SURUHANJAYA KOMUNIKASI DAN MULTIMEDIA MALAYSIA
MALAYSIAN COMMUNICATIONS AND MULTIMEDIA COMMISSION

BQoES 2022

Broadband Quality of Experience Survey 2022

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The 2nd edition of the Broadband Quality of Experience Survey known as Broadband Quality of Experience Survey 2022 (BQoES 2022) was conducted in-house by Malaysian Communications and Multimedia Commission (MCMC), with the objective to explore the following:

1. To understand and measure consumer satisfaction level and expectation for broadband services;
2. To identify areas of improvement for broadband services; and
3. To continue monitoring and improving consumer needs and expectations for broadband services.

The survey focused on five (5) scopes on the following broadband services:

Figure 1: Five scopes on broadband services

Accordingly, the survey covered three different types of consumers, which were fixed-broadband[1] (FBB) and mobile-broadband (MBB) consumers. Based on sampling methodology, the sample for this survey reached 1,152 respondents for FBB consumers[2] and 2,304 respondents for MBB consumers[3]. For data collection, respondents were assessed through both Computer Assisted Telephone Interview (CATI) and secure online survey questionnaire portal.

[1] Fibre only
[2] FBB consumers: Confidence level of 95% and precision of ±5.00%
[3] MBB consumers: Confidence level of 95% and precision of ±5.00 %

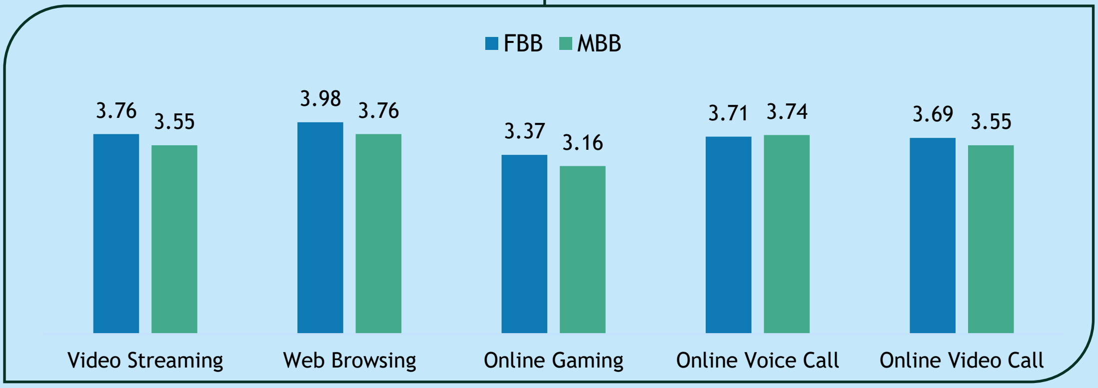
Highlights of Broadband Quality of Experience Survey 2022

FBB consumers showed higher satisfaction level compared to MBB consumers

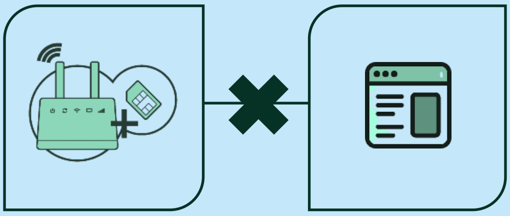
Overall CSI Score

FBB Fibre	MBB
3.71 (+0.01)	**3.56** (-0.10)

Web browsing attribute topped the list for all broadband consumers



Among scopes that did not meet expectations, web browsing showed the highest gap between consumers' expectation and service provider performance for all broadband



Areas to be improved by broadband service providers

FBB

- Online Voice Call
- Online Video Call

MBB

- Video Streaming
- Online Video Call

SECTION 3: INTRODUCTION

BACKGROUND OF SURVEY

The Jalinan Digital Negara (Jendela) was launched by the government in August 2020 to enhance the digital infrastructure of the country. In line with this, the approach of Quality of Experience (QoE) was determined in the National Digital Infrastructure Lab (NDIL) to ensure service providers deliver the minimum broadband services expected by the Malaysian population.

Subsequently, Malaysian Communications and Multimedia Commission (MCMC) undertook a survey in measuring broadband QoE, commencing 2021. The outcome of this survey in terms of Customer Satisfaction Index (CSI) has been set as one of MCMC's annual Key Performance Index (KPI).

Accordingly, the 2nd edition of the survey known as Broadband Quality of Experience 2022 (BQoES 2022) was launched in November 2022. Similarly, the objectives of the survey were to understand and measure consumer satisfaction level and expectation for broadband services, identify areas of improvement for broadband services and continue monitoring as well as improving consumer needs and expectations for broadband services.

SIGNIFICANCE OF SURVEY

As of 2022, Malaysia recorded ~47.5 million broadband subscriptions from 37 service providers which reflected an increase of 4.1 million from 2019. The growing consumption of broadband services brings an extensive assortment of advantage, opportunities and challenges. In this competitive market, each service provider is putting their utmost effort to provide the best consumer experience. Hence, quality of experience is vital to meet expectations of consumers.

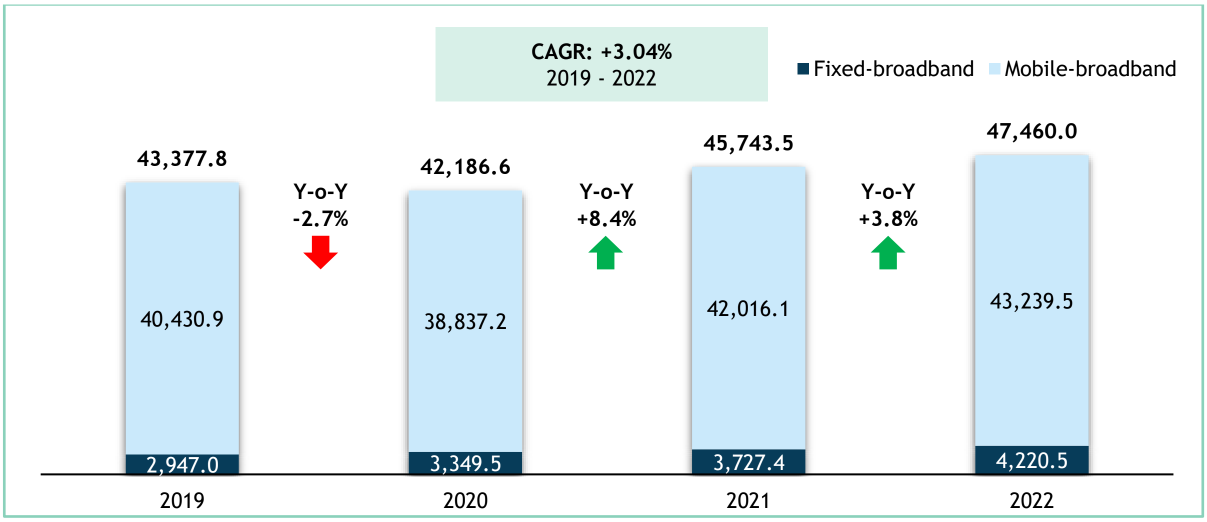


Figure 2: Broadband subscriptions ('000), 2019 - 2022

According to a recent McKinsey survey of global consumer sentiment conducted in April 2021[4], the COVID-19 pandemic has driven rapid adoption of digital channels across countries and industries. However, digital's growth has plateaued in the past six months and may begin to slip back as the pandemic eases—even as total digital adoption stays well above pre-pandemic levels. Based on Figure **3** below, while there was still an evident increase in the demand for broadband services, the rate of growth has become slower post-pandemic in Malaysia.

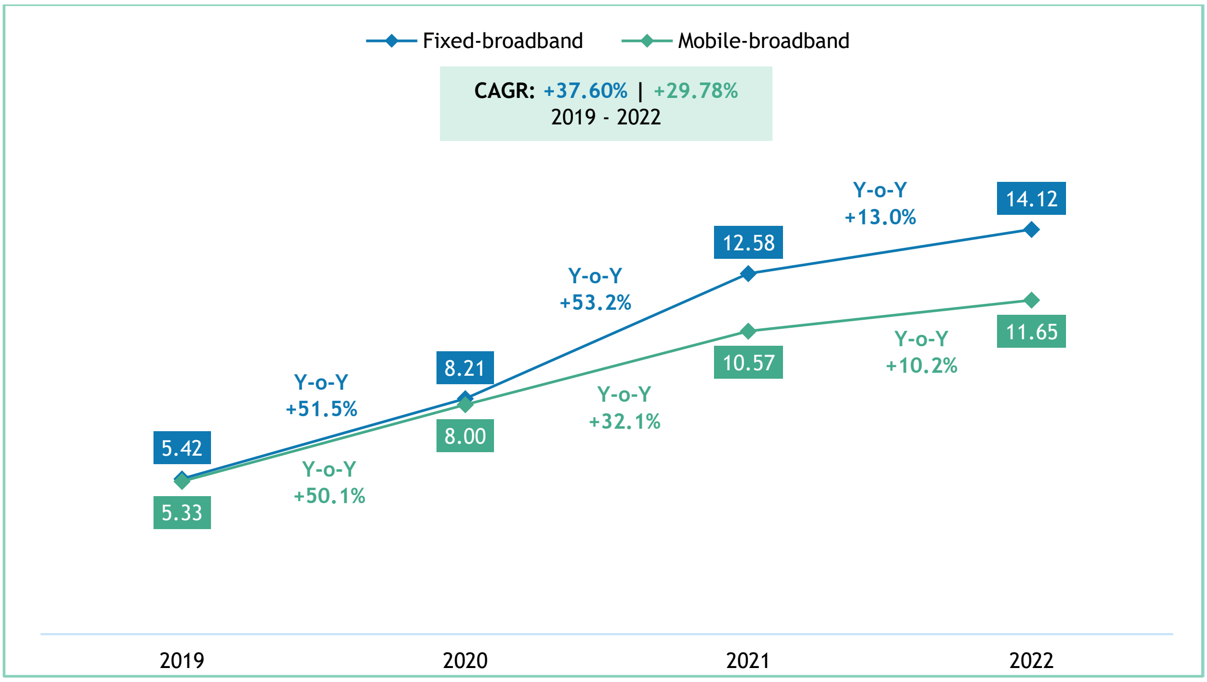


Figure 3: Broadband traffic (Exabyte), 2019 - 2022

Based on these findings, BQoES 2022 can be an instrument of assessment in measuring consumers' expectation and satisfaction. Furthermore, service providers can have a better understanding on their consumers' expectations as well as to apply required courses of actions to move towards in providing the best experience for their consumers.

[4] McKinsey & Company. (n.d.). What's next for digital consumers. Retrieved from https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/whats-next-for-digital-consumers

SECTION 4: METHODOLOGY

BQOES 2022 METHODOLOGY

The survey covered two types of consumers[5], namely FBB and MBB consumers. Eight service providers (SPs) were included in the survey as follows:

Table 1: List of service providers involved in BQoES 2022

BROADBAND	SERVICE PROVIDER
Fixed-broadband (FBB)	Maxis Communications Berhad (Maxis FBB)
	Telekom Malaysia Berhad (TM Unifi)
	TT dotCom Sdn. Bhd. (TIME)
Mobile-broadband (MBB)	Celcom Axiata Berhad (Celcom)
	DiGi Telecommunications Sdn. Bhd. (DiGi)
	Maxis Broadband Sdn. Bhd. (Maxis MBB)
	U Mobile Sdn. Bhd. (U Mobile)
	TM Technology Services Sdn. Bhd.[6] (Unifi Mobile)
	YTL Communications Sdn. Bhd. (YTLC)

Sample for broadband consumers were selected mainly by the following methods:

1. Mobile Station International Subscriber Directory Number (MSISDN) were generated randomly and submitted to SPs for their verification i.e., active, inactive, ported-out, etc. Telephone interviewers will then call the verified numbers and collect the completed responses accordingly, and
2. Publication of the survey notice which includes the survey link and QR code on MCMC website and social media as well as SPs website. The public could access the survey link and complete the survey themselves.

The survey adopted confidence level of 95% with precision level of ±5.00% for fixed-broadband consumers reaching a total of 1,152 respondents for FBB consumers. Meanwhile for mobile-broadband consumers, the survey adopted confidence level of 95% with precision level of ±5.00% reaching a total of 2,304 consumers.

Fieldwork for BQoES 2022 started on 11 November 2022 and ended on 9 January 2023. The survey respondents were assessed using Computer Assisted Telephone Interview (CATI) and secure online questionnaire (Verint system).

[5] For the purpose of this survey, BQoES 2022 consumers defined as respondents who used broadband services in the past 6 months
[6] Previously known as Webe Digital Sdn. Bhd.

METHOD OF DATA ANALYSIS

Scope of survey

BQoES 2022 focused on five (5) scopes[7] of broadband services. Inputs, suggestion and comments from relevant internal and external stakeholders were taken into account during the process of identifying the scopes and development of questionnaires. **Table 2** below depicted list of criteria and attributes in the survey.

Table 2: List of scopes and questions in BQoES 2022

NO	SCOPE	QUESTION
1	**Video Streaming**	1. Name of video streaming service mostly used
		2. Level of importance
		3. Level of satisfaction
2	**Web Browsing**	1. Name of website/app mostly visited
		2. Name of web browser mostly used
		3. Level of importance
		4. Level of satisfaction
3	**Online Gaming**	1. Name of online game mostly played
		2. Name of device mostly used for online gaming
		3. Level of importance
		4. Level of satisfaction
4	**Online Voice Call**	1. Name of application mostly used for online voice call
		2. Level of importance
		3. Level of satisfaction
5	**Online Video Call**	1. Name of application mostly used for online video call
		2. Level of importance
		3. Level of satisfaction

The criteria were evaluated according to consumers' perceptions on their expectation and performance of broadband providers, by using 5-Likert scale. Consumers' expectation was measured based on their level of importance towards broadband services, while broadband providers' performance was based on their level of satisfaction. **Table 3** below illustrated the measurement.

Table 3: 5-point Likert scale

RATING SCALE	EXPECTATION	PERFORMANCE
5	Extremely important	Extremely satisfied
4	Somewhat important	Somewhat satisfied
3	Neutral	Neutral
2	Somewhat not important	Somewhat dissatisfied
1	Extremely not important	Extremely dissatisfied

[7] Selection of criteria was based on the discussion and final report of the National Digital Infrastructure Lab (NDIL) published by MCMC

Additionally, the survey also consisted of 8 demographic profiles of broadband consumers as follows:

1. Age
2. Nationality
3. Gender
4. State
5. Occupation
6. Ethnicity
7. Income
8. Device frequently used

Survey Framework

In line with the objective of BQoES 2022, framework of the survey was developed based on three analyses as shown in **Figure 4** below:

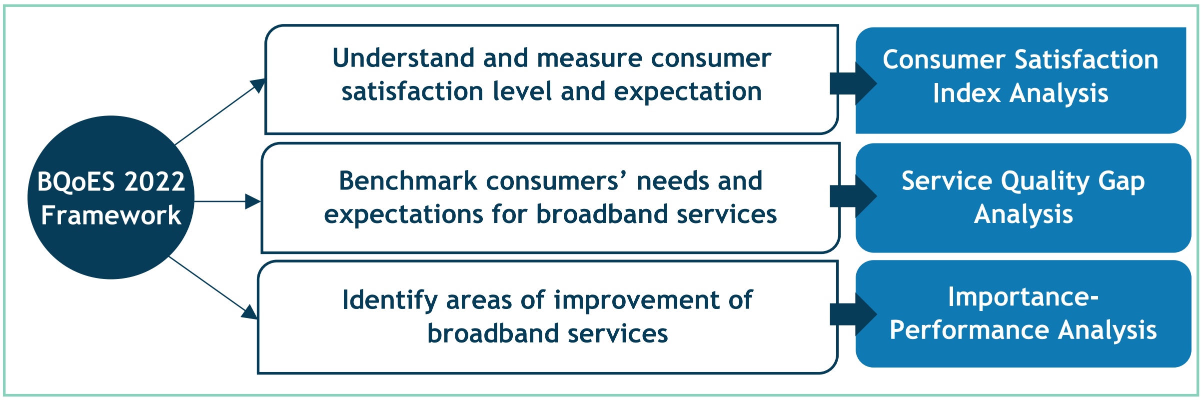


Figure 4: Survey objectives and the correspondence analysis

i. Consumer Satisfaction Index

Over decades, consumer satisfaction has been offered several definitions. Several literatures mentioned that consumer satisfaction can be defined as judgment, impression, response, or evaluation based on the product or services received by them.

