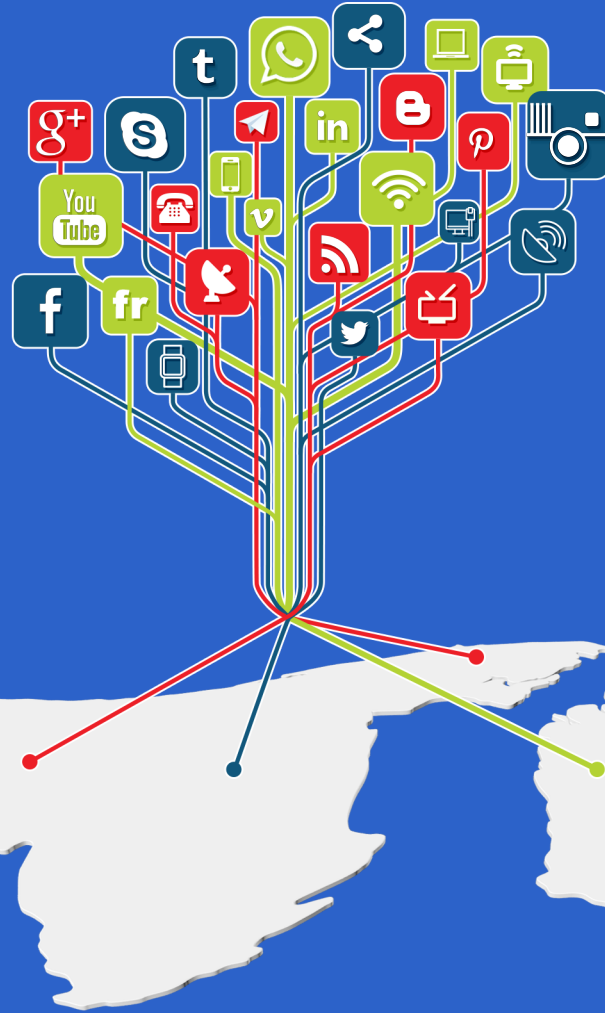




AITI

Authority for
Info-communications
Technology
Industry of Brunei Darussalam



BRUNEI DARUSSALAM

HOUSEHOLD ICT SURVEY REPORT 2016

This page is intentionally left blank

Copyright

This publication is protected by copyright and may only be reproduced for non-commercial use provided that the reproduction is accurate and not used in a misleading context. The source of the material must be identified along with its copyright status. All rights are reserved for brand names, registered trademarks, logos and images.

Disclaimer

This report contains information based on the responses to the Household ICT Survey 2016. It is not the opinion of AITI. Whilst every effort has been made to ensure that the results reported herein are complete, accurate and true, the Authority for Info-communications Technology Industry of Brunei Darussalam does not provide any warranty that the information contained herein is complete, accurate and true. In no event will the Authority for Info-communications Technology Industry of Brunei Darussalam 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.

Contents

COPYRIGHT	01
DISCLAIMER	01
MESSAGE FROM THE CHIEF EXECUTIVE	03
EXECUTIVE SUMMARY	04
1 INTRODUCTION	06
2 METHODOLOGY	06
2.1 Sampling	06
2.2 Data collection and validation	06
2.3 Challenges faced during survey	06
3 DEMOGRAPHICS	07
4 FINDINGS	10
4.1 Household Section	10
4.1.1 <i>Available Devices in Households</i>	10
4.1.2 <i>Internet Access According to Monthly Household Income</i>	11
4.1.3 <i>Household Internet Access</i>	11
4.1.4 <i>Types of Household Internet Access</i>	12
4.1.5 <i>Reasons for Lack of Internet Access</i>	13
4.1.6 <i>Perception of Internet Speed and Cost</i>	13
4.1.7 <i>Home Wireless Network Security</i>	15
4.1.8 <i>Anti-virus Protection on Devices</i>	16
4.1.9 <i>Password Protection on Devices</i>	16
4.1.10 <i>Benefits of Mobile Internet Access</i>	16
4.1.11 <i>Use of Social Media and Messaging Applications</i>	17
4.1.12 <i>Messaging and Social Media Applications by Age</i>	17
4.1.13 <i>Reasons for Using Social Media Applications</i>	18
4.1.14 <i>Frequency of Updating Security Settings for Applications</i>	19
4.1.15 <i>Preferred Radio Stations</i>	19
4.2 Individual Section	21
4.2.1 <i>Most Recent Computer Related Activities</i>	21
4.2.2 <i>Most Common Internet Access Locations</i>	21
4.2.3 <i>Most Recent Online Activities</i>	22
4.2.4 <i>Commonly Used E-Government Services</i>	24
4.2.5 <i>Language of Websites Used</i>	24
REFERENCES	25
LIST OF TABLES	26
LIST OF FIGURES	26
ACRONYMS/ABBREVIATIONS	27
PRODUCTION TEAM	28

Message from the Chief Executive

I am pleased to present the third Household Information and Communications Technology (ICT) Survey report, which focuses on the latest development and trends in ICT in Brunei Darussalam. The report is based on comparable data and indicators which have been set by the International Telecommunications Union (ITU), including also certain indicators which reflect Brunei Darussalam's unique ICT landscape.

Over the past few years, the world has witnessed the growth of ICT in households. According to the ITU, the proportion of households with Internet increased from eighteen percent (18%) in 2005 to forty six percent (46%) in 2015. One of the key findings in this year's report is that household access to the internet stood at seventy five percent (75%), the highest rate when compared to those in 2010 and 2013 respectively.

Despite this good progress, some households are still currently without access to internet and reasons contributing to this are varied and interrelated. Cost, access, interest, knowledge, skills and security are all relevant but their relative importance differs across different individuals and their circumstances.

The information gathered in this survey will provide an empirical basis for policy makers, academics, researchers, tech start-ups, entrepreneurs, ICT industry players and SME's to design, evaluate and implement ICT policies and strategies and adopt solutions to reduce the digital divide. This will also assist AITI and other relevant agencies in shaping Brunei Darussalam's ICT development and encouraging public Internet access, especially in areas where household Internet penetration remains low, over the next few years and beyond.

In closing, I would like to thank everyone who has contributed towards the success of this survey. I am convinced that the findings will provide valuable input in increasing awareness of the vital role ICT will play in the 21st century.

Pg Hj Mohd Zain Bin Pg Hj Abd Razak

Chief Executive

Authority for Info-communications Technology

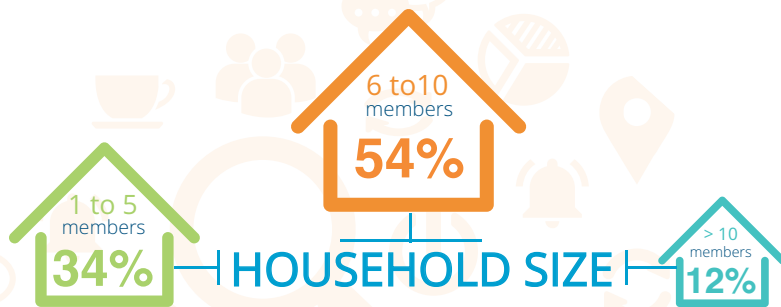
Industry of Brunei Darussalam (AITI)

Executive Summary

The 2016 survey shows an overall improvement in terms of household internet access, perception of internet speed and ownership of ICT devices. There is a continued focus on mobility supported by the increase in mobile data connections and mobile device ownership which points towards the demand for ubiquitous access to online content and services. Challenges identified includes a low adoption rate of online public services and security concerns.

Key findings of the 2016 survey are:

- Households spend approximately eight percent (8%) of their average monthly income on ICT services.
- Most commonly owned technology devices are mobile phones, laptops and tablets.
- There is growth in ownership of Smart TVs which support the rising demand for IPTV services.
- Pay TV, television and TVRO are the top subscription services.
- There is rising demand for IPTV services.
- Household access to internet is reported to be seventy five percent (75%), the highest when compared to 2010 and 2013 (60% & 63% respectively).
- Nine percent (9%) of the households have both fixed and mobile broadband access.
- Internet speeds have improved.
- The top 3 most popular social media applications used are Facebook, Instagram and Twitter.
- The top 3 most popular messaging applications used are WhatsApp, Skype and Telegram.



AVERAGE HOUSEHOLD SIZE IS 5

AVERAGE MONTHLY HOUSEHOLD ICT EXPENDITURE



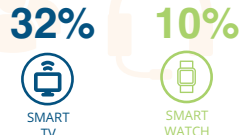
HOUSEHOLDS SPEND 8% OF AVERAGE MONTHLY INCOME ON ICT SERVICES

DEVICES

TOP 3 TECH DEVICES



EMERGING DEVICES



SERVICES

TOP 3 SERVICES

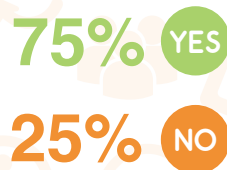


EMERGING SERVICES

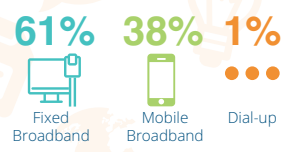


INTERNET

INTERNET ACCESS

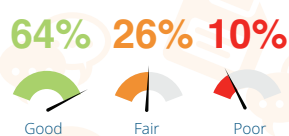


TYPE OF INTERNET ACCESS

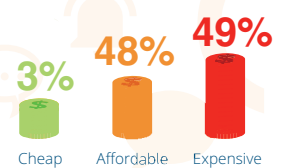


9% OF HOUSEHOLD HAVE BOTH FIXED AND MOBILE BROADBAND

PERCEPTION OF INTERNET SPEED

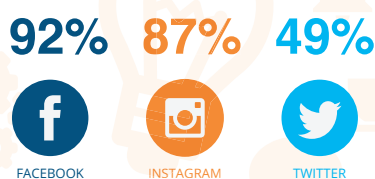


PERCEPTION OF INTERNET COST

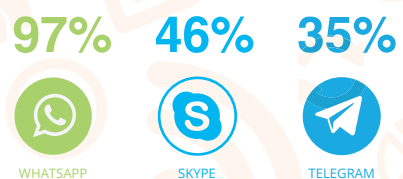


SOCIAL MEDIA

TOP 3 SOCIAL MEDIA APPS



TOP 3 MESSAGING APPS



1 Introduction

The Brunei Darussalam Household ICT Survey 2016 was carried out by AITI in collaboration with Bigbreak Solutions Sdn Bhd to collect information on key ICT indicators from a sampling size of 10,533 households. The indicators are categorized into access indicators and use indicators. Access indicators apply to households while use indicators apply to individuals.

2 Methodology

2.1 Sampling

The survey was conducted throughout all four districts with each household represented by one individual aged fifteen years or above. The total sample size consisted of 10,533 households and the margin of error on the results obtained is one percent (1%) with a confidence level of ninety five percent (95%).

2.2 Data collection and validation

Data collection was conducted through online and offline methods to accommodate greater access. Data collected was validated using pre-defined validation parameters to ensure that they were complete and that multiple answers were not given. All data captured were input to a database system for further analysis.

2.3 Challenges faced during survey

Challenges encountered during the course of the survey included respondents which are not computer literate while others did not see it as a priority or were reluctant to provide certain personal information because of privacy concerns. There were also respondents that were unwilling to participate as they did not possess the required knowledge about their household devices to complete the survey accurately.

