Suruhanjaya Komunikasi dan Multimedia Malaysia
Malaysian Communications and Multimedia Commission

DIGITAL CONNECTIVITY

Industry Performance Report 2015

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 2015.

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CHAIRMAN'S STATEMENT

Consumers' continued demand for communications services has resulted in a stable communications and multimedia (C&M) industry, albeit revenue growth of 4% to RM62 billion in 2015. The steady performance enabled the industry to capture nearly RM200 billion market capitalisation, which is about 12% of Bursa Malaysia market capitalisation. This encouraging performance is expected to be among the main factors safeguarding investor confidence. Indeed, I believe communications services will remain a key contributor to future growth for the country.

Expansion of Broadband Infrastructure

In 2015, the national household broadband penetration rate reached 77.3%, exceeding the 75% target set in the 10th Malaysia Plan 2010 – 2015. This was also contributed by the aggressive deployment of both fixed and mobile broadband. The 4G LTE roll out achieved 53.6% population coverage, ahead of the 50% target set for 2017. This roll out by the service providers serves to improve quality of service, Internet access and connectivity for enhanced broadband experience.

These developments bring us closer to achieving the Government's target for 95% populated areas covered by broadband infrastructure by 2020. The target speeds are set at 100Mbps for urban households and at least 50% of suburban and rural households with 20Mbps. The connectivity capacity to international destinations is also being increased. These changes underway complement the High Speed Broadband Project Phase 2 (HSBB2) and Suburban Broadband Project (SUBB) towards achieving the 11th Malaysia Plan 2016 – 2020 targets.

More Affordable Broadband Packages

As we all know, broadband services take up are highly correlated to affordability. From this perspective, the service providers have moderated broadband prices for basic fixed and mobile broadband. Earlier in 2015, the entry level plans for fixed broadband started at RM38 per month for 1Mbps and data quota of 1GB. On the other hand, mobile packages started at RM25 per month for 1GB.

Towards the end of the year, due to intense competition, the service providers have introduced innovative packages which were more competitive and affordable to users. These included higher data quota, free content and applications.

Smart Community Initiatives

The Smart Community programme starts at grass root level, champions Information and Communications Technology (ICT) at districts. This is to identify and push ICT usage through digital services. In this way, we can focus more effectively on social inclusion and empowering the community.

The Smart Community pilot was initiated in Kemaman, Terengganu. Ensuing will be the development of smart communities in other districts nationwide. These would represent the building blocks for national level smart nation agenda.

MCMC Strategic Plan 2016 – 2020

Moving towards 2020, MCMC has developed a Strategic Plan 2016 – 2020, which has strategic goals and objectives to boost industry growth. The Plan serves as a guide to industry stakeholders, which include service providers, ministries, investors and end users.

The Plan has seven policy thrusts namely in the areas of network and infrastructure; enabling platforms such as national digital identification platform; applications and content to stimulate growth of digital services. Other thrusts are user protection and empowerment; human capital development especially rural communities; ASEAN harmonisation and network security improvement.

The seven policy thrusts are further cascaded into 17 initiatives and supported by 127 programmes. The Strategic Plan 2016 – 2020 details are being finalised for release soon.

In the review of the Communications and Multimedia Act 1998 (CMA), the converged infrastructure approach remains intact. MCMC will continue to ensure a strong and progressive regulatory framework for development of C&M services. Focus areas of the review included service quality and instituting safeguards for online content and social media users.

In light of the rapid development of C&M industry, this review is timely with the aim to facilitate an environment conducive for the industry to provide robust digital services. As the nation goes into gear to tap the opportunities arising from the digital revolution, the MCMC will continue to collaborate with industry players and pursue cross sector co-regulation to promote digital services.

Dato' Sri Dr. Halim Shafie
Chairman
Malaysian Communications and Multimedia Commission

EXECUTIVE SUMMARY

In 2015, the C&M industry has performed reasonably well, recording 4% growth in revenue to RM62.04 billion from RM59.44 billion. This steady performance of the C&M industry was contributed mainly by telecommunications with 77% revenue share, broadcasting 10% and the remaining from postal sector and others including ACE market, digital signature and non-public listed licensees.

In terms of capital market valuation, the C&M industry market capitalisation marked RM196.69 billion as at end 2015. This represents 11.6% of the Bursa Malaysia market capitalisation of RM1,694.78 billion. However, the industry posted decline in market capitalisation by 6% due to volatile market amid a series of challenging economic factors.

In 2015, the 12 CMA licensees listed through holding companies on the ACE Bursa Malaysia garnered revenue of RM0.8 billion, with market capitalisation surpassing RM2.2 billion (2014: revenue of RM0.7 billion; market capitalisation of RM2 billion).

Increasing connectivity and digital access

From the connectivity and services perspectives, Malaysian broadband subscriptions have reached 30.8 million, taking the national household penetration rate to 77.3% by the end 2015. It is worth noting that the 4G LTE population coverage has achieved target of 50% population coverage two years earlier than target, that is, reaching 53.6% population coverage as at end 2015.

The fibre broadband subscriptions in Malaysia totalled 1.02 million as at end 2015. This is a significant increase of 18.6% compared with 0.86 million in 2014, mainly due to the successful roll out of the HSBB projects that have accelerated the take up of broadband services.

Direct Exchange Line (DEL), or fixed telephony, has declined since its peak in 2010, with penetration of 27.9 per 100 households in 2015. The decline has been partly offset by fixed broadband take up which offers bundled voice services.

On mobile subscriptions, the penetration rate is at 143.8% in 2015. By service provider market share, Maxis constituted 28.1%, followed by Celcom 27.9%, DiGi 27.2% and U Mobile 8.4%. In addition, mobile virtual network operators (MVNOs) in total captured the balance 8.4% mobile subscription market share. It is noted that the MVNO market is still slowly expanding. MVNO subscriptions in 2014 captured 8.2% market share.

In view of the increased subscriber base in the niche markets, MCMC is of the view that additional steps need to be taken to ensure protection of consumers. In this regard, the Mandatory Standard for the Provision of Services Through a Mobile Virtual Network was registered by MCMC on 13 October 2015 and took effect on 15 January 2016. This Mandatory Standard sets the minimum requirements for consumer protection on services offered by MVNOs. In addition, the listing of the MVNO services in the Access List is for the long term benefit of end users.

Multi-platform and multi-screen supporting content delivery

Over the past few years, broadcasters and telecommunications service providers have progressively provided new services including OTT platforms to deliver content. These service providers have also leveraged on digital solutions for the convenience of their audience, sharing content with other service providers and ventured into TV Shopping as a means to increase revenue base.

It is interesting to note that Malaysians continue to be fond of viewing TV. In 2015, Nielsen indicated that Malaysians spent a daily average of 3 hours 50 minutes on TV, 11 minutes higher than that recorded in 2014. As content is now made available for multi-platform and multi-screen, broadcasters indicated that their popular programmes aired across traditional TV platforms are also gaining traction via the Internet platform.

In 2015, the number of Pay TV subscriptions was at 5.65 million, up 8.4% compared with 5.21 million in 2014. Pay TV service providers in Malaysia deliver a wide choice of thematic channels or channels specialising in particular programmes such as movies, news and sports. In addition, the Pay TV service providers are offering add-on and value added services; akin to development worldwide. Such services have enhanced viewing experience, increased viewers appeal and retained customers.

Digital services and enablement platforms

MCMC seeks to promote new strategic areas such as digital services and data enablement platforms as key initiatives. The strategic initiatives involving digital services and data enablement platform are expected to unlock greater value across the public and private sectors and across all layers of the Malaysian digital economy.

In this respect, MCMC expects to play significant roles in the three key enablement platform initiatives namely digital ID, open data and mobile payment. MCMC plans to undertake these through an integrated approach, by way of collaboration with multiple stakeholders from different sectors.

Also, in promoting and encouraging the use of digital services and applications, MCMC has launched a smart community initiative in Kemaman, Terengganu which is our first benchmark for ICT development project. Among the benefits of this initiative is to leverage on ICT facilities at the Internet centre established in the district to support economic activities.

Aside from that, MCMC is also involved in industry development for content through providing grants. For this purpose, MCMC has allocated RM100 million for the Creative Industry Development Fund from 2011 to 2015. The objectives of the Fund were to enhance the competitiveness of national content industry as an economic growth area and to bring Malaysian content to the international arena. As at end 2015, a total of RM79.02 million was approved for 154 various projects under this Fund.

Consumer protection and quality of service

In 2015, total consumer complaints received by MCMC increased by 4% to a total of 14,156 (2014: 13,663), of which 73% of these complaints lodged were related to telecommunications services. The remainder was on content related issues and other services under the provisions of the CMA and investigated by MCMC. A further analysis on content related complaints revealed that more than half of these were social media related namely on fake or false profiles, obscene or indecent and offensive content.

Notably, 36% of the complaints were resolved within 72 working hours which is an improved efficiency in complaint resolution from 23.4% in 2014.

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 subscriptions to C&M services and increased consumer awareness.

In 2015, MCMC conducted a public inquiry to review the Access List and two public consultations to review Rates Rules and Affordable Broadband Packages. This process is to ensure that the subsidiary legislations and instruments under the CMA reflect the level of competition in the market and ensure the long term interests of end users.

Mandatory Standards were reviewed and enforced to ensure quality of service of public cellular services and networks, wired and mobile broadband as well as for broadcasting service.

Also, MCMC initiated various activities and capacity building workshops to strengthen the understanding, monitoring and enforcement of communications services, broadcast content and device certification. These activities act as proactive mechanisms for consumer protection.

Security and trust

As at end 2015, the cumulative number of digital certificates issued in Malaysia was 8.4 million, with net adds of one million certificates in the 12 month period. Digicert Sdn Bhd issued 92% of the certificates, with the remainder by MSC Trustgate Sdn Bhd and a trace from Telekom Applied Business Sdn Bhd.

Analysis based on user categories shows that 97.1% of total certificates were issued to the Government sector while the balance 2.9% were issued to the private sector such as financial institutions, pharmaceutical companies and individuals.

Courier services drive revenue growth for the postal and courier industry

As at end 2015, the postal and courier industry in Malaysia has an estimated revenue of RM4.5 billion, an increase of 12.5% from RM4 billion in 2014. Courier services contributed 62% or RM2.8 billion (14.8% growth from RM2.44 billion in 2014). Meanwhile, postal services captured the balance 38% or RM1.68 billion (11% growth from RM1.52 billion in 2014).

The rise of e-commerce contributes to increasing growth of revenue for courier services. This can be seen in terms of the increased number of parcels delivered. In 2015, the courier industry handled a total of 22.5 million parcels, up from 18.1 million in 2014.

Outlook 2016

An efficient infrastructure is the foundation of service availability, social inclusion, economic expansion and growth, which in turn improves national competitiveness. Hence, ongoing broadband projects for roll out of both fibre optic and 4G mobile services are deemed important to provide the capacity and coverage of broadband services in Malaysia, towards enabling digital economy. These, in turn, are expected to boost the economic growth with C&M infrastructure as a dynamic enabler.

Thus, connectivity underpins the foundation and revolution towards the digital economy for Malaysia. Both the Government and industry are in collaboration for promotion of development, adoption and usage of digital services and applications. The national policy objectives of the CMA continue to guide us to promote a competitive C&M industry environment and encourage the strategic investment in communications infrastructure for achieving seamless connectivity.

With these overarching objectives, MCMC will continue to facilitate infrastructure development and introduction of digital services towards creating more value propositions for consumers.

LICENSING UNDER CMA

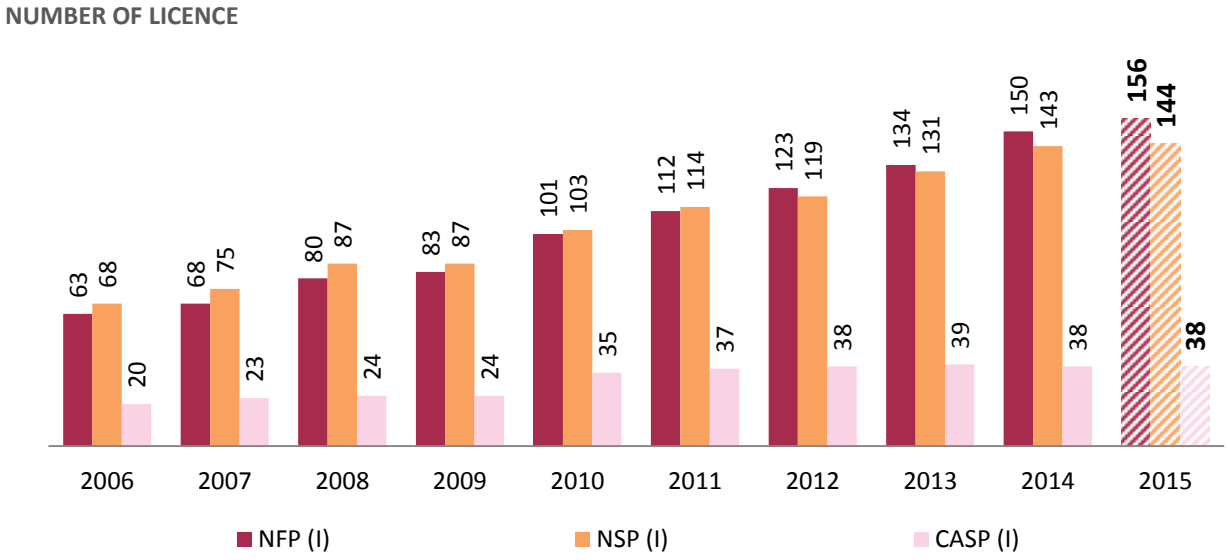
Under the Communications and Multimedia Act 1998 (CMA), there are two types of licences namely Individual and Class. These licences under the CMA are technology neutral and designed to accommodate services in different and distinct markets. These facilitates better regulation of the industry, and allow for orderly development of the converging and fast changing C&M landscape. There are four categories of licences namely Network Facilities, Network Services, Applications Services (Class licence only) and Content Applications Service licences[1].

Licensing Profile over the Years

As at end 2015, a total of 338 Individual licences were registered

The number of Individual licences has increased steadily over the years. As at end 2015, there were 338 Individual licences. The total number of licences issued comprises 156 NFP (I), 144 NSP (I) and 38 CASP (I) licensees.

CMA Licences (Individual) 2006 – 2015



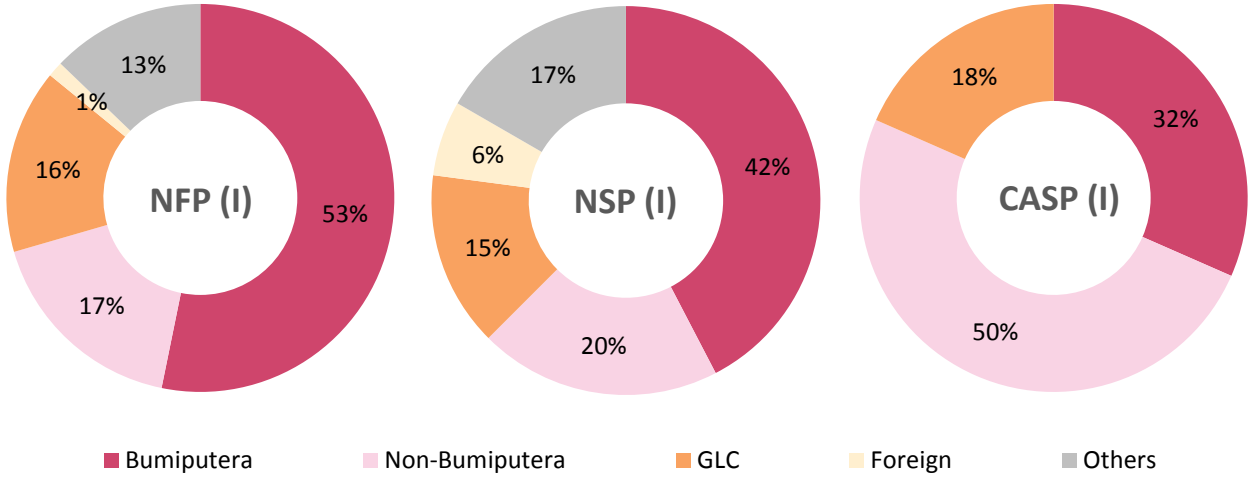
Source: MCMC

Figure i CMA Licences (Individual) 2006 – 2015

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

An analysis on Individual licensees' shareholding shows that 46% of total Individual licences in 2015 are Bumiputera-owned companies. The breakdown of shareholding composition by types of licence is shown as below.

Individual Licence – Shareholding Composition by Types of Licence 2015



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
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 ii Individual Licensee – Shareholding Composition by Types of Licence 2015

In 2015, there were a total of 81 individual licences approved and renewed as endorsed by the Minister of the Ministry of Communications and Multimedia Malaysia (KKMM). A total of 12 new NFP (I), nine new NSP (I) and two new CASP (I) licences were issued, whilst, 27 NFP (I), 17 NSP (I) and 14 CASP (I) licences were renewed.

Details of the infrastructure and services offered by new and renewed licensed service providers in 2015 are shown in Figure iii.

New and Renewed Licences Issued to Service Providers 2015					
Services	**Company**	**New (N)/ Renewed (R)**	**NFP (I)**	**NSP (I)**	**CASP (I)**
Deployment of broadband infrastructure and towers	Medini Iskandar Malaysia Sdn Bhd	N	✓		
	Ohana Communications Sdn Bhd	N	✓		
	PR1MA Communications Sdn Bhd	N	✓	✓	✓
	Advanced Research Communication Sdn Bhd	N	✓	✓	
	Fenomena Majukaya Sdn Bhd	N	✓	✓	
	Volksbhan Technology Sdn Bhd	N	✓	✓	
	XMT Technologies Sdn Bhd	N	✓	✓	
	Konsortium Infrastruktur W.P. Sdn Bhd	N	✓	✓	
	Bullish Aim Sdn Bhd	N	✓		
	DiGi Telecommunications Sdn Bhd	R	✓	✓	
	Celcom Axiata Bhd	R	✓	✓	
	Celcom Mobile Sdn Bhd	R	✓	✓	
	Celcom Networks Sdn Bhd	R	✓	✓	
	Y-Max Networks Sdn Bhd	R	✓	✓	
	Clear-Comm Sdn Bhd	R	✓	✓	
	Mal-Tel Communication Sdn Bhd	R	✓	✓	
	Jalur Lebar Nasional Sdn Bhd	R	✓	✓	
	Radio & Link Telecommunications Sdn Bhd	R	✓	✓	
	SEA Telco Engineering Services Sdn Bhd	R	✓	✓	
	Scopetel Sdn Bhd	R	✓	✓	
	Televenture Global Network Sdn Bhd	R	✓	✓	
	Celcom Timur (Sabah) Sdn Bhd	R	✓	✓	
	Danawa Resources Sdn Bhd	R	✓	✓	
	Common Tower Technologies Sdn Bhd	R	✓		
	NTT MSC Sdn Bhd	R	✓	✓	
Deployment of communications towers	Inforient Infrastructure Sdn Bhd	N	✓		
	Rangkaian Minang (NS) Sdn Bhd	N	✓		
	Navia Network Sdn Bhd	N	✓		
	D'Harmoni Telco Infra Sdn Bhd	R	✓		
	Touch Matrix Sdn Bhd	R	✓		
	Infra Quest Sdn Bhd	R	✓		
	Melaka ICT Holdings Sdn Bhd	R	✓		
	Konsortium Jaringan Selangor Sdn Bhd	R	✓		
	Desabina Industries Sdn Bhd	R	✓		
	Yiked Bina Sdn Bhd	R	✓		
	Tower-Fleet Sdn Bhd	R	✓		
	Perak Integrated Network Services Sdn Bhd	R	✓		
	PDC Telecommunication Services Sdn Bhd	R	✓		
	Juang Jaya Sdn Bhd	R	✓		

Services	Company	New (N)/ Renewed (R)	NFP (I)	NSP (I)	CASP (I)
Bandwidth services and management	Melaka ICT Holdings Sdn Bhd	N		✓	
	ITG Communications Sdn Bhd	R		✓	
	Sabah Net Sdn Bhd	R		✓	
Mobile Virtual Network Operator (MVNO)	Red One Network Sdn Bhd	N		✓	
	Naim Indah Mobile Communications Sdn Bhd	N		✓	
Content Applications Service	Cense Media Sdn Bhd	N			✓
	Kristal Harta Sdn Bhd	R			✓
	Sistem Televisyen Malaysia Bhd	R			✓
	Metropolitan TV Sdn Bhd	R			✓
	Natseven TV Sdn Bhd	R			✓
	Ch-9 Media Sdn Bhd	R			✓
	Synchrosound Studio Sdn Bhd	R			✓
	Suara Johor Sdn Bhd	R			✓
	Institut Kefahaman Islam Malaysia (IKIM)	R			✓
	Malaysia Airports (Sepang) Sdn Bhd	R			✓
	Radio Lebuhraya Sdn Bhd	R			✓
	Measat Radio Communications Sdn Bhd	R			✓
	Maestra Broadcast Sdn Bhd	R			✓
	Star RFM Sdn Bhd	R			✓
	Senandung Sonik Sdn Bhd	R			✓
Total			**39**	**26**	**16**

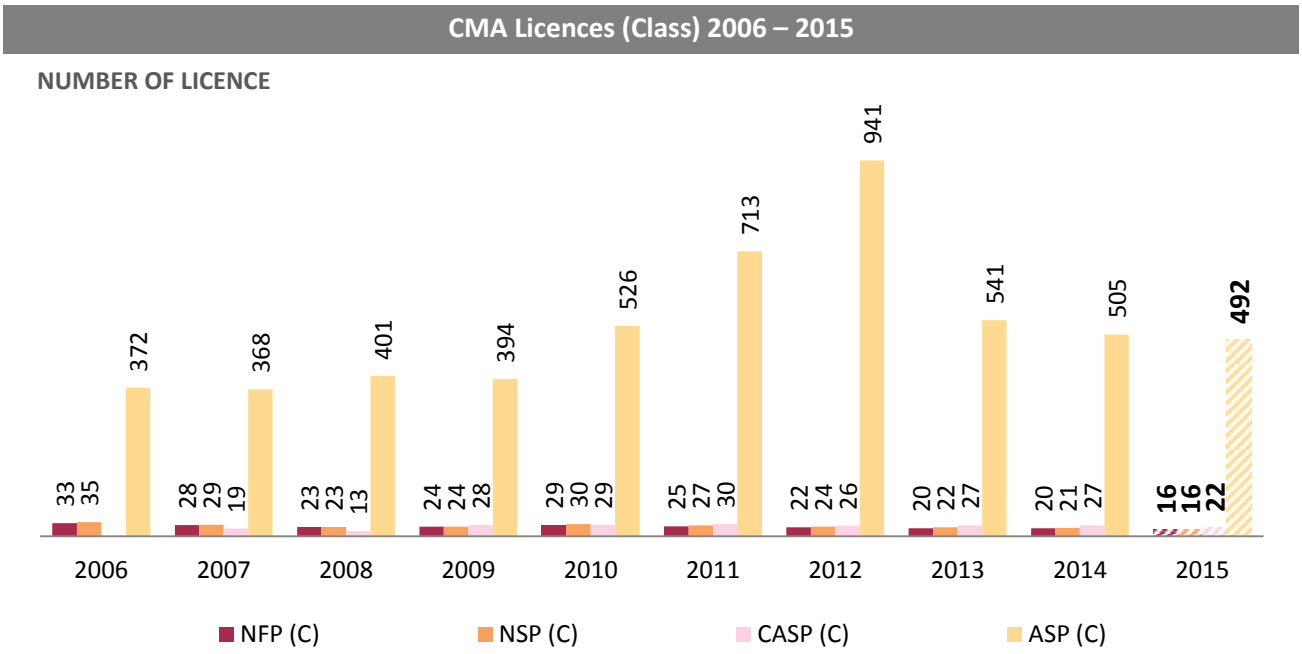
Source: MCMC

Figure iii New and Renewed Licences Issued to Service Providers 2015

A total of 546 Class licences were registered with MCMC as at end 2015

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

As at end 2015, there were 16 NFP (C), 16 NSP (C), 22 CASP (C) and 492 ASP (C) licences registered by MCMC. In 2015, there was a slight decline in terms of the total number of ASP (C) licences from 505 to 492.



Source: MCMC

Figure iv CMA Licences (Class) 2006 – 2015

Roll Out Status in 2015

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.

Roll Out Monitoring on New Licensees			
Company		**NFP (I)**	**NSP (I)**
1	Ridaa Associates Sdn Bhd	√	√
2	Elitemac Resources Sdn Bhd	√	√
3	LeBlanc Communications (M) Sdn Bhd	√	√
4	LeBlanc Astana Sdn Bhd	√	√
5	KUB Telekomunikasi Sdn Bhd	√	√
6	Pesona Network Engineering Sdn Bhd	√	√
7	Jalur Dimensi Sdn Bhd	√	√
8	Sunway Digital Wave Sdn Bhd	√	√
9	Platinum Core Solutions Sdn Bhd	√	√
10	Permodalan Risda Sdn Bhd	√	√
11	Stealth Broadband Sdn Bhd	√	√
12	Kenanga Marketing Sdn Bhd	√	
13	Arra Solutions Sdn Bhd	√	
14	Wasilah Engineering Sdn Bhd	√	
15	GTP Network Sdn Bhd	√	
16	Justclick Vision Sdn Bhd	√	
17	Ikhlas Informasi Teknologi Sdn Bhd	√	
18	Mustika Teratai Sdn Bhd	√	
19	R & D Solution Sdn Bhd		√
20	Xiddig Cellular Communications Sdn Bhd		√
21	OCK Setia Engineering Sdn Bhd		√
22	Premium Radius Sdn Bhd		√
23	Edotco Malaysia Sdn Bhd *(Formerly known as Celcom Services Sdn Bhd)*		√
24	BT Systems (Malaysia) Sdn Bhd		√

Source: MCMC

Figure v Roll Out Monitoring on New Licensees

As at end 2014, a total of 24 new service providers were issued with Individual licence (Figure v). Out of these, five service providers have complied with special licence condition and rolled out their facilities and services within the 12 months of licence granted. The licensees include:

Facilities/Services Deployed within 12 Months of Licence Granted			
Company		**Type of Licence**	**Facilities/Services Deployed**
1	Xiddig Cellular Communications Sdn Bhd	NSP (I)	MVNO Services
2	Premium Radius Sdn Bhd	NSP (I), NFP (I)	Bandwidth Services Tower
3	Edotco Malaysia Sdn Bhd *(Formerly known as Celcom Services Sdn Bhd)*	NSP (I), NFP (I)	Bandwidth Services Tower
4	Sunway Digital Wave Sdn Bhd	NSP (I), NFP (I)	Internet Access
5	BT Systems (Malaysia) Sdn Bhd	NSP (I)	Bandwidth Services

Source: MCMC

Figure vi Facilities/Services Deployed within 12 Months

In light of challenging economic environment, some service providers have delayed roll out in 2015 as they revised their commercial arrangements and business plans accordingly. As a result, six licensees have applied for extension of time.

Hence, MCMC's role to monitor for licensees' roll out is pivotal to ensure the deployment of infrastructure and services.

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ECONOMIC REGULATION

In 2015, MCMC conducted two public consultations to review Rates Rules and Affordable Broadband Packages and a public inquiry to review the Access List. These transparent processes ensure that the subsidiary legislations and instruments under the CMA are appropriate and proportionate in relation to the level of competition in the market as well as ensure that the long term interests of end users are maintained.

Review of Affordable Broadband Packages

MCMC conducted a public consultation on affordable broadband packages from 13 March 2015 to 27 March 2015. This review arose out of a call by the Minister of KKMM in February 2015 to reduce the prices of communications services for the long term benefit of the end users.

Affordability of broadband services is not a concern unique to Malaysia, but rather it is an international concern. In fact, the Broadband Commission for Digital Development (BCDD) was jointly established by International Telecommunication Union and United Nations Educational, Scientific and Cultural Organisation in May 2010 to boost the importance of broadband in the international agenda. As such, BCDD has set four new broadband targets for 2015 on making broadband policy universal, affordable, connecting homes to broadband and getting people online. The BCDD target 2, which is on affordable broadband, specifies that entry-level broadband services should be made affordable in developing countries through adequate regulation and market forces (amounting to less than 5% of average monthly income) by 2015.

MCMC conducted a review on the international regulatory approaches on broadband services at the wholesale and retail levels and noted that countries such as the United Kingdom and Australia imposed wholesale regulation in order to ensure competitive broadband services are available at the retail level to consumers. The preliminary view that MCMC expressed is that any regulation, if required to address competition issues, would be imposed at the wholesale level in order to stimulate competition and innovation at the retail level, whilst, retail regulation would be to ensure affordability.

In ensuring broadband services are affordable to consumers, MCMC observed that there are different measures taken by countries. Finland and the United States have implemented it through their universal service scheme or a targeted scheme for low income users. Some countries, such as Ireland, Uruguay and Brazil have included entry-level broadband packages, of which some are for a limited duration. This is as part of their national broadband plan or national digital strategy to lower the price and hence, increase broadband penetration. Lebanon, on the other hand, decided to impose price regulation on different broadband packages.

In Malaysia, MCMC conducted an analysis of affordability of broadband packages in 2015. It is observed that as a proportion of household income, for all income categories, entry-level fixed and mobile broadband packages are within the goal of affordability set by BCDD, that is, it is less than 5% of the average monthly income of an average household. However, it is noted that when income levels of individuals are considered, the packages are more affordable for some consumer groups as compared with others.

In this regard, the MCMC review proposed two different criteria for affordable fixed broadband and mobile broadband packages. The affordable fixed broadband package comprises speed of at least 1Mbps and a data quota of 1GB, whilst the affordable mobile broadband package consists of a data quota of at least 1GB.

The industry was receptive to the public consultation and proposed affordable broadband packages, which are fixed broadband package at 1Mbps and a data quota of 1GB offered at RM38 per month. The mobile broadband package with a data quota of 1GB is offered at RM25 per month. These packages are already available to end users in 2015.

Entry-level Fixed and Mobile Broadband Packages ***The Effect on Average Household and the Lower Income Group***				
	Fixed		**Mobile**	
	Consultation with Industry		**Consultation with Industry**	
	Before	**After**	**Before**	**After**
 **Average Household** Average Household Income: RM5,000 per month	Package @RM88 per month for 1Mbps: 1.76% of household income	Package @RM38 per month for 1Mbps and data quota of 1GB: 0.76% of household income	Package @RM28 per month for 1GB: 0.56% of household income	Package @RM25 per month for 1GB: 0.5% of household income
 **Lower Income Group** Average Household Income: RM1,847 per month	Package @RM88 per month for 1Mbps: 4.76% of household income	Package @RM38 per month for 1Mbps and data quota of 1GB: 2.05% of household income	Package @RM28 per month for 1GB: 1.51% of household income	Package @RM25 per month for 1GB: 1.35% of household income

Note: Average household income data is based on Household Income Survey 2012, Department of Statistics Malaysia

Source: MCMC

Figure vii Entry-level Fixed and Mobile Broadband Packages

Review of Rates Rules

In tandem with the review of Affordable Broadband Packages, MCMC also conducted a public consultation on the review of Communications and Multimedia (Rates) Rules 2002 (Rates Rules) from 13 March 2015 to 30 April 2015. At the conclusion of the public consultation, 10 submissions were received.

