



CONNECTI ITY

To Facilitate

Digital Transformation

INDUSTRY PERFORMANCE REPORT 2017



Suruhanjaya Komunikasi dan Multimedia Malaysia
Malaysian Communications and Multimedia Commission

STATUTORY REQUIREMENTS

In accordance with Part V, Chapter 15, Sections 123 – 125 of the Communications and Multimedia Act 1998, and Part II, Section 6 of Postal Services Act 2012, Malaysian Communications and Multimedia Commission hereby publishes and has transmitted to the Minister of Communications and Multimedia a copy of this Industry Performance Report (IPR) for the year ended 31 December 2017.

MALAYSIAN COMMUNICATIONS AND MULTIMEDIA COMMISSION, 2018

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CHAIRMAN'S STATEMENT

In 2017, the Communications and Multimedia (C&M) industry market capitalisation of RM183.99 billion represents 9.6% of Bursa Malaysia total market capitalisation of RM1,906.84 billion.

The C&M industry revenue including foreign emerging market operations grew by 5.2% to RM68.4 billion in 2017 from RM65.02 billion in 2016. In contrast, the domestic industry revenue grew by 1.2% as telecommunications and broadcasting sectors posted marginal decline in markets poised in digital transformation for renewed growth. Hence, intensifying network enhancement, talent management for digital services towards meeting consumers' demand are among differentiating factors going forward.

Notably, Pos Malaysia Berhad outperformed all public-listed C&M companies with its encouraging double digit revenue growth of 31% to RM2.46 billion in 2017, partly due to the increase in its courier and transshipment business.

Broadband Prices, Infrastructure and Connectivity

In 2017, broadband penetration rate per 100 inhabitants (fixed and mobile) surpassed 100% mark, reaching 117.3% of which mobile broadband subscriptions totalled 35.26 million (2016: 28.53 million). Compared to ten years ago, broadband penetration rate per 100 inhabitants was only at 4.1%. In order to cater for the growth of data traffic, mobile service providers need to invest in strategic network roll out to ensure quality of service is not compromised. Notably, 3G and 4G LTE population coverage are at 93.6% and 77.2% respectively.

Commission Determination on Mandatory Standard on Access Pricing released in 2017 regulates prices of wholesale services. I urge service providers to take advantage of this price reduction to offer competitive high speed broadband services to consumers. This can result in at least 50% reduction of broadband retail prices in coming years.

Infrastructure Readiness and Quality

Telecommunications service providers, both fixed and mobile, have invested a total of RM6 billion in capital expenditure as part of their continuous efforts to provide better connectivity. Out of this, 49% was invested by the fixed service providers for submarine cables and fibre deployment.

A milestone for the industry in 2017 is the completion of a new submarine cable system in May 2017, ahead of targeted timeline of 30 June 2017, which was funded by MCMC under Public-Private Project and deployed by Telekom Malaysia Berhad. The initiative involved construction of a submarine fibre optic cables network systems spanning over six submarine cable landing stations connecting Peninsular Malaysia with Sabah and Sarawak. The submarine fibre optic cable provides lit capacity of 4Tbps bandwidth infrastructure using 100Gbps Dense Wavelength Division Multiplexing technology.

Malaysia broadband initiatives namely, High Speed Broadband Project (HSBB1) and High Speed Broadband Project Phase 2 (HSBB2) projects have connected 4.27 million premises to high speed broadband up to 100Mbps. Meanwhile, the Suburban Broadband project (SUBB) connects 589,000 premises to broadband services with speeds up to 20Mbps in rural areas.

In terms of service quality, all mobile service providers complied with Mandatory Standards for Public Cellular Service in their nationwide performance by maintaining Call Setup Success Rate between 98% and 99% as well as Dropped Call Rate between 1% and 2%.

Level Playing Field

Being a disruptor in the mobile market, U Mobile Sdn Bhd (U Mobile) managed to grow its subscriptions market share to 14% or 6.12 million in 2017 from 1% in 2009. New innovative product offerings as well as substantial promotional and marketing activities by U Mobile attracted subscribers to switch from the three major celcos.

Courier services registered a total of 128 licences in 2017. E-commerce, home shopping, cybersecurity specialist and newspaper publisher also applied for courier licences to offer their own physical delivery system.

Entrance of new courier service providers complement e-fulfilment and last mile delivery services in support of growing e-commerce activities. According to Department of Statistics Malaysia data, e-commerce contribution to Malaysia's GDP has increased to 6.1% or RM74.6 billion in 2016 from 5.9% (RM68.3 billion) in 2015.

ICT Services, Applications and Underserved Communities

In order to ensure accelerated adoption and greater utilisation of digital services, the Government has implemented various initiatives at different community levels. Since 2015, MCMC has initiated the Smart Community initiative which is premised on the delivery of ICT ecosystem to the smallest geographic units. The Smart Community initiative aims to improve the quality of life and socio-economic status of local communities.

On top of that, being a platform to promote and implement various flagship programmes under Smart Community initiatives, Pusat Internet provides underserved communities with access to broadband services and to bridge digital divide between those in urban and rural areas. Service providers also play an important role in this initiative.

Maxis Berhad for instance, is offering eKelas programme at 45 Pusat Internet across 10 states. eKelas is a structured afterschool e-learning initiative aimed at improving academic performance of students in urban and rural poor communities in Malaysia. In line with Malaysian school syllabus, this programme enables remote learning through engaging and highly interactive digital content for Science, Mathematics and English subjects. Since its launch in November 2016, eKelas have engaged with more than 4,000 students, including those interacting within eKelas portal.

Mobile payment is gaining its ground and becoming a preferred choice of payment solutions. Tapping on the growing demand for digital services, Digi Telecommunications Sdn Bhd introduced its mobile wallets, *vcash*, in 2017 to enable users to make payment for goods and services using their smartphones.

Way forward 2018 and beyond

Going forward, I would encourage mobile service providers to invest in fixed broadband to increase competition in the fixed broadband market, thus boosting digital economy growth. Such efforts are essential towards supporting enhancement of advanced technologies from e-learning platform, smart farming technologies to Internet of Things.

Year 2018 would be a special year for MCMC as this marks the 20th year of C&M regulatory approach in driving the industry together with service providers and stakeholders in leading the nation into digital era. In light of this, I congratulate the industry on their work to embrace and keep pace in driving digital transformation. Such farsightedness and consistency to ensure necessary changes will take us towards achieving national competitive in preparation for the next frontier.

With that, it is my pleasure to present the 2017 Industry Performance Report.

Tan Sri Dr. Halim Shafie
Chairman
Malaysian Communications and Multimedia Commission

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EXECUTIVE SUMMARY

The C&M industry market capitalisation increased 8.5% to RM183.99 billion in 2017 from RM169.56 billion in 2016. This is in line with overall market upward trend as sentiment improved amid encouraging economic factors including recovering Ringgit and stronger crude oil prices.

The C&M industry market capitalisation represents 9.6% of Bursa Malaysia total market capitalisation of RM1,906.84 billion. It represents 75% of the ICT companies market capitalisation at RM245 billion on Bursa Malaysia.

In terms of revenue, the C&M industry has recorded 5.2% growth to RM68.41 billion in 2017 from RM65.02 billion in 2016. Specifically, by mainly domestic industry revenue, the growth is 1.2% to RM50.67 billion in 2017 compared with RM50.07 billion in 2016.

In terms of domestic industry revenue breakdown, telecommunications maintained major 68% revenue share, broadcasting 13% and the remaining from postal sector and others including ACE market and non-public listed licensees.

The overall telecommunications sector margin remained relatively positive and challenging, with average EBITDA margins at 40% in 2017 compared with 41% in 2016. This reflected intensifying competition, higher operating costs and upfront investments, which would provide more sustainable longer term benefits in digital era. The mobile service providers managed to record EBITDA margin ranging between 36% and as high as 54%, while the fixed service providers EBITDA margin averaged 33%.

Capital expenditure (Capex) of the telecommunications sector has reached RM6 billion in 2017. This is a 14% decline compared with RM6.98 billion in 2016. Meanwhile, Capex as a percentage of revenue (capital intensity) at 17.3%, is on par with global average of 17.3%. Capital investments remain steady but moderated due to higher network coverage combined with broader shift to software spend compared with earlier initial roll out pace for 4G LTE and 3G upgrades.

In 2017, total dividend payment by major public listed C&M companies declined 4.1% to RM5.43 billion compared with RM5.66 billion in 2016. Specifically, the telecommunications sector dividend payout was at RM4.69 billion, 3.1% less compared with the previous year. This reflected lower profitability and strategy to retain earnings for investments and expansion to meet new technological developments going forward.

The broadcasting sector continues to face shifts in viewing consumption and advertising spending to digital media, driven by mobility. With that, traditional media such as TV and radio are facing increasing competition resulting in revenue contribution lowered by 0.9% to RM6.42 billion in 2017.

Connectivity enabling digital services

In terms of connectivity in Malaysia, broadband subscriptions have increased 22% to 37.85 million in 2017 compared with 31.02 million in 2016. It is worth noting that the broadband penetration rate per 100 inhabitants has surpassed 100% mark in 2017, reaching 117.3%.

Mobile broadband remains the largest contributor in terms of broadband subscriptions, taking up more than 90% or 35.36 million of total broadband subscriptions. Mobile broadband subscription posted double digit growth of 23.6% in 2017. This growth is partly attributed to initiatives taken by service providers to migrate their existing pure voice subscribers onto postpaid or prepaid bundled plan (voice with minimum data). Additionally, the accelerated adoption is underpinned by innovative and competitive data packages and widespread network coverage.

The population coverage for 3G and 4G LTE recorded 93.6% and 77.2% respectively in 2017. The improved coverage and connectivity has led to new value creations, giving consumers greater mobility, convenience and digital experiences.

Fibre broadband has finally overtaken ADSL as the most popular means of broadband Internet access. The total number of fixed broadband subscriptions have reached 2.59 million in 2017. This is represented by a 4% growth or 250,000 subscriptions in fibre broadband. The growth is mainly driven by continuous High Speed Broadband initiatives such as High Speed Broadband Phase 1 (HSBB1), High Speed Broadband Phase 2 (HSBB2) and Suburban High Speed Project (SUBB). In addition, doubling the speed of fixed broadband in conjunction with Government's announcement during Budget 2017 also contributed to the fibre broadband take up rate.

Fixed telephony service as represented by Direct Exchange Line subscriptions, has declined further to 2.96 million, equivalent to a penetration rate per 100 inhabitants at 9.2% in 2017 from 10.6% in 2016. Such decline was in line with global trend in which changing consumer demand and cheaper communications alternatives impacted the provision of fixed telephony service.

On mobile cellular subscriptions, penetration rate per 100 inhabitants moderated to 131.2% at 42.34 million subscriptions. As a result of inactive SIM termination and migration to postpaid, postpaid subscriptions has increased by 11.2% to 10.23 million, whilst prepaid subscriptions continued to fall, by 6.3% to 32.11 million in 2017.

The local major mobile service providers have nearly equal market shares in terms of mobile cellular subscriptions. Maxis, Digi and Celcom have lost some market share to U Mobile and MVN service providers. U Mobile has managed to increase its market share to 14% in 2017 from 12% in 2016. The remainder is from MVN service providers with market share increased by 1% to 11% or 4.79 million subscriptions in 2017 compared with 10% in 2016.

Content services via multi platform

The broadcasting sector, which is facing challenges in traditional advertising and revenue, has been expanding their businesses to other avenues. Today, service providers are strategising to diversify business models such as providing content to other service providers and home shopping platform as well as airing content via multi platform to reach wider viewers.

Radio listenership reached 19.7 million in 2017 compared with 19.9 million in 2016. By top three states, Selangor recorded the highest number of radio listenership with 4.8 million, followed by Johor and Perak with three million and 2.1 million respectively.

On average, Malaysian spent 30 minutes per week listening to radio through their mobile devices. In view of this, broadcasters had launched a few new initiatives to capture listeners on mobile platform to strengthen their position and generate new revenue streams.

In 2017, advertising expenditure is estimated by Zenith to reach RM7.37 billion, a 3% growth compared with 2016. Internet advertising continues to be the fastest growing category of 16.7% in 2017.

Digital Services

The e-commerce sector has seen significant growth in terms of contribution to the country's economy. According to the Department of Statistics Malaysia, e-commerce contribution to Malaysia's Gross Domestic Product (GDP) had increased to 6.1% or RM74.6 billion in 2016 compared with 5.9% or RM68.3 billion in 2015. Such growth is mainly due to Malaysia's Internet penetration being one of the highest in the region and the fact that about one-third of our Internet users make purchases online.

Malaysia is expected to find opportunities from e-commerce growth and along with it the accompanying fulfilment delivery process. Thus, new innovations are expected to ensure efficiency in postal and courier services. A comprehensive last-mile delivery network is crucial to support e-commerce demand.

As technology advances, usage of mobile devices continue to evolve, shifting the traditional mode of payment to mobile electronic payments or known as mobile wallet. Currently, the existing mobile wallet payment services in Malaysia include credit card merchants, banks and payment merchants. Interestingly in recent developments, our service providers are also piloting their own version of mobile wallets through their subsidiaries and joint-venture partners.

Consumer protection and quality of service

MCMC has strengthened the Guidelines on Registration of End-Users of Prepaid Public Cellular Services on 1 June 2017 in ensuring authentication of user information. Under the revised guidelines, manual registration has been eliminated. Every registration must meet new requirements which include foreigners' registration, use of encrypted and secured automated platforms and maximum of five SIM cards per individual.

In 2017, total consumer complaints received by MCMC increased 91% to 33,257 (17,453 in 2016), mainly due to integration of Communications and Multimedia Consumer Forum of Malaysia Complaint Online Portal with the MCMC Complaint Portal. In terms of complaints resolution, 93% of these complaints were closed as at end 2017. Notably, on average 31% of the complaints were resolved within 72 working hours.

In ensuring service providers adhere to Mandatory Standards for Quality of Services, assessment is conducted for public cellular service, wireless broadband access and wired broadband access on a yearly basis. In 2017, for public cellular service nationwide performance, service providers were able to maintain Call Setup Success Rate between 98% and 99% and Drop Call Rate below 2%.

Trust and security

The demand for digital certificates has been increasing, mainly due to growing awareness on trust and security. As at end 2017, total number of digital certificates issued in Malaysia was 11.04 million (2016: 9.6 million). Public sector is the major contributor to the usage of digital certificates with 97.1% of total certificates issued.

In raising the level of consumer trust towards digital certificate, several improvements have been made to this service including implementing Digital Date Time Stamp Services (DTS). DTS is expected to promote the use of Public Key Infrastructure to a higher level and become an important component of the digital ecosystem in Malaysia.

Postal and courier services

Pos Malaysia outperformed all public-listed C&M companies with its encouraging double digit revenue growth of 31% to RM2.46 billion (2016: RM1.88 billion). The stronger results were attributed to an improvement in its courier and transshipment business as well as the inclusion of logistics and aviation segment contributing 28% to their revenue.

The rapid growth of e-commerce is positive for courier service providers as they are required to improve service delivery to remain competitive. There were 16 new courier companies in 2017, bringing the total to 128 licensees. These comprise 41 Class A, 50 Class B and 37 Class C licensees.

Outlook

Digital transformation is poised to drive operational efficiency and increase customer engagement for enterprises from industry verticals. In an effort to generate new economic avenues and ensure sustainable digital economy, the Government continues to emphasise quality connectivity and affordability of C&M services.

In 2018, service providers are expected to continue to deploy resources for fibre infrastructure and offering higher speed connectivity. This is guided by the Government's initiative to double the speed of fixed broadband and further expanding network reach into rural areas.

Hence, as one of the providers of key enablers for digital transformation, the C&M industry is expected to continue investing in digital innovation to provide high value-added services for the long-term benefit of end users.

LICENSING UNDER CMA

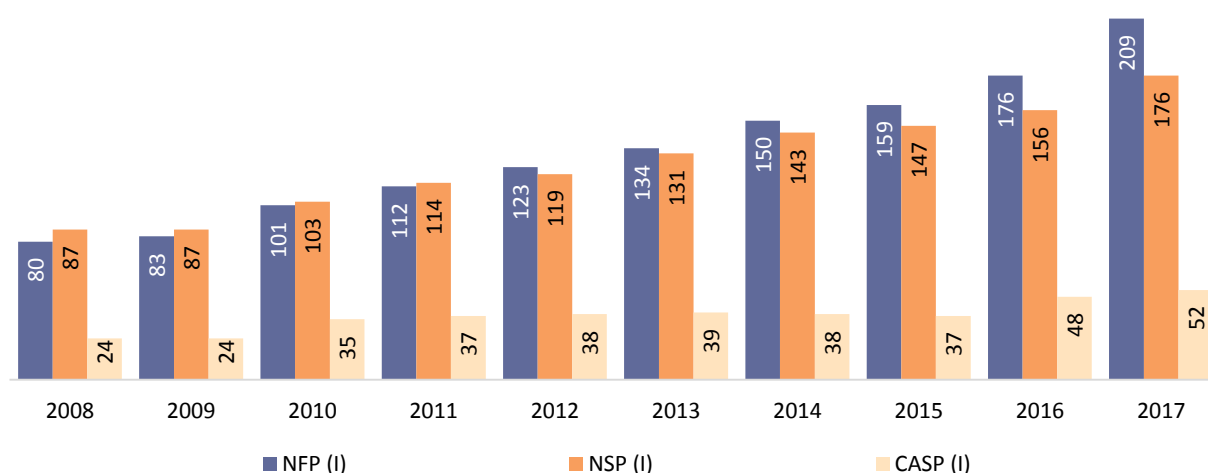
Under the Communications and Multimedia Act 1998 (CMA), there are four categories of licences namely, Network Facilities, Network Services, Applications Services (Class licence only) and Content Applications Service licences¹, which are divided into two types namely, Individual and Class. These licences under the CMA are technology neutral and designed to accommodate services in different and distinct markets.

Licensing Profile over the Years

The number of Individual licences has increased steadily over the years. For the year 2017, there were 437 Individual licences; increased by 15% overall. The total number of licences comprises of 209 NFP (I), 176 NSP (I) and 52 CASP (I) respectively.

CMA Licences (Individual) 2008 – 2017

NUMBER OF LICENCE



Source: MCMC

Figure i CMA Licences (Individual) 2008 – 2017

¹ NFP – Network Facilities Provider; NSP – Network Service Provider; CASP – Content Applications Service Provider; ASP – Applications Service Provider; I – Individual; C – Class.

There were a total of 100 individual licences approved and renewed by Minister of the Ministry of Communications and Multimedia Malaysia (KKMM). A total of 38 new NFP (I), 25 new NSP (I) and four new CASP (I) licences were issued, whilst, 16 NFP (I), 13 NSP (I) and four CASP (I) licences were renewed.

Additionally, details of the infrastructure and services offered by new and renewed licensed service providers in 2017 are shown in Figure ii.

New and Renewed Licences					
Infrastructure and Services	Company	New (N)/ Renewed (R)	NFP (I)	NSP (I)	CASP (I)
Content applications services – DTTB	Daeyun Broadcasting Sdn Bhd	N			✓
	Geliga Media Sdn Bhd	N			✓
Deployment of satellite based communications infrastructure to support broadcasting distribution services and provision of subscription broadcasting	Jaringan Mega Sdn Bhd	N	✓	✓	✓
	Smart Digital International Sdn Bhd	N	✓	✓	✓
Deployment of communications infrastructure to support broadband satellite services	Zeta IOS Sdn Bhd	N	✓	✓	
Deployment of communications infrastructure to support cellular and broadband services and provision of bandwidth services	Touch Mindscape Sdn Bhd	R	✓	✓	
	Summernet Sdn Bhd	N	✓	✓	
Deployment of communications infrastructure to support broadband services and provision of bandwidth services	Arus Restu Sdn Bhd	N	✓	✓	
	Daulat Networks Sdn Bhd	N	✓	✓	
	Hamshi Xair Sdn Bhd	N	✓	✓	
	Innet Technologies Sdn Bhd	N	✓	✓	
	Lautan Variasi Sdn Bhd	N	✓	✓	
	Matrix Power Network Sdn Bhd	N	✓	✓	
	Nalfin Realities Sdn Bhd	N	✓	✓	
	TNB-IT Sdn Bhd	N	✓	✓	
	Array Technology Sdn Bhd	N	✓	✓	
	Eden Networks Sdn Bhd	N	✓	✓	
	M Telecom World Sdn Bhd	N	✓	✓	
	Promajadi Sdn Bhd	N	✓	✓	
	R&R Engineering Supply Sdn Bhd	N	✓	✓	
	Altel Communications Sdn Bhd	R	✓	✓	
	Sacofa Sdn Bhd	R	✓	✓	
	Sarawak Information Systems Sdn Bhd	R	✓	✓	
	Sunwise Crystal Sdn Bhd	R	✓	✓	

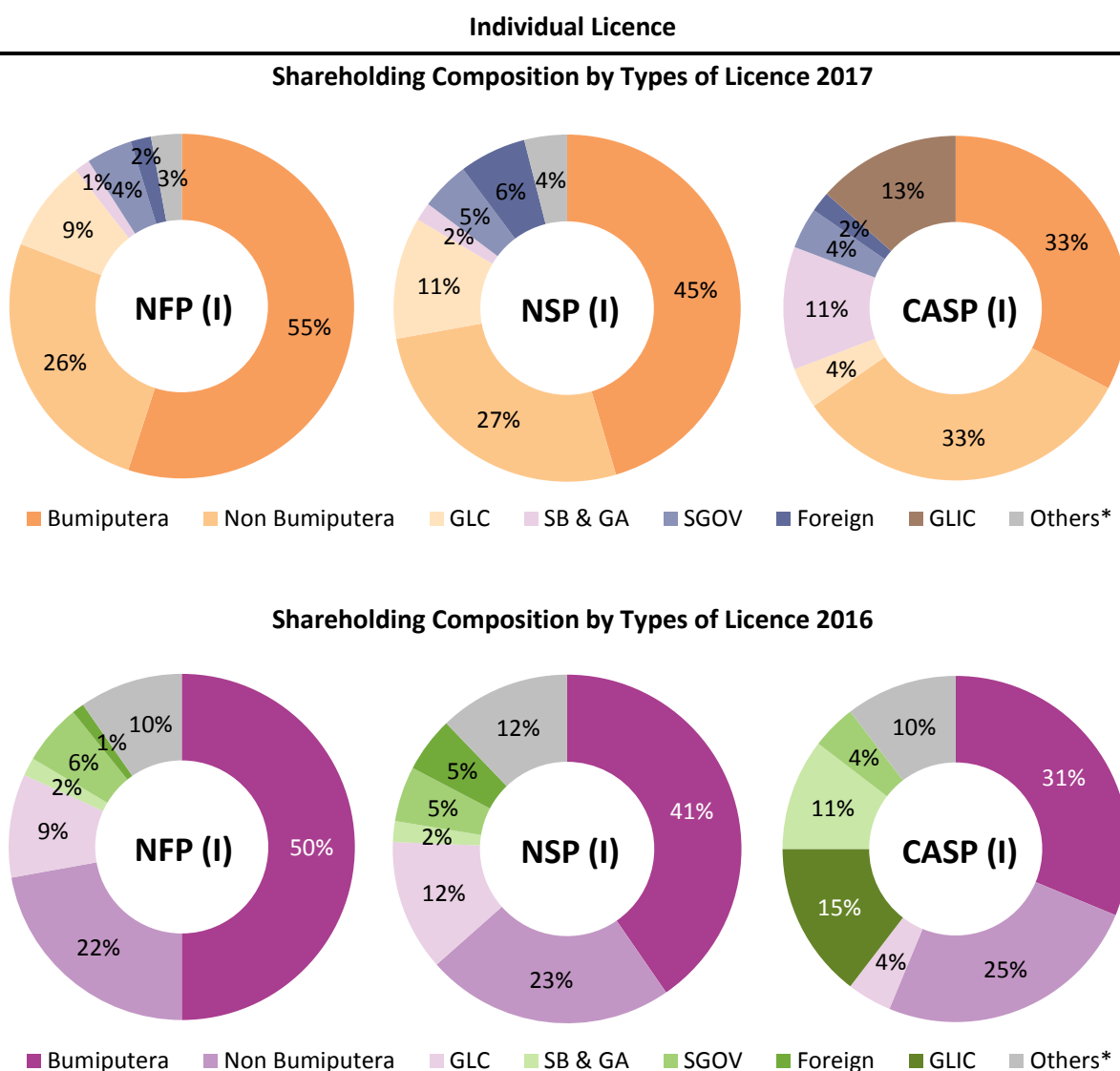
New and Renewed Licences					
Infrastructure and Services	Company	New (N)/ Renewed (R)	NFP (I)	NSP (I)	CASP (I)
	U Mobile Sdn Bhd	R	✓	✓	
Deployment of communications infrastructure to support broadband services and provision of bandwidth services via TNB's network	CME Asia Sdn Bhd	N	✓	✓	
Deployment of communications infrastructure to support broadcasting distribution services and provision of subscription broadcasting and non subscription broadcasting (via IPTV platform)	Digistar Rauland MSC Sdn Bhd	R	✓	✓	✓
Deployment of communications infrastructure to support cellular services	Valser Engineering Services Sdn Bhd	N	✓		
Deployment of communications infrastructure to support cellular and broadband services	Acoda Towers Sdn Bhd	N	✓		
	Birchcom Construction Sdn Bhd	N	✓		
	Exarex Sdn Bhd	N	✓		
	Front Connect Sdn Bhd	N	✓		
	JRA Riyyalcomm Sdn Bhd	N	✓		
	Pancar Bakti Sdn Bhd	N	✓		
	YTL Broadband Sdn Bhd	N	✓		
	Significant Technologies Sdn Bhd	R	✓		
	Tenaga Sinar Sahabat Sdn Bhd	R	✓		
	Threesixty Technologies Sdn Bhd	R	✓		
	Wilayah Persekutuan Infrastructure Sdn Bhd	R	✓		
Deployment of communications infrastructure to support broadband services	Borneo Restu Sdn Bhd	N	✓		
	Direct-Field Resources Sdn Bhd	N	✓		
	DTP Solutions Sdn Bhd	N	✓		
	Dynasynergy Sdn Bhd	N	✓		
	G-Tex Communication & Engineering Sdn Bhd	N	✓		
	KCSB Tower Sdn Bhd	N	✓		
	MN Permai Development Sdn Bhd	N	✓		
	OGPP Engineering Sdn Bhd	N	✓		
	Redpyne Sdn Bhd	N	✓		
	Argus Intan Solution Sdn Bhd	R	✓		

New and Renewed Licences					
Infrastructure and Services	Company	New (N)/ Renewed (R)	NFP (I)	NSP (I)	CASP (I)
	Edotco Malaysia Sdn Bhd	R	✓		
	MSA Resources Sdn Bhd	R	✓		
	Telestructure Sdn Bhd	R	✓		
Deployment of communications infrastructure to support IoT services	Xperanti IOT (M) Sdn Bhd	N	✓	✓	
Deployment of communications infrastructure to support satellite based services	Asas Stabil Sdn Bhd	N	✓	✓	
	Baycom Sdn Bhd	R	✓	✓	
Deployment of satellite infrastructure and services and provision of bandwidth services	ASN Networks Corporation Sdn Bhd	N	✓	✓	
Mobile Virtual Network Operator	Enabling Asia Tech Sdn Bhd	R		✓	
	XOX Com Sdn Bhd	R		✓	
Provision of bandwidth and access application services	Xecamed Sdn Bhd	N		✓	
Provision of bandwidth services	Axiata Business Services Sdn Bhd	N		✓	
	MBJ Network Venture Sdn Bhd	N		✓	
	PDC Telecommunication Services Sdn Bhd	N		✓	
	AT&T Worldwide Network Services Sdn Bhd	R		✓	
	VADS Bhd	R		✓	
Provision of subscription broadcasting	TM Net Sdn Bhd	R			✓
Provision of bandwidth management to support satellite based services	TS Global Network Sdn Bhd	R		✓	
Terrestrial radio broadcasting	BFM Media Sdn Bhd	R			✓
	Kool FM Sdn Bhd	R			✓
Total			54	38	8

Source: MCMC

Figure ii New and Renewed Licences

An analysis of Individual licensees' shareholding shows that 48.5% of total Individual licences in 2017 are Bumiputera-owned companies (2016: 44%). The shareholding composition by types of licence is shown as below:



Note:

Bumiputera-owned – company that has 51% or more Bumiputera ownership

Non-Bumiputera-owned – company that has 51% or more non-Bumiputera ownership

GLC – Government-linked company, that has a primary commercial objective and in which the Malaysian Government has a direct controlling stake. Controlling stake refers to the Government's ability (not just percentage ownership) to appoint Board of Director members, senior management, make major decisions (e.g. contract awards, strategy, restructuring and financing, acquisitions and divestments etc.) for GLCs either directly or through GLICs (Source: www.khazanah.com.my)

GLIC – Government-linked Investment Company, is a Federal Government linked investment company that allocates some or all of their funds to GLC investments. Defined by the influence of the Federal Government in: appointing/approving Board members and senior management, and having these individuals report directly to the Government, as well as, in providing funds for operations and/or guaranteeing capital (and some income) placed by unit holders. The definition currently includes seven GLICs: Employees Provident Fund, Khazanah, Kumpulan Wang Persaraan (Diperbadankan), Lembaga Tabung Angkatan Tentera, Lembaga Tabung Haji, Menteri Kewangan Diperbadankan and Permodalan Nasional Bhd (Source: www.khazanah.com.my)

SB & GA – Ownership held directly by a Statutory Body or Government Agency

SGOV – Major shares held by a State Government

Foreign-owned – company that has 51% or more shares held by foreign entities or individuals

Others – mixed shareholding, with no particular type of shareholder having a controlling interest in the company

Source: MCMC

Figure iii Individual Licence – Shareholding Composition by Types of Licence 2016 – 2017

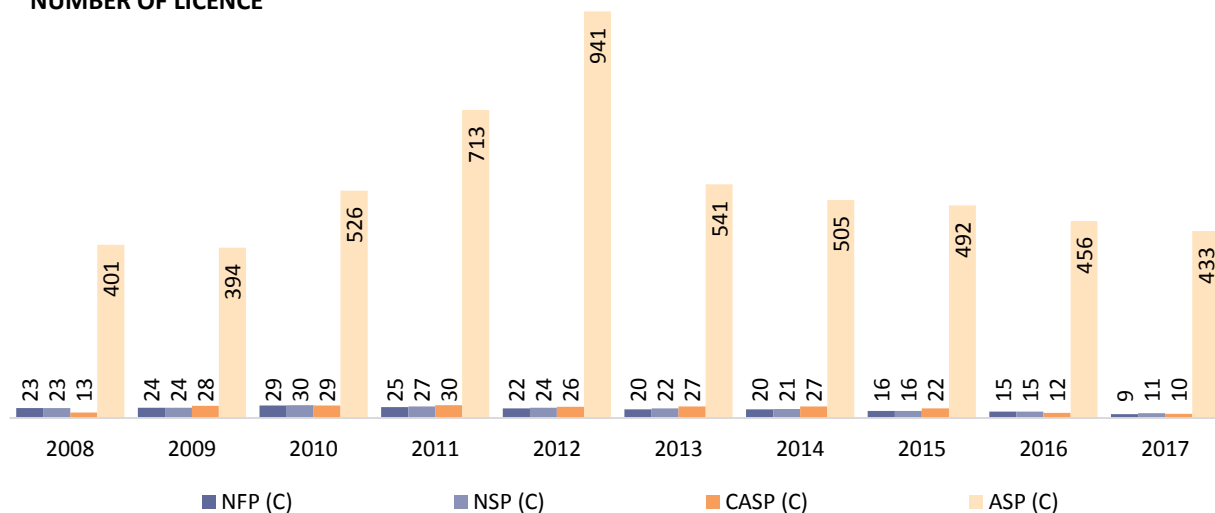
A total of 463 Class licences were registered with MCMC for the year 2017

Class licence is a relatively light-handed form of regulation which is designed to promote industry growth and development with relatively easier market access.

For the year 2017, there were nine NFP (C), 11 NSP (C), 10 CASP (C) and 433 ASP (C) licences registered by MCMC. There was a decline of 35 licences overall, to 463 from 498 licences in 2016 in terms of the total number of Class licences registered.

CMA Licences (Class) 2008 – 2017

NUMBER OF LICENCE



Source: MCMC

Figure iv CMA Licences (Class) 2008 – 2017

Roll Out Status in 2017

Licences granted are monitored for compliance with roll out conditions, that is, special licence condition Part B 1.2. Under this special licence condition, the compliance requirements include:

- a) The licensee to commence the provision of facilities or services within 12 months from the date of licence issued;
- b) However, the Minister may grant an extension of time to the licensee upon appeal and genuine progress being made towards the provision of facilities or services.

As at end 2016, a total of 43 new service and facilities providers were issued with Individual licence (Figure V). The number of licences issued has more than doubled in comparison to 2015 whereby there were only 19 new services providers.

New Licensees/Service Providers 2016				
No.	Company	NFP (I)	NSP (I)	CASP (I)
1	Mbits Digital Sdn Bhd	√	√	√
2	Ansa Broadcast Sdn Bhd	√	√	
3	ASN Satellites Sdn Bhd	√	√	
4	Borneo Global Connect Sdn Bhd	√	√	
5	Broadnet Network Sdn Bhd (Formerly known as Nasmudi Sdn Bhd)	√	√	
6	Compudyne Sdn Bhd	√	√	
7	Global Forway Sdn Bhd	√	√	
8	Integrated Access Communication Sdn Bhd	√	√	
9	MYISP Dot Com Sdn Bhd (Formerly known as C & R Corporate Services Sdn Bhd)	√	√	
10	Myren Network Sdn Bhd	√	√	
11	Omni-Glory Infotech Sdn Bhd	√	√	
12	Satellite NOC Sdn Bhd (Licence transferred from Binasat Sdn Bhd)	√	√	
13	Skyline Technology (M) Sdn Bhd	√	√	
14	Artisan Communication Sdn Bhd	√		
15	Bangkit Setia Sdn Bhd	√		
16	Grass2route Sdn Bhd	√		
17	Ha Megah Technology Sdn Bhd	√		
18	Intra Stream Sdn Bhd	√		
19	ITMax System Sdn Bhd	√		
20	Khadra Ventures Sdn Bhd	√		
21	Mass Rapid Transit Corporation Sdn Bhd	√		
22	Nexgen Ventures Sdn Bhd	√		
23	OCK Telco Infra Sdn Bhd	√		
24	Orissa Wicom (M) Sdn Bhd	√		
25	SF Lyca Telecommunications Sdn Bhd	√		
26	Verticom Sdn Bhd	√		
27	Vista Bumiria Sdn Bhd	√		
28	Xiddiq Cellular Communications Sdn Bhd	√		
29	Bullish Aim Sdn Bhd		√	
30	Jejak Semangat Sdn Bhd		√	

New Licensees/Service Providers 2016				
No.	Company	NFP (I)	NSP (I)	CASP (I)
31	MSA Resources Sdn Bhd		√	
32	Stealth Solutions Sdn Bhd		√	
33	Arus Rentas Sdn Bhd			√
34	Borneo Neo Vision Sdn Bhd			√
35	DNF Group Sdn Bhd			√
36	Enjoy TV Holding Sdn Bhd			√
37	Enmedia Ventures Sdn Bhd			√
38	Keluarga Communication Sdn Bhd			√
39	Nafas Media Sdn Bhd			√
40	Neo Universe Sdn Bhd			√
41	Sarawak Information Systems Sdn Bhd			√
42	Sky Elite Sdn Bhd			√
43	SNR Multi Tech Sdn Bhd			√
Total		28	17	12

Source: MCMC

Figure v New Licensees/Service Providers 2016

Out of the 43 new service providers, 14 have complied with special licence condition to roll out their facilities and services within 12 months from date of licence issued. These licensees are as follows:

Facilities/Services Deployed within 12 Months of Licence Issued			
No.	Company	Type of Licence	Facilities/Services Deployed
1	Borneo Global Connect Sdn Bhd	NFP (I), NSP(I)	Broadband Services (WiFi)
2	Global Forway Sdn Bhd	NFP (I), NSP(I)	Fibre & Broadband Services
3	MYISP Dot Com Sdn Bhd (Formerly known as C & R Corporate Services Sdn Bhd)	NFP (I), NSP(I)	Broadband Services
4	Myren Network Sdn Bhd	NFP (I), NSP(I)	Bandwidth Services
5	Mass Rapid Transit Corporation Sdn Bhd	NFP (I)	Dark Fibre
6	ITMax System Sdn Bhd	NFP (I)	Dark Fibre
7	Bangkit Setia Sdn Bhd	NFP (I)	Towers/Poles
8	Nexgen Ventures Sdn Bhd	NFP (I)	Towers/Poles
9	Satellite NOC Sdn Bhd (Licence transferred from Binast Sdn Bhd)	NFP (I)	Towers/Poles
10	Verticom Sdn Bhd	NFP (I)	Towers/Poles
11	Xiddiq Cellular Communications Sdn Bhd	NFP (I)	Dark Fibre (Last Mile)
12	Grass2route Sdn Bhd	NSP (I)	In Building Coverage
13	Arus Rentas Sdn Bhd	CASP(I)	FTA Radio (KK12 FM)
14	Sarawak Information Systems Sdn Bhd	CASP(I)	Networked Screens

Source: MCMC

Figure vi Facilities/Services Deployed within 12 Months of Licence Issued

As indicated by some service and facilities providers, in light of higher prices of equipment and limiting economic circumstances, they have delayed roll out in 2017; revising their commercial arrangements and business plans accordingly.

As a result, 16 licensees have applied for extension of time. In comparison to previous year, only four licensees have applied for extension of time and three of them have subsequently rolled out their services in second year of their licence (Year 2017).

From the 16 licensees who have applied for extension of time to roll out in 2017, nine were new CASP (I) licensees who have yet to roll out their services due to the delay in Digital Terrestrial Television (DTT) deployment by MYTV. There were 12 new CASP (I) licensees who intend to provide their service using DTT platform.

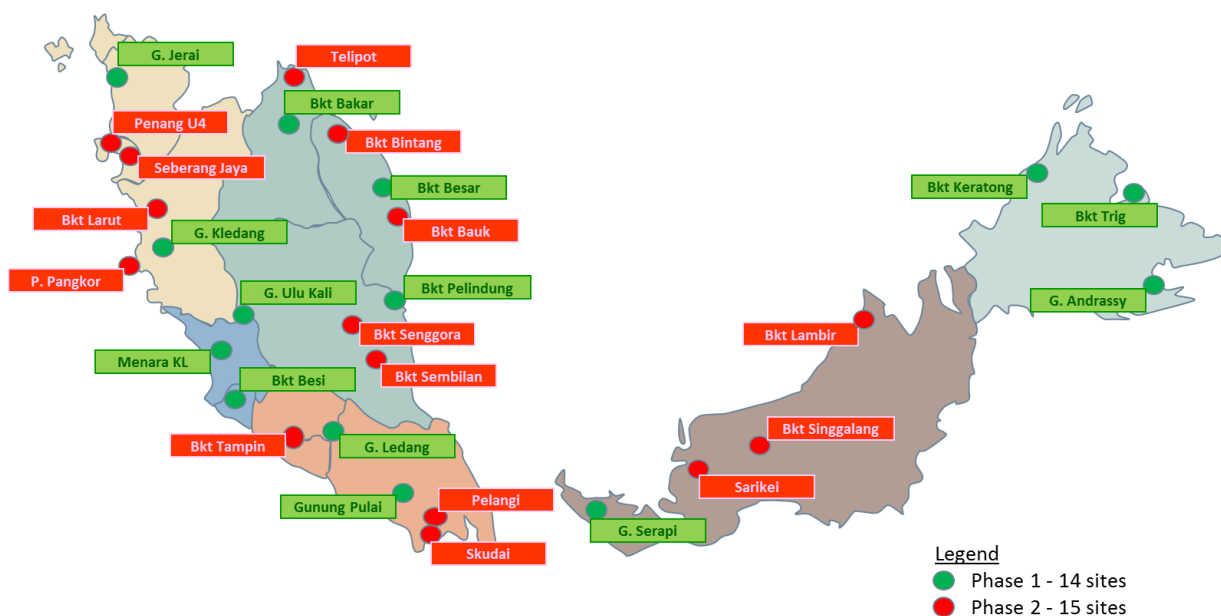
In order to ensure implementation of infrastructure and network services are covered nationwide, MCMC's role to monitor licensees' roll out is pivotal. In turn, network roll out ensures enablement to deploy digital infrastructure and services to support digital transformation towards 2020.

Digital Terrestrial Television Broadcasting Infrastructure Deployment in 2017

Towards convergence in C&M digital connectivity, traditional analogue terrestrial TV will eventually be replaced by DTT. Under the DTT project, MYTV Broadcasting Sdn Bhd (MYTV) was appointed to provide infrastructure and facilities which include digital multimedia hub and digital TV transmitters nationwide.

MYTV is expected to deploy 60 digital TV transmitters sites nationwide to ensure 98% population coverage. As at end 2017, MYTV has completed Phase 1 of 14 sites, whereas, for Phase 2, 15 sites out of 46 have been deployed nationwide. With 25 sites transmitting digitally, the population coverage has reached 92.1%.

Digital TV Transmitters Sites Deployed



*As at 31 December 2017

Source: MCMC

Figure vii Digital TV Transmitters Sites Deployed

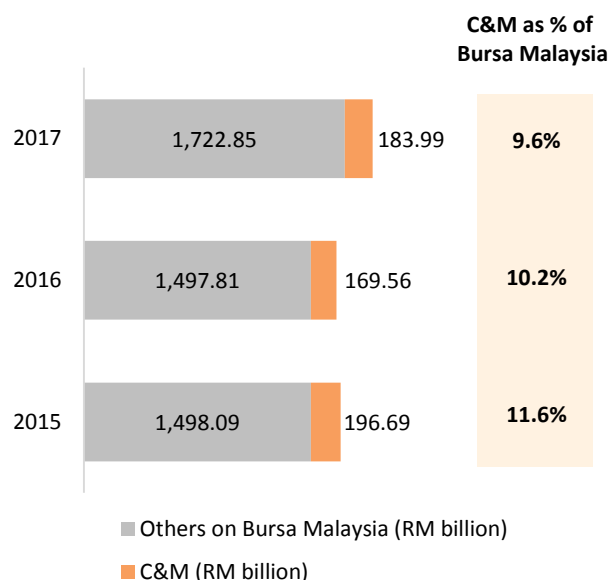
MODULE 1: ECONOMIC PERFORMANCE OF C&M INDUSTRY



C&M Industry Market Performance

C&M industry market capitalisation was RM184 billion; increased 8.5% in 2017 compared to end 2016

Contribution of C&M Industry to Bursa Malaysia Market Capitalisation 2015 – 2017



Source: Bloomberg, MCMC

Figure 1.1 Contribution of C&M Industry to Bursa Malaysia Market Capitalisation 2015 – 2017

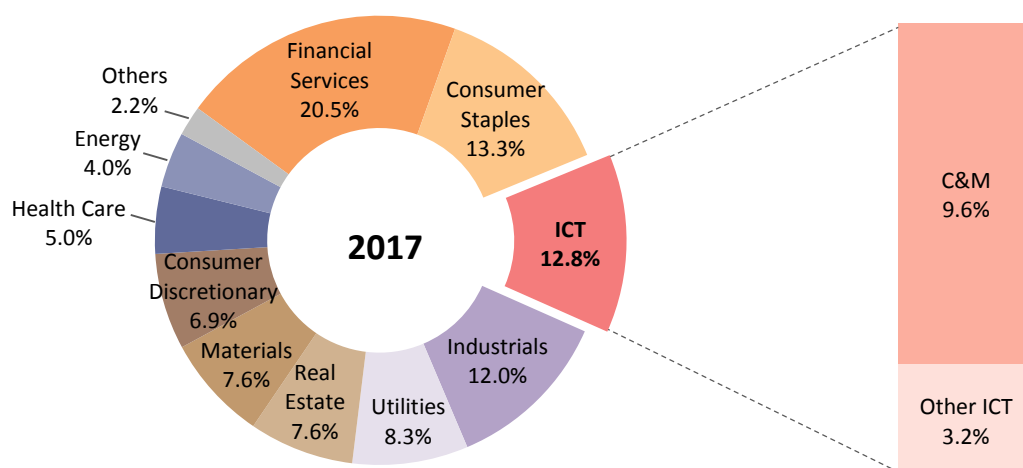
In 2017, the market has seen an upward trend amid recovering Ringgit and stronger crude oil prices. The C&M industry market capitalisation increased to RM183.99 billion in 2017 from RM169.56 billion as at end of 2016.

The favourable performance was driven by telecommunications sector. As at end 2017, the telecommunications sector market capitalisation rose 8.9% to RM165.22 billion from RM151.68 billion as at end 2016.

In contrast, the broadcasting sector posted decline in market capitalisation by 1.1% that is, RM14.66 billion compared with RM14.82 billion in 2016.

The C&M industry market capitalisation represents 9.6% of Bursa Malaysia total market capitalisation of RM1,906.84 billion. This represents 75% of the ICT companies market capitalisation at RM245 billion on Bursa Malaysia.