3 Demographics

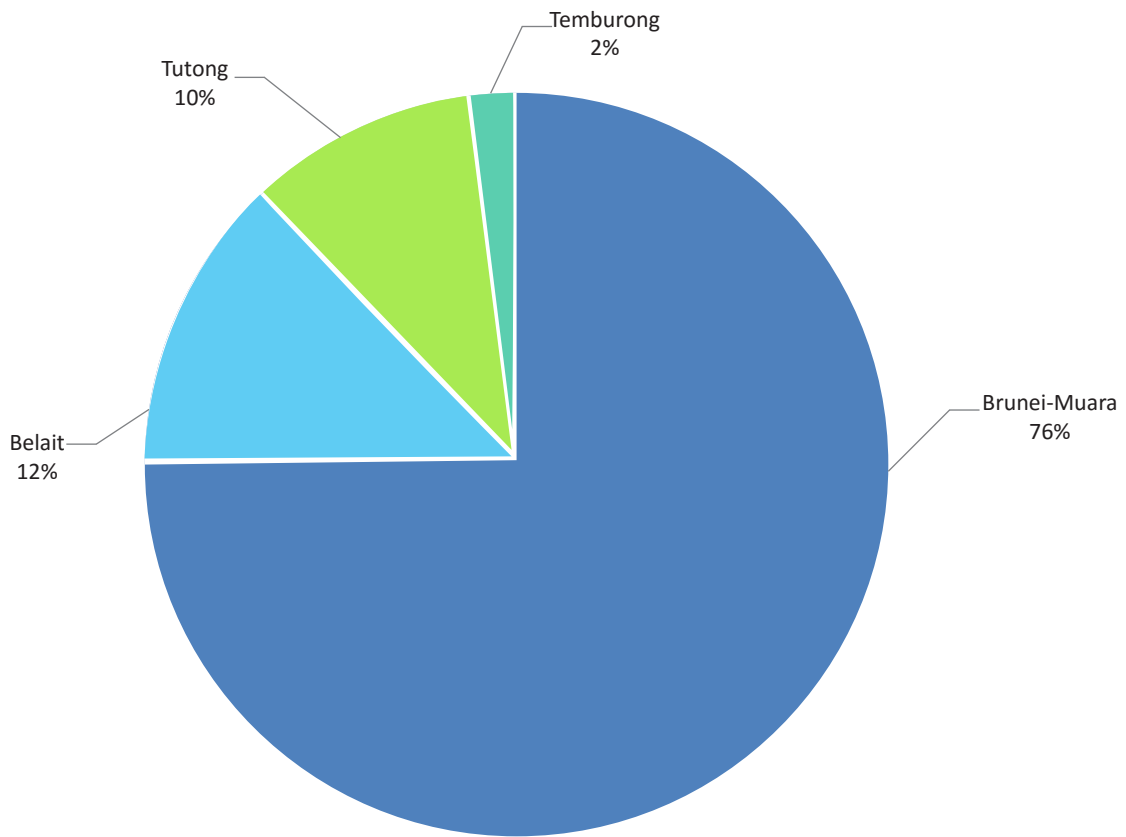


Figure 1: Response by District

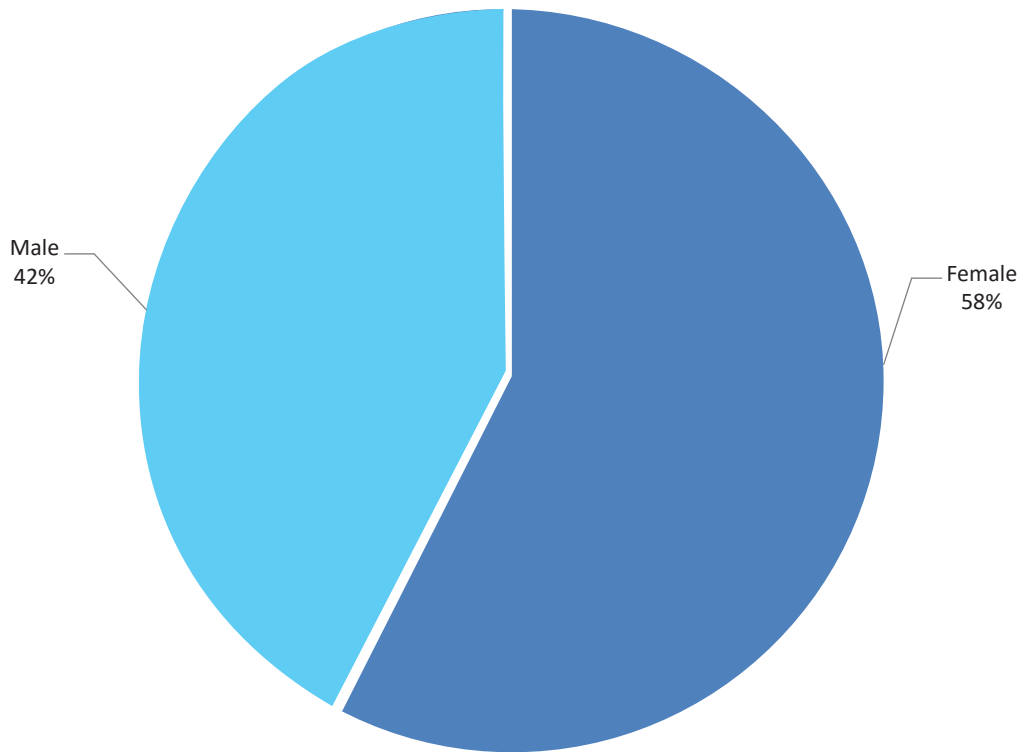


Figure 2: Response by Gender

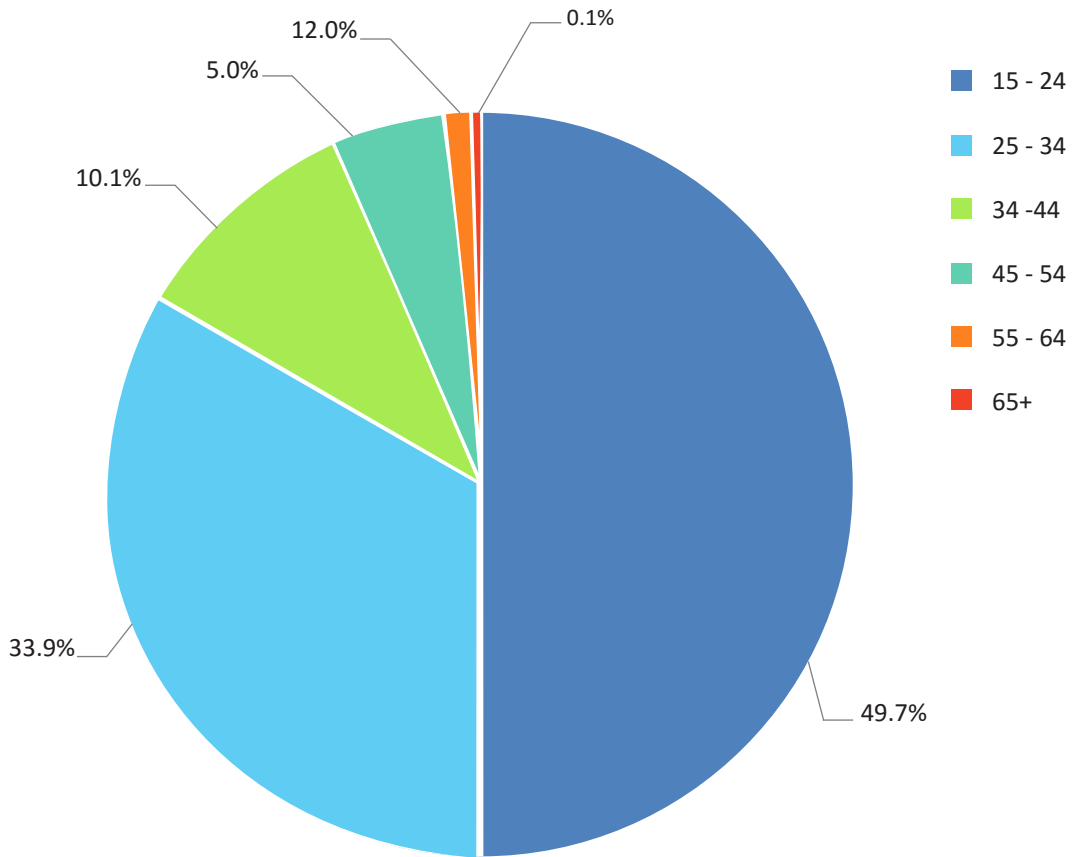


Figure 3: Response by Age

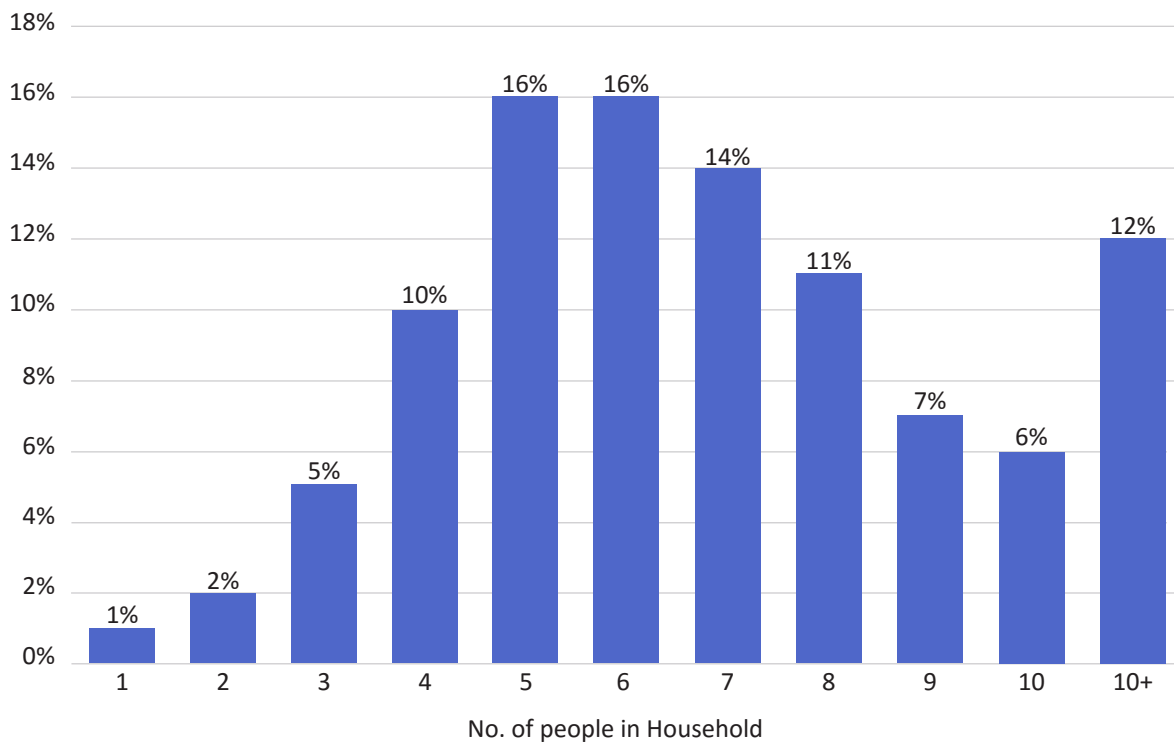


Figure 4: Household Size Distribution

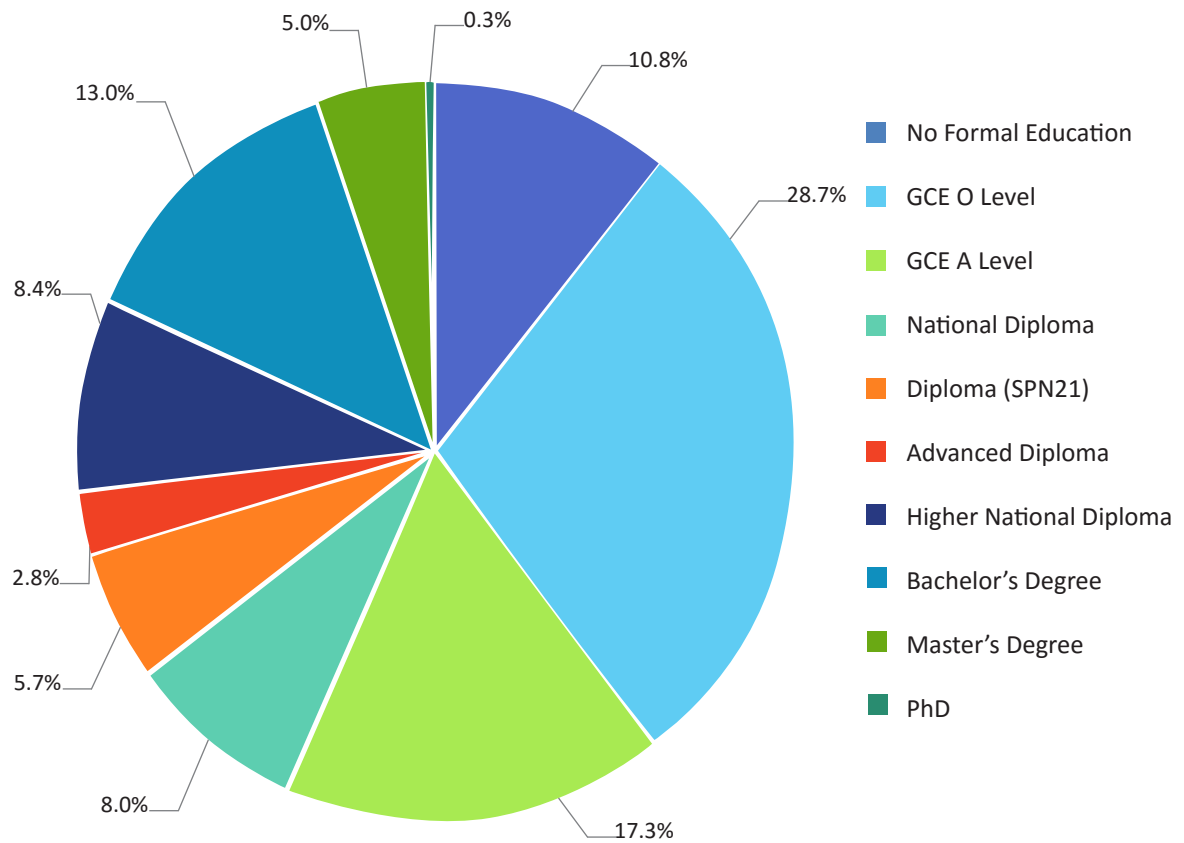


Figure 5: Education Distribution

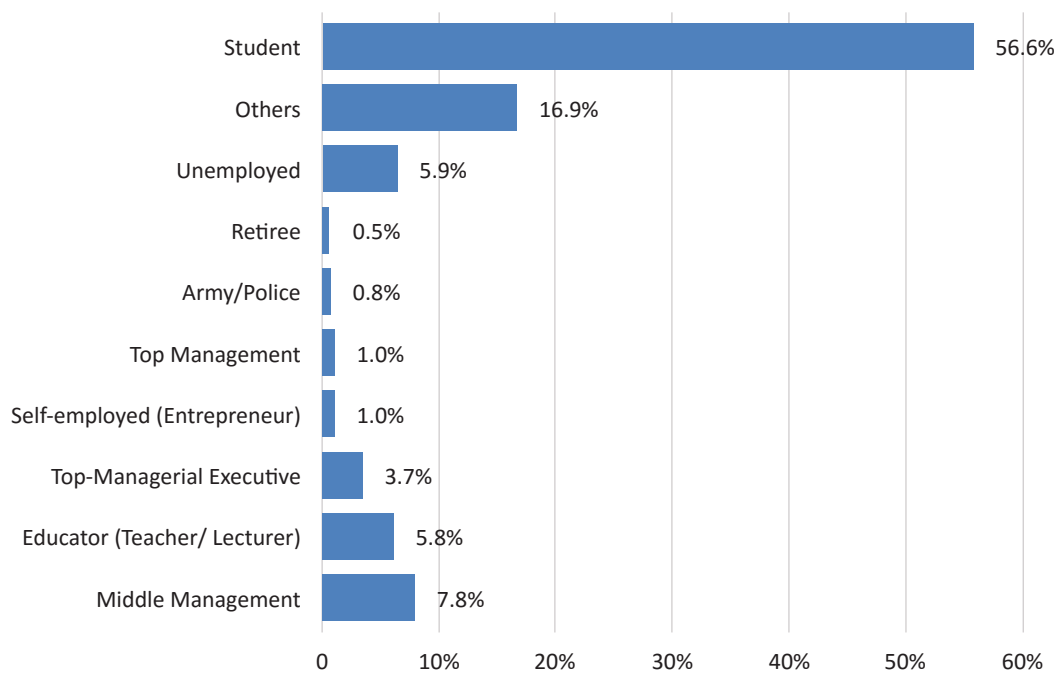


Figure 6: Occupation Distribution

4 Findings

4.1 Household Section

4.1.1 Available Devices in Households

Table 1: Available Devices in Households (comparison 2010, 2013 and 2016)

Device	2010	2013	2016
Telephone	63%	50%	49%
Mobile	99%	98%	99%
Laptop	76%	80%	93%
Desktop	51%	38%	39%
Tablet	-	44%	62%
Regular TV	99%	83%	64%
Digital TV	-	67%	40%
Smart TV	-	7%	32%
Kristal Astro	-	72%	67%
Television receive-only (TVRO)	-	29%	17%
Radio	83%	77%	75%
Smart Watch	-	-	10%
Internet Protocol television (IPTV)	-	-	18%
Gaming Console	-	-	40.7%
Home Storage	-	-	52.9%

The increase in ownership of devices together with the rise in household internet access means that individuals are now more connected than ever before. In contrast there is a decline in the ownership of traditional communication devices. This shows that there is a focus on mobility and on demand access to information and entertainment.

