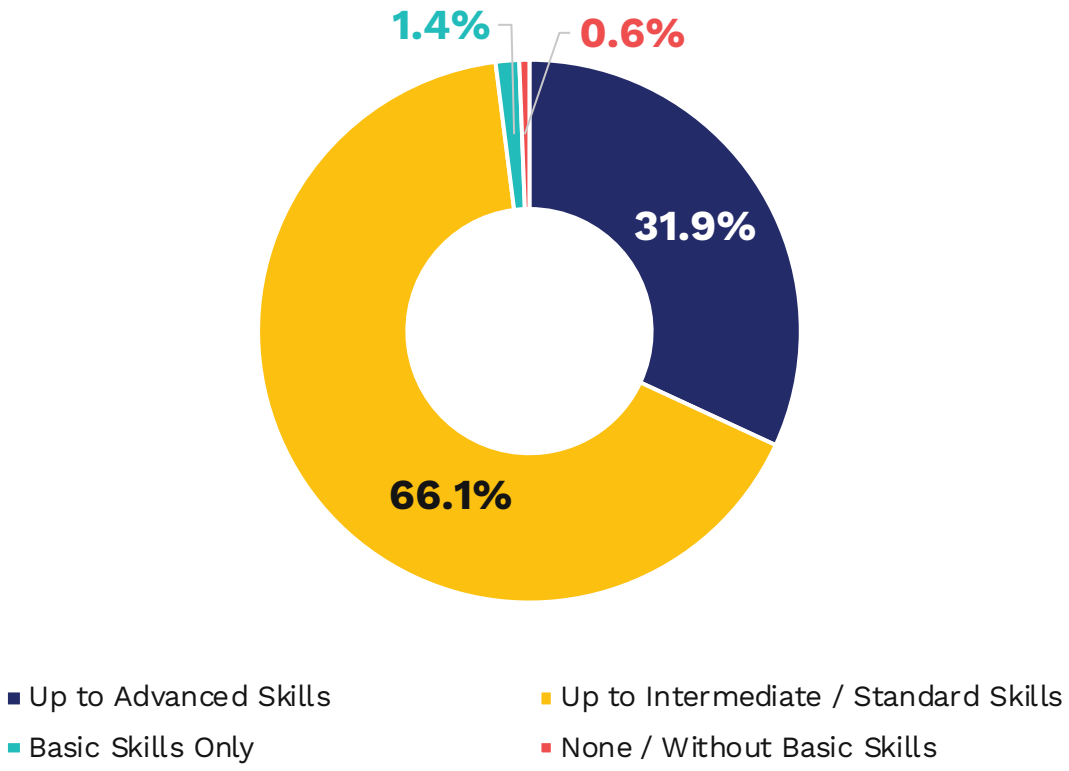
    iv. Finding, downloading, installing and configuring software;

    v. Changing password to access devices; and

    vi. Updating Anti-Virus software.

3. **Advanced skills:** ICT specialists use highly specialised, advanced skills in professions such as computer programming, software development, data science and network management. The proportion of individuals said to have Advanced skills is based on those who are capable of writing a computer programme using a specialised programming language.

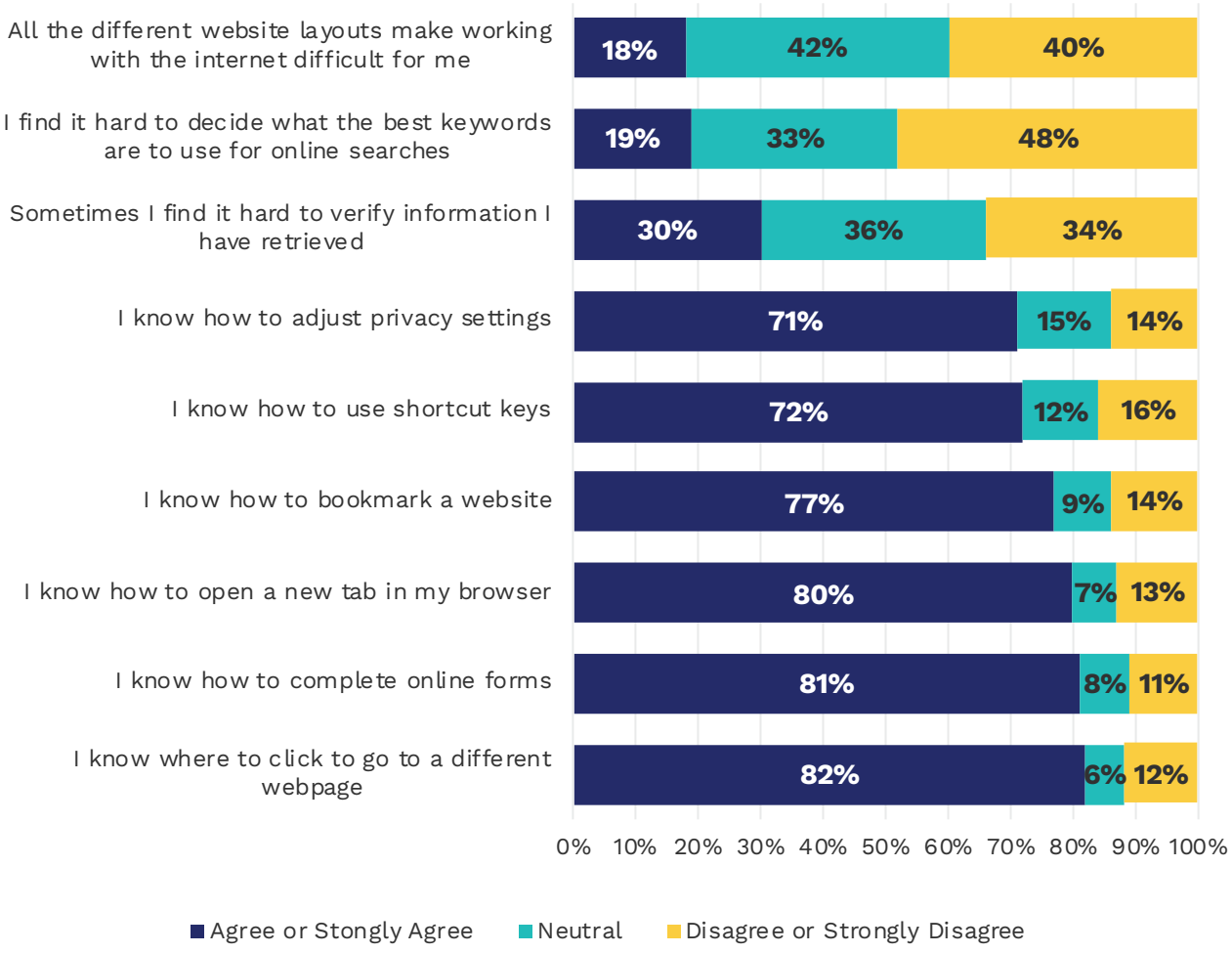
32% of respondents have advanced digital skills, while the majority of respondents (66%) have intermediate / standard digital skills.