The Rates Rules, in place since 2002, regulates the retail prices for the following:

- Public Switched Telephone Network (PSTN) services which include rental on exchange lines, local calls and national calls, connection and reconnection charges;
- Emergency services;
- Operator assistance service;
- Directory assistance service;
- Payphone services for local calls, national calls and national calls through operator assistance; and
- Internet access service; and
- Audiotext hosting service.

In conducting this review, consideration was given to development in Malaysia as well as regulatory trends and international best practices. Apart from the transformation of the C&M sector in Malaysia after the privatisation of the incumbent operator and the liberalisation of the sector over the last two decades, technological developments have accelerated service penetration rates, in particular for mobile telephony and broadband services.

To date, these developments have increased the impact of communications in the lives of society. Globally, it was observed that when competition developed, regulators would generally move away from price control regulation and would only intervene and regulate to address any market failure to the extent that is necessary.

Hence, the review proposed a forward-looking approach to retail regulation. Firstly, the focus of regulation would be on wholesale services, such as, through the access provisions and competition provisions under the CMA. The focus of retail regulation would then be on meeting social policy obligations such as, to ensure affordability of services, similar to the initiatives under the universal service provision in the CMA.

Secondly, due to the importance of broadband services in the 21st century, there would be less emphasis on maintaining rate regulation for legacy PSTN services. Thirdly, in considering that there is less of a need to regulate legacy PSTN services for the mass public, MCMC proposed instead a targeted approach to address the needs of clearly identified groups of consumers who could be disadvantaged.

Concluding the review, all retail services under Rates Rules, apart from emergency services, would be deregulated. Emergency services were considered as critical to consumers and would continue to be regulated at no charge. However, for the other retail services generally, there was either a decline in their usage or the availability of other services or platforms, rendering regulation less necessary.

Nevertheless, even where the retail rates are not regulated, service providers are required to comply with the principles of rate setting under the CMA, and MCMC would continue to monitor the rates of the retail services to ensure compliance with the CMA. Should any issue arise, the other provisions in the CMA would be used to address the situation.

Conclusion of Review of Rates Rules		
	Services	**Final View**
Currently regulated under Rates Rules	Public switched telephone network services	Deregulate
	Payphone services	Deregulate
	Emergency services	Continue to regulate via instruments under Required Application Services
	Operator assistance service	Deregulate
	Directory assistance service	Deregulate
	Internet access (dial-up) service	Deregulate
	Audiotext hosting service	Deregulate
Not regulated under Rates Rules	Broadband services	To continue working together with the industry to ensure availability of broadband services and to monitor broadband rates

Source: MCMC

Figure viii Conclusion of Review of Rates Rules

With regard to broadband services, which were not regulated under Rates Rules, MCMC would continue its role in ensuring consumer interests are safeguarded; in terms of broadband coverage, QoS, availability of higher speed services and affordability, in line with the 11th Malaysia Plan for ICT infrastructure and the Communications and Multimedia Action Plan 2020.

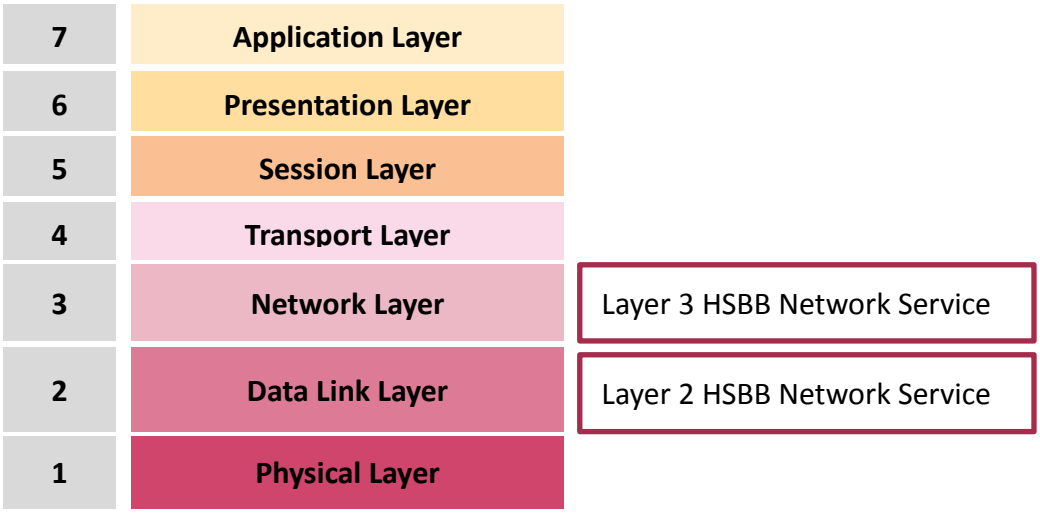
Review of Access List

MCMC conducted a public inquiry from 15 May 2015 to 10 July 2015 to review the Access List in 2015. At the conclusion of the public inquiry, 17 submissions were received. Subsequently, a public inquiry report was published and the Commission Determination on Access List, Determination No.2 of 2015 was also issued. Note that, this is the fourth time that MCMC has reviewed the Access List.

Consistent with previous reviews, MCMC adopted the principle of regulation for the long term benefit of the end user as its key guiding point of assessment to decide on the inclusion or removal of a service or facility in the Access List. Providing services for the long term benefit of the end user is one of the national policy objectives set out in the CMA. In addition, MCMC also took into consideration other national policy objectives and the well-established concept of bottleneck facilities. The main outcome was the inclusion of four new services namely Layer 3 HSBB Network Service, Duct and Manhole Access, End-to-End Transmission Service and MVNO Access and the removal of HSBB Network Service without QoS.

MCMC considered that listing a new Layer 3 HSBB Network Service would facilitate competition in the supply of retail HSBB Network Services and encourage infrastructure investment. Access Seekers will be encouraged to build their own customer base which will allow them to make further investments in the network infrastructure, gradually moving to investing in Layer 2 HSBB Network Services.

HSBB Network Services Illustrated with reference to the Layers of the Open System Interconnection Model



Source: MCMC

Figure ix HSBB Network Services Illustrated with reference to the Layers of the Open System Interconnection Model

In its Assessment of Dominance in 2014, MCMC found that the market for lead-in ducts and manhole infrastructure was not competitive and constituted a bottleneck facility. However, the market for the inter-exchange and mainline ducts was relatively competitive. Notwithstanding the general competitive finding for inter-exchange and mainline ducts, MCMC noted that there were exclusivity arrangements pertaining to inter-exchange and mainline ducts, which creates a bottleneck to competition in downstream market and is therefore, an access issue. As such, the Duct and Manhole Access, which comprises lead-in ducts and manhole and mainline ducts and manholes in areas where there is exclusivity, was included in the Access List.

The listing of End-to-End Transmission Service was mainly to address some of the difficulties faced by the Access Seekers in acquiring Trunk Transmission Service and Wholesale Local Leased Circuit Service in the Access List.

Globally, regulators encourage the role of MVNOs in mobile markets for two reasons, as a means to manage saturation in mobile market and scarcity of spectrum. In line with this development, MCMC also considered that the listing of the MVNO Access is in the long term benefit of the end user and aligns or supports the national policy objectives of the CMA.

MCMC removed the HSBB Network Service without QoS from the Access List mainly due to technical barriers. MCMC also viewed that the Access Seeker would not be in a position to acquire this service in the near future since it requires significant investment.

Finally, MCMC introduced an incentive based mechanism for removal of regulated facilities and services in the Access List in a targeted manner when there is evidence of competition. The incentive based regulation is intended for increased flexibility of seeking access and will apply to all of the transmission services in the Access List and the Layer 3 HSBB Network Service.

It is envisioned that by promoting a competitive environment, achieving any-to-any connectivity and encouraging the economically efficient use of and investment in communications infrastructure, the long term benefit of the end user can be achieved.

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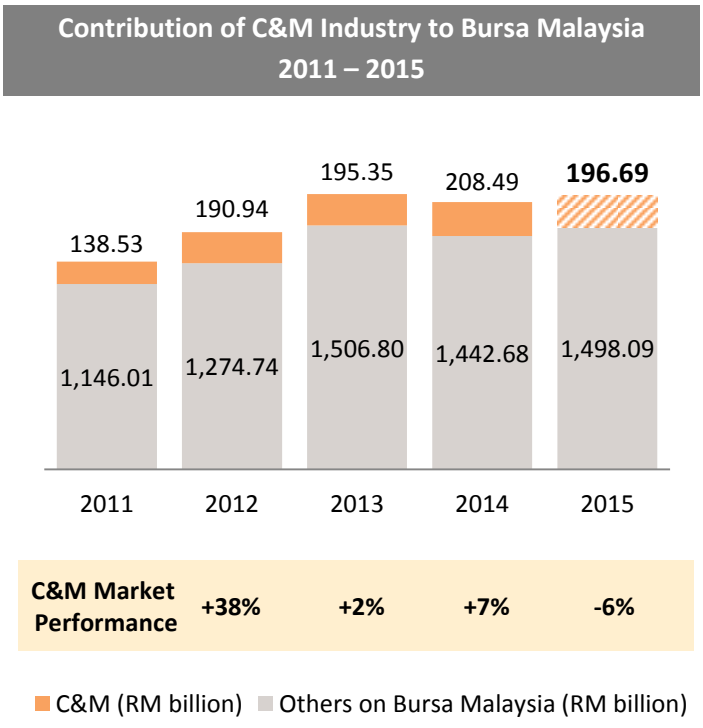
MODULE 1: ECONOMIC PERFORMANCE OF C&M INDUSTRY

C&M Industry Market Performance

C&M industry market capitalisation in 2015 at RM197 billion



Source: Bloomberg, MCMC

Figure 1.1 Contribution of C&M Industry to Bursa Malaysia 2011 – 2015

The C&M industry captured a market capitalisation of RM196.69 billion (2014: RM208.49 billion) which represents 11.6% of Bursa Malaysia market capitalisation of RM1,694.78 billion.

In 2015, the benchmark FTSE Bursa Malaysia KLCI Index (FBM KLCI) declined 3.9%. This was due to a volatile market amid a series of economic factors including weakening Ringgit as crude oil prices dropped by nearly 70% from peak above USD100 to USD34 per barrel low in December 2015.

In line with the overall market performance, the major telecommunications companies were also adversely affected with market capitalisation of RM179.42 billion, a decline of 5% from RM188.28 billion as at end 2014.

Meanwhile, broadcasting sector market capitalisation showed a double digit decline of 10.9% to RM15.78 billion (2014: RM17.71 billion). However, this sector performance remained resilient as market capitalisation improved as at end March 2016 to RM17.18 billion.

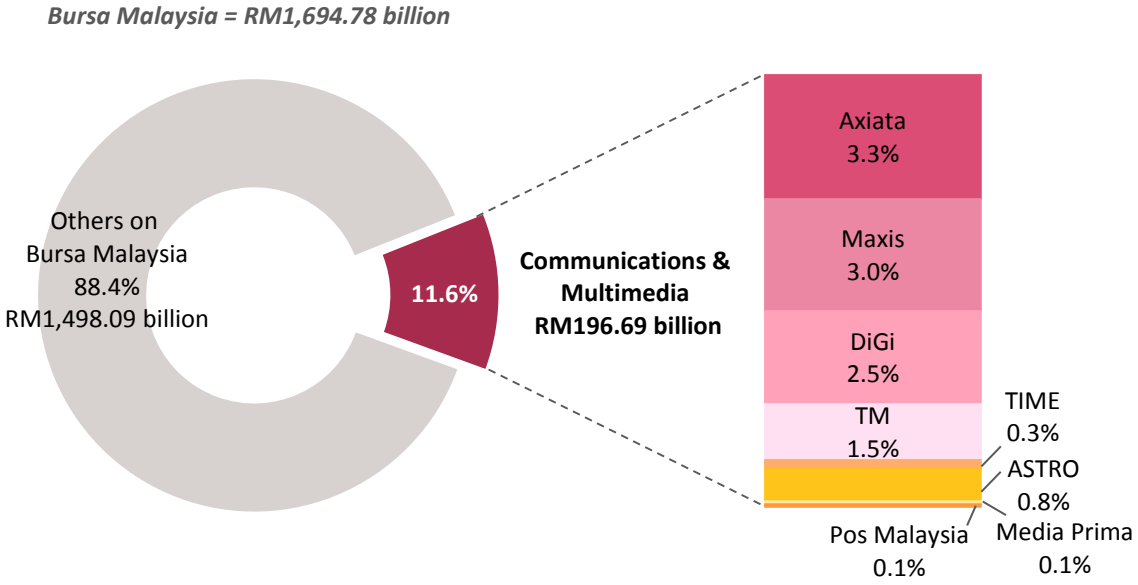
All the C&M companies in 2015 experienced lower market capitalisation except TIME. It is noteworthy that TIME has posted consistent gains over the past three years. In 2015, TIME recorded an increase in market capitalisation by 56% to RM4.37 billion compared with RM2.8 billion in 2014. The strong performance was underpinned by positive investor sentiment due to the company's strong earnings in 2015, which was backed by surging demand for fast and reliable bandwidth. Growth of its global bandwidth sales was attributed to the strengthening of the USD.

TIME is increasing its regional presence through strategic acquisition, partnership and joint venture. In 2015, TIME has successfully penetrated three new markets namely Vietnam, Myanmar and Thailand.

On the broadcasting front, Media Prima market capitalisation has declined consecutively over the past three years. In 2015, Media Prima posted 28% decline in its market capitalisation to RM1.41 billion (2014: RM1.95 billion). A softer advertising market has impacted its businesses and revenue. Media Prima derives about 80% of its revenue from TV and print advertising.

Meanwhile, Pos Malaysia recorded a 40% decrease in market capitalisation to RM1.49 billion as at end 2015 compared with RM2.49 billion one year ago. This was due to Pos Malaysia's financial performance; where its net profit decreased more than 50% due to high operating expenses.

C&M Companies Contribution to Bursa Malaysia 2015



Source: Bloomberg, MCMC

Figure 1.2 C&M Companies Contribution to Bursa Malaysia 2015

C&M Companies Market Capitalisation 2013 – 2015

Company	Market Capitalisation (RM billion)			Change (%)	
	2013	2014	2015	2013 – 2014	2014 – 2015
Axiata	58.93	60.50	56.51	2.7	-6.6
Maxis	54.55	51.42	51.07	-5.7	-0.7
DiGi	38.56	47.97	41.99	24.4	-12.5
TM	19.85	25.59	25.48	28.9	-0.4
TIME	2.03	2.80	4.37	37.9	56.1
Telecommunications	**173.92**	**188.28**	**179.42**	**8.3**	**-4.7**
ASTRO	15.59	15.76	14.37	1.1	-8.8
Media Prima	2.88	1.95	1.41	-32.3	-27.7
Broadcasting	**18.47**	**17.71**	**15.78**	**-4.1**	**-10.9**
Pos Malaysia	2.94	2.49	1.49	-15.3	-40.2
Total	**195.33**	**208.48**	**196.69**	**6.7**	**-5.7**
Bursa Malaysia	1,702.15	1,651.17	1,694.78	-3.0	2.6
C&M as % of Bursa Malaysia	**11.5%**	**12.6%**	**11.6%**	**-**	**-**

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

Source: Bloomberg, MCMC

Figure 1.3 C&M Companies Market Capitalisation 2013 – 2015

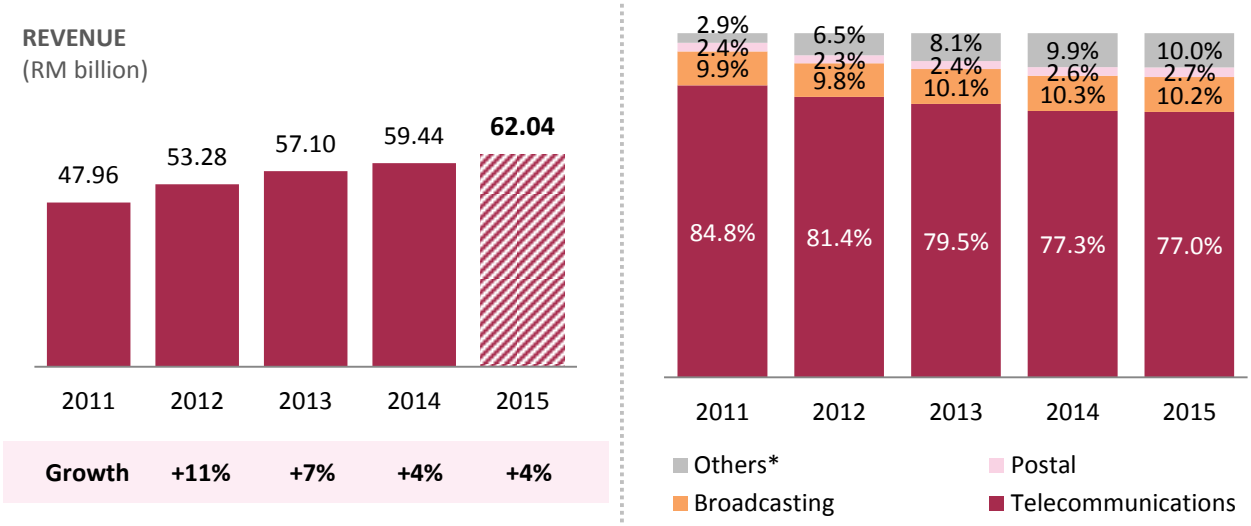
C&M Industry Financial Performance

C&M industry continued to maintain 4% growth in 2015

Based on aggregate revenue, the C&M industry continued to maintain 4% growth in 2015. Despite the implementation of Goods and Services Tax (GST) in April 2015 and weakening Ringgit, the C&M industry has not been severely impacted, generating revenue of RM62.04 billion. The breakdown is as follows:

- RM47.80 billion from telecommunications companies;
- RM6.34 billion from broadcasters;
- RM1.68 billion from postal; and
- Remaining are from digital signature, ACE Market and non-public listed licensees.

C&M Industry Revenue 2011 – 2015



**Estimated*
Note 1. Media Prima excludes print revenue
2. ASTRO and Pos Malaysia revenue adjusted based on a calendar year basis
3. Others include digital signature, ACE Market and non-public listed licensees

Source: Industry, MCMC

Figure 1.4 C&M Industry Revenue 2011 – 2015

The C&M industry revenue growth has moderated over recent years, from double digit annual growth rates of 11% in 2012, to single digit 4% respectively in 2015 and 2014. Challenged by increased competition and technological disruption, the C&M industry appears to be at a crossroad to a next phase of growth. One likely strategic change for traditional players is reinvention or diversifying services with multiple new offerings and hence, new revenue streams. Meeting consumer demand to cater to changing user behaviour and requirements in this way can alleviate lower revenues, pressure on margins and stagnating subscriptions.

As users are demanding more differentiated services to suit their personalised needs, products and offerings based on conventional focus of just getting subscription to a service is not sufficient to sustain growth. Advancing technology is bringing new competition for service providers who need to transform their offerings to include seamless provision of connectivity and content applications to meet consumer needs.

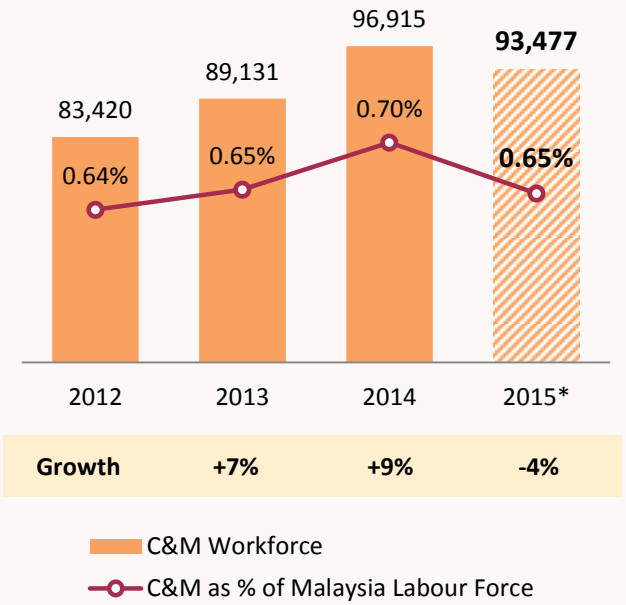
C&M industry has 93,477 employees

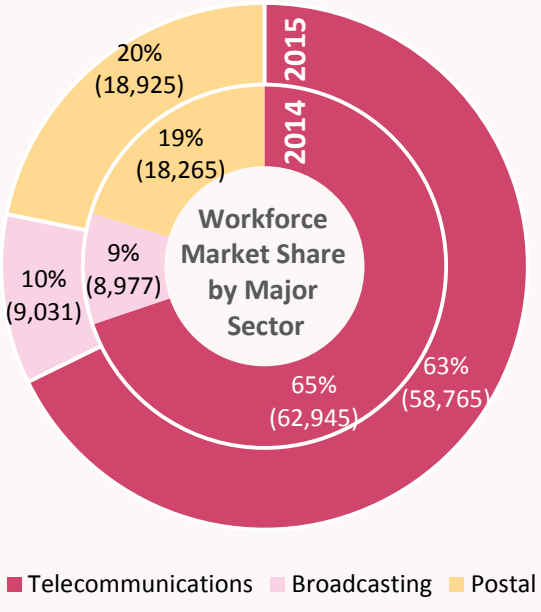
The digital economy is developing rapidly worldwide. It is an important driver of innovation, competitiveness and growth, and such development holds potential for C&M industry to develop further. New digital trends such as cloud computing, mobile applications, Internet of Things (IoT) and social media, are changing the business landscape, including business models of C&M companies, and reshaping the nature of work. Needless to say new digital opportunities require talented workforce to create a growing and sustainable economic environment.

Over the past four years, the C&M industry has grown to employ thousands of highly skilled personnel. In 2015, total C&M industry employment amounted to 93,477. The industry employment share was about 1% of total Malaysia labour force of 14.4 million[2]. Between 2012 and 2015, the number of employees is estimated to have increased by 12% or 10,057.

The telecommunications sector contributes the largest extent to C&M industry employment, that is, employing more than 58,000 compared to almost 10,000 in broadcasting. Telecommunications sector has shown decline in employment by 7% to 58,765 in 2015. Meanwhile, employment in broadcasting and postal sector increased by 0.6% to 9,031 and 4% to 18,925 respectively in 2015.

C&M Industry Workforce 2012 – 2015





**Estimated*

Source: Industry, MCMC

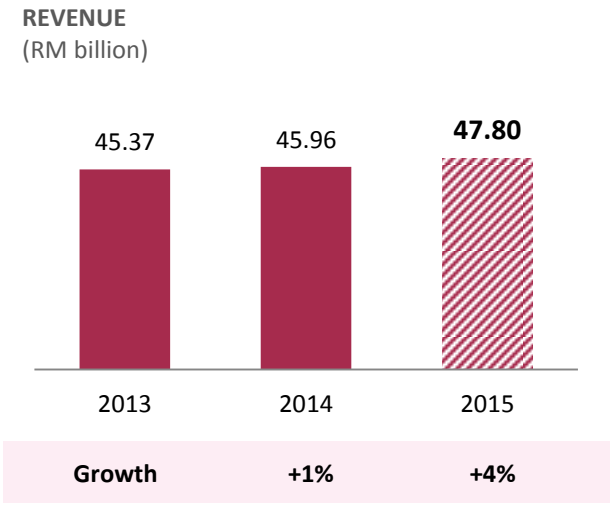
Figure 1.5 C&M Industry Workforce 2012 – 2015

[2] Department of Statistics Malaysia, Labour Force Statistics, Malaysia, December 2015, February 2016.

Telecommunications sector revenue grew by 4% in 2015 to RM48 billion

Year 2015 was a challenging one for the telecommunications sector, as service providers faced fierce competition amidst maturing market in its traditional connectivity provision segment. Telecommunications sector revenue totalled RM47.8 billion, accounting for 77% of total C&M industry revenue. Interestingly, the sector posted a faster pace of growth of 4% as compared with 1% in 2014 (RM45.96 billion).

Telecommunications Sector Revenue 2013 – 2015



Source: Industry, MCMC

Figure 1.6 Telecommunications Sector Revenue 2013 – 2015

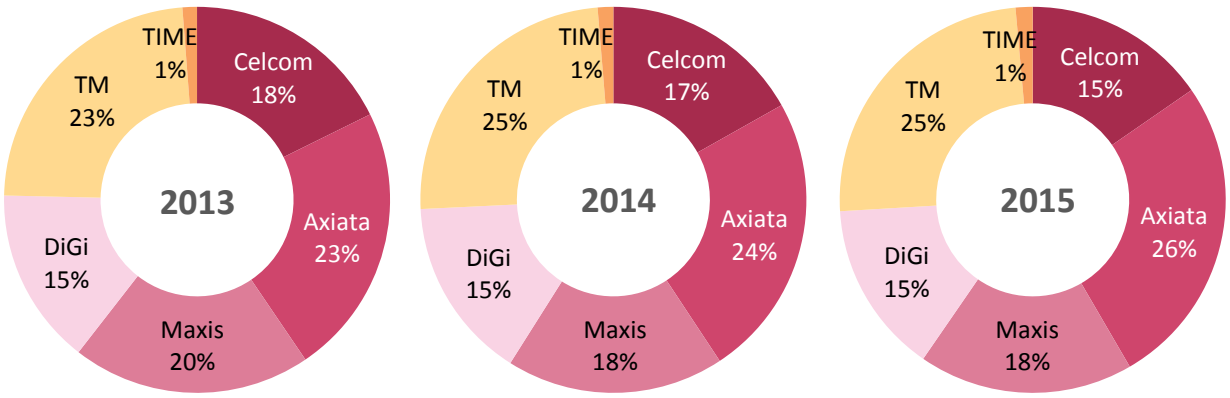
In 2015, mobile service providers, Axiata, Maxis and DiGi accounted for 74% or RM35.4 billion of the total telecommunications sector revenue (2014: 74%).

With the mobile penetration rate in excess of 140% and data usage accelerating, data services is expected to be a key driver for mobile revenue going forward. The three main enablers that underpin the demand for data services are:

- Better network coverage and speed;
- Increased uptake of Internet-enabled devices; and
- Improved data plans and packaging.

Meanwhile, TM and TIME contributed 26% (RM12.4 billion) to the total telecommunications revenue in 2015. Fixed broadband uptake continues to increase due to ongoing demand for more bandwidth from both home and business customers. The rising number of Internet-enabled devices and increased use of data-intensive services such as OTT video, online gaming and mobile apps, further increased usage and encouraged existing subscribers to upgrade their subscriptions. In 2015, the total number of fixed broadband subscriptions has increased to 3.1 million.

Telecommunications Sector Revenue Market Share 2013 – 2015



Note: Axiata revenue represents its foreign operations revenue, excludes Celcom revenue which is shown separately here

Source: Industry, MCMC

Figure 1.7 Telecommunications Sector Revenue Market Share 2013 – 2015

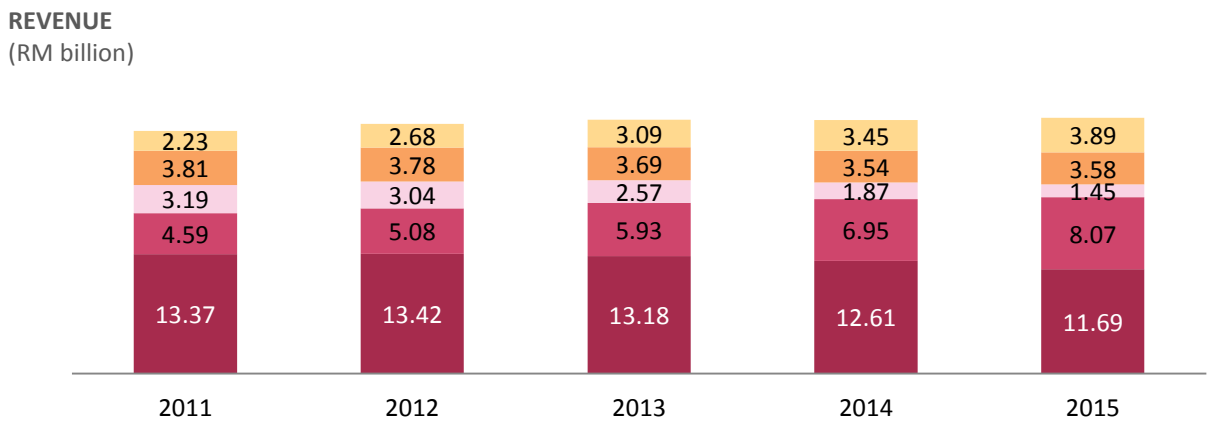
Globally, the telecommunications sector is transitioning rather rapidly from a traditional voice oriented market to a data driven market. It is increasingly clear that revenues from voice services alone will not be sufficient to provide sustainable overall revenue growth. It is evident in the industry that Internet-enabled connectivity is a key driver for sustained growth. New services such as High Definition (HD) video streaming, video conferencing, IoT and effectively the convergence of data and voice networks require higher bandwidth.

Faced with declining revenues from traditional voice and SMS services, telecommunications companies are already forging new partnerships and sourcing new revenue generating products and services to maintain growth. For instance in Malaysia, Maxis and ASTRO went into partnership in 2012 to optimise each other's prime assets namely Maxis mobile network and ASTRO content to offer quad-play (voice, video, broadband and mobility) to their customers. ASTRO has also supplied content to TM Internet Protocol television (IPTV) services since 2013. These partnerships and "new" sales relationships are expected to boost telecommunications service subscriptions while further diversifying and growing revenue.

Data and broadband services are now main drivers of growth, due largely to high speed networks and fast adoption of connected devices and applications

Over the past five years, the relationship between voice and data traffic is interchanging. The increase in data traffic with voice and SMS decreasing is a global trend across both developed and emerging markets. In Malaysia, our telecommunications sector has shown similar decline in voice and SMS revenue as a result of reduction in usage; complemented by OTT communications offerings. In 2015, mobile voice revenue declined by 7.3% to RM11.69 billion from RM12.61 billion in 2014.

Telecommunications Revenue by Service Category 2011 – 2015



Service Categories and % Change

Fixed Broadband	**+20.2%**	**+15.3%**	**+11.7%**	**+12.8%**
Fixed Voice	**-0.8%**	**-2.4%**	**-4.1%**	**+1.1%**
Mobile Messaging	**-4.7%**	**-15.5%**	**-27.2%**	**-22.4%**
Mobile Data	**+10.7%**	**+16.7%**	**+17.2%**	**+16.1%**
Mobile Voice	**+0.4%**	**-1.8%**	**-4.3%**	**-7.3%**

Note 1. Mobile data includes Value Added Service (VAS)
2. Excludes Axiata foreign operations
3. Fixed voice and broadband revenue from TM and TIME only

Source: Industry, MCMC

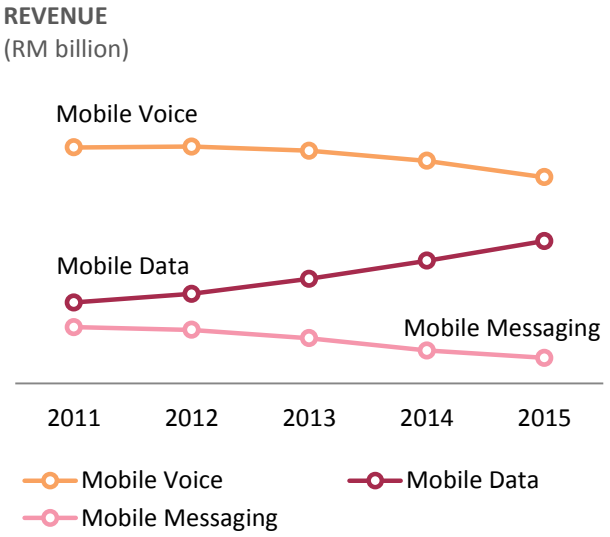
Figure 1.8 Telecommunications Revenue by Service Category 2011 – 2015

Voice services traditionally was the largest source of revenue for mobile service providers. However, it has been declining as consumers have started utilising smartphone applications to meet their communications needs. As consumers opt for this, the opportunity for service providers to reap revenue from excess voice usage is limited.