Table 2: Relationship between Device Ownership and Monthly Household Income

Device	Monthly Household Income (BND)	Percentage
Mobile	1,000-2,999	33%
	3,000-4,999	27%
Laptop	1,000-2,999	33%
	3,000-4,999	27%
Desktop	1,000-2,999	30%
	3,000-4,999	27%
Tablet	1,000-2,999	30%
	3,000-4,999	27%

There is direct correlation between ownership of devices and level of household income. Households with income range BND1,000 to BND4,999 own more than fifty percent (50%) of the devices.

4.1.2 Internet Access According to Monthly Household Income

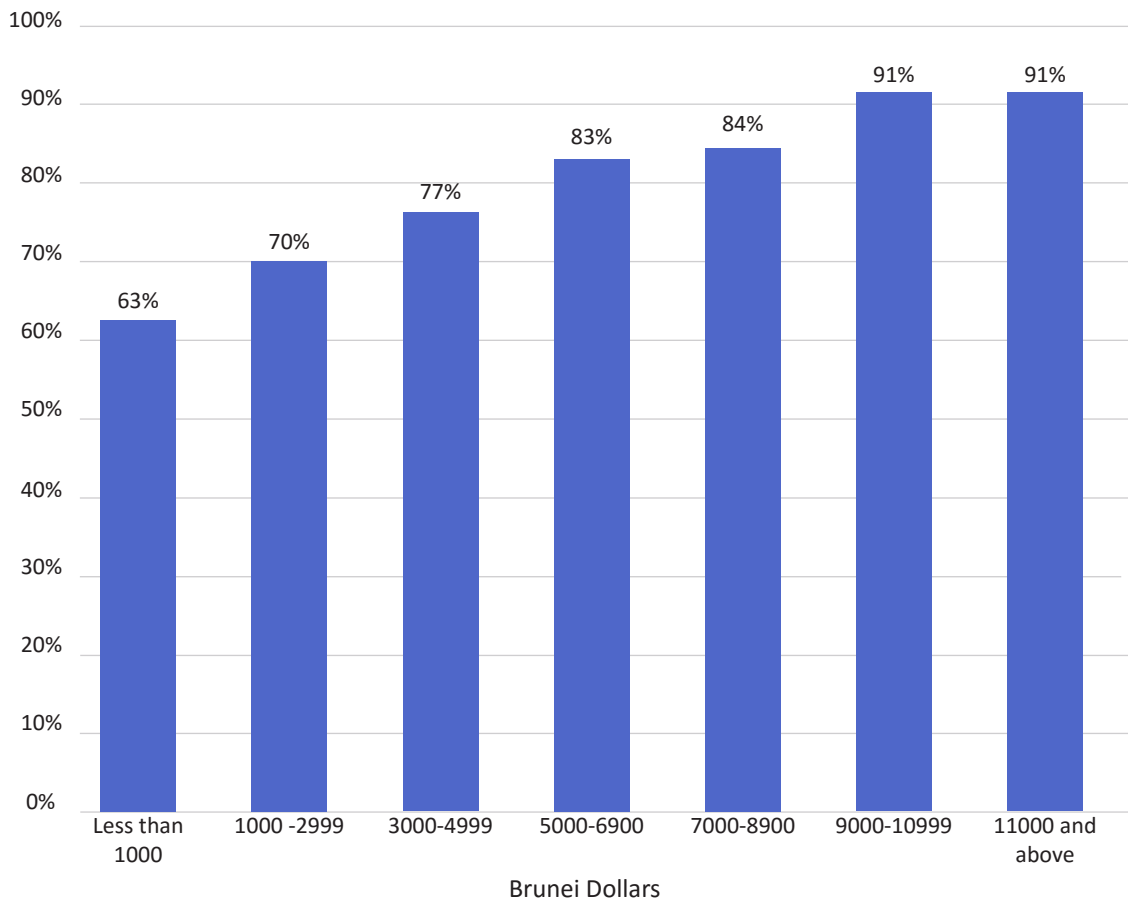


Figure 7: Internet Access According to Monthly Household Income

There is a positive correlation between household income and internet access in households.

4.1.3 Household Internet Access

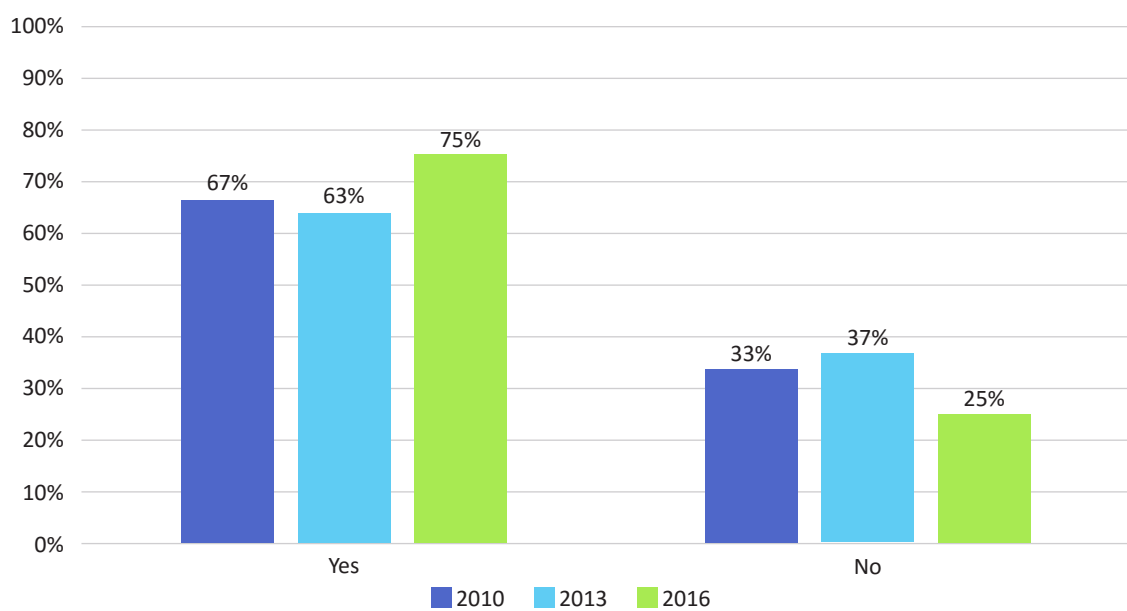


Figure 8: Household Internet Access

There has been a twelve percent (12%) increase in household access to the internet compared to 2013. The current rate of seventy five percent (75%) is above the average for the South East Asian region, which is at thirty six percent (36%), and closer to European internet penetration, which stands at seventy nine percent (79%), as recorded in the ITU World Telecommunication/ ICT Indicators database-2014.