7.2 Internet and Online Skills

Respondents were asked if they could perform a number of activities related to general online use, conducting online searches and verifying information found online.

The survey revealed that the majority of respondents had the necessary general operational skills to perform online functions and activities, including seeking information online, but up to 30% faced difficulties with verifying information retrieved from online sources.



7.3 Digital Content Creation

The ability or confidence to create or edit digital content is relatively low, with the only 38% of respondents able to create something new from existing online images, music or video that are safe to download.

38% I know how to create something new from existing online images, music or video that are safe to download.

25% I am confident about writing and commenting in blog, website or forum online.

25% I know how to make basic changes to the content that others have produced.

24% I would feel confident putting video content I have created online.

7.4 Online Safety

Generally, over 80% of respondents were aware and able to perform basic activities to ensure their online safety.

88% I am careful to make my comments and behaviours online.

86% I know which information I should and shouldn't share online.

86% I know how to add and remove friends from my contact lists.

83% I know how to change who I share content with.

8

ICT Access and Usage for Special Needs

8 ICT Access and Usage For Special Needs

This section provides information on the access and usage of ICT among households with Special Needs household members and Special Needs individuals.

8.1 ICT Access for Special Needs Households

Figure 37: ICT Accessibility for Special Needs

9% of the respondents have at least 1 household member with special needs.

Out of these households, 69% use ICT to do their daily activities.

69%
Use ICT to do their daily activities

Figure 38: ICT Device Use for Daily Activities in Special Needs Household

8.2 Devices or Technologies Used by Household Members with Special Needs

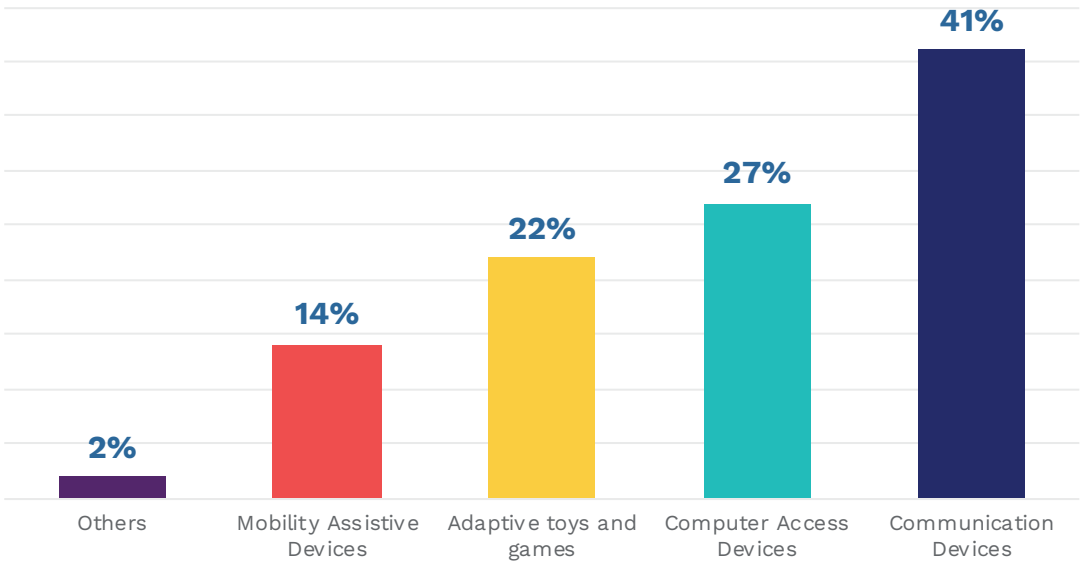


Figure 39: Devices or Technologies Used by Special Needs Household Members

The findings show the top four devices are: 1) Communication devices (41%), 2) Computer access devices (27%), 3) Adaptive toys and games (22%), and 4) Mobility assistive devices (14%).