Bursa Malaysia Market Capitalisation by Sector



Note: Consumer discretionary sector are businesses in manufacturing (automotive, household durable goods, textiles and apparel) and services (hotels, restaurants and leisure facilities). Consumer staples sector consists of manufacturers and distributors of food, beverages and tobacco, producers of non-durable household goods and personal products.

Source: Bloomberg, MCMC

Figure 1.2 Bursa Malaysia Market Capitalisation by Sector

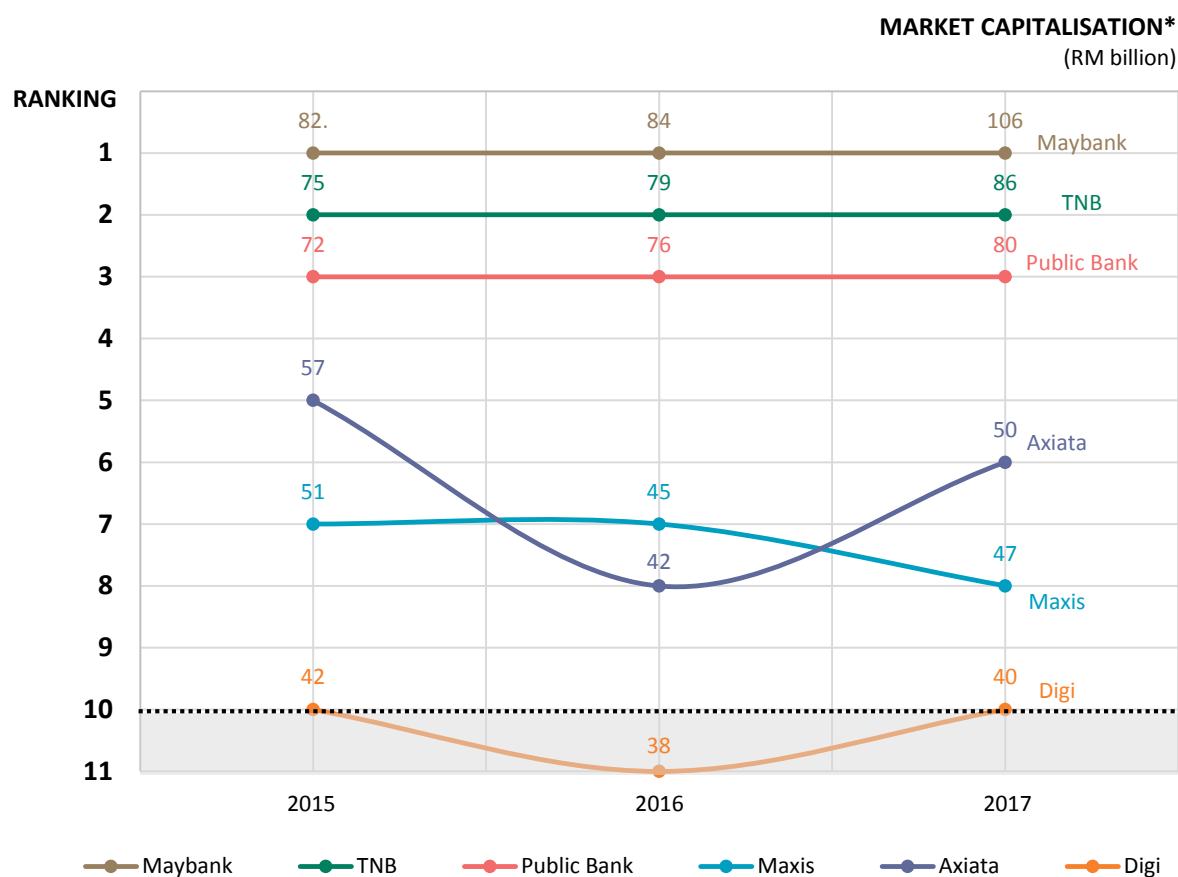
Axiata, Maxis and Digi in top 10 market capitalisation ranking

Financial and utilities sectors continued to be slightly ahead of telecommunications sector, underlining the stable fundamentals of these companies. The top three highest market capitalisation companies in 2017 are Maybank, TNB and Public Bank.

For telecommunications companies, Axiata is in 6th position while Maxis slipped one notch to 8th place in 2017 from 7th in 2016. However, Maxis market capitalisation value grew 4.4% to RM47 billion, while Digi ranked at 10th.

Telecommunications companies continued to be buoyed by their resilient business models, stable revenue growth, strategy focusing on data monetisation, improved services and new package offerings.

Trend of Top 10 Market Capitalisation 2015 – 2017



*As at 31 December

Note: 1. Top 10 largest stocks based on market capitalisation among the 30 stocks that comprise the FTSE Bursa Malaysia KLCI Index
2. Malayan Banking Bhd (Maybank), Tenaga Nasional Bhd (TNB), Public Bank Bhd (Public Bank)

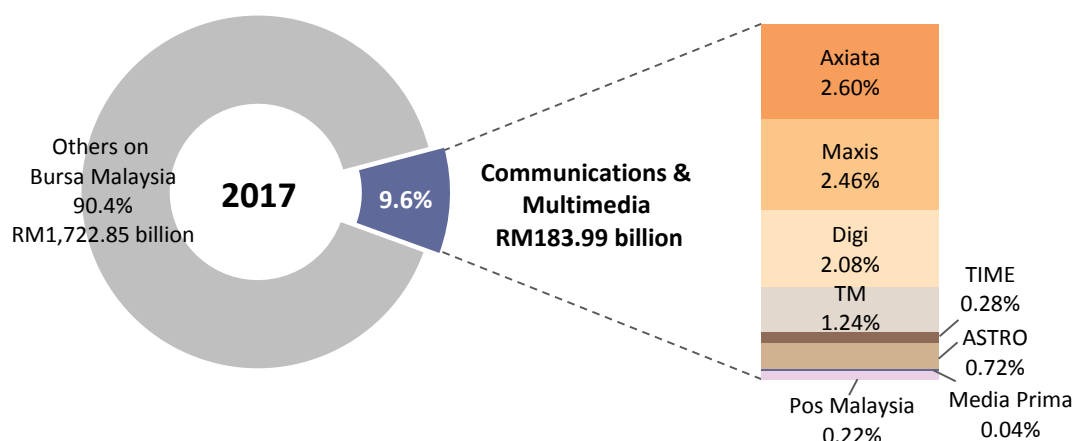
Source: Bloomberg, MCMC

Figure 1.3 Trend of Top 10 Market Capitalisation 2015 – 2017

As at end 2017, Axiata recorded the highest market capitalisation at RM49.67 billion or 2.6% of Bursa Malaysia. Maxis and Digi captured RM46.94 billion (2.5%) and RM39.65 billion (2.1%) respectively.

C&M Companies Contribution to Bursa Malaysia 2017

Bursa Malaysia = RM1,906.84 billion



Source: Bloomberg, MCMC

Figure 1.4 C&M Companies Contribution to Bursa Malaysia 2017

C&M Companies Market Capitalisation 2015 – 2017					
Company	Market Capitalisation (RM billion)			Change (%)	
	2017	2016	2015	2016 – 2017	2015 – 2016
Axiata	49.67	42.35	56.51	17.3	-25.1
Maxis	46.94	44.91	51.07	4.5	-12.1
Digi	39.65	37.55	41.99	5.6	-10.6
TM	23.67	22.36	25.48	5.9	-12.2
TIME	5.29	4.51	4.37	17.3	3.2
Telecommunications	165.22	151.68	179.42	8.9	-15.5
ASTRO	13.82	13.54	14.37	2.1	-5.8
Media Prima	0.84	1.28	1.41	-34.4	-9.2
Broadcasting	14.66	14.82	15.78	-1.1	-6.1
Pos Malaysia	4.11	3.06	1.49	34.3	105.4
Total C&M	183.99	169.56	196.69	8.5	-13.8

Note: Axiata Group Bhd (Axiata), Maxis Bhd (Maxis), Digi.Com Bhd (Digi), Telekom Malaysia Bhd (TM), TIME dotCom Bhd (TIME), ASTRO Malaysia Holdings Bhd (ASTRO), Media Prima Bhd (Media Prima) and Pos Malaysia Bhd (Pos Malaysia)

Source: Bloomberg, MCMC

Figure 1.5 C&M Companies Market Capitalisation 2015 – 2017

Pos Malaysia share price posted double digit percentage increase

As at end 2017, all C&M companies share prices posted gain except Media Prima. Pos Malaysia share price posted highest gain of 34.3% to RM5.25 per share compared with RM3.91 in 2016. This was underpinned by its growing profit and positive prospects as its business continues to be largely driven by the strong e-commerce growth in Malaysia. Also, the first phase of regional logistics hub Digital Free Trade Zone (DFTZ) has begun operations in November 2017 which is expected to further enhance Pos Malaysia network.

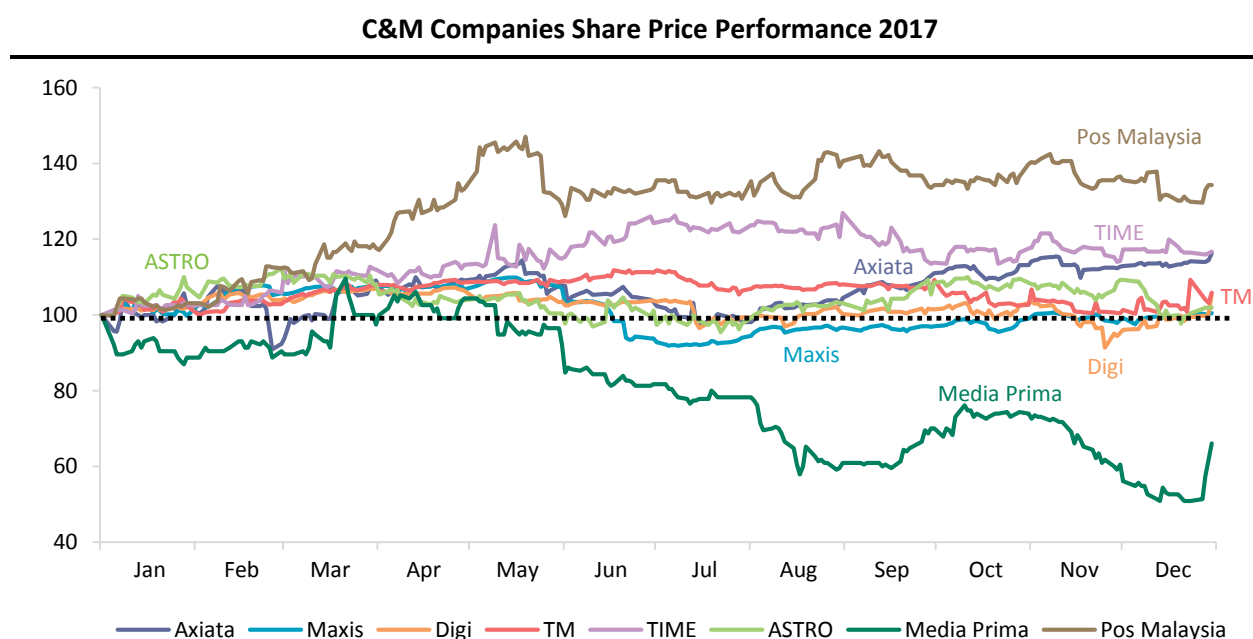
During the same period, Media Prima share price declined by 33.9% to RM0.76 per share compared with RM1.15 per share a year ago. The decline was led by lower revenue contribution and challenging media industry outlook as traditional media remains pressured by weak advertising expenditure and shift to digital media.

C&M Companies Share Price 2015 – 2017					
Company	Share Price (RM)			Change (%)	
	2017	2016	2015	2016 – 2017	2015 – 2016
Axiata	5.49	4.72	6.41	16.3	-26.4
Maxis	6.01	5.98	6.80	0.5	-12.1
Digi	5.10	4.83	5.40	5.6	-10.6
TM	6.30	5.95	6.78	5.9	-12.2
TIME	9.10	7.80	7.60	16.7	2.6
ASTRO	2.65	2.60	2.76	1.9	-5.8
Media Prima	0.76	1.15	1.27	-33.9	-9.4
Pos Malaysia	5.25	3.91	2.78	34.3	40.6

Note: Share price stated is the closing price of last trading day of the year

Source: Bloomberg, MCMC

Figure 1.6 C&M Companies Share Price 2015 – 2017



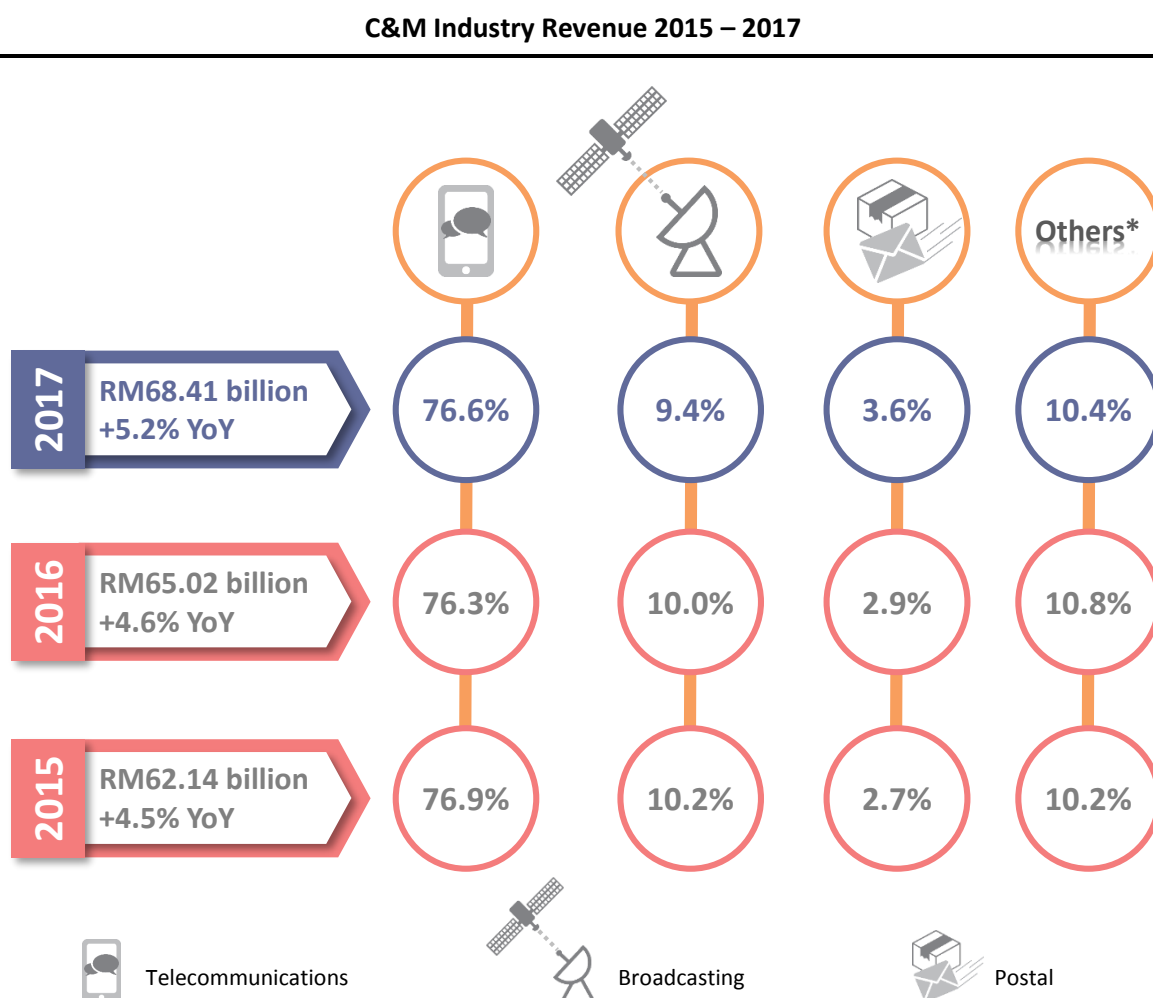
Source: Bloomberg, MCMC

Figure 1.7 C&M Companies Share Price Performance 2017

C&M Industry Financial Performance

The C&M industry aggregated revenue grew 5.2% to RM68.41 billion in 2017. The telecommunications sector posted growth of 5.6% to RM52.39 billion in 2017 from RM49.61 billion in 2016. The growth was mainly contributed by Axiata foreign operations from its regional markets which recorded higher revenue by 18.7% or RM2.79 billion.

The breakdown of industry revenue by sector are shown as below.



**Estimated*

Note 1. Includes Axiata foreign operations revenue

2. Media Prima excludes print revenue

3. ASTRO and Pos Malaysia revenue adjusted by calendar year

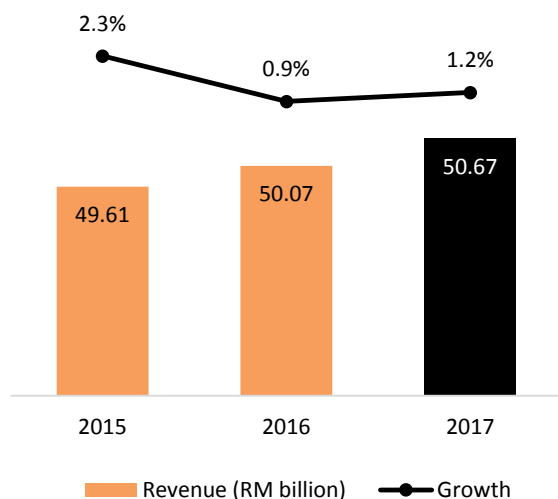
4. Others include non-public listed CMA licensees such as U Mobile Sdn Bhd, MVN service providers and ACE Market listed licensees (Figure 1.22)

Source: Industry, MCMC

Figure 1.8 C&M Industry Revenue 2015 – 2017

Specifically, by mainly local industry revenue, the growth is 1.2% to RM50.67 billion in 2017 compared with RM50.07 billion in 2016 (Figure 1.9). The breakdown of local industry revenue by sectors is 68% telecommunications, 13% broadcasting and 5% postal.

Domestic C&M Industry Revenue 2015 – 2017



Note: Excludes Axiata foreign operations revenue

Source: Industry, MCMC

Figure 1.9 Domestic C&M Industry Revenue 2015 – 2017

Based on domestic revenue only, the telecommunications sector posted a marginal decline of 0.03% to RM34.65 billion in 2017 from RM34.66 billion in 2016. The decline was mainly due to lower contribution from mobile service providers as intense competition continued its pressure on revenue. Fixed service providers revenue posted growth of 0.9% to RM12.95 billion in 2017 (2016: RM12.83 billion).

Meanwhile, the broadcasting sector revenue declined by 0.9% to RM6.42 billion in 2017 from RM6.48 billion in 2016. This was due to falling advertising sales and decrease in Pay TV subscriptions revenue led by lower package take up.

On the other hand, Pos Malaysia revenue saw double digit growth by 30.9% to RM2.46 billion in 2017 from RM1.88 billion in 2016. This upward performance was fuelled by courier and transshipment business strengthened by the rise in e-commerce.

Telecommunications Sector

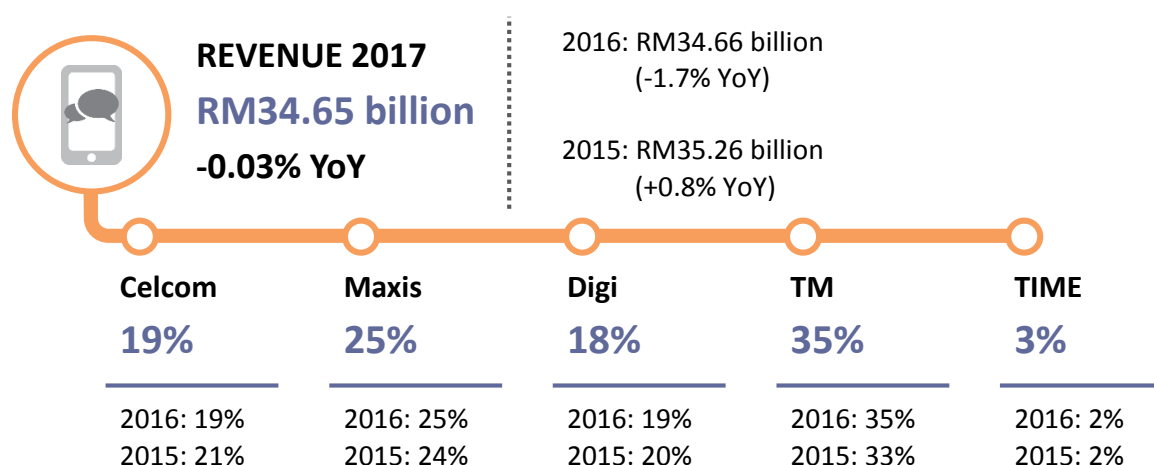
Telecommunications sector revenue witnessed marginal decline averaging 0.3% over the past three years

In 2017, the local telecommunications sector revenue showed a marginal decline of 0.03% to RM34.65 billion (2016: RM34.66 billion). This was due to lower revenue recorded by mobile service providers (Celcom, Maxis and Digi), which collectively decreased by 0.6% to RM21.7 billion in 2017 compared with RM21.83 billion in 2016.

Mobile service providers' revenue was affected by intense competition as each offered cheaper packages to acquire or retain subscribers. This benefits consumers, who can choose from a range of affordable and data-rich packages. Service providers are willing to spend on more promotions and discounted packages.

Overall, mobile service providers accounted for 62% of the total telecommunications sector revenue (2016: 63%).

Telecommunications Sector Revenue Share 2015 – 2017



Source: Industry, MCMC

Figure 1.10 Telecommunications Sector Revenue Share 2015 – 2017

Meanwhile, fixed service providers (TM and TIME) have posted positive revenue growth of 0.9% to RM12.95 billion in 2017 compared with RM12.83 billion in 2016. The increase of fixed service providers' revenue was attributed to higher take up in fibre connections, encouraged by the fast expanding fibre network coverage supported by the Government's High Speed Broadband (HSBB) initiatives.

In addition, service providers also carried out doubling the speed on fixed broadband initiatives in conjunction with Government's announcement during Budget 2017. This has led to fixed broadband subscriptions growth, subsequently increased revenue contribution.

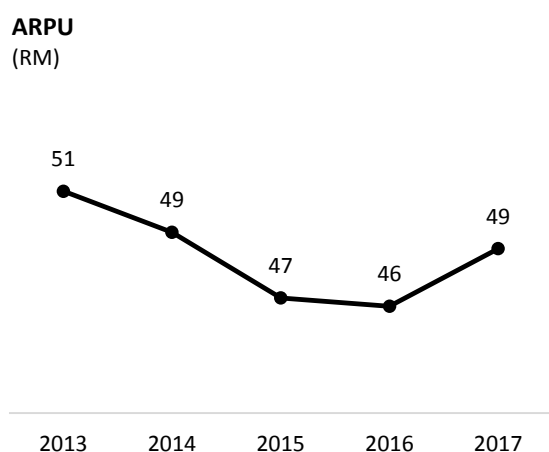
Average blended mobile ARPU declined to RM49 in 2017, due to heightened competition

Blended Average Revenue Per User (ARPU) for all three mobile service providers averaged RM49 per month in 2017 compared with average of RM46 per month in 2016.

It is lower as compared with RM51 per month in 2013. Over the past five years, blended ARPU levels have been on a downward trend as increased revenue from data services has not been sufficient to offset declining voice and SMS revenue.

ARPU continued to be under pressure as service providers attempt to attract customers through price promotions for prepaid and postpaid packages. Introduction of lower-priced mobile plans as well as packages that offer unlimited data, talk time and SMS have somewhat dampened revenue in the sector.

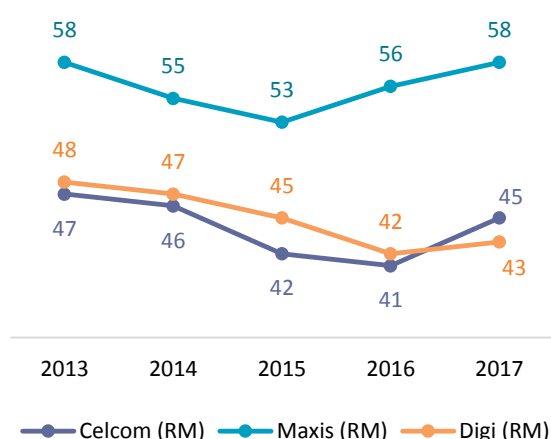
Blended Mobile ARPU 2013 – 2017



Source: Industry, MCMC

Figure 1.11 Blended Mobile ARPU 2013 – 2017

Blended Mobile ARPU by Service Providers



Source: Industry, MCMC

Figure 1.12 Blended Mobile ARPU by Service Providers

Service providers are expected to focus on increasing revenue by growing middle to higher-tier subscribers. Also, they are adding and enhancing their product portfolios from time to time, which entice legacy plan subscribers to migrate to higher value plans, thus contribute to better ARPU.

As shown in Figure 1.12, Maxis has the highest blended ARPU of more than RM50 per month compared with its peers. Meanwhile, Celcom's blended ARPU was at RM45 per month (2016: RM41) and Digi at RM43 per month (2016: RM42).

Maxis higher ARPU reflects that most of its subscribers are in premium and high-priced plans, driven by its postpaid services. Notably, Maxis postpaid ARPU was at RM102 in 2017. In contrast, Celcom and Digi postpaid ARPU was at RM84 and RM78 respectively.

Margin remains stable

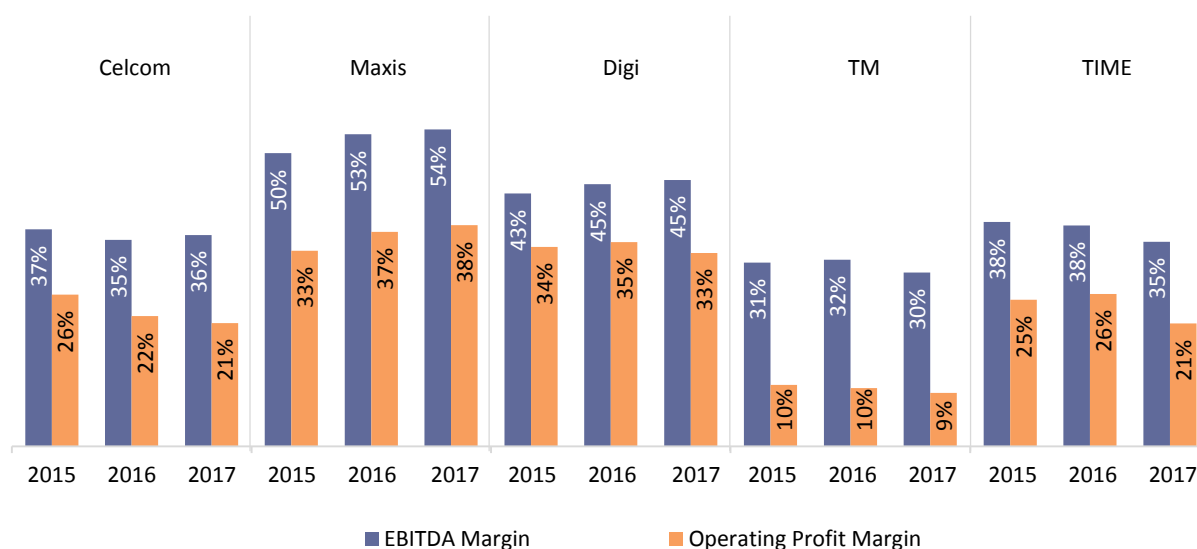
In 2017, the telecommunications sector EBITDA² margin and operating profit margin averaged 40% (2016: 41%) and 24% (2016: 26%) respectively. It remains unchanged compared with previous years' margin. Albeit slightly lower upon cost pressures and higher Ringgit value capital expenditures.

The mobile service providers recorded EBITDA margin as high as 54% by Maxis whilst Celcom and Digi was at 36% and 45% respectively.

Meanwhile, the fixed service providers EBITDA margin averaged 33% (2016: 35%), which is lower than in 2016 due to higher costs incurred for network expansion and maintenance. Specifically, TM posted EBITDA margin of 30% whilst TIME was at 35%.

In terms of operating profit, margins have been stable and showed little variation among both mobile and fixed service providers. That is, usually about one to two percentage points difference each year during the period 2015 to 2017.

Telecommunications Sector EBITDA Margin vis-à-vis Operating Profit Margin 2015 – 2017



Source: Industry, MCMC

Figure 1.13 Telecommunications Sector EBITDA Margin vis-à-vis Operating Profit Margin 2015 – 2017

² EBITDA refers to Earnings Before Interest, Tax, Depreciation and Amortisation.

Telecommunications sector Capex at RM6 billion in 2017

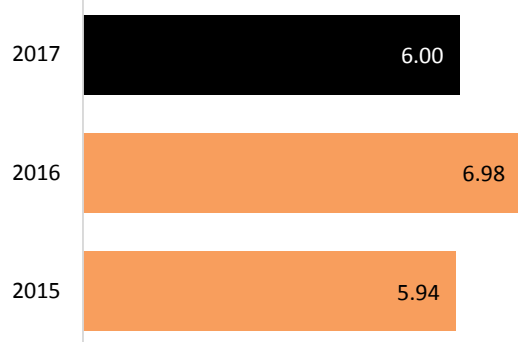
Capital expenditure (Capex) of the telecommunications sector was RM6 billion in 2017. This is a 14% decline compared with RM6.98 billion in 2016. As in previous years, Capex are mostly for network upgrades and expansion, both in fixed and mobile networks. However, in 2017, investment is now shifting to software spend.

The Capex to revenue ratio (capital intensity) was at 17.3% (2016: 20.1%).

Capex Trend 2015 – 2017

CAPEX

(RM billion)

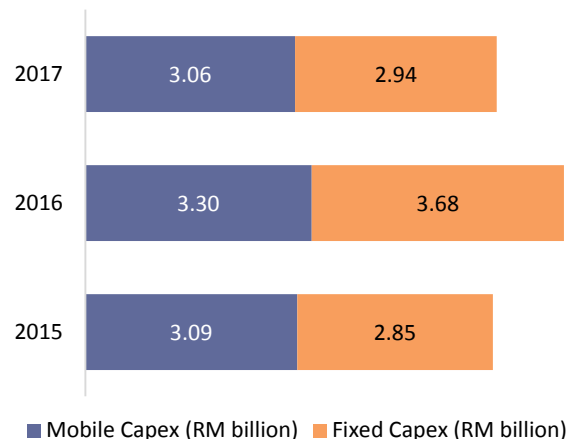


Note: Excludes Axiata foreign operations Capex

Source: Industry, MCMC

Figure 1.14 Capex Trend 2015 – 2017

Mobile and Fixed Capex 2015 – 2017

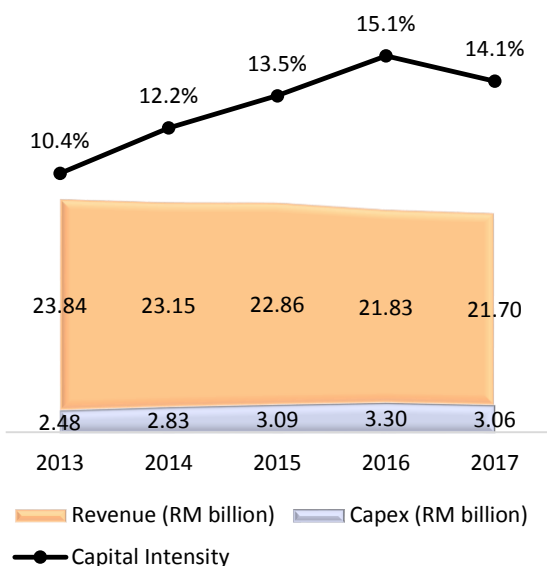


Note: Excludes Axiata foreign operations Capex

Source: Industry, MCMC

Figure 1.15 Mobile and Fixed Capex 2015 – 2017

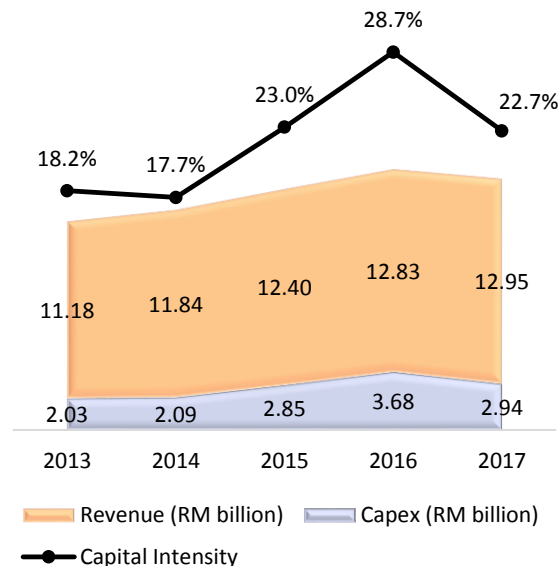
Mobile Capex vis-à-vis Revenue 2013 – 2017



Source: Industry, MCMC

Figure 1.16 Mobile Capex vis-à-vis Revenue 2013 – 2017

Fixed Capex vis-à-vis Revenue 2013 – 2017



Source: Industry, MCMC

Figure 1.17 Fixed Capex vis-à-vis Revenue 2013 – 2017

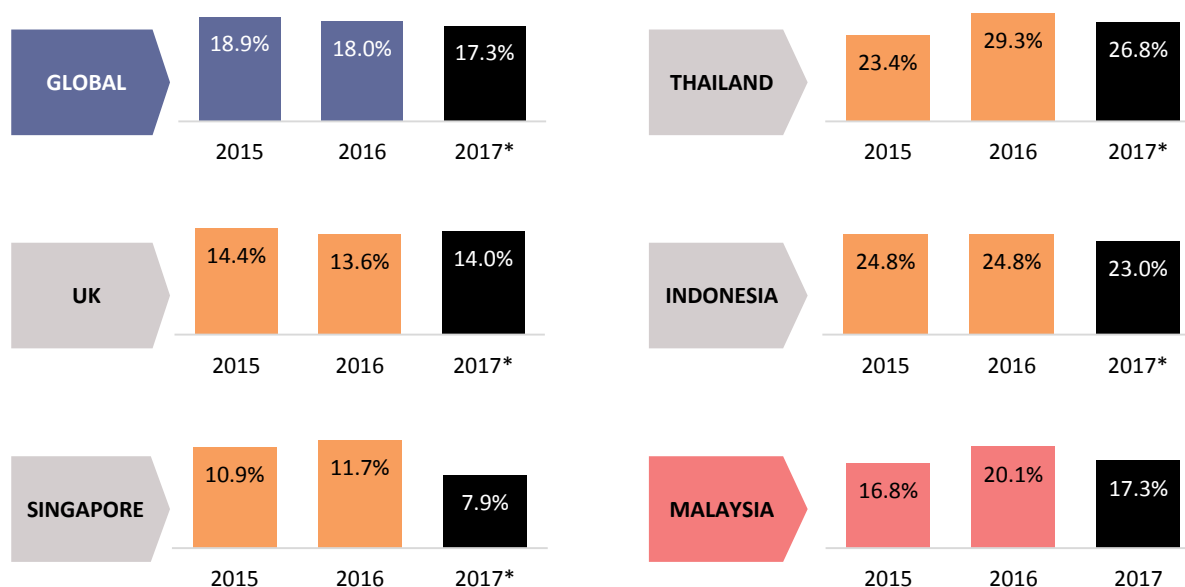
Mobile service providers Capex posted 7.3% decline to RM3.06 billion (14.1% of revenue) in 2017. Capex moderated due to various reasons. These include a slowdown in 3G upgrades and 4G LTE roll out among mobile service providers as population coverage has achieved 93.6% (3G) and 77.2% (4G LTE) respectively compared with initial roll out.

Meanwhile, fixed service providers' Capex has seen decline by 20.1% to RM2.94 billion (22.7% of revenue). This was due to completed submarine cables investments.

Malaysian telecommunications companies' capital intensity at 17.3%, is on par with global average of 17.3%, but higher than UK at 14% and Singapore at 7.9%. Meanwhile, Malaysia capital intensity was lower than in Thailand (26.8%) and Indonesia (23%) as service providers in Thailand and Indonesia tend to accelerate network infrastructure expansion to meet rising demand for data.

According to Ovum Research, globally, communications service providers' capital intensity faced decline in 2017. This was due to slowdown in network infrastructure project investment as service providers need to fund Mergers and Acquisitions (M&A) to diversify their revenue streams and position themselves for the future.

Communications Service Provider Capital Intensity 2015 – 2017: Selected Countries



*As at 3Q 2017

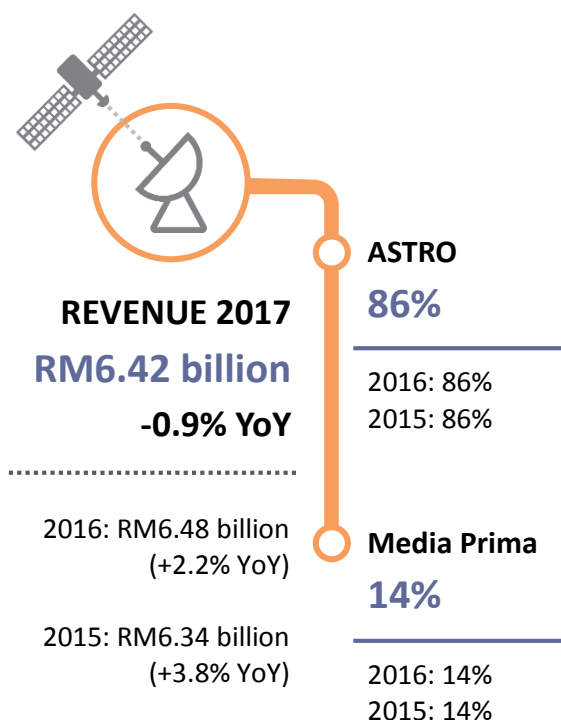
Source: Industry, MCMC, Ovum, Communications Provider Revenue & Capex Tracker: 3Q17, December 2017

Figure 1.18 Communications Service Provider Capital Intensity 2015 – 2017: Selected Countries

Broadcasting Sector

Broadcasting sector revenue has declined 0.9% in 2017

Broadcasting Sector Revenue Share 2015 – 2017



Note: 1. ASTRO revenue adjusted by calendar year

2. Excludes Media Prima print revenue

Source: Industry, MCMC

Figure 1.19 Broadcasting Sector Revenue Share 2015 – 2017

Broadcasting sector revenue constituting Pay TV (ASTRO) and Free-to-Air (FTA) TV (Media Prima Group) has declined by 0.9% in 2017, contributing RM6.42 billion to total C&M industry revenue compared with RM6.48 billion in 2016.

Such decline was due to lower advertising and Pay TV subscriptions revenue. However, revenue from sources other than subscriptions or advertising increased such as TV shopping was up by 32% to RM417 million in 2017. This contributed 6% of total broadcasting revenue compared with 5% in 2016.

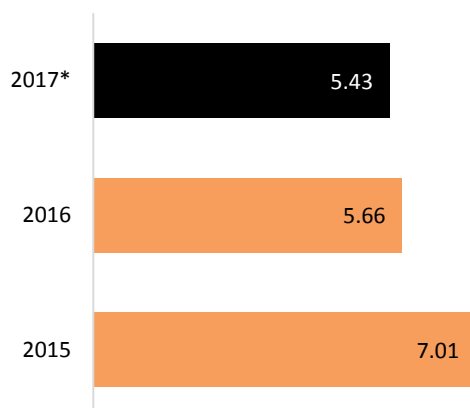
The broadcasting sector continues to face shifts in viewing consumption and advertising spending to digital media, driven by mobility.

Dividend payout declined 4.1% in 2017

In 2017, total dividend payout by major public listed C&M companies declined marginally by 4.1% from RM5.66 billion to RM5.43 billion.

Dividend Payout 2015 – 2017

DIVIDEND
(RM billion)



*Estimated

Note: Includes special dividend

Source: Industry, MCMC

Figure 1.20 Dividend Payout 2015 – 2017

The telecommunications sector dividend payout was at RM4.69 billion, also fell by 3.1% from RM4.84 billion in 2016.

The telecommunications sector dividend payout reflects relatively lower distributive profit of RM5.91 billion in 2017 compared with RM6.16 billion in 2016. Lower payout also was due to strategy to reserve cash for investments and expansion in line with new technological developments.

Telecommunications sector profits in the past three years have been declining, averaging decline of 6%. This is impact from rising operating costs and foreign exchange losses.

Overall in 2017, most telecommunications companies have been paying similar level of dividends whilst some companies have reduced their dividends.

For example, Digi and TIME dividend payout in value has reduced by 10.4% and 44.4% respectively to RM1.46 billion and RM100 million³ due to lower profitability recorded during the year. Digi net profits was lower impacted by increase in finance costs, spectrum amortisation expenses, inclusion of one-off settlement costs and exit fee for the termination of IT infrastructure and support services with Telenor companies. Nevertheless, Digi is still paying out close to 100% of its profits in the past three years.

TIME posted lower profit on absence of one-off gains on disposal of its shares in Digi and investments in Singapore-based Campana Group, higher subscriber acquisition costs and maintenance costs incurred for submarine cables.

Meanwhile, Maxis has maintained its profitability relatively well with net profits averaging RM2 billion over last three years. Noteworthy is that Maxis continued to review its dividend payout since 2015 to below 100% and stopped borrowing to pay dividends. This provides more sustainable cashflow retention for infrastructure expansion.

As for Axiata, the company dividend payout has increased 6.9% to RM0.77 billion in 2017 from RM0.72 billion in 2016. This is after a dividend cut back in 2016 of more than 50% compared to 2015 for infrastructure development and spectrum investment. On the other hand, TM has been maintaining around 90% level of payout ratio in the past three years on the back of steady net profits generated.

³ Estimated.

The ability to sustain dividends is driven by company strategy and earnings. With the high industry competitive pressures, there is a possibility of further dividend cuts due to lower net profits.

In comparison with other countries shown in Figure 1.21, most companies have lowered their dividend payout ratio in 2017 compared with 2016. Malaysia's telecommunications companies have been able to maintain their dividend payout to net profits range between 50% – 100%.

Dividend Payout Ratio by Selected Countries and Companies 2015 – 2017			
Company	2017	2016	2015
United Kingdom	-	90%	122%
BT Group*	-	80%	54%
Talk Talk*	-	100%	190%
Singapore	84%	85%	82%
Singtel*	60%	73%	74%
StarHub	111%	101%	93%
M1	80%	80%	80%
Malaysia	77%	78%	120%
Axiata	64%	50%	85%
Maxis	70%	75%	86%
Digi	99%	100%	99%
TM	94%	95%	90%
TIME	57%**	72%**	242%**
Thailand	47%	73%	108%
Advanced Info Service (AIS)	70%	98%	99%
Total Access Communication (DTAC)	27%	48%	118%
True Corp	45%	-	-
Indonesia	-	53%	60%
XL Axiata	-	-	-
Indosat	-	35%	-
Telekomunikasi Indonesia (Telkom)	-	70%	60%

*FYE March

**Payout in 2015, 2016 and 2017 include special dividend of 73.5 sen, 24 sen and 11.9 sen respectively.

Note 1. Dividend payout ratio is calculated by dividing total dividend (includes special dividend) by the net profit; company and year with no dividend payout and negative net profit excluded.

2. Dividend data may not be complete due to pending release of financial results for some companies.

Source: Industry, MCMC

Figure 1.21 Dividend Payout Ratio by Selected Countries and Companies 2015 – 2017

ACE Market Overview and Performance

CMA licensees listed on Bursa Malaysia ACE Market posted market capitalisation of RM1.43 billion and revenue of RM636 million

As at end 2017, there were 10 ACE listed licensees under the CMA. This represents 8.7% of the total 115 companies listed on Bursa Malaysia ACE Market. These licensees mostly hold an ASP (C) licence.