For instance, Anderson et al. (1994)[8] suggested consumer satisfaction could be defined in two different ways depending on the consumer experiences, which are specific experiences and cumulative experiences. During specific experience, consumer satisfaction is defined as the post-choice evaluative judgement of a specific purchase occasion. Meanwhile, for cumulative experience, consumer satisfaction is determined because of a consumers' evaluation of his or her total purchase and consumption experience over time.

However, focusing on satisfaction solely is not sufficient, as understanding the requirements or expectations from consumers need to be considered as well. In today's highly competitive market, where all service providers have equal opportunities to provide services, it is essential for them to

[8] Anderson, E. W., Fornell, C., & Lehmann, D. R. (1994). Customer satisfaction, market share, and profitability: Findings from Sweden. *Journal of marketing*, *58*(3), 53-66.

measure themselves on their ability to meet beyond customers' expectations. According to Gitomer, J. (1998)[9], he stated that satisfaction is the consumer's assessment of a product or service in terms of the extent to which that product or service has met his/her needs or expectations.

Therefore, BQoES 2022 evaluated Consumer Satisfaction Index (CSI) based on the consumers' experience on the performance of broadband service providers and their expectation. Further, market share of each broadband service provider will be imposed as a final weightage to the individual service provider's CSI score to compute the overall CSI score[10], as shown in **Figure 5** below:

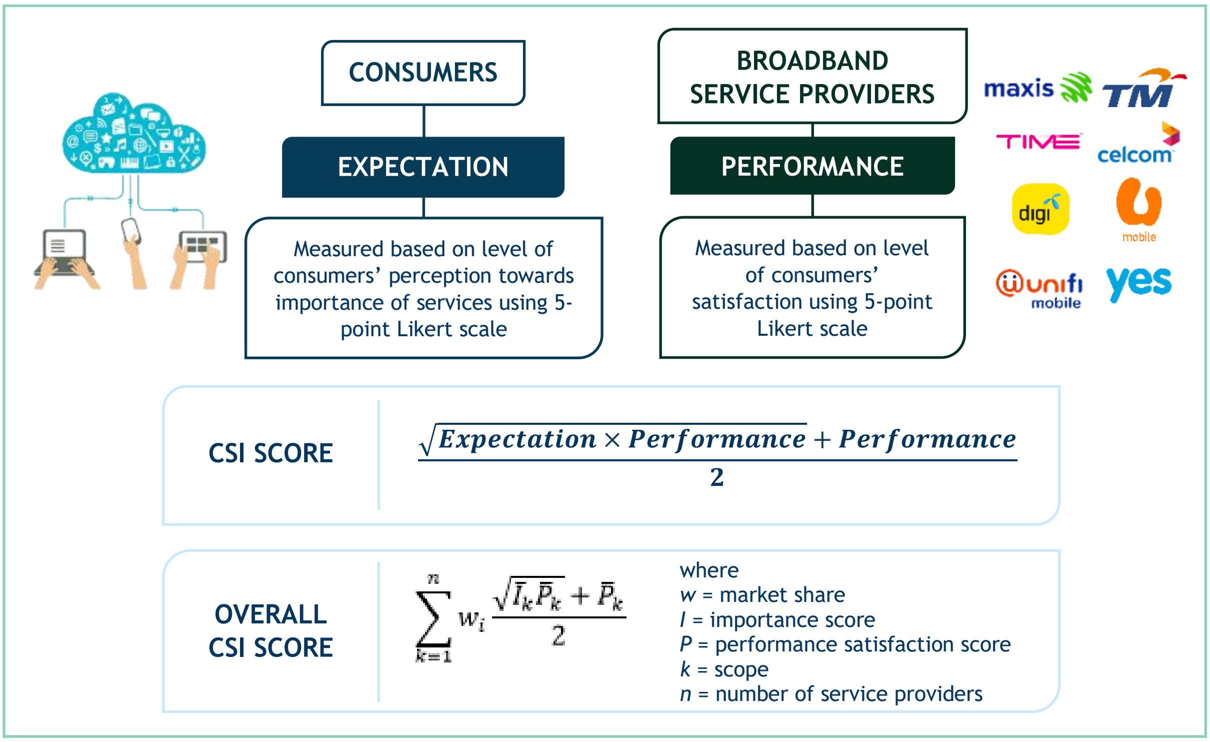


Figure 5: Consumer Satisfaction Index (CSI) model for BQoES 2022

Accordingly, the interpretation of the CSI score is based on relationship between loyalty and satisfaction as described in the Profit Chain from Heskett et al. (1997). **Figure 6** below illustrated the interpretation of the CSI scores[11].

[9] Gitomer, J. (1998). *Customer satisfaction is worthless, customer loyalty is priceless: How to make customers love you, keep them coming back, and tell everyone they know*. Austin, TX: Bard Press
[10] Source of CSI Model from MCMC Consumer Satisfaction Survey (2011 – 2017)
[11] *Interpretation of the CSI score based on the relationship between loyalty and satisfaction as described in the Profit Chain from Heskett, J., W. E. Sasser Jr., and L. Schlesinger. The Service Profit Chain: How Leading Companies Link Profit and Growth to Loyalty, Satisfaction, and Value. New York: Free Press, 1997*

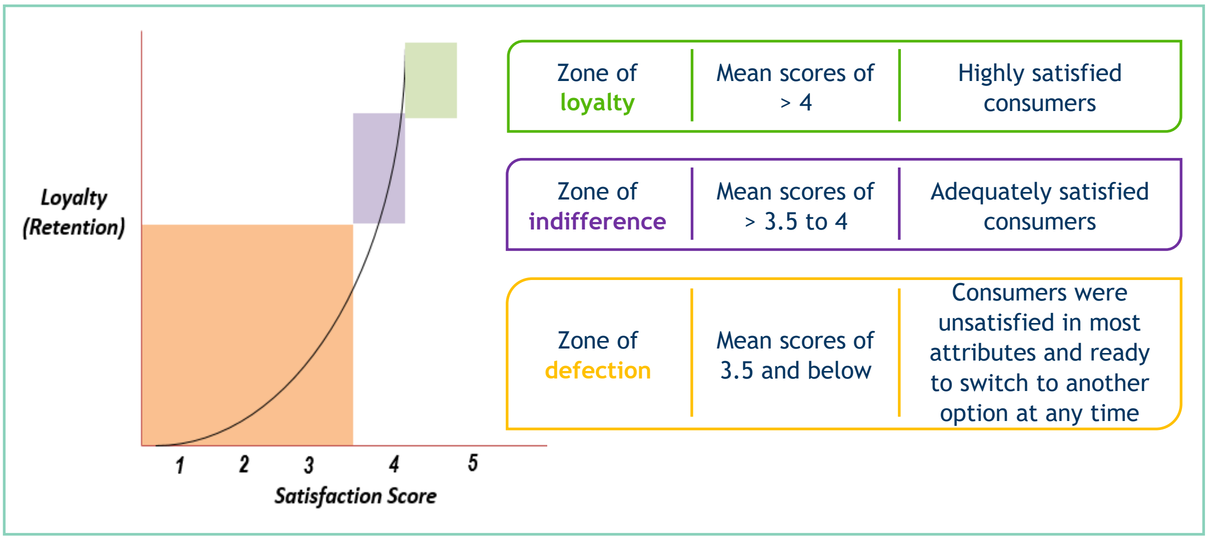


Figure 6: BQoES 2022 CSI scores and the correspondence interpretation

ii. Service Quality Gap Analysis

Service Quality Gap (SQG) analysis was conducted to explore whether the performance of the broadband service providers meets consumers' expectations. Adapted from Parasuraman et al. (1985), SQG analysis conducted by assessing the mean difference of the performance and expectation score. **Figure 7** illustrated the computation of the SQG analysis.

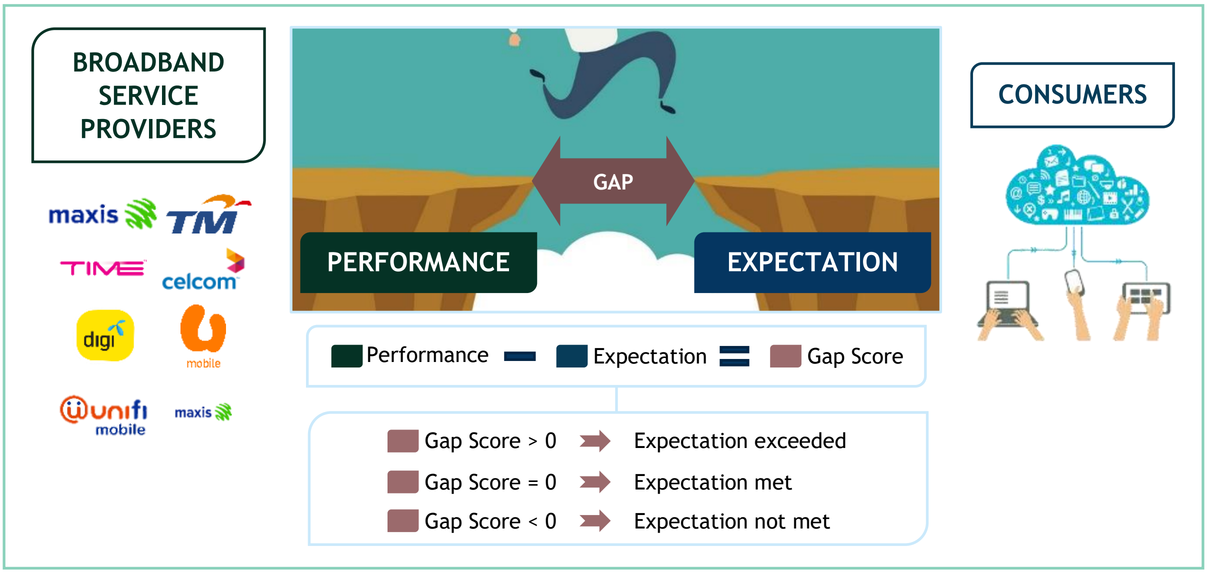


Figure 7: BQoES 2022 Service Quality Gap (SQG) model

iii. Importance-Performance Matrix

Further, the Importance-Performance Matrix Analysis was carried out to identify the high-performing scopes as the strength of the service providers as well as the low performing scopes that required intervention for improvement.

Developed by Martilla and James (1977), Importance-performance analysis (IPA) identifies the relative importance (expectation) of the attributes associated with a service or product while at the same time indicating the degree of performance (satisfaction). The results are plotted graphically on a two-dimensional grid, in which the performance of the attribute is displayed on the horizontal axis while the importance level is displayed on the vertical axis. **Figure 8** illustrated details of IPA.

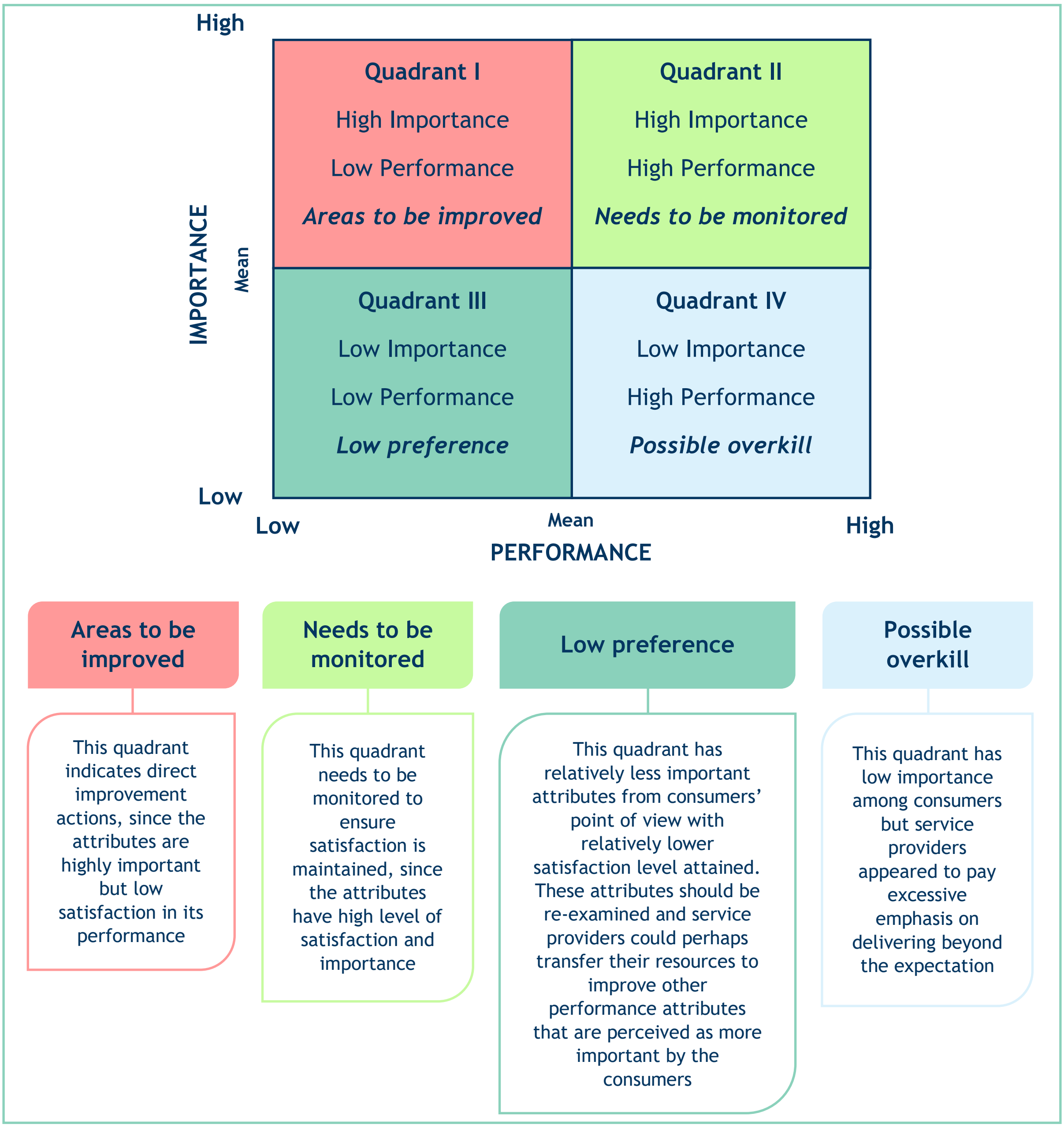


Figure 8: Importance-Performance Matrix

SECTION 5: MAIN FINDINGS

This section consists of six key findings as follows:

1. Overall CSI Score for FBB and MBB consumers
2. FBB Consumers:
    a. CSI Score by Scope
    b. Service Quality Gap Analysis
    c. Importance-Performance Analysis
3. MBB Consumers:
    a. CSI Score by Scope
    b. Service Quality Gap Analysis
    c. Importance-Performance Analysis
4. Broadband Consumer Consumption Pattern by Service
5. Demographic Profile for FBB and MBB consumers

OVERALL CSI SCORE FOR FBB AND MBB CONSUMERS

According to BQoES 2022, the overall customer satisfaction index (CSI) score for FBB and MBB consumers were 3.71 and 3.56, respectively. This means that FBB consumers showed a higher satisfaction level compared to MBB consumers. In comparison with 2021, FBB CSI score increased by 0.01 while MBB showed a decrease by 0.10. However, overall broadband consumers were still adequately satisfied with both broadband services.