8.3 Specific Assistive Features Required

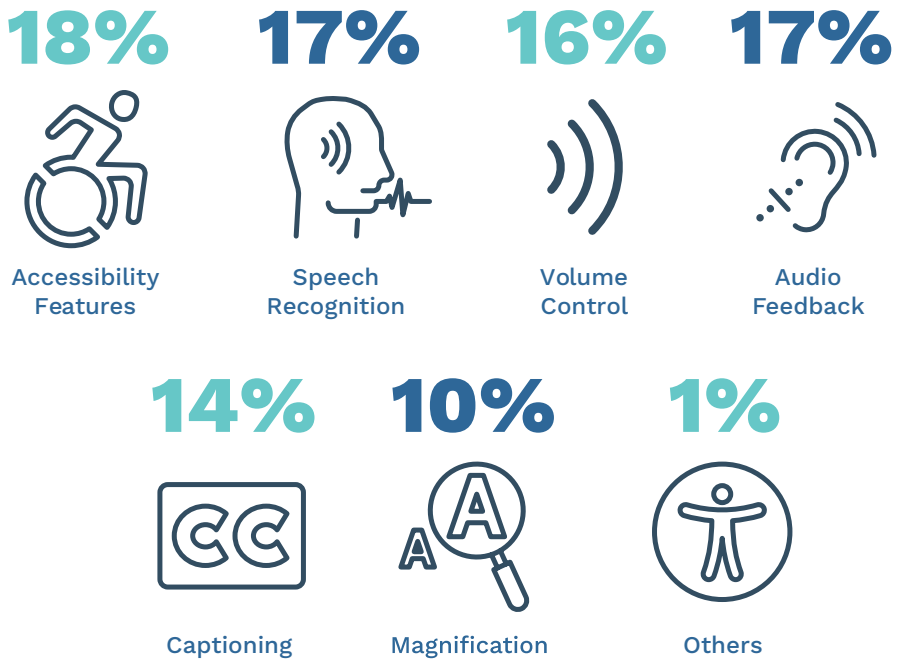


Figure 40: Special Assistive Features Used by Respondents with Special Needs Household Members

It was noted that most (38%) respondents indicated no special assistive features were required. However, it should be noted that the nature of 'special needs' of household members was not explicitly mentioned. Nonetheless, a small proportion of respondents (10%-18%) indicated that they used specific assistive features.

8.4 Reasons for not Having Devices or Technologies for Special Needs

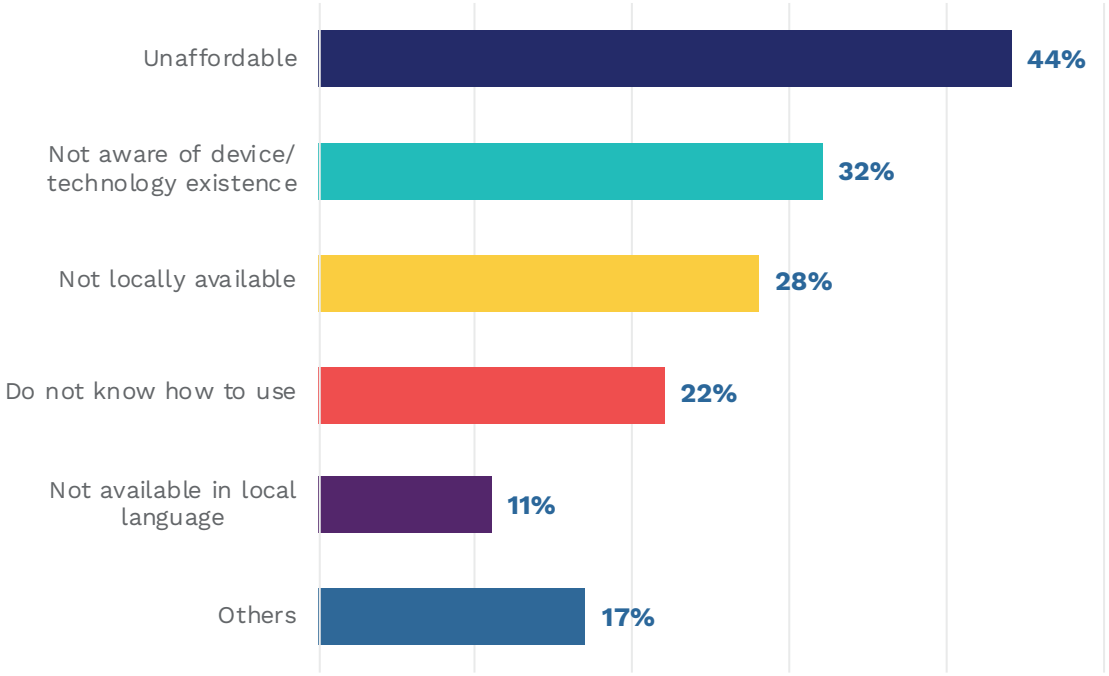


Figure 41: Reasons For Not Having Special Needs Device or Technology

The majority of respondents (44%) claimed that devices or technology for special needs are unaffordable. This is followed by lack of awareness of special needs devices or technology (32%), and such devices or technology are not locally available (28%). Special training and assistance may need to be provided as 22% of respondents do not know how to use special needs devices or technology.

8.5 Awareness and Support for ICT Access and Usage for Special Needs

The majority (60%) of respondents are unsure whether there is enough support and awareness to people with special needs in terms of access and use of ICT. 25% think support is unavailable, while only 15% believe support is available.

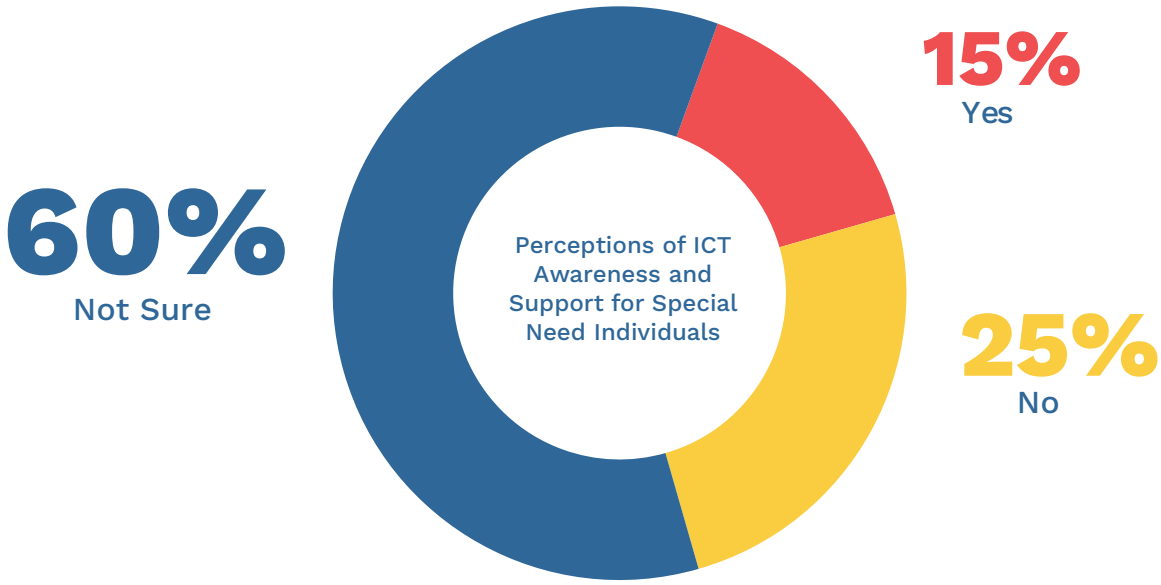


Figure 42: Perceptions of ICT Awareness and Support for Special Needs Individuals