Mobile messaging revenue has in 2015 declined by 22.5% to RM1.45 billion from RM1.87 billion in 2014. VoIP and OTT messaging applications are popular and making impact on overall mobile revenue for service providers.

While mobile messaging revenue is in gradual decline, mobile data is becoming the main driver of revenue growth. Data revenue in 2015 has increased 16.1% to RM8.07 billion (2014: RM6.95 billion). From 2011 to 2015, mobile data revenue grew 75.8% which is equivalent to CAGR of 15.2%. This was supported by the migration of 2G/3G subscribers to 4G LTE, hence, meeting the increasing consumer demand for mobile data.

Mobile Service Revenue Trend 2011 – 2015



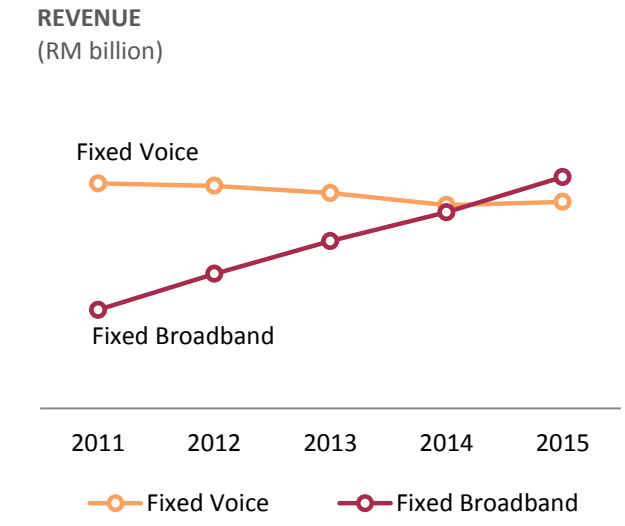
Source: Industry, MCMC

Figure 1.9 Mobile Service Revenue Trend 2011 – 2015

Such changing voice and data relationship illustrates the ongoing transformation in the business models. This is reflected in the transition from voice-centric to increasingly data-centric offerings. With voice and SMS becoming less significant in the overall mobile offering, the quality of networks and attractive data packages as well as customer experience management are expected to be key differentiators for service providers in maintaining or gaining market share.

Moreover, increase in demand for mobile data services also represents further opportunities for mobile content products and application developers. The mobile apps and content market place are boosted by quality and reliable network along with many device options and affordability.

Fixed Service Revenue Trend 2011 – 2015



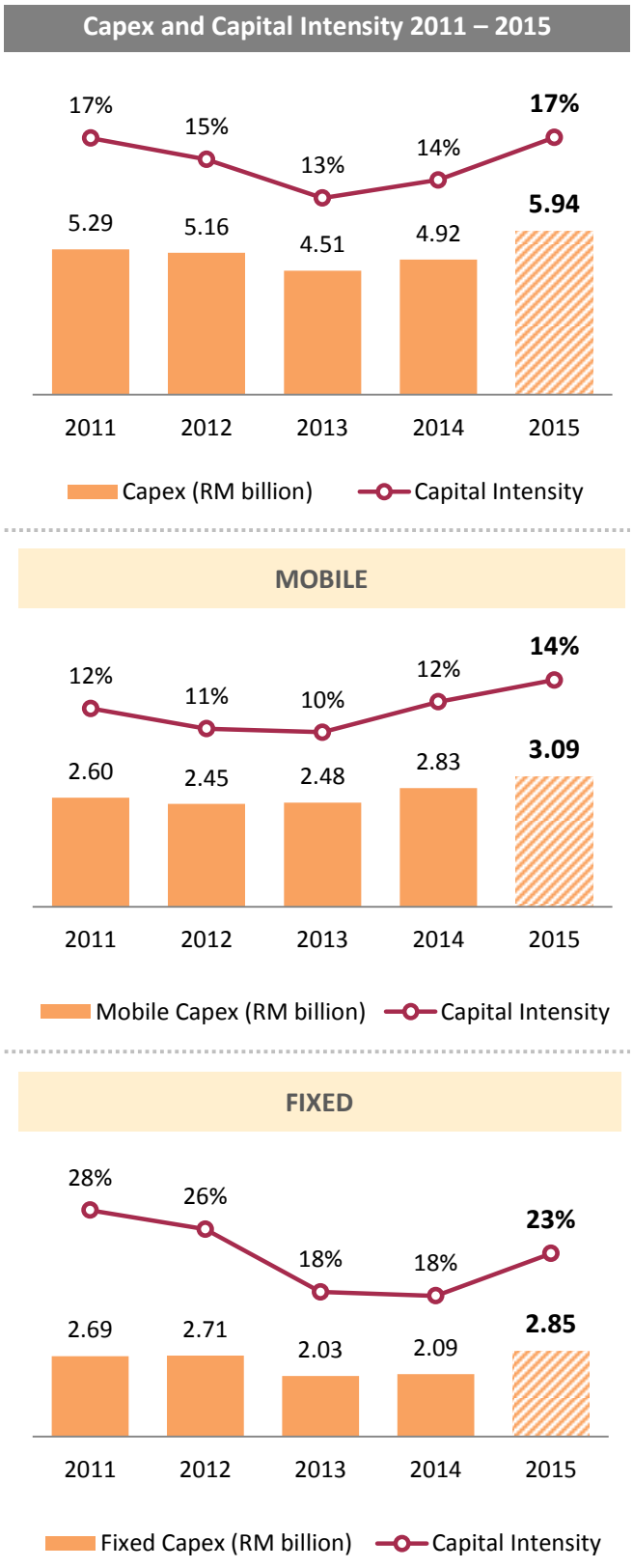
Source: Industry, MCMC

Figure 1.10 Fixed Service Revenue Trend 2011 – 2015

In 2015, fixed broadband revenue has crossover voice for the first time in Malaysia (Figure 1.10). This is considered a milestone in the history of our telecommunications services, in which broadband (RM3.89 billion) generated more revenue than voice services (RM3.58 billion). These trends are reflected in the number of fixed telephony and broadband subscriptions.

Fixed broadband subscriptions reached 3.1 million in 2015, which grew by 55% from two million in 2011. xDSL have 49% market share of fixed broadband subscriptions but there is expected increasing adoption of fibre in the future as consumers demand for higher speed connections.

Competition, advancing technology and focus on quality of service spurred Capex in 2015



Note: Excludes Axiata foreign operations Capex

Source: Industry, MCMC

Figure 1.11 Capex and Capital Intensity 2011 – 2015

Major telecommunications companies invested RM5.94 billion in Capex which translates to 17% of total revenue. Capex for mobile service providers was RM3.09 billion or 52% of total Capex, while 48% (RM2.85 billion) was by fixed service providers. Such investments were driven by:

- Improving existing network infrastructure for 3G, 4G LTE and fibre broadband including submarine cable construction.
- Increasing network capacity to support increasing usage demand.

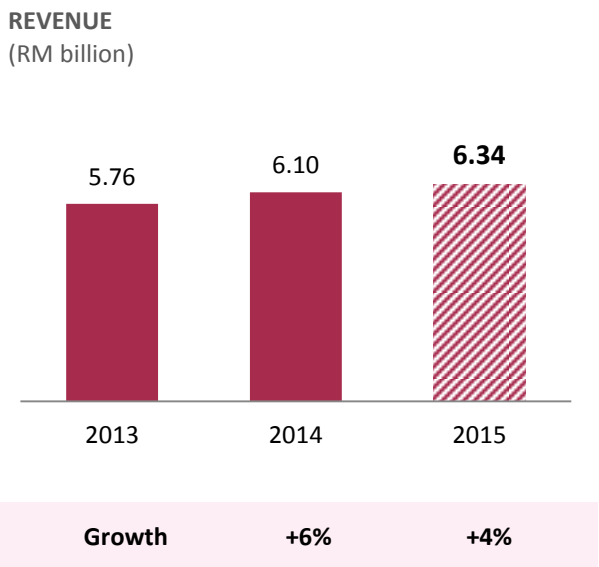
Competition and technology advancement are also driving service providers to speed up their existing network and services enhancement. Such emphasis is considered crucial as increasingly network quality is becoming a differentiating factor.

Meanwhile, research agency OVUM[3] forecasted global capital intensity to reach 19% in 2015. This is expected at 18% in 2016. Comparatively, Malaysia recorded capital intensity of 17% in 2015, that is, just below the global average.

[3] OVUM, Communications Provider Revenue Capex Forecast 2015 – 2020, 2015.

Broadcasting sector revenue grew 4% to RM6 billion in 2015

Broadcasting Sector Revenue 2013 – 2015



Growth	**+6%**	**+4%**

Note 1. ASTRO revenue adjusted based on calendar year
2. Excludes Media Prima print revenue

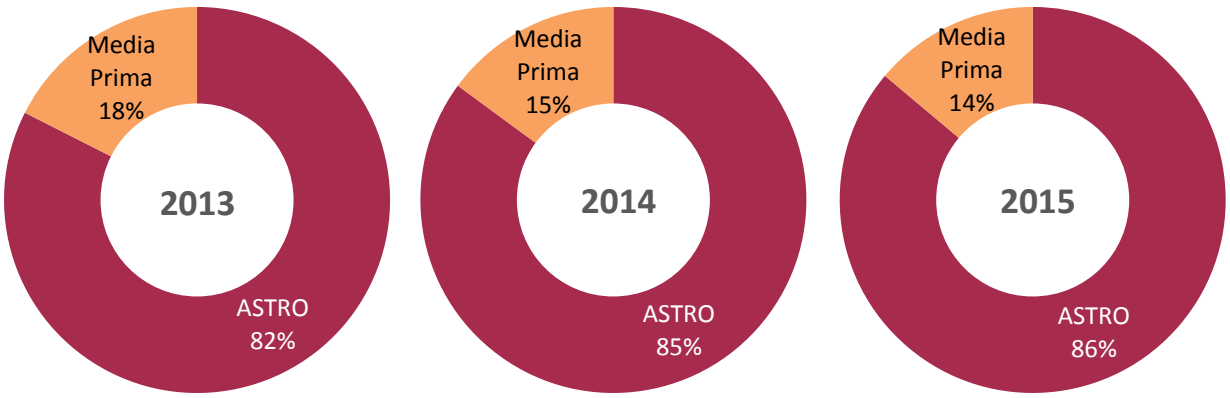
Source: Industry, MCMC
Figure 1.12 Broadcasting Sector Revenue 2013 – 2015

Broadcasting sector revenue consisting of Pay TV (ASTRO) and Free-to-Air (FTA) TV (Media Prima Group) amounted to RM6.34 billion, a growth of 4% from RM6.1 billion in 2014. This accounted for 10% of total C&M revenue in 2015.

Pay TV subscriptions revenue has increased 2% to RM4.4 billion (2014: RM4.3 billion), contributing more than half of the total broadcasting revenue. Attractive content, more channels and bonus features are expected to drive revenue over the coming years.

FTA TV relies predominantly on advertising. The FTA TV market share has declined since 2013. In 2015, FTA TV revenue declined by 3% from 2014. As consumers spend more time on mobile devices and engaged in digital media, many advertisers have strategised to seek more targeted audience over mobile and online platforms.

Broadcasting Sector Revenue Market Share 2013 – 2015



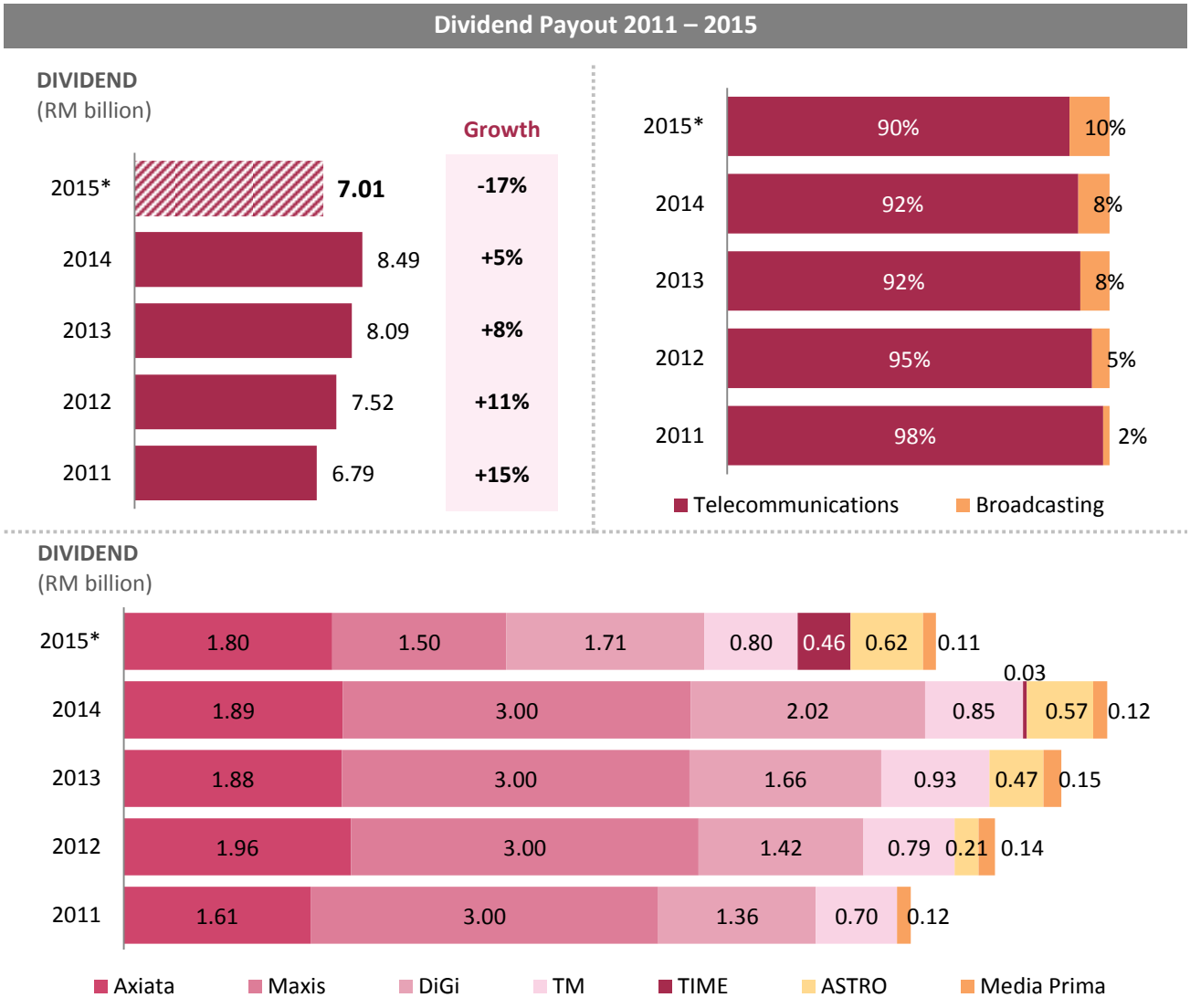
Source: Industry, MCMC
Figure 1.13 Broadcasting Sector Revenue Market Share 2013 – 2015

Moderated dividend payout in 2015

Dividend is an established strategy for public listed companies to enhance the attractiveness of their stocks thus attracting more local and foreign investors. From 2011 to 2015, telecommunications and broadcasting companies have been paying relatively stable dividends. However, in 2015, dividend payout posted relatively sharp decline due to readjustment especially by Maxis.

Total dividend payout fell to RM7.01 billion in 2015, a decline of 17% from RM8.49 billion in 2014. Out of the total dividend payout, about 90% are from telecommunications sector, with the remaining from broadcasting sector. It is observed that telecommunications share of dividend is declining between 2% and 3% each year since 2011. Meanwhile, broadcasting sector dividend share has increased from just 2% in 2010 to 10% in 2015.

Maxis was the top dividend payer from 2011 to 2014 (Figure 1.14) with payout of RM3 billion as compared with its peers. However, its 2015 payout was RM1.5 billion after the company decided not to borrow for this purpose. As a result, Maxis has managed its Capex and debt level for better risk exposure and more sustained investments.



**Estimated*
Note: Includes special dividend

Source: Industry, MCMC

Figure 1.14 Dividend Payout 2011 – 2015

ACE Market Overview and Performance

CMA licensees represent 11% of companies listed on Bursa Malaysia ACE Market

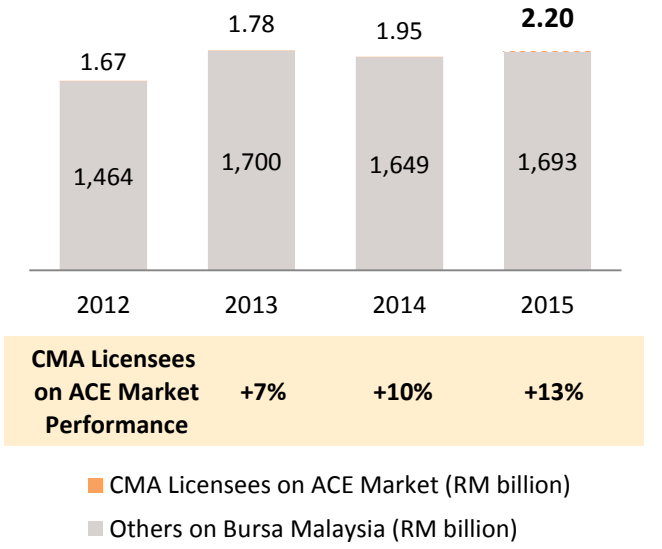
As at 2015, there were 12 ACE listed companies whose subsidiaries are licensees under the CMA. This represents 11% by number of companies listed on Bursa Malaysia ACE Market of 109 companies. These licensees are mostly under the ASP category.

Licensees on ACE Market 2015			
Company (ACE Listed)	**Listing Date**	**Licensee (Subsidiary of ACE listed company)**	**Type of Licences***
M3 Technologies (Asia) Bhd	27 Jan 2003	M3 Technologies (Asia) Bhd	ASP (C)
Mexter Technology Bhd	12 Apr 2005	EzyMobile International Sdn Bhd Mexcomm Sdn Bhd	ASP (C) ASP (C)
M-Mode Bhd	6 Dec 2004	M-Mode Mobile Sdn Bhd Mobile Multimedia Sdn Bhd	ASP (C) ASP (C)
MNC Wireless Bhd	25 Oct 2005	MNC Wireless Bhd Moblife.TV Sdn Bhd	ASP (C) ASP (C)
mTouche Technology Bhd	21 Jul 2005	Mobile Touchetek Sdn Bhd	ASP (C)
Nextgram Holdings Bhd *(Formerly known as Nextnation Communication Bhd)*	26 Aug 2005	Dubaitech Marketing Sdn Bhd Nextnation Network Sdn Bhd	ASP (C) ASP (C)
N2N Connect Bhd	28 Nov 2005	N2N Global Solution Sdn Bhd	ASP (C)
Privasia Technology Bhd	27 Apr 2006	IPSAT Sdn Bhd Privanet Sdn Bhd	ASP (C), NFP (I) & NSP (I) ASP (C), NFP (I) & NSP (I)
REDtone International Bhd	9 Jan 2004	REDtone Marketing Sdn Bhd REDtone Mytel Sdn Bhd REDtone Telecommunications Sdn Bhd SEA Telco Engineering Services Sdn Bhd	ASP (C), NFP (I) & NSP (I) ASP (C) ASP (C) ASP (C), NFP (I) & NSP (I)
SMTrack Bhd *(Formerly known as Smartag Solution Bhd)*	18 Apr 2011	Smartag Technologies Sdn Bhd	ASP (C)
XOX Bhd	10 Jun 2011	XOX Com Sdn Bhd XOX Media Sdn Bhd	ASP (C) & NSP (I) ASP (C)
YTL e-Solution Bhd	2 Jul 2002	Airzed Broadband Sdn Bhd Y-Max Networks Sdn Bhd	NFP (I) NFP (I) & NSP (I)

Source: Bursa Malaysia ACE Market, Industry, MCMC
Figure 1.15 Licensees on ACE Market 2015

CMA licensees listed on ACE Market posted market capitalisation of RM2.2 billion

Licensees on ACE Market: Market Capitalisation 2012 – 2015



Source: Bloomberg, MCMC

Figure 1.16 Licensees on ACE Market: Market Capitalisation 2012 – 2015

Market capitalisation for ACE listed companies whose subsidiaries are licensees under the CMA reached RM2.2 billion in 2015. Telecommunications services companies held 57% share. Meanwhile, Software Research and Development category holds 28% share of market capitalisation.

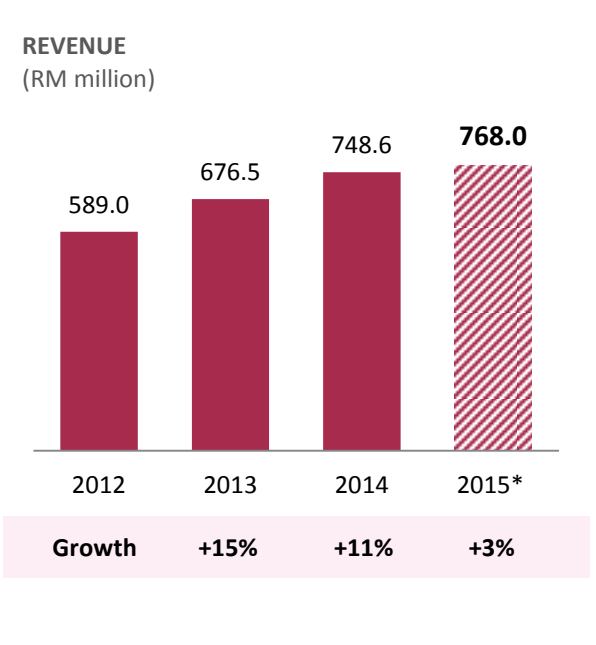
The CMA licensees constituted 0.13% of Bursa Malaysia market capitalisation of RM1,694.78 billion.

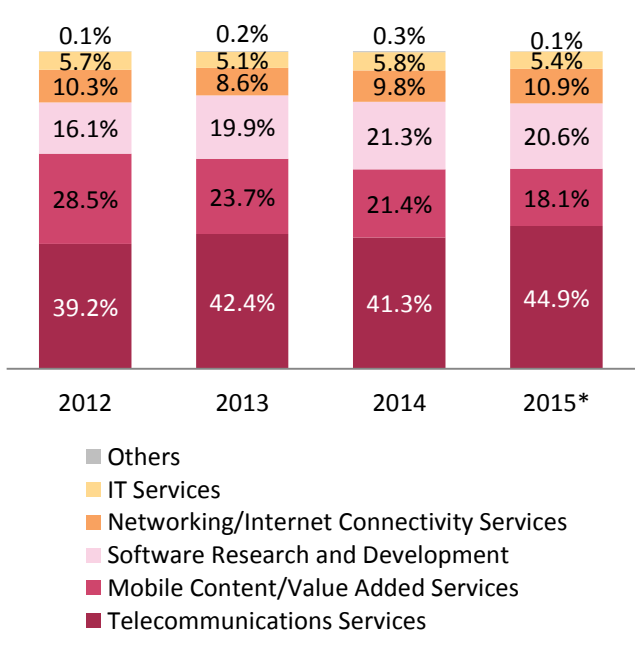
The CMA licensees market capitalisation gained 13% from 2014; with eight out of the 12 companies recorded increase in their market capitalisation.

CMA licensees captured estimated revenue of RM768 million

ACE Market listed licensees estimated revenue for 2015 was RM768 million, a moderate 3% increase from 2014. However, the growth was slower than the 11% recorded in 2014.

Licensees on ACE Market: Revenue 2012 – 2015





**Estimated*

Source: Industry, MCMC

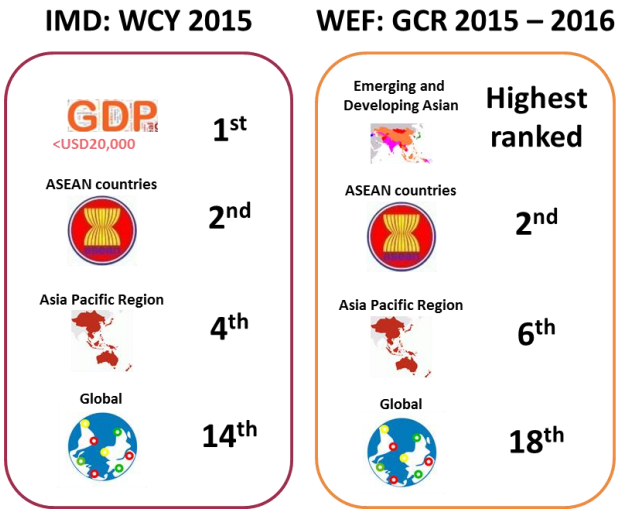
Figure 1.17 Licensees on ACE Market: Revenue 2012 – 2015

MODULE 2: SERVICES AND CONNECTIVITY

Malaysia's Competitiveness in the ICT Sector

Malaysia performed consistently well among developing Asian economies

Malaysia Competitiveness



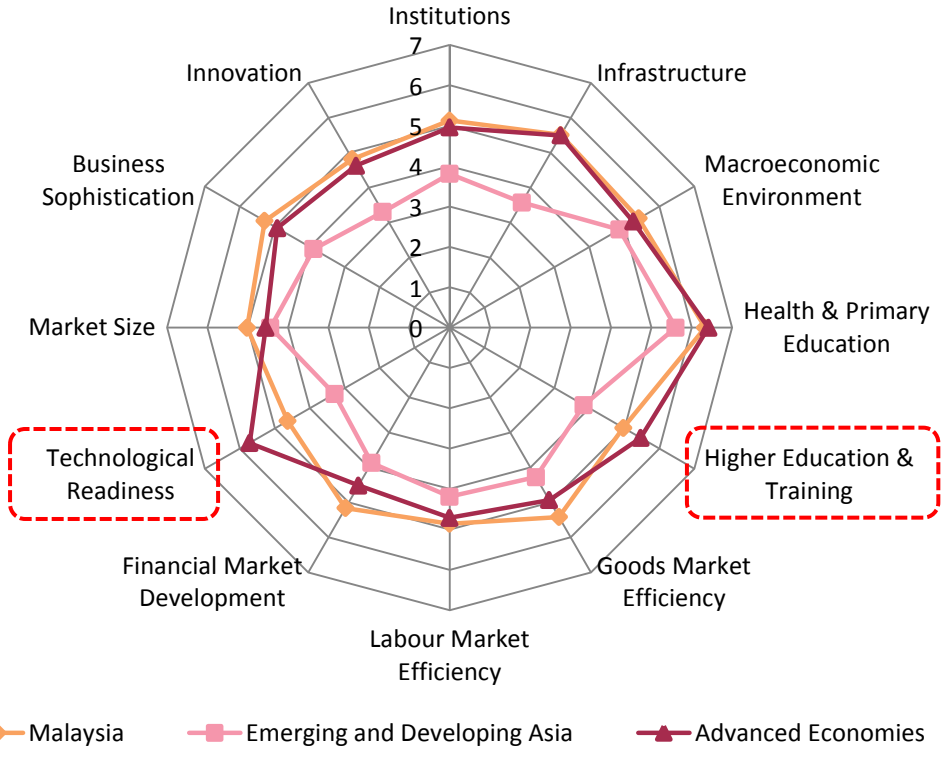
Source: IMD, WEF

Figure 2.1 Malaysia Competitiveness

With the ongoing integration of global markets, country rankings are highlighted as benchmarks to the investment community and governments worldwide. The rankings are published by World Economic Forum (WEF) and International Institute for Management Development (IMD) which indicate status of competitiveness and development among countries in Asia Pacific and ASEAN. The reports, Global Competitiveness Reports (GCR) of WEF and the World Competitiveness Yearbooks (WCY) of IMD use cross-country national competitiveness yardsticks for evaluating country development in key areas and also indicate critical areas for improvement going forward.

Malaysia has performed well in these rankings among developing Asian economies being first and second highest ranked in competitiveness for emerging and developing Asian countries and among ASEAN countries, respectively. Key highlights are shown in Figure 2.1.

Malaysia in the 12 Pillars of Global Competitiveness Index (GCI)



Source: WEF

Figure 2.2 Malaysia in the 12 Pillars of Global Competitiveness Index (GCI)

However, Malaysia needs to improve on technological readiness with focus on connectivity and bandwidth capacity, and enhance higher education and training for appropriately skilled workforce (Figure 2.2). A well-educated and trained workforce is critical as their skills enable them to adapt rapidly to the changing technological environment and knowledge-intensive activities. The identified areas for improvement, once rectified can propel Malaysia to be at par with advanced economies.

For sustainable growth of the communications sector and to achieve target of 95% populated areas covered with broadband by 2020[4], Malaysia needs to continue efforts on ubiquitous access and innovative usage of Internet connectivity. Along with such targets, focus on affordability and readiness in infrastructure remains crucial. Hence, stakeholders need to increasingly collaborate and integrate mutually beneficial roles for relevant, engaging content and seamless services.

[4] Target as stated in the 11th Malaysia Plan.

Broadband in Malaysia

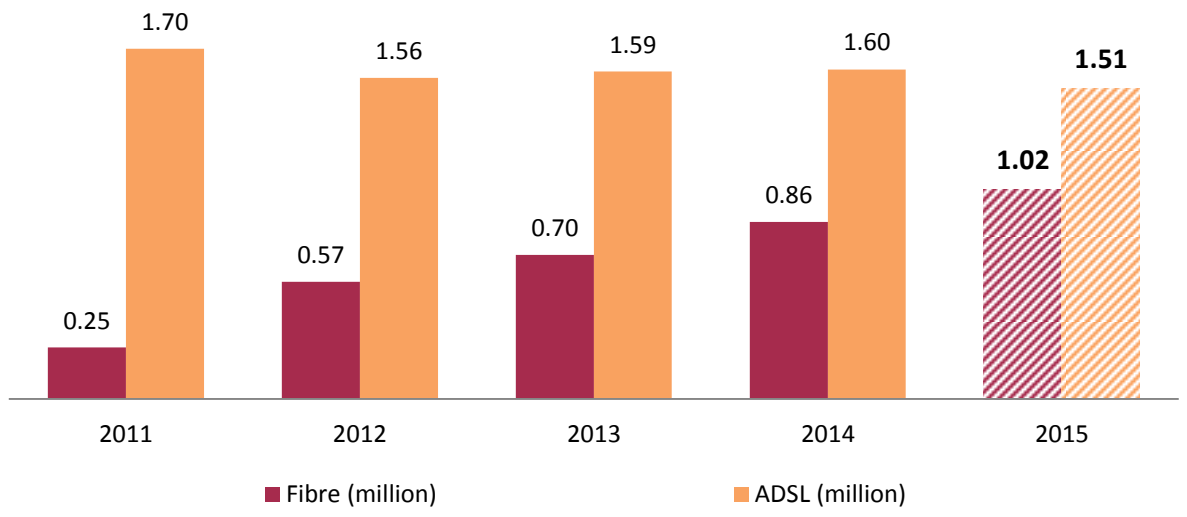
Malaysia broadband subscriptions reached 30.8 million, taking the national household penetration rate to 77.3%

National household broadband penetration rate continued to grow in 2015, registering 77.3% (2014: 70.2%).