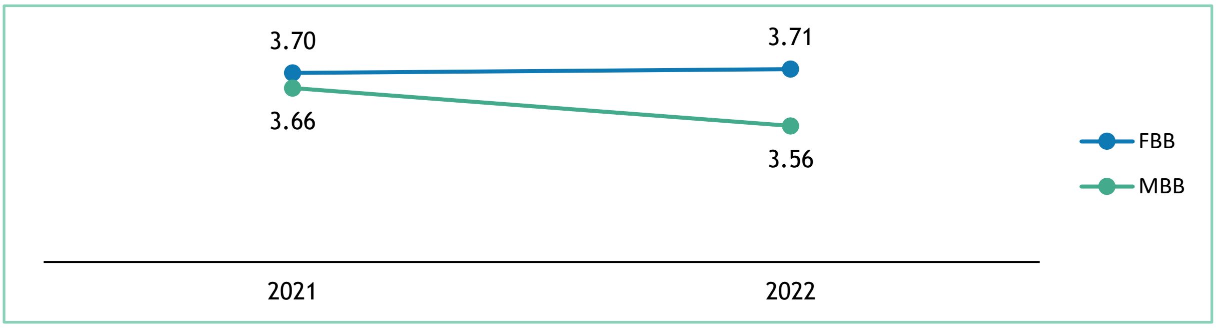


Figure 9: Overall CSI score for FBB and MBB consumers

FBB CONSUMERS

CSI Score by Scope

FBB users were fairly satisfied with their experience using FBB services, as shown by the CSI score of 3.71. **Figure 10** shows that Web Browsing obtained the highest score of 3.98, followed by Video Streaming (3.76) and Online Video Calls (3.69). Online Gaming was the only service that FBB users were unsatisfied with (3.37). Compared to 2021, Web Browsing, Online Voice Calls and Online Video Calls improved, with Online Video Calls having the biggest improvement (+0.04). On the other hand, Online Gaming and Video Streaming score has experienced a marginal drop year-on-year (YoY).

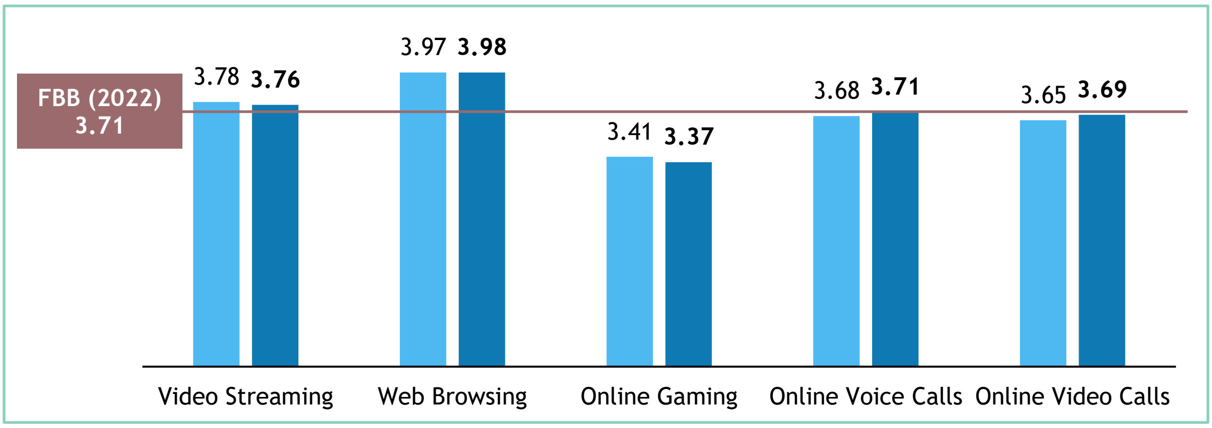


Figure 10: CSI Score by Scope for FBB

Service Quality Gap (SQG) Analysis

Additionally, SQG Analysis was conducted to measure gap of consumers' expectations and satisfaction.

For FBB consumers, four out of five scopes had negative gap scores, indicating that they did not meet consumers' expectations. Only Online Gaming experience had a positive gap score, indicating that it exceeded consumers' expectations. Online Video Calls had the biggest drop in gap score[12] (-0.68) compared to 2021, followed by Online Voice Calls (-0.41). On the other hand, Web Browsing (+0.05) and Online Gaming (+0.58) had the higher gap scores than last year. **Figure 11** shows the gap scores for FBB consumers.

[12] A lower gap score than last year shows a positive trend

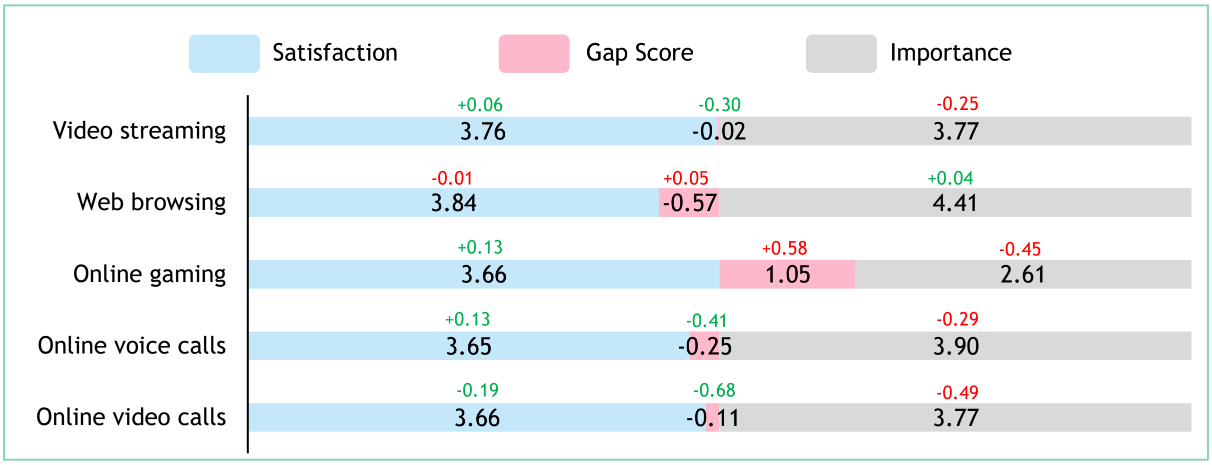


Figure 11: Service Quality Gap (SQG) Analysis for FBB

Importance-Performance Analysis

The results indicated that FBB consumers are setting higher standards for their, with a mean importance of 3.69. Meanwhile, with mean performance was at 3.71, this means some scopes performed well enough.

The position of all scopes in the four quadrants remained as per BQoES 2021, but Online Video Calls moved closer to Quadrant III (Low Preference) in 2022. From the IPA analysis (**Figure 12**), Online Voice Calls and Online Video Calls still analysis require improvement to meet expectation of consumers. Online Gaming remained in Quadrant III while Video Streaming and Web Browsing should be observed carefully to maintain the quality of experience.

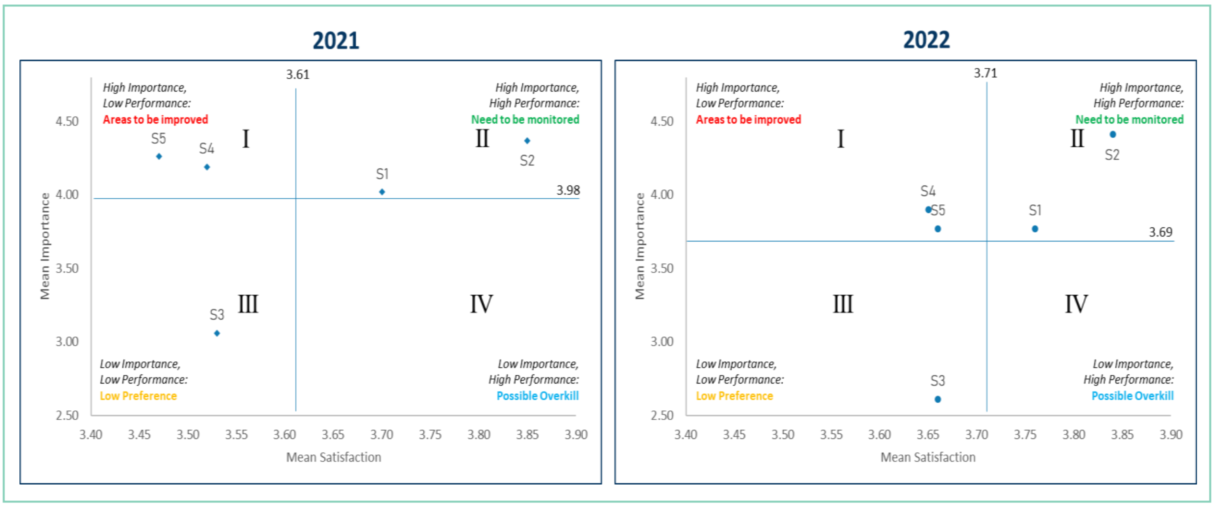


Figure 12: Importance-Performance Analysis for FBB[13]

[13] S1 = Video Streaming. S2 = Web Browsing. S3 = Online Gaming. S4 = Online Voice Calls. S5 = Online Video Calls.

MBB CONSUMERS

CSI Score by Scope

MBB Consumers were fairly satisfied with their experience, with CSI score of 3.56. Web Browsing had the highest score of 3.76, followed by Online Voice Calls (3.74). Online Gaming was the only scope where MBB consumers were not content (3.16). Only Online Voice Calls experienced a better score (+0.04) compared to 2021. The other scopes have experienced a drop YoY, with Online Gaming dropping the most (-0.21).

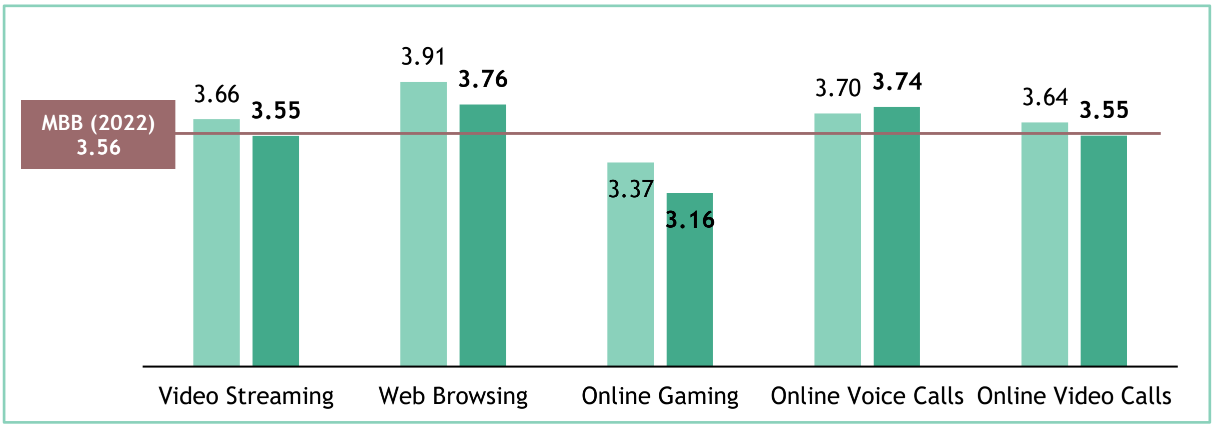


Figure 13: CSI Score for MBB

Service Quality Gap (SQG) Analysis

Similar to FBB, MBB consumers had a negative gap score in four out of five scopes, reflecting their expectations were not met. The only scope recorded a positive gap score was Online Gaming experience. The gap score for Online Voice Calls decreased the most (-0.40) from 2021. On the other hand, Web Browsing was the only scope that increased its gap score (+0.27) compared to last year.

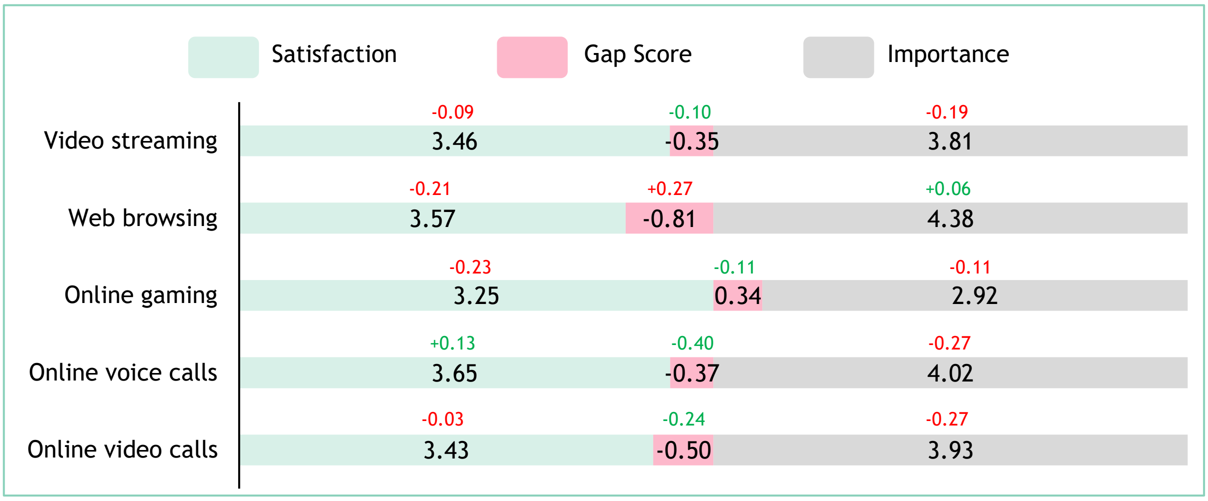


Figure 14: Service Quality Gap (SQG) Analysis for MBB

Importance-Performance Analysis (IPA)

MBB consumers rated the importance and performance of their service providers at 3.81 and 3.47, respectively. Similar to FBB, this indicates that consumers have high expectations and some areas showed satisfactory performance.

Compared to 2021, Online Voice Calls improved from Quadrant I (Areas to be Improved) to Quadrant II (Need to be monitored). Other scopes remained in the same quadrant. Video Streaming and Online Video Calls still require improvement.