9

Public Perceptions of ICT and Digital Wellbeing

9 Public Perceptions of ICT and Digital Wellbeing

This section provides information on how digital activities are perceived by individuals to have an impact on their lifestyle and wellbeing.

9.1 Benefits of ICT and Internet Use

Respondents were asked whether they agreed or disagreed with statements on the pros and cons of ICT and internet use. At least of 71% of respondents agreed or strongly agreed that ICT and internet usage yields all of the following benefits:

- Purchasing goods and services online has time-saving effects
- Task automation increases efficiency and frees up time
- Easier information access improves quality of work
- Online public services (e-Government Services) lead to time-saving effects
- Online communication with green technologies and energy informatics can provide better environmental climate for citizens
- New ICT-based applications increase monitoring and public safety, but can also be used for mass surveillance and crime prevention.

However, 85% of respondents also agree or strongly agree that the internet increases the risk of scams and theft in e-commerce and online banking

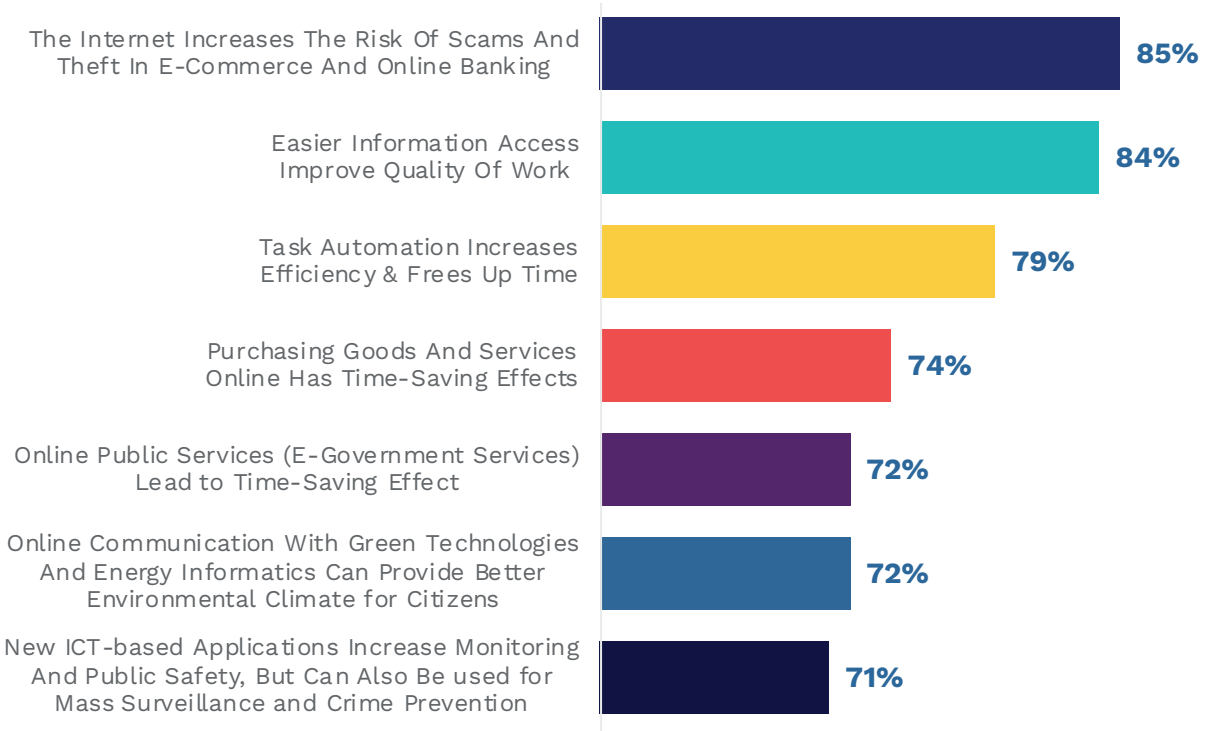


Figure 43: Proportion of Respondents in Agreement with Perceived Advantages and Disadvantages of ICT

9.2 Digital Wellbeing

This section seeks respondents' views on how digital trends have impacted their behaviour and mental wellbeing, particularly arising from the ubiquitous use of devices (such as phones) that have enabled wider online access to improve connectedness and the movement of more services and information online.

In addition to the benefits from recent ICT developments have been highlighted in the previous section, respondents highlighted the following top benefits:

67% Information access improves quality of learning and teaching via online learning

67%
If I have a question, I reach my phone for immediate answer (i.e. source of information access)

61%
Mobile and distance communication provides new opportunities for religious activities

However, the current digital trends have also contributed to a number of negative impacts to individuals, with the top concerns relating to phones being a source of distraction; and social pressure and anxiety arising from constant phone and internet use.

Source of Distraction

61% Need to check phone right away if it vibrates or makes sound.

60% Lose track of time when on phone.

39% Spend more time on social media than desirable.

36% Distracted by my phone when I'm with family and friends.

52% Feel like they are missing something important at work/university/school if they don't check phone.

47% Internet can increase social pressure and stress.