Fixed Broadband

In the case of fixed broadband, total number of fibre take up was at 1.02 million subscriptions as at end 2015, a significant increase 18.6% compared with 0.86 million in 2014. In comparison, Asymmetric Digital Subscriber Line (ADSL) service recorded 1.51 million subscriptions, representing a decrease of 5.6% compared with 1.60 million in 2014. The cumulative number of subscriptions for fibre and ADSL respectively since 2011 are shown in Figure 2.3.

ADSL and Fibre Subscriptions 2011 – 2015



Source: MCMC

Figure 2.3 ADSL and Fibre Subscriptions 2011 – 2015

Infrastructure expansion and initiatives to increase digital access

The successful roll out of the HSBB project from 2010 to 2012 (HSBB1) during the 10th Malaysia Plan period has accelerated the number of HSBB subscriptions in Malaysia. This project encompasses urban areas which includes industrial areas and Inner Klang Valley. The number of ports installed under HSBB1 amounted to 1.3 million ports by 2012.

Subsequently, HSBB2 and SUBB projects were announced in Budget 2014. The total cost of the HSBB2 and SUBB for a period of 10 years is RM1.8 billion and RM1.6 billion respectively. HSBB2 encompasses the deployment of additional access and core capacity covering all state capitals and major towns with a targeted speed of up to 100Mbps. SUBB involves the

upgrading of existing copper lines to deliver broadband at downlink speeds of up to 20Mbps, or up to 100Mbps in those areas where Fibre-to-the-Home (FTTH) technology is utilised.

In total, more than 400,000 premises in suburban and rural areas will benefit from the SUBB project by 2019. In addition, Rural Broadband (RBB) initiative was implemented in 2015 with the main objective of providing speed up to 4Mbps in underserved rural areas. Figure 2.4 shows the list of broadband initiatives.

Broadband Initiatives				
	HSBB1	**HSBB2**	**SUBB**	**RBB**
Project Timeline	2008 – 2012	2015 – 2017	2015 – 2019	2015 – 2016
Coverage Areas	▪ Inner Klang Valley and Iskandar Malaysia	▪ All state capitals and selected major towns such as Ayer Keroh, Seremban, Kangar, Kuantan and Kota Bharu ▪ Upon completion in December 2017 to cover 95 areas	▪ Identified suburban areas such as Kota Tinggi, Gurun, Tanjung Karang, Grik and Kuala Pilah ▪ Upon completion in December 2019 to cover 420 areas	▪ Selected rural areas
Speed	10Mbps and above	Up to 100Mbps	Up to 20Mbps	Up to 4Mbps
Number of Ports	**Total Deployed**	**Deployed (as at March 2016)**		
	▪ 1.3 million (2012) ▪ 1.8 million (March 2016)	▪ 135,094	▪ 118,100	▪ 6,700
		Targets (Year)		
		▪ 390,000 (2017)	▪ 420,000 (2019)	▪ 13,500 (2016)

Source: Industry, MCMC

Figure 2.4 Broadband Initiatives

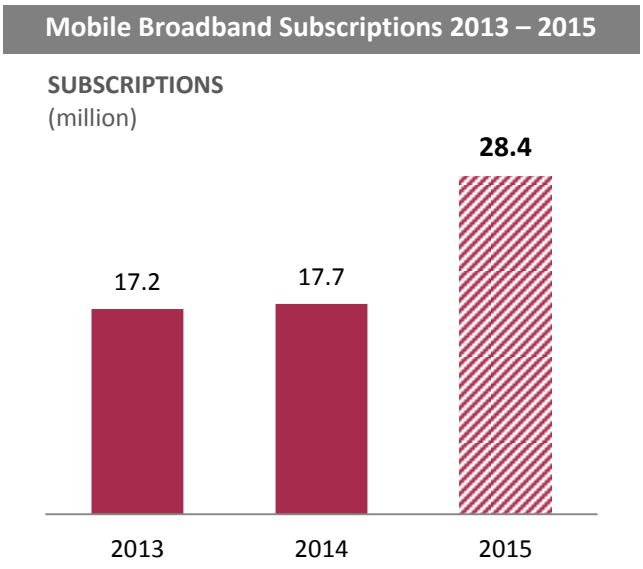
Mobile Broadband

3G and 4G LTE services recorded a total of 28.4 million broadband subscriptions

As at end 2015, mobile broadband recorded a total of 28.4 million subscriptions, an increase of 61% from 17.7 million in 2014.

Mobile broadband subscriptions have been showing increase for the past few years due to migration from 2G to 3G aside from take up arising from increased smartphone affordability and convenience of mobile functionality.

Notably, roll out of 4G LTE services in Malaysia since 2013 has offered higher speed mobile broadband services to subscribers. Subsequently, nearly one million net adds in 4G LTE subscriptions was recorded in 2015.



Note: Mobile broadband comprises 3G and 4G LTE subscriptions

Source: Industry, MCMC

Figure 2.5 Mobile Broadband Subscriptions 2013 – 2015

4G Long Term Evolution Services

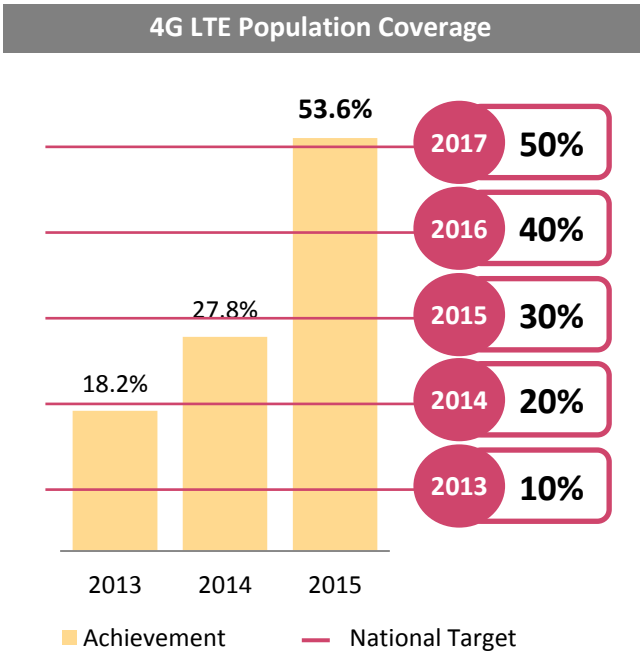
Achieved target of 50% population coverage two years earlier

In accordance with 2.6GHz spectrum allocation as at end 2012, 4G Long Term Evolution (4G LTE) coverage in Malaysia was set at minimum of 50% populated area by 2017.

Notably, as at end 2015, 4G LTE population coverage has reached 53.6%, exceeded the target set, with over 1.35 million subscriptions.

This reflects the commitment and investment made by service providers in 4G LTE deployment, which ultimately delivers enhanced service experience to end users.

As at end 2015, 4G LTE 2.6GHz sites deployed by Altel, Celcom, DiGi, Maxis, REDtone and U Mobile totalled 6,891[5].



Source: Industry, MCMC

Figure 2.6 4G LTE Population Coverage

In terms of fibre backhaul connectivity, as at end 2015, Maxis reported that they have successfully fiberised 43.1% of their sites with the remaining 53% using One Hop to Fibre optic nodes. The balance five sites (4%) are using two hops to fibre optic nodes. Meanwhile, Celcom has fiberised more than 30% of their sites.

By 2015, smartphones adoption worldwide is expected to grow by 10.4% to 1.4 billion units (2014: 26.3%)[6]. This is a driver towards the provision of an accessible, high quality network for digital economy. 4G LTE can enhance business and monetise opportunities through integrated services, and create new streams of revenue. However, service providers need to ensure their subscribers are satisfied with the quality of mobile Internet offered.

[5] Under the spectrum pooling and infrastructure sharing agreement, some of the towers are double counted.

[6] IDC, Worldwide Smartphone Growth Expected to Slow to 10.4% in 2015, Down From 27.5% Growth in 2014, August 2015.

Fixed Services

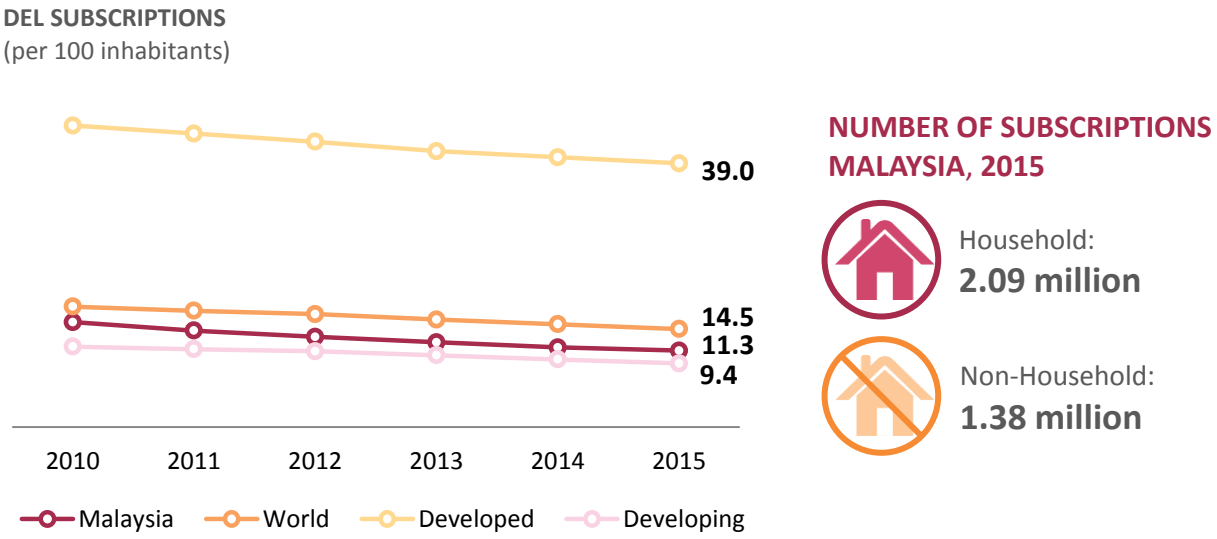
Direct Exchange Line subscriptions was at 11.3 per 100 inhabitants or a total of 3.5 million connections in 2015

As at end 2015, Direct Exchange Line (DEL) subscriptions by population stood at 3.5 million connections with penetration at 11.3 per 100 inhabitants (Figure 2.7). Subscriptions for DEL, or fixed telephony, has declined since its peak at 4.4 million in 2010.

By household penetration rate, DEL was at 27.9% or 2.09 million residential subscriptions, a decline of 1.9% from 2014 at 2.13 million. This decline has been partly offset by fixed broadband take up which offers bundled voice services. Six states in Malaysia namely Johor, Melaka, Negeri Sembilan, Perak, Pulau Pinang and Labuan are well above the national penetration rate level.

This declining trend continues to underscore the increasing substitution of fixed to mobile as well as the impact of increasing OTT services such as Skype, Viber or FaceTime. Certainly, the higher broadband take up, be it fixed or mobile, are encouraging natural substitutions for traditional fixed voice telephony.

DEL Subscriptions: Worldwide and Malaysia



Note: The developed and developing country classifications are based on UN M49 which is a standard for area codes used by the United Nations; For statistical purposes, developed and maintained by the United Nation Statistics Division. For more information refers to unstats.un.org

Source: International Telecommunication Union (ITU), MCMC

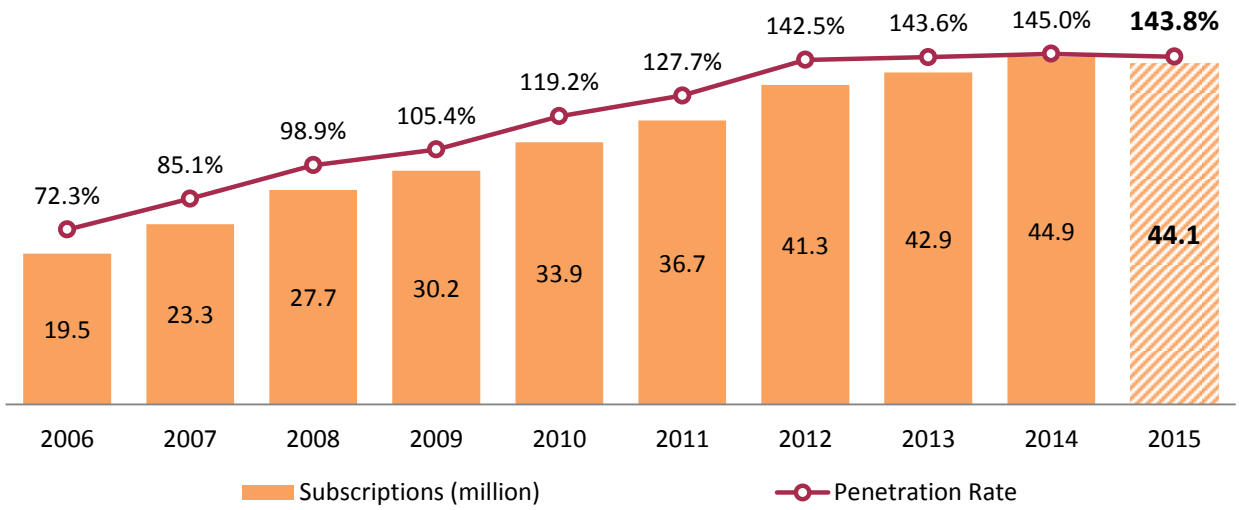
Figure 2.7 DEL Subscriptions: Worldwide and Malaysia

Mobile Services

As at 2015, mobile penetration rate is at 143.8%, equivalent to 44.1 million mobile subscriptions

By 2015, mobile subscriptions totalled 44.1 million, posted a 0.8 million decline compared with 44.9 million in 2014 (Figure 2.8). This decline was mainly attributed to the relatively substantial number of expired prepaid subscription and intense market competition.

Mobile Subscriptions and Penetration Rate 2006 – 2015



Source: Industry, MCMC

Figure 2.8 Mobile Subscriptions and Penetration Rate 2006 – 2015

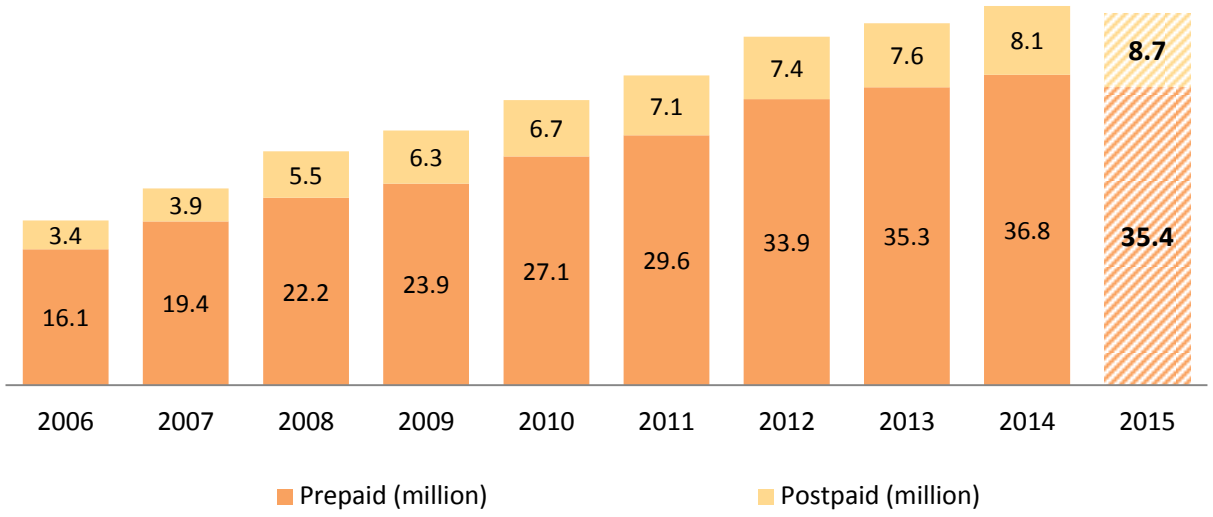
It is not the first time Malaysia experienced such a drop in the number of mobile subscriptions. When the prepaid registration exercise mandated by the Malaysian Government was completed in December 2006, the industry witnessed a decline of more than two million prepaid subscribers. In the 3Q 2014, due to the expiration of prepaid plans, the total mobile subscriber base declined by 89,000 subscribers. These have appeared to be temporary hiccup in the gradual, albeit moderate, growth trend over the years.

Interestingly, for niche markets such as migrant segment, attractive offering from service providers on International Direct Dialing (IDD) rates with free data may have changed subscriber behaviour and therefore subscription numbers. Most migrants workers in Malaysia appear to have a preference towards different service provider offerings and it seems a norm for them to use more than 3 SIMs – one each for IDD calls, domestic calls and data Internet. However, with the current packages available in the market that provide low IDD and domestic calls with data Internet, this has reduced the need to own more than one SIM card.

Prepaid and postpaid subscriptions

As at 2015, the 44.1 million mobile subscriptions comprised 35.4 million prepaid (80.3%) with the balance postpaid at 8.7 million (19.7%). Postpaid subscription has increased 7.3% from 8.1 million in 2014, while prepaid declined by 3.9% from 36.8 million. The increase in postpaid subscription is due to appealing packages as well as strategic partnerships to stimulate take up.

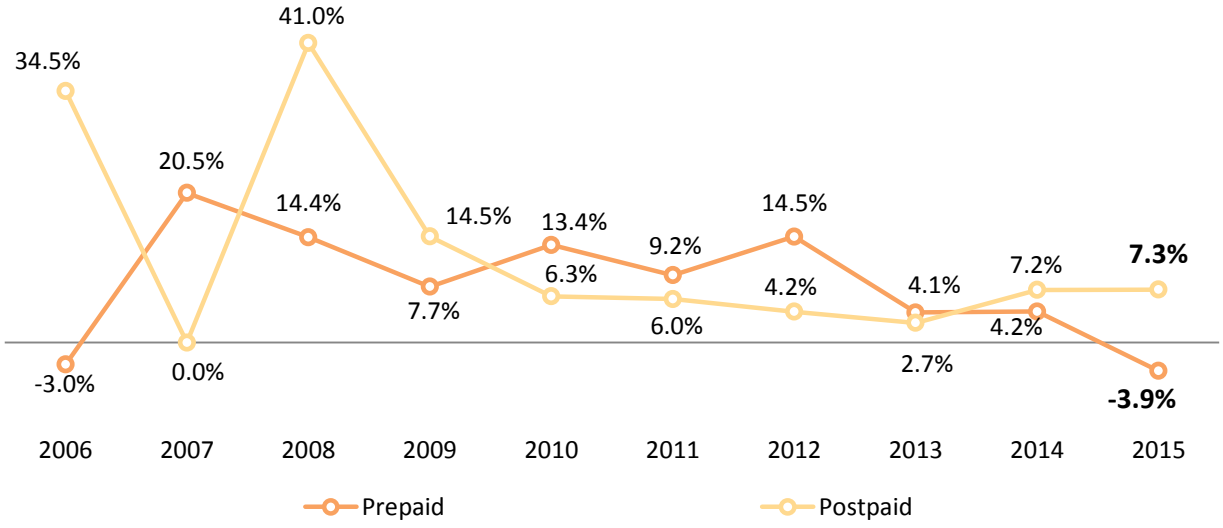
Prepaid and Postpaid Subscriptions of Mobile Services 2006 – 2015



Source: Industry, MCMC

Figure 2.9 Prepaid and Postpaid Subscriptions of Mobile Services 2006 – 2015

Prepaid and Postpaid Subscriptions Growth 2006 – 2015



Source: Industry, MCMC

Figure 2.10 Prepaid and Postpaid Subscriptions Growth 2006 – 2015

Service Provider Market Share: Value proposition reign

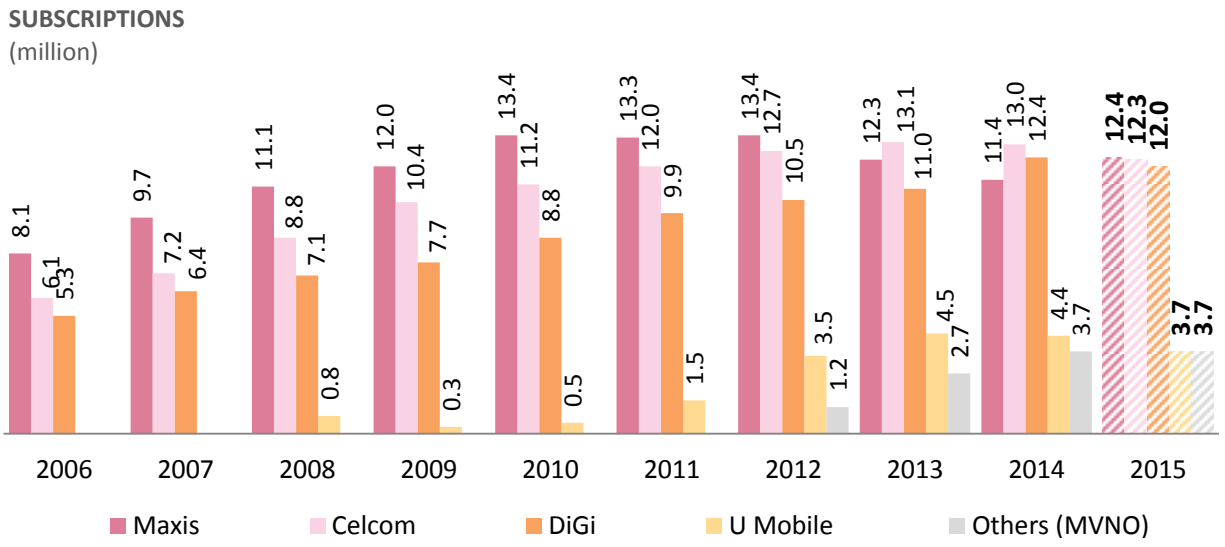
Mobile Network Operators (MNO) continued to face intense and challenging competitive environment. Nevertheless, this brings out the best strategies in driving the development of product innovation and enrichment to enhance value for money products and services.

Maxis managed to grow its subscribers base by 8.8% in 2015, thus regaining its lead at 28.1% market share with 12.4 million subscriptions. This is due to continuous introduction of innovative packages which include *Maxis Zerolution*, as well as enhancing their existing product offering such as *Maxis ONE Share* applicable to *Maxis One Plan* subscribers. These strategies have created competitive advantage to attract subscribers.

Celcom, with 27.9% market share has pioneered the option to allow subscribers to carry forward unused data under its packages namely *FIRST Basic 38* and *Magic SIM Starter Pack*. Meanwhile, DiGi and U Mobile market shares were at 27.2% and 8.4% respectively. DiGi launched multiple digital services such as *DiGi Music Freedom*, *Asia Live* and a cloud-based photo storage with brandname *Capture* whilst U Mobile launched its *POWER Prepaid Pack* and a micro financing option called *Flexi U MicroCredit*.

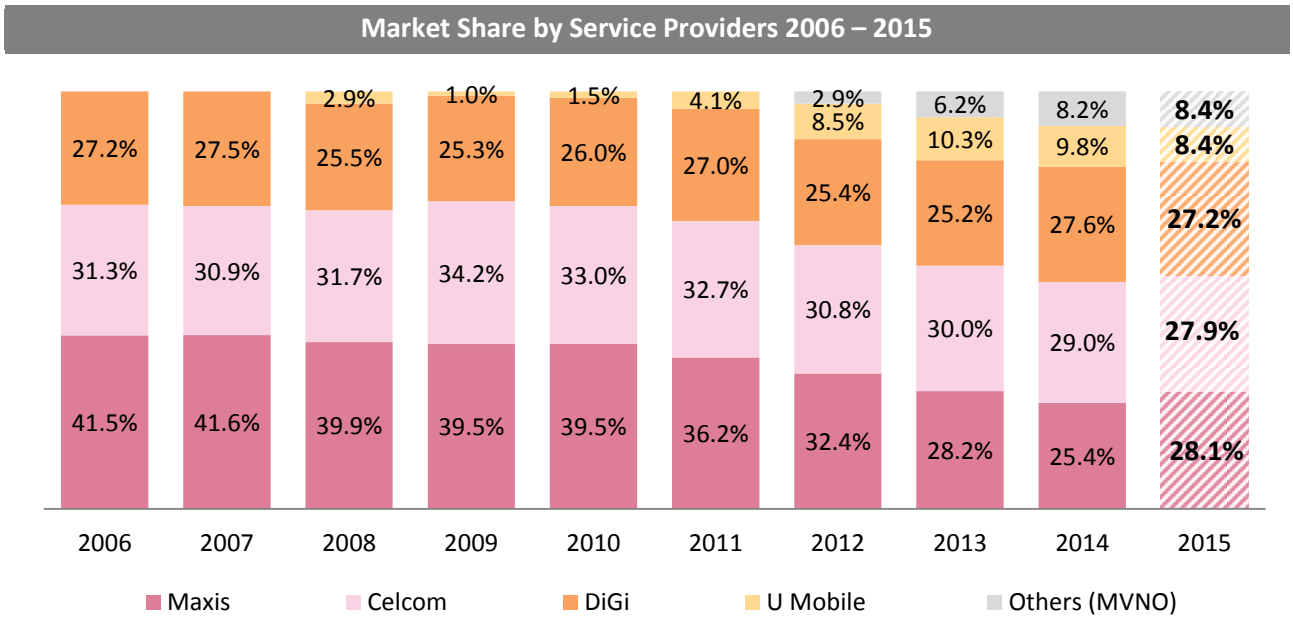
In 2015, MVNO subscriptions stood at 8.4% market share (3.7 million).

Mobile Subscriptions by Service Providers 2006 – 2015



Source: Industry, MCMC

Figure 2.11 Mobile Subscriptions by Service Providers 2006 – 2015



Source: Industry, MCMC

Figure 2.12 Market Share by Service Providers 2006 – 2015

MVNO Services

As at end 2015, there were a total of 24 MVNOs (2014: 20 MVNOs) provisioning mobile services. Although the MVNO market in Malaysia is still expanding with new entrants every year, three major MVNOs have already established relatively strong footholds, securing a combined MVNO market share of 83.4% from a total of 3.7 million subscriptions. These are Tune Talk, XOX Com and RED One Network.

MVNOs maintained their business models by focusing on market share acquisition through strategic MVNO-MNO partnership plan. In addition, MVNOs adopts different strategies to attract and retain their subscriber base. Among their strategies include leveraging their branding with other parties, as well as developing broader dealerships and networks.

To create a sustainable MVNO business proposition that is able to adapt rapidly to customer and market demand is challenging. According to OVUM, one in four MVNOs fail to reach its second year of operations[7]. Even though some MVNOs have found attractive niche markets, but competition from MNOs has intensified while unique value propositions are not easy to develop. For example, migrants market which is one of the MVNO target markets, is a very price-sensitive market.

The strategies adopted by MVNOs thus far are shown in Figure 2.13.

MVNO Challenges and Strategies Adopted	
Challenges	**Strategy Adopted**
Price war	▪ Focused on simple prepaid proposition with low prices ▪ Offering product innovations and hybrid package proposition
Direct competition from MNO	▪ Leverage on captive market within the Group ▪ Expanding retail distribution network
Market saturation	▪ Develop brand recognition and presence that is appealing to the target market ▪ Renegotiation of terms with MNO ▪ Establish a strategic partnership with relevant parties

Source: Industry, MCMC

Figure 2.13 MVNO Challenges and Strategies Adopted

[7] OVUM, The Multifaceted World of MVNOs: Growth and Challenges Ahead, 2013.

Mandatory Standard for the Provision of Services Through a Mobile Virtual Network

With increased subscriber base in niche markets, the MCMC is of the view that additional steps need to be taken to ensure protection of consumers. In this regard, the Mandatory Standard for the Provision of Services Through a Mobile Virtual Network was registered by MCMC on 13 October 2015 and took effect on 15 January 2016. This Mandatory Standard sets the minimum requirements for consumer protection on services by MVNOs.

More specifically, the Mandatory Standard outlines the requirements that both Host Operators and MVNOs need to undertake in the various stages of service provisioning, including service termination. This includes the requirement to provide relevant notices and information on the termination of service, actions and options to be undertaken and provided by both Host Operator and the MVNO for the continuity of service (including facilitating portability options).

The requirement is in line with the consumer empowerment approach, in which sufficient information are to be provided by service providers to enable consumers to make informed decisions. The requirement will also ensure that the consumers can enjoy their services without interruption should the MVNO terminates its services.

Taking into consideration MCMC continued efforts in consumer protection, innovative strategies by the MVNOs are needed to address key challenges and take responsive action.

MODULE 3: CONTENT SERVICES

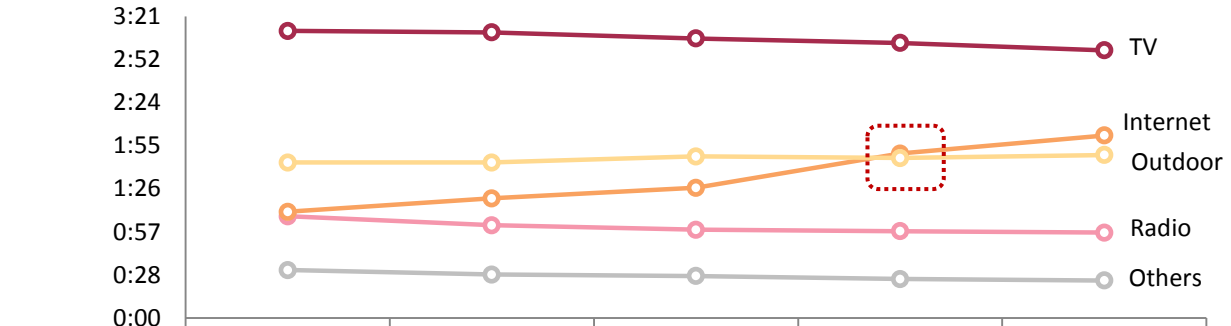
Media Landscape Overview

Consumer media consumption habits are shifting, particularly as digital content continues to evolve. In the past, media consumption[8] is said to be passive such as viewing TV, listening to radio and browsing newspaper. Today, digital media consumption is increasingly interactive with user engaging features. Such time spent and digital media features are fast becoming part of our daily routines and even emerging in business applications and services in line with evolving technological advancement.

In 2015, global media consumption for entertainment and news is estimated at an average of 8 hours 12 minutes a day, up by 1.4% or 7 minutes from 8 hours 5 minutes a day in 2014. The increase is driven by a double digit growth in Internet use by 11.8% in 2015 (Figure 3.1).

In 2014, Internet consumption at 1 hour 50 minutes per day overtook outdoor consumption (1 hour 47 minutes) and is now globally the second most popular consumed media after TV (Figure 3.1).

Worldwide: Average Media Consumption 2011 – 2015



	2011	2012	2013	2014	2015
TV	3:12	3:11	3:07	3:04	2:59
Radio	1:08	1:02	0:59	0:58	0:57
Internet	1:11	1:20	1:27	1:50	2:02
Outdoor	1:44	1:44	1:48	1:47	1:49
Others	0:32	0:29	0:28	0:26	0:25

Note 1. The report measures media consumed in its traditional format and Internet consumption includes all online activities
2. Outdoor media is advertising such as billboards and in-transit vehicles
3. Others comprise Print and Cinema

Source: ZenithOptimedia, Media Consumption Forecasts 2015, June 2015
Figure 3.1 Worldwide: Average Media Consumption 2011 – 2015

TV remains a powerful platform

TV consumption or time spent viewing TV continues to dominate our daily media consumption with the highest average minutes spent. However, the time spent is on gradual downtrend from 3 hours 12 minutes spent per day in 2011 to 2 hours 59 minutes in 2015 (Figure 3.1).