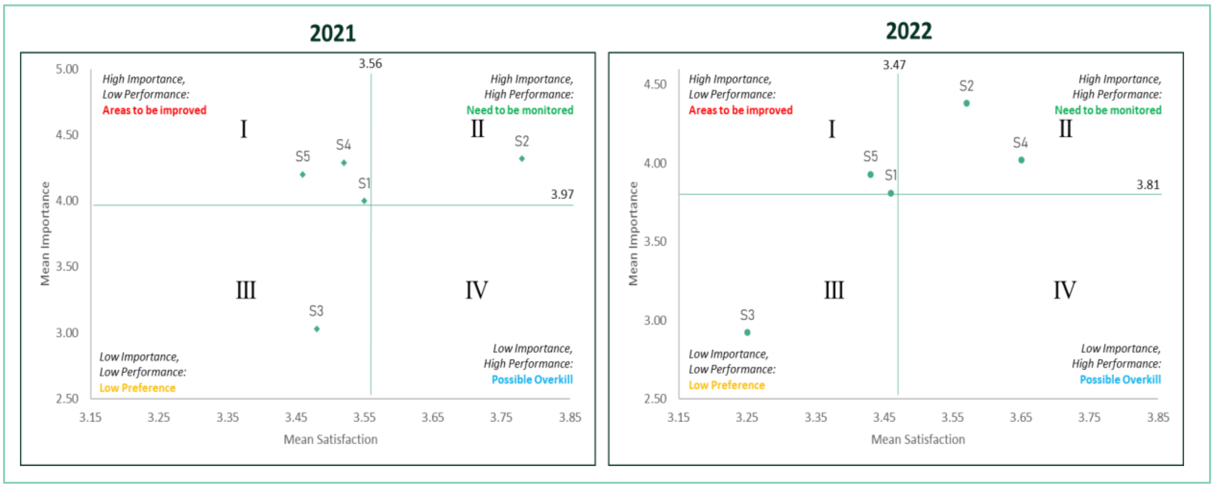


Figure 15: Importance-Performance Analysis for MBB[14]

[14] S1 = Video Streaming. S2 = Web Browsing. S3 = Online Gaming. S4 = Online Voice Calls. S5 = Online Video Calls.

BROADBAND CONSUMER CONSUMPTION PATTERN BY SERVICE

FBB consumers

The survey also investigated broadband consumer behaviour in detail. For Video Streaming, most FBB consumers (96.1%) watched videos online. Among them, nearly half (46.5%) mainly used YouTube, followed by Netflix (30.0%) and Facebook (9.8%). Regarding dissatisfaction, 9.7% of FBB consumers who watched videos online were unhappy with their experience and 44.9% of them cited “Video stalls and buffers” as the main reason for their dissatisfaction.

Compared with 2021, the percentage of video streamers decreased by 0.7 percentage points YoY. Netflix rose from the third place to the second place, overtaking Facebook. TikTok climbed from the fifth place to the fourth place, surpassing Instagram. The percentage of dissatisfied users also declined by 1.9 percentage points YoY.

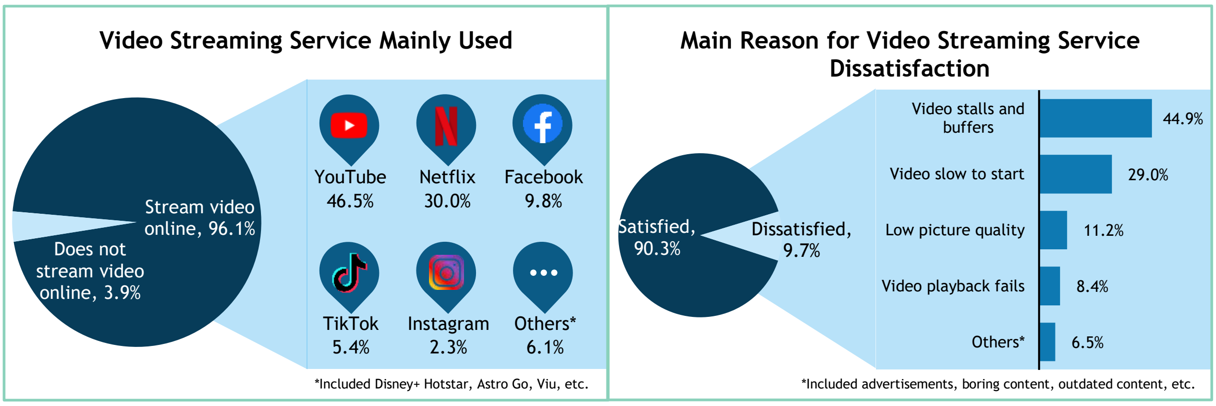


Figure 16: Video Streaming experience of FBB consumers

For Web Browsing, BQoES 2022 revealed that most FBB consumers preferred to use a web browser for their online activities (63.1%). The website they visited the most was Google.com (76.6%), followed by Shopee.com (6.9%). Among the applications, Shopee was the most popular among FBB consumers (32.7%). According to the latest data, Google Chrome and Safari remain the top two web browsers in terms of market share. However, Microsoft Edge has surpassed Firefox as the third most popular web browser.

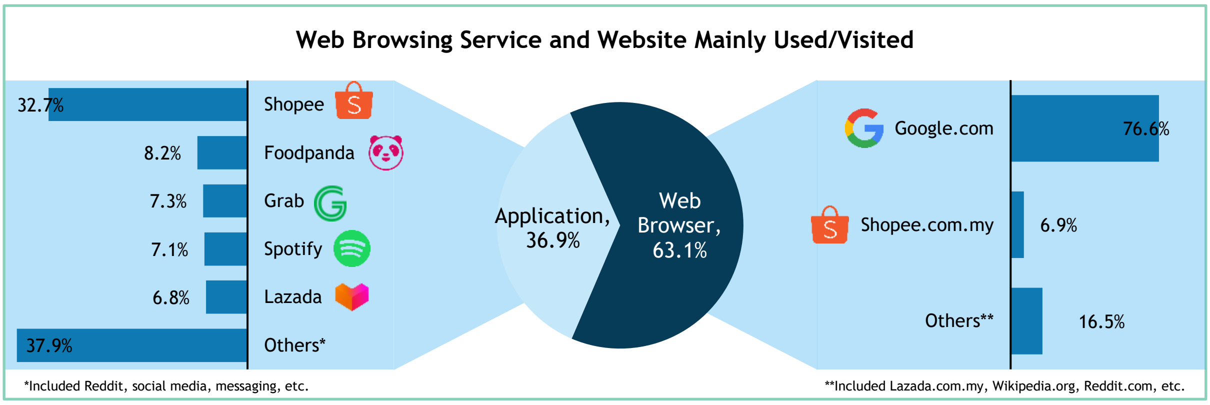


Figure 17: Web Browsing experience of FBB consumers

In terms of dissatisfaction, 6.9% of FBB consumers were dissatisfied with their web browsing experience with "Slow download" as the top reason (36.3%), followed by "Waiting for page to load". The data also showed that the percentage of users who are dissatisfied with their web browsing experience has increased by 1.7 percentage points YoY.

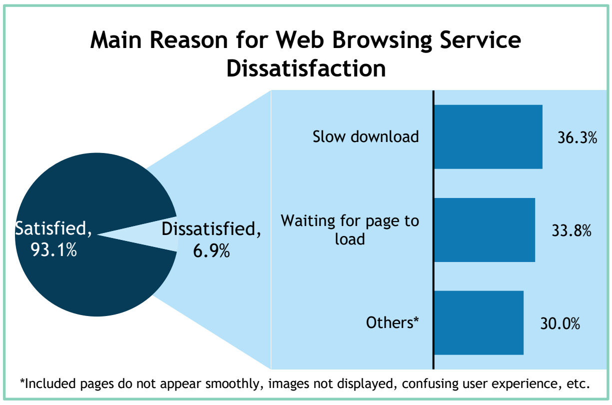


Figure 18: Web Browsing experience of FBB consumers (Dissatisfaction)

Figure 19 showed further details regarding Online Gaming experience where more than a third of FBB consumers (38.6%) played games online. BQoES 2022 showed that the percentage of online gamers has increased by 6.7 percentage points year-on-year. Within that group, the top three games played online were Mobile Legends: Bang Bang/MLBB (19.1%), Dota 2 (9.7%) and PlayerUnknown's Battlegrounds/PUBG (8.3%). In comparison with 2021, MLBB rose from the second place to the first place, overtaking PUBG. Dota 2 climbed from the fifth place to the third place.

As for dissatisfaction, 13.9% of FBB consumers who played games online were dissatisfied with their experience where 32.3% of them cited "Animation stuttering" as the main cause for their dissatisfaction. The survey also indicated that the percentage of users who were dissatisfied with their online gaming experience dropped by 4.9 percentage points YoY.

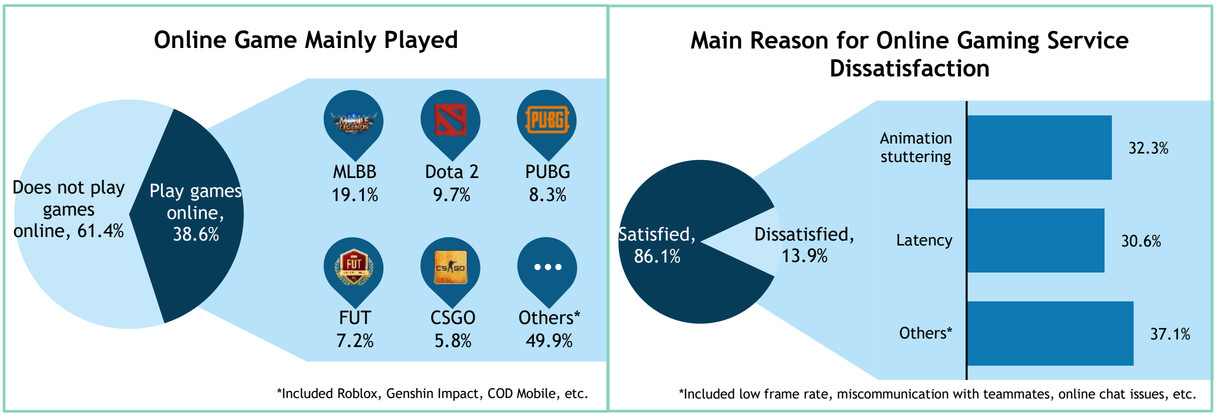


Figure 19: Online Gaming experience of FBB consumers

In 2022, FBB consumers who played games online were also asked on the device they mainly used to play games online. Smartphone (56.0%) was the top choice, followed by PC/Laptop (31.2%) and gaming console (8.5%). **Figure 20** below showed the device FBB consumers mainly used to play games online.

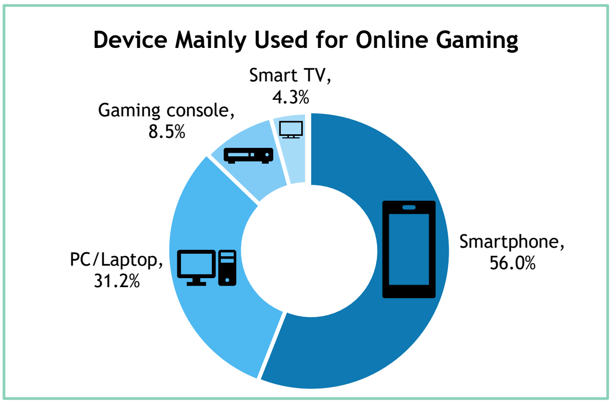


Figure 20: Device Mainly Used by FBB Consumers for Online Gaming

Regarding Online Voice Call (**Figure 21**), BQoES 2022 found that the most popular service used by FBB consumers who made online voice calls (84.2% out of all FBB consumers) was WhatsApp (84.3%), followed by FaceTime (5.2%). The percentage of online voice call users declined slightly by 0.2 percentage points YoY. WhatsApp and FaceTime maintained their positions as the most popular apps, while WeChat rose from seventh to third place, surpassing Teams.

As for dissatisfaction, 13.4% of FBB consumers were dissatisfied with their online voice calls experience with 56.9% of them quoted "Choppy voice" as the main reason for their dissatisfaction. The percentage of users who were dissatisfied with their online voice call experience also decreased by 0.2 percentage points YoY.

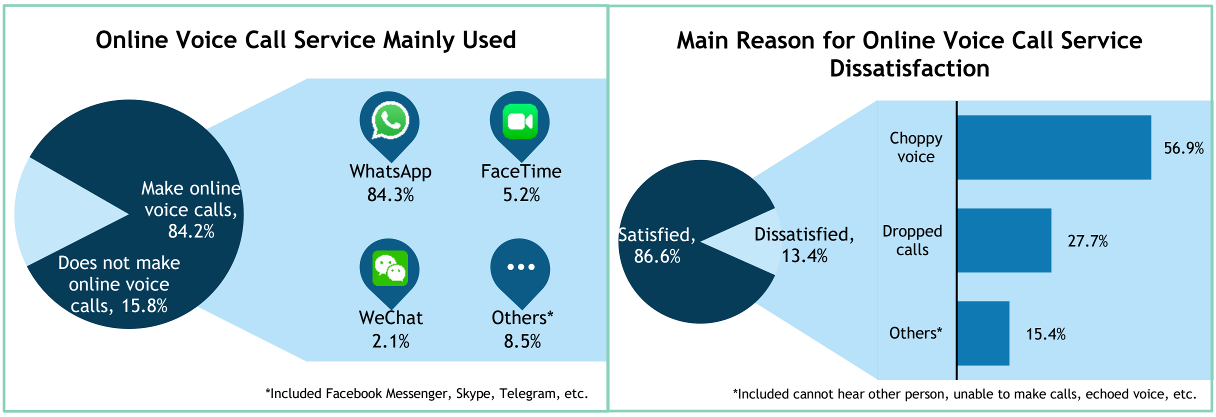


Figure 24: Online Voice Call experience of FBB consumers

Figure 22 displays Online Video Call experience by FBB consumers in detail. The survey found that out of the 92.3% of FBB consumers who made online video calls, WhatsApp was still the most popular service, albeit the lower percentage distribution (63.7%). The percentage of online video call users dropped by 1.5 points YoY, according to the survey. WhatsApp and Zoom remained the top two apps in terms of satisfaction, while FaceTime climbed from fourth to third place, overtaking Teams.

The survey also found that the percentage of dissatisfied users dropped by 4.6 points YoY, indicating an improvement in the quality and reliability of online video call services. Out of those who were dissatisfied with their Online Video Call experience (11.9%), 35.7% of them quoted “Choppy voice” as the main reason for their dissatisfaction.

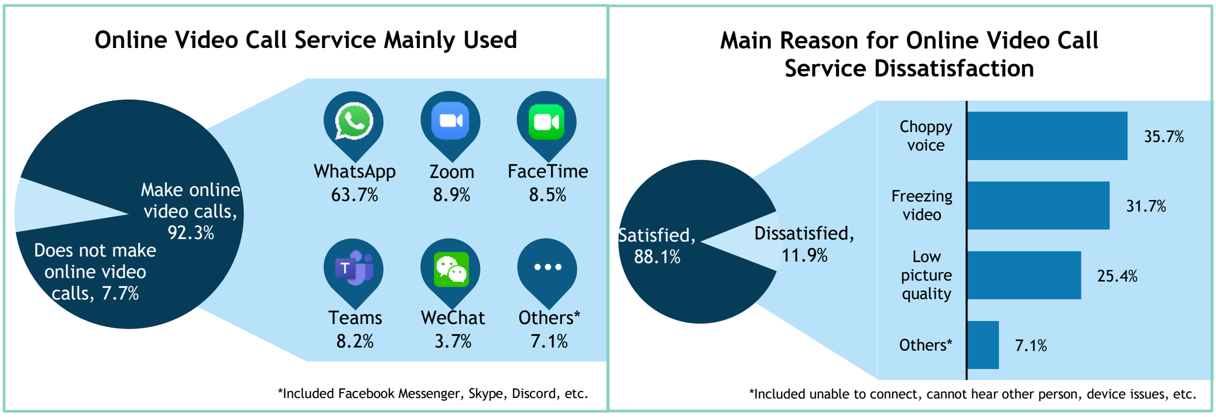


Figure 28: Online Video Call experience of FBB consumers

The device FBB consumers mainly used to make online video calls was also surveyed in 2022. Most of them (75.3%) preferred smartphone, followed by PC/Laptop at 22.1%. **Figure 23** illustrates the device preference of FBB consumers for online video calls.