32% Feel overwhelmed by the amount of unread emails / messages / texts I have.

Source of Social Pressure and Anxiety

Source of Sleep Disruption

36% Stay on phone instead of going to sleep when intended.

9.3 Parental Concerns

50% of respondents identified themselves as parents and provided their concerns about their children's access and use of the internet. From these respondents, over 75% are concerned about contents, contacts, conduct and the awareness of digital security when their children use the internet.

96% of parents are concerned about the content (what children are able to see or view online), 82% are concerned about digital security awareness (the types of information that can be shared or accessed), 80% have concerns about contacts (who children can speak to or meet online) and 76% are worried about conduct (how children present themselves and engage with others).

Some expressed particular concerns about: scammers; gadget addiction and distractions; cyberbullying; access to inappropriate content; negative influences from emulating bad behaviour or negative ideologies seen online; cybercrime (paedophiles, grooming and cyber exploitation of children) and identity theft.

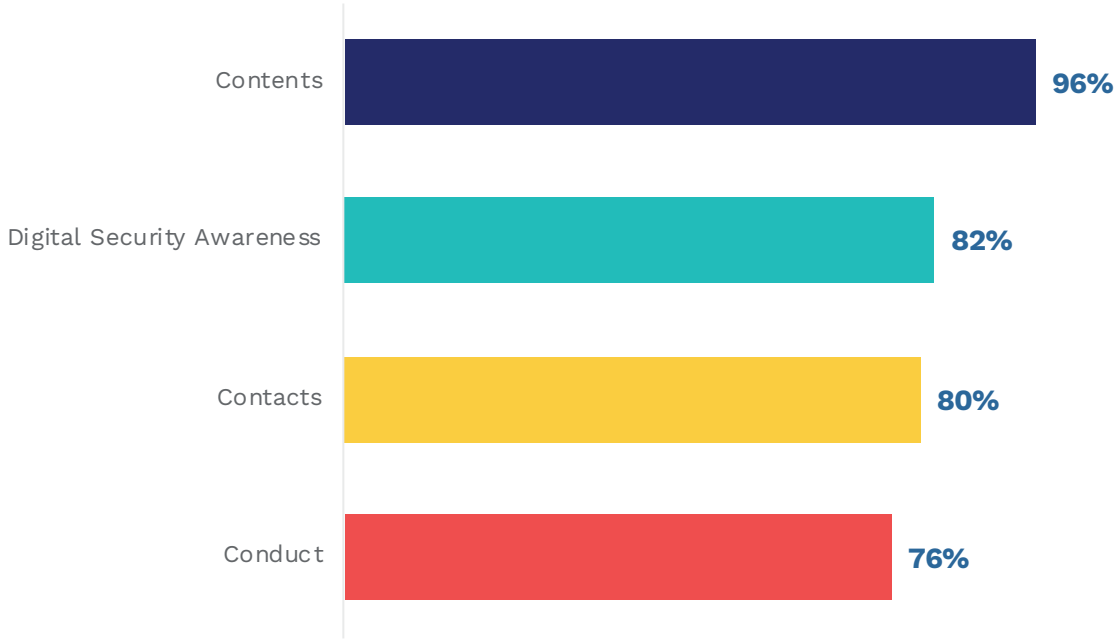
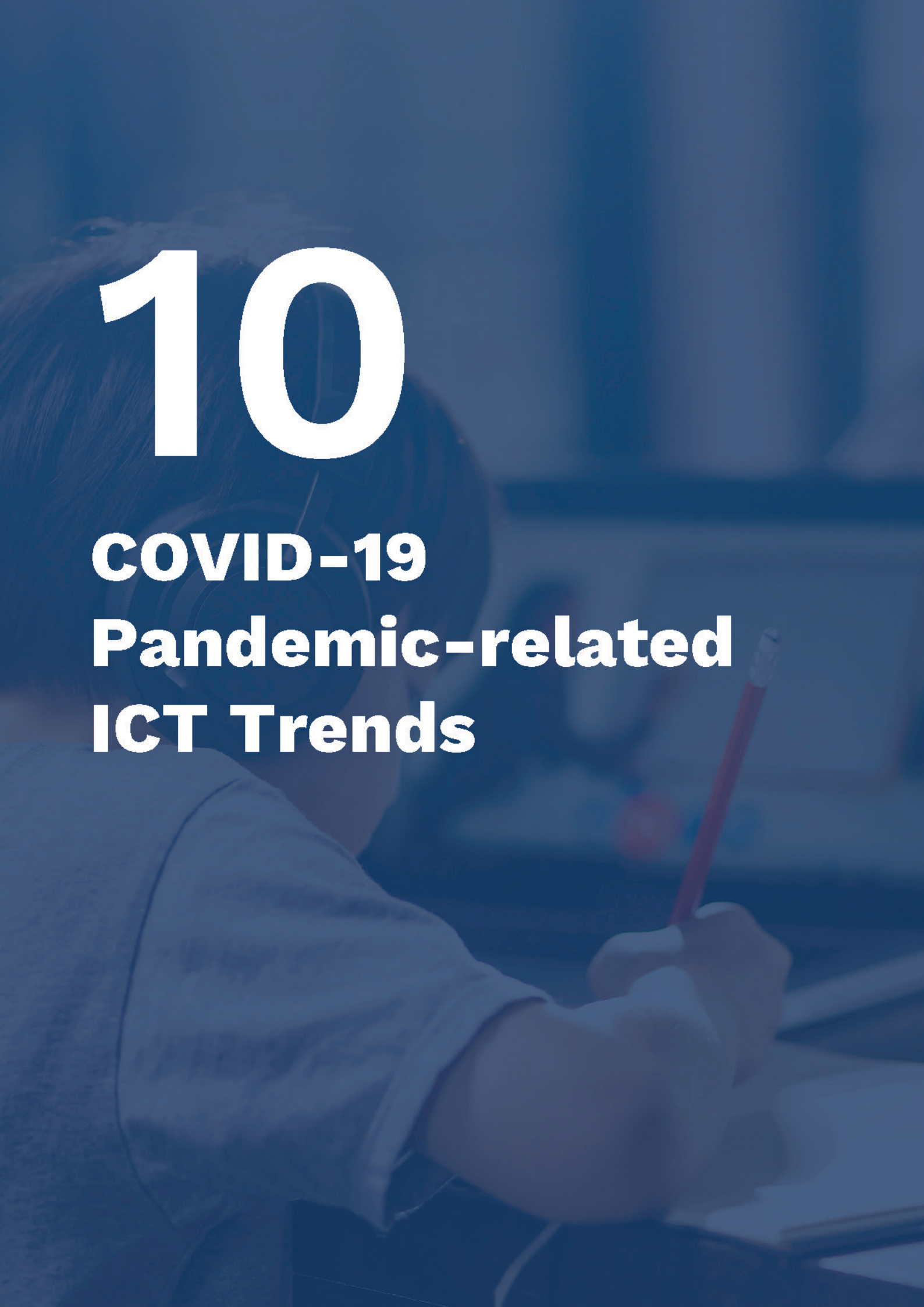