4.1.4 Types of Household Internet Access

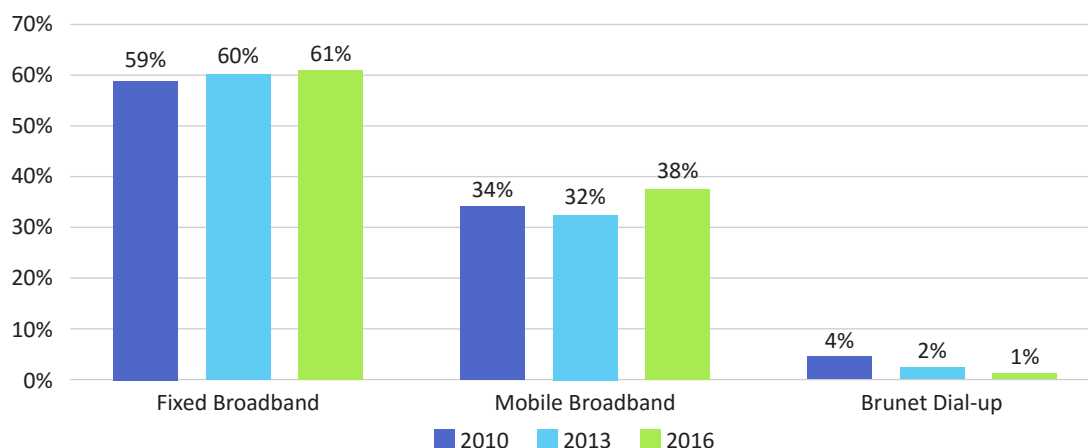


Figure 9: Types of Household Internet Access

There has been consistent increase in the adoption of broadband services over the last six (6) years. This year's survey shows that nine percent (9%) of households have both fixed and mobile broadband access. With broadband penetration on the rise along with the increasing trend in ownership of portable next generation technologies, delivery of over the top services are definitely the focus for the future.

4.1.5 Reasons for Lack of Internet Access

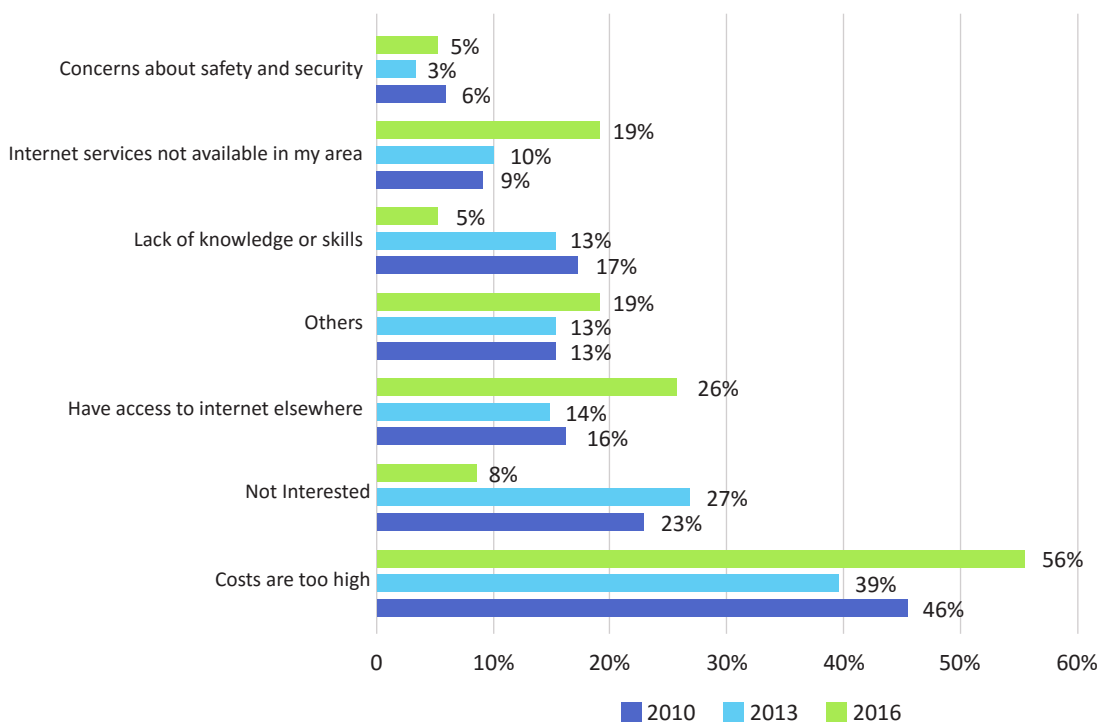


Figure 10: Reasons for Lack of Internet Access

4.1.6 Perception of Internet Speed and Cost

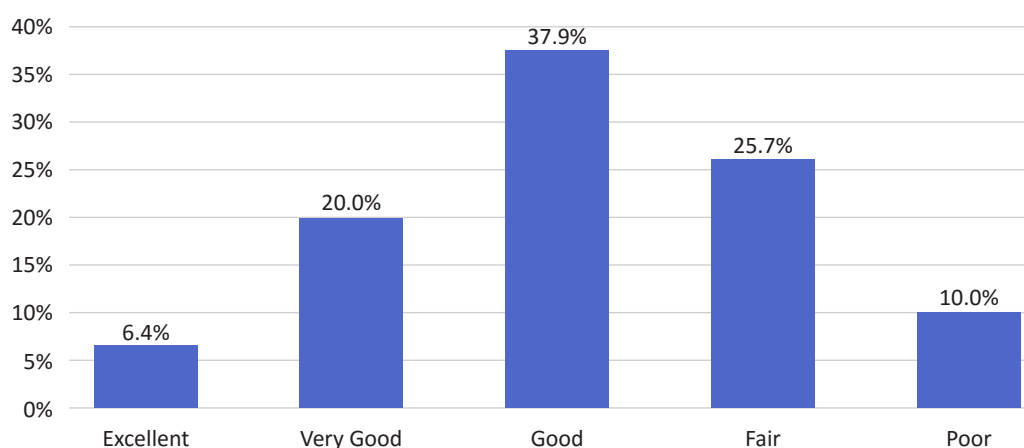


Figure 11: Internet Speed

Table 3: Internet Speed Perception (comparison 2010, 2013 and 2016)

Internet Speed	2010	2013	2016
Excellent	7%	9%	6%
Very good	14%	11%	20%
Good	32%	28%	38%
Fair	30%	27%	26%
Poor	17%	27%	10%

Only ten percent (10%) of the respondents described internet speed as being poor which is lower compared to the 2010 and 2013 surveys. This suggests that internet speed have improved since 2010.

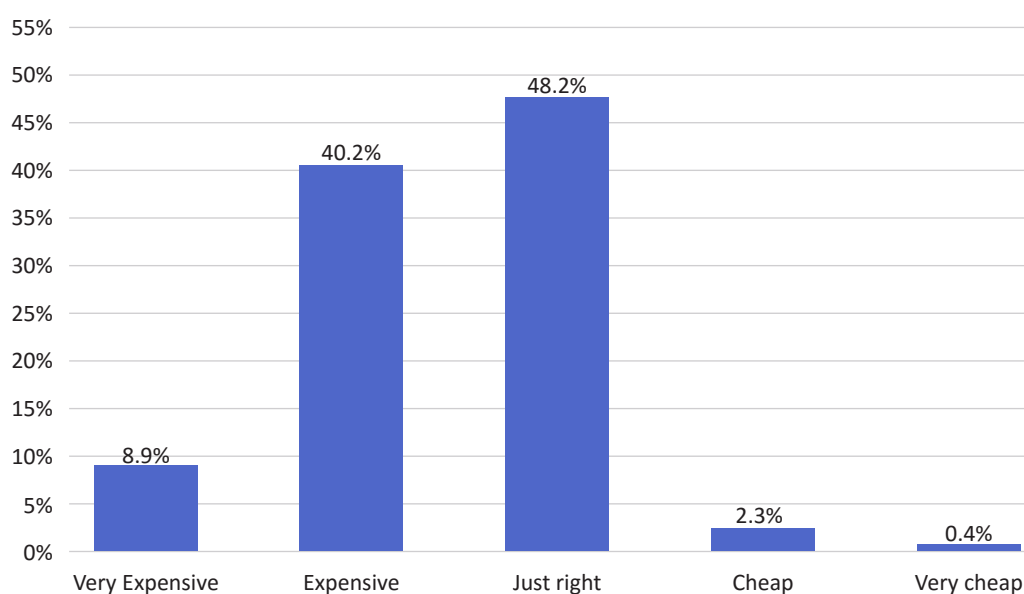


Figure 12: Internet Fee

Table 4: Internet Fee Perception (comparison 2010, 2013 and 2016)

Internet Fee	2010	2013	2016
Very Expensive	11%	18%	8.9%
Expensive	30%	33%	40.2%
Just Right	53%	45%	48.2%
Cheap	5.4%	3%	2.3%
Very Cheap	0.6%	1%	0.4%

About nine percent (9%) of the respondents rated internet fees as being very expensive which is lower compared to the 2010 and 2013 surveys. This suggests that perception on internet fees have definitely improved since 2010. Majority of the respondents consider internet fees as just right or expensive.