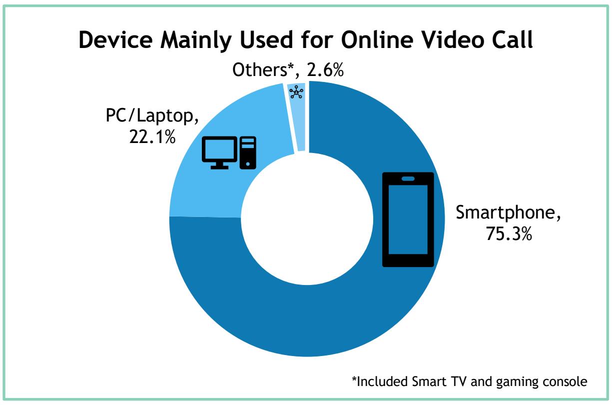


Figure 32: Device Mainly Used by FBB Consumers for Online Video Call

MBB consumers

Most MBB consumers (94.6%) watched videos online. YouTube was the main platform for 43.7% of them, followed by Netflix (17.8%) and Facebook (15.6%). The percentage of video streamers decreased by 4.0 percentage points YoY. Netflix rose from the fourth place to the second place, surpassing Facebook and Instagram. TikTok also climbed from the fifth place to the fourth place, overtaking Instagram.

The percentage of dissatisfied users increased by 4.7 percentage points YoY. In 2022, 17.0% of MBB consumers who watched videos online were unhappy with their experience and 53.0% of them claimed "Video stalls and buffers" was the main reason for their dissatisfaction.

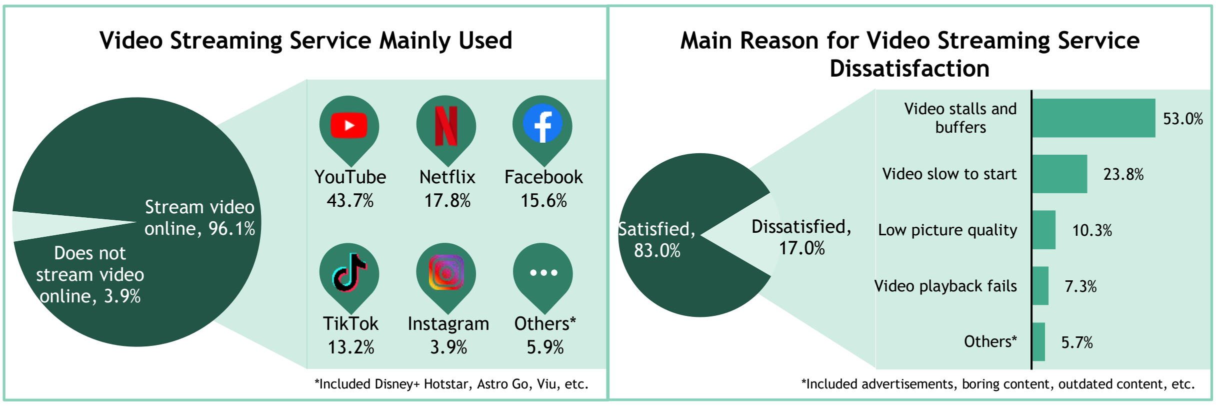


Figure 36: Video Streaming experience of MBB consumers

BQoES 2022 showed that most MBB consumers liked to use apps for their online activities (50.5%). Shopee was the favourite app for MBB consumers (41.5%). Meanwhile, the most visited website was Google.com (74.7%), followed by Shopee.com (10.6%). The latest data shows that Google Chrome and Safari are still the top two web browsers in terms of market share.

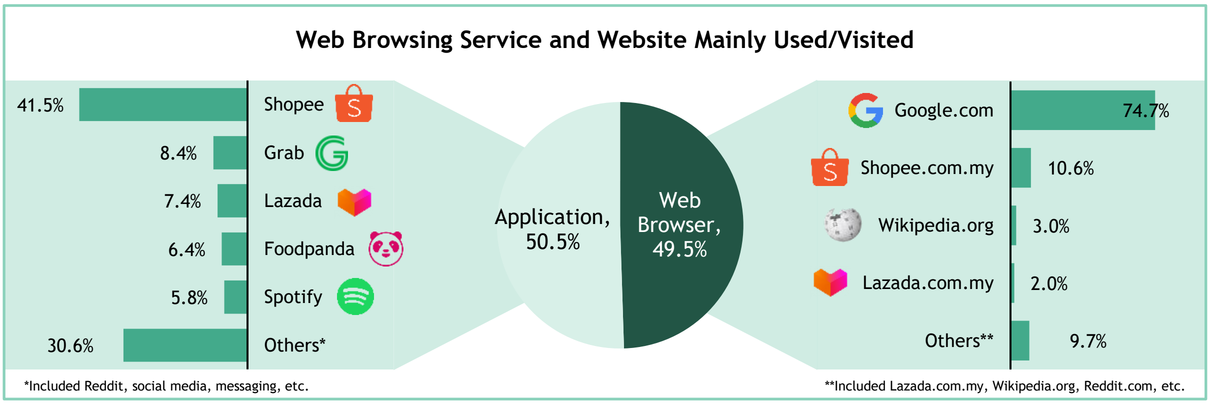


Figure 40: Web Browsing experience of MBB consumers

14.8% of MBB consumers were unhappy with their web browsing experience and “Waiting for page to load” was the main cause (40.1%) of their dissatisfaction, followed by “Slow download”. The percentage of users who were unhappy with their web browsing experience went up by 7.9 percentage points YoY.

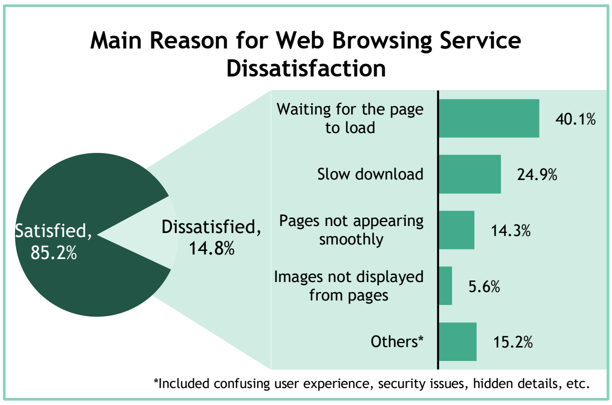


Figure 44: Web Browsing experience of MBB consumers (Dissatisfaction)

Figure 27 shows more details about Online Gaming experience. From the survey, 46.2% of MBB consumers played games online. The percentage of online gamers went up by 9.0 percentage points YoY. The top three online games were Mobile Legends: Bang Bang/MLBB (30.1%), PlayerUnknown’s Battlegrounds/PUBG (13.0%) and Call of Duty/COD (4.3%). Compared with 2021, MLBB remained in the first place. FIFA Ultimate Team/FUT climbed from the tenth place to the fifth place.

As for dissatisfaction, 25.8% of MBB consumers who played games online were dissatisfied with their experience where 36.7% of them cited “Animation stuttering” as the main cause for their dissatisfaction. The percentage of dissatisfied users increased by 8.4 percentage points YoY.

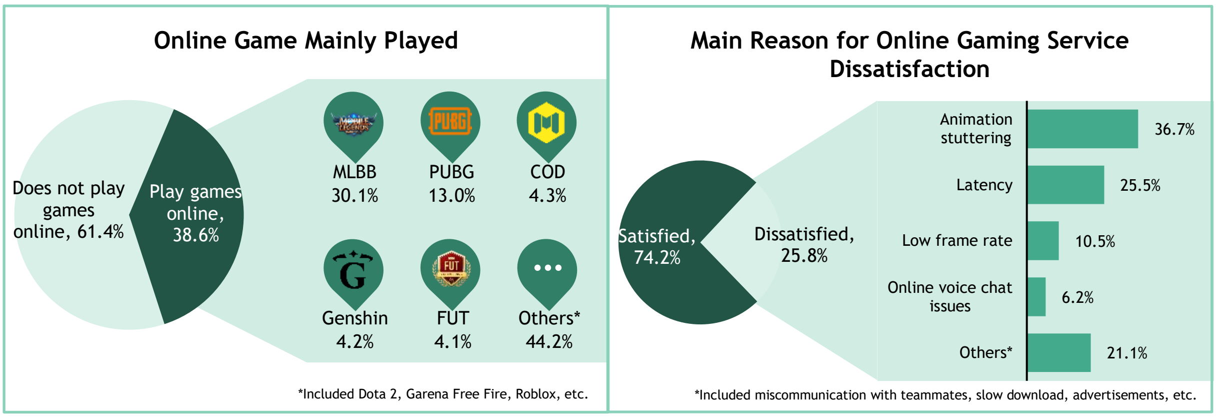


Figure 48: Online Gaming experience of MBB consumers

The survey in 2022 also asked MBB consumers about their main device for playing games online. Smartphone was the most preferred device (88.6%), followed by PC/Laptop (8.3%). The following **Figure 28** displayed the device choice of MBB consumers for online gaming.

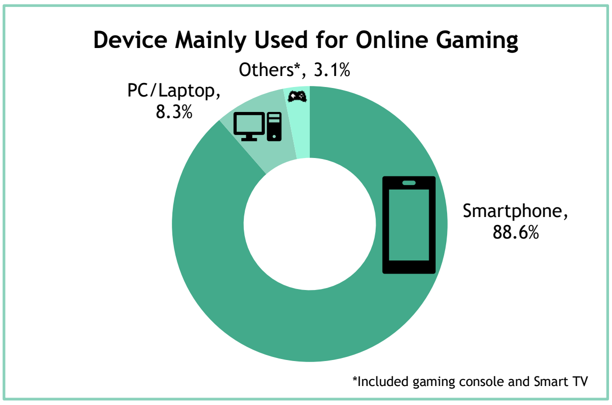


Figure 52: Device Mainly Used by MBB Consumers for Online Gaming

Regarding Online Voice Call, the percentage of online voice users decreased by 8.5 percentage points YoY. The survey found that the most popular service used by MBB consumers who made online voice calls (85.8% out of all MBB consumers) was WhatsApp (90.2%), followed by FaceTime (2.8%). WhatsApp and FaceTime stayed in the top two positions as compared with 2021.

As for dissatisfaction, the percentage of dissatisfied users decreased by 2.4 percentage points YoY. 12.9% of MBB consumers were dissatisfied with their online voice calls experience with 51.2% of them quoted “Choppy voice” as the main reason for their dissatisfaction.

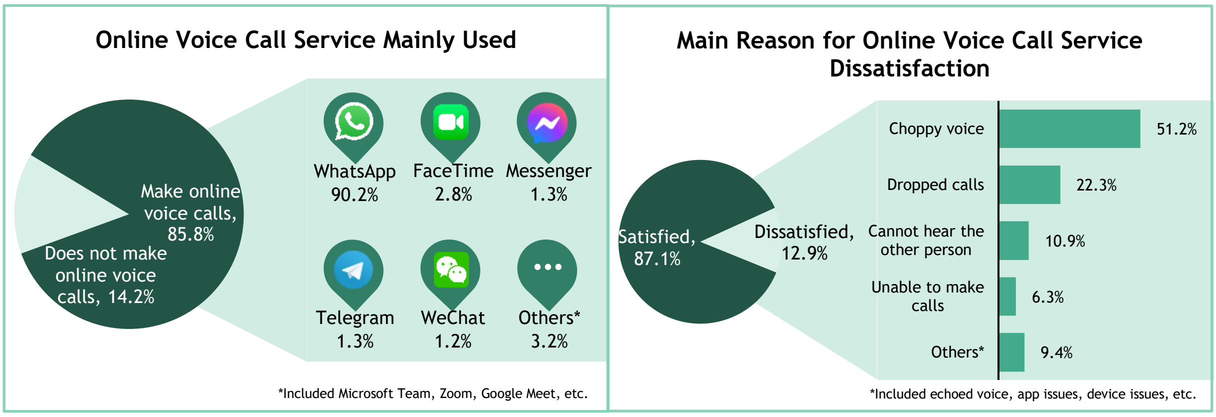


Figure 56: Online Voice Call experience of MBB consumers

The percentage of online video call users went down by 3.2 percentage points YoY. The survey found that out of the 93.3% of MBB consumers who made online video calls, WhatsApp was the most popular service (78.2%), similar position with BQoES 2021. Out of those who were dissatisfied with their Online Video Call experience (18.2%), 39.1% of them quoted “Freezing video” as the main reason for their dissatisfaction. The percentage of dissatisfied users went up by 1.3 percentage points YoY.

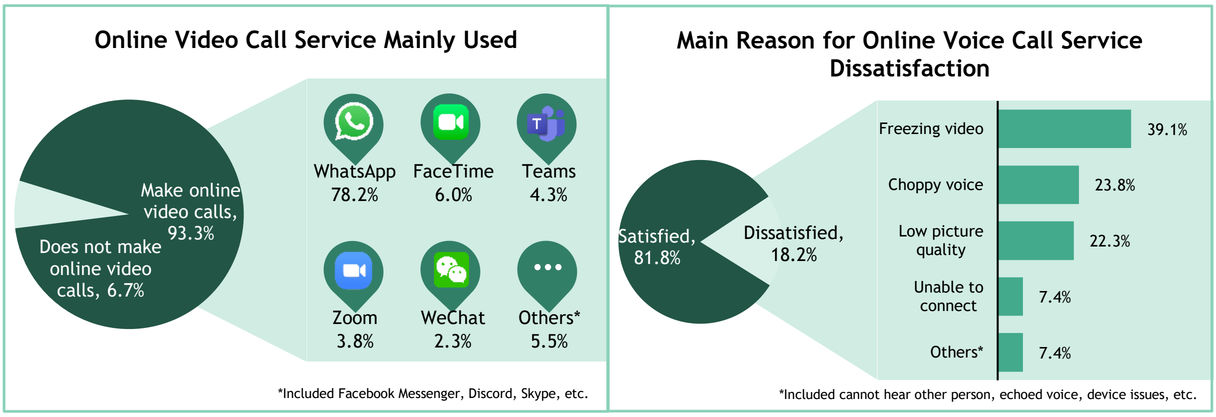


Figure 60: Online Video Call experience of MBB consumers

Most online video call users (75.3%) preferred smartphone, while PC/Laptop came second (22.1%). Smartphone was the most preferred device for all scopes and broadband services.

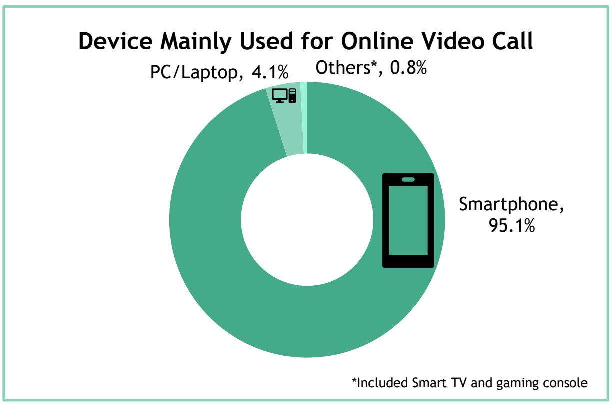


Figure 64: Device Mainly Used by FBB Consumers for Online Video Call

DEMOGRAPHIC PROFILE OF FBB AND MBB CONSUMERS

FBB consumers

The majority of FBB consumers who participated in BQoES 2022 were adults in their 30s and 40s, with 63.7% of them belonging to this age group. There was also a large disparity between male and female FBB consumers, with males comprising 72.2% and females only 27.8%. Furthermore, most FBB respondents earned RM 4,850 and more (54.7%).