[8] ZenithOptomedia: Media consumption is about the amount of time people spend using various kinds of media such as TV, newspapers and Internet.

Nevertheless, TV remains a popular medium in view of its large audience reach, especially over prime times.

Internet consumption also comprises online TV and video viewing which in Malaysia could be the same content produced for traditional TV. Therefore, it would appear that some audience time spent is also gradually shifting from traditional TV consumption to include online platform.

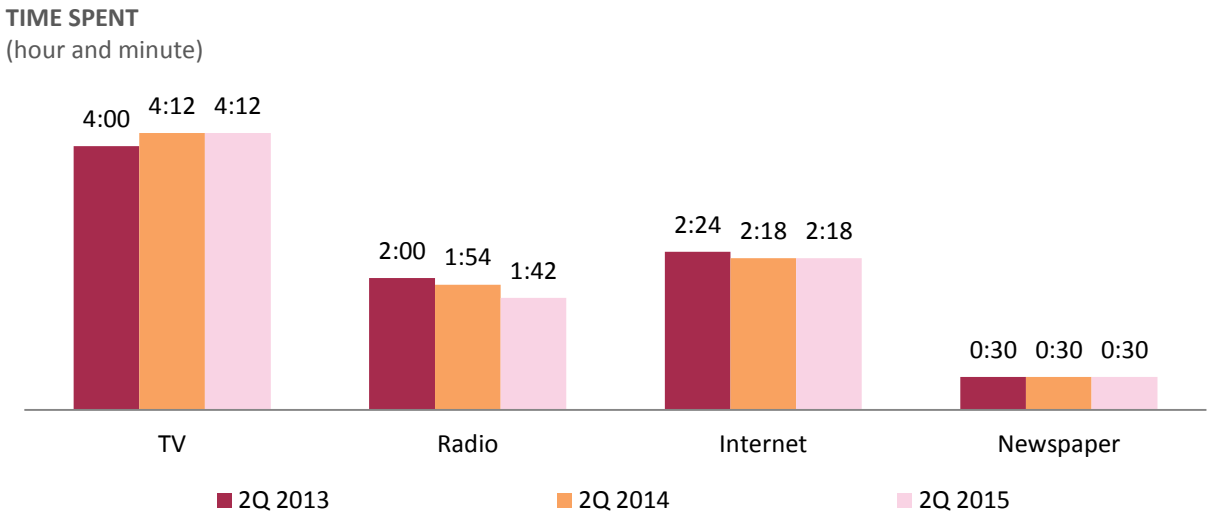
Some trends on TV consumption across several countries are listed below:

- In 3Q 2015, Nielsen showed that traditional TV remains the primary video viewing mechanism for adults across different age groups in United States[9]. Meanwhile, a separate study by the United States Department of Labour found that Americans spent more hours viewing TV with an average of 2 hours 49 minutes per day in 2014, an increase of three minutes from 2013[10].

- A survey by Reuters Institute for the Study of Journalism indicated that TV and online remain the two most popular ways of accessing news on a weekly basis in different locations of the world[11]. However, TV viewing is seen as most preferred in United Kingdom, Germany, France and Japan in 2015, while the online platform is leading in other countries such as United States and Denmark[12].

In Malaysia, TV consumption has the highest average time spent comprising 4 hours 12 minutes per day as at 2Q 2015 (Figure 3.2).

Malaysia: Average Media Consumption



Note 1. Data from Nielsen Consumer & Media View, in period of July of previous year to June 2013, 2014 and 2015 respectively
2. The average time spent on Internet dropped slightly in 2015 due to higher usage among light Internet users

Source: Nielsen

Figure 3.2 Malaysia: Average Media Consumption

A more detailed discussion on Malaysian TV Ratings and Audience Measurement is on page 72 under the section of Advertising Expenditure and Audience Measurement.

[9] Nielsen is a global provider of information and insights into what consumers watch and buy.
[10] Bureau of Labor Statistics United States Department of Labor, American Time Use Survey, June 2015.
[11] Department of Politics and International Relations, University of Oxford, Reuters Institute Digital News Report 2015.
[12] The report also mentioned that their online survey may underrepresent users who are not online.

New Business Model and Strategy Changes

Advertising and Subscription Models Integrated with OTT

Conventionally, TV broadcasters depend on either advertising or subscription business model as prime sources of revenue. However, over the past decade, the Internet revolution has unlocked possibilities to create new viable business strategies for broadcasters, such as integrating OTT into their existing business model for content delivery.

According to Analysys Mason[13], the OTT services such as on demand programming are said to have some substitution effect on physical video sales and now complement traditional linear TV globally[14].

To keep pace with technology advancement and consumer demand for content across multiple media and devices, broadcasters and telecommunications service providers have been aggressively embracing OTT platform across their value chain as a means to increase viewership and subscriptions. Eventually, as Internet Protocol (IP) increases in capacity and throughput, these efforts would to a large extent support new business models and revenue generating sources aside from reducing churn as largely done today.

Figure 3.3 shows major commercial TV broadcasting business models in Malaysia. Notably, broadcasters are transitioning to digital online services to reach a wider audience beyond their conventional means. These strategies are implemented by leveraging on advanced digital technology or establishing alliances or collaborations with trusted business partners in mutually beneficial ways. To date, most major broadcasters provide OTT services to their customers, in particular, Media Prima FTA TV stations and ASTRO satellite Pay TV.

Major Commercial TV Broadcasting Business Model					
Broadcaster	**FTA TV**		**Pay TV**		
	Media Prima	**TV AlHijrah**	**ABNXcess**	**ASTRO**	**TM HyppTV**
Platform	Terrestrial		HFC	DTH Satellite	IPTV
	OTT		-	IPTV and OTT	OTT
Number of TV channel(s)	4	1	50	183 including 69 ASTRO branded channels	119
Source of Revenue	Advertising and Sponsorship		Subscription		
	▪ Content Sales ▪ Subscription via OTT Platform	▪ Content Sales ▪ Government Grants	▪ Internet Service	▪ Content Sales ▪ Advertising and Sponsorship ▪ Merchandising (Home Shopping)	▪ Advertising

Note 1. DTH – Direct To Home, HFC – Hybrid Fibre Coaxial, VOD – Video On Demand
2. ASTRO subscription includes Pay Per View and VOD; TM HyppTV subscription based on triple play services offering high speed Internet, voice and IPTV

Source: MCMC
Figure 3.3 Major Commercial TV Broadcasting Business Model

[13] Analysys Mason is a research company specialising in telecommunications, media and technology market.
[14] Analysys Mason, Netflix and OTT players are, to date, a complement to traditional TV, but could threaten it in the long term, October 2015.

Content reaching audience across multiple platforms

In Malaysia, IP enabled services namely OTT and IPTV, has accelerated over the last few years as high speed broadband access became more pervasive. Over the years, Media Prima has capitalised on the OTT platform in order to extend its audience reach. In this way, they are able to deliver content which was previously only available over FTA TV.

The increased eye balls for OTT and FTA TV diversifies Media Prima revenue sources. However, relatively the monetisation value of OTT platform has yet to be fully capitalised. This is due to a number of reasons including audience fragmentation and advertising measurement. Nevertheless, broadcasters are continuously exploring new avenues in the digital space. Media Prima indicated that in 2016, it is targeting to offer Subscription Video On Demand (SVOD).

In 2015, Media Prima content has received a large number of views from online platform. One of its popular TV programmes is an award winning show known as *Anugerah Bintang Popular Berita Harian* aired in April 2015. The popular programme reported a total of 745,500 page views and 29,600 live streaming unique views; in addition to an average of 3.15 million audience per minute via both FTA and Pay TV platforms. Also, *The Injustice Stranger*, a drama broadcasted via ntv7 station reported 48,700 video views via online platform.

On the other hand, ASTRO is exploring more partnerships with other service providers in the digital space to provide more choice for customers. ASTRO has already positioned their content to leverage on multi-platform delivery aside from selling content to broadband service providers while still maintaining their ASTRO branding. Such strategies have enabled ASTRO to maintain its churn level at about 10%[15].

ASTRO has ventured into multiple platform to reach different audience. For instance, its local comedy programme, *Maharaja Lawak Mega*, garnered over two million views on YouTube. For digital platform, ASTRO has also created a short format pre-school animation kids content called *Didi and Friends* in 2015.

On the big screen, Astro Shaw, the producer and distributer of film under ASTRO has produced a local film *Polis Evo* which gathered the highest gross box office collection of RM18 million in 2015. The film recorded 1.3 million trailer views on YouTube and 1.1 million music video views on YouTube[16].

In December 2015, TM has partnered with iflix Sdn Bhd, a subscription based Video On Demand (VOD) platform provider [17] to deliver TV shows and movies to TM broadband customers. The partnership is said to be TM's first collaboration with an OTT service provider.

[15] ASTRO churn was 9.5% as at January 2016.
[16] ASTRO, ASTRO 3Q FY16 results presentation slides, December 2015.
[17] iflix is an Internet TV service for Southeast Asia. It provides content of top TV shows and movies from all over the world.

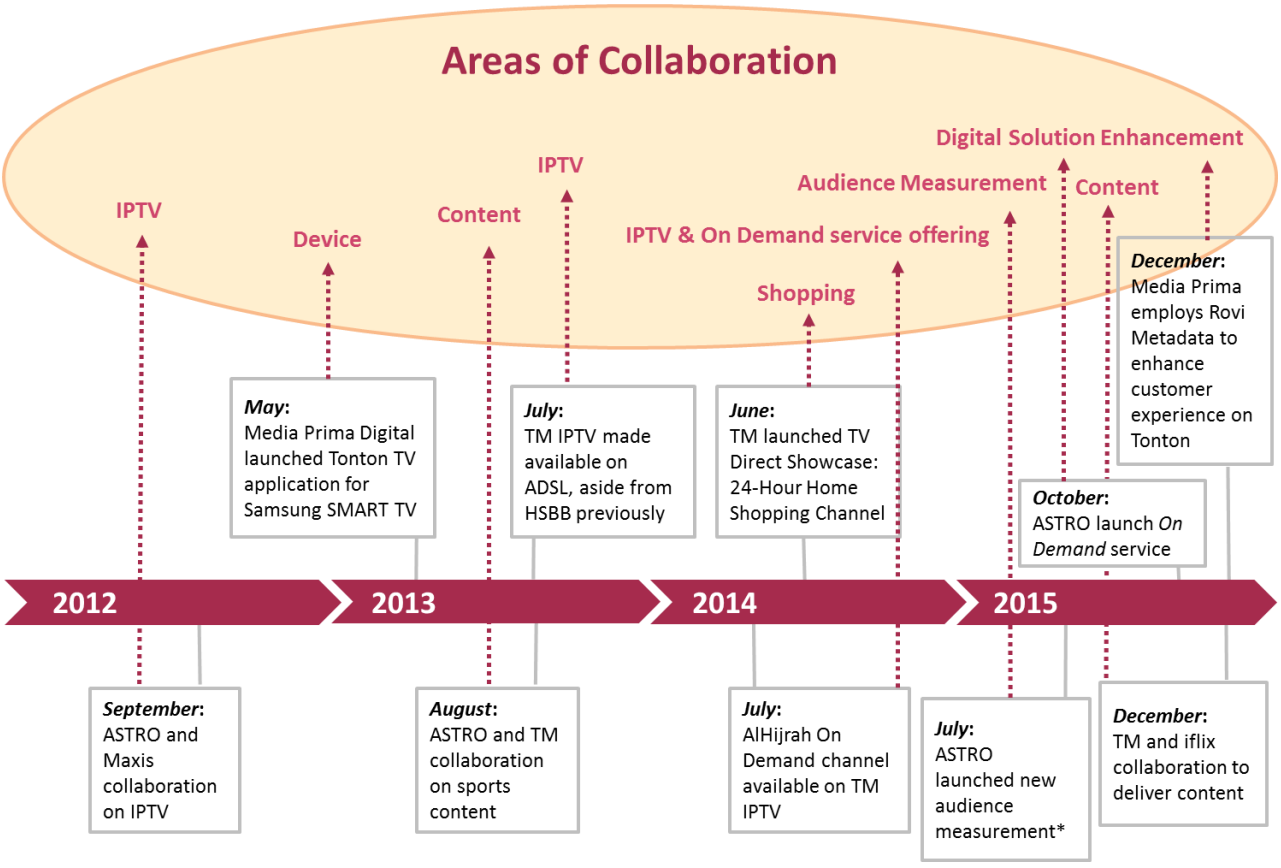
Shopping via TV Platform

In a separate development, ASTRO has diversified into the electronic shopping space. ASTRO has gone into partnership with GS Home Shopping and Korean Multimedia retailer to establish a home shopping experience to its customers. Since its launch in February 2015, Go Shop has reported RM189 million in revenue for the financial year ended 31 January 2016 and is projected to be worth RM3.6 billion in Malaysia by 2020[18]. The Go Shop is now available through TV, online and on mobile apps.

In 2014, TM HyppTV launched 24-hour dedicated home shopping, *TV Direct Showcase*. TM indicated that this development is its first foray into online shopping.

Figure 3.4 highlights the Malaysian broadcasters' development or services solution enhancement between 2012 and 2015. Over these years, the broadcasters have collaborated with other service providers to extend their content reach and diversify their services offered. They have leveraged on digital solutions or partnered to obtain the necessary expertise to enrich customer experience and increase audience interaction. The digital solutions also benefit broadcasters vis-à-vis audience measurement tools and analytics capability.

Selected Broadcasters Development 2012 – 2015



**Partnership with Kantar Media*

Source: News, MCMC

Figure 3.4 Selected Broadcasters Development 2012 – 2015

[18] TheSunDaily, Astro's Go Shop to generate RM500 million annual revenue, February 2015.

Local Content is in Demand

A survey conducted by Vuclip, a mobile VOD service provider focusing on emerging markets, stated that audience in a number of emerging Asian markets prefer content in their native language. In Malaysia, 64% of respondents said that video in their native language was either "very" or "somewhat" important to them[19].

For many years, TV3 took the lead with the highest audience number (Figure 3.5). In 2015, TV3 and five other FTA TV stations garnered 41% of audience share but this has declined by 8% (2014: 49%).

Top 10 TV Channels 2015					
Platform	**Channel**	**2014**		**2015**	
		Position	**Market Share**	**Position**	**Market Share**
FTA TV	TV3	1	49%	1	41%
	TV9	2		2	
	TV2	3		3	
	8TV	4		4	
	ntv7	5		5	
	TV1	6		6	
Pay TV	Ceria	10	11%	7	10%
	Ria	8		8	
	Prima	7		9	
	Sun-TV	9		10	
Others ▪ Pay TV channels* ▪ DVD + external devices to TV set ▪ TV AlHijrah		-	40%	-	49% ▪ 37% ▪ 11% ▪ 1%

**Comprise over 100 ASTRO channels*

Source: Nielsen

Figure 3.5 Top 10 TV Channels 2015

FTA TV continues to be the main TV stations amongst Malaysians for a number of reasons. One main reason is its compelling content which continue to gather strong attention and loyalty of the audience. Another reason is that FTA TV stations have reached nearly all households in Malaysia via both FTA and Pay TV platforms. These provide an established catchment area for advertising.

For example, TV3 is popular for its local content and garnered an average of over 600,000 audience per minute in 2015. Over the last two years, *Anugerah Juara Lagu*, was the most watched TV programme over TV3 with an average 3.7 of million audience per minute.

TV3 and TV9 target the mass Malay audience market. These two stations are expected to continue to deliver a minimum of 60% Bahasa Malaysia content. The other two stations under Media Prima namely ntv7, is a station with trendy and enriching content for urban English speaking audience, while 8TV focus on reality shows and drama for Chinese audience. Both ntv7 and 8TV have played leading roles in building the local Chinese content production[20].

[19] OVUM, Building Digital Audiences: Mobile Video Services for Asia, November 2015.
[20] Source from Media Prima.

The four Pay TV channels in the top 10 ranking (Figure 3.5) are on ASTRO platform namely Ceria, Ria, Prima which are ASTRO branded channels featuring Bahasa Malaysia content; Sun-TV is an international channel airing Tamil content. The four channels garnered 10% of audience share in 2015 (2014: 11%).

It is interesting to note that the market shares of "others" have increased to 49% in 2015 (2014: 40%). This comprise 37% Pay TV, 11% viewing DVD including external devices connected to TV set and the remaining 1% audience on FTA TV, that is, TV AlHijrah. Note that the higher audience fragmentation is due to higher take up of Pay TV subscriptions over the years (Figure 3.5).

Figure 3.6 shows Top 10 TV Programmes via FTA TV Channels in 2015. It is observed that TV3 secured all top 10 TV programmes in terms of audience reach with an average of three million audience viewing the top programmes per minute. This indicates that compelling local content are able to attract wide audience. Overall, the most popular content over TV3 is mainly local drama and entertainment.

Top 10 TV Programmes via FTA TV Channel 2015					
Position	**Channel**	**Description**	**Genre**	**Date**	**Average of individuals viewing per minute ('000)**
1	TV3	Anugerah Juara Lagu (*live*)	Entertainment	18 Jan	3,688
2	TV3	Lestary – Kau, Aku, Kita	Drama	3 Dec	3,505
3	TV3	Anugerah Bintang Popular BH (*live*)	Entertainment	5 Apr	3,154
4	TV3	Super Qu Puteh Bintang B.B. (*live*)	Reality TV	14 Jun	3,100
5	TV3	Akasia – Hello Mr. Perfect	Drama	28 Oct	3,096
6	TV3	Piala FA Final – Kelantan vs Lion (*live*)	Sports	23 May	2,994
7	TV3	Akasia – Mencintaimu	Drama	29 Sep	3,008
8	TV3	Akasia – Dia Isteri Luar Biasa	Drama	30 Jun	2,914
9	TV3	Buletin Utama	News	20 Oct	2,877
10	TV3	Samarinda – Zahira	Drama	22 Jan	2,828

Source: Nielsen

Figure 3.6 Top 10 TV Programme via FTA TV Channel 2015

Similar to FTA TV, local entertainment programme and drama garnered the highest audience over the Pay TV space (Figure 3.7).

Top 10 TV Programmes via Pay TV Channel 2015					
Position	**Channel**	**Description**	**Genre**	**Date**	**Average of individuals viewing per minute ('000)**
1	RIA	Konsert Gegar Vaganza (*live*)	Entertainment	29 Nov	1,905
2	RIA	Konsert Gegar Vaganza Akhir (*live*)	Entertainment	13 Dec	1,552
3	RIA	Tuan Anas Mikael	Drama	1 Dec	1,550
4	WARNA	Maharaja Lawak Mega (*live*)	Entertainment	16 Jan	1,404
5	WARNA	Maharaja Lawak Mega Akhir (*live*)	Entertainment	6 Feb	1,316
6	RIA	Konsert Akhir Akademi Fantasia (*live*)	Entertainment	11 Oct	1,305
7	PRIMA	Kilauan Emas Persada (*live*)	Musical	27 May	1,187
8	RIA HD	Konsert Gegar Vaganza 2 (*live*)	Musical	15 Nov	1,180
9	RIA	Tersuka Tanpa Sengaja	Drama	31 Dec	1,132
10	RIA	Konsert Akademi Fantasia (*live*)	Entertainment	4 Oct	1,045

Source: Nielsen

Figure 3.7 Top 10 TV Programmes via Pay TV Channel 2015

ASTRO's key differentiator is in-house local content, such as entertainment, drama and musicals to create necessary 'stickiness' with their customers.

ASTRO sports channel, Astro Arena continued to increase its coverage of local content by renewing and entering into partnerships with national sports bodies. In May 2015, ASTRO renewed its agreement with the Olympic Council of Malaysia to provide coverage for national sports associations affiliated to the council for another five years from 2015 to 2020.

In December 2015, Astro Arena and The Malaysian Hockey Confederation entered into a partnership agreement, wherein Astro Arena is the appointed broadcast and distribution rights partner for hockey events and the co-sponsor for Malaysian National Hockey teams.

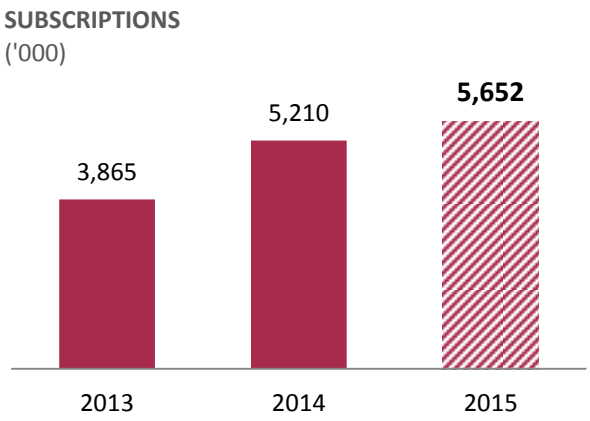
International content

Although local content is in demand, there is also a large number of Asian and international content available in the market; providing added variety and catering to audience seeking such content. In 2015 alone, Media Prima indicated that it has a content library of over 9,000 hours or about 375 days equivalent of international content.

Similar to FTA TV content production, the Pay TV service providers also acquire international content to provide a variety of programmes for sustainability of its subscriber base. For instance, in July 2015, ASTRO launched WWE Network, a service owned by World Wrestling Entertainment in United States.

Meanwhile, TM IPTV introduced seven new channels in 2015, which also added VOD, interactive learning and entertainment channels, whilst ASTRO's new channels include home and lifestyle entertainment, and documentary.

Pay TV Subscriptions 2013 – 2015



Source: Industry, MCMC

Figure 3.8 Pay TV Subscriptions 2013 – 2015

Figure 3.8 shows the Pay TV subscriptions from 2013 to 2015. In 2015, there were 5.65 million Pay TV subscriptions, up 8.4% from 5.21 million in 2014.

ASTRO has 4.8 million residential customers as at January 2016. The Group boost its customer base by offering non-subscription services namely *NJOI* since 2011 to target the low income group. As at 31 January 2016, *NJOI* has 1.3 million customers.

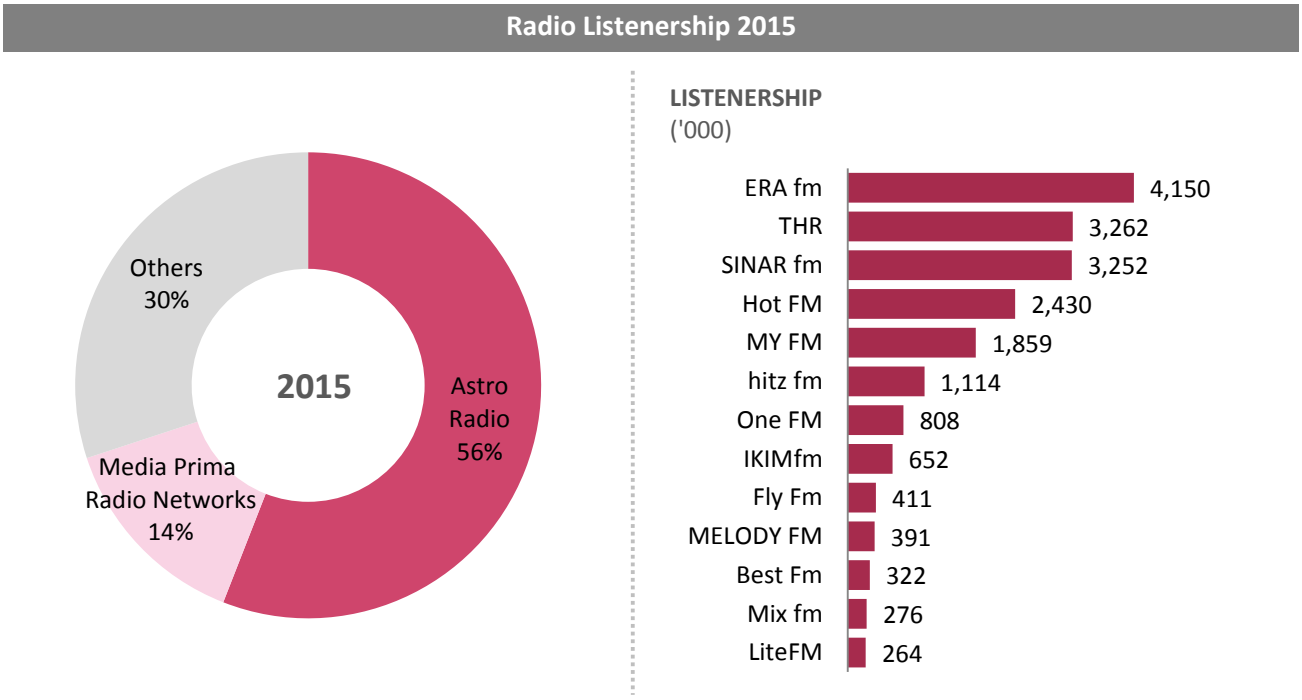
TM IPTV take up continues to be supported by increasing broadband subscriptions which is close to one million.

Radio Broadcasting

In the current digital space, radio remains popular with its targeted listeners while radio accessibility continues to expand via various delivery platforms.

Traditional radio continues to effectively reach listeners, with nine out of 10 persons[21], or 93.7% listeners aged 10 years and above in Peninsular Malaysia tuned in to their favourite radio stations[22].

In a separate survey conducted by Nielsen, ASTRO Radio stations are the most preferred station with 56% of listeners tuning in on a weekly basis. Three of the ASTRO radio stations namely ERA fm, THR and SINAR fm were in the highest listeners list (Figure 3.9). In contrast, 14% tune in to Media Prima radio stations.



Note: Both figures represent individuals aged 15 years and above in Peninsular Malaysia between July 2014 and June 2015. Others refer to those who listened to radio stations that are not listed here.

Source: Nielsen, MCMC
Figure 3.9 Radio Listenership 2015

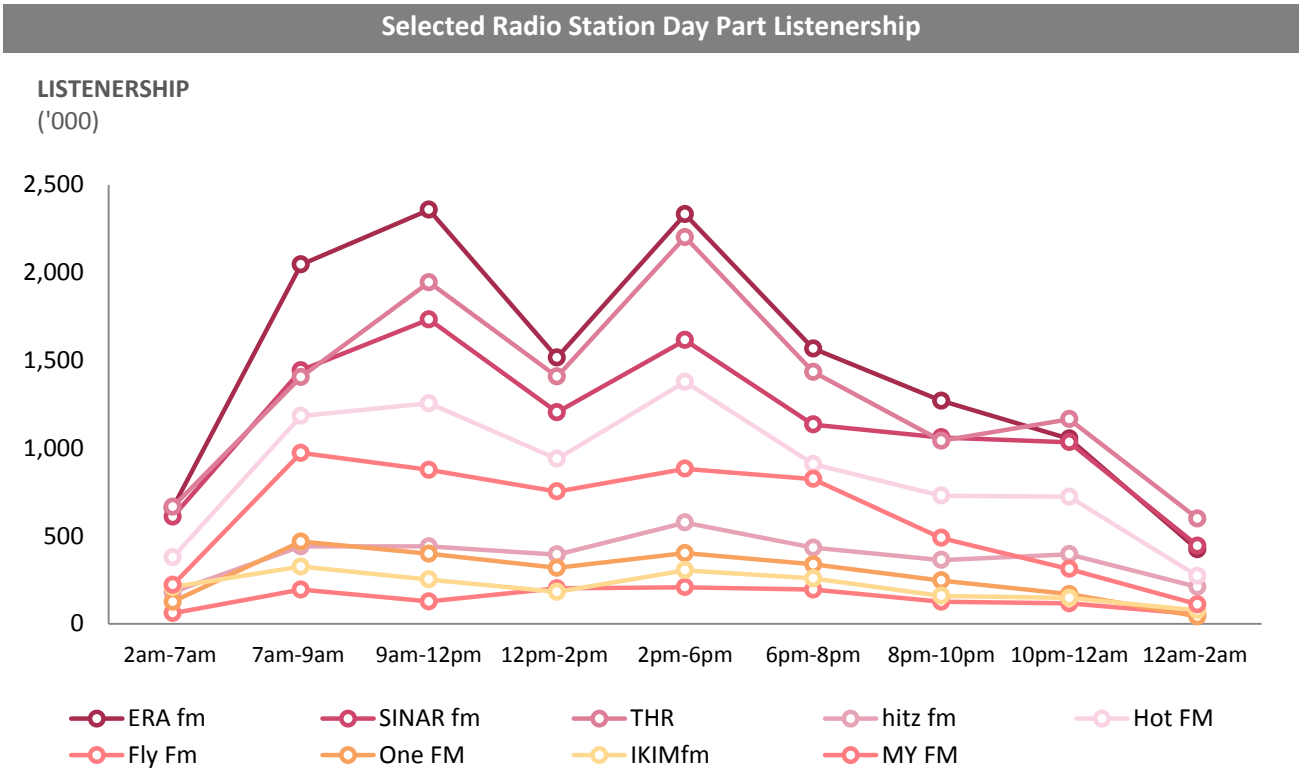
Note that the "others" category refers to radio stations listeners exclude those under ASTRO Radio and Media Prima Radio Networks but includes Singapore radio stations.

Peak times in radio listenership

Nielsen Radio Audience Measurement indicated that the peak times in radio listenership is during early morning and afternoon, where most listeners commute to school or work (from 7am to 9am) and going home from work (5pm until 7pm). Listeners who commute by car are most likely to tune in to the car radio whereas those who commute by public transportation such as the train and buses use their mobile devices. Car radio listenership in Malaysia

[21] GfK, Nine in 10 in Malaysia Tune In to Radio for 17 hours in a Week, July 2015.
[22] Nielsen, Radio Listenership Continues to Appeal Among Malaysians, November 2015.

reaches out to 12 million listeners aged 10 years and above while three in 10 listeners aged 10 years and above consume radio via smartphone and other connected devices[23].



Note: Figure represent individuals aged 15 years and above in Peninsular Malaysia between July 2014 and June 2015

Source: Nielsen, MCMC

Figure 3.10 Selected Radio Station Day Part Listenership

Radio listening through apps

With the quality of the country's transportation infrastructure improving, people are more inclined to commute using public transportation. This observation stems from the Government Transformation Programme Annual Report 2014[24] which indicated that the number of public transportation users increased to 455,728 passengers during peak hours in 2014 compared with 437,525 passengers in 2013; a 4% increase.

Furthermore, in 2015, there were 500,000 passengers commuting on Light Rail Transit (LRT) and KL Monorail on a daily basis .

[23] GfK, Radio Audience Measurement Wave 2, December 2015.
[24] Performance Management and Delivery Unit (PEMANDU), Government Transformation Programme Annual Report 2014, 2014.

Selected Radio Station Apps *(Number of Downloads 2015)*	
Radio Station	**Total Apps Download Range***
ERA fm	500,000 – 1,000,000
SINAR fm	100,000 – 500,000
THR Gegar	500,000 – 1,000,000
hitz fm	500,000 – 1,000,000
Hot FM	100,000 – 500,000
Fly Fm	100,000 – 500,000
One FM	100,000 – 500,000
IKIMfm	100,000 – 500,000
MY FM	100,000 – 500,000

Source: Figure obtained from Google Play Store only
Figure 3.11 Selected Radio Station Apps

In line with increased commuters on public transportation, radio stations are now exploring the mobile platform to meet the needs of users who are constantly on the move. This strategy is executed by developing apps so that users do not miss their favourite broadcast show. The number of downloads of selected applications for radio stations are in Figure 3.11. Note that the upper range for each app is between half a million and a million downloads.