Licensees on ACE Market 2017			
Company (ACE Listed)	Listing Date	Licensee (The company or subsidiary of ACE listed company)	Type of Licences
M3 Technologies (Asia) Bhd	2003	M3 Technologies (Asia) Bhd	ASP (C)
ManagePay Systems Bhd	2011	MPay Mobile Sdn Bhd	ASP (C)
Mexter Technology Bhd	2005	Mexcomm Sdn Bhd Ezymobile International Sdn Bhd	ASP (C)
MNC Wireless Bhd	2005	MNC Wireless Bhd Moblife.TV Sdn Bhd	ASP (C)
MTouche Technology Bhd	2005	Mobile Touchetek Sdn Bhd Mtouche International Sdn Bhd	ASP (C)
N2N Connect Bhd	2005	N2N Global Solutions Sdn Bhd NGN Connection Sdn Bhd	ASP (C)
Nexgram Holdings Bhd	2005	Nextnation Network Sdn Bhd Dubatech marketing Sdn Bhd	ASP (C)
Privasia Technology Bhd	2006	Privanet Sdn Bhd Privasat Sdn Bhd	NFP (I) & NSP (I)
REDtone International Bhd	2004	Redtone Engineering and Network Services Sdn Bhd Redtone Telecommunications Sdn Bhd Redtone Data Centre Sdn Bhd Redtone Mytel Sdn Bhd Sea Telco Engineering Services Sdn Bhd	NFP (I) & NSP (I) & ASP (C)
XOX Bhd	2011	XOX Com Sdn Bhd	NSP (I) & ASP (C)

Note: As at end 2017, Diversified Gateway Bhd is not a registered licensee under the CMA

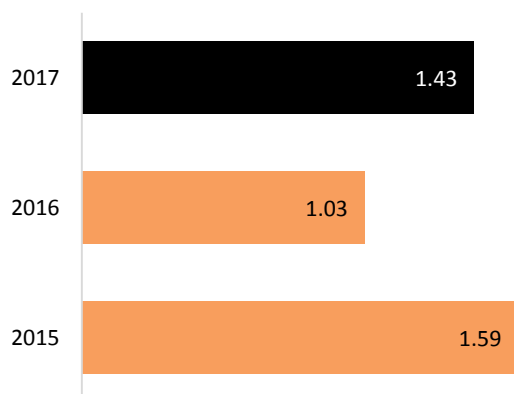
Source: Bursa Malaysia ACE Market, Industry, MCMC

Figure 1.22 Licensees on ACE Market 2017

In 2017, market capitalisation for the 10 CMA licensees listed on ACE Market was RM1.43 billion. This is an increase of 38.8% compared with RM1.03 billion in 2016 due in part to stronger market sentiment and investor optimism about these companies' growth opportunities.

Licensees on ACE Market: Market Capitalisation 2015 – 2017

MARKET CAPITALISATION (RM billion)



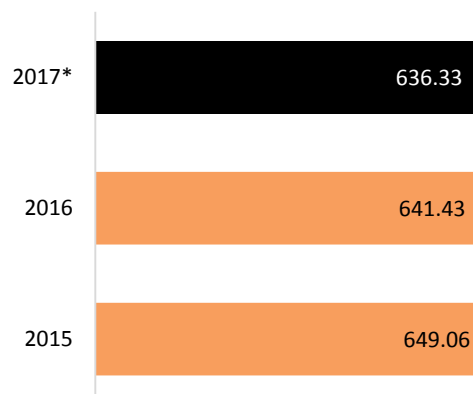
Note: The prior-year numbers restated based on list of licensees on ACE Market 2017, which was 10 companies

Source: Bloomberg, MCMC

Figure 1.23 Licensees on ACE Market: Market Capitalisation 2015 – 2017

Licensees on ACE Market: Revenue 2015 – 2017

REVENUE (RM million)



**Estimated*

Note: The prior-year numbers restated based on list of licensees on ACE Market 2017, which was 10 companies

Source: Industry, MCMC

Figure 1.24 Licensees on ACE Market: Revenue 2015 – 2017

In October 2017, an ACE listed company, ManagePay Systems Bhd, via its joint venture company, MPay Mobile Sdn Bhd (MPay Mobile) has received ASP (C) licence from MCMC (Figure 1.22). The licence allows MPay Mobile to carry out application services and provide MVN services.

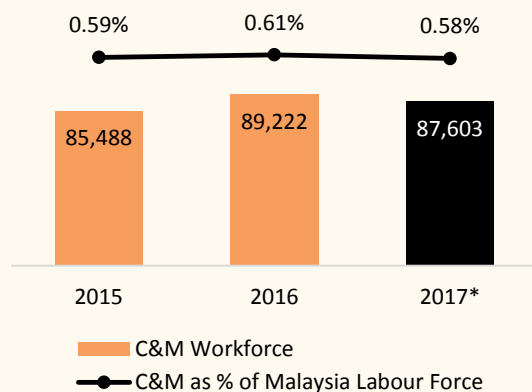
ManagePay Systems Bhd is a company that provides electronic payment services and solutions for banks and financial institutions, merchants and card issuers operating in Malaysia. ManagePay Systems has been listed on the ACE Market of Bursa Malaysia since 2011.

As at end 2017, ManagePay Systems has posted market capitalisation of more than RM150 million and share price at RM0.22 per share. The company recorded total revenue of RM8.18 million in 2017, an increase of 34.1% from RM6.10 million in 2016. This was attributed to better e-payment solutions sales supported by growing acceptance of cashless payments.

C&M Licensees Workforce

Based on industry feedback⁴, C&M licensees employed 87,603 workforce in 2017. This is about 0.6% of the Malaysian labour force of 15 million⁵. The number of employees is estimated to have declined marginally by 1.8% or 1,619 in 2017.

C&M Licensees Workforce 2015 – 2017



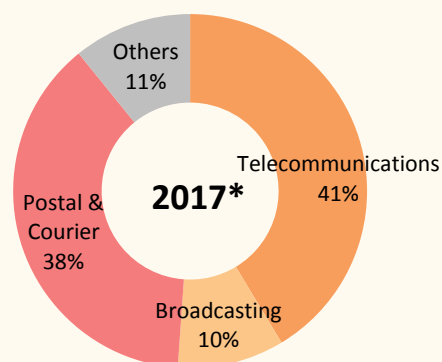
**Estimated*

Note: Excludes Axiata employees from foreign operations.

Source: Industry, MCMC

Figure 1.25 C&M Licensees Workforce 2015 – 2017

C&M Licensees Workforce by Sector



Note: Number of employees are from major public listed companies, other CMA licensees, postal and courier service providers

Source: Industry, MCMC

Figure 1.26 C&M Licensees Workforce by Sector

Employment in telecommunications and broadcasting sectors declined by 3.5% to 36,233 and 4.8% to 8,549 respectively in 2017. This was in part due to transformation efforts in rationalising and restructuring manpower arising from exercise undertaken by management to rescale operations and cost structure across the companies.

In line with digitalisation and emerging new technology, companies may have to trim its workforce and realign its manpower to key areas of focus to meet demands of a dynamic digital ecosystem.

All sectors are showing declining trend in employment except postal and courier sector, in which number of employees increased marginally by 0.1% to 33,326 in 2017. This was driven in part by ongoing growth in the Malaysia e-commerce market. As the e-commerce market continues to see higher sales and consumers demand for speedy shipping, the sector is motivated to improve their productivity by increasing manpower to meet demand and enhance delivery efficiency.

Notwithstanding the above, C&M companies continue to seek and train talents to position themselves in seeking profitable service opportunities. In 2017, C&M industry spent more than RM50 million in training and development, focusing on ICT, customer service, soft skills, logistics, technology and technical skills.

Nurturing creativity and innovation among Malaysians are important to unlock the growth potential of digital economy. A recent report by Google⁶ indicated that there is a shortage of home grown technology talents in Southeast Asia region, Malaysia included, and this is the most pressing challenge to tackle. The research has identified some of the top talents in demand including engineering and senior executives with vision and experience to lead a team towards digital transformation.

⁴ MCMC questionnaire to licensees on industry performance.

⁵ Department of Statistics Malaysia, Principal Statistics of Labour Force, Malaysia, Fourth Quarter (4Q) 2017, February 2018.

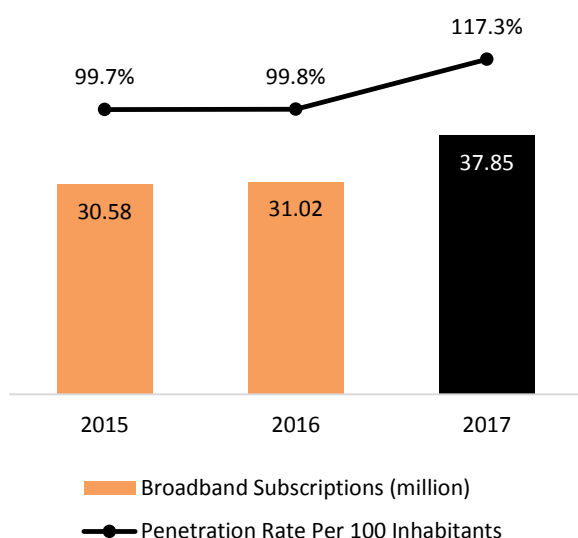
⁶ Google and Temasek, e-Conomy SEA Spotlight 2017.

MODULE 2: SERVICES AND CONNECTIVITY



Broadband in Malaysia

**Broadband Subscriptions and Penetration Rate
2015 – 2017**



Source: MCMC

Figure 2.1 Broadband Subscriptions and Penetration Rate 2015 – 2017

Malaysia broadband penetration rate per 100 inhabitants has surpassed 100% mark in 2017, reaching 117.3%. Broadband subscriptions have increased by 22% to 37.85 million from 31.02 million in 2016.

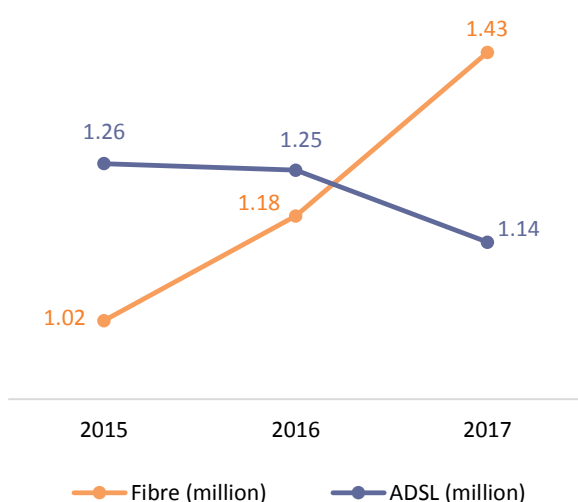
The increase was mainly due to higher mobile broadband subscriptions of 35.26 million, a double digit growth of 23.6% from 28.53 million in 2016. Factors driving this encouraging growth include individuals connecting more devices through mobile networks to enjoy faster connection speeds over 4G LTE, coupled with attractively priced data packages. Moreover, greater availability of affordable devices also aided mobile broadband take up.

In contrast, fixed broadband subscriptions reached 2.59 million, contributed 7% to total broadband subscriptions in 2017. The 2.59 million subscriptions represent a growth of 4% from 2.49 million in 2016.

Fixed Broadband

Specifically, fibre broadband subscriptions continue to rise. In 2017, it added 250,000 subscriptions to 1.43 million, an increase of 21.2% from 1.18 million in 2016. Meanwhile, Asymmetric Digital Subscriber Line (ADSL) subscriptions has seen a decline of 8.8% to 1.14 million in 2017 (2016: 1.25 million).

ADSL and Fibre Subscriptions 2015 – 2017



Source: MCMC

Figure 2.2 ADSL and Fibre Subscriptions 2015 – 2017

Fibre broadband has finally overtaken ADSL as the most popular broadband Internet access method. Ongoing HSBB initiatives towards improving fibre network coverage has resulted in more consumers migrating from ADSL to fibre.

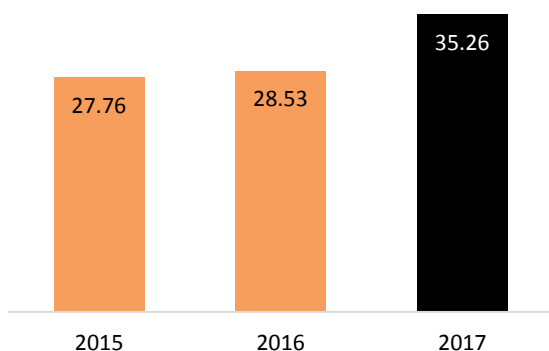
In addition, doubling the speed of fixed broadband initiatives in conjunction with Government's announcement during Budget 2017 also contributed to increase in fibre subscriptions.

Mobile Broadband

In 2017, mobile broadband subscriptions reached 35.26 million, a double digit growth of 23.6% from 28.53 million in 2016. The higher number in mobile broadband subscriptions were partly attributed to initiatives taken by service providers to migrate their existing pure voice subscribers' onto postpaid or prepaid bundled plan (voice with minimum data).

Mobile Broadband Subscriptions 2015 – 2017

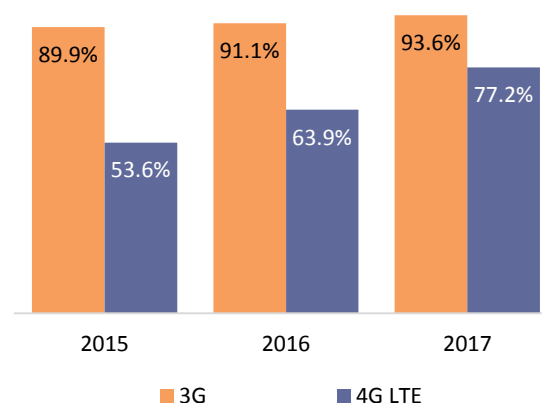
SUBSCRIPTIONS
(million)



Source: MCMC

Figure 2.3 Mobile Broadband Subscriptions 2015 – 2017

3G and 4G LTE Population Coverage 2015 – 2017



Source: MCMC

Figure 2.4 3G and 4G LTE Population Coverage 2015 – 2017

Moreover, with service providers aggressively and increasingly offering mobile broadband with innovative and competitive data packages that include large data allowances and affordable smartphones, mobile broadband adoption has accelerated, especially over the last one year.

For instance, Digi and Maxis have offered subscribers attractive priced packages with greater value. In 2017, Digi offers unlimited data packages starting from RM100, while Maxis has upgraded its postpaid plans with more data allowance i.e. 50GB plan (25GB + 25GB weekend) upgraded to 60GB all day data.

Meanwhile, U Mobile added unlimited data and calls as part of their postpaid and prepaid offerings, targeting heavy data users. In addition, U Mobile offers uncapped high speed data and free calls to all networks as their selling proposition. Celcom also added new packages that include substantial amount of data quota, that is, up to 100GB and free video and music streaming.

In summary, service providers are now strategically differentiating to focus on enhancing customer experience and improving service quality. Competitive advantage can be obtained by meeting customer demand for video content, shopping, banking transaction and other digital services. Service providers need to come up with products beyond connectivity with flexible pricing that indeed changes the stakes in a competitive market scenario.

Towards Next Generation of Mobile Broadband

The next generation of mobile broadband (5G) is envisaged to improve the performance and capabilities of current mobile broadband technologies and to support diverse usage scenarios and applications. Higher data rates, lower latency, reliable connectivity for new services as well as seamless user experience are needed to be met by 5G connectivity.

In May 2017, Celcom and Ericsson conducted Malaysia's first 5G trial featuring 5G radio prototypes using 28GHz band. The trial observed a peak throughput of up to 18Gbps and latency as low as 3ms. The trial also demonstrated 5G use cases such as robotic control, connected environment, virtual reality, Internet of Things (IoT) applications and 4K video streaming over 5G. A similar trial using Ericsson 5G radio prototypes was also performed at the Universiti Teknologi Malaysia's Innovation Centre for 5G (IC5G) to assess the operation and performance of emerging 5G technologies.

After 2020, 5G is expected to be commercially deployed. Current initiatives such as 5G trials provide platform for the mobile industry to prepare for successful and timely 5G readiness and deployment.

700MHz band for mobile broadband

In line with the Government's decision to optimise the use of spectrum resources, MCMC announced that the 700MHz band will be made available for mobile broadband service from 1 January 2019. The 700MHz band is currently allocated to broadcasting service and is used to provide analogue and digital terrestrial TV.

The 700MHz band with frequencies ranging from 703MHz to 743MHz and 758MHz to 798MHz will be assigned by way of spectrum assignment for a period of 15 years on a nationwide basis. The assignment of 700MHz band was carried out through tender (beauty contest) where bidders are evaluated based on six evaluation criteria. In the interest of end users, requirements of service roll out and coverage as well as proposals on services to be offered, retail prices and quality of service are among the key criteria for evaluation on 700MHz beauty contest.

With the 700MHz band, the population coverage for mobile broadband service by year 2020 is targeted at 95%. Due to its propagation characteristics, use of lower spectrum bands such as 700MHz band is important in enhancing coverage and capacity of mobile broadband service especially in rural and remote areas. The 700MHz band is also expected to complement the use of higher spectrum bands such as 1800MHz, 2100MHz and 2600MHz bands.

As the 700MHz band is intended for provision of high speed mobile broadband service, successful bidders are required to provide mobile broadband service of higher speed (average speed of 30Mbps by year 2020) to the end users. In addition, successful bidders are required to ensure provision of mobile service coverage at major highways and railway lines.

The reallocation of additional spectrum for mobile broadband such as the 700MHz band is expected to increase widespread service coverage and digital connectivity across urban, suburban and rural areas and therefore further spur the development of C&M industry and the nation as a whole.

Development of Broadband Infrastructure for Digital Connectivity

A new submarine cable system connecting the Peninsular Malaysia with Sabah and Sarawak was completed on 30 May 2017, ahead of targeted timeline of 30 June 2017.

The initiative has begun its implementation since 2014, which involved construction of a submarine fibre optic cables network system providing lit capacity of 4Tbps bandwidth infrastructure using 100Gbps Dense Wavelength Division Multiplexing (DWDM) technology.

The system can be upgraded to maximum design capacity of 12.8Tbps for future demand and currently the average utilisation or usage rate is 28% out of 4Tbps as at end 2017.

A total length of 3,820km of submarine fibre optic cable spans over six Submarine Cable Landing Centre which are located in Kuantan, Mersing, Kota Kinabalu, Kuching, Bintulu and Miri; connecting Peninsular Malaysia with Sabah and Sarawak.

Overview of Submarine Cable System Route Map



Source: MCMC

Figure 2.5 Overview of Submarine Cable System Route Map

Submarine Cable Route Segments			
Segment	Submarine Cable Landing Centre (Site A)	Submarine Cable Landing Centre (Site B)	Total Length (km)
S1	Mersing	Kuching	1,068
S2	Kuching	Bintulu	490
S3	Bintulu	Miri	211
S4	Miri	Kota Kinabalu	518
S5	Kota Kinabalu	Cherating	1,533
Total			3,820

Source: MCMC

Figure 2.6 Submarine Cable Route Segments

Year 2017 also witnessed developments of various key national infrastructure initiatives in enhancing Malaysia digital connectivity readiness towards smart nation.

Highlights include the completion of High Speed Broadband Phase 2 (HSBB2) project. This project which started in 2015 aimed to upgrade 95 exchanges, providing access to 650,000 premises passed by 2017 in all major capitals, cities and high-impact economies areas. As at end 2017, 777,000 premises are passed or accessible to HSBB2. Combined with High Speed Broadband Phase 1 (HSBB1), about 4.27 million premises are connected to high speed broadband with speeds up to 100Mbps.

From 2015 to 2017, under the Suburban Broadband (SUBB) project, 589,000 premises in suburban areas were connected to broadband services with speeds up to 20Mbps.

In addition, Rural Broadband (RBB) project is another initiative introduced in 2016 to carry out network infrastructure implementation to provide broadband services with speeds up to 20Mbps in rural areas.

Figure 2.7 shows the premises passed as at end 2017 for broadband initiatives undertaken.

Broadband Initiatives				
	HSBB1	HSBB2	SUBB	RBB
Project Timeline	2008 – 2012	2015 – 2017	2015 – 2019	2016 – 2017
Speed	10Mbps and above	Up to 100Mbps	Up to 20Mbps	Up to 20Mbps
Premises Passed	3.5 million	777,000	589,000	61,000

Source: MCMC

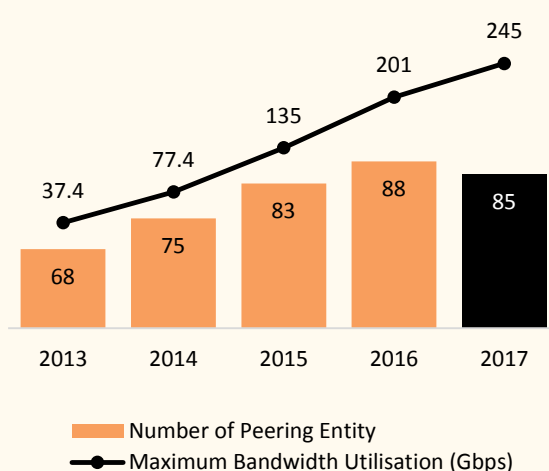
Figure 2.7 Broadband Initiatives

Malaysia Internet Exchange (MyIX)

The Malaysia Internet Exchange or MyIX was established in 2006 as a non-profit and neutral Internet Exchange platform. Internet Service Providers (ISPs) and content providers can connect and peer to exchange domestic Internet traffic.

To date, the 85 members of MyIX are able to bring Internet content closer to end users in Malaysia, reduces connectivity cost and facilitates drivers to a digital economy. They are able to reduce their operational costs which can translate to better earnings, or transfer the cost savings to their users by offering more competitive data plans.

**MyIX Bandwidth Utilisation and Peering Trend
2013 – 2017 (As at December)**



Source: MyIX, MCMC

Figure 2.8 MyIX Bandwidth Utilisation and Peering Trend 2013 – 2017
(As at December)

Figure 2.8 shows the growth trend of MyIX bandwidth utilisation and number of peering entities for 2017.

Despite the reduction of peering entities, the domestic Internet traffic maximum bandwidth utilisation has surged by 21.9% to 245Gbps from 201Gbps in 2016.

This reflects the growing Internet consumption fuelled by mobile broadband, cloud computing, social media, e-commerce and increased content available to Malaysians. The increase in Internet traffic is in line with the growth rate of broadband users in Malaysia.

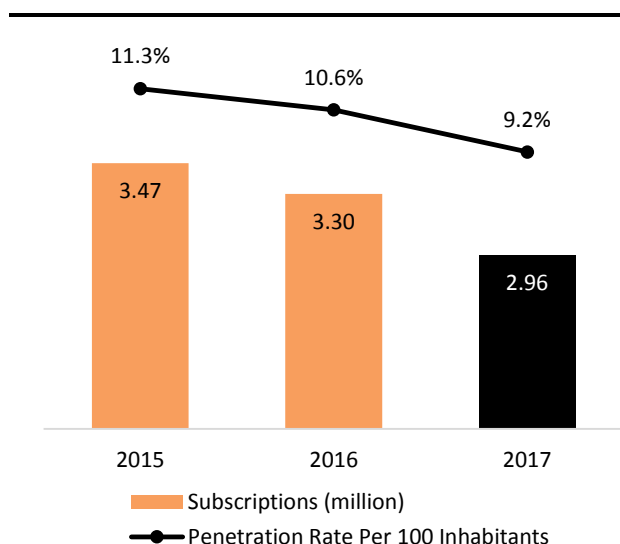
In 2017, there were 37.85 million broadband subscriptions, with 93% consisting of mobile broadband subscriptions. The upward trend of Internet consumption is expected to continue as more Malaysians become connected and increasing demand for faster and “always on” connectivity.

Fixed Services

DEL subscriptions continued to decline

In 2017, Direct Exchange Line (DEL) subscriptions was 2.96 million, down by 10.3% from 3.3 million in 2016. The decrease in DEL subscriptions continues as consumers turn to alternative solutions, such as Voice-over-IP (VoIP) and mobile calls.

**DEL Subscriptions and Penetration Rate
2015 – 2017**



Source: MCMC

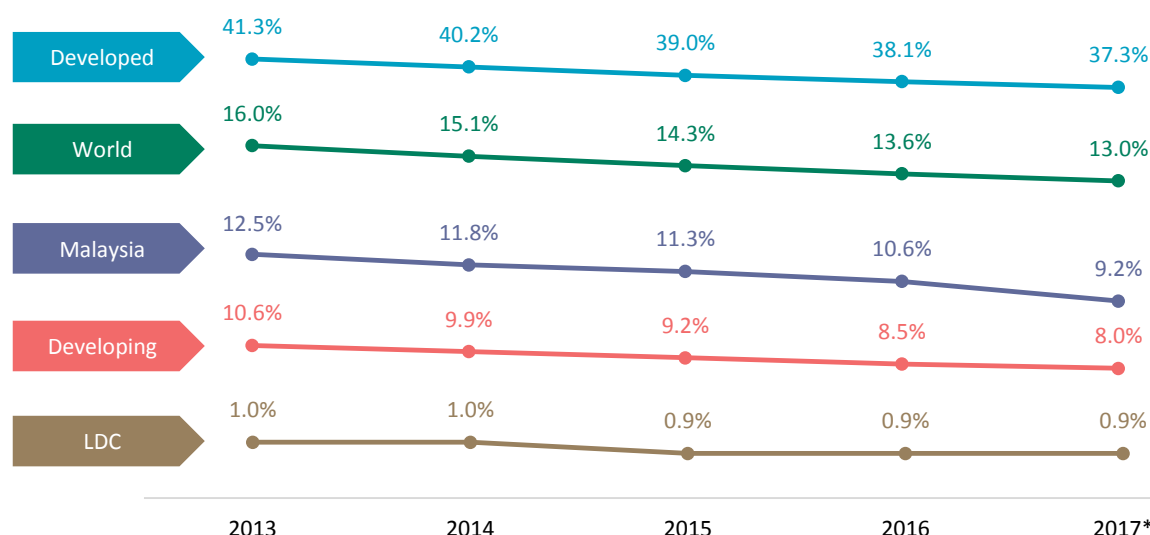
Figure 2.9 DEL Subscriptions and Penetration Rate 2015 – 2017

Notably, mobile VoIP calling applications are nearly free. There is generally no line rental fee or per-minute call rates as only data charges are incurred.

Malaysia DEL penetration rate per 100 inhabitants dropped from 10.6% to 9.2% in 2017.

According to ITU⁷, global fixed telephone penetration rate has continued to fall, dropping to 13% in 2017 from 13.6% in 2016. Mobile networks are increasingly prevalent to support changing consumer demand and thus, its impact on the provision of basic telecommunications services. Fixed telephone subscriptions worldwide was below one billion in 2017.

Worldwide and Malaysia: DEL Penetration Rate Per 100 Inhabitants



*Estimated for World, Developed, Developing and Least Developed Countries (LDC)

Note: The developed, developing and LDC country classifications are based on UN M49 which is a standard for area codes used by the United Nations; for more information refer to unstats.un.org

Source: International Telecommunication Union (ITU), MCMC

Figure 2.10 Worldwide and Malaysia: DEL Penetration Rate Per 100 Inhabitants

⁷ ITU, Key ICT indicators for developed and developing countries and the world (totals and penetration rates), 2005 – 2017.

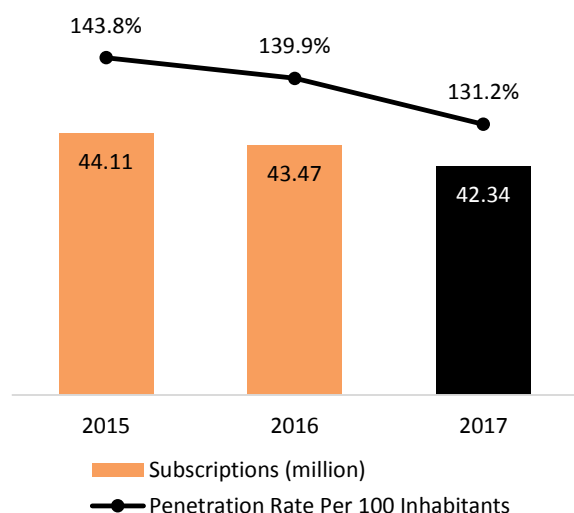
Mobile Services

Mobile cellular penetration rate at 131.2%, with 42.34 million subscriptions in 2017

Malaysia mobile cellular penetration rate in 2017 has moderated to 131.2% from 139.9% in 2016. This was partly due to consumer opting for single SIM compared with multiple SIM usage previously. Largely this is a result of competitively priced packages which have made it less advantageous for consumers to use more than one SIM. Rationalisation by service providers have also provided clearer subscriptions level as they disconnected inactive SIM, mainly prepaid subscriptions.

In 2017, there were 42.34 million mobile cellular subscriptions. Postpaid subscriptions has increased by 11.2% to 10.23 million, whilst prepaid subscriptions continued to fall, by 6.3% to 32.11 million (Figure 2.12).

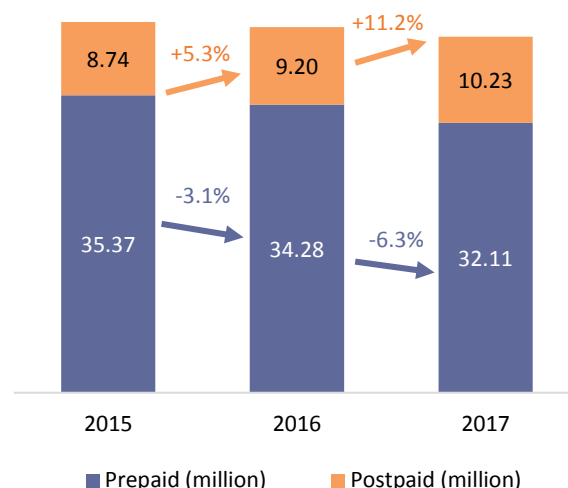
Mobile Cellular Subscriptions and Penetration Rate 2015 – 2017



Source: Industry, MCMC

Figure 2.11 Mobile Cellular Subscriptions and Penetration Rate 2015 – 2017

Prepaid and Postpaid Subscriptions 2015 – 2017



Source: Industry, MCMC

Figure 2.12 Prepaid and Postpaid Subscriptions 2015 – 2017

In summary, over the past three years, postpaid subscriptions have increased for various reasons that effectively emphasise data consumption. Postpaid take up is expected to continue in the near term as smartphones capabilities and applications are enhanced to meet consumer preference for online activities and mobility.

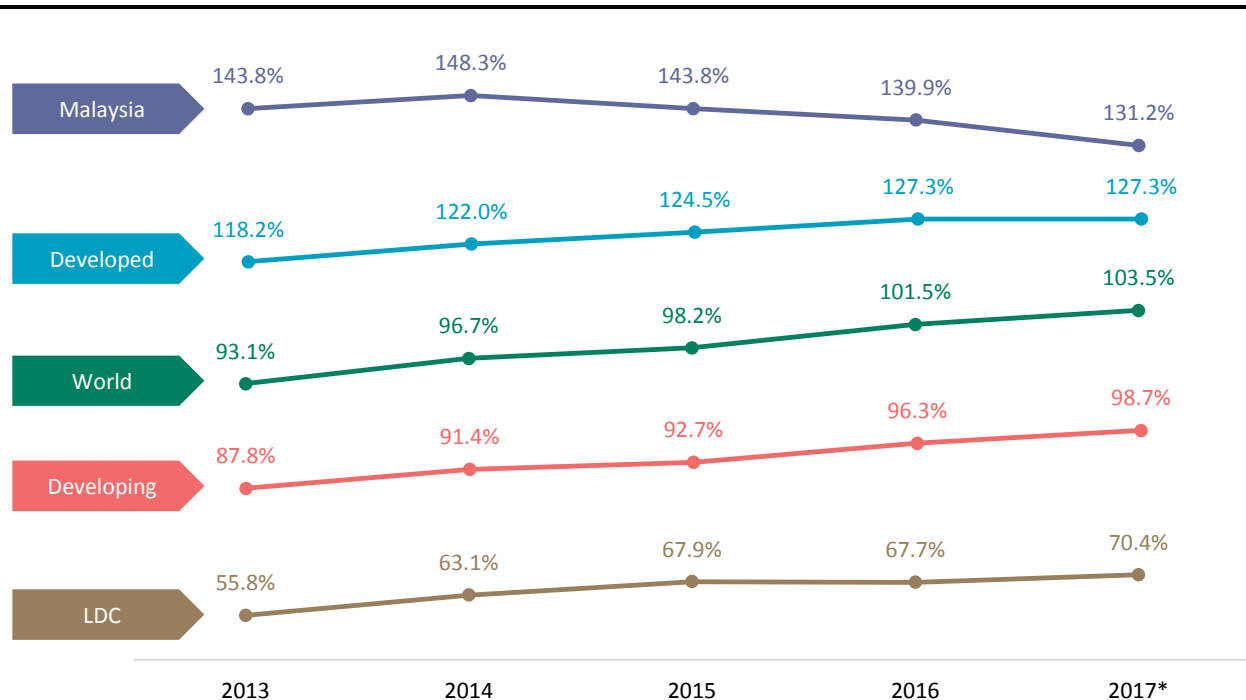
According to ITU⁸, world mobile cellular penetration rate per 100 inhabitants stood at 103.5% in 2017, translated from a total of 7.7 billion subscriptions. Mobile adoption is still rising, but growth rate continues to slow. Global mobile cellular subscriptions grew 3% in 2017 compared with 5% in 2016. Going forward, growth is likely to come from migration of existing 3G subscriptions to 4G.

⁸ ITU, Key ICT indicators for developed and developing countries and the world (totals and penetration rates), 2005 – 2017.

Malaysia's mobile cellular penetration rate at 131.2% is well above the world average as well as developed countries (Figure 2.13).

The mobile market in developed countries are relatively saturated, with high mobile cellular penetration rate of more than 100%. In contrast, developing and least developed countries (LDC) have penetration rate below 100%.

Worldwide and Malaysia: Mobile Cellular Penetration Rate Per 100 Inhabitants



*Estimated for World, Developed, Developing and Least Developed Countries (LDC)

Note: The developed, developing and LDC country classifications are based on UN M49 which is a standard for area codes used by the United Nations; for more information refer to unstats.un.org

Source: ITU, MCMC

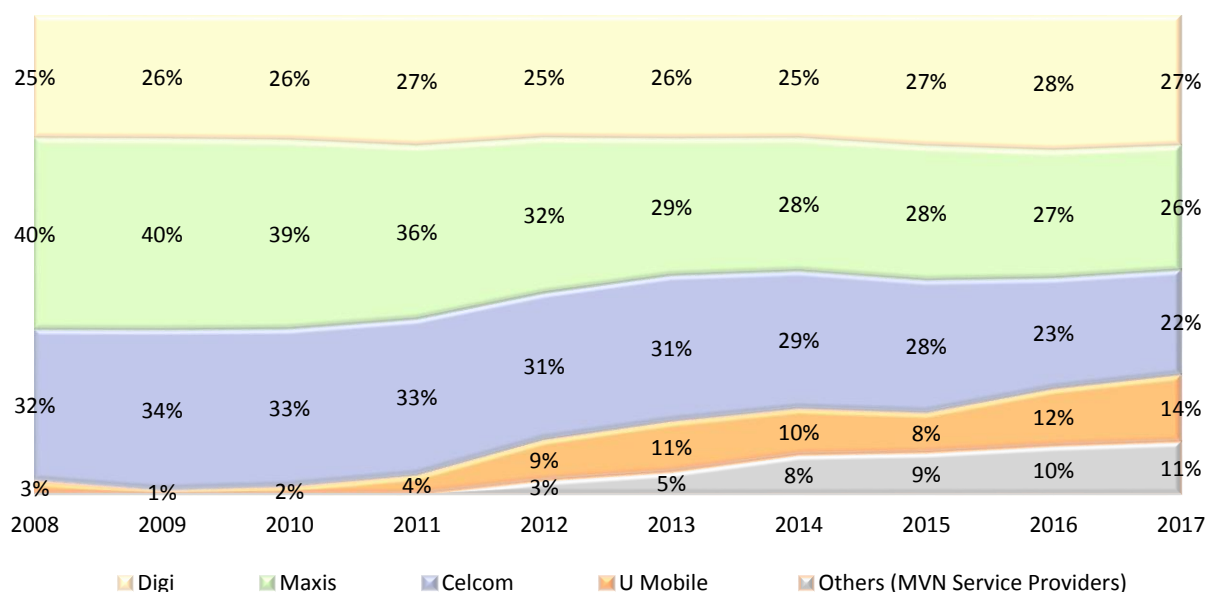
Figure 2.13 Worldwide and Malaysia: Mobile Cellular Penetration Rate Per 100 Inhabitants

U Mobile and MVN service providers market share is gaining ground

The local major mobile service providers have nearly equal market shares in terms of mobile cellular subscriptions in 2017. Maxis, Digi and Celcom lost some of their subscribers due to aggressive competition.

On the other hand, U Mobile with new innovative product offerings and substantial promotional and marketing activities has managed to increase its market share to 14% in 2017 from 12% in 2016. The remainder is from MVN service providers with market share increased by 1% to 11% or 4.79 million subscriptions in 2017 compared with 10% in 2016.

Mobile Cellular Subscriptions Market Share by Service Providers 2008 – 2017



Source: Industry, MCMC

Figure 2.14 Mobile Cellular Subscriptions Market Share by Service Providers 2008 – 2017

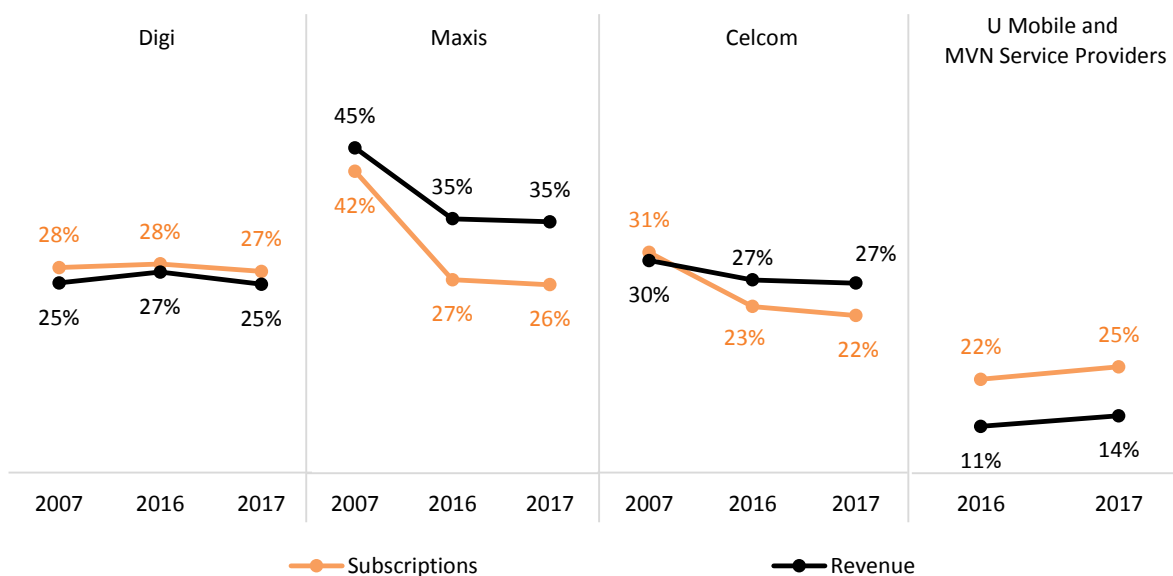
Over the last 10 years, the Malaysian mobile market has evolved and subscriptions have increased from 27.71 million in 2008 to 42.34 million in 2017.

Maxis has predominantly led subscriptions market share of 40% in 2008. While, Celcom and Digi at 32% and 25% respectively. It is observed that Maxis and Celcom market share has been declining towards 2017 as other competitors are catching up. As for Digi, its market share has been consistent throughout the past 10 years.

Digi currently holds subscriptions market share of 27%, followed by Maxis (26%) and Celcom (22%). On the other hand, U Mobile market share has been increasing over the years from a low of 1% in 2009 to 14% in 2017.

In terms of revenue market share, Maxis is still the leader although it has declined from market share of 45% in 2007 to 35% in 2017. Maxis has maintained strong postpaid subscriptions and higher ARPU with its strategy of improving and enhancing customer experience helping to attract high-end subscribers. Meanwhile, Celcom saw slight decline in revenue market share from 30% in 2007 to 27% in 2017. In contrast, Digi has managed to maintain its revenue market share averaging 26% during the same period.

Mobile Market Share by Subscriptions and Revenue



Source: Industry, MCMC

Figure 2.15 Mobile Market Share by Subscription and Revenue

Service providers' business models have changed for growth and sustainability. Moreover, growth would be challenging for all the service providers as each of them have similar products and almost identical pricing strategies. It is expected that unless service providers tap new or adjacent markets or create outstanding innovative packages, market shares are expected to remain relatively stable in the near term.

Mobile Virtual Network Services

Mobile Virtual Network (MVN) subscriptions close to 5 million mark

In 2017, MVN subscriptions was at 4.79 million. This is a growth of 8.9% compared with 4.4 million subscriptions in 2016. Notably, MVN service providers recorded market share of 11% out of total mobile cellular subscriptions. As at end 2017, there are 17 MVN service providers⁹ operating in Malaysia.

List of MVN Service Providers 2017		
Mobile Network Operator (MNO)	Thick MVN Service Provider ¹⁰	Thin MVN Service Provider ¹¹
Celcom Axiata	<ul style="list-style-type: none"> Altel Communications Sdn Bhd (Altel) Red ONE Network Sdn Bhd (redONE) Tune Talk Sdn Bhd (Tune Talk) XOX Com Sdn Bhd (XOX) Webe Digital Sdn Bhd (Webe) 	<ul style="list-style-type: none"> Merchantrade Asia Sdn Bhd (Merchantrade Asia) PLDT Malaysia Sdn Bhd (Smart Pinoy)
U Mobile	<ul style="list-style-type: none"> Ceres Telecom Sdn Bhd (FRIENDi Mobile) Telekomunikasi Indonesia (Malaysia) Sdn Bhd (Telin) 	<ul style="list-style-type: none"> ECI Communications Sdn Bhd (ECI) Mobile 8 Telco Sdn Bhd (Buzz Me) MyAngkasa Holdings Sdn Bhd (MyAngkasa Mobile) Uni Comms International Sdn Bhd (UCSI)
Digi	<ul style="list-style-type: none"> Talk Focus Sdn Bhd (Tron) Xiddig Cellular Communications Sdn Bhd (XiddiG) 	<ul style="list-style-type: none"> Pavo Communications Sdn Bhd (SpeakOut Wireless)
Maxis	-	<ul style="list-style-type: none"> REDtone Engineering and Network Services Sdn Bhd (ANSAR Mobile)

Source: MCMC

Figure 2.16 List of MVN Service Providers 2017

I Tel Mobile Network Sdn Bhd (I Tel) has terminated its MVN service on 1 August 2017. The risk and impact were minimal as there were only 235 active subscribers affected. Out of these, 170 subscribers chose to port to other service providers while the remainder chose to remain and thus, automatically migrated to Enabling Asia Tech Sdn Bhd¹².

I Tel has duly complied with Mandatory Standard for the Provision of Services through a Mobile Virtual Network and taken all necessary measures to facilitate their customers. This includes options for service continuity such as number portability or refunds to be made to subscribers accordingly. Due to proactive monitoring by MCMC, affected subscribers were successfully migrated and protected.

⁹ A MVN service provider fulfils at least one of the following criteria:

- Requires radio access from another service provider;
- Requires infrastructures from another service provider to enable services to be provided to the subscribers; or
- Subscribes to the wholesale service(s) provided by another service provider.

¹⁰ Thick MVN service provider is defined as a service provider who owns ASP (C) and NSP (I). They might have NFP(I) occasionally.

¹¹ Thin MVN service provider is defined as a service provider who owns ASP(C) licence only.

¹² Enabling Asia Tech Sdn Bhd is a Mobile Virtual Network Aggregator (MVNA) that hosted on U Mobile network, providing solutions and systems to MVN service providers.

Developments of MVN service providers in 2017

MVN service providers continue to find new and creative ways to differentiate themselves in the digital age. Whenever there is innovation, technology can never be far behind. Technology is the key enabler that will drive MVN market in the near future.

For instance, MVN service providers have been engaging in innovative SIM developments and tapping into opportunities for business growth. As mentioned in IPR 2016, Telin Malaysia has led to the creation of KarTuAS, a two in one SIM Card service that holds both Malaysian and Indonesian mobile numbers.

In 2017, Mobile 8 Telco Sdn Bhd under the “Buzz Me” brand name has introduced hybrid travel SIM using multi-IMSI (International Mobile Subscriber Identities) technology, targeting personal and business travellers. Travellers will no longer need to constantly switch SIM cards to enjoy local rates in more than 180 countries. The m8 World SIM enables subscribers to purchase prepaid plans from preferred roaming services partners via m8 World SIM mobile apps. Its dual usage can also be used in Malaysia, giving their subscribers the flexibility to change from one network to another.

On other developments, Tune Talk has partnered with US-based Juvo to drive financial inclusion initiative. Tune Talk is using Juvo’s technology to create applications namely, Tune Talk Pay Later. The applications allow Tune Talk prepaid subscribers to loan airtime credit from the company to reload their prepaid account. This is part of MVN service providers’ initiatives to embrace digital transformation. In this regard, MVN service providers have to position themselves to take advantage of the technology to provide more services and stay competitive.

Review of Mandatory Standard on Access Pricing

Price regulation of wholesale services is important in order to promote sustainable competition in the industry which is in the long-term benefit the end users of telecommunications services. Cost-based wholesale prices will also provide the appropriate signals for investment and new entry into the market. In the long-run, sustainable competition will provide the cornerstone in driving Malaysia's digital transformation aspirations.

In this respect, since January 2017, the MCMC embarked on a study to determine the cost-based prices to provide wholesale services and these prices were used to set the regulated rates for the period of 2018 to 2020. Wholesale services referred to in this context are the 23 facilities and services that the MCMC has listed in the Access List¹³. This is the fourth review of wholesale prices and the previous review was carried out in 2012.