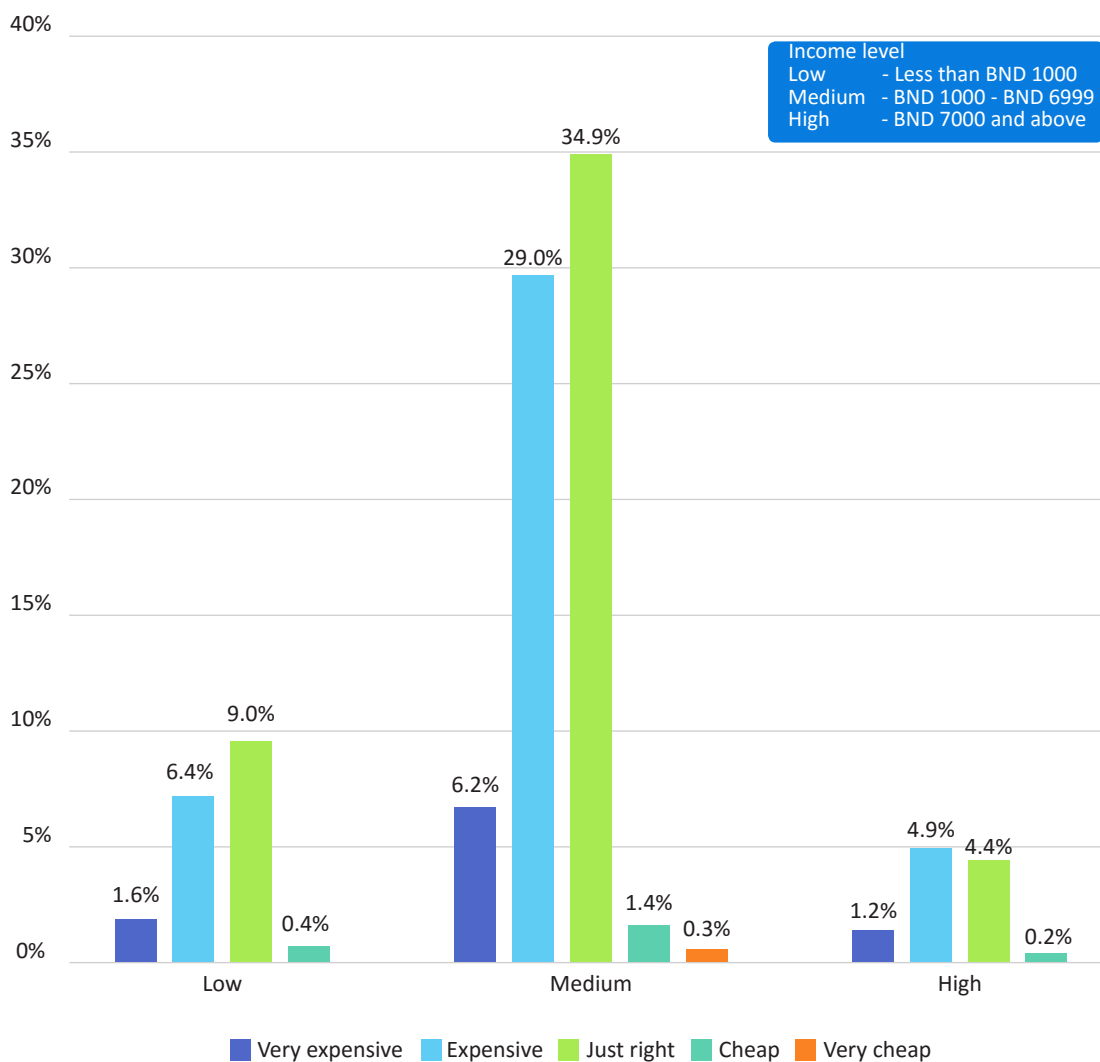


Figure 13: Relationship between Monthly Household Income and Internet Fee Perception

Majority of the households that rated internet charges as expensive or very expensive are those with income range BND 1,000 to BND 6,999.

4.1.7 Home Wireless Network Security

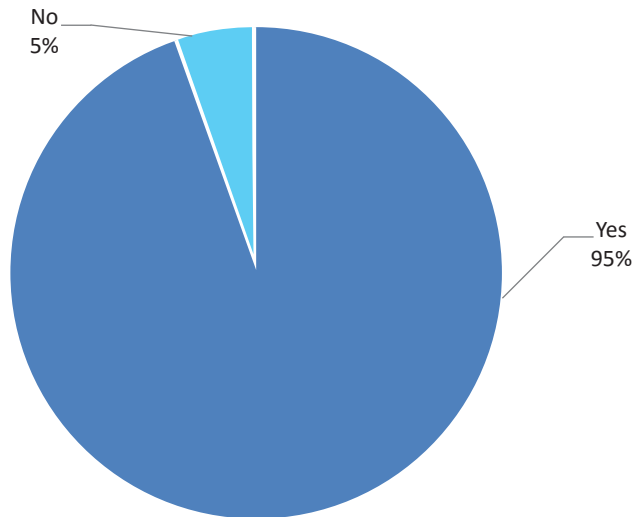


Figure 14: Home Wireless Network Security

Ninety five percent (95%) of the respondents are aware of the importance of protecting their home wireless networks as an online safety measure.

4.1.8 Anti-virus Protection on Devices

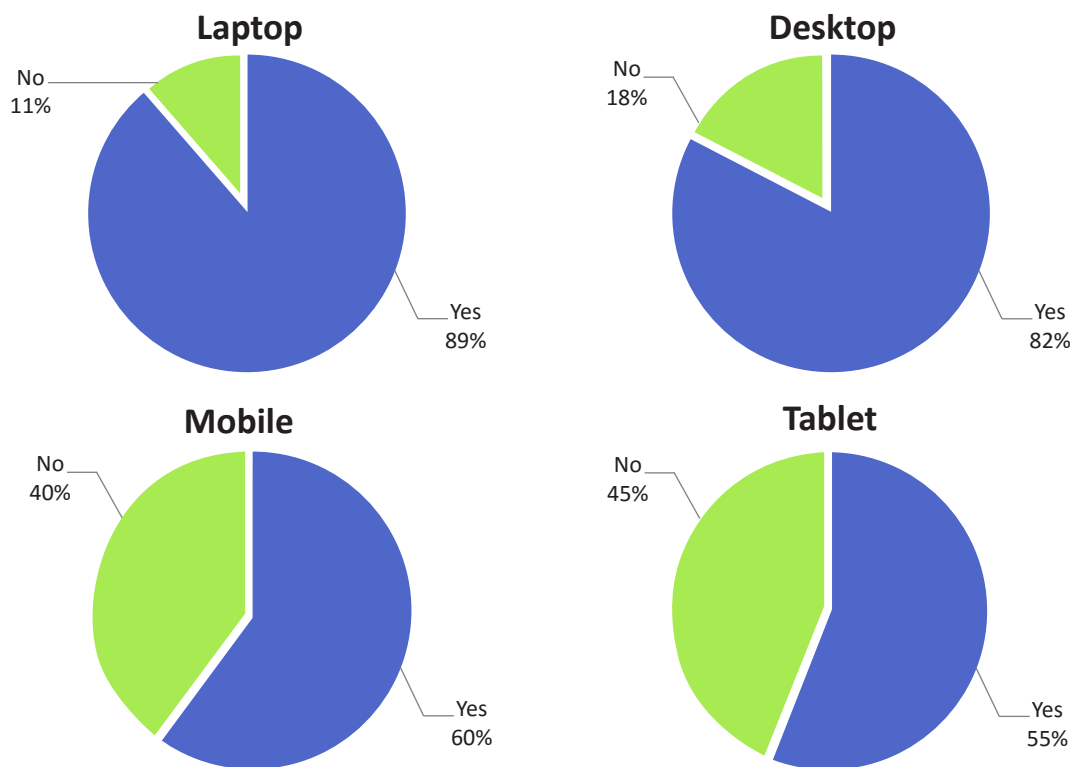


Figure 15: Anti-virus Protection on Devices

4.1.9 Password Protection on Devices

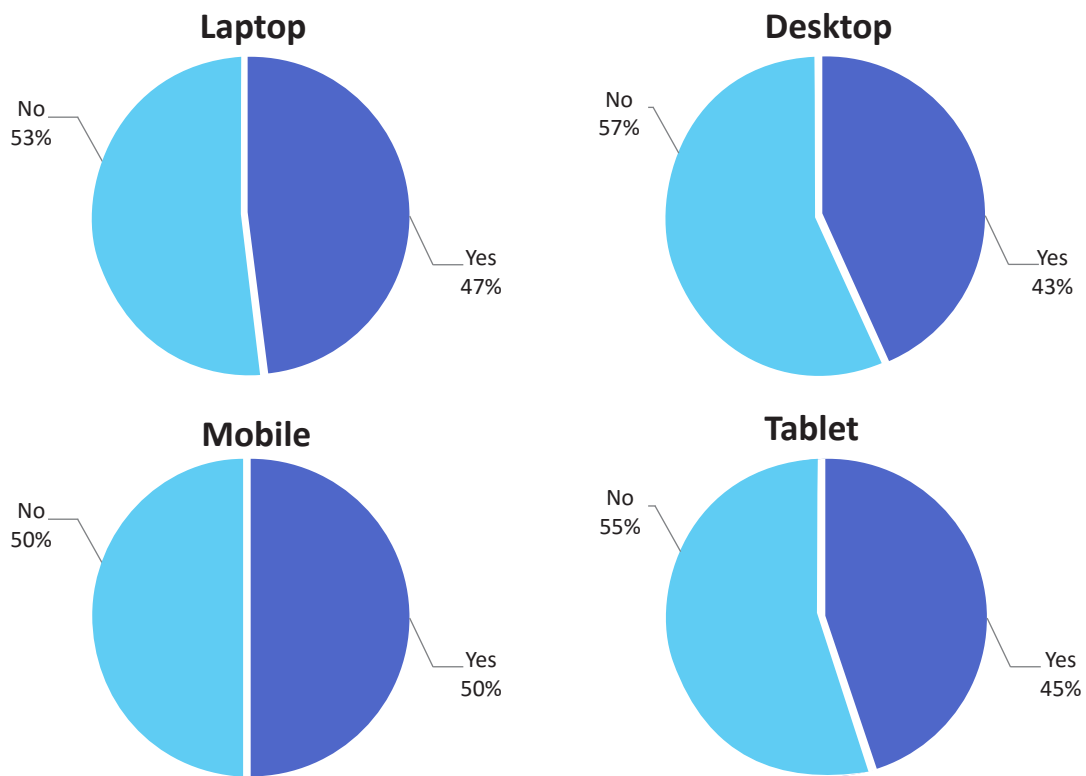


Figure 16: Password Protection on Devices

4.1.10 Benefits of Mobile Internet Access

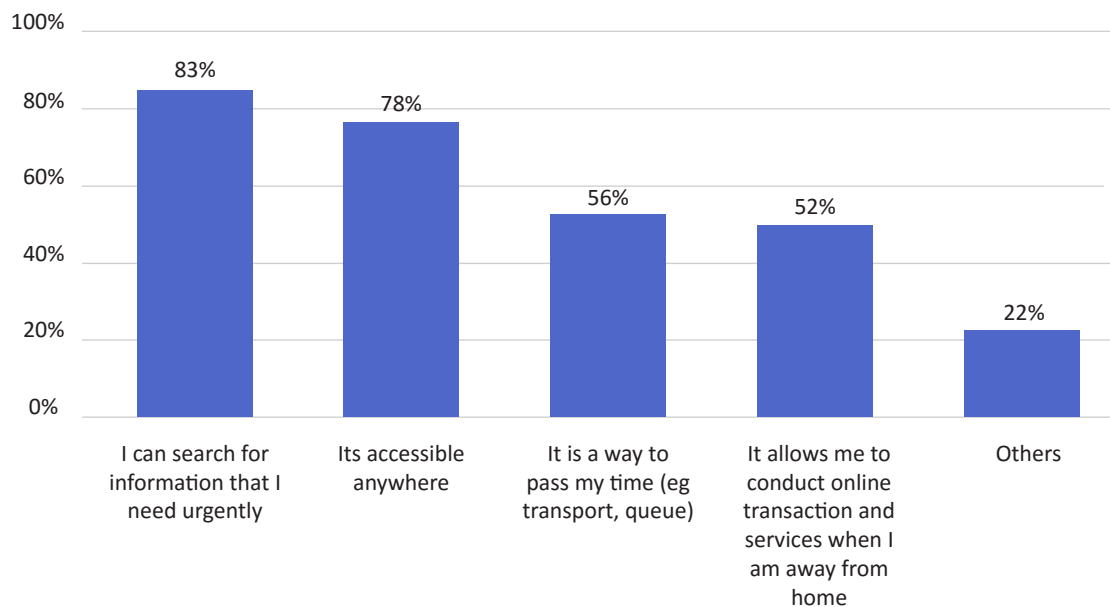


Figure 17: Benefits of Mobile Internet Access

Respondents favour instant access to information at eighty three percent (83%) and mobility at seventy eight percent (78%).