Figure 44: Top Parental Concerns about Child Access and Use of the Internet



10

COVID-19 Pandemic-related ICT Trends

10 COVID-19 Pandemic-Related ICT Trends

This section provides information on changes in ICT usage that had been observed and linked with the COVID-19 pandemic, this includes the temporary increase in remote work or work from home (WFH) and e-learning to mitigate the spread of COVID-19.

10.1 Work from Home (WFH) and e-Learning Participation

38% of respondents had engaged in work from home (WFH) on a daily basis or several times a week, while 39% of respondents had undergone online learning or e-learning from home on a daily basis or several times a week.

10.2 Fixed Broadband Data Usage for Work From Home (WFH) or e-Learning

62% of respondents estimate that the amount of data used for doing work or studying from home is within the range of 200GB and 800GB. 17% indicated that their estimated data usage exceeds 800GB, while around 21% need less than 200GB of data.

However it should be noted that the nature of work may vary among individuals and was not captured through this survey.

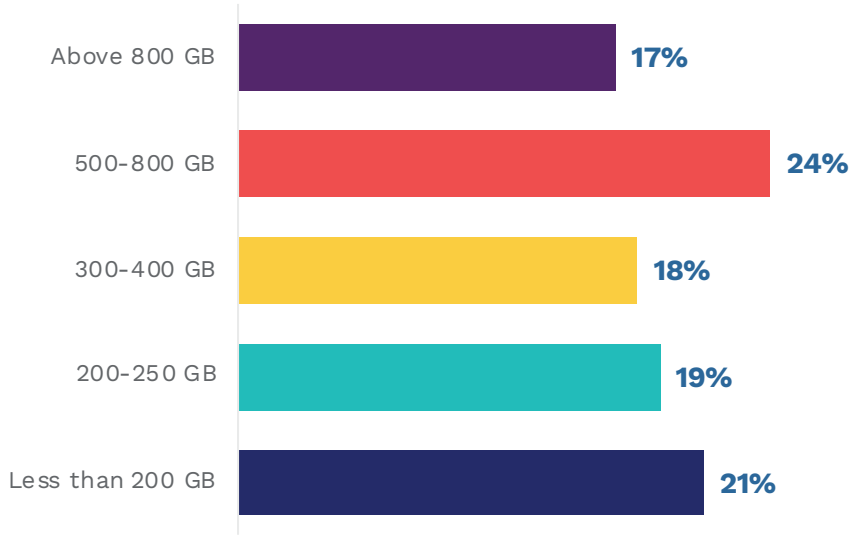


Figure 45: Fixed Broadband Data Usage for Work from Home or e-Learning

10.3 Fixed Broadband Speed for Work From Home (WFH) or e-Learning

55% of respondents estimated that a fixed broadband speed of up to 90Mbps was sufficient for doing work or studying from home. Whereas, 31% required speeds of 100 Mbps to 200 Mbps, and only 14% required speeds above 200Mbps.

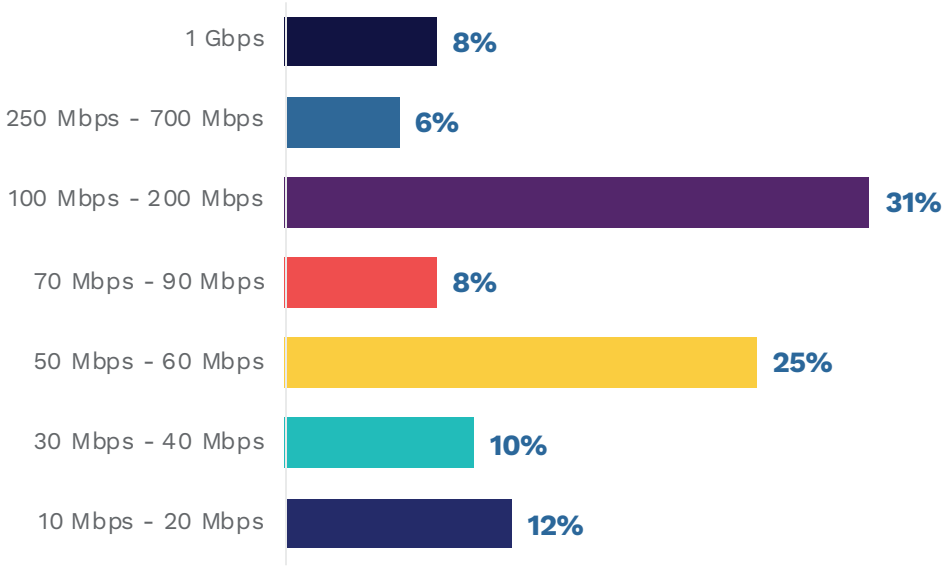


Figure 46: Fixed Broadband Speeds required for Work from Home or e-Learning

10.4 Mobile Broadband Data Usage for Work From Home (WFH) or e-Learning

For respondents using mobile broadband data to support work from home or e-learning activities, around 50% only required up to 15GB of data to work or study from home. 27% estimated that such activities required more than 15GB and up to 100 GB of data, while 23% required above 100GB of data and unlimited data.