The study was carried out in a transparent and consultative manner. This involved an extensive exercise to collect network and cost data from the service providers and subsequently build four economic cost models. There has also been extensive consultation with the service providers, in order to obtain feedback on the economic cost models. MCMC then carried out a Public Inquiry in accordance with sections 55, 58 and 61 of the CMA from 6 October to 20 November 2017. At the close of the Public Inquiry, MCMC received 16 submissions. After considering the submissions received, the Public Inquiry report¹⁴ was published along with the Commission Determination on Mandatory Standard on Access Pricing¹⁵.

The Mandatory Standard on Access Pricing regulates the maximum prices for 13 wholesale services. There are six principal wholesale services in the Access List that could potentially enhance the competitive landscape of fixed broadband market in Malaysia. Principally among these, price regulation of Layer 2 HSBB Network Service with Quality of Service and Layer 3 HSBB Network Service would allow alternative service providers to supply competitive high speed broadband services to consumers.

In addition, prices for three transmission services namely, Wholesale Local Leased Circuit Service, Trunk Transmission Service and End-to-End Transmission Service have also been reduced from the last review in 2012. Transmission services are important for ensuring nationwide connectivity of broadband networks.

Finally, with the regulation of prices for Duct and Manhole Access, this would encourage service providers to utilise existing duct infrastructure that would accelerate the deployment of broadband networks and services. With the availability of a range of regulated wholesale services that cater to different requirements of service providers, the MCMC expects that this will provide the catalyst to stimulate competitive fixed broadband offerings that are both innovative and affordable for businesses and consumers.

The prices for Digital Terrestrial Broadcasting Multiplexing Service are also regulated. This is timely and will assist the service providers in concluding their negotiations in providing digital TV services to Malaysian viewers and is a step towards ensuring analogue switch off.

In conclusion, price regulation of wholesale services is critical to promote sustainable competition in the industry that will result in innovative and affordable retail products for industry and consumers. This will lay the foundation for Malaysia to embrace digital transformation and grow its digital economy for the betterment of all its citizens.

¹³ <http://www.mcmc.gov.my/skmmgovmy/media/General/pdf/Access-List-2015.pdf>

¹⁴ <http://www.mcmc.gov.my/skmmgovmy/media/General/pdf/PI-Access-Pricing.pdf>

¹⁵ <http://www.mcmc.gov.my/skmmgovmy/media/General/pdf/MS-Access-Pricing.pdf>

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MODULE 3: CONTENT SERVICES



Media Landscape Overview

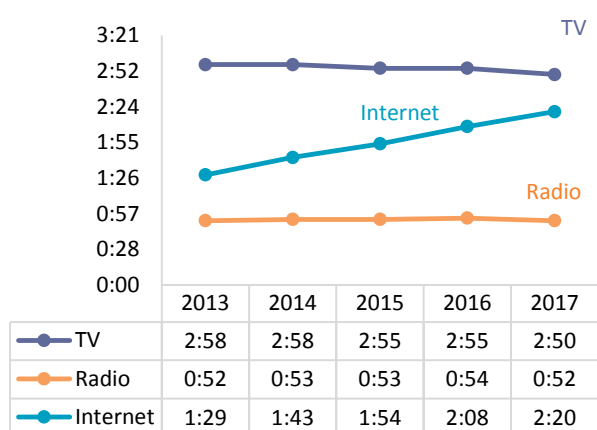
Traditional media remains relevant

Globally, traditional TV is the largest medium by consumption time, averaging 2 hours 50 minutes of viewing per day in 2017. However, the gap between TV and Internet has narrowed for the past few years (Figure 3.1).

Media Consumption 2013 – 2017: Worldwide

TIME SPENT

(hour and minute)



Source: Zenith, Media Consumption Forecast 2017

Figure 3.1 Media Consumption 2013 – 2017: Worldwide

Figure 3.2 shows media consumption for selected ASEAN and developed nations. TV continues to be relevant in developing countries such as Indonesia, Thailand and Malaysia, although Internet consumption is showing increasing trend.

However, the developed nations exhibit mixed trend. Internet consumption is relatively higher than TV in Singapore, Hong Kong and UK, whereas the US shows a converse trend, that TV still higher consumption than Internet, albeit towards crossover.

Specifically, TV is still the most used medium in US and the trend is in tandem with global media consumption.

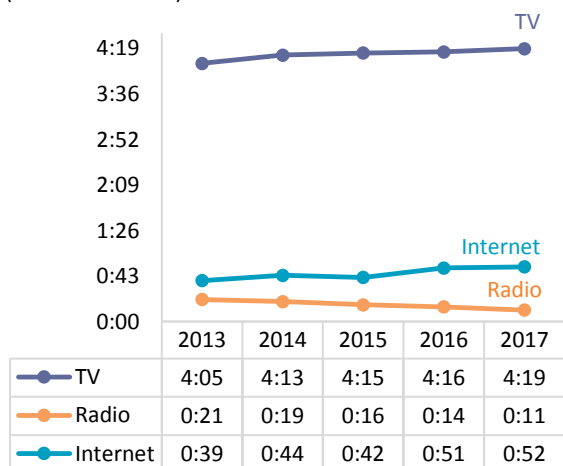
In UK, the shift to digital consumption continues. This is particularly towards mobile, for instance 4G services, along with bigger data bundles and greater storage have allowed consumers to increase their daily phone usage for entertainment, utility and information¹⁶.

Media Consumption 2013 – 2017: Selected Countries

Indonesia

TIME SPENT

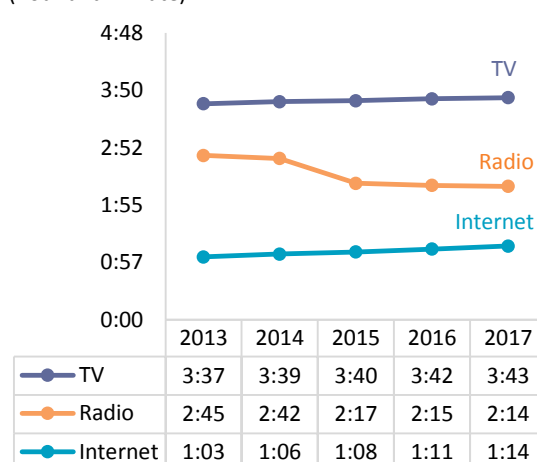
(hour and minute)



Malaysia

TIME SPENT

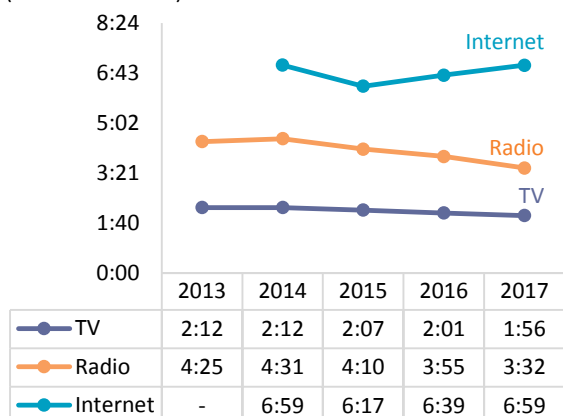
(hour and minute)



¹⁶ Zenith, Media Consumption Forecast 2017.

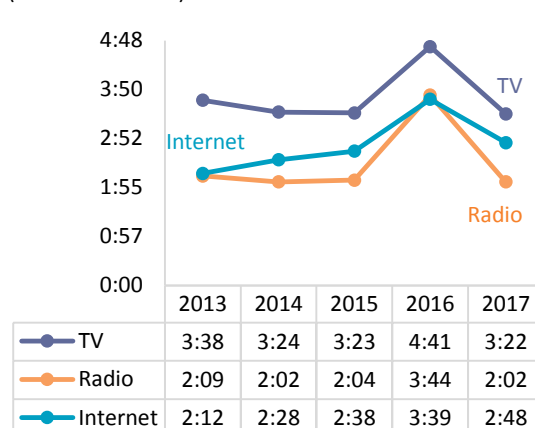
Singapore

TIME SPENT
(hour and minute)



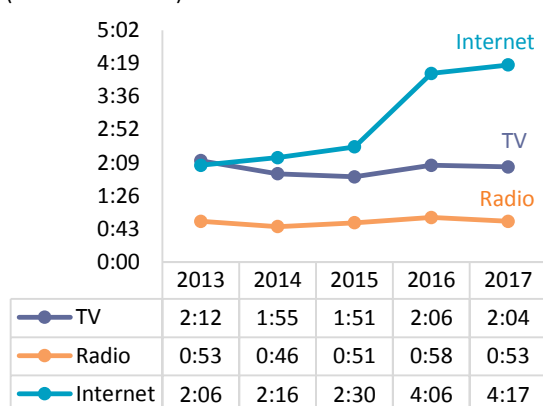
Thailand

TIME SPENT
(hour and minute)



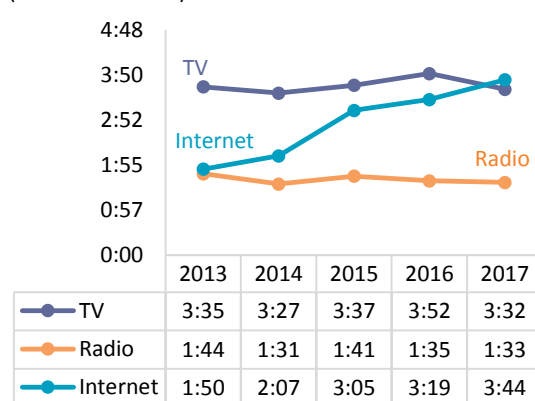
Hong Kong

TIME SPENT
(hour and minute)



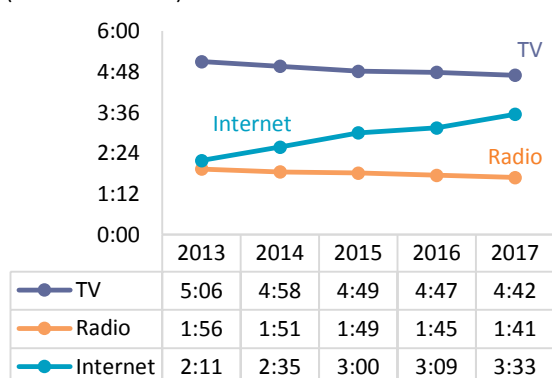
United Kingdom

TIME SPENT
(hour and minute)



United States

TIME SPENT
(hour and minute)



With digitisation, the shift in consumer behaviour to watching multi-screen video content from traditional TV screen is inevitable. This is particularly amongst millennials¹⁷ and younger viewers. Millennials watch TV on any device such as TV set, laptop, smartphone or tablet. A report by BI Intelligence¹⁸ captures this behaviour and noted that the definition of TV watching is changing to include new TV that is digital, social and cross-platform.

Source: Zenith, Media Consumption Forecast 2017; Roy Morgan Research; Nielsen Media Index; IMS Clear; Nielsen Consumer & Media View 4Q 2015

Figure 3.2 Media Consumption 2013 – 2017: Selected Countries

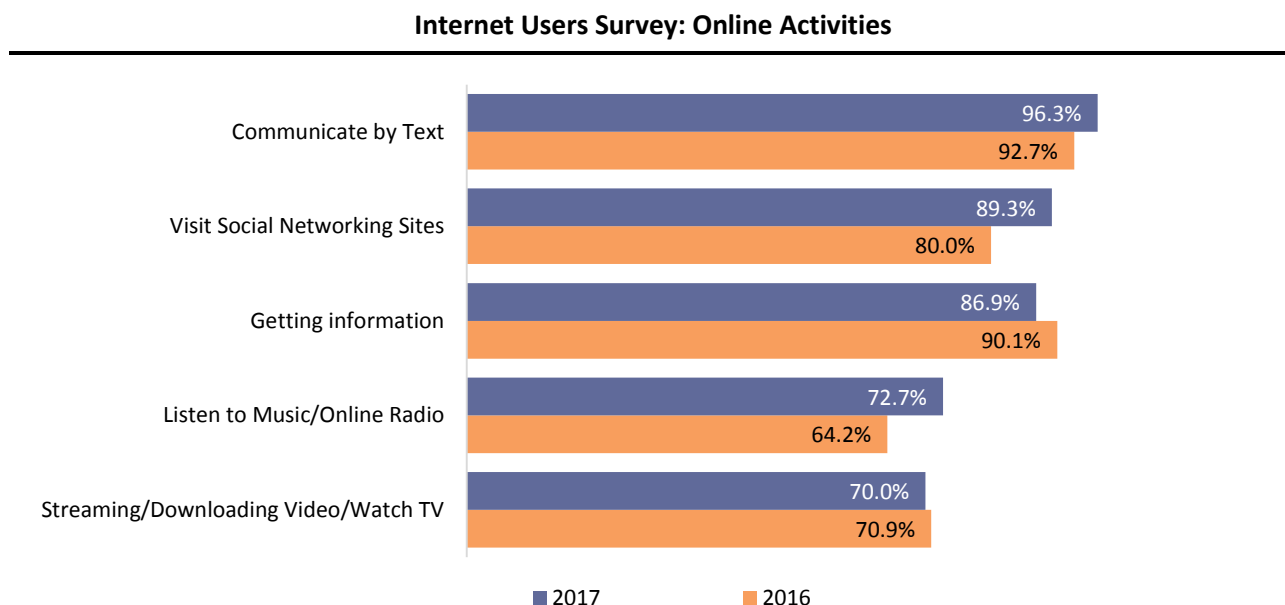
¹⁷ Millennials are those born in the 1980s or early 1990s.

¹⁸ BI Intelligence, The Future of TV 2017. BI Intelligence, a research service from Business Insider, an American financial and business news website, brings business intelligence for the digital age.

Despite the shift in consumer behaviour, watching TV via TV set still has the largest segment in media consumption worldwide and continues to be of relevance in this digital age. Thus, one could say that video content continues to be significant on both traditional and new media meeting the needs of all viewers.

Malaysians stream video or watching TV online

In Malaysia, majority of Internet users are streaming video or watching TV online as well as listening to music or radio. Based on MCMC Internet Users Survey 2017¹⁹, 70% of Internet users continued to stream video or watch TV as part of their leisure activities when online (Figure 3.3).



Source: MCMC

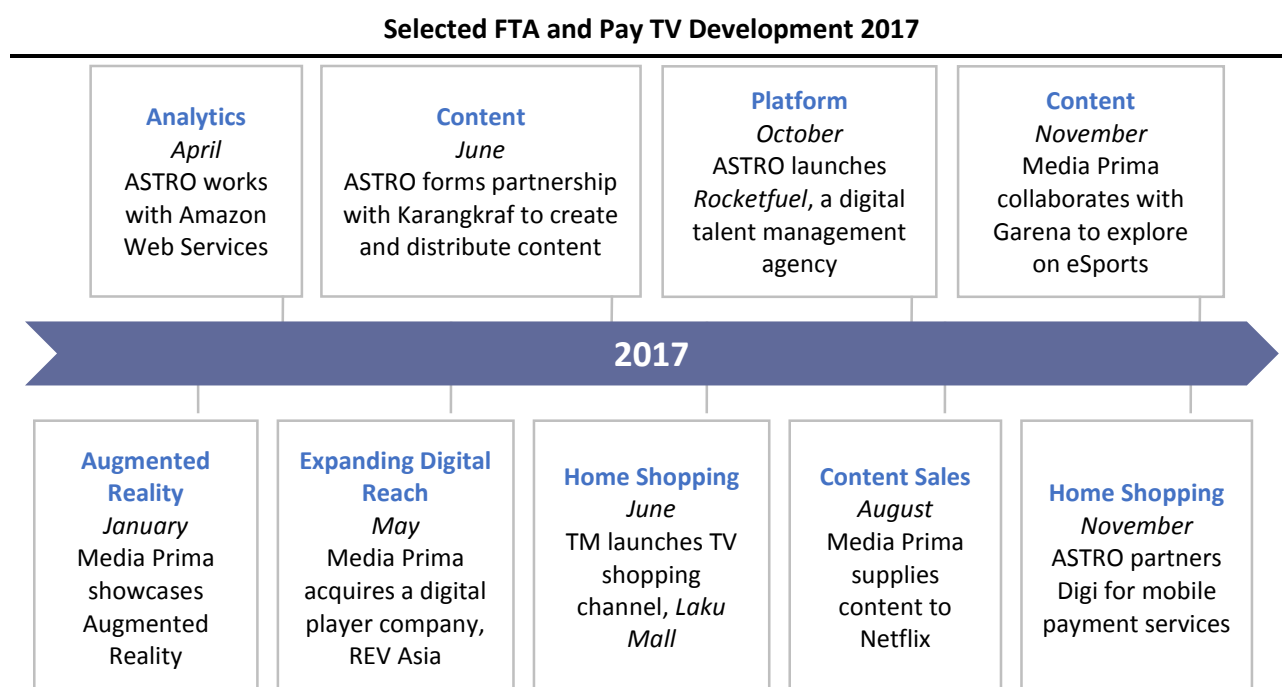
Figure 3.3 Internet Users Survey: Online Activities

¹⁹ MCMC conducts survey to collect data pertaining to access and usage of hand phones and Internet in Malaysia. Fieldwork for Internet User Survey 2017 started from 14 November 2016 to 10 February 2017.

FTA and Pay TV Development

A report from Accenture noted that the media and broadcasting ecosystem has evolved and service providers are diversifying to remain competitive. Based on the analysis of key players in the global broadcasting and digital video industry, service providers continue to experiment with new business models which combine advertising, subscriptions, generating transactions and selling content to other service providers²⁰.

This worldwide development is similar in Malaysia. FTA and Pay TV service providers to date are going beyond content businesses and expanding customer transaction to other avenues such as providing OTT service and home shopping. Service providers are strategising to diversify business models such as providing content to other service providers and home shopping platform to boost revenue. To reach wider viewers, FTA and Pay TV service providers are also airing their content via multiplatform and collaboration activities. For instance, Media Prima acquired REV Asia Holdings Sdn Bhd (Rev Asia), a digital player, in May 2017 (Figure 3.4).



Source: MCMC

Figure 3.4 Selected FTA and Pay TV Development 2017

FTA TV service provider, Media Prima aims to be the leading digital-first content and commerce company; engaging across all media. The Group is a fully integrated media company that has stake in TV stations, prints, radio stations, content creation and digital media.

The Media Prima Group has seen flat or lower advertising revenue recorded by its media platforms, with the exception of Out-of-Home and Digital platforms businesses²¹. If seen in isolation, Media Prima believes that digital advertising has posed a threat to TV advertising by shifting advertisers' budgets from traditional media to the new media.

In facing such challenges, Media Prima offers social media advertising and digital interactive engagement, for instance via Facebook, Instagram and Twitter. Media Prima has built a fan base

²⁰ Accenture, Future of Broadcasting VI, 2017.

²¹ Media Prima Press Release, Media Prima seeks to grow its digital and non-traditional revenue streams – reports revenue of RM272.2 million for Quarter 1 2017, May 2017.

of more than 11 million for its TV and radio stations²². Meantime, Tonton, Media Prima's OTT platform has extended their content to over seven million registered users.

In 2017, Media Prima expanded their content offerings to OTT players with a total deal of more than RM1 million. Over 50 titles are made available on iflix and 20 titles on Netflix platform.

To broaden their presence, Media Prima acquired Rev Asia in May 2017. Rev Asia is a digital player comprising various new media sites such as ohbulan.com and juiceonline.com. Rev Asia has significant reach amongst consumers aged 18 – 35 years and recorded revenue and profit after tax of RM23.5 million and RM4.2 million respectively for financial year ending 31 December 2016. These strong digital assets are expected to drive growth for the Group. As a result of this strategic acquisition, Media Prima reached a monthly digital viewers of 11.1 million in November 2017²³.

On the other hand, Pay TV, ASTRO is pursuing new opportunities for future growth to serve the digital lifestyle in Malaysia and regionally. ASTRO will do so by leveraging on their strength as well as identifying strategic partnership.

ASTRO is obtaining better business visibility and insights by using analytical capabilities to gauge viewer demand. For example, ASTRO has enabled personalised content recommendation across its On Demand service on connected set top boxes²⁴ and video streaming apps Astro GO and NJOI Now.

In 2017, ASTRO worked with Amazon Web Services for its group-wide digital and business transformation. It incorporates a cloud and mobile-first, analytics driven approach to accelerate innovation²⁵. To date, ASTRO uses Amazon Simple Storage Service to host over 23,000 on-demand current and library titles for their set top boxes and OTT video streaming products.

By utilising data analytics, ASTRO aims to further strengthen its digital brands portfolio to reaching millennials and prepare to scale at regional level. Tribe, ASTRO's regional OTT streaming service launched in 2016, is now available in four countries namely, Indonesia, Philippines, Singapore and Thailand. As at January 2018, Tribe has 3.1 million downloads, compared with only 760,000 in January 2017. Together with the growing number of users, ASTRO advertising business is expected to grow further on this platform.

Additionally, 2017 saw the launch of further digital products and services from ASTRO such as Rocketfuel Entertainment²⁶ (formerly known as Astro Digital Publications). It was launched to offer influencer marketing and talent management services under one roof, as well as tapping into regional social media followers. The company is managing over 100 influential personalities in beauty, fashion, lifestyle, automotive and parenting across ASEAN and has over 36 million cumulative social media reach.

²² Note that these figures are accumulative of Facebook, Twitter and Instagram, that is from Hot FM with six million followers and TV3 five million followers.

²³ New Straits Times, Media Prima on path to become leading digital-first content and commerce company, February 2018.

²⁴ Connected set top box refers to ASTRO personal video recorders connected to Internet.

²⁵ ASTRO mediaroom, Astro Accelerates its Digital and Business Transformation with Amazon Web Services, April 2017.

²⁶ The company is a wholly owned subsidiary of Astro Digital Sdn Bhd, i.e. ASTRO's Digital Media & Publications.

ASTRO entered into a strategic partnership with Turner Asia Pacific to co-develop Asian content for global distribution on Warner TV²⁷. This new venture will also enable ASTRO to strengthen its presence in the region.

In June 2017, ASTRO and Kumpulan Media Karangkraf, one of the major publishers in Malaysia, formed a strategic partnership to create and distribute content Intellectual Property for Bahasa Melayu and Islamic content across all platforms. Ownership of these Intellectual Property allows ASTRO to maximise monetisation potential from the content, increase advertising revenue, subscriptions and commerce, while at the same time adopting a long-term sustainable role in the industry²⁸.

Enriching Content

Tapping into eSports

"eSports" is the short form for electronic sports, whereby eSports players play computer games amongst each other. Ovum forecasts that the value of global eSports market is expected to reach USD1.9 billion in 2022, growing from an estimated USD733 million in 2017. This fast-moving market provides opportunities for various stakeholders such as broadcasters, video streaming platform as well as infrastructure and technology platform providers²⁹.

Broadcasters tap into eSports to reach more viewers particularly targeting millennials and develop competitive strategy to monetise content. In 2016, ASTRO introduced its first dedicated eSports channel in Southeast Asia called eGG (stands for "Every Good Game"). The channel continued to expand geographically in 2017 and is now available in five other countries aside from Malaysia, that is, Australia, Brunei, Indonesia, Philippines and Singapore. In Malaysia alone, it has reached over eight million viewers³⁰.

Also, Media Prima collaborated with Garena Malaysia Sdn Bhd in November 2017 to explore this growing eSports in Malaysia. Garena is an eSports publishing company which promotes various games from game developers.

Media Prima will also provide updates, news access to tournaments and events for world renowned eSports titles such as League of Legends, Sports FIFA Online 3 and Arena of Valor via Media Prima Television Networks and social media websites.

Virtual Reality into Local Entertainment

On a separate development, virtual reality (VR) including augmented reality content is taking place locally. VR is the use of computer technology to create a simulated environment, while augmented reality layers interactive, virtual enhancements over existing digital reality.

Media Prima accelerated new technology in their service by offering augmented reality product promo. It showcased its inaugural augmented reality in *Anugerah Skrin 2017*, an award winning show of Malaysia's audiovisual art for film and TV programmes. This special effect has given a

²⁷ Warner TV is a brand available across Asia Pacific, created and distributed by Turner Broadcasting System Asia Pacific, Inc., a Time Warner company. Turner Asia Pacific creates and distributes brands throughout the region, running 61 channels in 14 languages across 40 countries in Asia Pacific.

²⁸ ASTRO mediaroom, Astro achieves RM196 million PATAMI in 1QFY18, June 2017.

²⁹ Ovum, E-Sports Revenue Forecast Report: 2017–22, October 2017.

³⁰ As at 28 February 2018.

new level of experience to the viewers who watched the live show. The programme achieved a high rating of 2.9 million viewers in comparison to 2.6 million viewers in the previous year. Through this success, Media Prima mentioned that augmented reality will be implemented more in their programmes.

Meanwhile, ASTRO is looking at Astro World Cup VR app. The app is designed in collaboration with FIFA, featuring live matches and potential branding opportunities. ASTRO plans to launch it before the commencement of the World Cup in 2018.

Compelling Content

Local Content Continue to Gain Traction

Compelling content comprises content that meet viewers' demand or attracts viewers' attention. One of it is local content, which is clearly important to Malaysians. This can be observed from the fact that local content in local languages have been recording high ratings for many years on FTA TV as well as Pay TV.

In 2017, *Anugerah Juara Lagu*, the prestigious award winning show for 31 years, was the most watched TV programme over TV3 with an average of 3.9 million viewers per minute. Meanwhile, the most popular Chinese content was 8TV Mandarin news with an average of 661,000 viewers.

A drama series of 28 episodes, *7 Hari Mencintaiku* garnered a cumulative total of 11.5 million viewers on TV3. Notably, this sought-after drama bagged six awards at *Anugerah Drama Festival KL 2017* including the choice drama and theme song.

ASTRO's *Maharaja Lawak Mega 2017*, a comedy show that pits the best comedians in town in one stage from three countries namely, Malaysia, Indonesia and Singapore obtained an average of 4.9 million viewership per minute. This programme garnered more than 28 million digital views via Facebook, YouTube and Astro Gempak's website at www.astrogempak.com.my. This is significant increase compared with *Maharaja Lawak Mega 2016* which recorded a total of 15 million digital views.

Another programme, *Little Princess Aaisyah*, featuring diary on the life of a celebrity couple's daughter, garnered more than 6.9 million digital views.

Another FTA TV service provider, TV AlHijrah strives to provide new programme to attract viewers. One of the new programmes is *AlHijrah Kids News*, featuring children as newscaster. It comprises the latest information such as science and technology, health, humanity, religion and other current issues that are suitable for children as well as adults.

Online and Home Shopping

As a strategy to increase and diversify revenue sources, Pay TV and FTA TV service providers have launched their own TV shopping platforms including online shopping website.

ASTRO launched its home shopping platform called Go Shop in 2015. In this evolving consumer retail experience, ASTRO focused on overall shopping experience and implemented several strategies to grow the market such as offering a wider range of merchants and brands through its TV Shopping, e-commerce and content merchandising segments. ASTRO also integrate merchandise into their content such as TV dramas and on Tribe.

Additionally, ASTRO's Go Shop partnered mobile service provider Digi's digital arm, Digi-X to offer "e-cash on delivery" option namely, *vcash* to Go Shop customers. This offers convenience of cashless payments when shopping via TV, online and mobile platforms.

Between February 2017 and January 2018, Go Shop generated RM290 million in revenue, up 11.1% compared with RM261.1 million in the previous year.

Similarly, Media Prima launched its home shopping in 2016. Known as CJ Wow Shop, the shopping platform is available across all four Media Prima FTA TV channels as well as on its website and mobile apps.

In 2017, Media Prima expanded their CJ Wow Shop hours on their TV network stations and commenced their 24-hours channel on *Tonton xtra*. Other than that, CJ Wow Shop expanded into Mandarin content in order to make CJ Wow Shop more accessible, relevant and exciting for a diverse range of viewers.

In 2017, the home shopping business garnered revenue of RM129.5 million, doubled that of the amount than the previous year at RM61.4 million.

TM launched their shopping TV channel in Bahasa Malaysia namely, *Laku Mall* on its IPTV and mobile app. The channel offers wide selection of products such as home & living, electronics & gadgets and women's fashion since June 2017. It involves cooperation with Mangkin Prestij Sdn Bhd, a company involving in talent management and movie production as well as M Tanochi Home Shopping Sdn Bhd.

FTA TV

The FTA TV service providers comprise Sistem Televisyen Malaysia Bhd or better known as TV3, NatSeven TV Sdn Bhd (ntv7), Metropolitan TV Sdn Bhd (8TV) and Ch-9 Media Sdn Bhd (TV9). These four TV stations are under Media Prima Bhd (Media Prima). The others are Government owned stations namely, AlHijrah Media Corporation (TV AlHijrah) and Bernama News Channel (BNC).

Media Prima continues to be the major FTA broadcaster with four TV stations. According to Media Prima, TV3 is the number one station over FTA TV network with an overall viewership share of 20.8% in 2017³¹.

As FTA TV service providers provide free content to viewers, they leverage on their content strength and branding to generate revenue via advertisement and sponsorship.

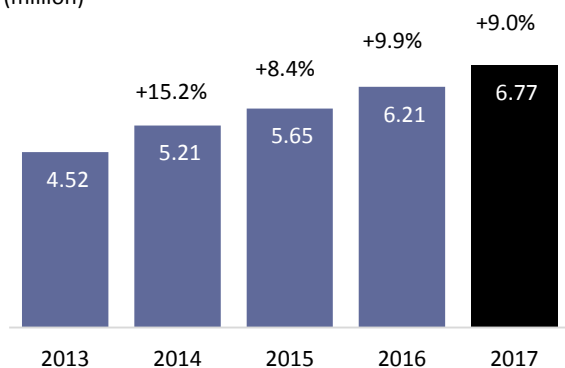
Moving forward, Media Prima plans to strengthen programming content for TV3 and 8TV. There will be a rebranding exercise for ntv7 in 2018 and more airtime for TV shopping via TV9.

Pay TV

Overall Pay TV subscriptions comprising ASTRO and TM HyppTV has been increasing for the past five years (Figure 3.5). As at end 2017, the Pay TV subscriptions increased by 9% to 6.77 million from 6.21 million in 2016.

Pay TV Subscriptions 2013 – 2017

SUBSCRIPTIONS
(million)



Source: MCMC

Figure 3.5 Pay TV Subscriptions 2013 – 2017

ASTRO has 5.49 million subscribers as at January 2018, up 7.2% from 5.12 million in the previous year. ASTRO boosted its customer base due to non-subscription service namely, NJOI. On top of 29 TV and 20 radio channels provided for free, NJOI subscribers can purchase TV content on a prepaid basis. Notably, NJOI revenue grew by 21% YoY to RM100 million from the previous year.

ASTRO reported a total of 190 channels. Some of the new channels are Warner TV and ASTRO Arena SEA in HD format.

In contrast, TM HyppTV recorded 1.36 million subscriptions, up 23.6% compared with 1.1 million in 2016. TM has bundled HyppTV as part of its broadband offerings. In 2017, TM has introduced seven new channels such as Zee TV, Nickelodeon and MTV Asia, making a total of 108 channels for its subscribers.

³¹ Source from Media Prima, Investor Presentation – Financial & Business Review for the Financial Period Ended 30 September 2017.

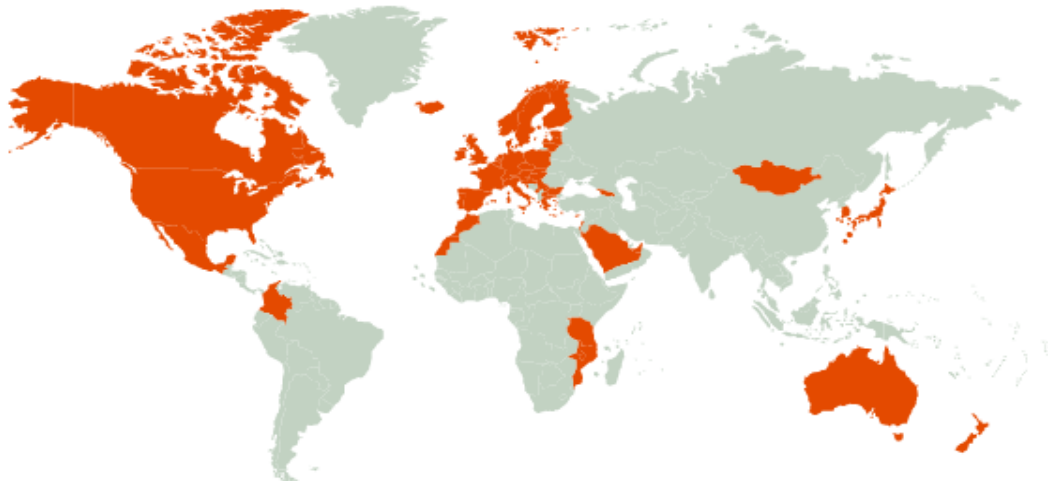
Digital Terrestrial TV Development

The TV broadcasting industry in Malaysia has started with a single Government terrestrial TV operator namely, Radio Televisyen Malaysia (RTM) in 1963 and since then other FTA TV stations namely, TV3, NTV7, 8TV, TV9 and TV AlHijrah are currently operating on analogue terrestrial TV platform. Today, viewers are being offered with a variety of good quality content genre to cater to their needs and interests.

Analogue technology is gradually being phased out. Consequently, doing away with this and its high maintenance cost enables the FTA broadcasters to stay relevant and cost competitive. This is positive in the midst of intense competition amongst new media platforms such as cable and Internet Protocol (IP), OTT and satellite.

Many countries have already started the transition from analogue terrestrial TV to Digital Terrestrial TV (DTT). New Zealand, United Kingdom, Germany, Japan, Italy, Sweden and Finland are among the countries that have successfully transitioned to DTT.

Countries that have completed DTT Deployment



Source: ITU

Figure 3.6 Countries that have completed DTT Deployment

DTT is a government's initiative, spearheaded by KKMM and monitored by MCMC. This initiative aims to ensure a smooth transition from analogue to digital broadcasting on terrestrial platform for current FTA service providers including RTM. Malaysia aims to implement full switchover or Analogue Switch Off which is in line with the timeline agreed by ASEAN member countries to implement Analogue Switch Off (2015 – 2020).

In order to receive DTT service, viewers have to either own a MYTV Advanced Set Top Box or integrated Digital TV (iDTV) that comes with a built-in digital tuner and does not require a set top box.

MYTV has reported Advanced Set Top Box sales has reached more than 10,000 sets through various platforms such as retail sales at electrical outlets (255 nationwide and growing), online sales (<https://shop.mytvbroadcasting.my>), corporate and direct sales.

Also, MYTV is to distribute two million set top boxes to eligible households and to date it has distributed about 444,000 free basic set top boxes at nine states namely, Kelantan, Pahang, Terengganu, Kedah, Perak, Pulau Pinang, Johor, Negeri Sembilan and Melaka.

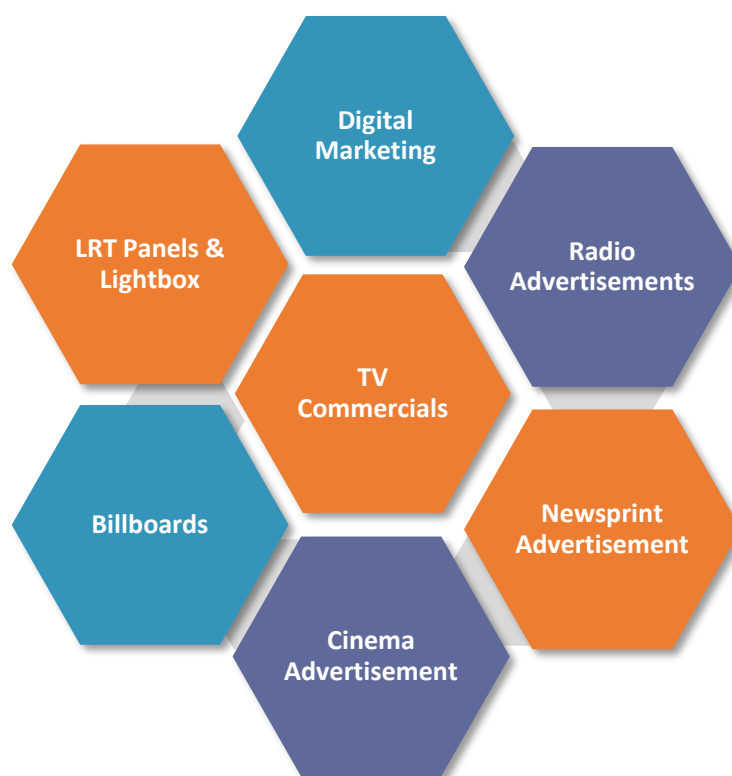
Alternatively, consumers who wish to buy an iDTV are advised to look for DTTV label approved by SIRIM QAS International Sdn Bhd. To date, 11 iDTV brands namely, Samsung, Sony, Panasonic, Sharp, LG, Toshiba, Philip, Singer³², Hisense, Daewoo and Skyworth are available in the market.

Education and Awareness Campaign

Various education and awareness campaigns were conducted since 3Q 2016 on various multimedia platforms to create awareness on DTT service to the public. The campaign has been conducted under several phases, as follows:

- Phase 1: September – October 2016
- Phase 2: November 2016 – February 2017
- Phase 3: March – August 2017

Education and Awareness Campaign on Various Platforms



Source: MYTV, MCMC

Figure 3.7 Education and Awareness Campaign on Various Platforms

³² Singer is manufactured by Sharp Manufacturing Corporation (M) Sdn Bhd.

The broadcasters' alliance has agreed that DTT service shall be promoted under the brand called myFreeview.

Viewers are able to enjoy nine TV channels from Media Prima, RTM, AlHijrah Media Corporation and BNC and four RTM radio channels for free. By October 2017, three TV channels were further included in trial transmission namely, TV3 HD, Drama Sangat and CJ Wow Shop shopping channels were aired on myFreeview platform.

As at December 2017, 12 TV channels and four radio channels are being aired on myFreeview platform.

TV and Radio Channels on myFreeview



Source: MCMC

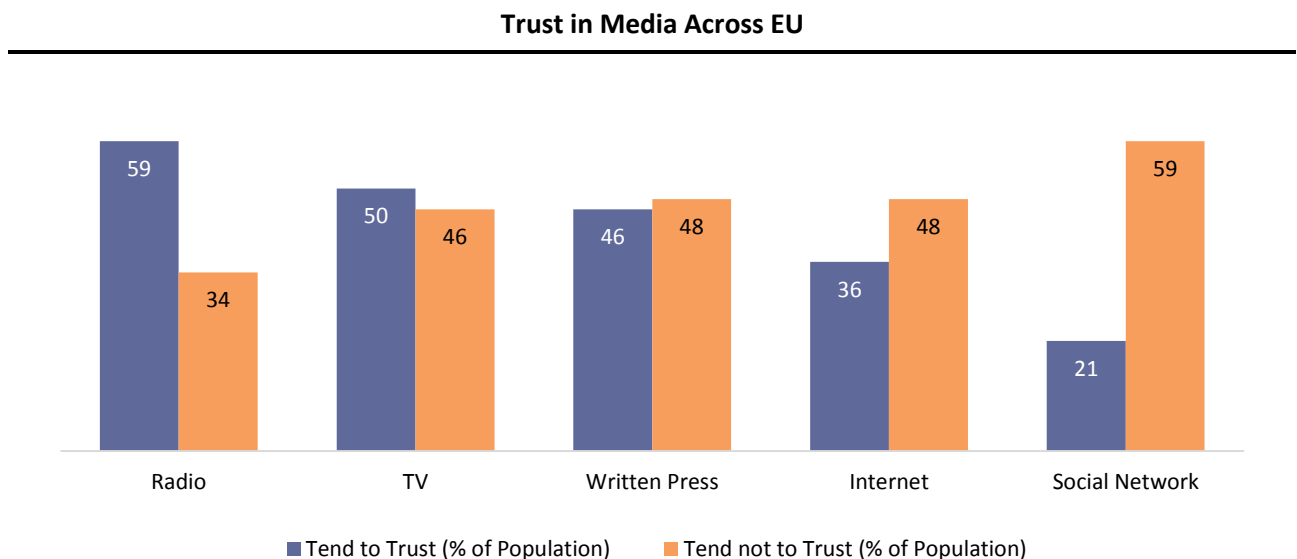
Figure 3.8 TV and Radio Channels on myFreeview

Radio Broadcasting

Development around the World

Currently, there are about 44,000 radio stations worldwide³³ and at least 75% of households in developing countries having access to radio.

On the traditional platform, radio remains as one of the most reliable and trusted channels for distributing news, information and entertainment in rural areas. A survey on Market Insight: Trust in Media 2017³⁴ conducted by European Broadcasting Union indicates that radio is the most trusted media across Europe with 59% of EU citizens having trust in radio (Figure 3.9).



Source: European Broadcasting Union
Figure 3.9 Trust in Media Across EU

Radio Broadcasting in Malaysia

Traditional radio has evolved and thrive in the digital age. The digital and mobile media landscape can be viewed as versatility offered by digitalisation which extend radio listening to be available anywhere and anytime.

No longer do listeners commuting to work early morning have to miss the rest of a radio show. Instead, with a pair of headphones, listeners can seamlessly swap from one device to another without losing audio content. In fact, now six in ten listeners consume audio content through a mobile device³⁵.

Listeners can pick and choose how they consume their content. With the proliferation of services like Spotify and Pandora, listeners can customise their audio content. On the whole, this century-old medium appears more popular than ever.

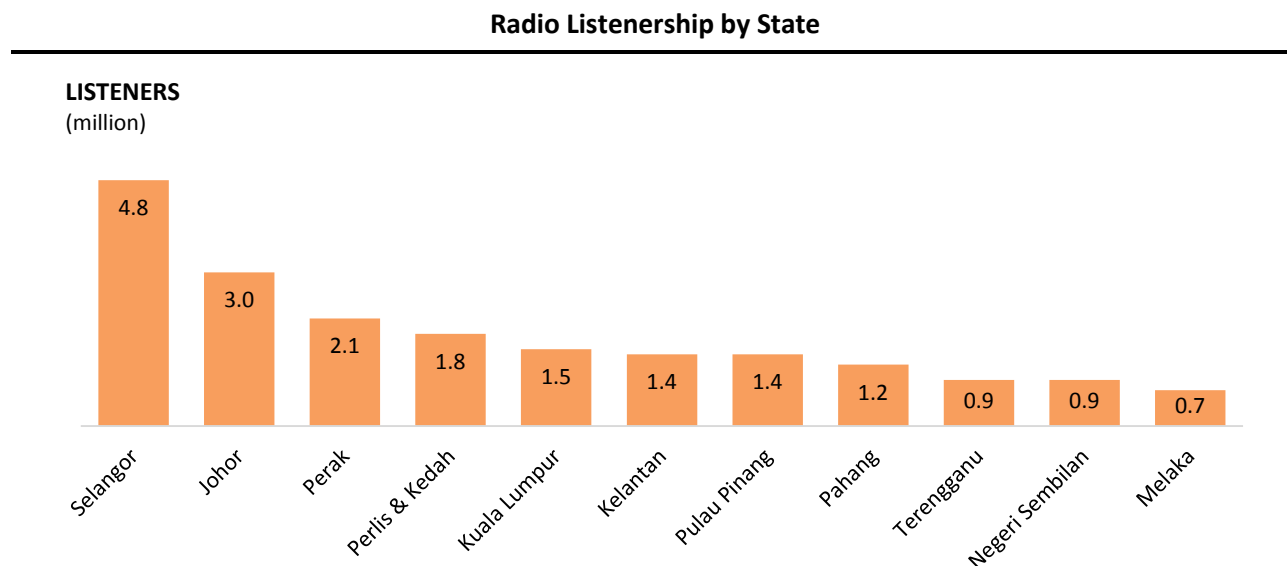
³³ The World Factbook 2010, Central Intelligence Agency, USA.

³⁴ Market Insight: Trust in Media 2017 survey was conducted by European Broadcasting Union where 1,000 respondents from each 33 European Countries involved were interviewed face-to-face.

³⁵ www.cicero-group.com/the-power-of-radio-should-not-be-underestimated

In Malaysia, radio remains as one of the primary information sources. It is a prevalent engagement media among Malaysians, reaching 19.7 million listeners, or 95.7% of population³⁶.

By state, Selangor recorded the highest number of radio listenership with 4.8 million listeners followed by Johor and Perak with 3 million and 2.1 million listeners respectively³⁷ (Figure 3.10). As at January 2017, there are 28 private radio stations in Malaysia³⁸.



Source: GfK RAM Wave 2 2017

Figure 3.10 Radio Listenership by State

³⁶ GfK, Second Wave of the Radio Audience Measurement, 2017. The survey sampled 6,000 unique individuals aged 10 years and above.

³⁷ Ibid.