4.1.11 Use of Social Media and Messaging Applications

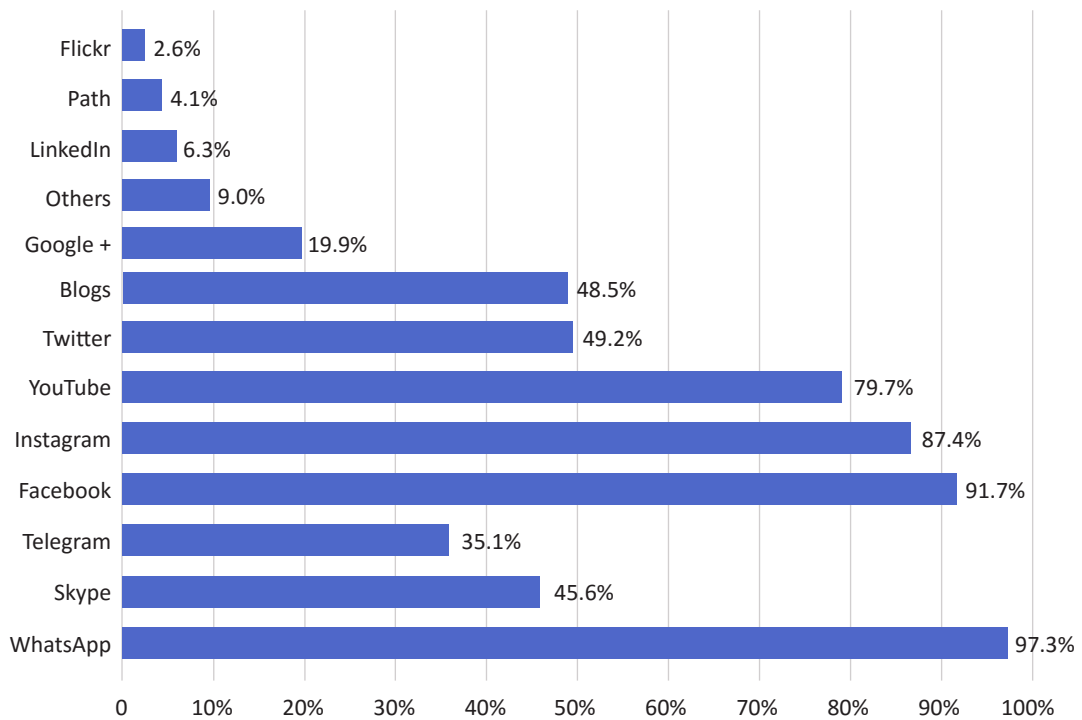


Figure 18: Use of Social Media and Messaging Applications

The rapid uptake of social networking is visible globally and Brunei is no different. The three most popular social media and messaging applications used in households are WhatsApp, Facebook and Instagram.

4.1.12 Messaging and Social Media Applications by Age

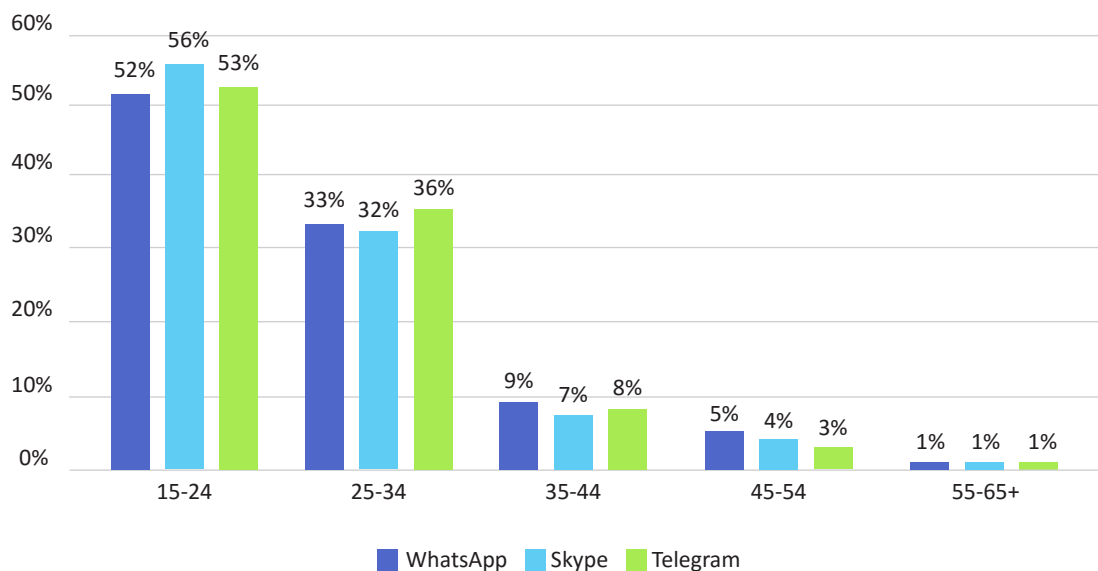


Figure 19: Messaging Applications by Age

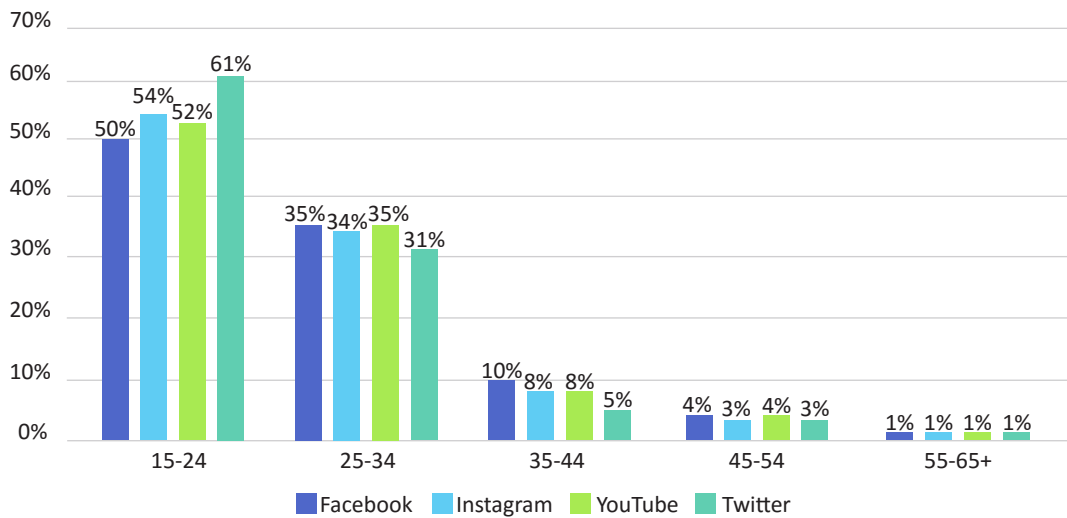


Figure 20: Social Media Applications by Age

Consistent with global trends in social media use, the most active social media users are aged between 15 and 34 years old with most engaging on multiple platforms.

4.1.13 Reasons for Using Social Media Applications



Figure 21: Reasons for Using Social Media and Messaging Applications

The data suggests that social media and messaging applications are most commonly used to keep in touch with family and friends instead of business and marketing purposes.