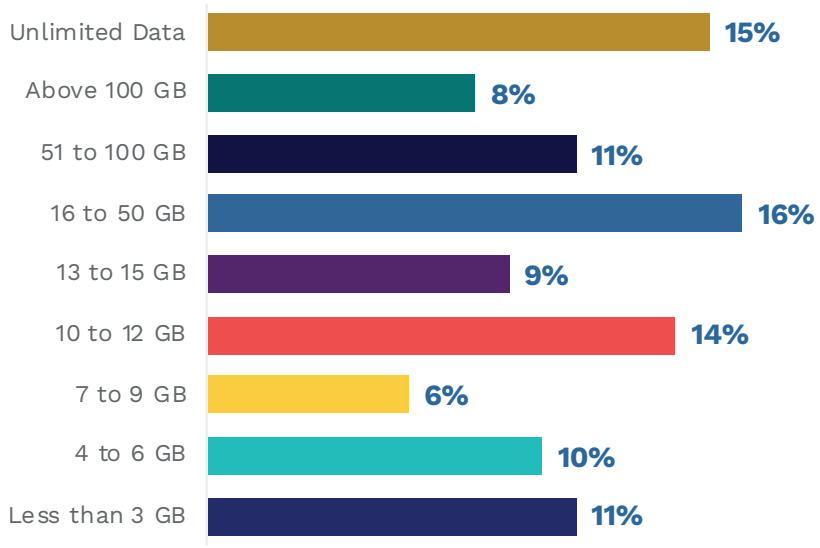


Figure 47: Mobile Broadband Data Usage for Work from Home or e-Learning

10.5 Devices Used for Work From Home (WFH) or e-Learning

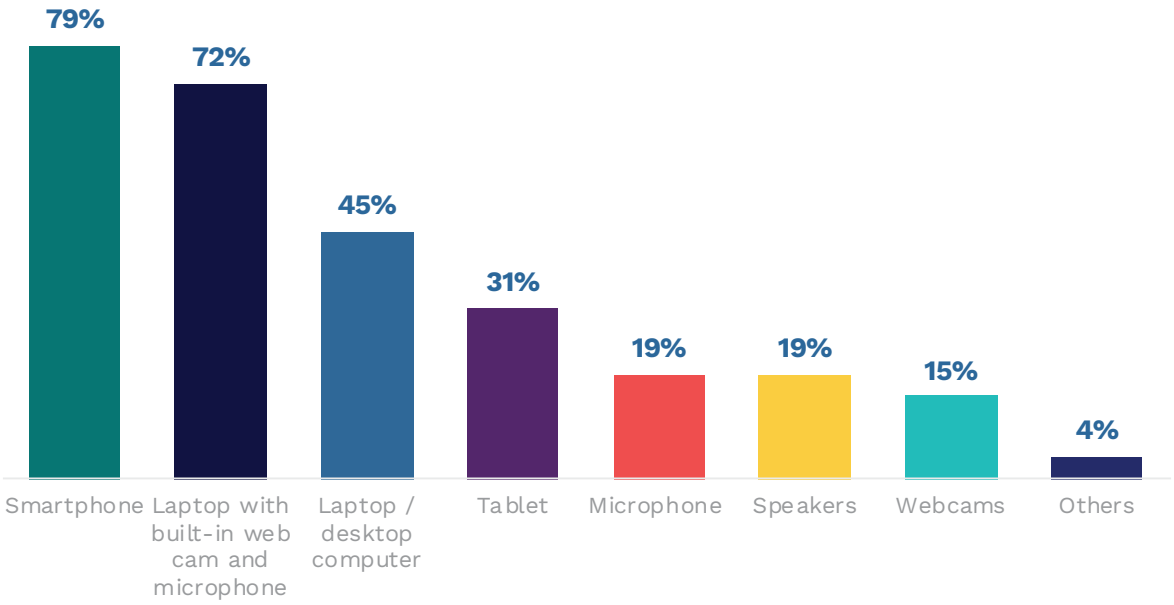


Figure 48: Devices Used for Work From Home and e-Learning

The top three devices used for WFH and/or e-learning were 1) Smartphone (79%); 2) A laptop with built-in web cam and microphone (72%); and 3) Laptop (without built-in web cam and microphone) or Desktop computer (45%).