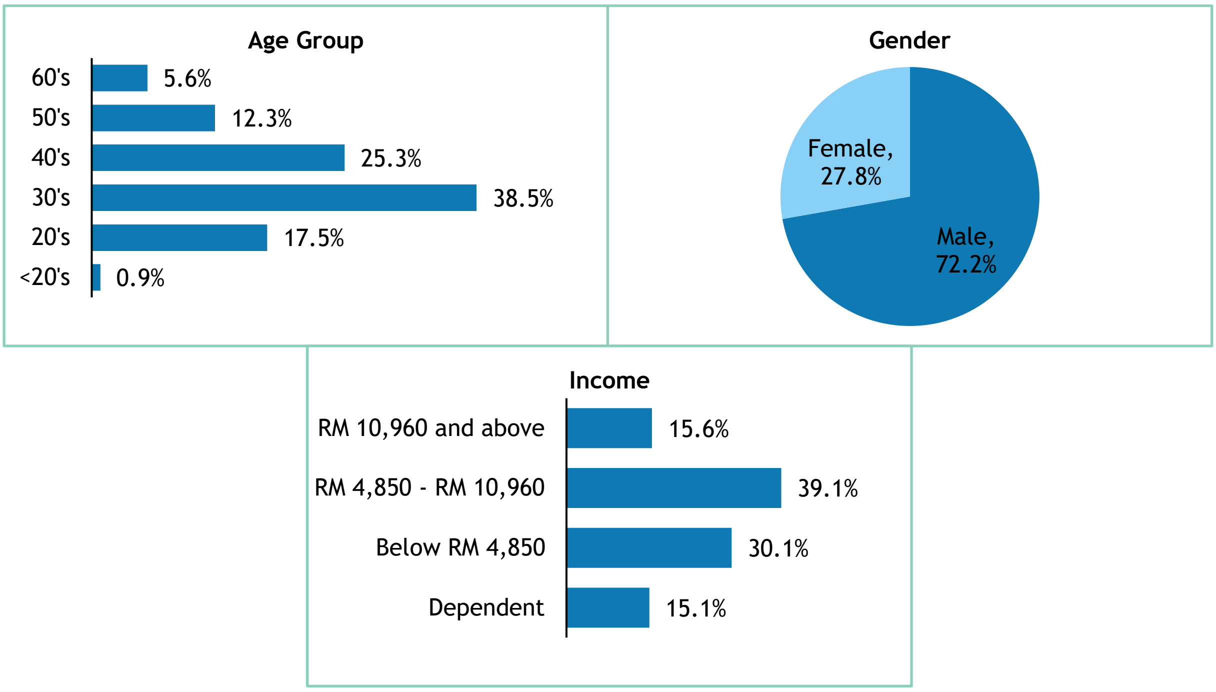


Figure 68: Demographic profile of FBB consumers (Age, Gender and Income)

Most FBB respondents in BQoES 2022 were employed (64.8%), while 7.6% were out of work (including housewives). The main device for broadband usage among FBB consumers was smartphones (55.6%). iPhone was the most popular smartphone brand among them (42.5%), followed by Samsung (16.3%) and Oppo (10.3%). Additionally, most respondents lived in urban areas (82.6%).

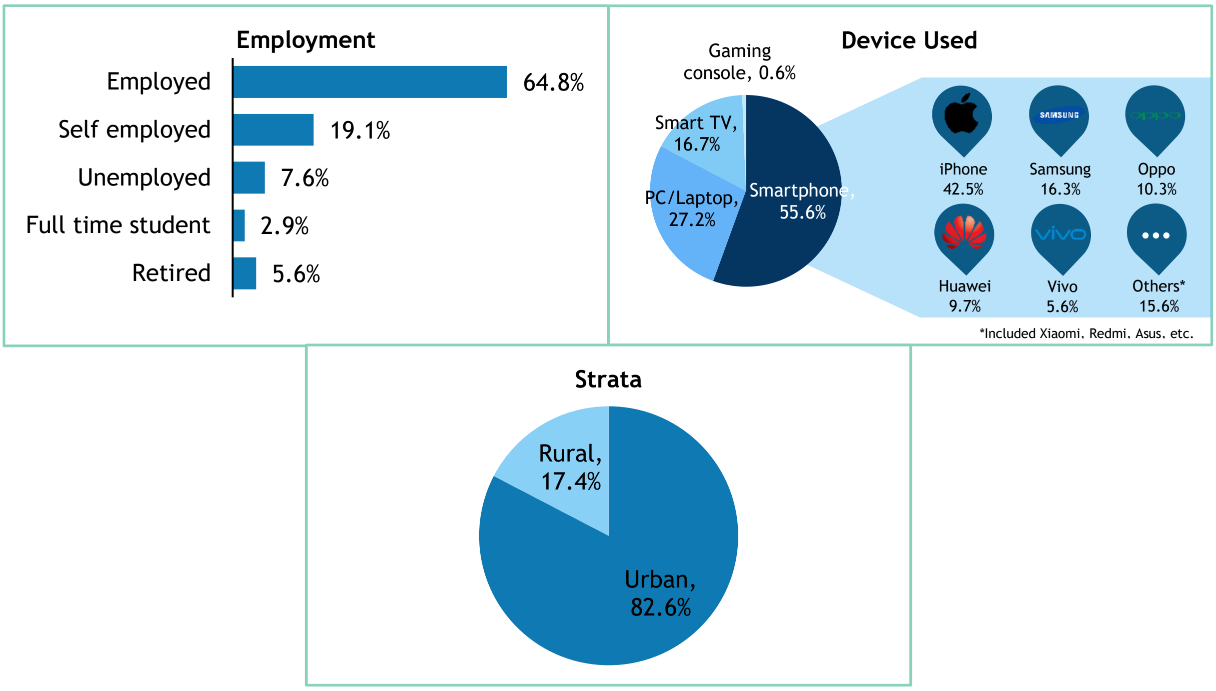


Figure 72: Demographic profile of FBB consumers (Device Used, Employment and Strata)

Other demographic profile of FBB consumers i.e., level of education, nationality, ethnicity and state can be observed in **Figure 34** below:

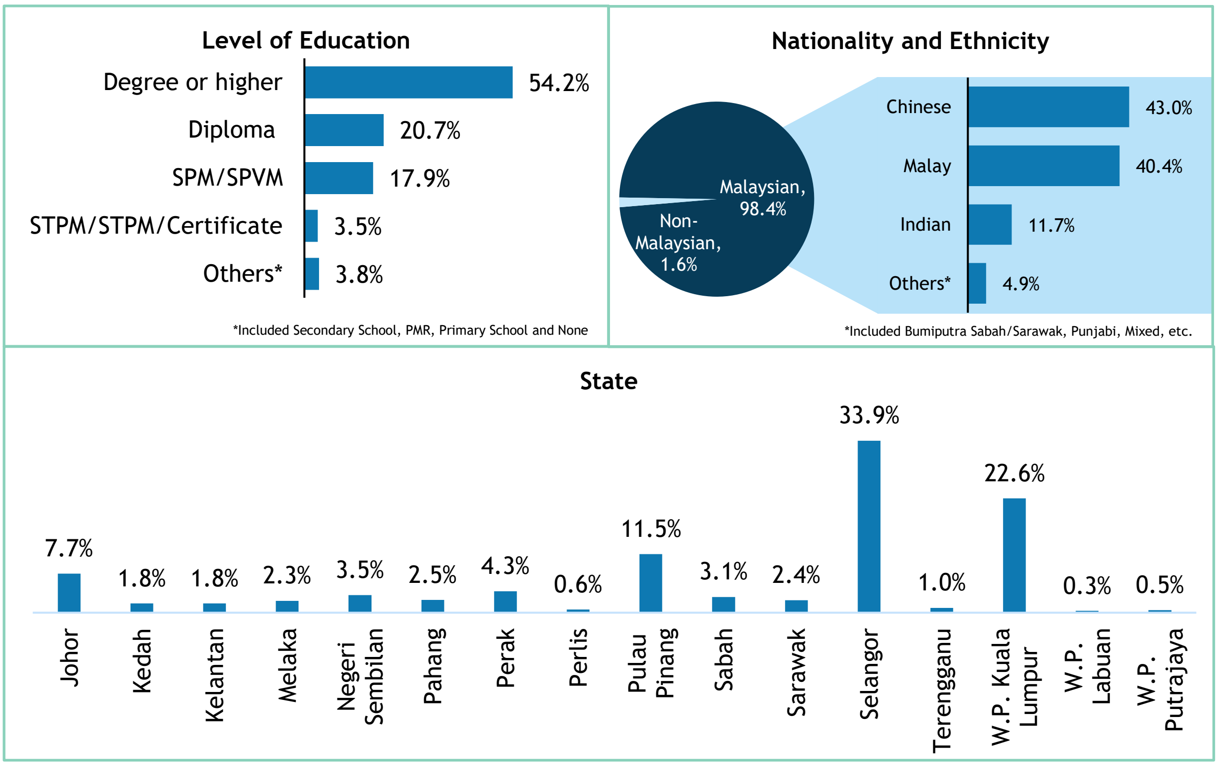


Figure 76: Demographic profile of FBB consumers (Level of Education, Nationality, Ethnicity and State)

MBB consumers

MBB consumers were mostly young people in their 20s and 30s, while FBB consumers were predominantly adults. The gender distribution among MBB consumers was also skewed, with a gap of 38.5% between male and female users. Another notable difference was the income level of MBB consumers, who were more likely to have lower income; nearly half of them (49.7%) earned less than RM 4,850 per month.

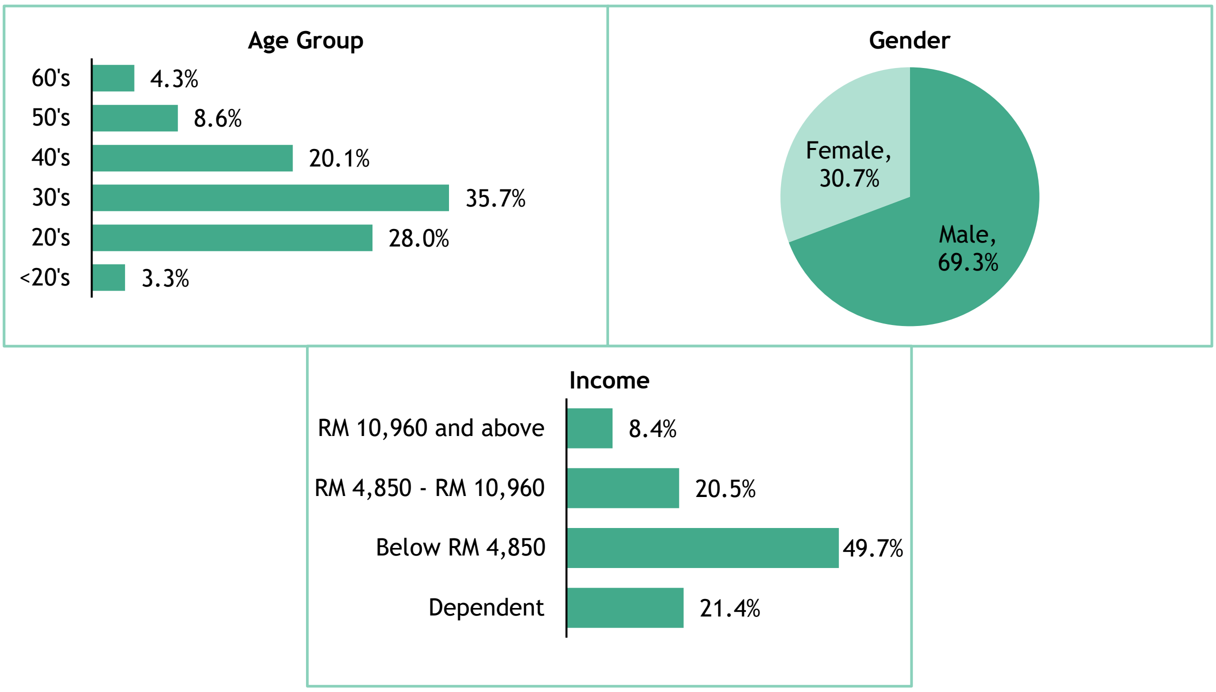


Figure 80: Demographic profile of MBB consumers (Age, Gender and Income)

Most of the respondents (60.6%) were employed in various sectors, while 9.5% of them were not working for various reasons (including housewives). The survey also revealed that smartphones were the dominant device for broadband usage among MBB consumers, with 95.0% of them using smartphones as their primary device. The survey also asked about the smartphone brands that MBB consumers preferred. The results showed that iPhone was the most popular brand, with 26.3% of MBB consumers used an iPhone, followed by Samsung (16.5%) and Vivo (12.4%). Moreover, most of the respondents resided in urban areas (70.7%).

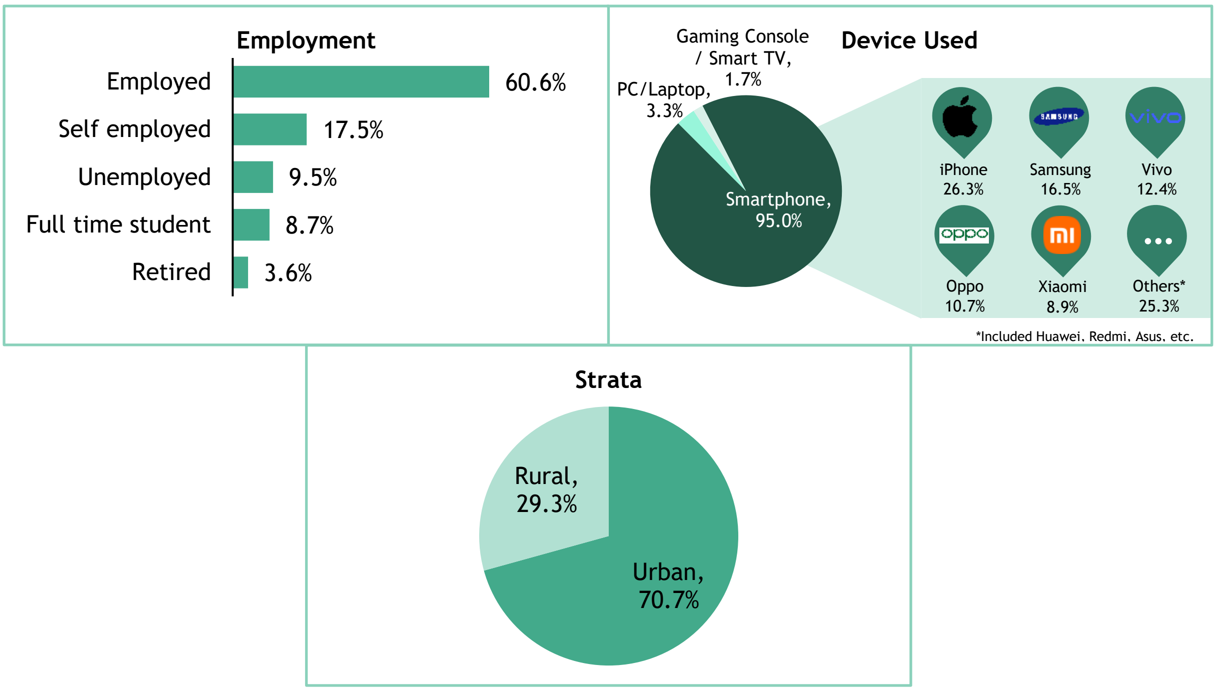


Figure 84: Demographic profile of MBB consumers (Employment, Device Used and Strata)