4.1.14 Frequency of Updating Security Settings for Applications

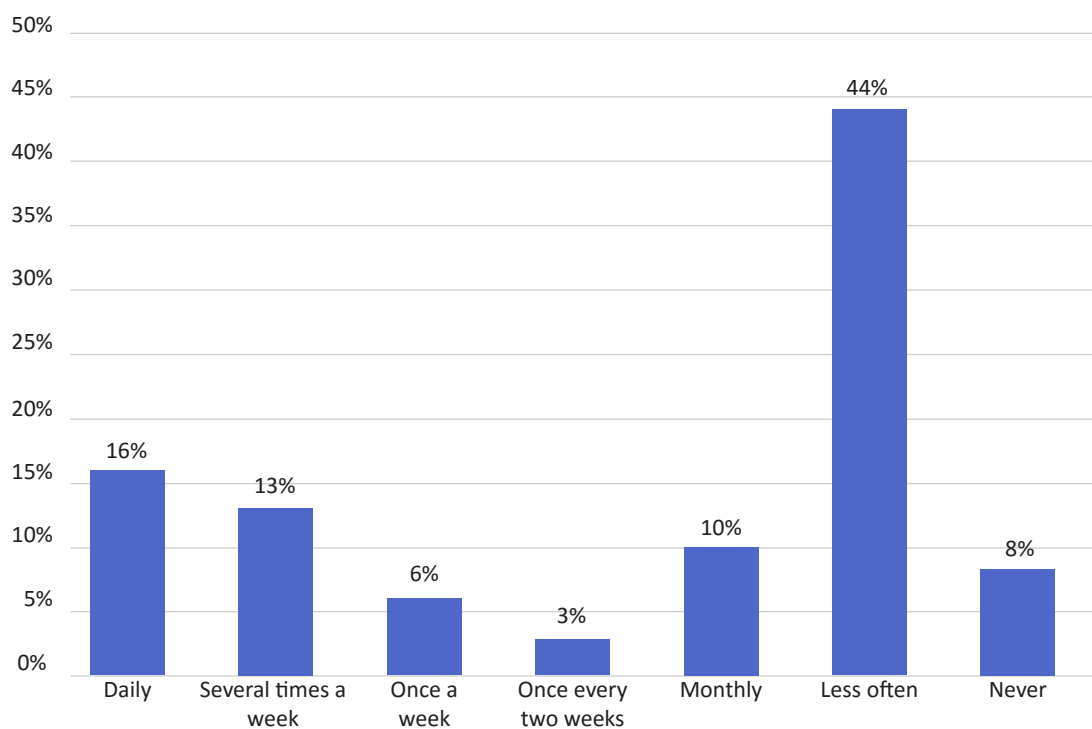


Figure 22: Frequency of Updating Security Settings for Applications

4.1.15 Preferred Radio Stations

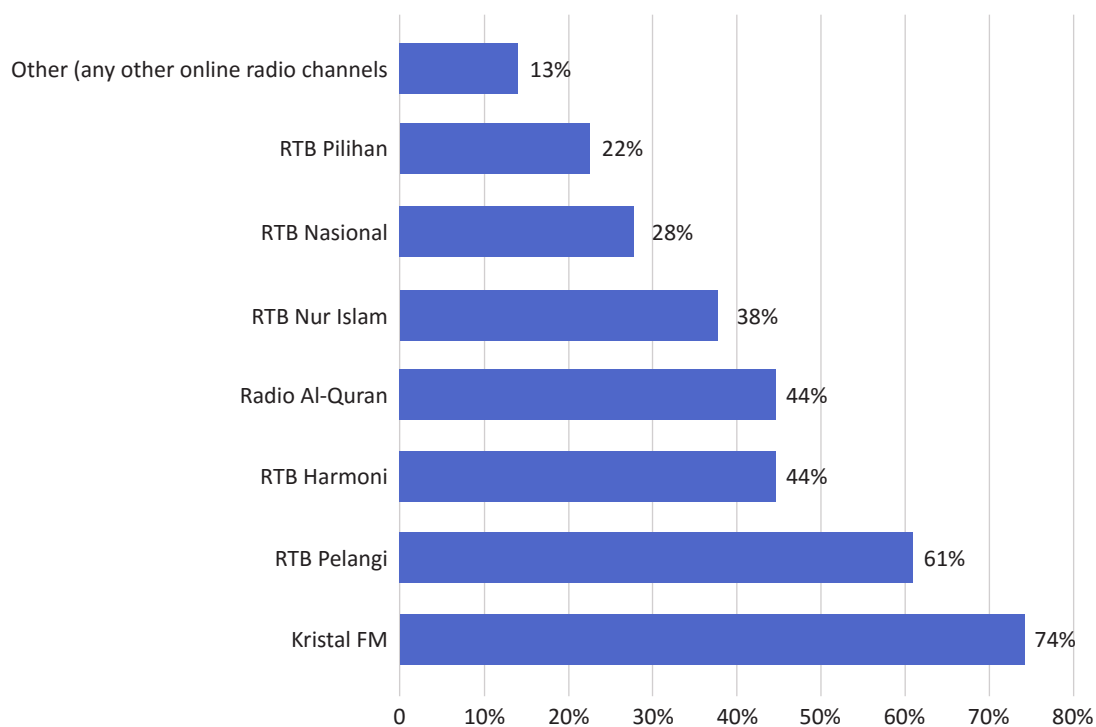


Figure 23: Preferred Radio Stations

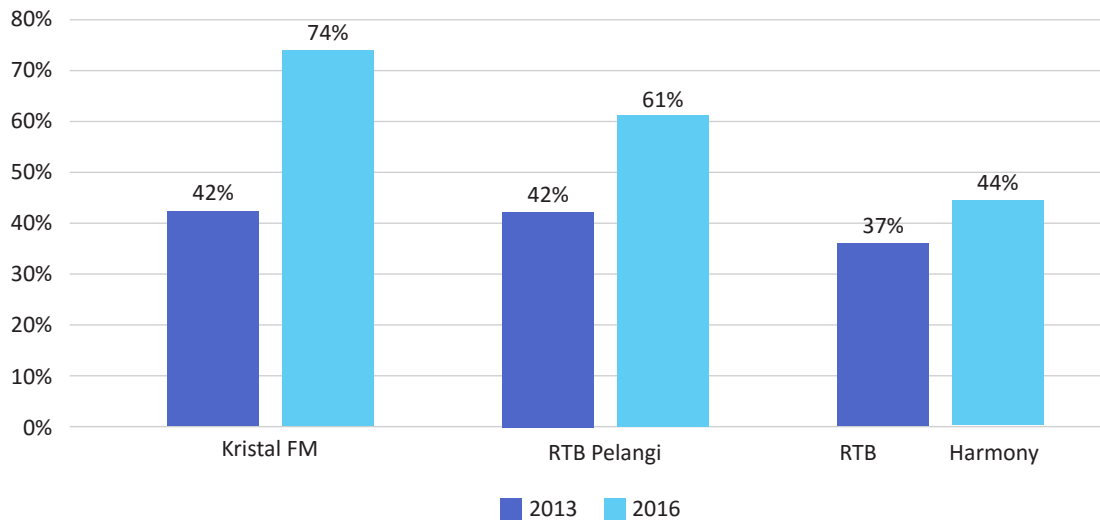


Figure 24: Preferred Radio Stations (comparison 2013 and 2016)

Kristal FM has consistently been the preferred local radio station since the last survey in 2013. Both RTB Pelangi and RTB harmony have also been consistently among the top three (3) radio stations over the last three (3) years.

4.2 Individual Section

4.2.1 Most Recent Computer Related Activities

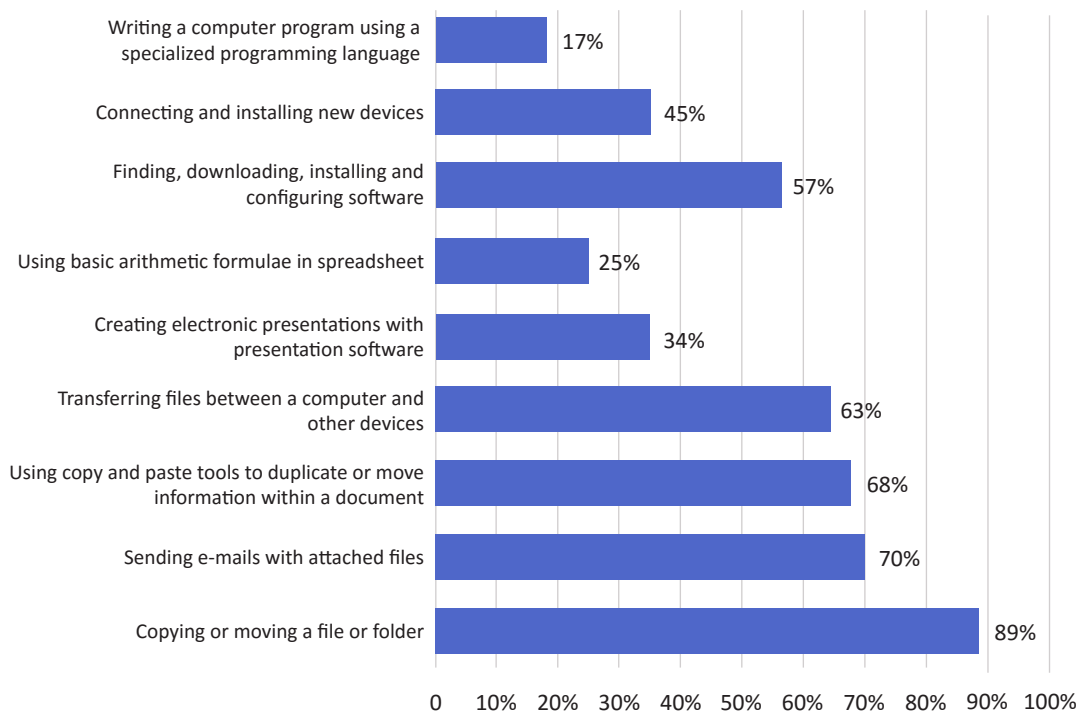


Figure 25: Most Recent Computer Related Activities

This year's survey results shows that computer users in Brunei are more inclined with using computers to perform administrative tasks than technical tasks.

4.2.2 Most Common Internet Access Locations

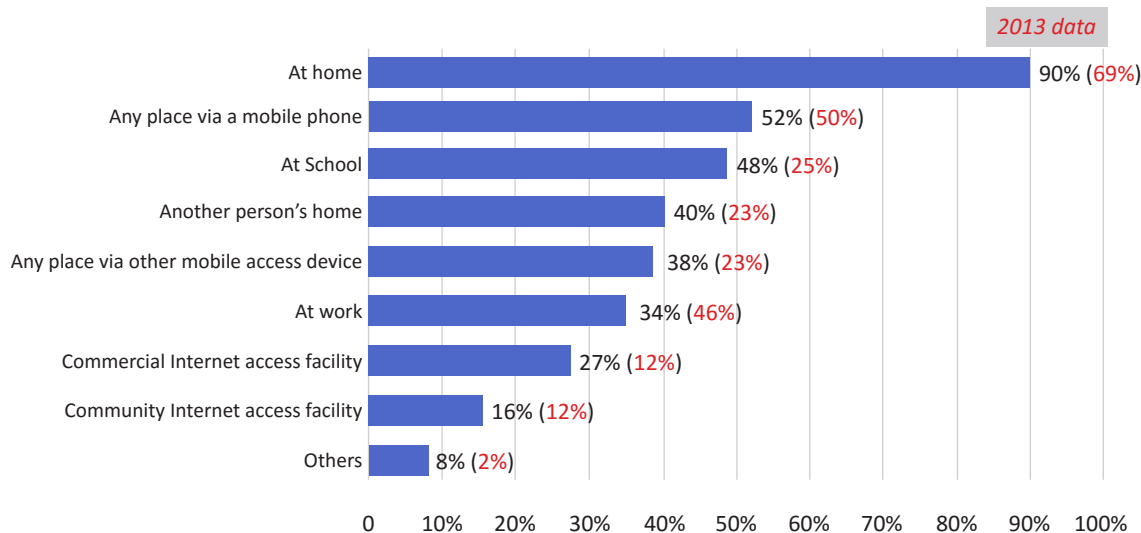


Figure 26: Most Common Internet Access Locations

Most respondents access the internet from home. This is consistent with the results from the 2013 survey. However, there is a slight increase in mobile internet access consistent with the focus on mobility and instant access to information.

4.2.3 Most Recent Online Activities

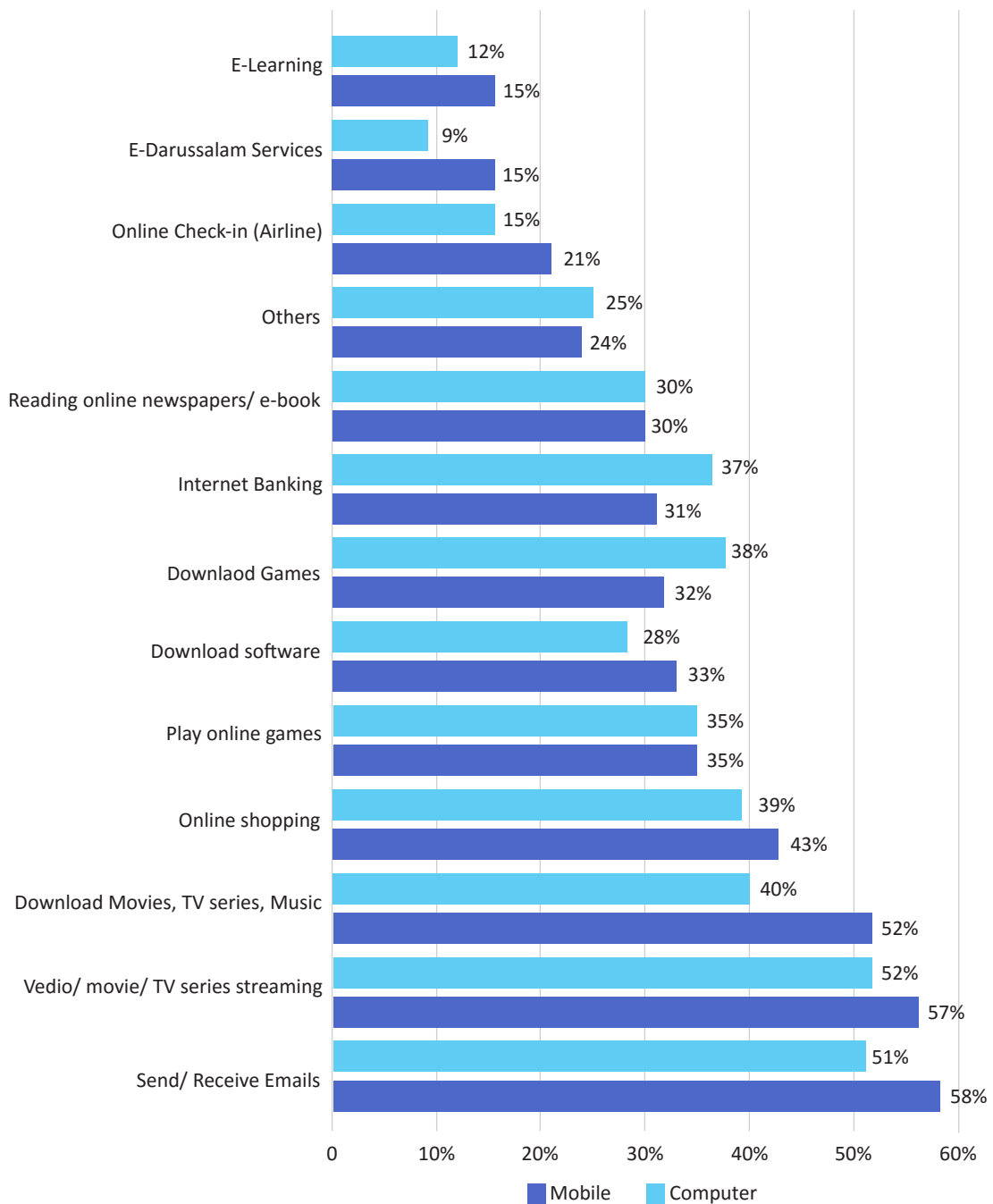


Figure 27: Most Recent Online Activities

The top three (3) primary online activities carried out by respondents through both computer and mobile are related to communication (send/receive emails), online streaming (Video/movies/TV series) and downloading movies, TV series and music. Respondents favour using desktop or laptop computers rather than mobile phones to perform all activities with the exception of downloading games and performing internet banking.