Furthermore, time spent listening to radio is higher when using the mobile platform using radio apps[25]. Studies from GfK showed that listeners on the mobile platform tend to spend a weekly average of 18 hours listening to radio.

Notably in 2015, the local radio broadcasters focused on various strategies to drive growth in listenership and increase revenue in 2015 as follows:

- Enhance content by introducing new content offerings and improving programming strategies across all available platforms. For example, broadcasters' emphasis on local content and maintaining local identity;
- Increase streaming listenership and tap new digital revenue opportunities; and
- Grow social media community base.

In term of radio station listenership highlights, some of the key accomplishments for selected radio stations are as follows:

Selected Radio Station Achievement 2015	
Radio Station	**2015 Achievements**
ERA fm	▪ 2.6 million listeners tune into its morning show "JoHaRa Pagi ERA" ▪ Time spent listening to the station is 8 hours 5 minutes
SINAR fm	▪ Country's No. 3 brand ▪ Second most listened-to Malay station ▪ "Breakfast" and "Drive" programmes captured 1.9 million and 1.8 million listeners respectively
THR Gegar	▪ Retained its position as No. 1 station in East Coast
hitz fm	▪ Weekly reach of 1.1 million listeners ▪ Listeners spent close to six hours of infotainment on Hitz fm
Hot FM	▪ Average weekly reach of 2.4 million listeners
MY FM	▪ Retained its position as the country's No. 1 Chinese station with two million listeners

Source: Industry
Figure 3.12 Selected Radio Station Achievement 2015

[25] GfK, Nine in 10 in Malaysia Tune In to Radio for 17 hours in a Week, July 2015.

In 2015, ASTRO Radio indicated that they have worked closely with its TV, publications and digital partners to collaborate and deliver fully integrated multi-platform client campaign solutions. Meanwhile, another radio station, BFM 89.9 has promoted ASTRO content as strategies to grow revenue and monetise new services.

In October 2015, Media Prima entered into a conditional share purchase agreement to acquire Copyright Laureate Sdn Bhd for a total cash consideration of RM20 million. The company operates Ultra FM and Pi Mai FM radio stations in Klang Valley and Pulau Pinang respectively. The proposed acquisition is said to provide potential in terms of revenue growth for Media Prima. This move is in tandem with the Group's business strategy of procuring strategic media assets and grow advertising share.

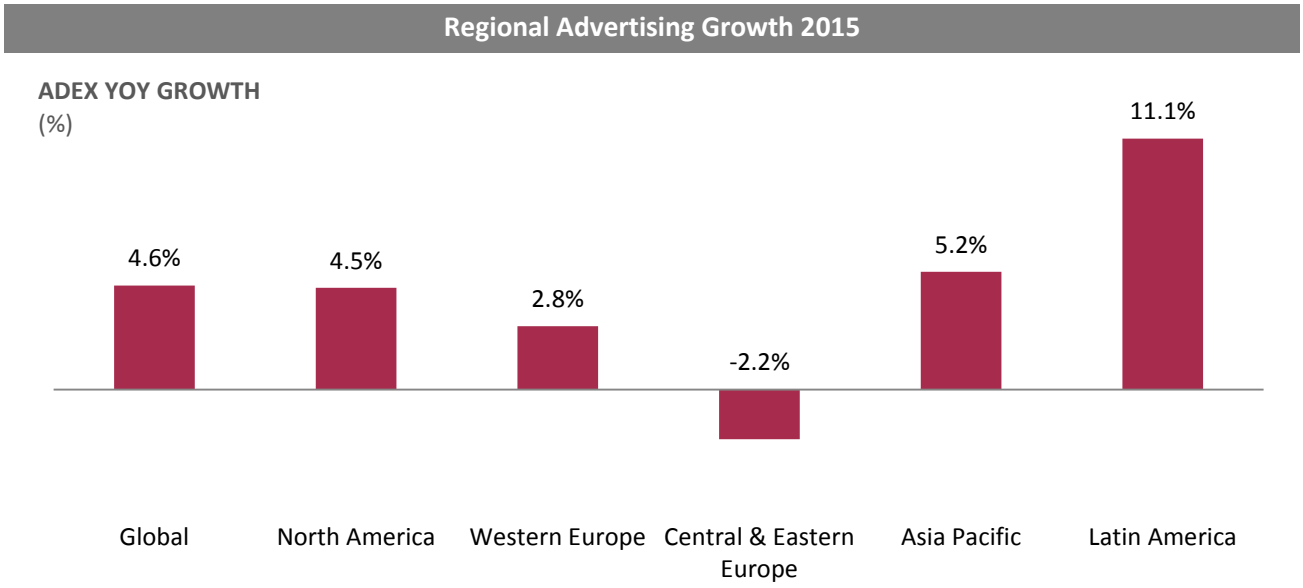
Meanwhile, new private radio stations in 2015 include Tea fm radio which has been set up in Kuching to cater to listeners in Sabah and Sarawak. Tea fm radio which made its debut broadcast on August 2015, is a private radio station jointly owned by Alpha Impress Sdn Bhd and Redberry Sdn Bhd Targeting urban Chinese population, particularly women aged between 20 and 40 years old, Tea fm broadcasts in Chinese dialects as well as in English.

Radio broadcasters are already further expanding their listeners reach using other platforms including TV and the Internet. Media Prima radio station, Hot fm is an example having launched Hot TV, and using the Internet as a platform for online radio streaming.

Advertising Expenditure and Audience Measurement

Global Adex increased by 4.6% to reach USD540 billion in 2015

In 2015, global advertising expenditure (Adex) is expected to reach USD540 billion, a 4.6% increase over 2014 . Major events such as Winter Olympics, FIFA World Cup and United States mid-term elections contributed to boost advertising outlays. Such optimism is also due to digital media, which is fueling growth in advertising budgets. Global digital spending is forecasted by Carat Media to grow 15.7% in 2015.



Source: Carat Media

Figure 3.13 Regional Advertising Growth 2015

Digital Adex includes promotional advertisements and messages delivered through email, social media websites, online Adex on search engines, banner ads on mobile or websites and affiliates programmes. Globally, digital Adex in recent years is becoming the fastest growing medium. Notably, digital Adex rose to 29% of total global spend in 2015, from 25.5% in 2014. By 2018, digital Adex is expected to attract 36.6% of all global advertising, overtaking TV for the first time to become the world's largest advertising medium[26].

Media Partners Asia Ltd, a research and consulting firm said that for Asia Pacific, the share of digital media in the advertising market in 2015 was 30.7%. This is projected to overtake TV by 2017 and increase to 44.2% by 2020. It is noted that in 2014, digital Adex revenue overtook TV in China and by 2022 – 2023, Korea's digital Adex is expected to surpass TV.

One of the reasons for TV's loss of market share to digital media is the rapid growth of online mobile. With 3.6 billion unique mobile subscribers as at end 2014, and another one billion added by 2020 taking global penetration rate to 60%[27], mobile is indeed pervasive. Mobile is changing in the way consumers seek information, view content, browse products, purchase goods and services and many other usage[28].

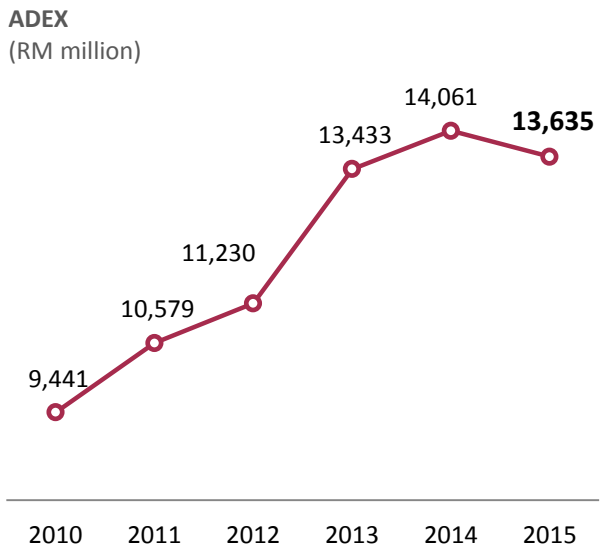
[26] ZenithOptimedia, Online Video to Lead 4.4% Growth in Global Adspend in 2015, March 2015.
[27] eMarketer, Mobile Ad Spend to Top $100 Billion Worldwide in 2016, 51% of Digital Market , April 2015.
[28] Carat Media, Carat predicts digital spend to reach more than 25% of total advertising spend in 2016, fuelled by upsurge in mobile advertising spending in 2015, March 2015.

In view of this development, mobile Adex is expected to reach USD100 billion worldwide in 2016, comprising 51% of the digital market[29]. While TV offers unparalleled capacity in view of established audience reach, online offers targeted and personalised marketing messages[30] which is expected to have more pervasive impact in the long run.

Malaysia Adex grew 6.2% for the first three months of 2015

Adex in Malaysia grew by 6.2% for the first three months of 2015 compared with the same period in the previous year. However, total Malaysia Adex dropped by 3% year on year.

Malaysia Adex 2010 – 2015



Source: Nielsen

Figure 3.14 Malaysia Adex 2010 – 2015

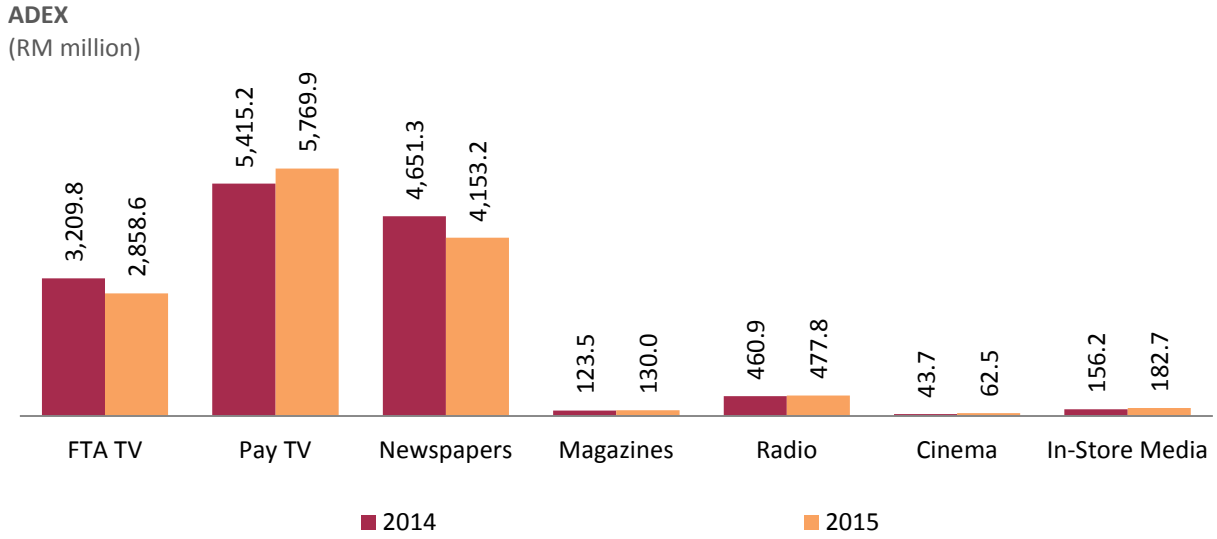
By medium, advertisers are still much focused on TV and newspapers as platforms for advertisement. TV play a major role in Adex with total contribution of 63% or RM8.6 billion of total Adex (RM13.6 billion in 2015).

Adex for Pay TV showed an increase of 6% which is partly contributed by the motion picture "The Journey". This movie was advertised in a total of 8,761 spots on 24 channels[31]; made in Malaysia and accorded a rather successful local film in 2015, with RM17.2 million at the box office[32].

On the contrary, both FTA TV and newspaper Adex dipped 12% year on year, while radio Adex increased 4%. This suggests that some advertising budgets have migrated from FTA TV and newspapers to the radio medium[33].

[29] eMarketer, Mobile Ad Spend to Top $100 Billion Worldwide in 2016, 51% of Digital Market, April 2015.
[30] livemint.com, TV Grows Despite Strides in Digital Spends, December 2015
[31] The Star, Pay TV also Hit by Soft Advertising Market, March 2015.
[32] Finas, Top 30 Feature Film, Access on February 2015.
[33] Maybank Investment Bank Research, Total Adex Contract Down 8% YoY in August, September 2015.

Malaysia Adex by Medium 2014 – 2015



Source: Nielsen

Figure 3.15 Malaysia Adex by Medium 2014 – 2015

Digital Adex in Malaysia is expected to grow 12.7% by 2019 to USD227 million. For 2016, given the relatively uncertain macroeconomic environment, consumers and advertisers are expected to continue to be cautious on their spending. Maybank Investment Bank Research forecast total 2016 gross Adex in Malaysia to show year on year growth of 5%. Spending for advertising is also expected to improve with major sports events (Summer Olympics and UEFA Euro Cup) scheduled for mid-2016.

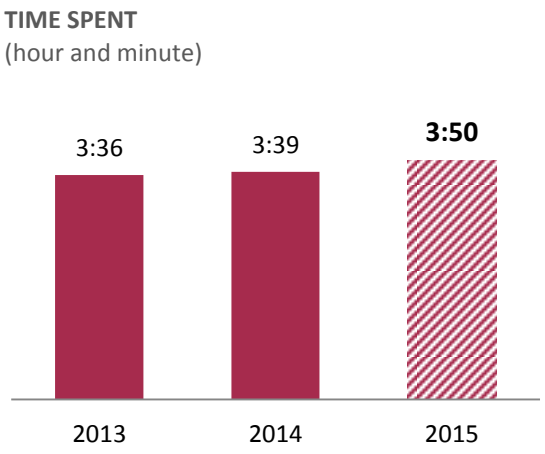
Audience Measurement

The value of TV advertising slot for advertisers depend on the number of audience viewing a particular TV programme and the time they spend on TV. As TV remains the main advertising platform due to its popularity, this section highlights the audience measurement to provide some insight on TV viewing habits among Malaysians.

The average time of viewing traditional TV per day continued to increase despite content being made available across various platforms and devices.

On average, Malaysians spent 3 hours and 50 minutes a day on TV in 2015, higher than that recorded in 2014 (3 hours 39 minutes) (Figure 3.16)[34].

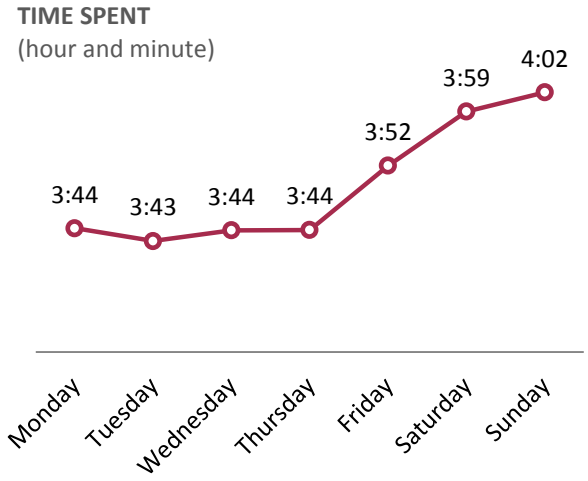
Malaysian Average Time of Broadcast TV Viewing Per Person Per Day 2013 – 2015



Source: Nielsen Television Audience Measurement

Figure 3.16 Malaysian Average Time of Broadcast TV Viewing Per Person Per Day 2013 – 2015

Malaysian Average Time of Viewing by Different Day in a Week 2015



Source: Nielsen

Figure 3.17 Malaysian Average Time of Viewing by Different Day in a Week 2015

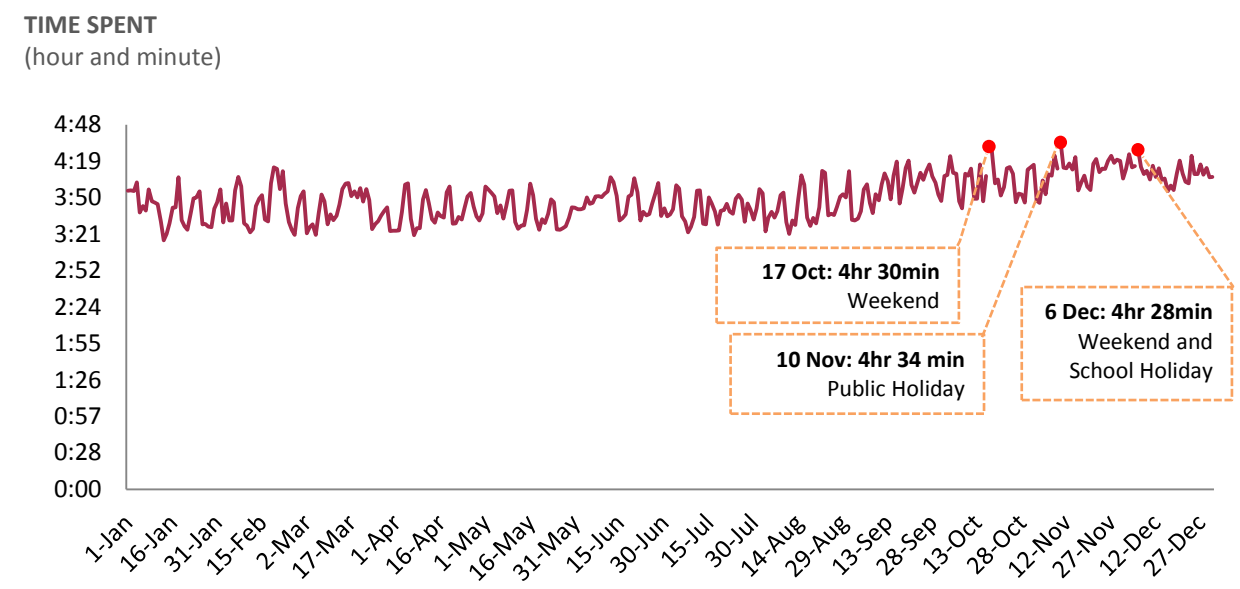
Figure 3.17 shows the average time of viewing by different days in a week in 2015. Notably, people spent more time viewing TV on weekends (Saturday and Sunday), when most people are at home.

By breaking down into different days throughout the year, each person spent approximately 3 to 4 and a half hours on average per day viewing TV in 2015 (Figure 3.18).

A detailed analysis reveals that Malaysians usually spend more time on TV during public holidays, weekends or school holidays. The highest time spent viewing TV amongst Malaysians with an average of 4 hours and 34 minutes per person was on 10 November 2015 during the Deepavali celebration. This is most likely due to the public holiday falling in the middle of the week and people appeared to have rather stayed at home instead of going for a holiday (Figure 3.18).

[34] Based on individuals aged four years and above living in Peninsular Malaysia.

Malaysian Average Time of Viewing Per Day 2015



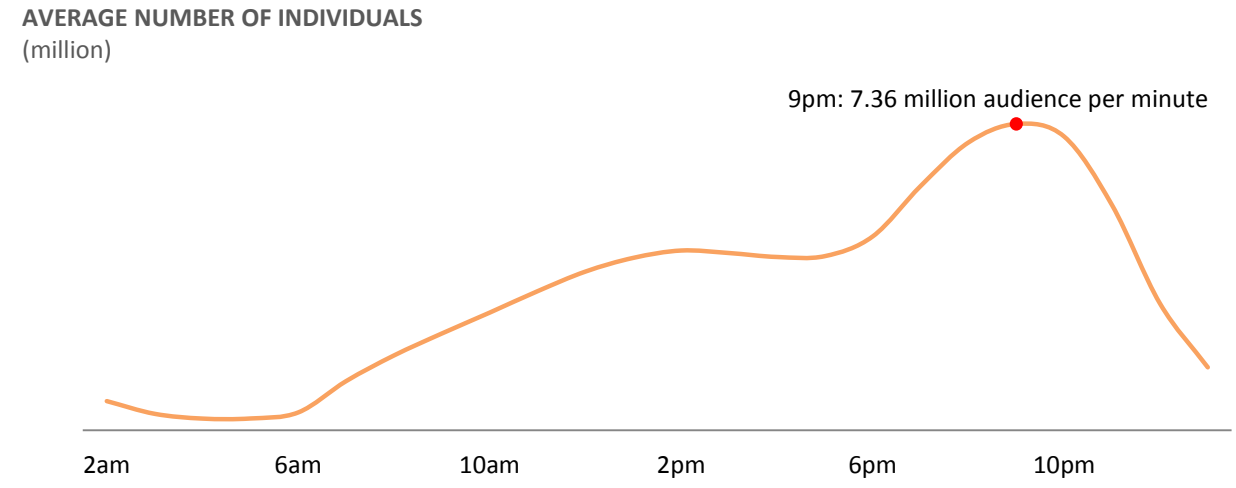
Source: Nielsen

Figure 3.18 Malaysian Average Time of Viewing Per Day 2015

Figure 3.19 shows TV Broadcast Daypart across FTA and Pay TV channels in 2015. The peak is at 9pm with seven million audience on TV in Malaysia, same as in 2014.

Due to the higher time spent on TV during weekends and at night, Nielsen suggested that advertising fees are typically more expensive during these periods.

Malaysian TV Broadcast Daypart 2015



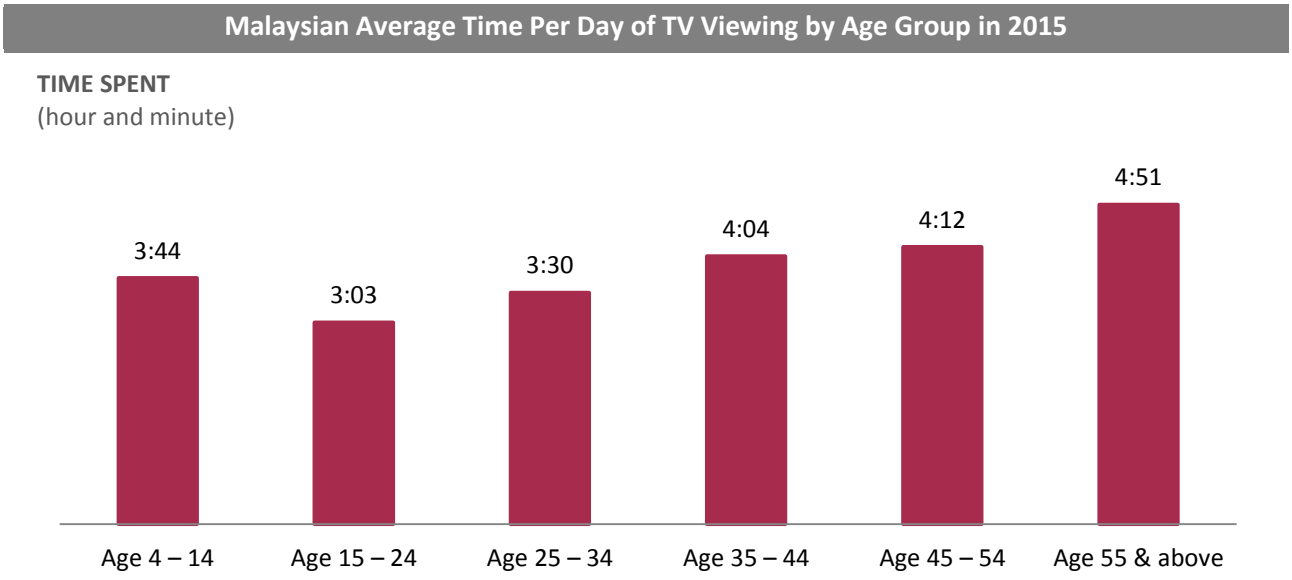
Source: Nielsen

Figure 3.19 Malaysian TV Broadcast Daypart 2015

Viewing behaviours differ by demographic

In 2015, teenagers and millennials aged 15 to 34 spent less time viewing TV between 3 hours and 3 and half hours a day, while audience aged 35 and above tend to spend more time on TV more than 4 hours a day.

This trend is similar to United States and United Kingdom whereby teenagers and millennials spent less time on TV vis-à-vis adults aged 35 and older. This pattern suggests that teenagers and millennials are technology savvy generations and are likely to use connected devices as substitute for TV (Figure 3.20).



Source: Nielsen

Figure 3.20 Malaysian Average Time Per Day of TV Viewing by Age Group 2015

MODULE 4: ENABLEMENT PLATFORMS AND SMART COMMUNITY

Digital Services and Data Enablement Platform

Exponential pace of technological advancement and disruptive trends in ICT is reshaping the structure of the C&M services towards vertical convergence. Digital services are being built across vertical economic sectors which ride on enablement as well as data platform and supported by robust and secure communications infrastructure.

In light of these developments, MCMC seeks to promote new strategic areas such as digital services and data enablement platforms as key initiatives. The strategic initiatives involving digital services and data enablement platform are expected to unlock greater value across the public and private sector and across all layers of the Malaysian digital economy.

According to Boston Consulting Group (BCG) in their study for the review of the CMA, digital services and data enablement platform is expected to generate savings to the Malaysian Government of at least RM2.3 billion through increase use of digital services and provide Gross National Income (GNI) impact of RM26 billion to the broader economy by 2020.

MCMC expects to play significant roles in the three key enablement platform initiatives namely digital ID, open data and mobile payment. MCMC has planned to undertake this key initiatives through an integrated approach, by way of collaboration with multiple stakeholders from different sectors.

Digital ID Platform

One major challenge to boost digital services and the digital economy is the legitimate concern about fraud committed over the network, online identity theft and systems failure.

In BCG's 2014 Government Satisfaction Survey, 86% of Malaysians rated security and privacy of information as priority in utilising digital services. MCMC as a key stakeholder in Malaysia's digital ecosystem, is keen to ensure that initiatives are undertaken to propel the delivery of efficient and secure digital services to the public.

In the adoption of digital services and hence, participation in the digital economy, a trusted and robust digital identity system for verification and authentication is a key enabler providing assurance to the public and industry to make transactions with greater confidence. This trust factor is vital in moving forward into a digital age.

Towards a common aim in ensuring optimum user experience and the delivery of secure and trusted digital services in Malaysia, this calls for collaboration amongst the stakeholders.

Globally, many countries have launched their Digital ID such as Australia, New Zealand, Singapore, India, United Arab Emirates, Estonia and Canada. These countries have their own ways of Digital ID implementation, depending on their respective country's vision, social perspectives and economic circumstances.

To implement such an initiative would potentially mean that the following measures will need to be put in place:

- A cross-agency and private sector alignment would need to be reached on common digital standards.

- Establishment of a national level authentication engagement platform for public-private interoperability.
- Development of policy, processes and governance models.
- Determination of levels of authentication and security.
- Setting up or appointing an implementation agency/entity to undertake relevant initiatives and push for the introduction of Digital ID.
- Where necessary, amend regulations across industries to allow utilisation of Digital ID as an acceptable identity proof.
- Potentially mandate public services to leverage Digital ID.

Towards this end, the MCMC together with key stakeholders plan to undertake a study on the landscape and state of readiness of the nation to adopt the digital ID as a key enablement platform to bolster confidence and efficacy in the delivery of secure digital services.

Globally in terms of Digital ID platform in the mobile industry front, the GSMA's Mobile Connect solution serves to create and manage a digital universal identity via a single log-in solution. The service was launched in the Mobile World Congress in 2014. All operators and online service providers using Mobile Connect have signed up to the GSMA Mobile Connect privacy principles, which is a core pillar of Mobile Connect. As at February 2016, 34 MNOs from 21 countries have launched Mobile Connect service[35].

Specifically the service securely authenticates users, enabling them to digitally confirm their identity and credentials, and grant safe online access to services such as e-commerce, banking, healthcare, digital entertainment and e-government, via their mobile phones. It works by employing the user's unique mobile number, combined with a unique PIN for more secure use cases, to verify and grant online access.

In Malaysia, the mobile network operators are currently establishing proof-of-concept for commercial online transactions with several merchants.

Big Data Analytics and Open Data Platform

Open data has positive impact on multiple stakeholders, from the Government, broader economy and society. There is tremendous potential to create social and economic value through open data. Malaysia has embarked on such initiative through the collaborative effort between MAMPU and MDEC to encourage government open data.

Besides this government effort, KKMM with MAMPU's support have developed the National Big Data Framework and jointly initiated Big Data Analytics pilot projects. The strategic intent of the National Big Data Analytics (BDA) includes to proliferate the usage of BDA in all sectors, catalyse adoption and usage of BDA in the public sector and build the BDA industry in Malaysia.

MCMC will contribute towards the Government's efforts in promoting the big data agenda for the country. It is our view that open data has the potential to generate significant economic and social value for government, the private sector and the public. Efforts have been made to make government data public but it will also be useful to do something similar by expanding the open data initiative to the private sector.

[35] GSMA, GSMA's Mobile Connect Available to Two Billion Consumers Globally, February 2016.

Thus, MCMC enhances Malaysia's open data initiatives through the creation of a data marketplace, which will link to the Data Ocean initiative planned by MAMPU. Apart from that, MCMC is looking into running a social open data pilot with the industry such as in the area of disaster management.

Mobile Payment Systems Platform

In general, mobile payment is a term describing the services that allow electronic money transactions over a mobile phone. It is also referred to as mobile financial services, mobile wallet and mobile payment. In broader terms, mobile payment includes all types of monetary transactions executed via mobile phones for goods and services either online or over-the-counter. Transactions made over-the-counter require a Near Field Communication (NFC) enabled smartphone and terminals. For online payments, payment requests is required to be authenticated via the digital ID on mobile device.

Mobile payment is a key component in realising the national objective of having a cashless society by 2020. The success of mobile payment depends on the users "simple-as-cash" experience and at the same time the service must be faster, cheaper and more convenient and secure than other means of payment.

The service providers are keen to expand use of mobile payment including catering to the under-banked segment. However, interoperability challenges must be overcome, that is, interoperability between mobile money issuers and banks. In addition, there is a need to provide incentives to lower barriers to entry, boost adoption by merchants as well as making NFC smartphones cheaper to encourage proximity based mobile transactions.

MCMC recognises the importance of mobile payment platform as a vital component of the growing Malaysian digital economy and is facilitating the service providers to address the challenges. Therefore, a collaborative approach is needed with key stakeholders in the mobile payment ecosystem.

Building Smart Community

Smart community is a vital building block of a smart nation. Moving towards the transformation into a smart digital nation, the communities in Malaysia also need to be empowered with wide exposure and knowledge as well as equipped with sufficient ICT facilities. This is one of the main objectives under the Smart Digital Nation vision, which is spearheaded by MCMC.

The idea of smart community is about using technology to improve the way of life. In 2015, MCMC has introduced a Smart Community initiative in Kemaman, Terengganu to expose the local community to ICT and the usage of ICT towards improving quality of life and business.

Flagship Programmes

The six main flagship programmes under Kemaman Smart Community initiative are:

Main Flagship Programmes Under Kemaman Smart Community Initiative	
Flagship Programme	**Description**
Flood Management System	This system is aimed to leverage on ICT platform in managing flood disaster.
Mobile Apps Development Competition – Appster Boss 2015	This programme provides a platform for students and developers to interact and exercise their innovation as well as establish and enhance their network relationship with budding developers and industry experts.
Kemaman Innovation Centre	This innovation centre serves as an accelerator programme with the objective to improve the quality of life through the use of ICT applications.
Documentary "Malaysia's Flood Warriors"	A 45-minute documentary on the devastation brought about by floods in Kemaman and how the use of ICT assisted in communications.
Lifelong Learning	This initiative leverages on ICT platform to enhance knowledge of a community. It consists of four main modules: ▪ Community of Interest ▪ uPustaka ▪ ICT Module ▪ Information Literacy
1Malaysia Internet Centre	An initiative which provides collective broadband access in rural and suburban areas. It is aimed as a local transformation platform for the community to learn ICT; incorporating ICT assistance for individuals and businesses.