Other demographic profile of MBB consumers i.e., level of education, nationality, ethnicity and state can be observed in **Figure 37** below:

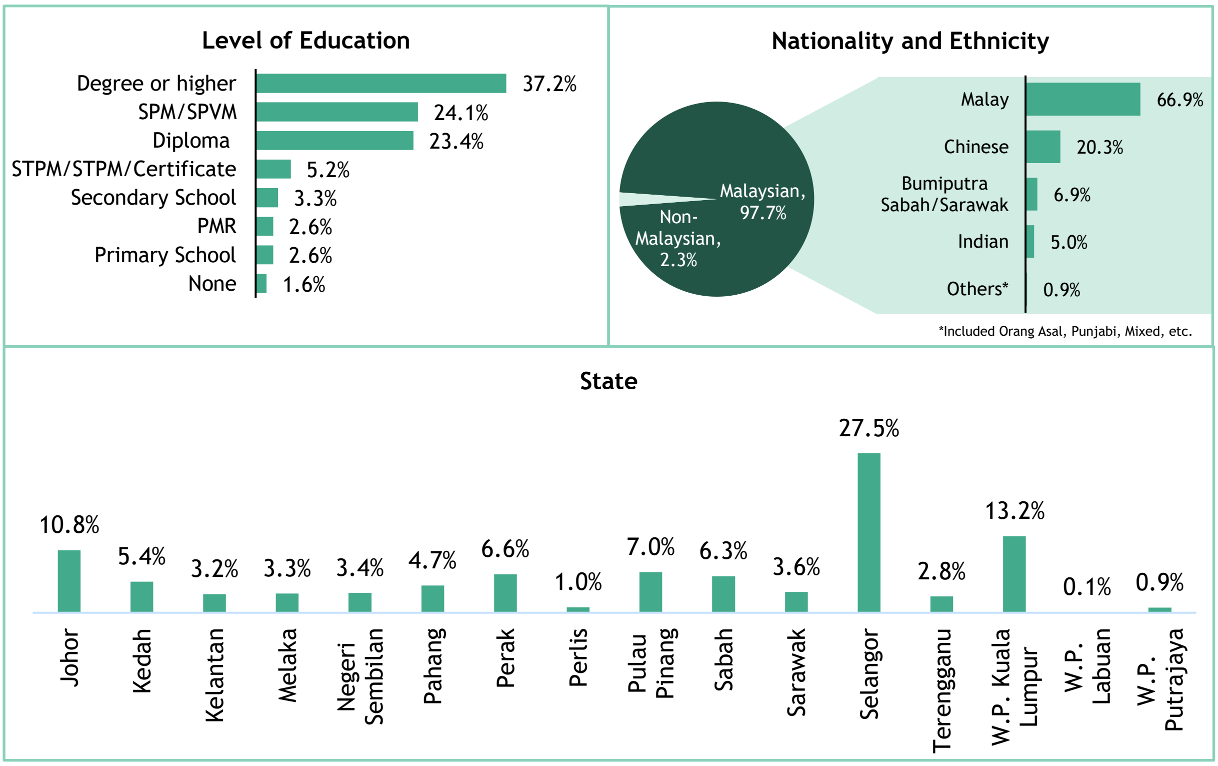


Figure 88: Demographic profile of MBB consumers (Level of Education, Nationality, Ethnicity and State)

SECTION 6: CONCLUSIONS

In conclusion, the BQoES 2022 found that both Fixed-Broadband and Mobile-Broadband customers rated overall satisfaction with broadband services. With a CSI score of 3.71, Fixed-Broadband customers clearly demonstrated a higher degree of satisfaction than Mobile-Broadband customers, who scored just slightly lower at 3.56. It is worth noting that only Fixed-Broadband showed improvement in its CSI score from the previous year. Additionally, when examining specific service aspects, Web Browsing emerged as the most satisfying experience for all broadband consumers, with CSI scored ranging from 3.76 to 3.98.

When examining the disparity between satisfaction and importance levels, Online Gaming was the only area where broadband consumers universally found their experience to exceed expectations, with gaps ranging from 0.34 to 1.05. Conversely, both Fixed-Broadband and Mobile-Broadband users reported the widest gaps between satisfaction and importance in the contexts of Online Voice Call and Online Video Call experiences. Interestingly, Mobile-Broadband consumers placed greater importance on Online Voice Calls, while Fixed-Broadband consumers prioritized Online Video Calls.

In terms of areas needing improvement, Fixed-Broadband service providers should focus on enhancing their Online Voice Call and Online Video Call services to increase consumer satisfaction. Likewise, Mobile-Broadband service providers should prioritize improving their Video Streaming service. Elevating the quality of these services should be a top priority for providers to boost overall consumer satisfaction.

Service providers should consistently work to bridge the performance gap between consumers' expectations and their actual broadband experience. Additionally, they should educate consumers about factors affecting their broadband quality, including device performance, storage optimization, and suitable Internet packages. Consumers need to be aware that their broadband experience can be influenced by factors like device type, age, condition, available storage, and package compatibility with their needs. By providing this information, service providers can empower consumers to make better choices and optimize their broadband experience.

Finally, BOoES 2022 not only examined the alignment of consumer expectations and broadband service provider performance, but it also provided significant insights for optimizing resource allocation. These insights are critical for finding growth prospects and supporting government projects like Jendela in improving digital connectivity in the country.

SECTION 7: TABLES

Caution is required in the use of the estimates tabulated below.

While MCMC takes every care to minimise non-sampling errors, which cannot be quantified, the estimates presented are also subject to sampling error, which is a measure of the chance variation that occurs because a sample, and not the entire population is canvassed. The sampling error of an estimate is usually expressed as a percentage of that estimate to give the relative sampling error (RSE) of that estimate.

In general, estimates that are small are subject to high RSEs. As a guide, only estimates with RSEs of 25% or less are considered reliable for general use. Estimates with RSEs greater than 25% but less than or equal to 50% are denoted with an asterisk (*) in these tables and should be used with caution; while estimates with RSEs greater than 50% are denoted by two asterisks (**) and are considered too unreliable for general use. However, these estimates may be aggregated with others until an RSE of less than 25% is obtained.

Confidence intervals for very small estimates should be based on the binomial distribution rather than the normal approximation to the binomial. As an alternative, the method of Korn and Graubard, 1998 may also be used. Percentages may not add up to 100 because of rounding.

BROADBAND CONSUMER CONSUMPTION PATTERN BY SERVICE

FBB Consumers

Table 4: FBB consumers' Video Streaming activity

Activity	Distribution (%)	RSE
Does not stream video online	3.9	14.6
Stream video online	96.1	0.6

Table 5: FBB consumers' Video Streaming service mainly used

Service	Distribution (%)	RSE
Youtube	46.5	3.2
Netflix	30.0	4.6
Facebook	9.8	9.1
Tiktok	5.4	12.6
Instagram	2.3	19.8
Others	6.1	11.8

Table 6: FBB consumers' Video Streaming service level of importance

Level of Importance	Distribution (%)	RSE
Extremely not important	2.7	17.7
Not important	10.0	8.8
Neutral	16.1	6.7
Important	35.9	3.9
Extremely Important	35.4	4.0

Table 7: FBB consumers' Video Streaming service level of satisfaction

Level of Satisfaction	Distribution (%)	RSE
Extremely dissatisfied	1.6	23.4
Dissatisfied	7.4	10.6
Neutral	22.5	5.6
Satisfied	50.5	3.0
Extremely satisfied	18.0	6.4

Table 8: FBB consumers' Video Streaming service main reason for dissatisfaction

Reason	Distribution (%)	RSE
The video stalls and buffers	44.9	10.7
The video is slow to load up and start	29.0	15.1

Reason	Distribution (%)	RSE
The picture quality of the video is low	11.2	27.2*
Video playback fails and shows an error message	8.4	31.9*
Others	6.5	36.5*

Table 9: FBB consumers' Service mainly used

Service	Distribution (%)	RSE
Apps	36.9	3.9
Web Browser	63.1	2.3

Table 10: FBB consumers' Application mainly used

Website	Distribution (%)	RSE
Shopee	32.7	7.0
Foodpanda	8.2	16.2
Grab	7.3	17.3
Spotify	7.1	17.6
Lazada	6.8	17.9
Others	37.9	6.2

Table 11: FBB consumers' Website mainly visited

Website	Distribution (%)	RSE
Google.com	76.6	2.0
Shopee.com.my	6.9	13.6
Others	16.5	8.3

Table 12: FBB consumers' Web Browser mainly used

Web Browser	Distribution (%)	RSE
Google Chrome	74.8	2.2
Safari	12.2	9.9
Microsoft Edge	5.8	15.0
Mozilla Firefox	4.7	16.7
Others	2.5	23.3

Table 13: FBB consumers' Web Browsing service level of importance

Level of Importance	Distribution (%)	RSE
Extremely not important	0.5	40.7*
Not important	1.0	30.0*

Level of Importance	Distribution (%)	RSE
Neutral	5.5	12.2
Important	33.2	4.2
Extremely Important	59.9	2.4

Table 14: FBB consumers' Web Browsing service level of satisfaction

Level of Satisfaction	Distribution (%)	RSE
Extremely dissatisfied	1.6	22.8
Dissatisfied	5.3	12.5
Neutral	20.1	5.9
Satisfied	55.3	2.6
Extremely satisfied	17.6	6.4

Table 15: FBB consumers' Web Browsing service main reason for dissatisfaction

Reason	Distribution (%)	RSE
Slow download from the pages	36.3	14.8
Waiting for the page to load	33.8	15.7
Others	30.0	17.1

Table 16: FBB consumers' Onling Gaming activity

Activity	Distribution (%)	RSE
Does not play games online	61.4	2.3
Play games online	38.6	3.7

Table 17: FBB consumers' online game mainly played

Online Game	Distribution (%)	RSE
Mobile Legends: Bang Bang	19.1	9.8
Dota 2	9.7	14.5
PlayerUnknown's Battlegrounds (PUBG)	8.3	15.7
FIFA Ultimate Team (FUT)	7.2	17.0
Counter-Strike: Global Offensive (CS:GO)	5.8	19.0
Others	49.9	4.8

Table 18: FBB consumers' Online Gaming service level of importance

Level of Importance	Distribution (%)	RSE
Extremely not important	13.6	7.4
Not important	34.0	4.1

Level of Importance	Distribution (%)	RSE
Neutral	25.3	5.1
Important	15.5	6.9
Extremely Important	11.5	8.2

Table 19: FBB consumers' Online Gaming service level of satisfaction

Level of Satisfaction	Distribution (%)	RSE
Extremely dissatisfied	3.6	24.5
Dissatisfied	10.8	13.6
Neutral	29.7	7.3
Satisfied	37.5	6.1
Extremely satisfied	18.4	10.0

Table 20: FBB consumers' Online Gaming service main reason for dissatisfaction

Reason	Distribution (%)	RSE
Gameplay or animation stuttering	32.3	18.4
Latency issue	30.6	19.1
Others	37.1	16.5

Table 21: FBB consumers' Online Gaming main device used

Device	Distribution (%)	RSE
Smartphone	56.0	4.2
PC/Laptop	31.2	7.0
Gaming console	8.5	15.5
Smart TV	4.3	22.4

Table 22: FBB consumers' Online Voice Call activity

Activity	Distribution (%)	RSE
Does not make online voice calls	15.8	6.8
Make online voice calls	84.2	1.3

Table 23: FBB consumers' Online Voice Call service mainly used

Service	Distribution (%)	RSE
WhatsApp	84.3	1.4
FaceTime	5.2	13.8
WeChat	2.1	22.1
Others	8.5	10.6

Table 24: FBB consumers' Online Voice Call service level of importance

Level of Importance	Distribution (%)	RSE
Extremely not important	1.6	22.8
Not important	8.6	9.6
Neutral	17.2	6.5
Important	39.1	3.7
Extremely Important	33.4	4.2

Table 25: FBB consumers' Online Voice Call service level of satisfaction

Level of Satisfaction	Distribution (%)	RSE
Extremely dissatisfied	2.4	20.6
Dissatisfied	11.0	9.1
Neutral	24.9	5.6
Satisfied	48.5	3.3
Extremely satisfied	13.3	8.2

Table 26: FBB consumers' Online Voice Call service main reason for dissatisfaction

Reason	Distribution (%)	RSE
Voices are choppy or broken	56.9	7.6
Dropped calls during conversation	27.7	14.2
Others	15.4	20.6

Table 27: FBB consumers' Online Video Call activity

Activity	Distribution (%)	RSE
Does not make online video calls	7.7	10.2
Make online video calls	92.3	0.9

Table 28: FBB consumers' Online Video Call service mainly used

Service	Distribution (%)	RSE
WhatsApp	63.7	2.3
Zoom	8.9	9.8
FaceTime	8.5	10.1
Microsoft Teams	8.2	10.3
WeChat	3.7	15.7
Others	6.0	11.1

Table 29: FBB consumers' Online Video Call service level of importance

Level of Importance	Distribution (%)	RSE
Extremely not important	2.0	20.6
Not important	9.5	9.1
Neutral	19.2	6.0
Important	41.4	3.5
Extremely Important	28.0	4.7

Table 30: FBB consumers' Online Video Call service level of satisfaction

Level of Satisfaction	Distribution (%)	RSE
Extremely dissatisfied	2.5	19.0
Dissatisfied	9.4	9.5
Neutral	25.0	5.3
Satisfied	49.4	3.1
Extremely satisfied	13.6	7.7

Table 31: FBB consumers' Online Video Call service main reason for dissatisfaction

Reason	Distribution (%)	RSE
Voices are choppy or broken	35.7	12.0
Freezing or disconnected video	31.7	13.1
The picture quality of the video is low	25.4	15.3
Others	7.1	32.1

Table 32: FBB consumers' Online Video Call main device used

Device	Distribution (%)	RSE
Smartphone	75.3	1.8
PC/Laptop	22.1	5.8
Others	2.6	18.6

MBB Consumers

Table 33: MBB consumers' Video Streaming activity

Activity	Distribution (%)	RSE
Does not stream video online	5.4	8.7
Stream video online	94.6	0.5

Table 34: MBB consumers' Video Streaming service mainly used

Service	Distribution (%)	RSE
Youtube	43.7	2.4
Netflix	17.8	4.6
Facebook	15.6	5.0
Tiktok	13.2	5.5
Instagram	3.9	10.7
Others	5.9	8.6

Table 35: MBB consumers' Video Streaming service level of importance

Level of Importance	Distribution (%)	RSE
Extremely not important	2.2	13.8
Not important	10.1	6.2
Neutral	17.8	4.5
Important	37.2	2.7
Extremely Important	32.7	3.0

Table 36: MBB consumers' Video Streaming service level of satisfaction

Level of Satisfaction	Distribution (%)	RSE
Extremely dissatisfied	3.8	10.8
Dissatisfied	12.6	5.6
Neutral	27.4	3.5
Satisfied	43.6	2.4
Extremely satisfied	12.7	5.6

Table 37: MBB consumers' Video Streaming service main reason for dissatisfaction

Reason	Distribution (%)	RSE
The video stalls and buffers	53.0	4.9
The video is slow to load up and start	23.8	9.3
The picture quality of the video is low	10.3	15.4
Video playback fails and shows an error message	7.3	18.5