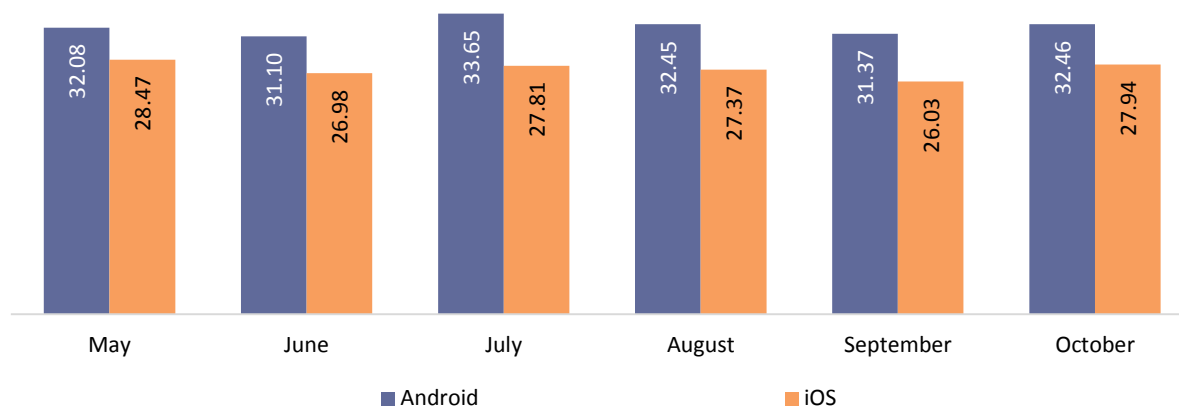
³⁸ MCMC

Radio Listenership on Smartphone

In this convergence era, radio listening is not just through traditional medium, but through various connected devices. On average, mobile phone users spent 30 minutes per week listening to radio through their mobile devices.

Average Time Spent Listening

TIME SPENT
(minute)



Source: RADIOactive, Commercial Radio Malaysia – Webcast Metrics, 2017
Figure 3.11 Average Time Spent Listening

Local radio broadcasters are capturing opportunities from this radio listenership trend. Media Prima has intensified their efforts to reach out to listeners through mobile platforms. As at end 2017, a total of 5.6 million mobile apps were downloaded, for both iOS and Android platforms. Subsequently, Media Prima increased their social media engagement from 700,000 average social post reach per week in 2015 to 4.7 million by 2017.

Leveraging on Internet, Media Prima launched three new initiatives with the objective to strengthen its industry position and generate new revenue streams. These new initiatives include capitalising on Podcast, e-commerce and Icon to reach out to audience through digital radio streaming. Hence, offering their radio reach for advertising by e-commerce merchants and branding purposes. With these initiatives, Media Prima aims to achieve a 10% revenue growth in the next three years.

Media Prima Initiatives 2017	
Initiative	Description
Podcast	<ul style="list-style-type: none"> Branded as <i>Ais Kacang</i>, it comprises a series of talk shows with specific themes that listeners can stream digitally Available in three main languages — Malay, English and Chinese
E-Commerce	<ul style="list-style-type: none"> Branded as <i>SuperDeals</i>, offer alternative ways for e-commerce merchants to advertise and promote their e-commerce platforms Partnering with CJ Wow Shop and Lazada
Icon	<ul style="list-style-type: none"> Strengthen radio stations' branding (Fly FM, Hot FM, One FM and Kool FM)

Source: Media Prima
Figure 3.12 Media Prima Initiatives 2017

ASTRO also launched a number of new initiatives to ensure that they remain competitive in the market. The initiatives comprise new programmes targeting specific radio listener segments.

ASTRO Initiatives 2017		
New Programme	Description	Frequency
Zayan	<ul style="list-style-type: none"> Targeting modern Muslims, with an aspiration to provide this community with music and dialogue on Islamic content 	<ul style="list-style-type: none"> 104.9fm channel in the Klang Valley, 98.1fm in Alor Setar, 106.4fm in Ipoh, 98.9fm in Melaka, 92.8fm in Johor Bahru and 91.6fm in Kuantan
goXUAN	<ul style="list-style-type: none"> Trendsetter for Chinese Generation Z community Deliver latest hits, trends and hottest topics for social literacy tech generation 	<ul style="list-style-type: none"> 88.9fm in the Klang Valley and 107.6fm in Penang

Source: ASTRO

Figure 3.13 ASTRO Initiatives 2017

The efforts of Media Prima and ASTRO in reaching out actively to listeners through digital platform is expected to provide unique experience for radio listenership aside from attracting audience. Audience engagement is expanded using social media as a platform.

GfK conducted a study³⁹ which indicates that as many as 48% of listeners in Malaysia visited Facebook, Instagram and YouTube pages to get access to radio content and interact with the presenters.

Other radio broadcasters, Star RFM and BERNAMA Radio are also using social media platform to capture wider listenership. As at end 2017, Star RFM recorded almost half a million followers on Facebook and a total of 74,000 apps downloaded while BERNAMA managed to record 328,000 followers on Facebook⁴⁰. This is part of the radio industry's strategy to stay relevant in a highly competitive market with the likes of streaming giants Spotify and Apple Music attracting listeners.

³⁹ GfK, Second Wave of the Radio Audience Measurement, 2017.

⁴⁰ IPR 2017 questionnaires survey.

Based on industry feedback, strategies adopted by radio broadcasters in capturing wider listenership are shown in Figure 3.14. The strategies include delivery mode such as Internet based platforms; visualisation of radio content using video; maximising social networking; and leveraging partnerships to enhance content and adopt new technologies.

Strategy Used by Radio Broadcasters	
Delivery Mode	<ul style="list-style-type: none"> Expansion of radio content via multi platforms especially visual to capture Internet users Development of digital channel to cater to specific age group Promote live streaming as a growing digital revenue platform that provides an edge to radio business over other platform
Video Content	<ul style="list-style-type: none"> Visualisation of radio content – Transform audio content into video content including features and contests to provide holistic user experience
Social Networking	<ul style="list-style-type: none"> Maximise social media usage
Partnership and collaboration	<ul style="list-style-type: none"> Partnership and collaboration with content providers, technology suppliers and others

Source: Industry

Figure 3.14 Strategy Used by Radio Broadcasters

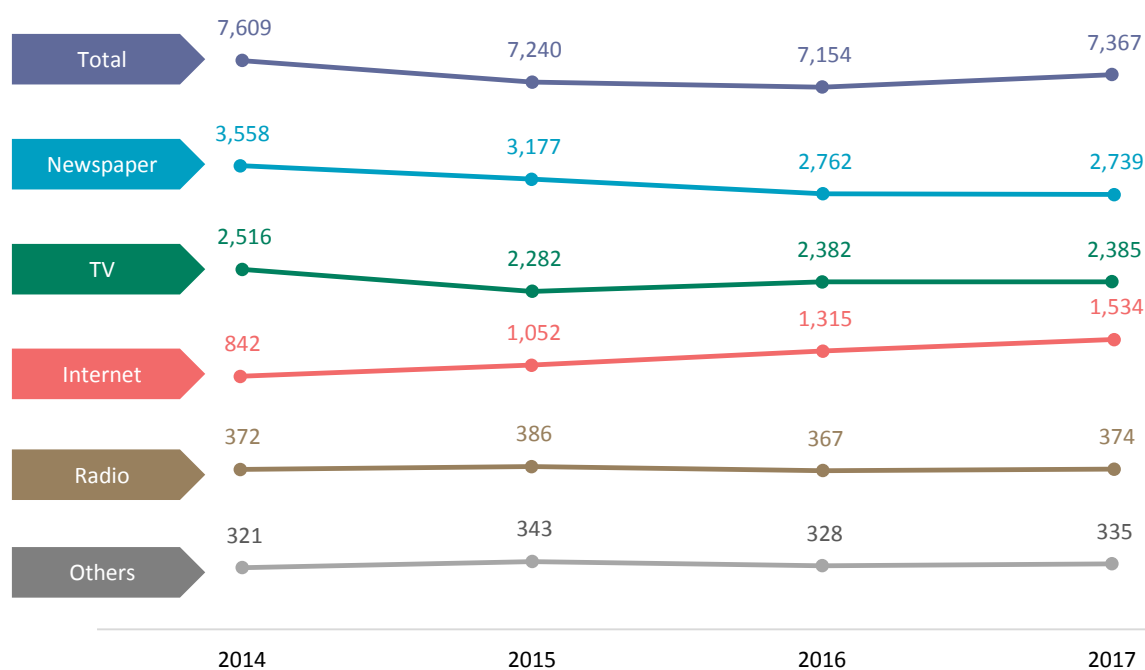
Advertising Expenditure

In 2017, Malaysia advertising expenditure is estimated to reach RM7.37 billion, a 3% growth compared to the previous year. This is according to Zenith's Advertising Expenditure Forecasts, published in September 2017.

Malaysia Advertising Expenditure 2014 – 2017

ADVERTISING EXPENDITURE

(RM million)

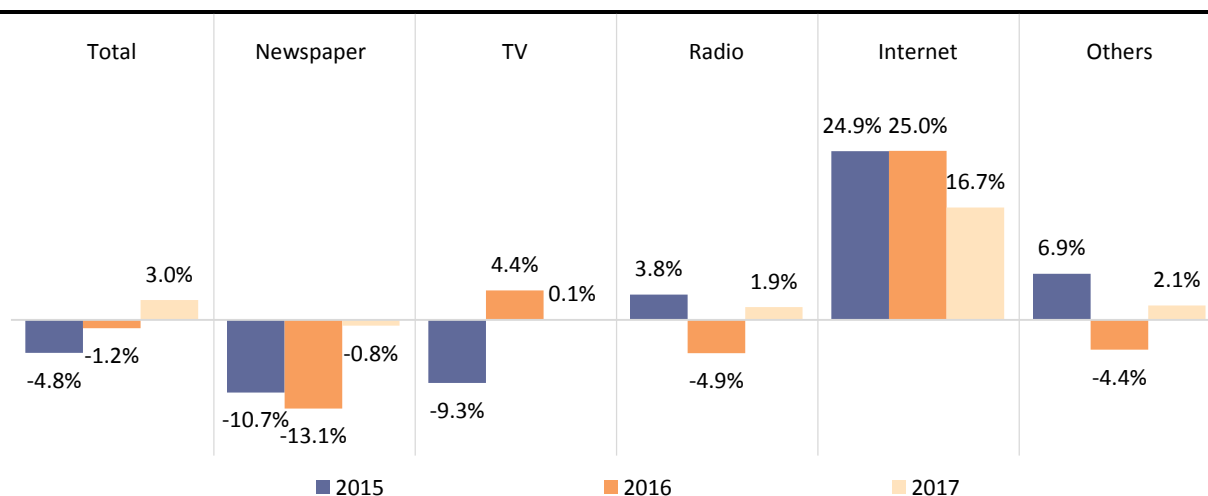


Note: Data from Nielsen Media Research, company reports and Zenith estimates (2012 – 2016) and Zenith forecast (2017); Internet figures are Zenith estimates for display, classified and search; Others comprise magazines, cinema and outdoor/transport

Source: Zenith

Figure 3.15 Malaysia Advertising Expenditure 2014 – 2017

Malaysia Advertising Growth 2015 – 2017



Note: Data from Nielsen Media Research, company reports and Zenith estimates (2015 – 2016) after discount and Zenith forecast (2017); Internet figures are Zenith estimates for display, classified and search; Others comprise magazines, cinema and outdoor or transport

Source: Zenith

Figure 3.16 Malaysia Advertising Growth 2015 – 2017

In 2017, all media experienced growth except for newspaper which declined by 0.8%. Internet led with double digit growth of 16.7%. Radio advertising grew by 1.9%.

Based on Figure 3.15 and Figure 3.16, overall advertising expenditure in 2015 and 2016 posted a decline of 4.8% and 1.2% respectively. This was largely due to continuous decline in traditional media namely, newspaper advertising expenditure as well as TV which has declined in 2015.

Internet continue to be the fastest growing category for the past few years. Among the key drivers of Internet advertising expenditure growth are high penetration and usage of smartphones as well as rapid growth of online videos⁴¹.

On traditional media, radio growth is driven by more vehicles on the road and a growing number of young listeners. Increasing listener engagement is said to have created potential in terms of advertising expenditure as well as sponsorship⁴².

Advertising expenditure on TV increased marginally by 0.1% contributed by Pay TV advertising expenditure growth of 7%. The growth of Pay TV advertising expenditure is partly due to advertisers targeting specific and niche viewers who opt for one of the Pay TV channels⁴³. This is because Pay TV typically offers a large number of channels and there are thematic channels available such as movies, cartoon and news. The large number of channel offerings means viewership for a particular programme or channel are likely to be small and more personalised. This allows advertisers to target their messaging more effectively. However, FTA TV experienced a decline (-0.8%).

Other media such as cinema and outdoor or transport posted higher advertising expenditure in 2017 compared with magazine which has declined for two consecutive years in 2016 and 2017. This is in line with declining advertising in print media over the last three years.

Digital Advertising Expenditure

Internet advertising, included digital advertising⁴⁴ is increasingly gaining popularity among advertisers due to several factors, such as digital advertising enabling targeting of audience and can reach a wider market. Also, apart from the effective cost factor, digital advertising is considered more effective, for example, digital advertising has a global reach, meaning that it has wider opportunities for monetisation or branding in comparison to traditional mainstream medium such as TV and radio⁴⁵.

In Malaysia, digital advertising is gaining ground partly due to growing Internet users. Based on Internet User Survey conducted by MCMC, in Malaysia, there are 24.5 million Internet users in 2016 (76.9% of population), a marginal increase of 1.7% from 24.1 million in 2015⁴⁶.

⁴¹ The Star Online, Growth momentum to continue in digital media spend, June 2017.

⁴² Commercial Radio Malaysia, Radio industry will remain relevant, says Astro Radio CEO, January 2017.

⁴³ The Star Online, Turmoil for TV?, August 2017.

⁴⁴ www.webopedia.com/TERM/D/digital_advertising.html

⁴⁵ blog.orcawise.com/five-advantages-of-digital-advertising

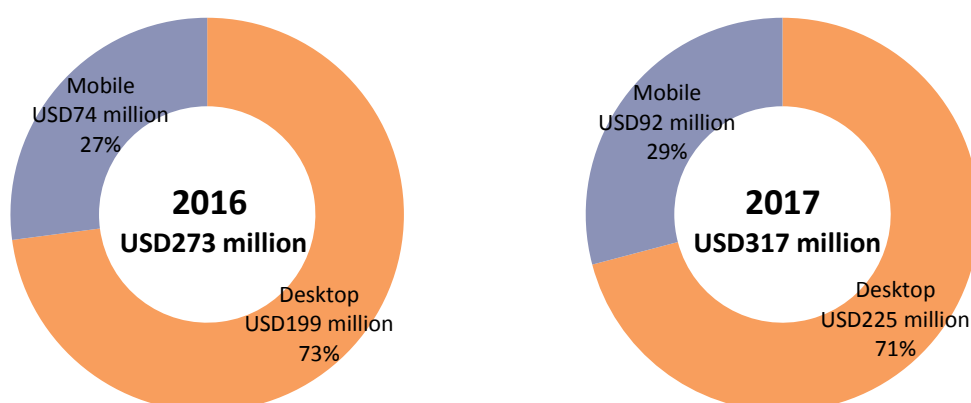
⁴⁶ www.skmm.gov.my/skmmgovmy/media/General/pdf/MCMC-Internet-Users-Survey-2017_v2.pdf

According to Statista, digital advertising can be categorised into five types as follows:

- Banner
- Video Advertising
- Search Advertising
- Social Media
- Classified

These categories of digital advertising are applicable for both desktop and mobile platforms. In 2017, Malaysia recorded a total of USD316.99 million for digital advertising expenditure, an increase of 16.28% compared to previous year.

Digital Advertising by Version in Malaysia 2016 – 2017



Source: Statista, Digital Advertising Market Report – Data Sheet
Figure 3.17 Digital Advertising by Version in Malaysia 2016 – 2017

From Figure 3.17, mobile digital advertising is preferred by advertisers more than desktop as mobile phone is now the preferred mode to access Internet⁴⁷. In 2017, a total of USD224.75 million or 71% from total Internet advertising expenditure is from mobile. This compares favourably to the total value for mobile Internet advertising of USD198.81 million in 2016.

Statista projected that by 2020, Internet advertising expenditure in Malaysia can reach USD450 million⁴⁸. This represents an expected CAGR growth of 12% between 2017 and 2020.

⁴⁷ www.skmm.gov.my/skmmgovmy/media/General/pdf/MCMC-Internet-Users-Survey-2017_v2.pdf

⁴⁸ Statista, Digital Advertising Market Report – Data Sheet, published March 2017.

MODULE 4: DIGITAL SERVICES



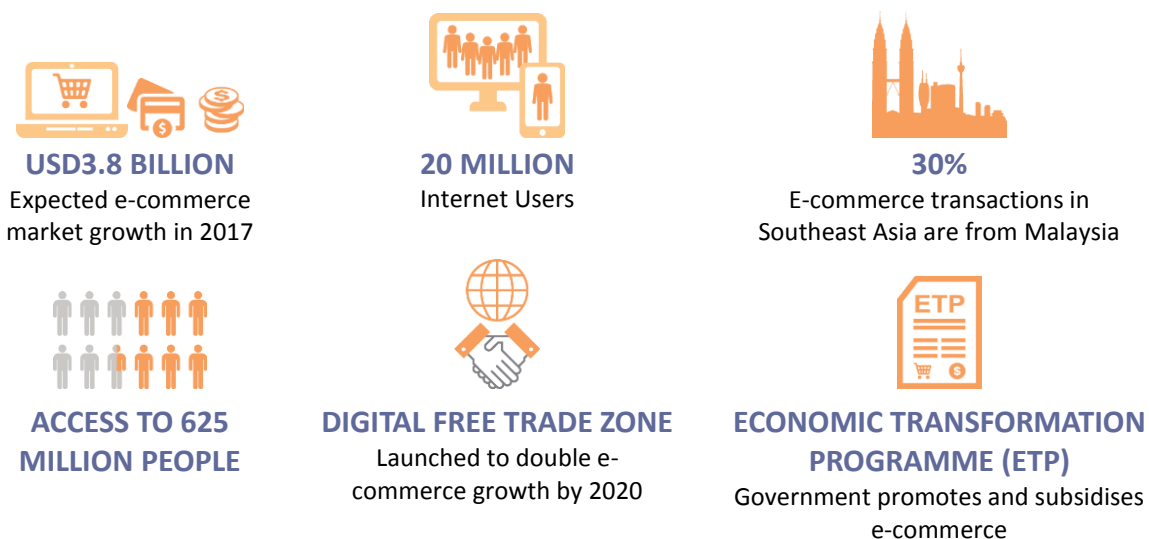
E-Commerce

Electronic commerce or e-commerce is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the Internet. The e-commerce market continues to grow in Malaysia.

According to the Department of Statistics Malaysia, data collected showed that e-commerce contribution to Malaysia's GDP had increased to 6.1% or RM74.6 billion in 2016 compared to 5.9% or RM68.3 billion in 2015.

Facilitating e-commerce expected growth is also infrastructure readiness and our favourable demographics comprising savvy online users. Also, Malaysia's Internet penetration is one of the highest in the region and about one-third of our Internet users make purchases online (Figure 4.2).

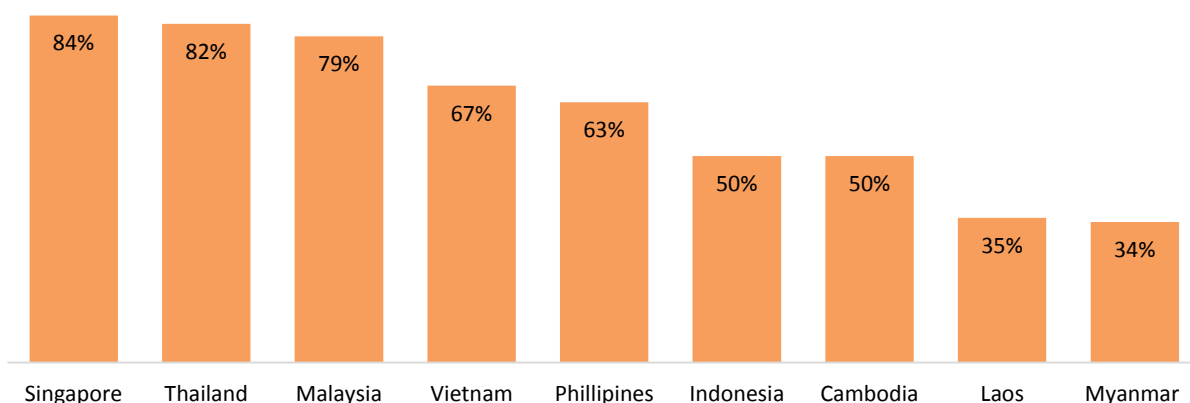
Overview of E-Commerce Market in Malaysia



Source: BMI Research

Figure 4.1 Overview of E-Commerce Market in Malaysia

Internet Penetration by Country



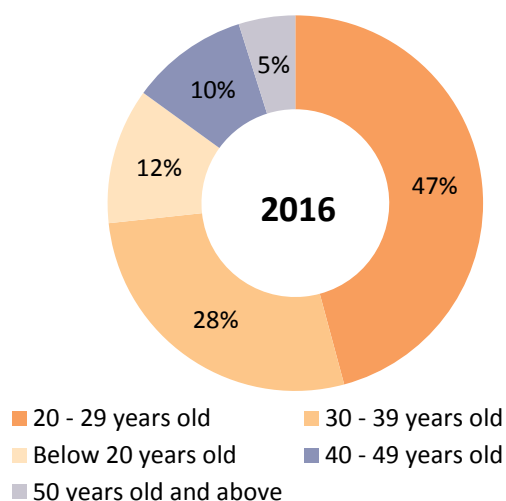
Source: We Are Social: Global Digital Report 2018

Figure 4.2 Internet Penetration by Country

More than 50% of online shoppers in Malaysia are less than 29 years old⁴⁹. Hence, this younger generation offer opportunities even in the longer term as they progress in age and contribute higher household income generation. Such development augurs well for e-commerce in the country.

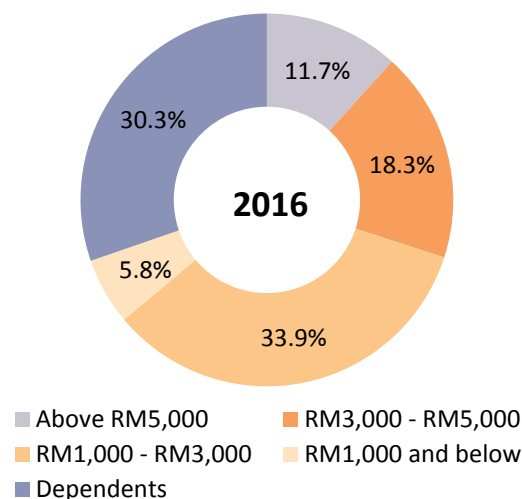
A glimpse into the profile of Malaysian online shoppers found that lower middle income group of RM1,000 to RM3,000 contributed the most in online shopping at 33.9%. This could be due to cheaper alternatives available online and cost saving for transportation to visit physical shops.

Online Purchasing Age Group 2016



Source: MCMC Internet Users Survey 2017
Figure 4.3 Purchasing Online Age Group 2016

Purchasing Online Income Group 2016



Source: MCMC Internet Users Survey 2017
Figure 4.4 Purchasing Online Income Group 2016

Currently, product category with the largest share of e-commerce sales is Fashion and Beauty, which remains the top position since 2015. Other sought after categories include, electronics, sports and hobbies, whilst categories that are likely to expand going forward are home décor and furniture, household groceries including health and supplements⁵⁰.

Most Purchased E-Commerce Product Categories 2016 – 2017



Source: 11street.my, Industry
Figure 4.5 Most Purchased E-Commerce Product Categories 2016 – 2017

⁴⁹ MCMC, Internet Users Survey 2017.

⁵⁰ aseanup.com/insights-trends-e-commerce-malaysia

In Malaysia, the e-commerce competitive landscape is led by online marketplaces such as Lazada.com.my and 11street.my, which were the most visited B2C e-commerce websites in February 2017⁵¹. Lazada Malaysia is ASEAN's fastest-growing e-commerce platform. To date, Lazada Malaysia has more than seven million app downloads. The platform has over 19,000 merchants and the company targets to increase this to over 50,000 by 2018⁵².

Growing Industry Driven by e-Commerce

Asia Pacific is the fastest growing region in e-commerce⁵³. In the region, Malaysia is expected to generate revenue for the accompanying fulfilment delivery service providers.

Efficiency in postal and courier services is expected to be increasingly supported by more comprehensive end to end delivery network.

To accelerate e-commerce growth by 2020

The Digital Free Trade Zone (DFTZ), launched in 22 March 2017, is the first regional and Malaysia e-hub. DFTZ combines both physical and virtual zones incorporated with a RM60 million e-Commerce Regional Distribution Centre venture between Pos Malaysia and Lazada at former low cost carrier terminal in Sepang.

DFTZ is expected to be a game changer to the sector ecosystem with potential for cross border e-commerce, development of SMEs, creation of new jobs aside from initial capital investment.

Accordingly, these initiatives are expected to double Malaysia's e-commerce growth and increase its contribution towards the GDP to RM211 billion (approximately USD47.68 billion) by year 2020⁵⁴. In August 2017, DFTZ managed to attract more than 1,500 of e-commerce SMEs on board. SMEs are introduced and trained to setup their business and mini site on Alibaba.com. Eventually, DFTZ goes live and the first shipment begins in November 2017⁵⁵.

⁵¹ yStats.com, Malaysia B2C e-commerce Market 2017. yStats.com is a Germany-based e-commerce and online payment market research company providing research, competitor intelligence, market reports, statistics, data, forecasts.

⁵² Lazada Malaysia is part of Lazada Group which operates Southeast Asia's number one online shopping and selling destination in Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam. As of April 2016, Alibaba Group bought controlling stake in Lazada to support Alibaba's expansion plans in Southeast Asia. Further in June 2017, Alibaba Group invested another USD1 billion, taking up 83% stake in Lazada.

⁵³ Reportlinker, Asia Pacific B2C E-commerce Market, 2017.

⁵⁴ MDEC, Malaysia launches world's first Digital Free Trade Zone, 2017.

⁵⁵ DFTZ goes live, www.mydftz.com/dftz-goes-live

DFTZ Highlights



Source: Industry

Figure 4.6 DFTZ Highlights

On a separate development, in 2017, a new GD Express e-commerce hub and line haul in Kuching, Sarawak is expected to promote e-commerce and SMEs in the Digital Free Trade Zone. The company's fulfilment development for warehousing enable e-commerce products to be delivered from overseas directly into Sarawak. It also assists local businesses to link their products to the online marketplace and enable them to sell through multiple channels.

A cloud-based call centre was also established and planned for drop-off and collection point outlets in the rural areas. Thus, local communities will have faster access to affordable products or other necessities.

MCMC continues to play a critical role in the National e-Commerce Strategic Roadmap to monitor and transform Malaysia's last-mile delivery network towards the best in class. In fact, the development of DFTZ would be impaired without a strong last-mile delivery network.

Towards this end, MCMC hosted an inaugural e-Commerce Delivery Symposium and Award 2017 together with Association of Malaysian Express Carriers (AMEC). The symposium served as a discussion platform for industry stakeholders to share knowledge, best practices and ideas by the delivery ecosystem specialists and Government agencies including:

- Ministry of International Trade and Industry (MITI);
- MDEC;
- Pos Malaysia;
- GD Express Sdn Bhd;
- DHL Express (M) Sdn Bhd;
- Lazada Express (M) Sdn Bhd; and
- Google.

M-Commerce

The shift from using laptops or desktops for search and making purchases online to using mobile phones over the last two years has accelerated. The increase in Malaysian consumers making online purchases using mobile phone is one of the major trends driving the country's e-commerce in 2017. According to a Visa Consumer Payment Attitudes Survey 2016, 57% of Malaysians are using their mobile phones to shop at least once a month online, up 9% from 2015.

This trend considered a mobile-oriented mindset is driving e-commerce expansion⁵⁶. E-commerce platforms are being revised continuously to create good customer experience by developing the way content is presented on their website as well as on the mobile devices. This includes, innovatively using new features and providing relevant information to customers. Enhancing the quality of content and loading speed are also emphasised.

Mobile Payments

Mobile Payments Development in Malaysia

"Mobile Payments" includes transactions at Point-of-Sale that are processed via smartphone applications (so-called "mobile wallets"). Well-known global providers of mobile wallets are ApplePay, Google Wallet and Samsung Pay. The payment in this case is made by a contactless interaction of the smartphone app with a suitable payment terminal belonging to the merchant.

The data transfer can be made, for example, via wireless standard Near Field Communication (NFC) or by scanning a Quick Response (QR) code to initiate the payment. A user pays for a purchase via a Mobile Wallet application which triggers an online bank transfer or pays by using a digitally stored credit or debit card (Host Card Emulation).

Malaysians appear upbeat about technological advancements in payment solutions. They are quick to recognise the benefits of using contactless cards, wearables and mobile payments. According to Visa Mobile Attitudes Study 2016, Malaysians are ready to adopt mobile payments with seven in ten expressing willingness to use mobile wallets⁵⁷. Data on mobile payments in Malaysia is shown in Figure 4.7⁵⁸.

⁵⁶ www.freemalaysiatoday.com/category/nation/2017/09/13/mobile-first-mindset-driving-lazada-e-commerce-expansion

⁵⁷ www.smartinvestor.com.my/mobile-payments-malaysians

⁵⁸ www.statista.com/outlook/331/122/mobile-payments/malaysia#

Mobile Payments Segment in Malaysia⁵⁹



- Transaction Value: Mobile Payments segments amounts to USD142 million in 2017.
- Transaction Value: USD927 million expected in 2021 based on annual growth rate of 59.8% CAGR 2017 – 2021.
- Users: expected at 2.4 million by 2021.
- Average transaction value per user: USD136.10 in 2017.
- Global comparison perspective: China has highest transaction value of USD138.27 billion in 2017.

Source: Statista, MCMC

Figure 4.7 Data on Mobile Payments in Malaysia

Currently, the existing mobile wallet payment services in Malaysia include Visa Checkout, Masterpass, CIMB pay, MOLPay and Samsung Pay. In 2017, Alipay is the latest mobile wallet payment service to enter our shores in collaboration with Public Bank, Maybank and CIMB.

Alipay is a mobile wallet payment method, a secure platform where shoppers can store funds to be used online, essentially providing cashless payment service for users⁶⁰. Alipay is China's largest mobile payment app, with 520 million active users⁶¹. Alipay in-store payment service is currently accepted at over 110,000 retail stores globally and supported in over 70 overseas markets. Globally and especially in China, the digital wallet application can be used for taxi service, hotel booking, buying movie tickets and even booking doctor's appointments.

In Malaysia, Alipay is available at outlets mostly frequented by tourists from China. However, Malaysians too benefit from this service, especially for online shoppers. In 2017, 7-Eleven is the first retailer in Malaysia to completely accept Alipay mobile wallet application. The cashless payment option is now accepted at all 2,100 7-Eleven stores in Malaysia⁶². Other merchants accepting Alipay includes Resorts World Genting (in collaboration with CIMB Bank), Berjaya Group and Lazada.

The CMA licensees are also piloting their own version of mobile wallets through their subsidiaries and joint-venture partners which have obtained their licences from BNM. In 2017, Digi launched *vcash*, a mobile payment application that offers Malaysians an easy, more convenient way to pay, send, request and store money in their smartphones. *vcash* is a solution offered by Digi in partnership with Valyou Sdn Bhd, an e-money issuer authorised by BNM and is now available for all Malaysians on the Google Play Store or Apple App store for free. Other players which have obtained relevant licences from BNM is expected to launch their mobile wallets in 2018.

⁵⁹ Ibid.

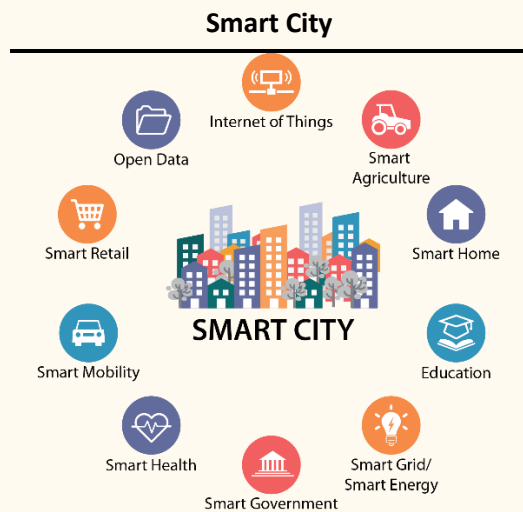
⁶⁰ Alipay is operated by Ant Financial Services Group. This third party online payment platform was launched in China in 2004 by Alibaba Group and its founder Jack Ma.

⁶¹ globenewswire.com/news-release/2017/08/04/1079603/0/en/Alipay-enters-partnership-with-VTB-to-expand-merchant-network-in-Russia.html

⁶² www.thestar.com.my/business/business-news/2017/05/22/7-eleven-first-malaysian-retailer-to-accept-alipay

Smart Cities Initiatives

The concept of smart cities has risen from the emerging urbanisation phenomenon occurring across the world. A smart city is based on real-time systems whereby it is made up of several smart systems.



Source: MCMC

Figure 4.8 Smart City

A Smart City will have smart physical, social, institutional and economic infrastructure in a sustainable environment, with its citizens at the entry of these systems.

The United Nation (UN) estimated that approximately 60% of our global population will live in cities by 2030. The urbanisation trend is also prevalent in our country where currently 75% of Malaysians resides in urban areas.

The key enabler for smart cities development is ICT. Integration of these technologies into cities major processes can make it smarter and more efficient in managing urban challenges. However, we have to ensure that the numerous technologies deployed in cities are interoperable, safe and regulated.

Framework on Smart Cities Standardisation

To ensure a systematic standardisation of smart cities development in Malaysia, a “Framework on Smart Cities Standardisation in Relations to Information and Communications Aspects” was developed by the Focus Group on Smart City of the Internet of Things Working Group (IoT WG) under the Malaysian Technical Standards Forum Bhd (MTSFB). The Focus Group is an industry-driven forum established to facilitate the standardisation efforts of smart cities and communities in Malaysia.

The document has gone through extensive assessment during the development process that includes review at multiple draft stages by the committee and relevant stakeholders, as well as public commenting procedure. The main objective of this document is to provide a working standardisation reference for stakeholders to consider.

Through this framework, the complexities of smart cities implementation are separated into four urban dimensions:

- Society – to deliver today and future generations' requirements, by enhancing wellbeing, spiritual and social coherency, as well as efficiency regarding energy, food, water and others.
- Environment – to include protection, waste and emissions control against climate change.
- Governance – to ensure urban utility and service availability.
- Economy – in terms of sustainable growth, smart solutions to increase efficiency and productivity, and city competitiveness (attracting habitants, visitors and businesses).

The collective effort of stakeholders in enabling standardisation and regulatory initiatives will be a solution in addressing challenges and issues pertaining to the development of smart cities in Malaysia.

The “Framework on Smart Cities Standardisation in Relations to Information and Communications Aspects” has been published on MCMC website in April 2017. Since then, the framework has been made reference and used by various stakeholders in Malaysia such as the Iskandar Regional Development Authority, and local authority such as Majlis Perbandaran Sepang and Dewan Bandaraya Kuala Lumpur in their smart city development plans.

MODULE 5: SMART COMMUNITY



Smart Community

Smart community concept is premised in the delivery of ICT ecosystem to the smallest geographic units thereby improving the quality of life and socio-economic status of local community. This is done through providing Internet and digital access and ensuring the use of ICT platforms aside from connected devices. Since the Smart Community initiative implementation in 2015, MCMC has implemented five of these Communities nationwide, starting in Kemaman as a pilot project before replicating the concept to the Kota Belud district in Sabah, Lundu in Sarawak and Federal Territory Putrajaya in 2016.

The latest Smart Community Initiative is “Digital Langkawi”, Kedah, implemented in 2017. Its main objective is to upgrade the telecommunication infrastructure and improve quality of communication services. The goal is to achieve 100% LTE coverage for Kuah Town and main tourist spots as well as 3G coverage to support and maintain Langkawi Island as a world tourist destination.

Langkawi Smart Community consists of developing local content, skills and talent nurturing, smart tourism and local entrepreneurs aside from enhancement of additional postal service.

Implementation of Smart Community



Flagship Programmes

LANGKAWI (2017)	LUNDU, SARAWAK (2016)
<ol style="list-style-type: none">1. Telecommunications Infrastructure Improvements2. Mobile Ticketing Application3. Tourism Application4. Smart Waste Management5. Integrated Operation Command Centre6. Enhancement of Postal Services<ul style="list-style-type: none">▪ Address For All▪ Agent Post7. Smart Lock8. E-Masjid9. Online Entrepreneur10. MyComms Application	<ol style="list-style-type: none">1. Telecommunications Infrastructure Improvements2. Tourism and Entrepreneurship Development3. Local Content and Application Development4. Pusat Internet5. Enhancement of Postal Services<ul style="list-style-type: none">▪ Address For All▪ Pos On Wheel▪ Smart Posmen
KOTA BELUD, SABAH (2016)	PUTRAJAYA (2016)
<ol style="list-style-type: none">1. Telecommunications Infrastructure Improvements2. Water Level and Safety Monitoring System3. VHF Network4. Tourism and Entrepreneurship Development5. Local Content and Application Development6. Pusat Internet7. Enhancement of Postal Services<ul style="list-style-type: none">▪ Address For All▪ Pos On Wheel▪ Smart Posmen	<ol style="list-style-type: none">1. Telecommunications Infrastructure Improvements2. Digital Services3. Local Content and Application Development
KEMAMAN, TERENGGANU (2015)	
<ol style="list-style-type: none">1. Telecommunications Infrastructure Improvements2. Flood Management System3. Kemaman Open Innovation Lab4. Mobile Application Development Programme5. Documentary “Malaysia’s Flood Warriors”6. Pusat Internet7. Life Long Learning	

Source: MCMC

Figure 5.1 Implementation of Smart Community

Further, developmental programme in Kota Belud in relation to flood management was conducted in 2017. Details are in Figure 5.2 below:

Flagship Programme in Kota Belud		
Programme	Collaboration Partners	Description
Security and Integrated Flood Network (SAIFON)	MCMC and MSD Digital Intelligence Sdn Bhd	<ul style="list-style-type: none"> ▪ Automated flood warning system through an application to forewarn Kota Belud communities every time there is heavy downpour. ▪ SAIFON flood warning application enables Kota Belud community to monitor the real time reading of water level, as well keep provide alert on flood risk around the area. ▪ Sensors installed at three major rivers in Kota Belud namely, Sungai Kadamaian, Sungai Tempasuk and Sungai Abai to monitor the rise of water level. ▪ 12 closed-circuit television (CCTV) installed at strategic locations in Kota Belud town to help local agencies and <i>Angkatan Pertahanan Awam Malaysia</i> to monitor, plan and take swift action in ensuring community safety during emergency.






Source: MCMC

Figure 5.2 Flagship Programme in Kota Belud

MCMC and Industry Activities Promoting Smart Community

Since 2015, a key success factor for the implementation of Smart Community initiatives is the collaboration between MCMC and stakeholders. The stakeholders include service providers, state governments, government agencies, institutes of higher learnings, non-governmental organisations (NGOs) and private companies.

Flagship programmes involving the local community under Smart Community initiatives include E-Magazine for schools, MyCommunity Heroes to foster various skills development including English literacy and Book for Asia programme to channel reading material; from worldwide to the local community.

Flagship Programmes in Kota Belud, Lundu and Putrajaya					
Programme	Collaboration Partners		Description		
E-Magazine	MCMC, Xentral Methods Sdn Bhd and Ministry of Education (MOE) through National Book Council of Malaysia (MBKM), District Education Office Kota Belud, District Education Office Lundu and Putrajaya Federal Territory Education Department.		Due to its success in Kemaman, E-Magazine programme has been replicated in Kota Belud, Lundu and Putrajaya. This programme leverages on digital platform to build a school's yearbook in a digital format called e-magazine. It is intended to spark creativity and innovation among teachers and students in developing digital content besides promoting cost saving and green technology.		
					
Kota Belud	Phase 1	22 – 23 Feb 2017	Pusat Internet Pekan Kota Belud	29 Teachers 25 Students	29 Schools
	Phase 2	22 – 23 May 2017	Pusat Internet Pekan Kota Belud	24 Teachers 4 Students	24 Schools
Lundu	Phase 1	25 – 26 Apr 2017	Pusat Internet Kg Pandan	33 Teachers 31 Students	33 Schools
	Phase 2	13 – 15 Jun 2017	Pusat Internet Kg Pandan	32 Teachers 30 Students	32 Schools
Putrajaya	Phase 1	18 – 19 Apr 2017	Pusat Internet Presint 9 Fasa 10	26 Teachers 23 Students	27 Schools
	Phase 2	20 – 21 Jun 2017	Pusat Internet Presint 9 Fasa 10	28 Teachers 31 Students	28 Schools
	Phase 3	25 – 26 Jul 2017	Pusat Internet Presint 9 Fasa 10	23 Teachers 26 Students	24 Schools

Source: MCMC

Figure 5.3 Flagship Programmes in Kota Belud, Lundu and Putrajaya

Flagship Programmes in Kemaman				
Programme	Collaboration Partners	Description		
MyCommunity Heroes	MCMC, District Education Office Kemaman and LEAD Institute.	<p>To foster social aspects of entrepreneurship skills among the younger residents and hence, manage social problems via innovative solutions among the younger residents. Also aims to improve local community’s English language literacy via group discussion and nurturing creativity and critical thinking.</p> <p>Four secondary schools in Kemaman have been chosen as pilot schools for MyCommunity Heroes programme.</p> <p>This programme will be expanded to other Smart Communities districts at Kota Belud, Lundu, Putrajaya and Langkawi in 2018.</p>		
				
Workshop	24 – 25 Mar 2017	Kemaman Open Innovation Lab (KOIL)	4 Teachers 18 Students	4 Schools
Refresher Course	26 Aug 2017	District Education Office Kemaman	4 Teachers 21 Students	4 Schools
Books for Asia Kemaman (Pilot District)	MCMC, The Asia Foundation via the International Institute of Public Policy and Management (INPUMA) of University Malaya and District Education Office Kemaman.	<p>A book distribution programme that aims to expose the community with quality reading materials and enables the learning of writing techniques from renowned writers all over the world.</p> <p>To encourage reading culture and Life Long Learning while improving English literacy among the community</p>		
	3 May 2017		Auditorium Petra, Sekolah Menengah Kebangsaan Rantau Petronas	
 TOTAL NUMBER OF RECIPIENTS & BOOKS RECEIVED				
47 Primary Schools (1,786 books)		23 Secondary Schools (966 books)		10 Pusat Internet (300 books)
Kemaman Open Innovation Lab (KOIL) (40 books)				

Source: MCMC

Figure 5.4 Flagship Programmes in Kemaman

PUSAT INTERNET: Smart Community Empowerment

Pusat Internet is one of the initiatives under Universal Service Provision (USP) Programme with an aim to provide underserved communities with access to broadband services and hence, narrow the digital divide between those in urban and rural areas.

Pusat Internet serves as a platform to promote and implement flagship programmes under MCMC Smart Community initiative. It also acts as a hub for community development through various engagement with stakeholders. The activities conducted at the centres nationwide contribute to local community engagements with strategic stakeholders such as the Government and non-government entities as well as institutes of higher learning. This has created impact in making Pusat Internet a practical and essential community ICT hub for the rural areas.

Also, community empowerment programmes through Pusat Internet nationwide are being conducted through various collaborations. These include ICT workshops for basic ICT Training and entrepreneurship and e-commerce workshops for basic online marketing and selling products or services.

Community Empowerment through Pusat Internet Nationwide



Source: MCMC

Figure 5.5 Community Empowerment through Pusat Internet Nationwide

Entrepreneurship Programmes at Pusat Internet

Pusat Internet has shifted its focus from providing basic ICT skills to organising various programmes to enhance the social economic well-being of the rural community. The programmes include various topic such as ICT, e-learning, social media, entrepreneurship and e-commerce, as well as programmes on STEM, IoT, applications and community engagement.