Source: MCMC

Figure 4.1 Main Flagship Programmes Under Kemaman Smart Community Initiative

Kemaman district has become a benchmark for ICT development through the smart community initiative. Among the benefits of this initiative is to leverage on ICT facilities at the Internet centre established in the district for economic activities.

In addition, the development of a flood management system located at Kemaman District Office is focusing on the population data collection and to complement the current flood action plan during the disaster.

To facilitate such developments, improvement of communications infrastructure and service quality are critical in enabling communities to enjoy the benefits of ICT. Notably, access to 4G LTE network coverage is already available in Chukai town, under Kemaman district, and 85% of populated areas is covered by 3G network coverage.

The development of the Kemaman Smart Community is the result of cooperation and collaboration between MCMC and other stakeholders, including service providers, local government agencies, educational institutions and most importantly, the local champion. These are among the key success factors in the implementation of the smart community principles in the district.

Industry Activities Promoting Digital Lifestyle

Digital Lifestyle Malaysia is an initiative to promote and accelerate the development and adoption of digital applications and services. It includes the adoption of intelligent IoT infrastructure for Internet-based communications transactions to promote social economic development.

Among the initiatives undertaken in 2015 were activities to promote smart nation such as ICT development as well as usage.

Empowering a Smart Digital Nation

In conjunction with KLConverge! 2015, MCMC in collaboration with Multimedia University of Malaysia (MMU) organised the Symposium on Empowering A Smart Digital Nation forum held on 27 – 29 August 2015 in Kuala Lumpur Convention Centre (KLCC).

The objective of the symposium is to provide a platform for experts, professionals and decision makers from the government, industry and academia to share knowledge, ideas and insights on fostering convergence and digital inclusion towards a smart nation.

myMaker

myMaker is aimed at raising public awareness on the technology development by tech enthusiastic, crafters, educators, tinkerers, hobbyists, engineers, science clubs, authors, artists, students and commercial exhibitors. All of these will create a Makers community in the hope to create innovative and creative society towards smart nation. Makers are the grassroot society that can contribute and escalate the adoption of IoT. The makers basically will "show and tell" of the various technological developments created and innovated by them. They also work with partners such as KakiDIY, Thinkerers to create their content, products and other inventions.

In 2015, myMaker hosted several maker exhibitions in conjunction with KLConverge! 2015, Kuala Lumpur Engineering and Science Festival (KLESF) and Malaysia Cybergames 2015. Notably, myMakers were accompanied by ASEAN countries and Japan. Overall, around 40,000 visitors attended the KLESF 2015.

Data Insight Analytics Workshop

A workshop on data insight analytics was organised in conjunction with KLConverge! 2015. The workshop was attended by technical and non-technical professionals who are keen to understand, explore and gain insight and experience in data science and IoT.

The workshop shared analytics tools and provided understanding of their use including getting better insights to data of the IoT.

MODULE 5: APPS AND CONTENT DEVELOPMENT

Content and Applications Development

It is widely recognised that enhancement in C&M services, particularly digital content and applications development is essential for Malaysia towards becoming a developed nation. This C&M enhancement needs to be in the important areas of providing connectivity, access support and enablement activities. Hence, the C&M industry contribute towards socio-economic development, along with human capacity development and competencies among service providers.

The 11th Malaysia Plan 2016 – 2020 emphasised the development of ICT as one of the national transformation catalysts with local content industry cited to be poised as one of the important sources of economic growth.

Realising the importance of local content development, MCMC continues to play its catalyst role and take proactive steps in establishing Malaysia as the major creative content hub in Asian region. Towards this end, MCMC has focused on three main areas as follows:

- Incentive
- Capacity Development
- Strategic Initiative

Incentive

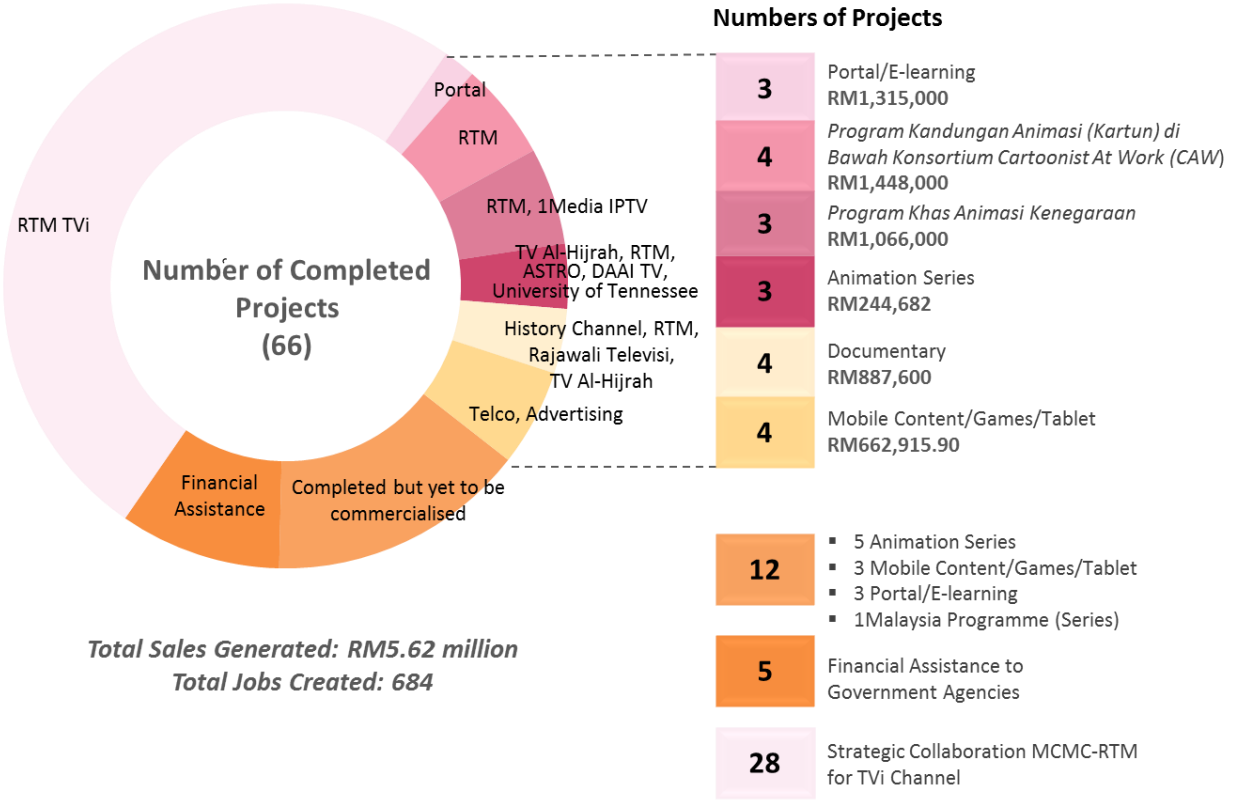
The establishment of the Creative Industry Development Fund (CIDF-MCMC) demonstrates MCMC's commitment towards content development. CIDF-MCMC encourages the development of highly creative local content, original and marketable multimedia content for domestic and international markets.

CIDF-MCMC also aims at developing highly creative digital content as a new source of growth for Malaysia in achieving high income economy. This includes supporting the generation of more local content for Digital Terrestrial Television Broadcasting (DTTB) and increasing broadband penetration.

MCMC has allocated RM100 million for the CIDF-MCMC for a period of three years from 2011 to 2013 to focus on the development of content for TV, mobile and the Internet. In 2013, the fund allocation period was further extended until 2015 with the aim to develop the local creative content industry as a global content development hub.

From January 2011 until 31 December 2015, a total of RM79.02 million was approved for the development of 154 projects inclusive of eight projects under the KKMM and 12 programmes approved under the CIDF-MCMC repurposed fund.

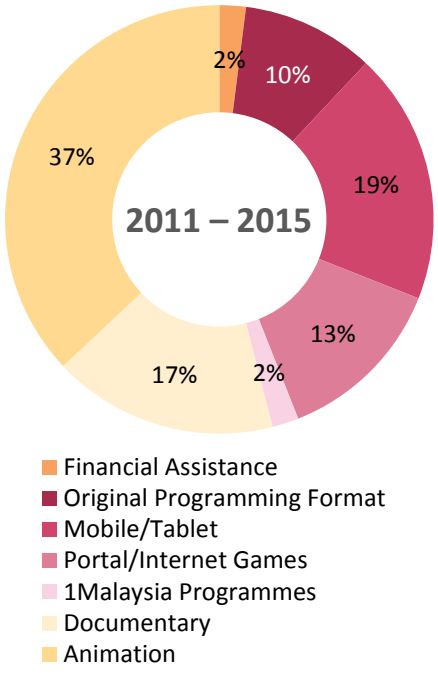
Completed Projects under CIDF-MCMC for 2011 – 2015



Source: MCMC

Figure 5.1 Completed Projects under CIDF-MCMC for 2011 – 2015

Projects Approved by Focus Area 2011 – 2015



Source: MCMC

Figure 5.2 Projects Approved by Focus Area 2011 – 2015

From 1 January 2015 until 31 December 2015, a total of RM10.89 million was disbursed to CIDF-MCMC grantees based on the agreed milestones. To date, a total of RM49.4 million has been disbursed since January 2011.

As at 31 December 2015, a total of 586 applications were received under CIDF-MCMC; out of this 142 projects were approved and 66 projects successfully completed. The balance 76 projects are still in progress and under MCMC monitoring. Under the CIDF-MCMC repurposed fund, a total of four programmes have been completed while the remaining eight programmes are in progress.

Completed Projects by Company and Genre 2015		
Company	**Project**	**Genre**
Cluebee Sdn Bhd	Drawzania.com	Portal
Dextra Resources Sdn Bhd	MYSA: Islamic iBook For Primary School Children	iBook
KWIK Mandarin (M) Sdn Bhd	Mandarin E-learning for Non-Native Speaker	E-learning Portal
Third Rock Creation Sdn Bhd	Cingkus Blues (Season 2)	Animation
Side FX Sdn Bhd	Gen-X	Animation
Animagis Sdn Bhd	Si Bongkok Tanjung Puteri	Animation
ZNG Production Sdn Bhd	Rahman	Animation
N2 Publishing Sdn Bhd	Campus Life	Portal
Integrated Commerce Sdn Bhd	EasyTuition	E-learning Portal
Caprice Technologies Sdn Bhd	Classruum *(Formerly known as JIFFY)*	E-learning Portal
Zfilms Production Sdn Bhd	Dengan Basikal Aku Menjelajah (Season 2)	Documentary
Whenevr Sdn Bhd	Online Event Registration, Ticketing Website and Mobile Apps	Portal and Apps
42nd Pictures Sdn Bhd	Lari Sayang Lari	1Malaysia Programme (Drama Series)

Source: Industry, MCMC
Figure 5.3 Completed Projects by Company and Genre 2015

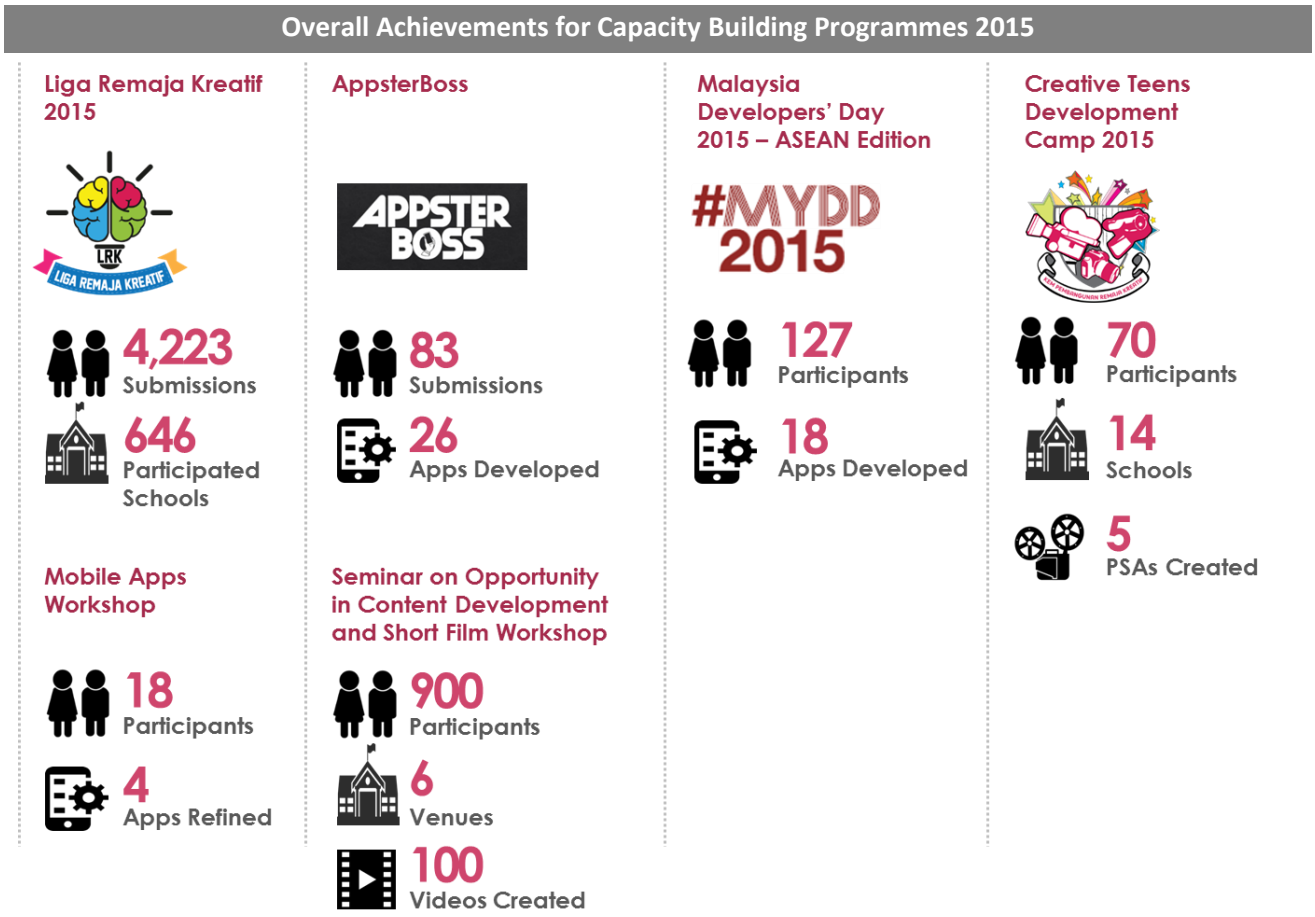
Capacity Development

MCMC continues to support the skills development and capacity building in the local content and applications industry. Among the MCMC's initiatives are as follows:

MCMC Initiatives 2015	
Initiative	**Notes**
Competency Enhancement Programmes	A strategic collaboration between MCMC and Multimedia University (MMU) focusing on skills development in storytelling and scriptwriting.
League of Creative Teen 2015 (LRK2015)	This competition initiative is based and aimed at spurring the creation of local content among students.
Creative Teens Development Camp 2015 (#KAMERA2015)	A follow up programme for League of Creative Teens focusing on enhancing students' talent in producing online creative content.
Seminar on Opportunity in Content Development Industry and Short Film Workshop	Specially designed to expose secondary schools students on the opportunities in content industry.
Mobile Apps Workshop	To further refine and improve four selected mobiles apps developed by eighteen LRK2015 finalists.
Malaysia Developer's Day 2015 – ASEAN Edition	A competition organised by MCMC in collaboration with AT&T and open to all developers from ASEAN Dialogue Partner[36] to develop mobile apps.
Game Jam 2015	A mobile game apps competition targeting school students.
AppsterBoss 2015	A 24-hour mobile apps development competition.

Source: MCMC
Figure 5.4 MCMC Initiatives 2015

[36] ASEAN including Korea, Japan, China and India.



Source: MCMC

Figure 5.5 Overall Achievements for Capacity Building Programmes 2015

Strategic Initiatives

MCMC collaborates with key stakeholders to further develop talents and skills in the creative industry. Some of the strategic initiatives are:

- **MCMC Bursary for Intellectual Property Creation**
  The programme is a collaboration between MCMC and two academic institutions namely KRU Academy[37] and Point College[38]. The objective of this programme is to provide partial bursary to qualified students pursuing multimedia diploma from any of these institutions. The total allocation for the programme is RM2 million whereby each institution has been allocated RM1 million.

- **Market Access Programme**
  MCMC continues to collaborate with other government agencies such as National Films Development Corporation Malaysia (FINAS), MDEC and local companies like Creative Content Association Malaysia (CCAM) to provide a platform for local content producers to market their content at international markets. The collaborative effort had penetrated content markets like MIPTV 2015, MIPCOM 2015, MyContent Dubai 2015 and Asia Television Forum 2015.

[37] KRU Academy is a vocational college specialising in skills related to the Creative Industry.
[38] Point College is an industry driven college to produce international film and TV production, production support, new media and design solutions.

Global Apps Development

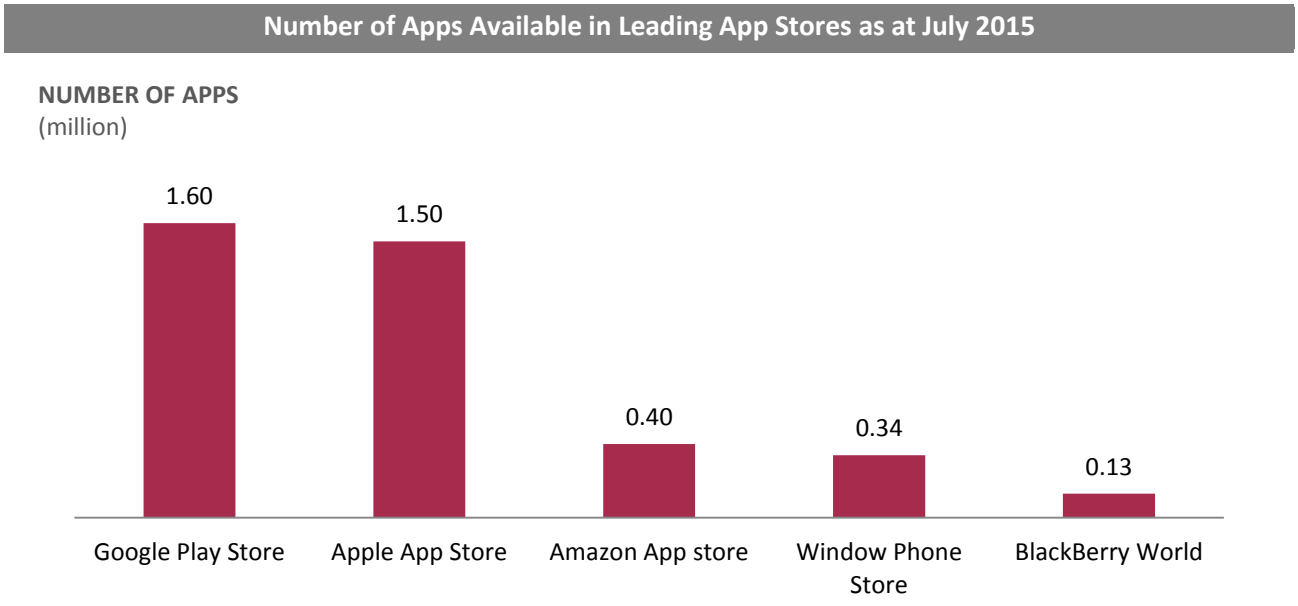
In the digital environment today, consumers are spending more time picking or snacking on content accessed using mobile apps than they do surfing on their desktop. Findings by Flurry[39] indicated that users are spending on average 2 hours 42 minutes on their smartphone. Out of this, 86% is spent on mobile apps compared with web browser 14%.

The leading app stores present nearly four million apps, out of which two thirds are from Google Play Store (1.6 million) and Apple App Store (1.5 million).

In 2015, social networking and mobile messaging apps were the most popular apps globally[40] and in Malaysia[41]. This indicates that consumers are more likely to use these OTT apps to communicate than using traditional voice and SMS services.

Statista indicated that the popularity of mobile apps translates into an estimated USD25 billion revenue in 2015; CAGR 29.6% from 2010.

In 2015, there were 180 billion apps downloaded from apps stores, out of which 56% were from Apple App Store. Nevertheless, despite the massive download, Apple users are spending 84% of their time using just five non-native apps they have installed including social media or gaming, while others may spend more time on instant messaging[42].



Source: Statista

Figure 5.6 Number of Apps Available in Leading App Stores July 2015

[39] Flurry is a mobile analytics, monetisation and advertising company founded in 2005. The company develops and markets platform for analysing consumer interactions with mobile apps, solutions for marketers to advertise in-apps, as well as a service for applying monetisation structures to mobile apps.

[40] Nielsen, Top Smartphone Apps of 2015, 2015.

[41] Nielsen, Discover What Malaysians Are Watching, Reading, Playing, Browsing, Buying and More, 2015.

[42] Techcrunch, Consumers Spend 85% Of Time On Smartphones In Apps, But Only 5 Apps See Heavy Use, June 2015.

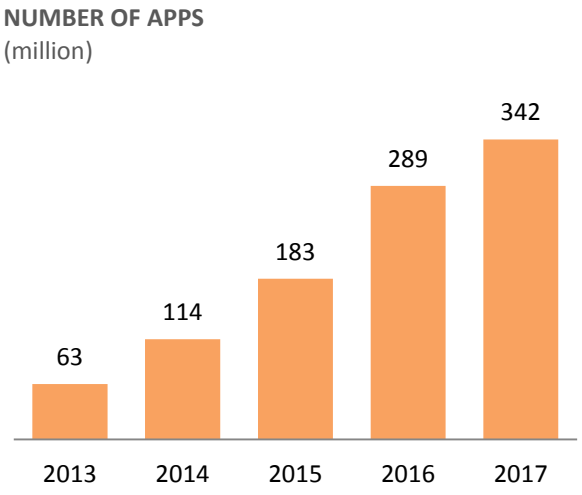
Malaysia Apps Development

In 2015, there were 183 million mobile apps download

Malaysia as a developing country is expected to receive positive impact of growth in mobile connected devices. A survey conducted by IDC found that, total apps downloaded by Malaysians are expected to reach 183 million download or 38% growth in 2015 compared with 2014. The numbers are expected to increase by two-fold to 342 million by 2017.

Local service providers continue to capitalise on this growth to further engage their current and potential subscribers.

Malaysia Mobile Apps Downloads 2013 – 2017



Source: IDC MY Mobile Apps Market Sizing and Forecast, 2014
Figure 5.7 Malaysia Mobile Apps Downloads 2013 – 2017

Maxis for example launched in 2015 a new app called *MyMaxis*[43] for postpaid subscribers which is available via both iOS and Android. This app allows subscribers to view postpaid account information, purchase data passes, and perform transactions like downloading and paying bills while on the mobile. This app can also remind subscribers on the Personal Unlocking Key Code of their SIM and allow them to edit their e-billing email address.

In order to encourage apps usage, the app works as a reward app which offers over 100 rewards under five categories such as dining, entertainment, health and beauty, shopping, and travel.

Celcom in September 2015 is also taking similar initiatives in strengthening their market by launching an app called Zipit Chat[44]. This is an app that enables users to send and receive SMS, chat and email with "absolute privacy" and self-destruct features. It also allows subscribers to make VoIP calls, and even keep Secure Notes with military grade encryption that deters hacking.

Meanwhile Flexiroam Ltd, a Malaysian-based telecommunications company also launched an app that provides a solution for bill shock in international mobile roaming. This app enables subscribers to own up to 50 virtual international numbers which they can make and receive calls and messages using local rates and cheaper data worldwide. Towards the development of this functional service, the MCMC has provided a grant from its Creative Industry Development Fund to subsidise Flexiroam R&D and commercialisation.

[43] Vulcanpost, Maxis' New App For Postpaid Users Saves You Time and Rewards You for It, February 2015.
[44] Celcom, Celcom Unveils Ultimate Privacy In Mobile Chat – Zipit Chat, September 2015.

Content apps developed by FTA and Pay TV broadcasters to enhance viewer engagement

Media Prima is capitalising on *Tonton* apps by appointing Rovi Metadata[45] in 2015 to empower entertainment discovery experience for their video portal, *Tonton*. This will enable *Tonton*'s five million registered users (as at September 2015) to go through unique experience in engaging with their favourite entertainment content. Rovi Metadata with a library of more than half a million movies and TV programmes provides intuitive search and navigation for subscribers to easily find their favourite content.

For the record, by end of 2015, *Tonton* recorded 16.7 million monthly page views and 3.2 million monthly videos watched.

ASTRO with a radio listenership of over 12.8 million[46] launched its mobile app, *Raku*, a short form for Radio Aku ("My Radio" in Bahasa Malaysia). Through *Raku*, users can stream millions of songs and videos, listen to more than 20 live radio stations and podcasts, and access local community updates such as news, traffic report and sports. Users who wish to enjoy more functionality can subscribe to *Raku Premium*, which is available via www.raku.my, on Google Play Store and Apple App Store. *Raku* apps are targeted to attract 500,000 active users[47] and its downloads reached 87,000[48] as at August 2015.

Market research firm GfK[49] in its independent report indicated that radio listenership aged 10 and above in Peninsular Malaysia has reached 91%, with more than 18.3 million listeners. GfK radio audience measurement survey also found that on average radio listeners spent 16 hours a week, whereby most people tune in during the morning when they commute to school or work, and during lunch time. The survey also found that three in 10 listeners aged 10 years and above consume radio via mobile devices or Pay TV decoder.

[45] Rovi is leading the way to a more personalised entertainment experience. The company's pioneering guides, metadata and recommendations continue to drive programme search and navigation on millions of devices across the globe.
[46] As at 31 January 2016.
[47] Mynewshub, ASTRO Sasar 500,000 Pengguna Aktif Aplikasi Raku, April 2015.
[48] Asia Radio Today, ASTRO Radio's Raku Streams Live Concerts to Celebrate Malaysia's Independence Day, August 2015.
[49] GfK or The GfK SE, established in 1934 as Gesellschaft für Konsumforschung, a German market research institute.

MODULE 6: QUALITY ASSURANCE AND CONSUMER PROTECTION

Consumer Complaints as Feedback Mechanism

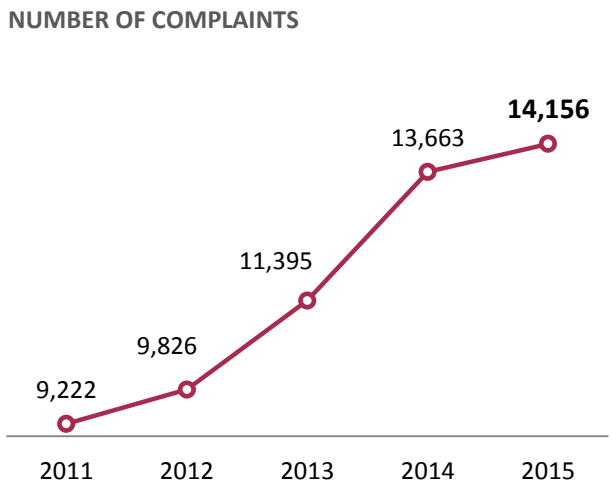
Consumer protection is one of the key focus areas in the CMA[50]. The purpose of consumer protection is to promote and protect consumer interests through ensuring C&M service providers responsiveness to consumer requirements; and maintaining consumer confidence in QoS. There is also emphasis on widespread access to services and affordability of services to consumers in Malaysia.

These goals facilitated with various regulatory instruments, together with empowerment platforms vis-à-vis self-regulating Industry Forums and MCMC, provide service assurance to consumers in the C&M industry. It is worth mentioning that consumer complaints on C&M services serve as part of the feedback mechanism to enhance the regulation and development of the industry. Subsequently, the issues raised are analysed for QoS implementation, which in turn, enables the C&M industry to improve their services provision and enhance customer engagement. MCMC also monitors and seeks to resolve complaints received from consumers with relevant stakeholders.

MCMC also plays a part in ensuring consumers have choice including satisfactory levels of service at affordable prices, where consumers benefit through the provisioning of necessary services and complaints are handled fairly and effectively.

Consumer Complaints in 2015

Trend of Consumer Complaints Received by MCMC 2011 – 2015



Source: MCMC

Figure 6.1 Trend of Consumer Complaints Received by MCMC 2011 – 2015

It is observed that 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 empowerment to raise issues and seek resolution with relevant parties concerned. Also, consumers are more aware of the areas to raise complaints, for example, on sensitive information they receive on their devices or over the Internet.

In 2015, a total of 14,156 complaints were received by MCMC compared with 13,663 complaints reported in 2014. This shows a 4% increase in the number of complaints, which included poor telecommunications services delivery as well as content related issues.

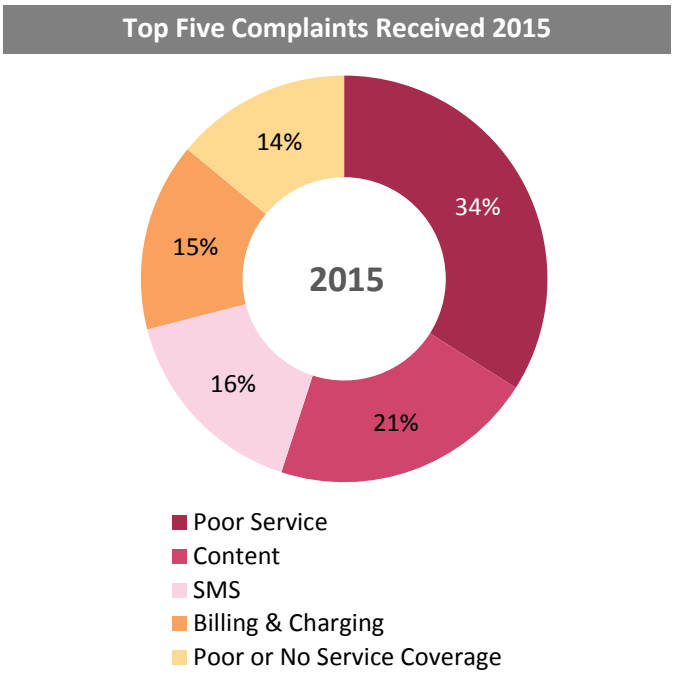
Out of the total complaints received in 2015, 10,304 of these (73%) were related to telecommunications services. The remaining 3,852 complaints (27%) were on content related issues and other services under the provisions of the CMA and investigated by MCMC.

[50] CMA, Part VIII Consumer Protection, Sections 187 – 196, 1998.

The top five categories of complaints lodged with MCMC in 2015 are as follows:

1. Poor service mainly on Mobile Number Portability rejection or delay; service disruption; quality of Internet connection and Internet speed; delay in installation and service activation or restoration.
2. Content related to new media such as social networking, website or blog, email, SMS and MMS, TV and radio programmes.
3. SMS particularly on Mobile Content Services such as unsubscribed SMS from external content providers and telecommunications service providers including SMS spam peer to peer.
4. Billing and charging mainly related to billing dispute on roaming charges and data.
5. No coverage or poor service particularly cellular and broadband services including dropped calls.