10.6 Software For Work From Home (WFH) or e-Learning

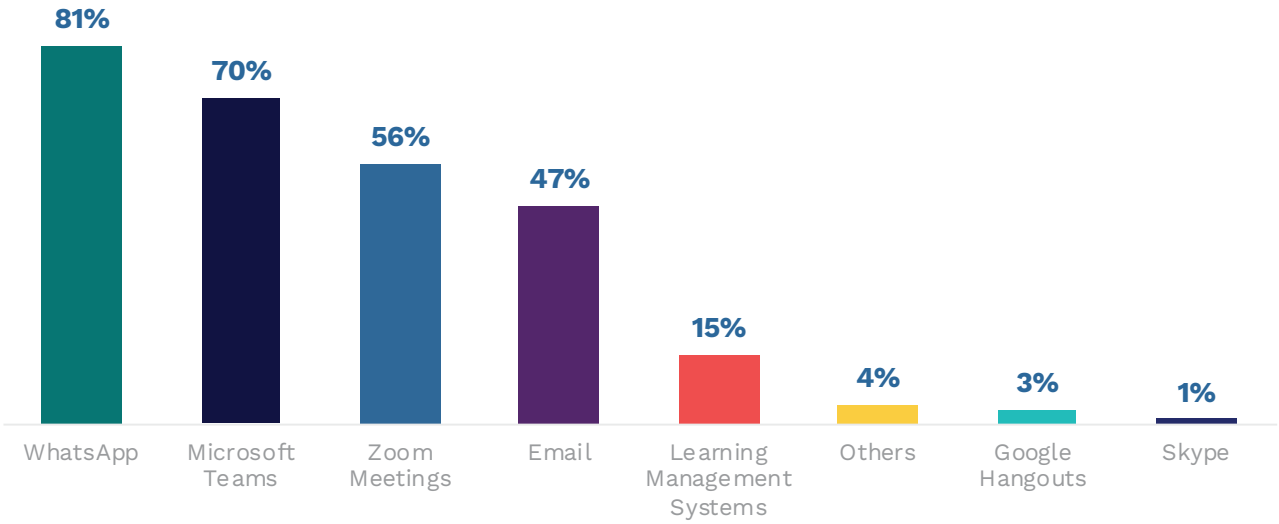


Figure 49: Software Used for Work From Home and e-Learning

The top three software used for working from home and e-learning are 1) WhatsApp; 2) Microsoft teams; and 3) Zoom Meeting. WhatsApp is used extensively for both e-learning and WFH, while also being the most popular social media application in Brunei Darussalam.

10.7 Reasons for Software Preference

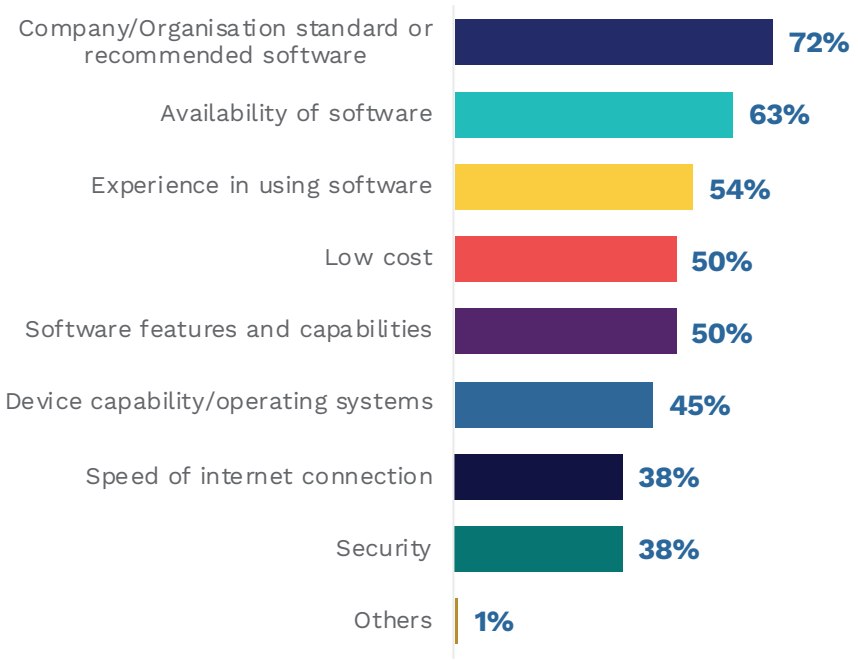


Figure 50: Reasons for Software Preferences

Result shows that the preference for software or applications used in e-learning and Work From Home (WFH) is primarily driven by company / organisation decisions and recommendations (72%), as well as the software availability (63%) and users' experience with such software (54%). Other reasons include low cost (50%) and features and capabilities (50%).

10.8 Productivity and Efficiency of Working From Home (WFH) and e-Learning

The majority of respondents (42%) feel neither productive nor efficient when conducting e-learning and work from home (WFH). However, 33% felt more productive and efficient when working from home or during e-learning, while 25% did not.

Figure 51: Productive & Efficient e-Learning or Work from Home

10.9 Feasibility of Conducting e-Learning and/or WFH

Some key findings on the feasibility of conducting remote work or learning are as follows:

- 78% of respondents indicated that they have the knowledge and tools to use the online tools for them to work or learn remotely.
- 77% have the necessary resources (devices and connection) that support these online tools.
- 74% were able to learn to use the online tools by themselves.
- 66% indicated that the online tools are mostly available and easy to use.

Nonetheless some challenges were faced by a proportion of respondents in relation to conducting remote work or learning:

- 48% had to purchase additional new or upgrade devices to support work from home or e-learning activities.
- 47% felt they had to spend a lot to accommodate work from home or e-learning activities.
- 38% encountered difficulty in adapting teaching styles or learning strategies in the online environment.
- 16% felt support services (training / manuals / helpdesk) were not readily available or sufficiently provided by schools or organisations.

10.10 Benefits and Challenges of Working From Home (WFH) and e-Learning

Respondents identified the following as the top benefits from working from home or e-Learning (with the highest number of respondents in agreement): 1) Less travel times and reduction in travel costs (81%); 2) More time with close family members (68%); 3) Able to learn or do work at own pace (67%).

Whereas, the top challenges related to working from home or e-learning are: 1) the need for self-discipline or good time management (68%); 2) poor internet connectivity (62%) ; 3) more preparation needed for e-learning activities (52%) (this may be reflective of the transitional period from physical classes to online learning styles and materials).

Statements Regarding Benefits or Challenges of Remote Work and e-Learning	Agree or Strongly Agree
Benefits	
Less travel times and reduce travel costs	81%
More time with close family members	68%
Can learn / do work at own pace	67%
Able to connect and communicate more with teachers/students/ colleagues	49%
Challenges	
Need good time management	68%
Poor Connectivity	62%
More preparation needed for e-learning activities	52%
Lack of opportunity to be on site for technical and operations work	51%
Distractions	49%

Statements Regarding Benefits or Challenges of Remote Work and e-Learning	Agree or Strongly Agree
Lack of access to necessary documents and printing facilities	47%
Mental health issues	44%
Occupied with monitoring other household member's/children's e-learning activities	43%
Lack of IT support and dedicated software and/or devices	35%
Lack of suitable space at home	37%

- END -