These centres have been used to enhance strategic collaboration with stakeholders including the following:




- Majlis Amanah Rakyat (MARA)
- Federal Agricultural Marketing Authority (FAMA)
- National Strategy Unit (NSU)
- Department of Orang Asli Development (JAKOA)
- Lazada
- Lelong.my
- Malaysia Digital Economy Corporation (MDEC)
- Institutes of Higher Learning






Among the programmes initiated with the strategic partners are those where skills of participants can be fostered, developed and shared, such as:



















- Professional video production
- Developing product profile on online portal namely, Agrobazaar and Lazada
- Growing business/entrepreneurship
- English language skills

Programmes Organised by MCMC Together with Strategic Partners

Flagship Programmes						
Programme	Collaboration Partners	Description				
Script to Screen Workshop (#SKS)	MCMC and Institutes of Higher Learning	The programme is a comprehensive plan based on professional and quality short video production training modules so that local products and services can be promoted effectively and extensively through social media such as YouTube, e-commerce sites and so on.				
	WORKSHOP	TARGET	PUSAT INTERNET	MENTOR	DURATION	COVERAGE
						
	6 Workshops	180 Managers & Assistant Managers	180 Pusat Internet	60 Mentors & Facilitators	120 6 Workshops for 20 Hours	12 12 States/ 6 Regions
STRATEGIC PARTNERS AND TIMELINES FOR PHASE 2 – 2017						
	UMS 16 & 17 August	SWINBURNE 3 & 4 October	MMU CYBERJAYA 24 & 25 October	UMK 30 & 31 October	USM 7 & 8 November	MMU NUSAJAYA 15 & 16 November

Flagship Programmes												
Programme	Collaboration Partners	Description										
Agrobazaar Online Entrepreneurship Training Programme	MCMC and FAMA	<p>Aim: To train entrepreneurs and Pusat Internet supervisors to develop their product profile and sell through Agrobazaar online portal. FAMA provides the training and e-commerce platform, whilst MCMC provide Pusat Internet as training centres as well as assist entrepreneurs in the programme.</p> <table><tr><th colspan="2">6 Regions Nationwide</th></tr><tr><th>Targets</th><th>Total of Participants</th></tr><tr><td>Train the Trainers<ul style="list-style-type: none">Managers and Assistant Managers</td><td>111</td></tr><tr><td>Entrepreneurs<ul style="list-style-type: none">Local entrepreneurs</td><td>95</td></tr><tr><td>Total Trained</td><td>206</td></tr></table>	6 Regions Nationwide		Targets	Total of Participants	Train the Trainers <ul style="list-style-type: none">Managers and Assistant Managers	111	Entrepreneurs <ul style="list-style-type: none">Local entrepreneurs	95	Total Trained	206
6 Regions Nationwide												
Targets	Total of Participants											
Train the Trainers <ul style="list-style-type: none">Managers and Assistant Managers	111											
Entrepreneurs <ul style="list-style-type: none">Local entrepreneurs	95											
Total Trained	206											
Kemaman Open Innovation Challenge 2017 (KOIL 2017)	Pejabat Daerah dan Tanah Kemaman, TM and supported by Trendnexus Sdn Bhd (a marketing agency company).	<p>Aim: To develop entrepreneurship flagship programmes at Pusat Internet in line with the RMK-11 to further strengthen national economic growth. This programme is part of the initiatives to fulfil Kemaman Smart Community aspirations in improving the community's quality of life and socio economic status through the use of ICT and faster access to information.</p> <p>Duration: 14 July 2017 – 18 November 2017</p> <p>Up to six selected projects will be given the opportunity to receive pre-seed funding by MCMC for prototypes development in 2018.</p> <div><div> 143 Participants</div><div> 116 Completed the Training</div><div> 60 New Potential Businesses</div></div>										
Orang Asli Online Entrepreneurship Training Programme	MCMC, FAMA and JAKOA	<p>Aim: Train Orang Asli on basic online entrepreneurship leveraging on Agrobazaar, an online business platform developed by FAMA to promote local products.</p> <p>District: Pusat Internet Kampung Orang Asli Sg. Judah, Banting.</p>										

Flagship Programmes											
Programme	Collaboration Partners	Description									
	ORANG ASLI ONLINE ENTREPRENEURSHIP TRAINING PROGRAMME 1 pilot training: Basic online entrepreneurship training for 10 orang Asli. Thereafter enroll into Agrobazaar portal.										
	TRAINING	PARTICIPANTS	PUSAT INTERNET	DURATION	PRODUCT						
											
	Training	Participants	1 Pusat Internet	Hours	Orang Asli Products						
	1 Pilot Programme	9 Orang Asli	Active Orang Asli Entrepreneurs	Minimum 6 Hours Per Session	Enroll onto Agrobazaar						
Webinar Session "Menjual Dengan Lazada Secara Online"	MCMC and Lazada	Aim: Train entrepreneurs at Pusat Internet basic e-commerce services using Lazada platform. Training includes the process to enroll as a seller and design online store front. Module: Webinar, live streaming using GetGoTraining.com conducted on 16 October 2017.									
Class 101: Now Everybody Can Sell Online	MCMC and Lelong.my	Aim: Train Pusat Internet supervisors as well as aspiring entrepreneurs from central region on how to do effective online marketing and becoming an online entrepreneur.									
Kursus Latihan Asas Keusahawanan	MCMC and MARA	Aim: Basic Entrepreneurship Training Programme for Pusat Internet supervisors as well as entrepreneurs in smart community districts. <table><tr><th>Venue</th><th>Date</th></tr><tr><td>Pusat Internet Lundu, Sarawak</td><td>29 – 30 November 2017</td></tr><tr><td>Pusat Internet Perpustakaan Negeri Cawangan Kota Belud, Sabah</td><td>6 – 7 December 2017</td></tr></table>				Venue	Date	Pusat Internet Lundu, Sarawak	29 – 30 November 2017	Pusat Internet Perpustakaan Negeri Cawangan Kota Belud, Sabah	6 – 7 December 2017
Venue	Date										
Pusat Internet Lundu, Sarawak	29 – 30 November 2017										
Pusat Internet Perpustakaan Negeri Cawangan Kota Belud, Sabah	6 – 7 December 2017										
Bahasa Inggeris Programme	MCMC and National Strategic Unit (NSU), an agency under Ministry of Finance to pilot Bahasa Inggeris programme	An initiative under the National Blue Ocean Strategy, implemented by NSU with Science of Life System 247 Sdn Bhd, an award winning humanitarian organisation. Objective: To improve English proficiency of local communities, subsequently improve their quality of life. Pusat Internet: Belimbing Kanan, Padang Terap and Kuah, Langkawi, Kedah.									

Flagship Programmes																								
Programme	Collaboration Partners	Description																						
eKelas	MCMC and Maxis	<p>Maxis eKelas is an after-school digital learning initiative that aims to improve academic performance of students in rural and urban communities.</p> <p>eKelas was launched in November 2016 after a 15-month pilot programme. The focus of eKelas is on three critical subjects – Science, Mathematics and English for form 1, 2 and 3 students that includes group work, quizzes, contests, holiday camps and motivational talks. MCMC provides Pusat Internet as learning centres for eKelas.</p> <p>eKelas Carnival and Launching of eKelas Portal</p> <p>The eKelas Carnival and launching of eKelas Portal was held in August 2017 at Putrajaya. The event was attended by more than 700 participants including students and parents.</p> <p>The eKelas portal is a one stop hub to provide content to students such as notes, videos, presentations and exercises to help them with their studies.</p>																						
		<table><tr><th>TRAINING</th><th>PARTICIPANTS</th><th>PUSAT INTERNET</th><th>OUTCOME</th><th>DURATION</th><th>TARGET</th></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>>4,000</td><td>102</td><td>45</td><td>11</td><td>700</td><td>10</td></tr><tr><td>Students</td><td>Volunteers & Tutor</td><td>Pusat Internet Participating in eKelas</td><td>Students Received Anugerah Gemilang</td><td>Hours Live Tutorial</td><td>States</td></tr></table>	TRAINING	PARTICIPANTS	PUSAT INTERNET	OUTCOME	DURATION	TARGET							>4,000	102	45	11	700	10	Students	Volunteers & Tutor	Pusat Internet Participating in eKelas	Students Received Anugerah Gemilang
TRAINING	PARTICIPANTS	PUSAT INTERNET	OUTCOME	DURATION	TARGET																			
																								
>4,000	102	45	11	700	10																			
Students	Volunteers & Tutor	Pusat Internet Participating in eKelas	Students Received Anugerah Gemilang	Hours Live Tutorial	States																			
Pertandingan Usahawan Terbaik (August 2017)	MCMC	<p>Objective: To honour local entrepreneurs for their achievements in online businesses. The competition was opened to all entrepreneurs who are registered as Pusat Internet members.</p> <p>Prize giving ceremony was held on 5 October 2017 at Auditorium MCMC, Cyberjaya. The awards were given to entrepreneurs who have successfully transformed their products and services from traditional marketing to online platform that is in line with current trends of digital economy.</p>																						

Source: MCMC

Figure 5.6 Flagship Programmes

Content and Application Development

Creative Industry Development Fund (CIDF)

The CIDF was established to facilitate and encourage Malaysians' involvement in the creation, production and distribution of highly creative, original and marketable multimedia content for domestic and international markets.

MCMC has allocated RM100 million for the CIDF from year 2011 – 2013 to focus on the development of content for TV, mobile and Internet. To date, MCMC continues to monitor progress of approved projects under CIDF, which include grant disbursement, approved, completed and terminated projects. Details are shown in Figure 5.7.

Completed Projects by Company and Genre 2017				
No.	Company	Project	Genre	Commercial Platform
1	Red Circle Sdn Bhd	Mini Sains	Animation	App Store and Google Play
2	Yeayyy Sdn Bhd	WhatsTivity	Portal and Apps	Portal, App Store and Google Play
3	Inphase Media Sdn Bhd	My Passion: Astrophotography	Documentary	Planetcast Media Service Limited, India
4	Makmur Megah Sdn Bhd	Mac & Ted Season 2	Animation	PT Alva Media, Indonesia
5	Xevetor Sdn Bhd	GO3: Elemental Wheel	Animation	MONSTA TV
6	Brainy Apps Sdn Bhd	Brainy Bunch	Animation	App Store and Google Play
7	iKoncept Media Sdn Bhd	iHias	Apps	Portal and Google Play
8	Nibiru Pictures Sdn Bhd	MBOO	Animation	ZigZag TV
9	Enershia Sdn Bhd	Pak Deman	Animation	ZigZag TV
10	Spyderkat Sdn Bhd	TiKL Box	Portal and Apps	Portal, App Store and Google Play
11	Allegro Rhythm Broadcasting Sdn Bhd	Melestarikan Makyung	Documentary	Bername News Channel (Astro 502)
12	Two Tones Sdn Bhd	Kapsul	Drama Series	Bername News Channel (Astro 502)
13	Gancho Studios Sdn Bhd	Vantura	Animation	MONSTA TV
14	Odd Technologies (M) Sdn Bhd	Vidzume Qwork	Portal	Portal
15	Third Rock Creation Sdn Bhd	Cingkus Blues Season 2	Animation	Primeworks Distribution Sdn Bhd
16	Laksana Talian Sdn Bhd	Chinese Pioneers of Malaya	Documentary	Golden Sun Films, Hong Kong
17	KL Motion Pictures Sdn Bhd	The Story of Melaka	Documentary	Content Network Asia Pte. Ltd., Singapore
18	KL Television Network Sdn Bhd	Misi Tun Sakaran Marine Park	Documentary	SINAR TV
19	Orion Digital Studio Sdn Bhd	Kembara Galaksi	Animation	ZigZag TV
20	Kelembai Studios (M) Sdn Bhd	WIRA	Documentary	ZigZag TV & RTM (TBC)
21	Happy Ring Ring Sdn Bhd	ChickyFox	Musical Story Book	App Store and Google Play

Completed Projects by Company and Genre 2017				
No.	Company	Project	Genre	Commercial Platform
22	Otti Pictures Sdn Bhd	Balloonina	Animation	ZigZag TV
23	Metal Brain Studio Sdn Bhd	Okolele	Animation	Kedoo Entertainment, UEA & MONSTA TV
24	Matavia Reka Sdn Bhd	Wildlife Defenders: Sabah	Documentary	Discovery Channel (Astro 551)
25	Benchmark Productions Sdn Bhd	Adam & 2 Saintis Alien	Animation	ZigZag TV
26	Dunia Diyari Sdn Bhd	Send Doa	Apps	App Store and Google Play
27	Tujuh Warisan Sdn Bhd	Music Malaysia	Documentary	Bernamea News Channel (Astro 502)
28	Avell Global Sdn Bhd	Cedocu	Documentary	SINAR TV
29	One Miracle Creative Sdn Bhd	OMA The Series	Animation	Seed Studio TV
30	Imaginex Studios Sdn Bhd	Sounds Like Asia	Portal	Portal
31	Red Communications Sdn Bhd	Stepping Out	Original Format Programme	Nat Geo People Channel (Astro Channel 503)

Source: MCMC

Figure 5.7 Completed Projects by Company and Genre in 2017

MODULE 6: QUALITY ASSURANCE AND CONSUMER PROTECTION



Consumer Protection and Empowerment

MCMC and the Industry Forums have conducted various campaigns and initiatives to promote awareness among consumers on C&M service offerings. Such engagements not only educate consumers about their rights, but also provide information about new services and options offered by the industry.

Consumer protection framework developed by MCMC and industry forums promotes and protects consumer interests through ensuring C&M service providers' responsiveness to consumers.

Prepaid Registration Guideline

The Ministerial Direction on the Registration of Subscribers of Prepaid Public Cellular Services, Direction No. 1 of 2006, was first introduced in 2006. This prepaid registration guideline directed every service provider that provides prepaid mobile services to register its user in Malaysia. In 2017, MCMC has strengthened the Guidelines on Registration of End-Users of Prepaid Public Cellular Services (Prepaid Guideline) on 1 June 2017, effective from 1 January 2018.

This guideline aims to empower consumers in ensuring identification information provided during registration are valid and to ensure the integrity of data.

Under the revised guidelines, manual registration has been eliminated and every registration must meet newly established requirements set by MCMC as explained in Figure 6.1 below:

Prepaid Registration Guidelines	
New Provision	Details
New requirement for foreigners' registration	<ul style="list-style-type: none">Foreigners now need to show both passport and work permit/student ID card to subscribe to public cellular service.Foreigners with Passport only will be treated as Tourists and the validity of the SIM card is limited to three months only.
Registration using encrypted and secured Automated Platforms only (<i>manual verification by dealers, hardcopy forms or SMS are prohibited</i>)	<ul style="list-style-type: none">Telcos or its Dealers are required to use automated platforms such as MyKad Reader, Biometric Reader, Optical Character Recognition, Secure online registration verified via financial account or any other automated platforms as may be approved by MCMC from time to time.With this, it is anticipated that the number of false registrations will be reduced.
Number of SIM Cards allowed per individual	<ul style="list-style-type: none">Service providers shall not register any new customer for more than five SIM Cards per individual.
New and free of charge platform for customers to check their subscriptions	<ul style="list-style-type: none">Service providers shall develop a free of charge mechanism that enables the subscribers to check for any SIM Cards registered under their name.

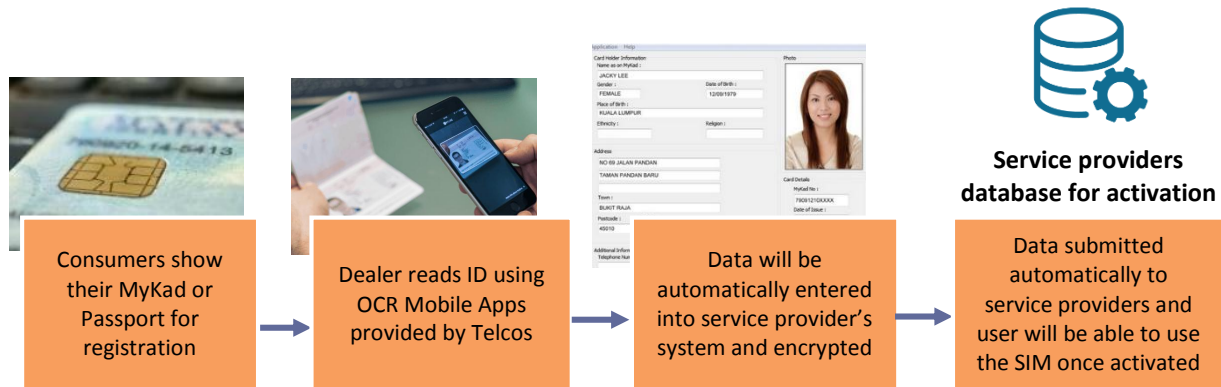
Note: 1. The Guidelines is drafted as such to ensure its applicability for future compliance. Service providers are allowed to use any automated platforms which offers the same or better security such as OCR and Biometric reader. However, approval from MCMC is required before implementation.

2. Previously, service providers are allowed to register 10 SIM Cards per individual. This created abuses by Dealers, especially in registering foreigners/foreign workers.

Source: MCMC

Figure 6.1 Prepaid Registration Guidelines

Registration Using Optical Character Recognition (OCR)



Source: MCMC

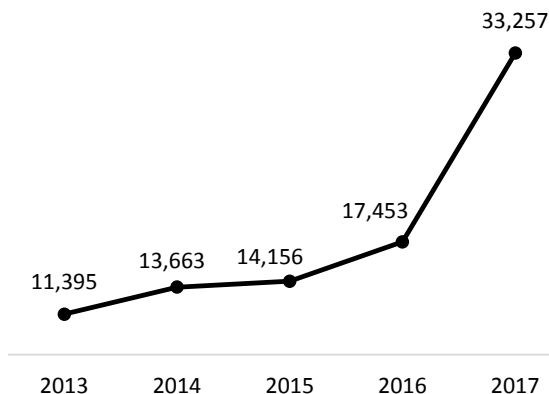
Figure 6.2 Registration Using Optical Character Recognition (OCR)

With automation in the registration process, it is expected that fraudulent registration using false ID to be reduced.

Consumer Complaints

Trend of Consumer Complaints Received by MCMC 2013 – 2017

NUMBER OF COMPLAINTS



Source: MCMC

Figure 6.3 Trend of Consumer Complaints Received by MCMC 2013 – 2017

Over the past few years, the number of consumer complaints received by MCMC is on an uptrend. This is due to the growing number of subscribers to C&M services, as well as increased consumer awareness in exercising their rights to lodge complaints and seek resolution with relevant parties concerned. Today, complaints include those on sensitive information or content received on complainants' communication devices or over the Internet.

In 2017, a total of 33,257 complaints were received by MCMC compared with 17,453 complaints reported in 2016. This shows a 91% increase in the number of complaints, which were related to issues on telecommunications services as well as on social media.

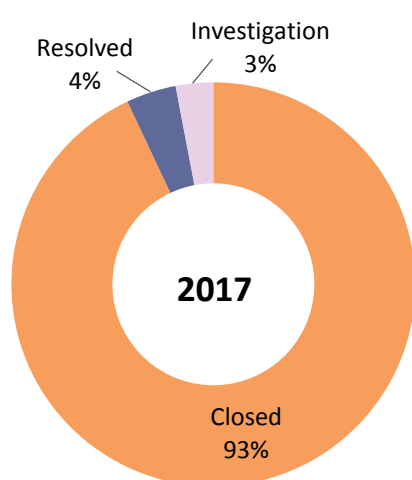
Notably, the surge in the number of complaints was contributed by the migration of data from Communications and Multimedia Consumer Forum of Malaysia (CFM) Complaint Online Portal (CoP) to the Integrated Complaint Management System (ICMS) platform in 2017.

Prior to the ICMS inception, there were multiple systems used by the service provider, CFM and MCMC. This had created a duplication of complaints and causes delay in consumer grievances to the overall complaint escalation system.

In view of the above, MCMC has embarked on a data consolidation via the development of the ICMS platform which provides seamless complaint management and enables effective compliance and monitoring activities by MCMC. Furthermore, this system is integrated with various complaint channels i.e. WhatsApp, email, portal and hotlines which provides greater accessibility for the consumers to engage with MCMC. This initiative is in alignment with the vision envisaged in the 10th national policy objectives in the consumer protection regulatory framework.

Lastly, the aggressive campaigns and outreach conducted by MCMC on *Klik Dengan Bijak*, *sebenarnya.my*, *check your label* and the consumer empowerment programme nationwide have indirectly increase public awareness on MCMC's roles. These efforts not only raised consumer awareness about their rights, but also empowered them to lodge complaints directly with MCMC when service providers failed to deliver their services.

Complaint Resolution 2017



In terms of complaints resolution, 93% of these complaints were closed as at end 2017. Notably, on average 31% of the complaints were resolved within 72 working hours.

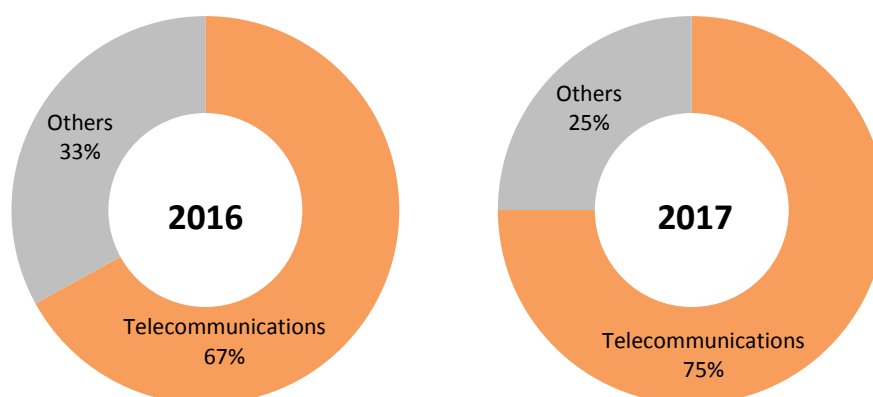
Source: MCMC

Figure 6.4 Complaint Resolution 2017

75% complaints were on telecommunications services

Out of the total complaints received in 2017, 75% (24,837 complaints) were related to telecommunications services. The remaining 8,420 complaints (25%) were on content related issues and other services under the provisions of the CMA and investigated by MCMC.

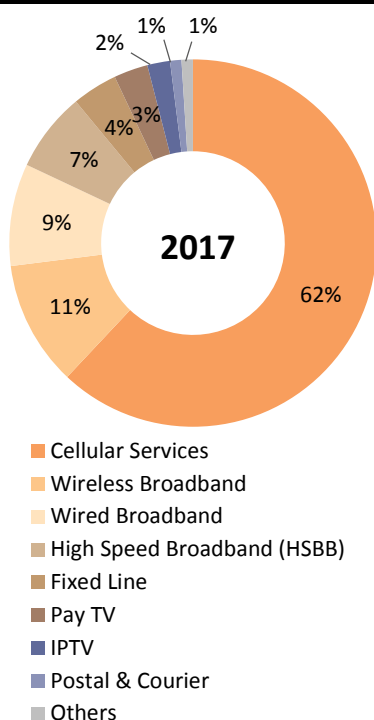
Complaints by Industry 2016 – 2017



Source: MCMC

Figure 6.5 Complaints by Industry 2016 – 2017

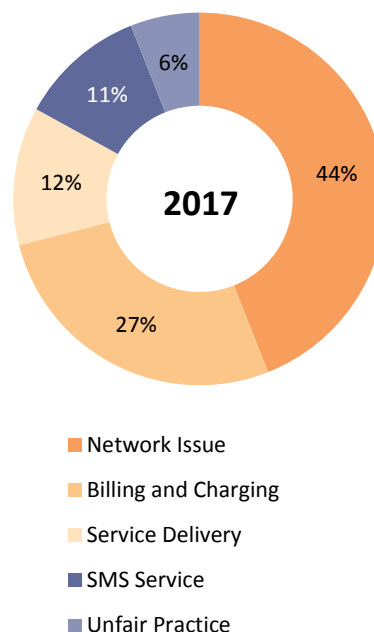
Types of Complaint in Telecommunications Sector



Source: MCMC

Figure 6.6 Types of Complaint in Telecommunications Sector

Top Five Complaints Received 2017



Source: MCMC

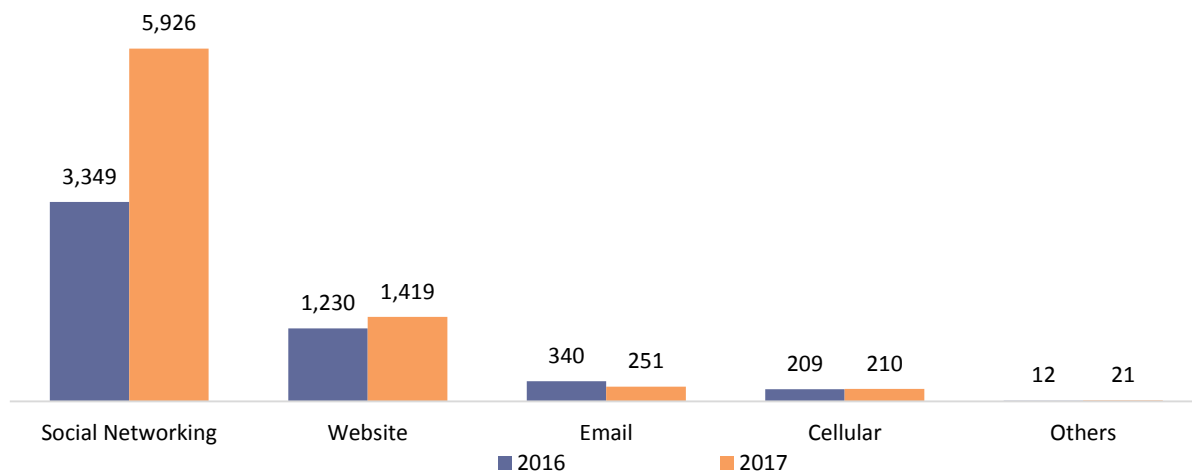
Figure 6.7 Top Five Complaints Received 2017

The top five categories of complaints lodged with MCMC in 2017 are as follows:

1. Network related issues mainly on poor or unavailability of services i.e. 3G and 4G LTE. Intermittent call connection due to network congestion including service disruption or downtime also contributed to the highest complaint category reported in 2017.
2. Complaints relating to billing and charging increased to 27% from 11% in 2016. Most of the cases were related to hefty billing charges for unknown transactions i.e. dispute of charges or rates of call or SMS, roaming charges, data or General Packet Radio Services (GPRS) charges and rebate or refund request.
3. Service delivery issues particularly on delay in installation and activation or restoration also include poor customer service and technical failure. In addition, faulty customers' device or customer premises equipment also forms part of the service delivery complaints.
4. SMS services mainly on Mobile Content Services such as SMS gambling, unsubscribed or promotional SMS from external content provider including telco, SMS scam and SMS peer to peer spam.
5. Unfair practice issues particularly on service termination without notice, fraud registration of postpaid/prepaid/broadband services as well as unfair contract terms which are favourable to the service providers.

Content Related Issues by Platform 2016 – 2017

NUMBER OF COMPLAINTS



Source: MCMC

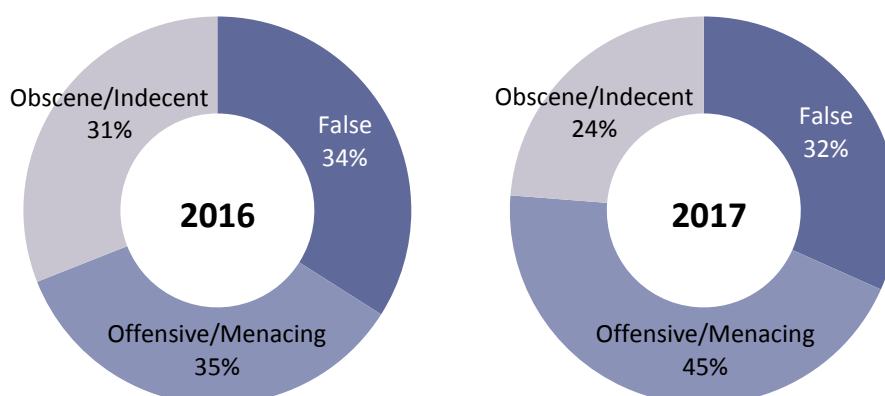
Figure 6.8 Content Related Issues by Platform 2016 – 2017

Complaints on social networking are on the rise

In 2017, a total of 7,827 complaints were classified under new media complaint category. Out of these, 96% of the new media issues were related to social networking content i.e. Facebook, Instagram, WhatsApp, Telegram and Tumblr. It is observed that complaints related to social networking were highest at 5,519 complaints received. This is a 65% increase from the number of complaints recorded in the preceding year. Most of the issues were related to false or misleading content, offensive or menacing remarks, obscene or indecent content as well as political issues.

Notably, complaints related to false and obscene or indecent content have marginally decreased in percentage to 24% in 2017 from 31% in 2016. Whilst, complaints on offensive content showed significant increase to 1,901 (45%) complaints in 2017 from 815 complaints (35%) in 2016.

Complaints Received on Content Related Issues 2016 – 2017



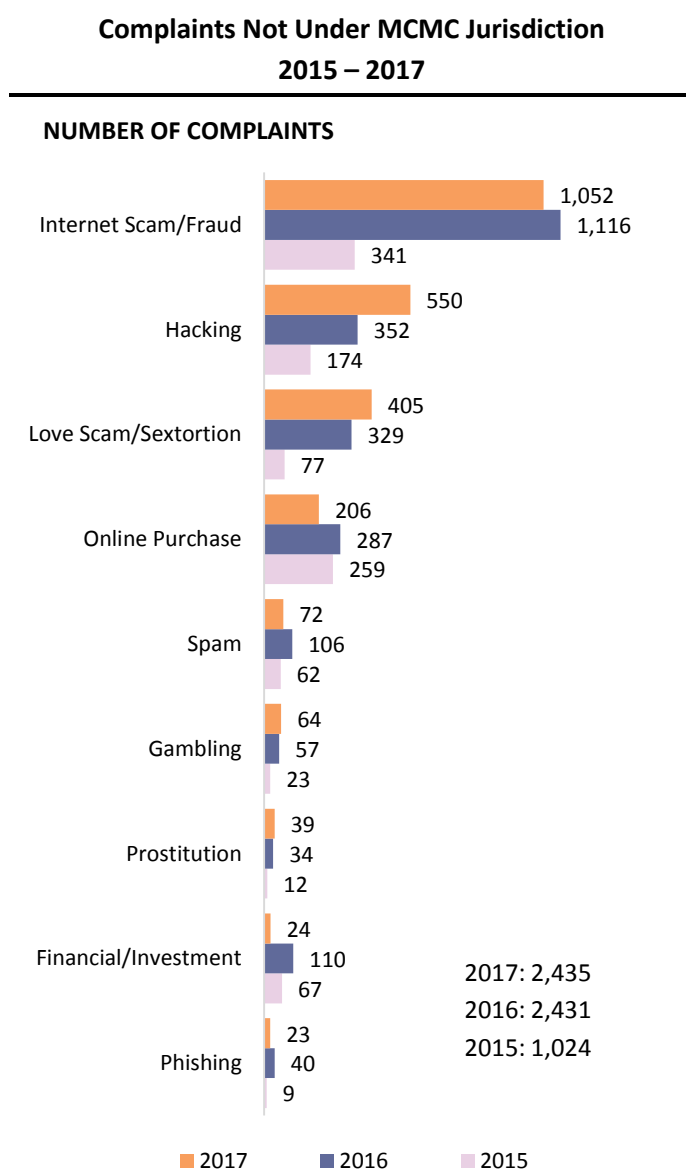
Source: MCMC

Figure 6.9 Complaints Received on Content Related Issues 2016 – 2017

For certain complaints relating to social networking, MCMC would guide the complainant on the procedures and steps in lodging a report with social media providers, e.g. Facebook, on reporting fake profile or other content related issues.

Where the complaint cases have an element of breach of the CMA, further investigation are carried out, which may result in MCMC taking further action.

Complaints Not Under MCMC Jurisdiction



Complaints not under MCMC's jurisdiction continue to be highlighted by consumers. A breakdown of these types of complaints received by MCMC show top four categories were Internet scam or fraud, hacking of social media account, sextortion or love scam and non-delivery of online purchased items. Others include investment or quick cash scheme and copyright issues (Figure 6.10).

Even though these complaints are not under MCMC jurisdiction, we have provided technical advice on the issues highlighted. MCMC also plays an active role together with other enforcement agencies towards eradicating such illegal activities.

Source: MCMC

Figure 6.10 Complaints Not Under MCMC Jurisdiction 2015 – 2017

Industry Forums

Communications and Multimedia Content Forum of Malaysia

Premised on the concept of self-regulation, Communications and Multimedia Content Forum of Malaysia (CMCF) was established in 2001 to enforce Malaysian Communications and Multimedia Content Code (Content Code) containing governing standards and practices for the C&M industry. CMCF has a membership of 48 organisations from industry including broadcasters, advertisers and telcos as at end 2017.

In 2017, CMCF continues its efforts in industry development through 103 public relation initiatives and awareness activities. There was also collaboration with MCMC, KKMM, CyberSecurity Malaysia, MYNIC, institutions of higher learning, schools and the public.

Series of lectures and activities conducted provide more in-depth explanation of the Content Code to assist industry in complying with the rules and regulation as per the Code.

Activities of CMCF 2017	
Types of Activity	Number
Roadshow, Exhibition	52
Seminar, Workshop, Conference	11
Self-initiated Workshop, Event	12
Media Interview	28
Total	103

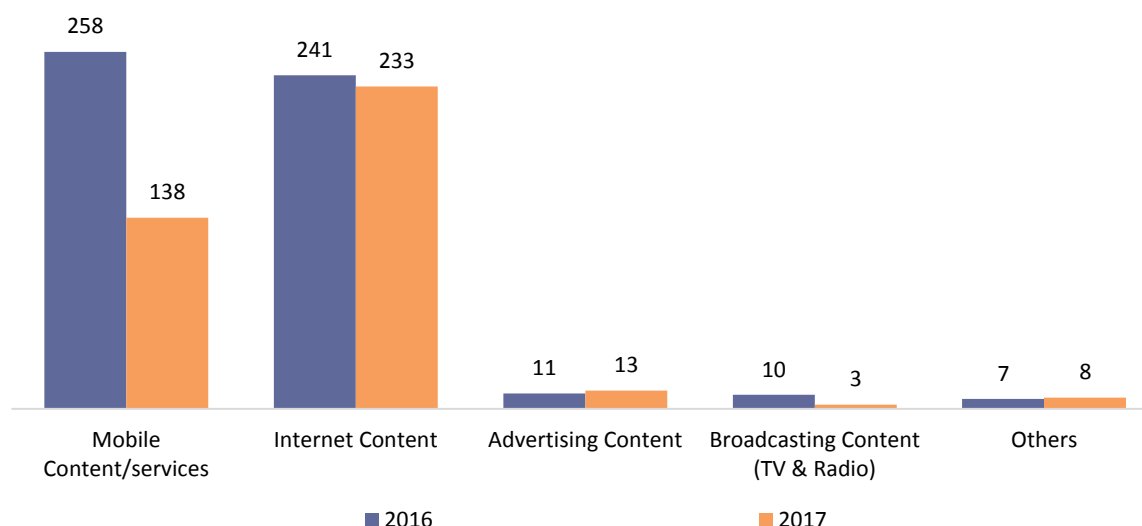
Source: CMCF

Figure 6.11 Activities of CMCF 2017

The impact of such continuous training is seen as a reduction of number of complaints received on specific issues year on year. In 2017, CMCF received 395 complaints, a decrease of 25% from 2016 (527 complaints), indicated effectiveness of the above efforts by CMCF. The largest portion of complaints received was on Internet content with 233 cases, constituting 60% of total number of complaints received by CMCF.

Complaints Received by Category 2016 – 2017

NUMBER OF COMPLAINTS



Source: MCMC

Figure 6.12 Complaints Received by Category 2016 – 2017

In 2017, an Industry Practice Note was released by CMCF on the matter of using religion in advertising via broadcasting media. The purpose of this voluntary practice note is to ensure that both broadcasters and advertisers do not broadcast any content that uses religion as a marketing tool in promoting products.

Engaging with Communities and Capacity Building

CMCF Self-Initiated Awareness Campaign at Schools



Source: CMCF

Figure 6.13 CMCF Self-Initiated Awareness Campaign at Schools

Recent reports received by the CMCF showed that misconduct in using the Internet has increased in recent years, especially among teenagers who may share false information and indecent personal video on the Internet. Thus, briefing sessions on Internet safety to teenage students as the target group were intensified in 2017.

In collaboration with universities and schools, MCMC and CMCF have organised such sessions and a variety of other activities for youth.

CMCF has received positive feedback from participants, suggestions were for more frequently held activities as well as to target those in rural areas. In 2017, CMCF has conducted exhibitions and talks in rural areas in collaboration with Pusat Internet throughout Malaysia. The aim is educating the rural population on Internet safety and self-regulation.

CMCF Awareness Programme at Pusat Internet



Source: CMCF

Figure 6.14 CMCF Awareness Programme at Pusat Internet



In 2017, CMCF made various media notifications and appearances covering print, TV and radio.

CMCF recorded an innovative milestone where its awareness campaign was styled as “Disebalik Wajah”. The idea behind this campaign arose from the growing problems of online misconduct such as cyber bullying, rumour mongering as well as sexting⁶³ along with dissemination of unsavoury online content.

Media Appearance		
Type of Media	Disebalik Wajah	General
Print	8	19
TV	4	4
Radio	5	6
Online	8	2
Total	25	31

Source: CMCF

Figure 6.15 Media Appearance

In Phase 2 of this campaign, CMCF will focus on creating a message for promotion, distribution, including responsible access to electronic content.

CMCF also hosted a roundtable discussion prior to the campaign launch, dubbed “The Ugliness Inside: How We Behave Different Online”. With celebrity participation along with representatives from UNICEF, academia and industry, the discussion focused on besieged netizens, faced with choices on how they should conduct themselves while online.

⁶³ Sending of sexually explicit digital images, videos, text messages or emails, usually by mobile phone.

Communications and Multimedia Consumer Forum of Malaysia

Prioritising the Consumer in Digital Connectivity Initiatives

Connecting 95% of Malaysia's populated areas to the digital world is an undertaking that would be meaningless if the end users are not engaged. Hence, the Communications and Multimedia Consumer Forum of Malaysia (CFM), plays a vital supporting role in ensuring consumers are empowered and is key to protect consumers. CFM is a forum designated by MCMC to protect consumers' interest.

One of the core functions of CFM is to provide a platform for consumers to seek redress to their unresolved complaints. CFM is a non-profit organisation with representatives from both the supply and demand sides.

With the implementation of ICMS by MCMC to consolidate and streamline complaints management, CFM received 4,746 complaints in 2017 as compared to 7,556 in 2016 and managed to resolve 86% of the complaints within 15 business days which is an improvement by 9% as compared to 2016 at 77%.

Through its Complaint and Compliance Bureau, CFM also deliberates on connectivity issues faced by the consumers and how best to address it. CFM has also formed an Industry Best Practice Committee in 2017 to provide recommendations and guidelines for the industry, in line with the spirit of self-regulation. Therein, three proposals were submitted to MCMC for industry improvement on consumer issues namely, Debt Collection Management, Mobile Data Pay-Per-Use and Call Charges to Customer Service Hotline.

Another core function of CFM is to increase the awareness and knowledge of consumers on the C&M services provided to the public. This includes tips and advice for consumers on how to become a smart digital citizen. CFM outreach initiatives include Knowledge Sharing sessions held four times throughout Malaysia in 2017 and supported twelve Pocket Talks with communities. CFM also disseminates its messages from time to time through various platforms such as Facebook, Instagram and Twitter as well as through its Quarterly Newsletter, *Shout!*

Moving forward, CFM will continue to engage all stakeholders through various platforms to ensure that the industry prioritises consumers end. This will be done by working together with the stakeholders to come up with industry best practices and ensure adherence to General Consumer Code of Practice for the Communications and Multimedia Industry Malaysia by the service providers. Of equal importance is the empowerment of consumers through better awareness and knowledge of their rights for C&M services.

MCMC Monitoring Activities

Monitoring of CASP (I) Licensees through Content Monitoring Centre

MCMC continues to monitor CASP (I) licensees' compliance with Licence Conditions under the CMA through Content Monitoring Centre. Established in 2016, the Content Monitoring Centre enables systematic monitoring of content broadcasted by CASP (I) licensees.

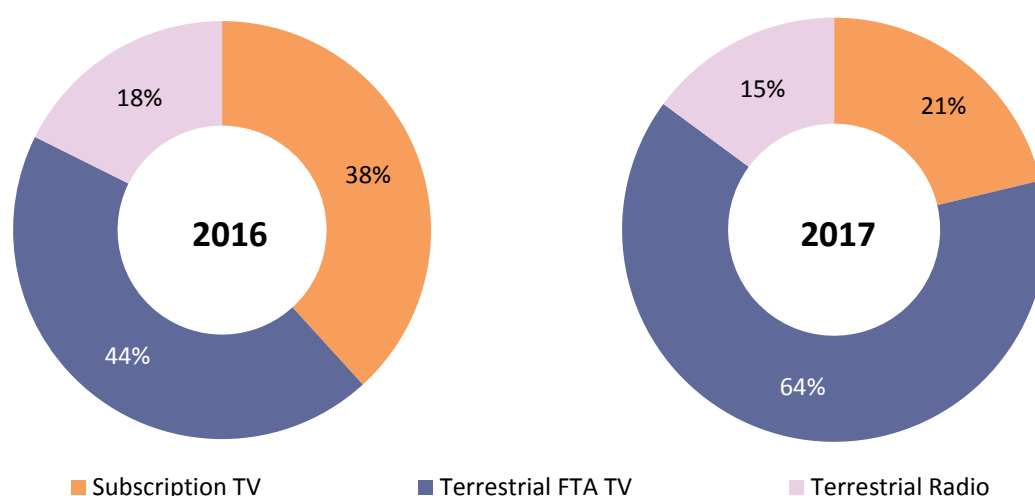
In 2017, a total of 47 complaints related to TV and radio content were received and investigated by MCMC (2016: 34 complaints). Of which 30 complaints were raised internally as a result of proactive monitoring of content broadcasted through the Content Monitoring Centre.

Complaints on Broadcast Content				
Category	FTA TV	Subscription TV	Radio	Total by Category
Advertisements	7	2	1	10
Programme Content	23	8	6	37
Total by Platform	30	10	7	47

Source: MCMC

Figure 6.16 Complaints on Broadcast Content

Complaints on Broadcast Content by Platform 2016 – 2017



Note: Subscription TV – ASTRO, HyppTV; Terrestrial FTA TV – TV3, TV9, ntv7, 8TV and TV AlHijrah

Source: MCMC

Figure 6.17 Complaints on Broadcast Content by Platform 2016 – 2017

Out of the 47 complaints, 79% or 37 cases were related to programme content such as news, films or drama which were indecent, obscene, false, offensive and menacing. The remaining 10 cases were related to commercial advertisement. These involved advertising of food products with false and misleading health claims, health products which were not approved by Medicine Advertisement Board or advertisement of slimming products which are not allowed to be advertised as per Content Code.

In 2017, MCMC continued its efforts in capacity building by organising compliance programmes and workshops to engage and address issues or noncompliance by the broadcasters. MCMC also collaborated with relevant agencies and released three industry references as best practices for self-regulation of broadcast content by the broadcasters as follows:

Industry References for Self-Regulation of Broadcast Content		
Industry Reference	Collaboration Partners	Description
<i>Sambutan Perayaan Islam</i>	Jabatan Kemajuan Islam Malaysia, Jabatan Mufti Wilayah Persekutuan and Universiti Kebangsaan Malaysia	<ul style="list-style-type: none"> Best practices for selection and provision of appropriate broadcasting content in conjunction with the celebration of Islamic festivals
<i>Adat Istiadat dan Tradisi Masyarakat Peribumi Sarawak</i>	Majlis Adat Istiadat Sarawak	<ul style="list-style-type: none"> Best practices in preparation of content involving the customs and traditions of indigenous people of Sarawak
<i>Bahasa Terlarang</i>	Dewan Bahasa dan Pustaka, Film Censorship Board, CMCF and Commercial Radio Malaysia	<ul style="list-style-type: none"> Related to the use of illicit language, especially abusive, vulgar and obscene language

Source: MCMC

Figure 6.18 Industry References for Self-Regulation of Broadcast Content

Content Monitoring Centre



Source: MCMC

Figure 6.19 Content Monitoring Centre

Participants to Broadcast Content Compliance Workshop – Bahasa Terlarang



Source: MCMC

Figure 6.20 Participants to Broadcast Content Compliance Workshop – Bahasa Terlarang

Monitoring for certification of communications equipment and devices

MCMC conducted annual Market Surveillance Programmes for the period from 2012 to 2017. The fifth programme started in late 2017 and will be completed by 3Q 2018. This programme aims to protect consumers by ensuring that all communications equipment in the market complies with the technical specifications registered by MCMC and hence are safe to use. SIRIM QAS International Sdn Bhd⁶⁴ has been awarded a contract to run this programme since 2012.

In order to improve the compliance of communications equipment in the market, the Market Surveillance Programme 2017/2018 consists of two parts namely, engagement programme with the industry and actual market surveillance programme.

MCMC in collaboration with SIRIM QAS International conducted the engagement programme from 14 August 2017 to February 2018. During this programme, one-on-one engagement sessions were held with 26 companies consisting of hypermarkets, chain stores, online stores and industry associations. The objective of these engagement sessions is to inform the stakeholders on the regulatory requirements and scope of communications equipment subject to mandatory certification before the equipment are placed onto Malaysian market. The participating companies are listed in Figure 6.21.