Table 5: Most Recent Online Activities Using Laptop/Desktop Computer by Age

Device	15-24	25-34	35-44	45-54	55-64	65+
Download Games	9%	6%	4%	3%	2%	3%
Download Movies, TV Series, Music	14%	11%	8%	7%	8%	5%
Download software	8%	8%	6%	5%	6%	5%
E-Darussalam Services	2%	4%	6%	7%	4%	8%
E-Learning	3%	3%	3%	4%	3%	3%
Internet Banking	4%	8%	11%	10%	10%	8%
Online Check-in (Airline)	3%	5%	7%	8%	9%	8%
Online shopping	9%	11%	11%	9%	9%	5%
Others	6%	4%	4%	8%	10%	8%
Play online games	10%	7%	5%	4%	4%	3%
Reading online newspapers/e-book	6%	7%	8%	10%	9%	11%
Send/Receive Emails	11%	14%	16%	16%	15%	22%
Video/movie/TV series streaming	15%	12%	11%	8%	9%	11%

Table 6: Most Recent Online Activities Using Mobile Devices by Age

Online Activities	15-24	25-34	35-44	45-54	55-64	65+
Download Games	3%	3%	5%	6%	7%	11%
Download Movies, TV Series, Music	3%	6%	6%	7%	7%	11%
Download software	8%	3%	5%	6%	6%	7%
E-Darussalam Services	3%	2%	4%	4%	3%	1%
E-Learning	-	2%	3%	2%	3%	3%
Internet Banking	5%	9%	9%	13%	10%	6%
Online Check-in (Airline)	3%	4%	5%	5%	4%	2%
Online shopping	5%	5%	7%	10%	9%	8%
Others	11%	12%	8%	6%	5%	6%
Play online games	5%	4%	4%	6%	7%	9%
Reading online newspapers/e-book	5%	8%	9%	9%	6%	6%
Send/Receive Emails	11%	12%	13%	14%	12%	11%
Video/movie/TV series streaming	8%	7%	8%	11%	11%	13%

Individuals aged between 15 and 34 years old are the most active downloaders of games, movies and TV series as well as online streaming and playing online games. In contrast, individuals aged between 35 and 54 years old are more inclined to engage in internet banking and E-Darussalam services while senior citizens aged 55 years and above mostly used the internet for email purposes.

4.2.4 Commonly Used E-Government Services

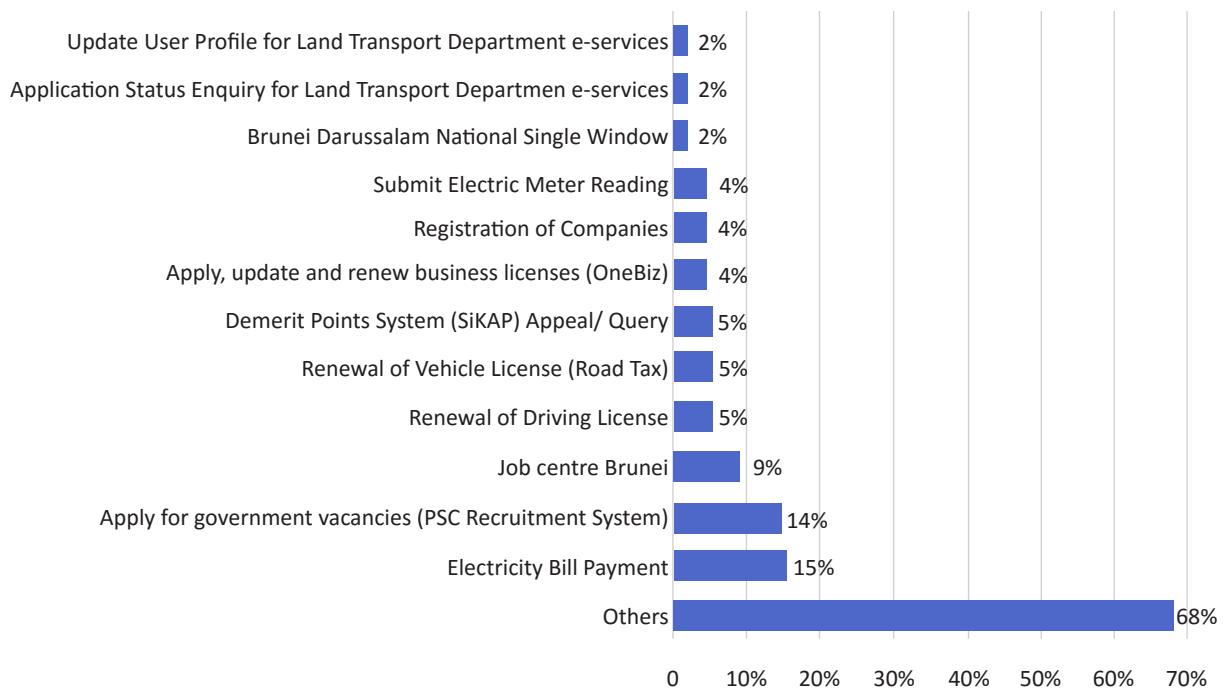


Figure 28: Commonly Used E-Government Services

The Government has been promoting its E-Government services for citizen access through the Internet, mobile and self-service kiosks. Online government services can provide better ways to access and manage information compared to traditional means. However, there is still a low adoption rate of E-Government services by the public.

4.2.5 Language of Websites Used

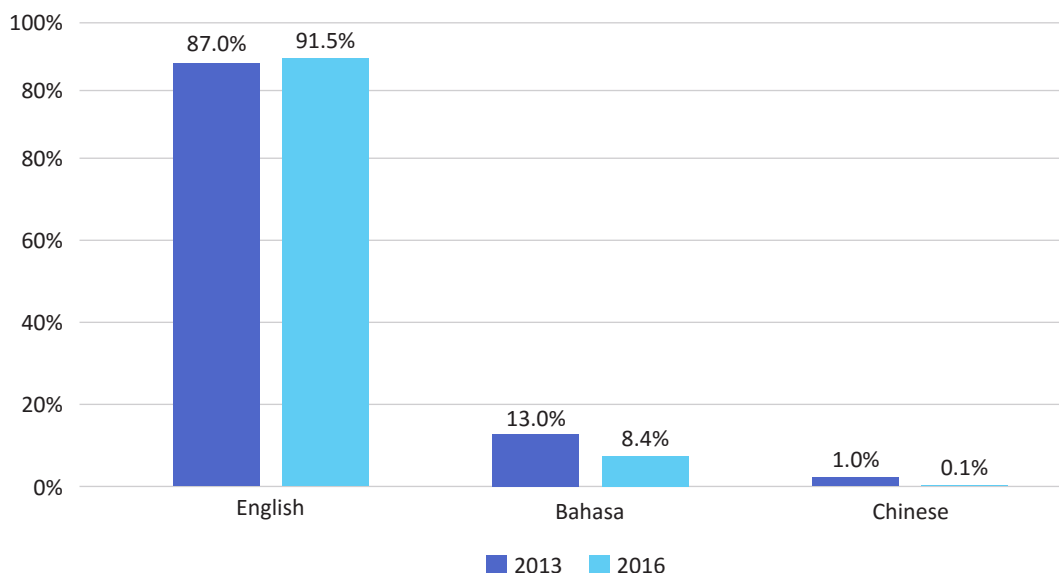


Figure 29: Language of Websites Used (comparison 2013 and 2016)

Websites in English have consistently been rated higher followed by those in Bahasa Melayu and Chinese since 2013. In the 2016 survey, ninety two percent (92%) of the respondents preferred English.

REFERENCES

1. Population and Housing Census-2011, Department of Statistics, Department of Economic Planning and Development, Prime Minister's Office, Brunei Darussalam
2. Brunei Darussalam Household ICT Survey Report-2013
3. Brunei Darussalam Household ICT Survey Report-2010
4. Handbook for the collection of Administrative Data on Telecommunications/ICT- International Telecommunication Union-2011
5. Telecommunication Indicators Handbook- International Telecommunication Union-2011

LIST OF TABLES

Table 1: Available Devices in Households (comparison 2010, 2013 and 2016)	10
Table 2: Relationship between Device Ownership and Monthly Household Income	10
Table 3: Internet Speed Perception (comparison 2010, 2013 and 2016)	13
Table 4: Internet Fee Perception (comparison 2010, 2013 and 2016)	14
Table 5: Most Recent Online Activities Using Laptop/Desktop Computer by Age	23
Table 6: Most Recent Online Activities Using Mobile Devices by Age	23

LIST OF FIGURES

Figure 1: Response by District	7
Figure 2: Response by Gender	7
Figure 3: Response by Age	8
Figure 4: Household Size Distribution	8
Figure 5: Education Distribution	9
Figure 6: Occupation Distribution	9
Figure 7: Internet Access According to Monthly Household Income	11
Figure 8: Household Internet Access	11
Figure 9: Types of Household Internet Access	12
Figure 10: Reasons for Lack of Internet Access	12
Figure 11: Internet Speed	13
Figure 12: Internet Fee	13
Figure 13: Relationship between Monthly Household Income and Internet Fee Perception	14
Figure 14: Home Wireless Network Security	15
Figure 15: Anti-virus Protection on Devices	15
Figure 16: Password Protection on Devices	16
Figure 17: Benefits of Mobile Internet Access	16
Figure 18: Use of Social Media and Messaging Applications	17
Figure 19: Messaging Applications by Age	17
Figure 20: Social Media Applications by Age	18
Figure 21: Reasons for Using Social Media and Messaging Applications	18
Figure 22: Frequency of Updating Security Settings for Applications	19
Figure 23: Preferred Radio Stations	19
Figure 24: Preferred Radio Stations (comparison 2013 and 2016)	20
Figure 25: Most Recent Computer Related Activities	21
Figure 26: Most Common Internet Access Locations	21
Figure 27: Most Recent Online Activities	22
Figure 28: Commonly Used E-Government Services	24
Figure 29: Language of Websites Used (comparison 2013 and 2016)	24

ACRONYMS/ABBREVIATIONS

ICT	Information and Communication Technology
AITI	Authority for Info-communications Technology Industry of Brunei Darussalam
ITU	International Telecommunication Union
RTB	Radio Television Brunei

PRODUCTION TEAM

Authority for Info-communications Technology Industry of Brunei Darussalam

Bigbreak Solutions Sdn. Bhd.

Project Champion

Md Mahmud Hadini Bin Hj Md Taufik

Joshua Lim Sheng Ming

Project Manager

Gabriel Chan Yung Khang
Norhairezan Binti Ahmad

Rejikanth Arulanantha
Pushparaja

Editorial

Tina Lim - Keasberry
Md Reza Bin Nazamuddin
Hjh Adina Hazri Binti Hj Azahari
Zeti Reza Binti Haji Mohd Amin
Jasmine Kristin Wong Mei Yik

Dr. Afzaal Seyal
Sumedha Rathmali WA
Archibald Bower
Rohitha Senarath

This page is intentionally left blank

AITI

www.aiti.gov.bn