Reason	Distribution (%)	RSE
Others	5.7	21.2

Table 38: MBB consumers' Service mainly used

Service	Distribution (%)	RSE
Apps	50.5	2.1
Web Browser	49.5	2.1

Table 39: MBB consumers' Application mainly used

Website	Distribution (%)	RSE
Shopee	41.5	3.5
Grab	8.4	9.7
Lazada	7.4	10.4
Foodpanda	6.4	11.2
Spotify	5.8	11.9
Others	30.6	4.4

Table 40: MBB consumers' Website mainly visited

Website	Distribution (%)	RSE
Google.com	74.7	1.7
Shopee.com.my	10.6	8.6
Wikipedia.org	3.0	16.9
Lazada.com.my	2.0	20.6
Others	9.7	9.0

Table 41: FBB consumers' Web Browser mainly used

Web Browser	Distribution (%)	RSE
Google Chrome	78.6	1.5
Safari	11.3	8.3
Mozilla Firefox	3.4	15.7
Microsoft Edge	2.5	18.3
Others	4.1	14.3

Table 42: MBB consumers' Web Browsing service level of importance

Level of Importance	Distribution (%)	RSE
Extremely not important	1.0	20.7
Not important	1.9	15.1
Neutral	7.6	7.3

Level of Importance	Distribution (%)	RSE
Important	33.5	2.9
Extremely Important	56.1	1.8

Table 43: MBB consumers' Web Browsing service level of satisfaction

Level of Satisfaction	Distribution (%)	RSE
Extremely dissatisfied	3.7	10.6
Dissatisfied	10.9	5.9
Neutral	24.3	3.7
Satisfied	46.5	2.2
Extremely satisfied	14.5	5.1

Table 44: MBB consumers' Web Browsing service main reason for dissatisfaction

Reason	Distribution (%)	RSE
Waiting for page to load	40.1	6.6
Slow download from web pages	24.9	9.4
Web pages not displaying smoothly	14.3	13.2
Images for web pages not displayed	5.6	22.3
Others	15.2	12.8

Table 45: MBB consumers' Onling Gaming activity

Activity	Distribution (%)	RSE
Does not play games online	53.8	1.9
Play games online	46.2	2.2

Table 46: MBB consumers' online game mainly played

Online Game	Distribution (%)	RSE
Mobile Legends: Bang Bang	30.1	4.7
PlayerUnknown's Battlegrounds (PUBG)	13.0	7.9
Call of Duty (COD) Mobile	4.3	14.4
Genshin Impact	4.2	14.6
FIFA Ultimate Team (FUT)	4.1	14.8
Others	44.2	3.4

Table 47: MBB consumers' Online Gaming service level of importance

Level of Importance	Distribution (%)	RSE
Extremely not important	10.8	6.0
Not important	30.0	3.2

Level of Importance	Distribution (%)	RSE
Neutral	24.3	3.7
Important	18.2	4.4
Extremely Important	16.7	4.7

Table 48: MBB consumers' Online Gaming service level of satisfaction

Level of Satisfaction	Distribution (%)	RSE
Extremely dissatisfied	9.1	9.9
Dissatisfied	16.7	7.2
Neutral	31.0	5.1
Satisfied	30.7	5.1
Extremely satisfied	12.4	8.4

Table 49: MBB consumers' Online Gaming service main reason for dissatisfaction

Reason	Distribution (%)	RSE
Animation stuttering	36.7	7.9
Latency	25.5	10.3
Low frame rate	10.5	17.6
Online chat issues where voices are choppy	6.2	23.5
Others	21.1	11.7

Table 50: MBB consumers' Online Gaming main device used

Device	Distribution (%)	RSE
Smartphone	88.6	1.1
PC/Laptop	8.3	10.2
Others	3.1	17.1

Table 51: MBB consumers' Online Voice Call activity

Activity	Distribution (%)	RSE
Does not make online voice calls	14.2	5.1
Make online voice calls	85.8	0.8

Table 52: MBB consumers' Online Voice Call service mainly used

Service	Distribution (%)	RSE
WhatsApp	90.2	0.7
FaceTime	2.8	13.2
Facebook Messenger	1.3	19.5
Telegram	1.3	19.9

Service	Distribution (%)	RSE
WeChat	1.2	20.3
Others	3.2	12.4

Table 53: MBB consumers' Online Voice Call service level of importance

Level of Importance	Distribution (%)	RSE
Extremely not important	1.2	19.1
Not important	6.4	8.0
Neutral	15.8	4.8
Important	38.1	2.7
Extremely Important	38.5	2.6

Table 54: MBB consumers' Online Voice Call service level of satisfaction

Level of Satisfaction	Distribution (%)	RSE
Extremely dissatisfied	9.1	9.9
Dissatisfied	16.7	7.2
Neutral	31.0	5.1
Satisfied	30.7	5.1
Extremely satisfied	12.4	8.4

Table 55: MBB consumers' Online Voice Call service main reason for dissatisfaction

Reason	Distribution (%)	RSE
Choppy or broken voices	51.2	6.1
Dropped calls	22.3	11.7
Cannot hear other person	10.9	17.8
Unable to make calls	6.3	24.2
Others	9.4	19.4

Table 56: MBB consumers' Online Video Call activity

Activity	Distribution (%)	RSE
Does not make online video calls	6.7	7.8
Make online video calls	93.3	0.6

Table 57: MBB consumers' Online Video Call service mainly used

Service	Distribution (%)	RSE
WhatsApp	78.2	1.1
FaceTime	6.0	8.6

Microsoft Teams	4.3	10.2
Zoom	3.8	10.9
WeChat	2.3	14.1
Others	5.5	8.9

Table 58: MBB consumers' Online Video Call service level of importance

Level of Importance	Distribution (%)	RSE
Extremely not important	1.2	18.8
Not important	7.5	7.3
Neutral	18.2	4.4
Important	38.5	2.6
Extremely Important	34.6	2.9

Table 59: MBB consumers' Online Video Call service level of satisfaction

Level of Satisfaction	Distribution (%)	RSE
Extremely dissatisfied	5.3	9.5
Dissatisfied	14.5	5.5
Neutral	29.4	3.5
Satisfied	46.0	2.4
Extremely satisfied	13.4	5.7

Table 60: MBB consumers' Online Video Call service main reason for dissatisfaction

Reason	Distribution (%)	RSE
Video froze or disconnected	39.1	6.3
Choppy or broken voices	23.8	9.1
Low video quality	22.3	9.5
Unable to connect	7.4	17.9
Others	7.4	17.9

Table 61: MBB consumers' Online Video Call main device used

Device	Distribution (%)	RSE
Smartphone	95.1	0.5
PC/Laptop	4.1	10.4
Others	0.8	24.2

BROADBAND CONSUMER DEMOGRAPHIC BY SERVICE

FBB Consumers

Table 62: FBB consumers' age distribution

Age group	Distribution (%)	RSE
15 - 19	0.9	31.5*
20 - 24	5.3	12.5
25 - 29	12.2	7.9
30 - 34	20.7	5.8
35 - 39	17.8	6.3
40 - 44	17.1	6.5
45 - 49	8.2	9.9
50 - 54	8.2	9.8
55 - 59	4.1	14.3
60 - 64	3.6	15.1
65 and above	1.9	21.1

Table 63: FBB consumers' employment distribution

Employment	Distribution (%)	RSE
A full time student	2.9	17.2
Employed	64.8	2.2
Pensioner	5.6	12.1
Self employed	19.1	6.1
Unemployed	7.6	10.2

Table 64: FBB consumers' full time student distribution

Student status	Distribution (%)	RSE
College/University	93.9	4.4
Secondary school	6.1	68.5**

Table 65: FBB consumers' highest level of education distribution

Education level	Distribution (%)	RSE
Degree or higher	54.2	2.7
Diploma	20.7	5.8
None	0.7	35.2*
PT3/PMR/UEC-Junior Middle Three	1.0	28.7*
Primary school	0.9	31.5*
Secondary school	1.2	26.6*
SPM/SPVM	17.9	6.3

Education level	Distribution (%)	RSE
STPM/STAM/Certificate/UEC-Senior Middle Three	3.5	15.5

Table 66: FBB consumers' gender distribution

Gender	Distribution (%)	RSE
Male	72.2	1.8
Female	27.8	4.8

Table 67: FBB consumers' nationality distribution

Nationality	Distribution (%)	RSE
Malaysian	98.4	0.4
Non-malaysian	1.6	22.8

Table 68: FBB consumers' Malaysian ethnicity distribution

Ethnicity	Distribution (%)	RSE
Bumiputra Sabah/Sarawak	3.5	15.5
Chinese	43.0	3.4
Indian	11.7	8.1
Malay	40.4	3.6
Others	1.3	25.6

Table 69: FBB consumers' state distribution

Ethnicity	Distribution (%)	RSE
Johor	7.7	10.2
Kedah	1.8	21.6
Kelantan	1.8	21.6
Melaka	2.3	19.0
Negeri Sembilan	3.5	15.5
Pahang	2.5	18.3
Perak	4.3	14.0
Perlis	0.6	37.7*
Pulau Pinang	11.5	8.2
Sabah	3.1	16.4
Sarawak	2.4	18.7
Selangor	33.9	4.1
Terengganu	1.0	30.0*
Wilayah Persekutuan Kuala Lumpur	22.6	5.5
Wilayah Persekutuan Labuan	0.3	49.9*
Wilayah Persekutuan Putrajaya	0.5	40.7*

Table 70: FBB consumers' income distribution

Ethnicity	Distribution (%)	RSE
More than RM15,039	6.8	10.9
RM10,960 – RM15,039	8.3	9.8
RM8,700 - RM10,959	7.2	10.6
RM7,100 - RM8,699	4.7	13.3
RM5,880 - RM7,099	9.5	9.1
RM4,850 - RM5,879	8.8	9.5
RM3,970 - RM4,849	7.4	10.4
RM3,170 - RM3,969	8.4	9.7
RM2,500 - RM3,169	9.5	9.1
Less than RM2,500	13.9	7.3
Dependent	15.6	6.8

Table 71: FBB consumers' main device used

Device	Distribution (%)	RSE
Smartphone	55.6	2.6
PC/Laptop	27.2	4.8
Gaming console	0.6	37.7*
Smart TV	16.7	6.6

Table 72: FBB consumers' main smartphone used

Smartphone	Distribution (%)	RSE
iPhone	42.5	4.6
Samsung	16.3	9.0
Oppo	10.3	11.7
Huawei	9.7	12.1
Vivo	5.6	16.2
Others	15.6	9.2

Table 73: FBB consumers' main PC/Laptop used

PC/Laptop	Distribution (%)	RSE
Self-build PC	16.9	12.5
Dell	15.0	13.4
MacBook	12.1	15.2
HP	11.5	15.7
Asus	10.5	16.5
Acer	7.7	19.6
Lenovo	7.0	20.6
Others	19.2	11.6

Table 74: FBB consumers' residential area

Residential Area	Distribution (%)	RSE
Urban	82.6	1.4
Rural	17.4	6.4

MBB Consumers

Table 75: MBB consumers' age distribution

Age group	Distribution (%)	RSE
15 - 19	3.3	11.2
20 - 24	12.0	5.6
25 - 29	16.1	4.8
30 - 34	20.1	4.2
35 - 39	15.6	4.8
40 - 44	12.9	5.4
45 - 49	7.2	7.5
50 - 54	5.4	8.7
55 - 59	3.2	11.5
60 - 64	2.4	13.2
65 and above	1.8	15.3

Table 76: MBB consumers' employment distribution

Employment	Distribution (%)	RSE
A full time student	8.7	6.7
Employed	60.6	1.7
Pensioner	3.6	10.8
Self employed	17.5	4.5
Unemployed	9.5	6.4

Table 77: MBB consumers' full time student distribution

Student status	Distribution (%)	RSE
College/University	87.6	2.6
Secondary school	12.4	18.7

Table 78: MBB consumers' highest level of education distribution

Education level	Distribution (%)	RSE
Degree or higher	37.2	2.7
Diploma	23.4	3.8

Education level	Distribution (%)	RSE
None	1.6	16.5
PMR/UEC-Junior Middle Three	2.6	12.6
Primary school	2.6	12.6
Secondary school	3.3	11.3
SPM/SPVM	24.1	3.7
STPM/STAM/Certificate/UEC-Senior Middle Three	5.2	8.9

Table 79: MBB consumers' gender distribution

Gender	Distribution (%)	RSE
Male	69.3	1.4
Female	30.7	3.1

Table 80: MBB consumers' nationality distribution

Nationality	Distribution (%)	RSE
Malaysian	97.7	0.3
Non-malaysian	2.3	13.6

Table 81: MBB consumers' Malaysian ethnicity distribution

Ethnicity	Distribution (%)	RSE
Bumiputra Sabah/Sarawak	6.9	7.8
Chinese	20.3	4.2
Indian	5.0	9.2
Malay	66.9	1.5
Others	0.9	21.7

Table 82: MBB consumers' state distribution

Ethnicity	Distribution (%)	RSE
Johor	10.8	6.0
Kedah	5.4	8.7
Kelantan	3.2	11.4
Melaka	3.3	11.2
Negeri Sembilan	3.4	11.1
Pahang	4.7	9.4
Perak	6.6	7.8
Perlis	1.0	21.2
Pulau Pinang	7.0	7.6
Sabah	6.3	8.0
Sarawak	3.6	10.8

Ethnicity	Distribution (%)	RSE
Selangor	27.5	3.4
Terengganu	2.8	12.2
Wilayah Persekutuan Kuala Lumpur	13.2	5.3
Wilayah Persekutuan Labuan	0.1	57.7
Wilayah Persekutuan Putrajaya	0.9	21.7

Table 83: MBB consumers' income distribution

Ethnicity	Distribution (%)	RSE
More than RM15,039	3.3	11.2
RM10,960 - RM15,039	5.1	9.0
RM8,700 - RM10,959	4.1	10.0
RM7,100 - RM8,699	3.2	11.4
RM5,880 - RM7,099	5.8	8.4
RM4,850 - RM5,879	7.4	7.4
RM3,970 - RM4,849	5.5	8.7
RM3,170 - RM3,969	7.2	7.5
RM2,500 - RM3,169	10.9	5.9
Less than RM2,500	26.1	3.5
Dependent	21.4	4.0

Table 84: MBB consumers' main device used

Device	Distribution (%)	RSE
Smartphone	95.0	0.5
PC/Laptop	3.3	11.3
Gaming console	0.3	40.8*
Smart TV	1.5	17.0

Table 85: MBB consumers' main smartphone used

Smartphone	Distribution (%)	RSE
iPhone	26.3	3.6
Samsung	16.5	4.8
Vivo	12.4	5.7
Oppo	10.7	6.2
Xiaomi	8.9	6.8
Huawei	8.5	7.0
Redmi	6.5	8.1
Asus	0.9	22.3
Others	9.3	6.7

Table 86: MBB consumers' main PC/Laptop used

PC/Laptop	Distribution (%)	RSE
HP	27.6	18.6
Dell	14.5	27.9*
Lenovo	13.2	29.5*
Acer	10.5	33.4*
MacBook	9.2	36.0*
Self-build PC	9.2	36.0*
Others	15.8	26.5*

Table 87: MBB consumers' residential area

Residential Area	Distribution (%)	RSE
Urban	70.7	1.3
Rural	29.3	3.2

CONTACTS	Please contact the MCMC Statistics and Data Intelligence Department if you have any queries regarding statistics published by MCMC at **statistics@mcmc.gov.my**