Participating Companies in Engagement Programme			
No.	Company	No.	Company
Hypermarket		Chain Store	
1	Aeon Co. (M) Bhd	1	Courts Malaysia Sdn Bhd
2	Mydin	2	Onking Chain Store
3	Tesco Stores (Malaysia)	3	Harvey Norman Malaysia
4	Giant Retail (M)	4	Senheng Electric
5	Aeon Big	5	Thunder Match Technology
6	Lulu Hypermarket	6	HLK (Chain-Store)
Online Store		7	Jayacom Information
1	Lazada Malaysia	8	All IT Hypermarket
2	Mudah.my	9	Viewnet Computer
3	Lelong.my	10	Tech Zone Computer House
4	11Street	11	Best Denki Malaysia
5	CJ Wow Shop	Industry Associations	
6	Go Shop	1	Persatuan Industri Komputer dan Multimedia (PIKOM)
7	lpmart.com.my	2	Federation of Malaysian Manufacturers (FMM)

Source: MCMC

Figure 6.21 Participating Companies in Engagement Programme

The actual market surveillance programme will be held from 1 January 2018 to 31 July 2018. A total of 135 samples consisting of 15 categories from various types of communications equipment will be purchased nationwide.

The samples will undergo evaluation and lab testing to determine status of compliance with the technical specifications and labeling requirements enforced by MCMC. Further action will be taken based on results of the analysis carried out, including legal actions against alleged non-compliance.

⁶⁴ SIRIM QAS International Sdn Bhd is registered with MCMC as a certifying agency.

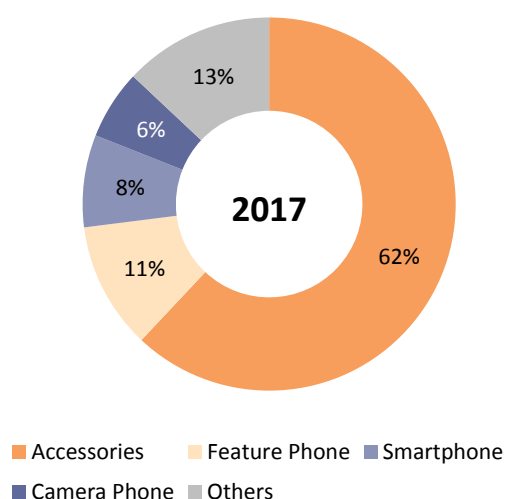
Mobile e-Waste Programme

In addressing the electrical and electronic wastes (e-waste) issues, MCMC together with industry has initiated recycling programme on discarded mobile devices. "Mobile e-Waste: Old Phone, New life" programme launched on August 2015 is MCMC's response to the Resolution 79 adopted by World Telecommunication Standardisation Assembly (WTSA 12) in November 2012. Resolution 79 invites its Member States to take all necessary measures in handling and controlling e-waste to mitigate the hazards arising from used telecommunications/ICT equipment.

Since then, a lot of campaigns and awareness activities on Mobile e-Waste have been held and participated by programme partners and Pusat Internet. The campaigns and activities have raised the public awareness on the importance of recycling their e-waste especially mobile phones in a safe and environmental friendly.

The collection trend is showing encouraging rate of growth. Total collection increased more than 160% to 1,762.47kg in 2017 from 670.54kg in 2016. In total, mobile phone accessories recorded the highest percentage collected followed by feature phones, smartphones and camera phones.

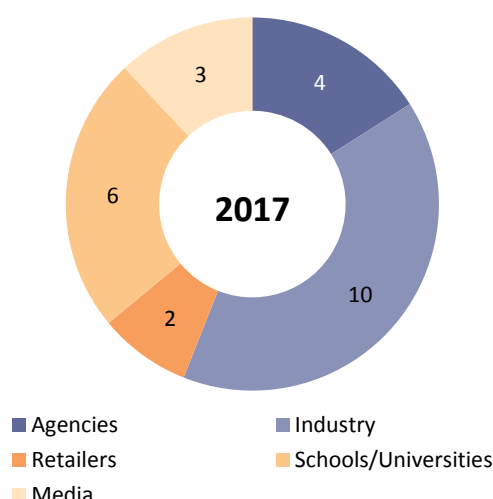
Mobile Phones and Accessories Collection 2017



Source: MCMC

Figure 6.22 Mobile Phones and Accessories Collection 2017

Mobile e-Waste Partners by Categories 2017



Source: MCMC

Figure 6.23 Mobile e-Waste Partners by Categories 2017

From a total of six partners from telecommunications industry in 2016, Mobile e-Waste currently has 25 actively participating partners contributing more than 150 collection boxes throughout Peninsular Malaysia, Sabah and Sarawak. This includes MCMC own collection boxes distributed to schools and institutions of higher learning, Pusat Internet, internal and external events and others.

Our partners include industry players, retail companies, media agencies, government agencies and NGOs, schools and universities as illustrated in Figure 6.23.

Quality of Service

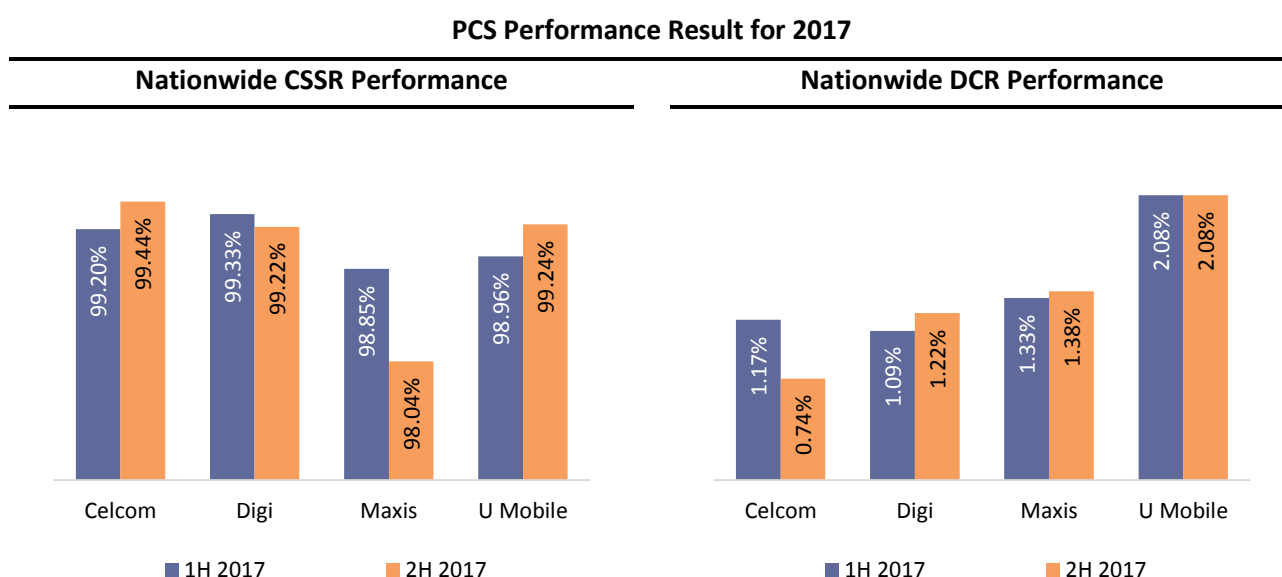
Network Performance Assessment

Assessment on Quality of Service for Public Cellular Service (PCS), Wireless broadband access and Wired broadband access provided by service providers is conducted on a yearly basis. The main objective is to ensure service providers adhere to the Mandatory Standards set by MCMC. The ultimate goal is to protect the consumer and promote network improvement nationwide.

PCS QoS refers to the capability of voice call service to maintain a set threshold for Dropped Call Rate (DCR) and Call Setup Success Rate (CSSR)⁶⁵. As for Wireless and Wired broadband access, compliance is measured based on achievement to meet minimum throughput, network latency and also packet loss as required by the Mandatory Standards.

To evaluate PCS performance, the measurement was conducted via drive test and is repeated on a half-yearly basis. The wireless broadband assessment is measured by selecting test point that fulfil the Mandatory Standards guideline criteria whilst for wired broadband service it is based on confirmation from subscriber to participate in the assessment.

In 2017, all mobile service providers were able to maintain CSSR between 98% to 99% and DCR below 1% to 2%. This translates to the accomplishment of the industry to meet the Mandatory Standards for PCS even though they are still in the midst of network optimisation due to the spectrum reallocation exercise, which is expected to be completed by year end. The results of CSSR and DCR by service providers are shown in Figure 6.24.



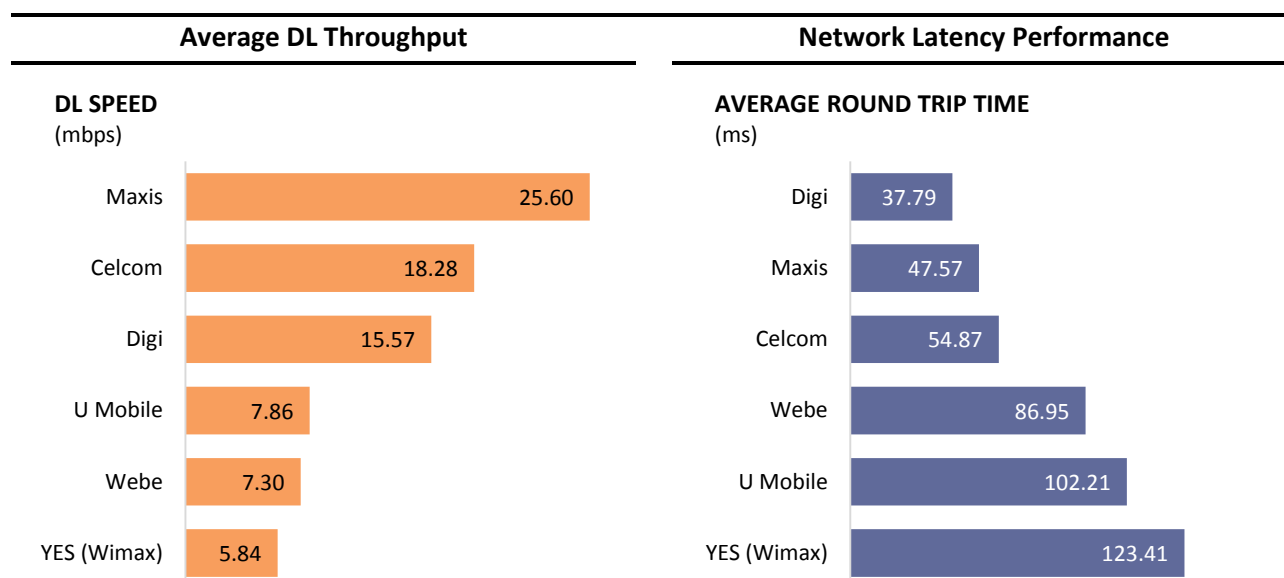
Source: MCMC

Figure 6.24 PCS Performance Result for 2017

Internet speed plays a major role when downloading files, streaming video and browsing web as network latency impact user experience for real time services such as video call, video conferencing and playing games. Moreover, the surge in online applications for smartphones has increased the demand for network capacity to meet user expectations. Figure 6.25 shows the performance of both parameters measured nationwide by service providers while Figure 6.26 summarises the compliance result as compared to the Mandatory Standards.

⁶⁵ Service provider must achieve CSSR \geq 95% and DCR \leq 3% for nationwide PCS assessment.

Network Performance for Wireless Broadband



Note: YES (LTE) average DL speed at 8.06Mbps, average round trip time is 63.08ms

Source: MCMC

Figure 6.25 Network Performance for Wireless Broadband

Wireless Broadband Performance Result 2017			
Service Provider	% of time		Packet Loss (%)
	Speed \geq 0.65 Mbps	Latency \leq 250ms	
Celcom	98.48	99.12	0.53
Digi	98.80	99.61	0.52
Maxis	99.66	99.51	0.13
U Mobile	94.77	92.48	0.99
Webe	96.67	97.13	1.42
YES (LTE)*	99.39	99.91	2.37
YES (Wimax)	87.01	96.70	1.04

*YES (LTE) measurements only cover certain states namely, Kelantan, Terengganu, Johor, Kedah, Perlis, Sabah and Sarawak. Therefore, does not represent nationwide results

Source: MCMC

Figure 6.26 Wireless Broadband Performance Result 2017

MCMC conducted a series of tests at subscribers' premises to gauge the performance for wired broadband service. Results collected are measured against their subscriptions value and technology provided for home Internet. Fibre connections are able to provide higher speeds and better network latency compared with copper connections. However, due to the lack in widespread deployment of fibre in the rural and suburban areas, many users rely on copper connections.

Figure 6.27 summarises the compliance result measurements conducted for wired broadband.

Wired Broadband Performance Result for 2017								
Service Provider	Digital Subscriber Line Technology (%)				Fibre Technology (%)			
	Upload Speed	Download Speed	Round Trip Time	Packet Loss	Upload Speed	Download Speed	Round Trip Time	Packet Loss
TM	99.84	96.01	77.34	1.27	99.19	99.01	92.23	0.29
Maxis	100	99.58	99.04	0.05	96.37	96.94	91.86	0.23
TIME	N/A				98.02	96.23	100	0.10

Source: MCMC

Figure 6.27 Wired Broadband Performance Result for 2017

Mandatory Standards on Quality of Service

Mandatory Standards on Quality of Service (QoS) under the CMA was developed to ensure service providers adhere to their commitments to provide good quality services to consumers. A total of eight Commission Determinations on the MS QoS were registered between 2002 and 2016. The latest review of the Mandatory Standards on QoS in 2016 are as follows:

Mandatory Standards on QoS	
Date	Mandatory Standards
1 January 2016	MS QoS for Public Cellular Services (PCS) registered and in effect.
1 February 2016	MS QoS for Wired Broadband Access Service (BAS) and Wireless Broadband Access Service (WBAS) registered.
1 July 2016	Effective date for the new standards on Customer Service Quality for BAS and WBAS.

Source: MCMC

Figure 6.28 Mandatory Standards on QoS

Each licensee is obliged to submit a quarterly report to MCMC for the new standards for PCS, BAS and WBAS. Non-compliance with the MS QoS is categorised into three categories:

- i. Non-compliance with the minimum standard imposed;
- ii. Late submission; and
- iii. Failure to submit.

Non-compliance is an offence under Section 105(3) of the CMA and will be read together with Section 242 on General Offence and Penalty. The offender shall be liable to a fine not exceeding RM100,000 or to imprisonment for a term not exceeding two years or to both.

In 2017, MCMC issued 25 notices of non-compliance on the half-yearly report, which may lead to further enforcement action.

Spectrum Monitoring and Interference Resolution

Spectrum interference has been on the increase year on year. Interference is mostly caused by non-standard equipment or faulty devices. Interference degrades service quality for cellular and wireless networks and creates negative impact to the public.

Technical Regulation requires standard devices to be used on wireless equipment, thus ensuring its interoperability and avoiding frequency interference. Furthermore, certain use of the spectrum is not harmonised regionally or globally. For this, MCMC has appointed SIRIM as a certification body to inspect and perform type approval on any wireless equipment used in Malaysia.

For instance, MCMC allocates cordless phone to operate within frequency range from 1885 to 1900MHz. However, in other countries cordless phones may operate outside of the allocated range in Malaysia. Hence, these phones are considered non-standard for Malaysia as it may be operating within cellular bands and as a result may cause interference.

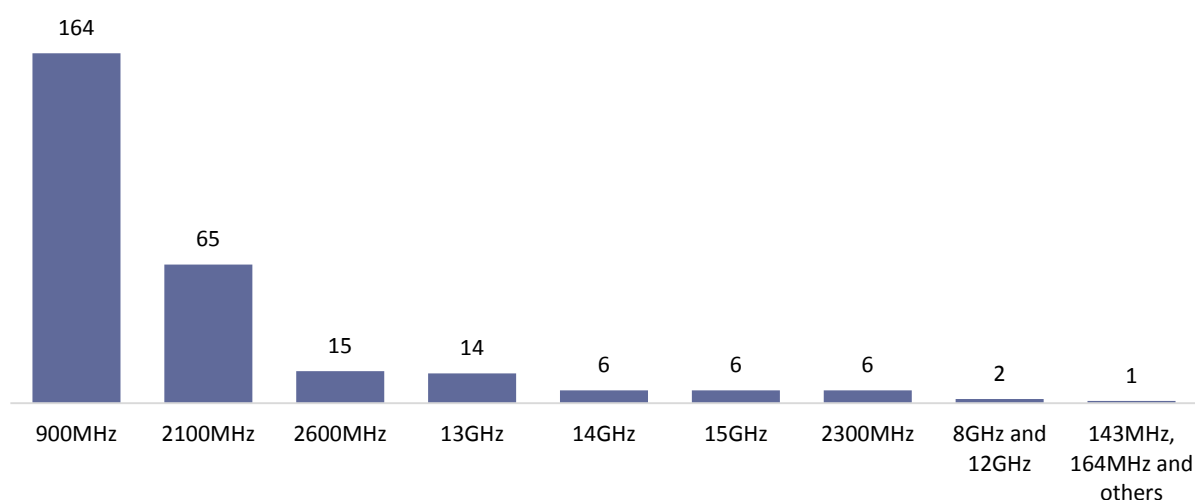
As at end 2017, a total of 293 complaints were received on radio frequency interference. Maxis lodged the highest complaints with 172 (58.7%), followed by U Mobile with 62 complaints (21.16%). There were also complaints on interference involving walkie-talkies or trunked radio from Mal-Tel Sdn Bhd and Puma Energy Sdn Bhd.

In 2017, non-standard RFID reader interference raised the highest number of complaints. The RFID reader operates within the same frequencies for cellular services in 900MHz band. Such RFID readers are commonly used for automated barrier gates while a few are used for book management in libraries. Notably, standard RFID reader should operate within 919 to 923MHz with maximum Effective Radiated Power not exceeding two Watts.

As at 31 December 2017, 164 out of 293 complaints lodged with MCMC were on the 900MHz band. These complaints include non-standard RFID readers, cellular boosters and jammers causing interference in the same band.

Spectrum Interference Complaints According to Frequency Bands

NUMBER OF COMPLAINTS



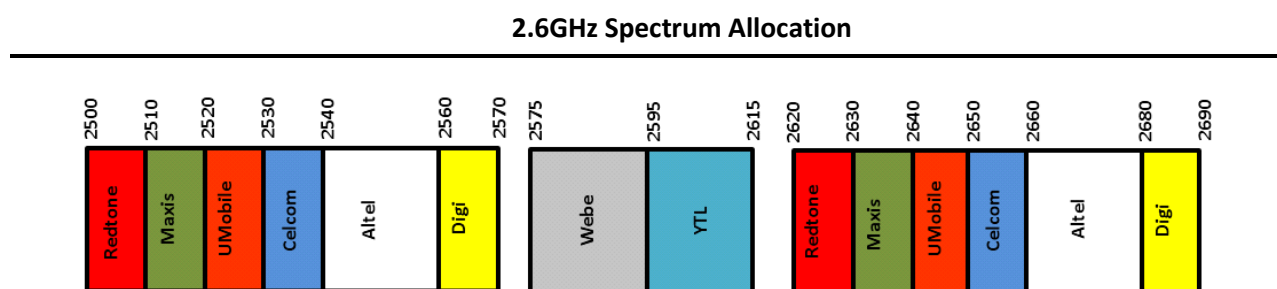
Source: MCMC

Figure 6.29 Spectrum Interference Complaints According to Frequency Bands

It would be advisable for consumers to check for MCMC certification label attached on wireless equipment or device prior to purchase. This is critical as the owner of a non-standard equipment or device could be charged under Section 239 of CMA for unlawful use, possession or supply of non-standard devices.

Spectrum Occupancy Monitoring on 2.6GHz Band in Kuala Lumpur, Selangor and Negeri Sembilan

In 2017, MCMC conducted spectrum occupancy measurement for 2.6GHz band while driving on random routes around Kuala Lumpur, Selangor and Negeri Sembilan. The 2.6GHz band has been allocated to eight service providers for almost four years since early 2013 as in Figure 6.30 below:

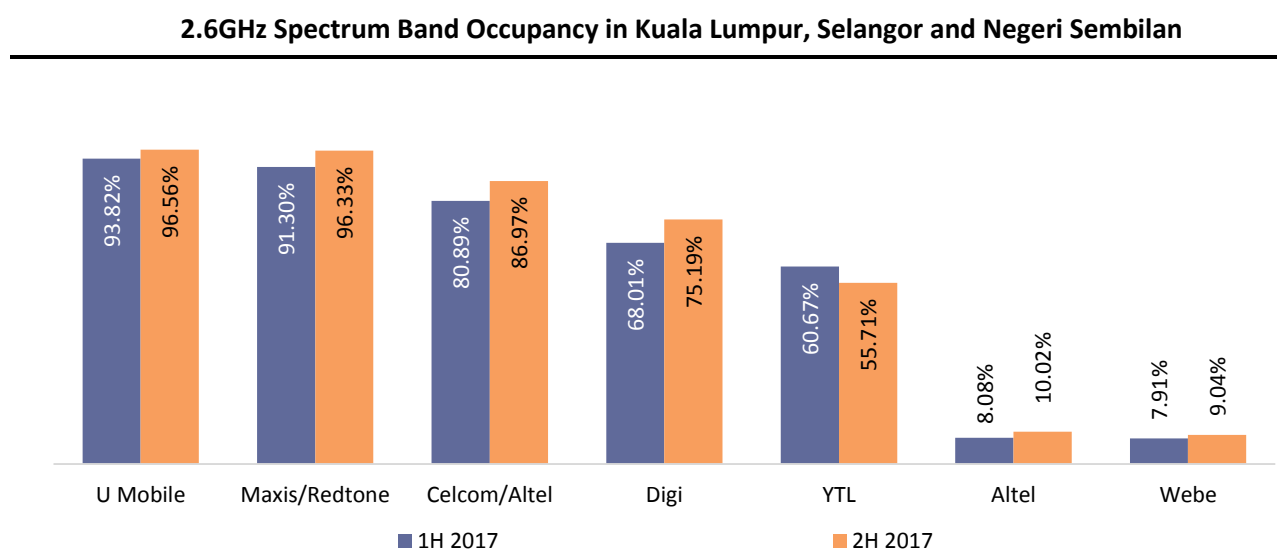


Source: MCMC

Figure 6.30 2.6GHz Spectrum Allocation

Percentage of spectrum occupancy in the 2.6GHz band for 1H 2017 and 2H 2017 is summarised as in Figure 6.31. It is noted that U Mobile recorded the highest percentage of occupancy in the 2.6GHz band.

Occupancy measurements are conducted to ensure the assigned national spectrum resource is being optimised.



Source: MCMC

Figure 6.31 2.6GHz Spectrum Band Occupancy in Kuala Lumpur, Selangor and Negeri Sembilan

Frequency Monitoring System for Super High Frequency Band

Super High Frequency (SHF) is generally known as the frequency that resides between range of 3GHz to 30GHz and being used by satellites, microwaves as well as terrestrial systems technologies. Since 2016, MCMC has embarked on initiative to enhance our frequency monitoring system capability specifically in the SHF band via SHF monitoring project.

The systems implementation among others are summarised in Figure 6.32 and Figure 6.33.

Mobile Monitoring System B (Ford Ranger)



Source: MCMC

Figure 6.32 Mobile Monitoring System B (Ford Ranger)

Frequency Monitoring Range

2GHz until 18GHz

System Summary

Equipped with frequency monitoring system that is able to perform transmissions direction finding with the use of a horn antenna. The horn antenna is placed on the rotator and elevator at the top of the mast to enable full control of the antenna movements and covering all angles for identifying direction of the frequency transmission.

It is also installed with automated cabin roof opening mechanism and a mast that can be erected up to 4.7 metre in which both can be fully controlled from inside of the vehicle.

This system has also been integrated with existing MCMC frequency monitoring systems so as to allow triangulation method to be performed in determining the direction and location of an interference source.

Satellite Monitoring System



Source: MCMC

Figure 6.33 Satellite Monitoring System

Frequency Monitoring Range

Satellite frequencies in C and Ku bands

System Summary

This system comprises two main components which are the antenna system and satellite spectrum monitoring system.

The antenna system has a diameter width of 7.3 metre and equipped with a cabin located in the compound of former MCMC Headquarters building in Cyberjaya, Selangor.

As for the satellite spectrum monitoring system, it enables satellite monitoring and tracking of the service providers utilising the C and Ku frequency bands. It can also execute monitoring of the satellite carriers automatically as well as prompting alerts on signals interference. Moreover, it is able to analyse in depth in terms of the technical aspects of tracked signals.

NASMOC Monitoring System in Bintulu, Sarawak

National Spectrum Monitoring and Control System (NASMOC) is a network of system that has the capability to execute real time frequency monitoring, frequency channel occupancy tracking and field strength measurements for broadcast stations. It also helps in determining direction of transmissions for a specific frequency.

In September 2017, a NASMOC monitoring station was added and fully operational in Bintulu, Sarawak. This accomplishment has made the total number of stations for the NASMOC network system nationwide to be at 35 locations. The deployment of NASMOC system in Bintulu is crucial and relevant due to booming oil and gas industry in that area. Hence, frequency users have increased drastically in Bintulu and such scenario needs monitoring that can be done via NASMOC system. Additionally, the NASMOC system in Bintulu has been linked with the other NASMOC stations especially the ones in Sibul and Miri to cover frequency monitoring blind spots in between the two locations.

NASMOC Bintulu Fixed Monitoring Station



Frequency Monitoring Range

20MHz to 8GHz

System Summary

This system is able to perform automatic frequency scanning and can be controlled from MCMC Headquarters in Cyberjaya as well as MCMC Sarawak Regional Office in Kuching.

Moreover, the NASMOC Bintulu is furnished with sophisticated technology of hybrid algorithm from Time Difference of Arrival (TDOA) and Angle of Arrival (AOA) in identifying the direction and location of frequency interference emitter with more accuracy.

Source: MCMC

Figure 6.34 NASMOC Bintulu Fixed Monitoring Station

Radio Frequency Electromagnetic Fields (RF EMF)

Guideline on the Mandatory Standard for Electromagnetic Field Emission from Radiocommunications Infrastructure

Wireless networks offer infrastructure and connection for ICT services to support modern digital lifestyle. Rapid development of these technologies has significantly improved the performance of cellular networks through deployment of multiple radiocommunications infrastructures such as base stations with shorter transmission distance for providing higher data rate. However, the proliferation of infrastructure and prevalent use of mobile devices have led to growing public concerns over possible health effects from exposure to electromagnetic field (EMF) emission. Hence, careful deployment and effective monitoring of wireless networks are important in ensuring EMF emission does not have negative impact to public health. This includes those in smart cities and communities with dense concentrations of users.

As a regulatory mechanism to ensure industry-wide compliance with a standard on EMF emission as well as to reinforce public confidence, MCMC published "Mandatory Standard for EMF Emission from Radiocommunications Infrastructure, Determination No. 1 of 2010" (MS for EMF) on 24 December 2010.

Due to advancement in cellular technology and new antenna design, MCMC recognised the need for a source of reference to complement and reinforce the MS for EMF. Thus, a "Guideline on the Mandatory Standard for Electromagnetic Field Emission from Radiocommunications Infrastructure" (EMF Guidelines) was published in 2017. The EMF Guideline provides detail procedures and methods to facilitate the NFP and NSP compliance towards the MS for EMF as well as provides requirement for assessment and verification of compliance.

The EMF Guideline was developed in consultation with experts in the field of EMF. It has undergone extensive assessment during development process that includes multiple draft revisions by consultant and relevant stakeholders, as well as public consultation phase. Reference has been made to the latest IEC 62232:2017 Standard as base document while keeping the existing base documents references to ITU-T Recommendations K.52 and K.61 intact⁶⁶.

The Guideline is accessible from the following link:

[http://www.mcmc.gov.my/skmmgovmy/media/General/pdf/Guideline-on-the-Mandatory-Standard-for-Electromagnetic-Field-Emission-\(CTD-No-1-of-2010\).pdf](http://www.mcmc.gov.my/skmmgovmy/media/General/pdf/Guideline-on-the-Mandatory-Standard-for-Electromagnetic-Field-Emission-(CTD-No-1-of-2010).pdf)

⁶⁶ ITU-T Recommendations K.52 accessible from <http://emfguide.itu.int/pdfs/T-REC-K.52-200412.pdf> and ITU-T Recommendations K.61 accessible from <http://emfguide.itu.int/pdfs/T-REC-K.61-200802.pdf>

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MODULE 7: SECURITY AND TRUST



Digital Signature Industry Performance

Under the purview of Digital Signature Act 1997, MCMC is the designated regulatory body that oversees and supervises activities of licensed Certification Authorities (CAs).

MCMC's role in developing Public Key Infrastructure (PKI) is critical to create a reliable digital and trust ecosystem for the Government, business and society. The PKI can assist retail consumers and organisations to prevent identity theft and other online fraud incidents, and subsequently increase safety and confidence in cyberspace or online users.

MCMC established a regulatory regime to promote the use of digital signature and create methodologies of ensuring security of signatures. This is realised by imposing stringent security audit requirement, a WebTrust guideline, to all licensed CAs with audits performed by qualified auditors appointed by MCMC.

WebTrust guideline (Trust Service Principles and Criteria for Certification Authorities) requires an annual performance audit to be performed. This is done based on strict terms of reference which provides the baseline for a control framework to assess the adequacy of the CAs' systems, policies and procedure. By adopting WebTrust guideline, licensed CAs would be WebTrust certified and have the advantage of internationally recognised standing.

Growth of Certification Authorities and Digital Certificates

Digital certificate is an electronic credential that represents the identity of individuals, organisations and computers. Digital certificates are used for online authentication, encryptions and digital signature. The demand for digital certificates is expected to increase in tandem with digital transformation and growth of digital economy.

On 1 September 2017, Raffcomm Technologies Sdn Bhd was appointed by MCMC as the fourth licensed CA. This is in addition to the three licensed CAs currently in operation namely, Pos Digicert Sdn Bhd (Pos Digicert)⁶⁷, MSC Trustgate Sdn Bhd (MSC Trustgate) and Telekom Applied Business Sdn Bhd (TAB).

The entry of this new CA shows that there is no barriers to entry as suitably qualified companies are allowed to compete with existing CAs with innovative business models. With the appointment of a new CA, it is hoped that it can cater to the demand growth of digital certificates and further strengthens PKI in Malaysia.

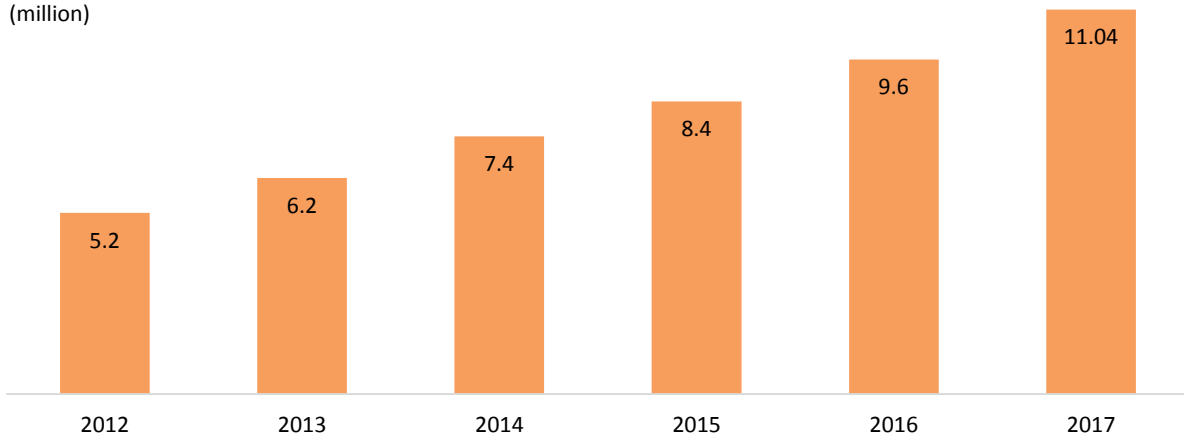
As at end 2017, the number of digital certificates issued in Malaysia was 11.04 million. In which, 93% of the certificates were issued by Pos Digicert, while the remainder by MSC Trustgate and TAB. To date, around four million people have utilised the Pos Digicert service via Inland Revenue Board e-filing services⁶⁸.

⁶⁷ Previously known as Digicert Sdn Bhd.

⁶⁸ NST, Revisit Digital Signature Act to Ensure Relevancy, January 2018.

Digital Certificate Issuance 2012 – 2017

NUMBER OF CERTIFICATES
(million)



Source: Industry

Figure 7.1 Digital Certificate Issuance 2012 – 2017

The major contributor to the usage of digital certificates in Malaysia is the public sector which took up 97.1% of total certificates issued. Most of the Government online application services are supported by the usage of digital certificates to secure online transmission of data via Internet. The remaining 2.8% is issued to corporate sectors such as banking, healthcare and other industries, whilst 0.1% to individuals. This proportion of digital certificates issuance has remained the same and consistently more than 96% usage by the public sector.

Innovation in Digital Signature

Digital Date Time Stamp Services

Recognised Date/Time Stamp (DTS) service is a digital service based on the PKI system, regulated under Digital Signature Act 1997 and the Digital Signature Regulations 1998. Recognised DTS service is a value-added and cost effective digital service that can be provided by licensed CAs to verify existence and prove the integrity of digital files at a particular time as outlined by international standards. DTS is expected to promote the use of PKI to a higher level and become an important component of the digital ecosystem in Malaysia.

The exact date and time sourced from a recognised party is important for legal and commercial use. In line with development of digital services, DTS service has become an essential component of the e-Government tender specification. This development is expected to open new growth opportunities to licensed CAs and improve existing e-Government system and banking sector in Malaysia.

This positive development requires existing licensed CAs to make new investments to provide recognised DTS infrastructure.

Development of Guideline and Certification Framework for Recognised Date Time Stamp Services

Due to high demand of DTS services, MCMC has developed the guideline and certification framework for recognised DTS in Malaysia. The guideline and certification framework covers the principles and requirements of DTS protocol including policies and security requirements associated with CAs' operations that provide recognised DTS or also referred to as Time Stamping Authority.

In order to provide a recognised DTS, Time Stamping Authority needs to collaborate with National Metrology Institute of Malaysia (NMIM) SIRIM as the National Time Keeper to obtain the exact and recognised time source which will be generated through atomic clocks maintained by NMIM SIRIM. Subsequently, it will be integrated with digital signature services provided by Time Stamping Authority.

Digital Certified True Copy Initiative

Digital Certified True Copy (Digital CTC) initiative is a digital document validation service introduced by Companies Commission of Malaysia (SSM), in collaboration with SSM's service provider Big Dataworks Sdn Bhd and Pos Digicert. This collaboration has resulted in transformation through a creative and systematic way. Digital CTC transformed manual document authentication through a combination of statutory imaging technology, digital signature, date time stamping and Quick Response Code (QR code) with cryptography security features. Digital CTC ensures the validity of documents issued by SSM and prevent forgery by irresponsible parties.

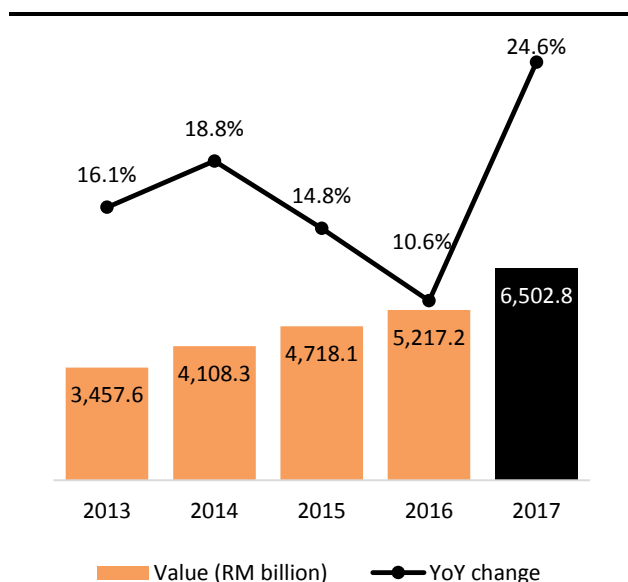
With MCMC's support, SSM made history when it was recognised by the Malaysia Book of Records as the first government agency to implement Digital CTC service.

Trust and Confidence in Internet Banking

Towards promoting consumer confidence to perform online transaction, the Government has implemented various efforts to modernise National PKI. It prevents online security threats and acts as a tool that secure online communication as well as facilitating e-commerce services.

In 2017, the secured national PKI has supported 743.5 million Internet banking transactions, with value of RM6,502.8 billion.

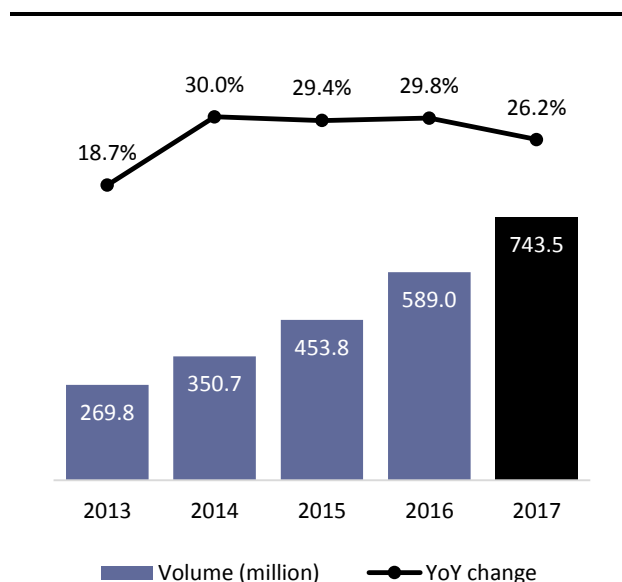
**Internet Banking Value in Malaysia
2013 – 2017**



Source: Bank Negara Malaysia

Figure 7.2 Internet Banking Value in Malaysia 2013 – 2017

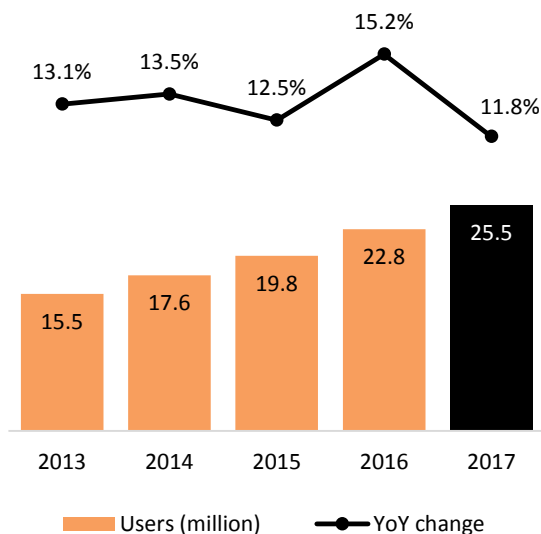
**Internet Banking Volume in Malaysia
2013 – 2017**



Source: Bank Negara Malaysia

Figure 7.3 Internet Banking Volume in Malaysia 2013 – 2017

Internet Banking User in Malaysia 2013 – 2017



Source: Bank Negara Malaysia

Figure 7.4 Internet Banking User in Malaysia 2013 – 2017

In comparison, there were only 21.6 million Internet banking transactions in 2005 and the volume of Internet banking in 2017 was 2.8 times that of 269.8 million in 2013.

Internet banking transaction value over the last five years grew at an average of 17%.

Increased trust and confidence of the public to perform online transactions has generated significant increase in usage. The number of Internet banking users totalled 25.5 million in 2017, or 79.5% of the population.

Cyberattack: Ransomware

On 12 May 2017, a large number of ransomware cyberattacks, dubbed as “WannaCry”, was reported around the world, hitting nearly 100 countries. The malware used in these attacks encrypted files, drops and executed a decryptor tool. Ransom demand between USD300 to USD600 in Bitcoin was demanded by the attackers to decrypt those files⁶⁹. According to Kaspersky Lab’s annual IT security survey⁷⁰, there were 700,000 victims of WannaCry worldwide.

The survey also reported that 65% of businesses hit by ransomware in 2017 said they had lost access to a significant portion of or even all their data.

In Malaysia, MCMC monitored the situation together with other enforcement agencies. MCMC issued a press release to urge Malaysians to take the precautions as follows:

1. Update their software to the latest patch;
2. Ensure that all hosts have enabled endpoint anti-malware solutions; and
3. Immediately backup vital data to an external hard drive or cloud storage service, if they have not done so already.

At the same time, Internet users are advised not to click on any suspicious links and report any incidences to the authorities as quickly as possible.

⁶⁹ Kaspersky Lab, WannaCry ransomware used in widespread attacks all over the world, May 2017. (securelist.com/wannacry-ransomware-used-in-widespread-attacks-all-over-the-world/78351/)

⁷⁰ Kaspersky Lab, Kaspersky Security Bulletin: Story of the Year 2017, November 2017.

MODULE 8: POSTAL AND COURIER



Postal and Courier Services Industry Performance 2017

In 2017, Malaysia's postal and courier services attained 23rd place in Universal Postal Union (UPU)⁷¹ newly devised international level Integrated Index for Postal Development (2IPD). The ranking was based on in-depth analysis of 170 countries and territories of UPU, which covers four development dimensions namely, Reliability, Reach, Relevance and Resilience⁷². Achievement in each dimension demonstrates that postal transformation initiatives have been carried out successfully in the areas of operational efficiency, connectivity and regulatory framework.

UPU is a specialised agency under United Nation (UN) that coordinates postal policies among member nations, in addition to the worldwide postal system. It is the primary forum for cooperation between postal sector players and helps to ensure a universal network of up-to-date products and services. UPU consists of four bodies namely, Congress, Council of Administration, Postal Operations Council and International Bureau⁷³.

Moving forward, the postal and courier services industry need to embrace innovation and business digital transformation in order to respond to the rapid evolution of consumer needs and to remain competitive. In today's digital society, technology adoption in processes enable postal and courier services to efficiently perform their critical roles as an essential physical delivery network in the digital ecosystem.

In light of this, MCMC is committed in overseeing the transformation initiatives to enhance the postal and courier industry.

Postal Services

The key function of MCMC under Postal Services Act 2012 is to ensure the provision of universal postal services in Malaysia. The incumbent, Pos Malaysia Bhd is the licensed postal service provider for both basic and competitive postal services.

Basic postal services, which forms the universal service obligation, covers provision of basic and registered domestic as well as international mail and parcel services. This includes five days a week collection and delivery service with exception in rural areas⁷⁴. There is also a provision of a minimum 1,000 postal outlets nationwide.

In 2017, MCMC continued its initiatives in rural development namely, *Pelan Transformasi Pos Sabah dan Sarawak Fasa 4* (PTPSS) and Address for All Project. Under the PTPSS, appointed Community Postman (225 in Sabah and 225 in Sarawak) delivering mail was further up-scaled to deliver parcels to enable e-commerce for the rural community. Also, a total of 18 Pos on Wheels continue to operate to support postal services for communities in rural areas. Meanwhile, the Address for All project, a national addresses initiative to manage issue of premises with incomplete addresses has created more than 70,000 house numbers since 2016.

⁷¹ UPU, a specialised agency of the United Nations dealing with the international postal development.

⁷² The basic input into 2IPD consists of UPU data, including postal big data, over 3 billion tracking records were checked and analysed, official UPU statistics, and key UPU surveys.

⁷³ UPU, The Universal Postal Union, www.upu.int/en/the-upu/the-upu.html

⁷⁴ Rural areas are depending on reasonable frequency.

Postal services also play a part in boosting economic values and preserving national treasures. In October 2017, *Rumah Api Tanjung Datu*, Sarawak has been given a special postcode 94111 in conjunction with its new face-lift themed “Where Borneo Begins”. For reference, *Rumah Api Tanjung Datu* was built by the British in 1870s and is among the earliest buildings in Malaysia.

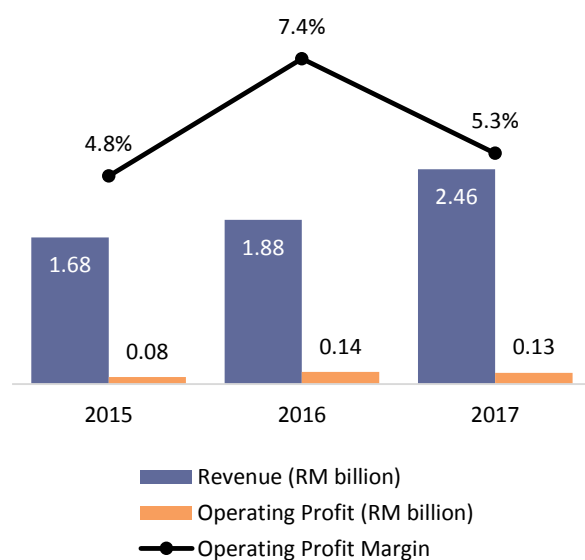
Pos Malaysia Revenue

Pos Malaysia revenue grew by 30.9% to RM2.46 billion in 2017 from RM1.88 billion in 2016. The stronger revenue was attributed to an improvement in its courier and transshipment business as well as the inclusion of logistics and aviation segment contributing 28% to its revenue.

Noteworthy is that, Pos Malaysia completed acquisition of 100% stake in Pos Aviation Group, consisting of KL Airport Services Sdn Bhd and Konsortium Logistik Bhd group of companies in September 2016, with full year financial impact in 2017. The acquisition also enables Pos Malaysia to expand its services beyond last mile delivery. This strategic business direction and extended network would facilitate Pos Malaysia to transform into an integrated logistics service provider.

In 2017, despite a challenging and competitive operating environment, courier segment managed to increase its revenue growth. Pos Malaysia registered a 12.1% hike in courier segment revenue to RM0.74 billion from RM0.66 billion in 2016.

**Pos Malaysia Revenue and Operating Profit
2015 – 2017**



Note: Pos Malaysia revenue adjusted by calendar year

Source: Industry, MCMC

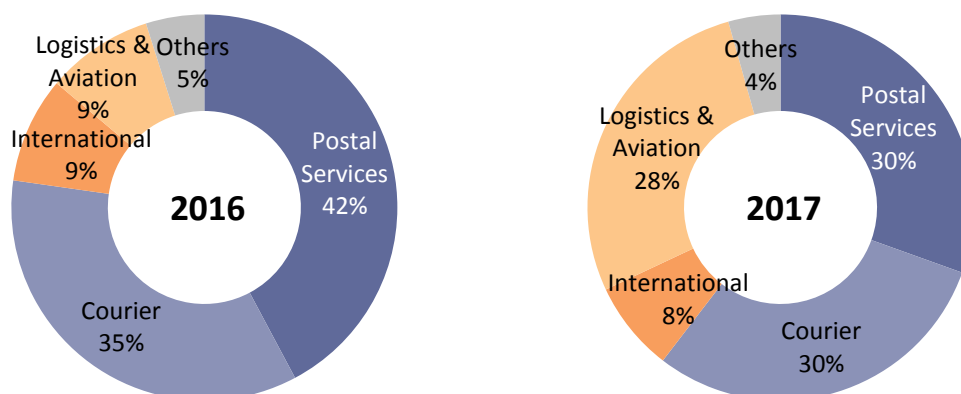
Figure 8.1 Pos Malaysia Revenue and Operating Profit 2015 – 2017

The Group’s international business segment increased by 11.8% in 2017. The higher revenue was due to increase in transshipment volume as more e-commerce merchandise aggregators channelled business to Pos Malaysia due to their competitively priced offerings. For reference, its international business segment comprise a suite of international solutions including e-commerce transshipment services⁷⁵ and direct entry services⁷⁶.

⁷⁵ Transshipment services involve shipment of international goods to an intermediate destination, and then from there to its destination. For example, goods from China to final delivery country in Russia, shall be transit in Malaysia.

⁷⁶ Direct entry service is referred to international shipment sent directly to destination country from country of origin, and does not involve transit in other countries. For example, goods to be delivered to Malaysia from China are directly shipped into Malaysia without transit in other countries.

Pos Malaysia Revenue by Segment 2016 – 2017



Note: Pos Malaysia operating profit adjusted by calendar year.

Source: Industry, MCMC

Figure 8.2 Pos Malaysia Revenue by Segment 2016 – 2017

Pos Malaysia, operating profit declined 7.1% to RM130 million, which translates to operating profit margin of 5.3% (2016: 7.4%). This is due to higher operational costs mainly staff and transportation cost.

In tandem with increase in demand for e-commerce, Pos Malaysia also face heightened competition in their business segments. To mitigate this, it is building close partnerships and collaborations with strategic partners such as Lazada, Tigers Global Logistics (M) Sdn Bhd and AirAsia as well as improving service performance to create brand loyalty.

Pos Malaysia Strategic Development

Pos Malaysia has continued expanding its capabilities towards delivering new products and services in order to meet consumer needs and capitalise on technology changes. This is part of their transition into the digital era featuring enhanced role in the value chain to meet higher demand for e-fulfilment.

Pos Malaysia further developed its infrastructure and service offerings related to e-commerce to various sites across the country pursuant to their strategic initiatives in SCORE 2.0 that began in 2016. SCORE 2.0 addresses the future of Pos Malaysia on various aspects of their business as follows:

- Solution driven by technology;
- Customer centricity;
- Operational efficiency;
- Revenue and geographic diversification; and
- Enabler capabilities.

It involves the implementation of 13 strategic initiatives within e-commerce, logistics, postal and courier as well as corporate components. Following the acquisition of the Pos Aviation Group,

Pos Malaysia added another six strategic initiatives to 19 in total under SCORE 2.0⁷⁷ (Figure 8.3).

Strategic Initiatives under SCORE 2.0			
19 Strategic Initiatives	Digital Mailbox	Supply Chain & Fulfilment	POS ACE Expansion
	E-Commerce	International Postal Hub	Digital Money Services
	Trade Facilitation	Cross-Border e-fulfilment	Big Data Analytics
	Post Ads	Integrated Processing Hub	Digital Business Centre
LCCT Redevelopment Project	Smart Posman	Delivery Optimisation	Project Logistics
	Enhanced Value of Key Estates	Last Mile Delivery Enhancement	Space Utilisation Programme

Source: Industry

Figure 8.3 Strategic Initiatives under SCORE 2.0

Through their strategic plan, Pos Malaysia is to deploy more touchpoints as follows:

- 185 parcel lockers to be installed by March 2018;
- E-commerce warehouse in Section 28, Shah Alam, to be completed in December 2019; and
- Establish more partnerships with e-commerce partners.

With partnership and collaboration as follows, Pos Malaysia is expected to be able to offer an end-to-end fulfilment and last mile delivery services.

In April 2017, Pos Malaysia entered into strategic business collaboration with Tiger Global Logistics for establishing a regional e-fulfilment hub. This would facilitate more cross-border e-commerce activities with Tiger Global Logistics end-to-end e-commerce fulfilment solutions. Tiger Global Logistics is a global logistics and transportation company which specialises in supply chain solutions, e-fulfilment and transportation by air, sea and road.

Under the collaboration, Tiger Global Logistics would have the mandate to manage the entire supply chain process including customs clearance, product handling, pick and pack as well as last-mile delivery. Through this partnership, Pos Malaysia has been receiving volumes from Tiger Global Logistics such as sportswear product for example from Brazilian Jiu-Jitsu and Mixed Martial Arts⁷⁸.

Subsequently, in May 2017, Pos Malaysia entered into smart partnership with e-commerce players such as Lazada on the development of an e-commerce Regional Distribution Centre.

⁷⁷ Pos Malaysia Annual Report 2017.

⁷⁸ IPR Questionnaire 2017.

In June 2017, Pos Malaysia started collaboration with Shopee, a mobile-first ⁷⁹ social marketplace, to provide a free shipping service for online entrepreneurs.

Such strategies signal milestone for Pos Malaysia to tap further into new business opportunities arising from developments in the e-commerce sector.

Postal Services Key Performance Highlights 2017

Postal Services Access

Towards encouraging postal innovative technology, MCMC and Pos Malaysia embarked on a pilot Digital Mailbox initiative to serve the growing digital generation. This initiative is intended to increase speed and efficiency, as well as lower cost of mailing documents by digitalisation. Concurrently, Pos Malaysia is also offering new innovative solutions to consumers via secured automated lockers, self-service machines and kiosks at strategic locations. These increases consumer convenience by allowing them to drop off and self-collect their items anytime.

In enhancing customer satisfaction towards their products and services, Pos Malaysia expanded its touchpoint network by strengthening existing channels and rolling out new channels consisting of 10 Pos Laju EziDrive-Thru, 60 Pos Laju EziBox, 40 Pos Laju Prepaid EziDrop and 21 Pos Laju kiosk. All the touchpoints are located at strategic and high traffic areas that would enable customers to collect or post items at their convenience.

MCMC also have extended postal parcel service at Pusat Internet, hence becoming rural e-commerce fulfilment centre which can reduce the rural e-commerce gap. Four pilot locations are currently operating and more locations will be deployed in 2018.

⁷⁹ Mobile first strategy is trend in website development where designing a website for smartphones, tablets and mobile devices takes priority over desktop web design.

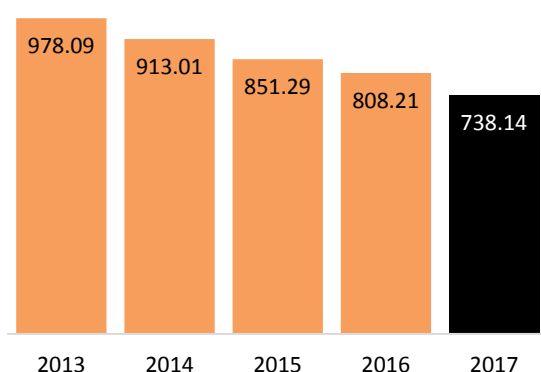
Postal Services Traffic

For domestic services, 738.14 million letter-post items were handled as at end 2017. Compared with 808.21 million letter-post items handled in 2016, there was a decline of 8.7% or 70.07 million items.

On the other hand, 40.82 million letter-post items were handled for international services with 29.65 million issued and 11.17 million items received respectively.

**Pos Malaysia: Letter Post 2013 – 2017
(Domestic Services)**

NUMBER OF LETTER-POST ITEM
(million)

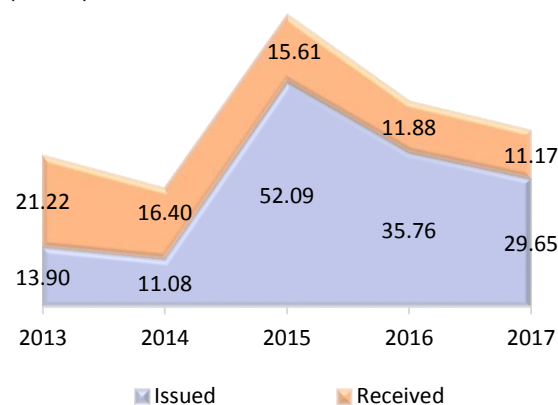


Source: Pos Malaysia, MCMC

Figure 8.4 Pos Malaysia: Letter Post 2013 – 2017 (Domestic Services)

**Pos Malaysia: Letter Post 2013 – 2017
(International Services)**

NUMBER OF LETTER-POST ITEM
(million)



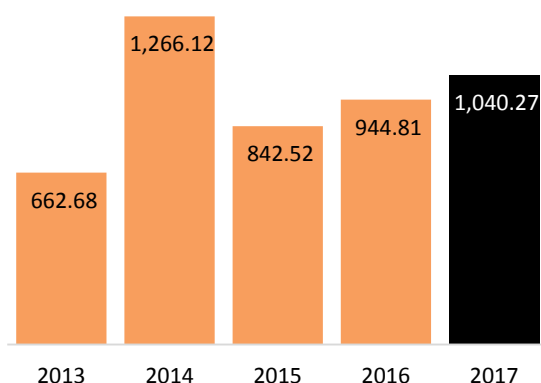
Source: Pos Malaysia, MCMC

Figure 8.5 Pos Malaysia: Letter Post 2013 – 2017 (International Services)

The declining trend in letter-post items for both domestic and international services indicates that there is less demand for letter-post sending. This is due to consumers leveraging on alternative offered by digital communications technology such as email, social networking and other electronic means.

**Pos Malaysia: Parcel 2013 – 2017
(Domestic Services)**

NUMBER OF ORDINARY PARCEL
(‘000)

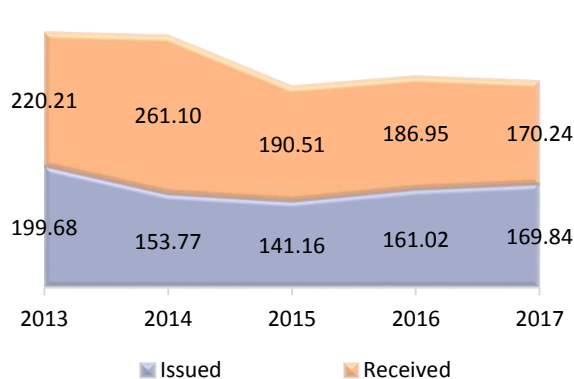


Source: Pos Malaysia, MCMC

Figure 8.6 Pos Malaysia: Parcel 2013 – 2017 (Domestic Services)

**Pos Malaysia: Parcel 2013 – 2017
(International Services)**

NUMBER OF ORDINARY PARCEL
(‘000)



Source: Pos Malaysia, MCMC

Figure 8.7 Pos Malaysia: Parcel 2013 – 2017 (International Services)

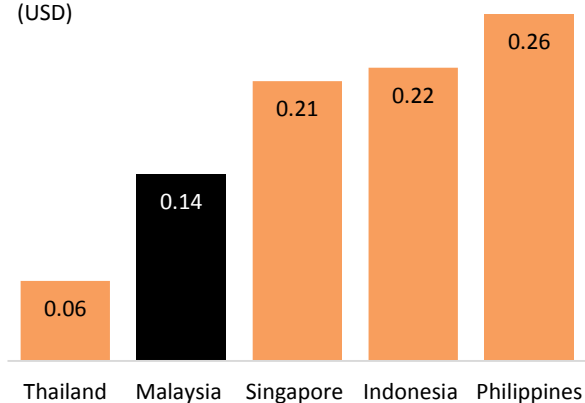
In contrast, there was a growth in volume of parcels, both domestic and cross-border in 2017. Indeed, the number of ordinary parcels for domestic services has gradually increased. As at end 2017, the total number of ordinary parcels increased to 1.04 million compared with 944,806 in 2016.

For international services, the number of parcels issued had increased marginally by 5.5% to 169,839 from 161,016 recorded in the previous year. In contrast, international parcels received, reduced 16,710 or 8.9% to 170,236 compared with 186,946 previously (Figure 8.7). The decline in ordinary parcel volume in Malaysia has been partially offset by the growing number of express services.

Postal Services Tariff

Comparison of Domestic Letter Tariff (up to 20gram)

TARIFF
(USD)



Source: Industry (as at 2016)

Figure 8.8 Comparison of Domestic Letter Tariff (up to 20gram)

In comparison with neighbouring countries, Malaysians enjoy relatively affordable prices in postal services.

For instance, current tariff for a 20gram ordinary domestic parcel is regulated at RM0.60 (about USD0.14). This basic postal service tariff is lower than in Singapore, Indonesia and the Philippines as shown in Figure 8.8.

Sustainable Development in Postal and Courier Services

Road Safety Championship 2017

Road Safety Championship was conducted for the 4th consecutive year since 2014. The aim is to reduce the number of road accidents and encourage drivers to build professionalism and a high level of proficiency. Such postal and courier services competence is in line with the UN sustainable development goals to reduce accident fatalities by 50% as well as the Government's objective to reduce 50% road accident fatalities by 2020⁸⁰.

In 2017, 12 companies participated in the competition. The Lorry Driver Category was created as an additional improved element to emphasise road safety for lorry drivers. GD Express Sdn Bhd emerged as the inaugural winner of this new category.

The Rider Category was won by Pos Malaysia whilst the Van Category and the Overall Champion was bagged by Yamato Transport (M) Sdn Bhd.

Another new element of this annual event is the safety campaign "Ikrar Kami". This campaign is a pledge by the postal and courier services industry workforce to become civic-minded drivers and riders based on the five principles of Slow, Secure, Silent, Sharp and Set.

Philately

Philately is important as part of the national preserving of culture, heritage and unity as well as history of Malaysia and its sovereignty. In 2017, MCMC approved 24 vibrant special, commemorative and definitive stamp theme (Figure 8.9). By stamp theme, 16 stamps were issued in special type (2016: 13). Seven stamps were issued in commemorative type and one was in definitive type.

The year 2017 marked a major milestone in Malaysian philately history with issuance of the first ASEAN stamp. The stamp features ASEAN Post's new logo and carries a national flower-theme stamp series to commemorate the 50th ASEAN anniversary. Other ASEAN member countries also used their respective national flowers for their stamps. This cooperation portrays a clear symbol of ASEAN unity.

⁸⁰ Road Safety Plan of Malaysia 2014 – 2020, www.piarc.rmto.ir/DocLib6/7-JKJR-Action-to-road-safety.pdf

Stamps Issued in 2017	
Type	Theme
Special	<ul style="list-style-type: none"> ▪ Malaysia Serama ▪ Festival Food Series – Chinese ▪ Festival Food Series – Kadazandusun & Dayak ▪ Festive Greeting ▪ Coronation of DYMM Seri Paduka Baginda Yang Di Pertuan Agong XV - Sultan Muhammad V ▪ Festival Food Series – Malay ▪ Malaysian Batik ▪ Mass Rapid Transit (MRT) ▪ SEA Games 2017 ▪ Special Edition Series III – Seri Paduka Baginda Yang Di Pertuan Agong ▪ Negaraku ▪ World Post Day (Pos-silang) ▪ Festival Food Series – Indian ▪ Tourists Destinations – Pahang, Perak and Terengganu ▪ Children's Holiday Activities (Stamp Week 2017: 4 – 10 December 2017) ▪ #KitaJuara – SEA Games 2017
Commemorative	<ul style="list-style-type: none"> ▪ 100th Anniversary Chung Ling High School ▪ 100th Anniversary of Palm Oil Industry ▪ 50th Anniversary of ASEAN – ASEAN Post (National Flower) ▪ 150 Years Straits Settlements Stamps – Provisional Issue ▪ Royal Visit of TRH The Prince of Wales & The Duchess of Cornwall – 60 years Anniversary of Diplomatic Ties Malaysia – United Kingdom ▪ 150th Anniversary Sarawak State Legislative Assembly ▪ 150 Years Straits Settlements Stamps – Permanent Issue
Definitive	<ul style="list-style-type: none"> ▪ National Definitive Series

Source: MCMC

Figure 8.9 Stamp Issued in 2017

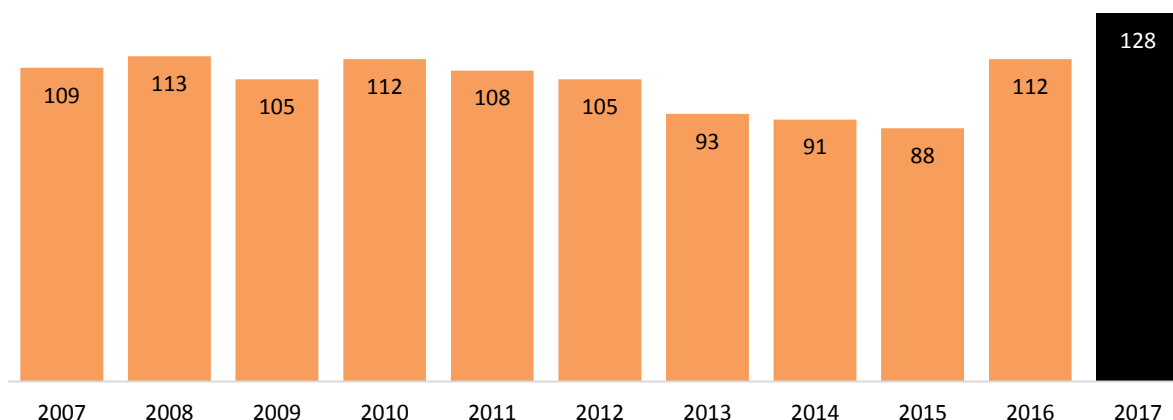
Courier Services

In 2013, all courier service providers were successfully migrated to the new licensing regime that classified courier licence into class framework. It is an important milestone for courier service providers to uplift themselves and hence the industry to further improve their competitiveness and eventually attracting additional capital investment.

The rationalisation of the courier companies into class licensing framework firmed up the sector to accommodate new entrants since the e-commerce boom over the last few years.

Due to the changing landscape, the focus of consumer centricity in business such as prompt delivery upon sale done and supporting technology advancement attracted companies to setup their own physical delivery network for example Lazada Express (M) Sdn Bhd.

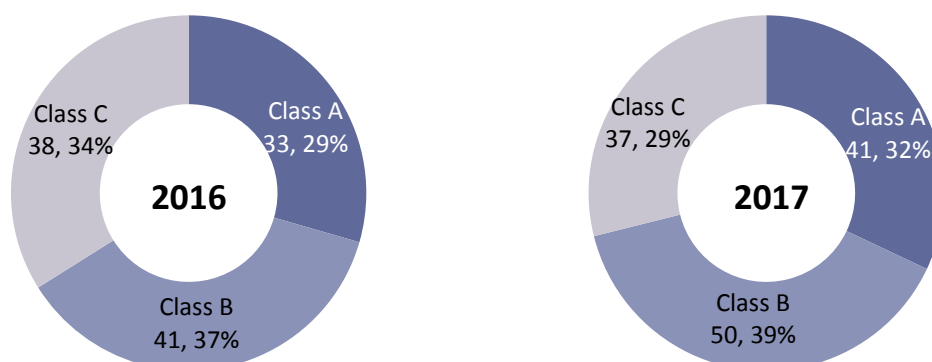
Number of Courier Licences 2007 – 2017



Source: Industry, MCMC

Figure 8.10 Number of Courier Licences 2007 – 2017

Courier Licences by Class 2016 – 2017



Source: MCMC

Figure 8.11 Courier Licences by Class 2016 – 2017

The rapid growth of e-commerce is positive for existing courier service providers to improve their services in the face of competition from new entrants. Along with technology advancement, more non-generic (or cross channel verticals) businesses are venturing into the courier industry. This includes online e-commerce and home shopping players as well as cybersecurity specialist and newspaper publisher.

Development in digital lifestyle and online shopping also drives courier service providers to remain resilient in the industry. Towards this end, most of the courier service providers will continue to invest in delivery network infrastructure, IT hardware and software and also hub facilities to handle increase in business volume as well as to improve service performance⁸¹.

⁸¹ IPR Questionnaire 2017.

Courier Services Licence by Class

There were 128 courier services licensees in 2017 compared with 112 in 2016. These include 41 Class A licensees (32%) which increased by eight licensees from 33 in 2016. Meanwhile, Class B licensees increased by nine to 50 (2016: 41 licensees) and the remaining 37 are Class C licensees (2016: 38 licensees).

Class Licence	New Licensees	Upgraded Licensees From Other Class Category
A	<ul style="list-style-type: none"> ▪ DHL e-Commerce (Malaysia) Sdn Bhd ▪ MIG Pictures Sdn Bhd ▪ Pgeon Express Sdn Bhd ▪ Logistic Worldwide Express (M) Sdn Bhd ▪ Naluri Bumi (M) Sdn Bhd ▪ Parcel To Post Services Sdn Bhd ▪ CJ Century Logistics Sdn Bhd 	<ul style="list-style-type: none"> ▪ FMX (M) Sdn Bhd (from Class B)
B	<ul style="list-style-type: none"> ▪ ABS Xpress (M) Sdn Bhd ▪ Asas Gemilang Resources Sdn Bhd ▪ B.P. Ambulatory Sdn Bhd ▪ JEX Express Solutions Sdn Bhd ▪ Landbridge Haulage (M) Sdn Bhd ▪ Karhoo Courier Sdn Bhd ▪ Sin Chew Media Corporation Bhd ▪ PacknPost2u Sdn Bhd ▪ Pro Office Solutions Sdn Bhd ▪ Soonest Logistics (M) Sdn Bhd ▪ Titus Express Delivery Sdn Bhd 	<ul style="list-style-type: none"> ▪ MLH Services Sdn Bhd (from Class C in 2016) ▪ Centurion Freight Express Sdn Bhd (from Class C in 2016)
C	<ul style="list-style-type: none"> ▪ Kaizo Global Express Sdn Bhd ▪ Multi Cargo Express Sdn Bhd ▪ NizTheWiz Technology Sdn Bhd 	-

Class A licensees are allowed to provide domestic and international courier services, whereas Class B licensees are allowed to operate nationwide. Another category under Class C licensees are allowed to operate courier services intra state.

Notably, entrance of new companies into Class A would intensify the competitive courier market to compete at both local and international level. For instance, FMX (M) Sdn Bhd, a Class B licensee upgraded its licence to Class A in 2017. FMX (M) Sdn Bhd owns a network in strategic locations in Peninsular Malaysia, East Malaysia and Brunei. Class A licence allows a company to extend their courier services outside Malaysia such as Brunei and Thailand.

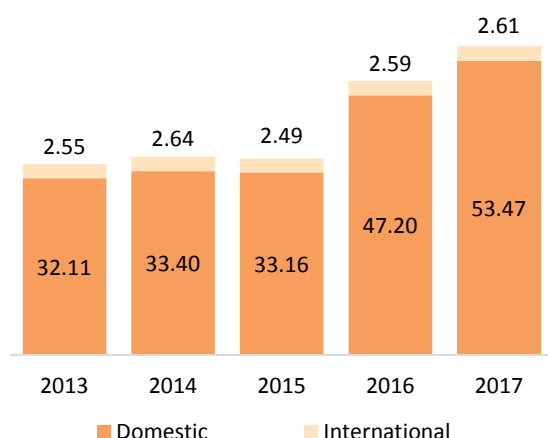
In 2016, two other courier companies have upgraded their licences from Class C to Class B namely, Centurion Freight Express Sdn Bhd and MLH Services Sdn Bhd. These two companies have expanded their courier services footprint in the market, beyond their previous existing operation only within Klang Valley.

Courier Services Traffic

E-commerce is one of the major drivers of domestic and international courier services traffic. Figure 8.12 shows total volume for document in domestic services was 53.47 million, higher compared with 47.2 million in 2016. International services also increased to 2.61 million from 2.59 million. This was due to the rise in e-commerce which has contributed consistently to courier services industry.

Courier Services Traffic 2013 – 2017 (Document)

NUMBER OF DOCUMENT
(million)

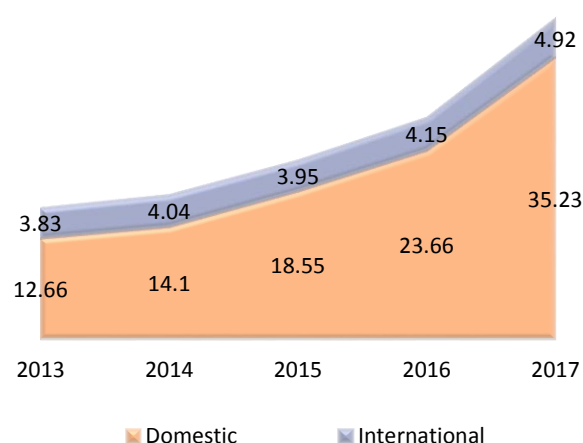


Source: MCMC

Figure 8.12 Courier Services Traffic 2013 – 2017 (Document)

Courier Services Traffic 2013 – 2017 (Parcel)

NUMBER OF PARCEL
(million)

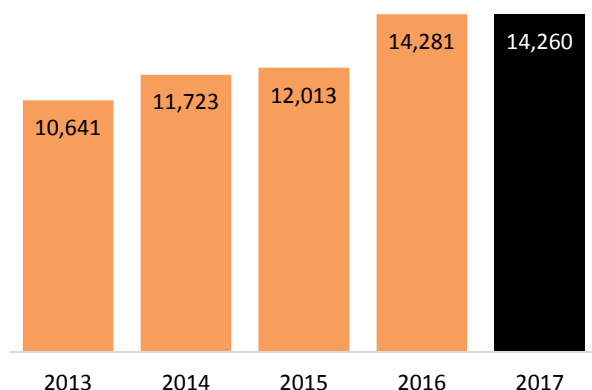


Source: MCMC

Figure 8.13 Courier Services Traffic 2013 – 2017 (Parcel)

The MCMC Internet Users Survey 2017 indicated increased e-commerce participation by individual consumers at 48.8% compared with 35.3% in 2016. This continued to support steady growth of parcel that generated from online shopping activities as shown in Figure 8.13. Courier traffic for parcel reached 35.23 million domestically and international services increased to 4.92 million for the same period.

Employees in Courier Services Industry 2013 – 2017



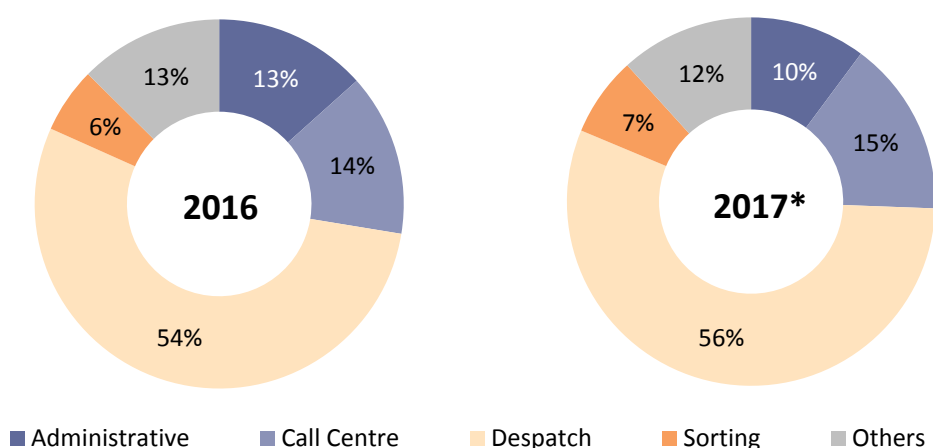
In 2017, total number of employees in courier services industry slightly reduced to 14,260 from 14,281 in the previous year.

The total number of employees increased by 34% since 2013 to meet fulfilment demand in e-commerce delivery services.

Source: MCMC

Figure 8.14 Employees in Courier Services Industry 2013 – 2017

Employees in Courier Services Industry by Job Function 2016 – 2017



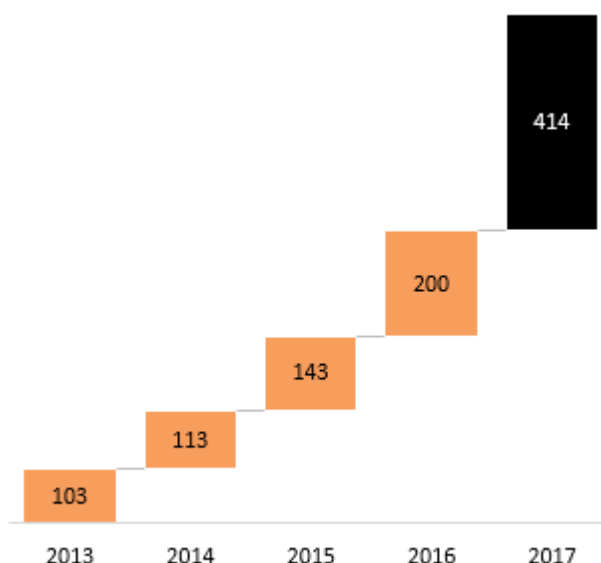
Source: MCMC

Figure 8.15 Employees in Courier Services Industry by Job Function 2016 – 2017

As the parcel deliveries through courier services became prevalent amongst consumers, the despatch categories constituted 56% or 7,945 employees in 2017 (2016: 54%). Call centre constitutes 15% or 2,199 employees in 2017 compared with 2,030 in 2016. For sorting category, the proportion increased to 7% in 2017, that is 992 from 818 employees. Whilst, other categories that consist operation centre, sales, financial and customer service have decreased to 1,674 or 12% compared with 1,797 in 2016.

Postal and Courier Services Industry Consumer Complaints

Total Complaints Received by MCMC 2013 – 2017



Source: MCMC

Figure 8.16 Total Complaints Received by MCMC 2013 – 2017

Consumer complaint is one of the parameters to improve service performance and customer experience through feedback mechanism. As the courier services landscape changes with increasing business to business (B2B), and business to consumer (B2C) base, the customer expectations also changes. Consequently, complaints increase.

In 2017, MCMC received 414 complaints on postal and courier services. This is more than double from 2016 where 200 complaints were received.

By type of complaints, poor service⁸² recorded the highest number of complaints received in 2017, that is, 131 complaints compared with 70 in 2016. As shown in Figure 8.17, the top three complaints are poor services, late delivery and lost item. These constitute a total of 79% of all complaints received in 2017. Notably, late delivery is one of the most challenging issue to manage especially during peak seasons where high volume of items are processed. Lost items complaint followed closely with 96 cases cited in 2017.

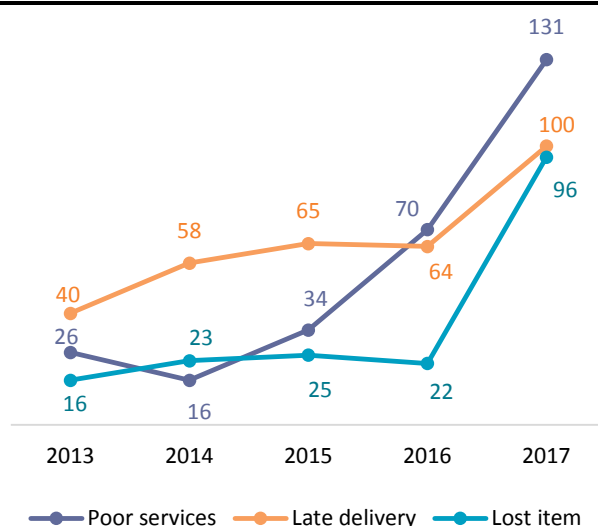
Types of Complaint Received by MCMC 2013 – 2017										
Type	2013		2014		2015		2016		2017	
	Number	(%)	Number	(%)	Number	(%)	Number	(%)	Number	(%)
Poor service	26	25.2%	16	14.2%	34	23.78%	70	35.0%	131	31.6%
Late delivery	40	38.8%	58	51.3%	65	45.5%	64	32.0%	100	24.2%
Lost item	16	15.5%	23	20.4%	25	17.5%	22	11.0%	96	23.2%
Not satisfied with customer service	6	5.8%	11	9.7%	10	7.0%	17	8.5%	28	6.8%
Not satisfied with service price or refund	4	3.9%	1	0.9%	1	0.7%	10	5.0%	9	2.2%
Behaviour of delivery personnel	4	3.9%	2	1.8%	4	2.8%	3	1.5%	8	1.9%
No postal service	-	-	-	-	-	-	-	-	13	3.1%
Others	7	6.8%	2	1.8%	5	3.5%	14	7.0%	29	7.0%
Total	103	100	113	100	143	100	200	100	414	100

Source: MCMC

Figure 8.17 Types of Complaint Received by MCMC 2013 – 2017

⁸² Poor service comprises items received in poor conditions such as damage or broken due to mishandling of items.

Top Three Complaints Trend 2013 – 2017



Source: MCMC

Figure 8.18 Top Three Complaints Trend 2013 – 2017

The aspect of quality in e-fulfilment will continue to be a main focus, which ensures courier service providers offer the best in class services for last mile delivery. One of the ways to improve quality is for courier service providers to obtain feedback from customers through their internal customer satisfaction survey⁸³.

Nonetheless, the number of complaints is expected to increase further in the coming years in line with the upsurge of e-commerce activities translating into increasing number of items delivered.

⁸³ Response received from IPR 2017 questionnaire.

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MODULE 9: OUTLOOK 2018

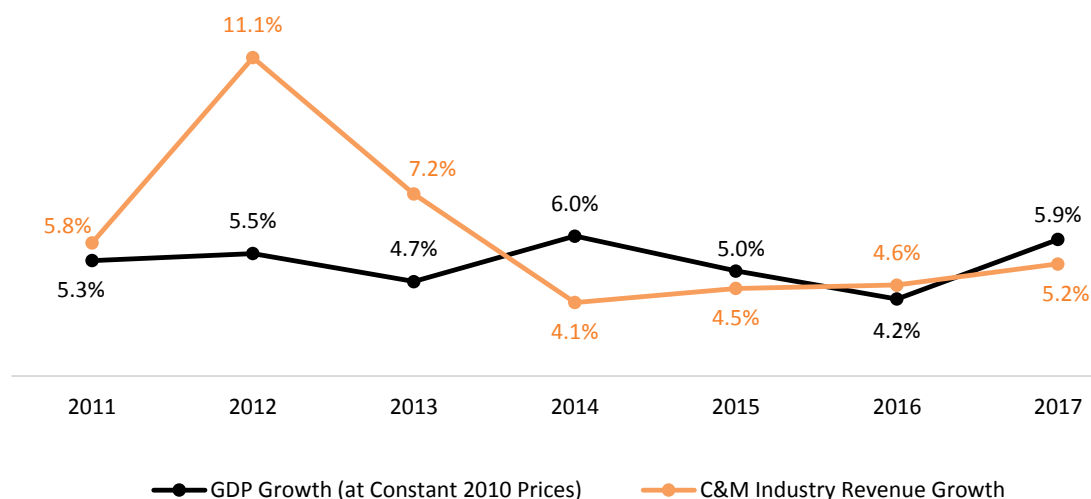


C&M Industry Outlook

In 2017, the C&M industry based on domestic revenue grew 1.2% to RM50.67 billion compared with 0.9% growth previously. For 2018, revenue is expected to remain steady, driven mainly by strong consumer demand for C&M services. Strategic investment in Capex by service providers would effectively ensure infrastructure readiness and service quality going forward.

Moreover, the service providers venturing into SMEs markets to support digitalisation process by adoption of ICT in their business operations would also add to positive earnings impact.

Malaysia GDP vis-à-vis Industry 2011 – 2017



Note 1. In 2014, the GDP growth is relatively higher boosted by improvement in external trade performance and expansion in the domestic oriented industries, mainly in the services, manufacturing and construction sectors.

2. C&M industry revenue growth for 2015 and 2016 were reinstated.

Source: Department of Statistics Malaysia, Industry, MCMC

Figure 9.1 Malaysia GDP vis-à-vis Industry 2011 – 2017

Connectivity and Affordability

In an effort to generate new economic avenues and ensure sustainable digital economy, the Government continues to emphasise quality connectivity and affordability of C&M services. In 2018, service providers are expected to continue to deploy resources for fibre infrastructure, offering higher speed connectivity. This is guided by the Government's initiative to double the speed of fixed broadband and further expand the network reach into rural areas. At the same time, this project aims to ensure the safety and security of the nation's strategic and critical infrastructure.

In addressing affordability, fixed broadband service providers have continued their efforts in upgrading their residential fibre subscriptions; doubled the speed at the same price in 2017. This is also towards meeting the target of entry level broadband prices to 1.14% of GNI in 2018.

Also, MCMC in 2017 released the Commission Determination on Mandatory Standard on Access Pricing to regulate prices of wholesale services. We foresee that the service providers will take advantage of this price reduction to supply competitive high speed broadband services to consumers. This in turn would result in at least 50% reduction of broadband retail prices in coming years in addition to promote sustainable competition in the industry.

Improving Customer Experience

MCMC is in the process of spectrum reassignment for 700MHz frequency bands. These bands are currently used for analogue broadcasting service in Malaysia and is expected to be made available for mobile broadband services using LTE technology and beyond 1 January 2019.

Service providers are to ensure provision of higher mobile broadband speed of minimum 30Mbps as well as enhance quality of service and service level availability.

Service providers have been committed in network optimisation for both voice and data, and they are expected to continue with these while leveraging analytics for proactive customer experience management. Service providers have offered 4.5G service in 2017 which has twice the speed of 4G services for better data services. Trials on 5G conducted by service providers and vendors seek to achieve speeds of over 1Gbps over the wireless networks.

Strategies such as RAN sharing and fiberisation of backhaul have also improved network quality and subsequently, customer experience.

Industry Verticals to Embrace Digital Transformation

The C&M industry plays a pivotal role in providing building blocks for access, interconnectivity and applications. Coupled with the wide availability of technologies and devices such as mobile, artificial intelligence, big data, data analytics and cloud, it is envisioned that these support and enable the fourth Industrial Revolution⁸⁴ in the country.

With efficiency boost from smart networks offering greater network capacity and smart sensors in the eventual Internet of Things, businesses can capitalise and leapfrog cost efficiencies. Hence, as the digital era features speed and agility as competitive factors, industry verticals tap digital platforms for enterprise transformation and sustainable businesses.

Nonetheless, these connected systems pose a threat to security and privacy if not managed properly. Users, service providers and all stakeholders need to prioritise security as well as safeguard private and personal data.

Driving Digital Transformation

Digital transformation is poised to drive operational efficiency and increase customer engagement for enterprises from industry verticals. Enterprises need to reconcile their digital change strategy with short and long-term financial goals for sustainability and better success rate in their digital transformation journey.

Hence, the digital transformation drivers including the C&M service providers, need to continue with their digital innovation in keeping pace with the demand expected in 2018.

⁸⁴ The fourth Industrial Revolution is an overarching industrial transformation that covers every aspect of industries and economic activities including every aspect of living. It is a total transformation of all sectors into new system and/or way of life that will change the way we do businesses. Current technological advances at times also considered as “disruptive technologies” due to the convergence of the physical, digital and biological worlds. (Source: Ministry of International Trade and Industry, Transforming Industry, Industry 4.0).

Moving forward, we expect there will be intense competition as service providers strive to retain their customers. Thus, it is opportune for the service providers to consider investing in areas related to cognitive computing, blockchain and global integration⁸⁵ for revenue diversification.

Conclusion

Digital transformation and disruptive technologies are here to stay. These developments can be capitalised by strategically adopting ICT services into supporting operations and tapping benefits from enhanced business models enabled by technology.

Also, policy and new regulatory framework plays an important role to manage orderly industry development. All stakeholders need to work together to ensure new strategies and best practices pave the way for us to achieve Smart Digital Nation.

Moving forward, service providers together with MCMC should continue to drive digital transformation and reap far reaching benefits. Also, moving to fast-growing adjacent markets such as content or financial services and new markets in IoT and others in the pipeline can indeed prove to be highly beneficial for advancing C&M industry services and its returns.

⁸⁵ IBM, Reimagining Telecommunications with Blockchains, January 2018.

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LIST OF ABBREVIATIONS

3G	3 rd Generation
4G LTE	4 th Generation Long Term Evolution
5G	5 th Generation
A	
ACE	“Access”, “Certainty”, “Efficiency”
Adex	Advertising Expenditure
ADSL	Asymmetric Digital Subscriber Line
AMEC	Association of Malaysian Express Carriers
AOA	Angle of Arrival
ARPU	Average Revenue Per User
ASP	Applications Service Provider
ASEAN	Association of Southeast Asian Nations
B	
B2B	Business to Business
B2C	Business to Consumer
BAS	Broadband Access Service
C	
C&M	Communications and Multimedia
CA	Certification Authority
CAGR	Compound Annual Growth Rate
CASP	Content Applications Service Provider
CCTV	Closed-circuit television
CFM	Communications and Multimedia Consumer Forum of Malaysia
CIDF	Creative Industry Development Fund
CMA	Communications and Multimedia Act 1998
CMCF	Communications and Multimedia Content Forum of Malaysia
CoP	Complaint Online Portal
CSSR	Call Setup Success Rate
D	
DCR	Dropped Call Rate
DEL	Direct Exchange Line
DFTZ	Digital Free Trade Zone
DTS	Date Time Stamp Services
DTTB	Digital Terrestrial Television Broadcasting
E	
EMF	Electronic Magnetic Fields
F	
FAMA	Federal Agricultural Marketing Authority
FAQ	Frequently Asked Questions
FMM	Federation of Malaysian Manufacturers
FTA	Free-to-Air
FYE	Fiscal Year End
G	
GA	Government Agency
GCC	General Consumer Code of Practice for the Communications and Multimedia Industry Malaysia
GDP	Gross Domestic Product
GLC	Government-linked Company
GLIC	Government-linked Investment Company
GPRS	General Packet Radio Services
H	
HSBB	High Speed Broadband

I	
iDTV	Integrated Digital TV
ICMS	Integrated Complaint Management System
ICT	Information and Communications Technology
IoT	Internet of Things
IP	Internet Protocol
ISP	Internet Service Provider
ITU	International Telecommunication Union
J	
JAKOA	Department of Orang Asli Development
K	
KKMM	Ministry of Communications and Multimedia
Kbps	kilobits per second
KLIA	Kuala Lumpur International Airport
L	
LDC	Least Developed Countries
LTE	Long Term Evolution
M	
M&A	Mergers and Acquisitions
MARA	<i>Majlis Amanah Rakyat</i>
Mbps	Megabits Per Second
MNO	Mobile Network Operator
MRT	Mass Rapid Transit
MVN	Mobile Virtual Network
MyIX	Malaysia Internet Exchange
N	
NASMOC	National Spectrum Monitoring and Control System
NFC	Near Field Communication
NFP	Network Facilities Provider
NGOs	Non-Governmental Organisations
NSP	Network Services Provider
NSU	National Strategy Unit
O	
OCR	Optical Character Recognition
OTT	Over-the-Top
P	
PCS	Public Cellular Service
PIKOM	<i>Persatuan Industri Komputer dan Multimedia</i>
PKI	Public Key Infrastructure
PTPSS	<i>Pelan Transformasi Pos Sabah dan Sarawak Fasa 4</i>
Q	
QoS	Quality of Service
QR Code	Quick Response Code
R	
RAN	Radio Access Network
RBB	Rural Broadband
RFID	Radio Frequency Identification
S	
SB	Statutory Bodies
SGOV	State Government
SHF	Super High Frequency
SIM	Subscriber Identity Module
SME	Small and Medium Enterprises
SMS	Short Messaging Service
SSM	Companies Commission of Malaysia
STEM	Science, Technology, Engineering and Mathematics

SUBB	Suburban Broadband
T	
TAB	Telekom Applied Business Sdn Bhd
TDOA	Time Difference of Arrival
U	
UN	United Nations
UPU	Universal Postal Union
USD	United States Dollar
USP	Universal Service Provision
V	
VR	Virtual Reality
VoIP	Voice over Internet Protocol
W	
WBAS	Wireless Broadband Access Service
WTSA 12	World Telecommunication Standardisation Assembly
Y	
YoY	Year on Year

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