36% consumer complaints were resolved within 72 working hours



Source: MCMC

Figure 6.2 Top Five Complaints Received 2015

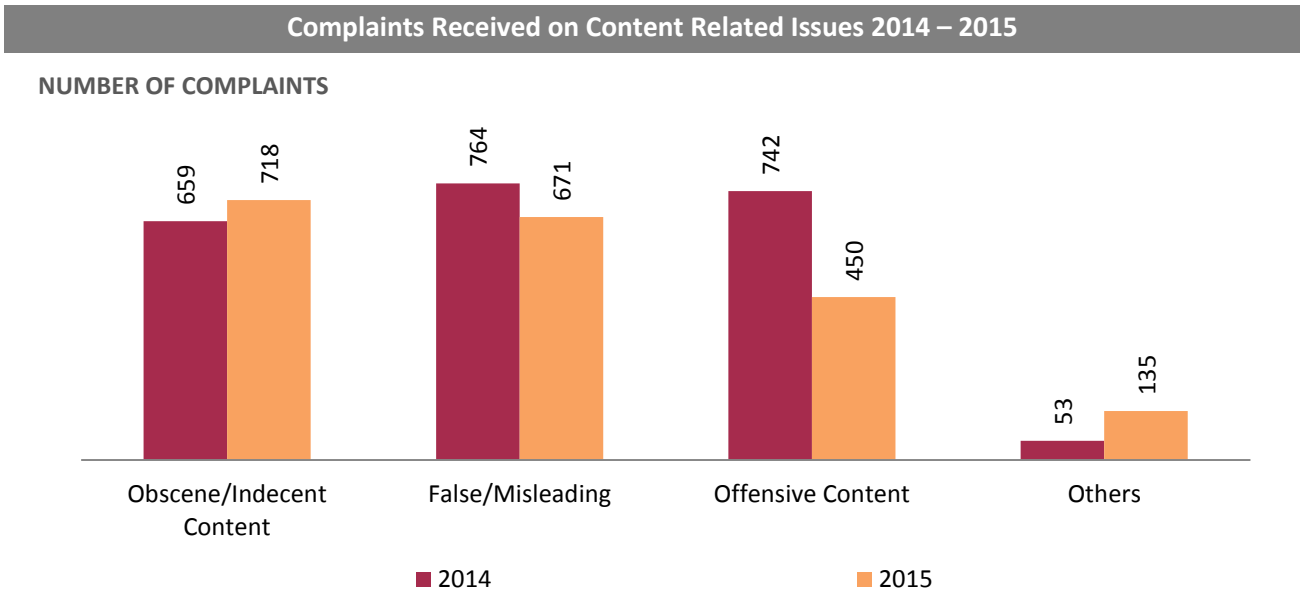
In terms of complaints resolution, 97% of these complaints were resolved as at end 2015. Notably, 36% of consumer complaints were resolved within 72 working hours compared with 23.4% in 2014.

For complaints that are not under MCMC jurisdiction, these cases were referred to relevant authorities for resolution. These complaints included non-delivery of online purchased items, online gambling, investment or quick cash scheme and copyright issues.

More than 50% of content related complaints were associated with social media

In 2015, a total of 1,974 cases were classified under content complaint category, of which, 57% of the content issues were related to social media, that is, fake or false profiles, obscene or indecent and offensive.

Complaints relating to obscene or indecent content have marginally increased in 2015 due to MCMC's aggressive media campaign on blocking porn websites. This campaign was conducted in 3Q 2015. In contrast, false or misleading and offensive content showed significant decrease from 764 complaints to 671 and 742 complaints to 450 respectively in 2015.



Source: MCMC

Figure 6.3 Complaints Received on Content Related Issues 2014 – 2015

For certain complaints relating to social media such as fake profile, MCMC would guide the complainant on the procedures and steps in lodging a report with social media providers.

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

Complaints to Industry Forums

Complaints to CMCF declined by 27%

Communications and Multimedia Content Forum of Malaysia (CMCF) is designated by the MCMC through CMA as the industry body to facilitate and enhance industry self-regulation. This is guided by the Content Code, which has been drawn up by the CMCF since 2004.

In 2015, CMCF received a total of 465 complaints, a decline of 26.7% compared with 634 received in 2014. Out of these, 431 (93%) were from the public and 34 (7%) were from MCMC, KKMM and members of CMCF.

Complaints Received by CMCF 2015		
Types	**Number**	**% of total**
Mobile Content/Services	212	45.6%
Internet Content	209	45.0%
Advertising Content	24	5.2%
Broadcasting Content (TV and Radio)	19	4.0%
Others	1	0.2%
Total	**465**	**100%**

Source: CMCF
Figure 6.4 Complaints Received by CMCF 2015

CMCF refers to Content Code, a guideline for industry endorsed best practices on content dissemination, to determine if the cited content has indeed breached the code. Enforcement action is taken if there is a breach of the Content Code, with a fine of not more than RM50,000 imposed on the offender.

90% of complaints were resolved by CFM within stipulated time period

As a self-regulating body designated by MCMC under the CMA, Communications and Multimedia Consumer Forum of Malaysia (CFM) offers a platform for consumers to report complaints in relation to C&M services. This industry forum is also responsible to develop General Consumer Code of Practice for the Communications and Multimedia Industry Malaysia (GCC) that serves to promote high standards of services and protect consumer interests. The GCC has been registered with MCMC since 2003.

In 2015, CFM was involved in the CMA review and is relooking its processes and procedure for expediting resolution of complaints and bringing the forum closer to the public. Concurrently, CFM is also reviewing the GCC and working on the establishment of Alternate Dispute Resolution mechanism for C&M services.

As part of its rebranding exercise in 2015, CFM introduced a new logo and mascot named *Fillo*, to further enhance awareness and image of CFM. For better interaction between CFM and the public, traditional media including print, TV and radio are used for consumer empowerment and information sharing. CFM also utilises social media platforms to reach online consumers and disseminate consumer rights information.

Due to the extensive promotion and capacity building activities by CFM in 2015, there was an increased number of likes and followers on various social media platforms.

CFM Social Media Popularity 2014 – 2015			
Platform	**2014**	**2015**	**% Change**
Facebook	4,013	15,380	283
Twitter	369	540	46
Instagram	161	750	366

Source: MCMC

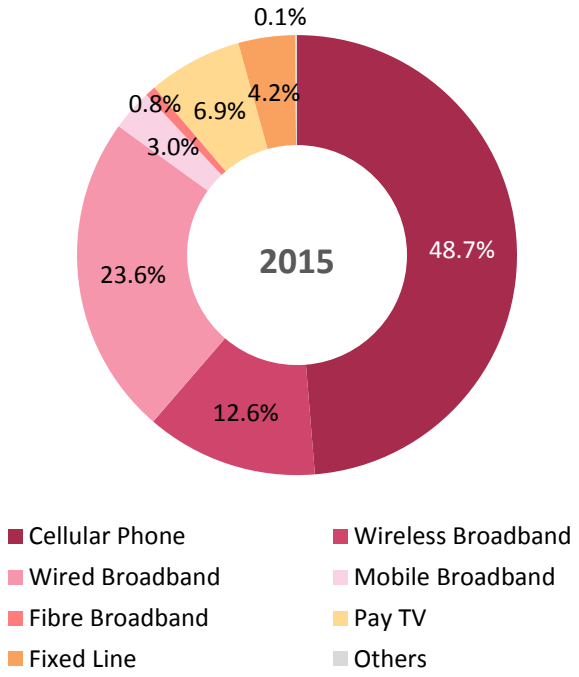
Figure 6.5 CFM Social Media Popularity 2014 – 2015

Following the prepaid GST implementation in April 2015, CFM has capitalised on all platforms to create awareness and provide a better understanding on this matter.

In addition, the CFM publication, *Shout!* is issued quarterly and available in both printed copy and online versions. *Shout!* Publication had 32,000 copies in circulation at different areas across the country. Its online version is available at www.consumerinfo.my/News-Events/Collateral-Sharing.aspx.

In 2015, a total of 7,326 complaints were lodged with CFM, out of which 90% were resolved within the stipulated time period. This is an improved efficiency in complaints resolution from 83% in 2014. As at end 2015, 97% of complaints were resolved. In addition, there were nine cases investigated for non-compliance.

CFM Complaints by Types of Service 2015



Source: CFM, MCMC

Figure 6.6 CFM Complaints by Types of Service 2015

CFM accepted application of five new members, making their membership to a total of 44 as at end 2015.

The official platforms of interaction between CFM and the public include:

- CFM hotline 1800 18 2222;
- Web portal (www.consumerinfo.my);
- Complaint portal (www.complaint.cfm.org.my); and
- Social media platforms
  i. Facebook: consumer.forum.malaysia
  ii. Twitter: cfm_malaysia
  iii. Instagram: cfm_malaysia

In 2016, CFM is planning to introduce new platforms which include mobile apps and Guidebook on Top 10 Complaints for consumer reference.

MCMC Monitoring Activities

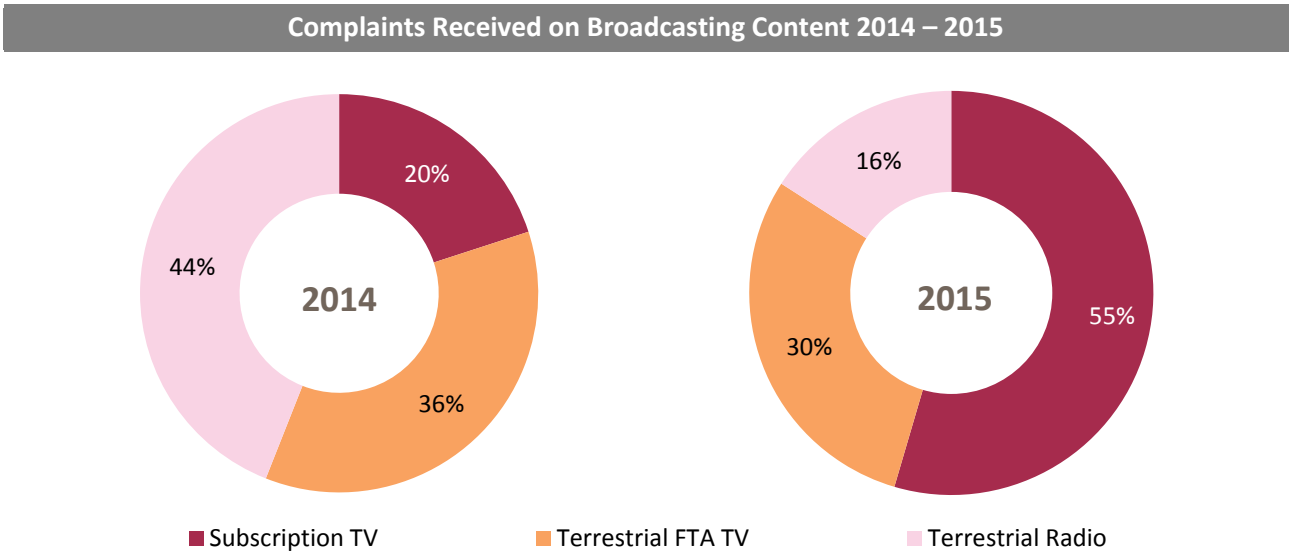
In 2015, MCMC initiated a number of programmes with the main objective to strengthen monitoring activities in various aspects including broadcasting content, device certification and ensuring QoS of public cellular services and networks. These monitoring activities are proactive mechanisms for consumer protection. Any non-compliance or offences uncovered would result in enforcement action taken against the parties concerned.

Content Monitoring Centre

Content Monitoring Centre project was launched in early 2015 as part of MCMC initiatives to strengthen content monitoring activities. The centre enables MCMC to monitor broadcast content aired by CASP (I) licensees and ensure their compliance with licence conditions. MCMC is currently developing the structured monitoring broadcast content and targets for Content Monitoring Centre to go live in January 2016.

MCMC acts on content-related complaints, which includes resolution of complaints received from consumers and undertake enforcement action, if necessary. This is particularly for complaints related to broadcast content such as advertisements, and TV and radio content.

As at end 2015, a total of 44 complaints were received on broadcast content. Out of these, improper programme containing offensive content and others against current standards of accepted behaviour, constituted 77.5% of the total complaints investigated. The remaining complaints were related to commercial advertisement.



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

Source: MCMC

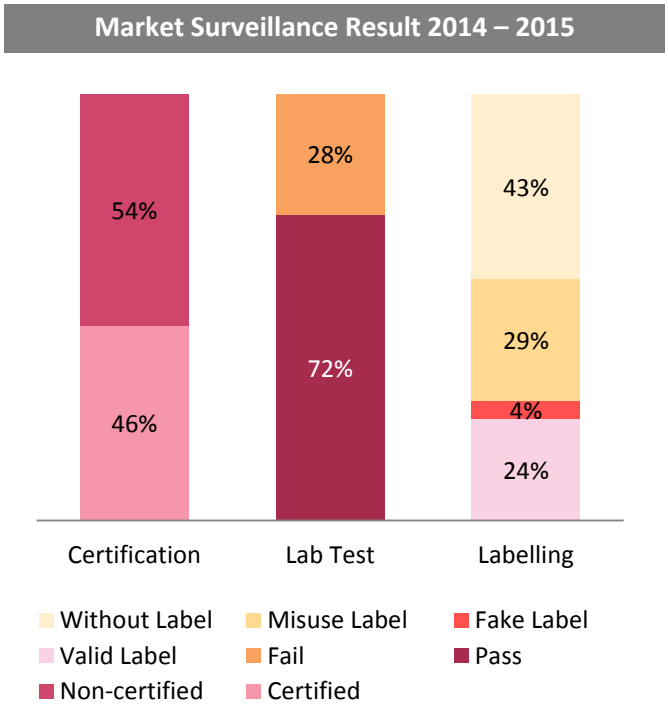
Figure 6.7 Complaints Received on Broadcasting Content 2014 – 2015

In 2015, four First Information Report (FIR) were filed, seven warning letters and two advisory letters were issued to the licensees. A penalty was imposed against two licensees.

Monitoring for certification of communications equipment and devices through market surveillance programme

MCMC appoints SIRIM QAS International Sdn Bhd as certifying agency to conduct market surveillance programme for communications equipment. The main purpose of this programme is to protect consumers by ensuring all communications equipment sold in the market complies with the technical codes.

Under phase two of this programme, which was carried out from 1 January 2015 until 20 March 2015, a total of 145 samples comprising 17 categories of communications equipment available locally were assessed. These were evaluated based on a process that includes verification of certification marks and laboratory testing to examine for compliance with the selected critical technical parameters. The results of the evaluation are listed in Figure 6.8.



Source: MCMC

Figure 6.8 Market Surveillance Result 2014 – 2015

Appropriate enforcement and corrective actions were taken against non-compliances found based on the outcome of the evaluation exercise. This exercise plays a significant role as a surveillance mechanism ensuring the continuity of C&M products placed in the market. It also serves to maintain consumer and business confidence in the present conformity assessment system.

Quality of Service

Compliance with Mandatory Standards on Quality of Service (QoS)

By harnessing connectivity, communications infrastructure and digital services, MCMC seeks to improve daily activities and build a smart community, which not only sustains socio-economic growth but also enhances the standard and quality of life. Therefore, the C&M industry services as critical enablers to this goal has to be at a high standard.

MCMC in monitoring of QoS is focused on Public Cellular Services (PCS), Wired and Mobile Broadband and Broadcasting Service. The PCS Mandatory Standards serves as benchmarks for quality assurance in various aspects. For instance, in 2015, dropped call rates in Putrajaya and designated routes was improved and kept at not more than 2% while Nationwide dropped call rates must not exceed 3%. MCMC has reviewed current Mandatory Standards for Wired Broadband while a new Mandatory Standard was developed for Mobile Broadband.

Mandatory Standards for Public Cellular Services – Network Performance	
QoS Indicator	**QoS Standard**
Call setup success rate	▪ Call setup success rate must be not less than 95%, for intra-network or inter-network calls.
Dropped call rate	▪ The dropped call rate for Designated Routes and Areas must be not more than 2%, for intra-network or inter-network calls; and ▪ The dropped call rate for areas other than Designated Routes and Areas must be not more than 3%, for intra-network or inter-network calls.

Source: MCMC

Figure 6.9 Mandatory Standards for Public Cellular Services – Network Performance

Mandatory Standards enable regulatory measures to be taken for the purpose of consumer protection. The Broadband Mandatory Standards are expected to take effect 1 February 2016 after a Public Inquiry process is completed. As such, MCMC will eventually be conducting its own broadband testing and measurements using its newly procured test gears via a dedicated server. Excerpts from the Mandatory Standards of the broadband test gears are in Figure 6.10 and Figure 6.11.

Mandatory Standards for Wired (Fixed) Broadband – Network Performance	
QoS Indicator	**QoS Standard**
Network latency (ping time)	▪ Network latency must be not more than 85ms, 95% of the time based on test sample. ▪ Measurement using standard packet of 64 bytes to travel across the network from the end user to Malaysian Internet Exchange (MyIX) and back to the end user.
Throughput (broadband speed)	▪ Throughput must be not less than: a) 70% of the subscribed level for 90% of the time for DSL effective 1 February 2016; b) 90% of the subscribed level for 90% of the time for Fibre effective 1 February 2016. ▪ The measurement is for both uploading and downloading, between the end user and MyIX.
Packet loss	▪ Not more than 1%, computed based on the average test sample. ▪ The measurement is done for the route between the end user and MyIX.

Source: MCMC

Figure 6.10 Mandatory Standards for Wired (Fixed) Broadband – Network Performance

Mandatory Standards for Mobile (Wireless) Broadband – Network Performance	
QoS Indicator	**QoS Standard**
Network latency (ping time)	▪ Network latency must be not more than 250ms, 70% of the time based on test sample.
Broadband speed (throughput)	▪ Broadband speed must be: a) Not less than 650Kbps at 65% of the time for FDD and 80% of the time for TDD effective 1 February 2016; b) Not less than 1Mbps at 80% of the time for both FDD and TDD effective 1 January 2018.
Packet loss	▪ Packet loss must be not more than 3%, calculated based on the average test sample.

Source: MCMC

Figure 6.11 Mandatory Standards for Mobile (Wireless) Broadband – Network Performance

Mobile service providers recorded average dropped call rate of 2.32% based on measurements on Protocol Routes

For QoS checks in the PCS domain, the service provider cellular networks are audited via Extensive Endpoint Service Availability Test (EESAT) measurements on Protocol Routes and Nationwide. Such test includes to address complaints on dropped calls and ensuring service levels offered by service providers are kept up to mark.

In 2015, based on the assessment on cellular network performance of service providers on Protocol Routes[51], on average, mobile service providers achieved 2.32% dropped call rate. That is, exceeds the 2% threshold determined in the Mandatory Standards for PCS. Beginning 2016, the MCMC have initiated a two-tier Key Performance Indicator for dropped call rate as follows:

- Designated route at 2%; and
- Nationwide route at 3%.

As for broadcasting services, stipulated coverage and quality of DTTB reception must be ensured. MYTV Broadcasting Sdn Bhd (MYTV), was appointed as the Common Integrated Infrastructure Provider for DTTB services provision in Malaysia. The roll out which started in 2015 is expected to meet digital coverage of 98% by 2018 prior to analogue switch off. The smooth and orderly transition from analogue to digital is critically important to harness digital dividend.

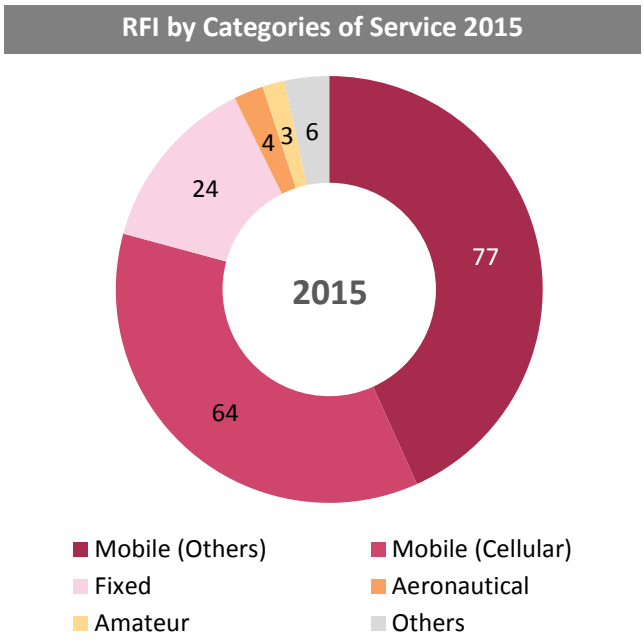
[51] Protocol Routes for this test covered Cyberjaya route, Putrajaya route, MEX highway and KLIA to Subang Airport.

Spectrum Monitoring and Interference Resolution

Radio frequency monitoring and operational works include the monitoring of frequency usage by all licensees, conduct investigation and resolve all service provider complaints related to radio frequency interference (RFI).

The RFI complaints are categorised based on types of service as follows:

- Aeronautical Mobile Service
- Amateur Service
- Broadcasting Service
- Fixed Service
- Fixed Satellite Service
- Maritime Mobile Service
- Mobile Service (most number of RFI received in 2015)



Source: MCMC

Figure 6.12 RFI by Categories of Service 2015

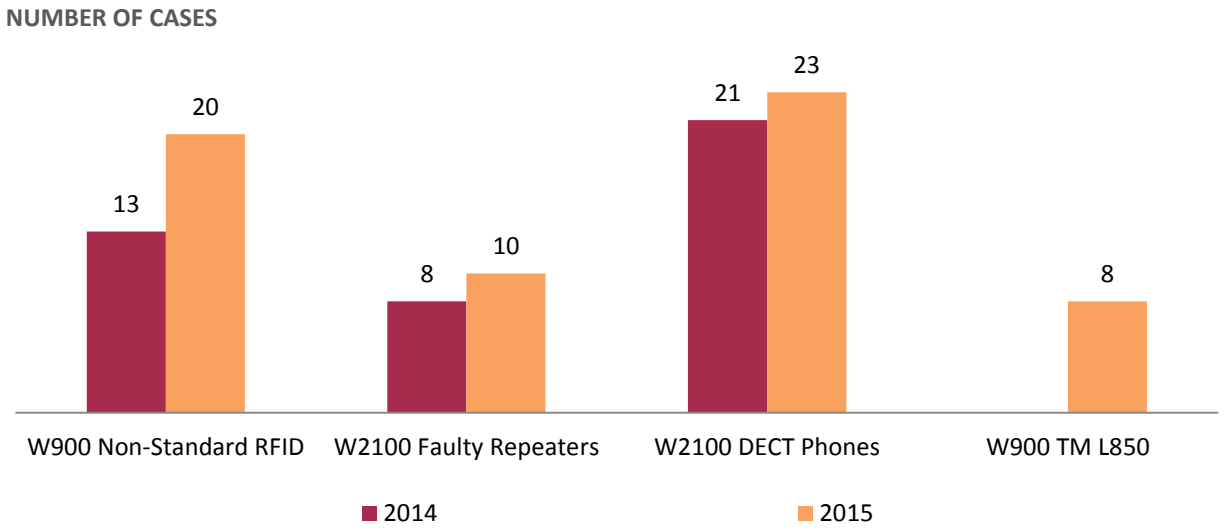
Under spectrum monitoring, frequency usage and performances are monitored via unmanned Fixed Monitoring Systems (NASMOC) and Mobile Monitoring Systems (MMS/DCMU). The NASMOC is capable of monitoring frequency remotely. While the MMS vehicles are for onsite frequency monitoring together with portable equipment to locate or triangulate sources of interference.

In 2015, most RFI cases fell under mobile services and hence, efforts have been placed towards these types of service. As at 15 December 2015, 88 RFI cases have been successfully resolved. The breakdown of RFI complaints by category of service are shown in Figure 6.12.

In 2015, there were more wireless broadband interference issues in WCDMA technology compared with 2014. The cases involved non-standard devices used by the public. In comparison, 13 cases of W900 RFI were reported in 2014 due to radio frequency identification (RFID) wireless devices whereas in 2015 there were 20 cases reported. Eight cases of W2100 RFI reported in 2014 were due to faulty and non-standard repeaters.

However, in 2015, 10 such cases were reported. U Mobile recorded 23 RFI cases of such interference due to non-standard Digital Enhanced Cordless Technology (DECT) phones used in the spectrum band W2100 in 2015 (2014: 21 cases).

RFI Cases for WCDMA 2014 – 2015

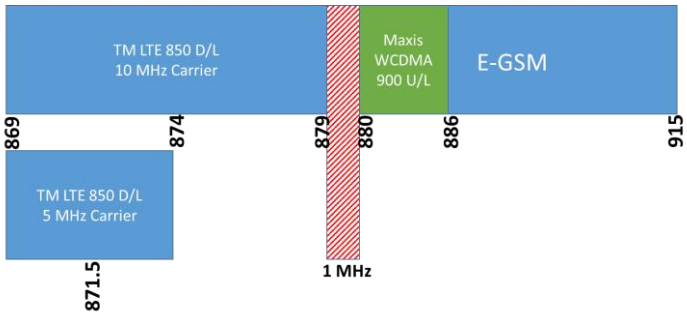


Source: MCMC

Figure 6.13 RFI Cases for WCDMA 2014 – 2015

In 2015, a new interference issue was discovered involving WCDMA 900 band from Maxis and LTE850 band from TM. This is due to close proximity of the sites between Maxis and TM, particularly of the opposite links on adjacent bands. That is, Maxis is reportedly experiencing blocking interference from TM LTE downlink. It is noteworthy that to remedy this, coordination works are currently ongoing between the two service providers.

Band Plan TM LTE850 and Maxis E-GSM



Source: MCMC

Figure 6.14 Band Plan TM LTE850 and Maxis E-GSM

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MODULE 7: SECURITY AND TRUST

Digital Signature Market

Although the advancement of mobile communications technology and apps have enabled a convenient means of doing businesses, mobile devices are exposed to greater risks and security threats as compared with traditional online systems. That is, for example, transactions and activities in cyberspace can be falsified and messages tampered with.

The main issues arising on take up of online or electronic transactions remain on trust and security. These issues are constantly being addressed by the stakeholders concerned.

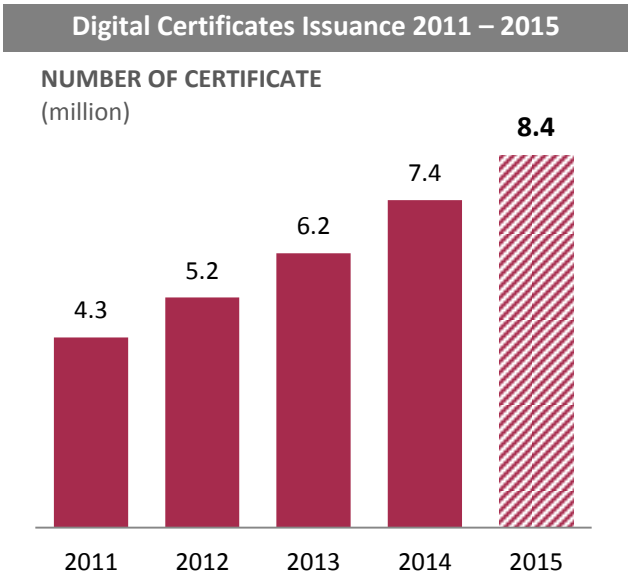
In the digital world, digital signature serves as analogous or similar to signatures on papers. This can ensure that both parties to electronic contract are the sender and receiver in the electronic transactions are who they purport to be. With a digital signature, the sender and receiver are assured that their electronic record is authenticated and not forged while in transit.

There are different types of digital signature available that are used in interesting ways. For example, digital signature appearing in digital documents may be in many forms based on various systems in context namely cryptosystem, biometrics (fingerprint validation and retinal scans), Secure Socket Layer (SSL) and Secure Electronic Transaction (SET).

In short, digital signature paves the way for the use of digital certificates in various electronic transactions and other online service applications to ensure the user is legitimate.

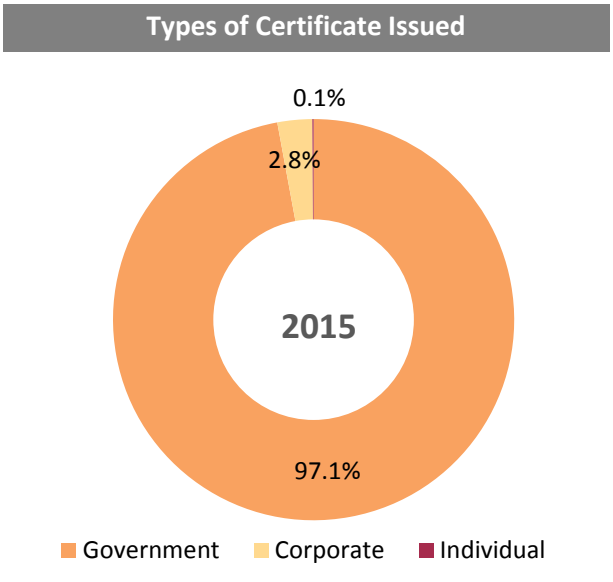
8.4 million digital certificates were issued as at end 2015

As at end 2015, the cumulative number of digital certificates issued in Malaysia was 8.4 million. This represents one million net adds or 13.5% increase in 2015. Based on proportion issued by Certification Authorities (CAs), 92% of the certificates were issued by Digicert Sdn Bhd, the remainder by MSC Trustgate Sdn Bhd and a trace from Telekom Applied Business Sdn Bhd.



Source: Industry

Figure 7.1 Digital Certificates Issuance 2011 – 2015



Source: Industry

Figure 7.2 Types of Certificate Issued

The major contributor to the use 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.

The CAs have indicated various strategies to cultivate the use of digital certificates and create awareness on the importance of security online and identity authentication. They have also offered a wide range of products to cater to different stakeholders. Furthermore, the CAs have formed international collaborations with foreign partners from Norway and Thailand for further development in this area.

Network and Cybersecurity in the Digital Economy

C&M service providers attentive to ensuring high network security

Telecommunications networks and infrastructure are critical components for global economic and social development and particularly supports national growth due to the enabler role of communications services. Hence, infrastructure readiness is among the benchmarks to gain insights for developing policies as well as indicators to attract investments, both local and foreign.

From our survey[52], service providers indicated that they have high level of attentiveness towards securing communications networks and infrastructure. Various security controls were put in place, including benchmarking against world class security implementation, that is, ISO Security standards for data centres and customer systems. This is in line with MCMC Information Security Management System (2010 – 2014) initiative, where all major C&M companies are certified with ISO/IEC 27001 standard.

Service providers have undertaken various measures to protect assets and network facilities in ensuring high security level within their networks. Among the efforts include operating Security Operations Centre (SOC) and Security Incident Response Team (SIRT) to monitor and mitigate core network from threats.

Based on the same survey, the service providers indicated that human factors are also a key vulnerability in an organisation's value chain. Most often, cybercriminals target individuals rather than the organisation itself. Therein, service providers also conduct security awareness programmes and in-company campaigns to provide security knowledge and educating their employees to this effect. In addition, security control measures such as sensitive data filtering as well as detecting and preventing malware activity are taken to mitigate risks.

MCMC plays a role in empowering and ensuring information security and network reliability. To this effect, MCMC has established a proactive platform for monitoring cyber threats as well as creating security awareness among users and service providers.

Towards this end, the MCMC Network Security Centre monitors security threats and disseminate early warning to its stakeholders including critical network infrastructure information and the public. Periodic cyber exercises are also conducted with external entities

[52] MCMC, IPR 2015 questionnaires to service providers in telecommunications, broadcasting and related services.

to continuously revise security policies, manage risks and proactively ensure readiness of the nation's network against cyber threats.

Cybersecurity and the Digital Economy

In this changing environment of the digital economy, it is of utmost importance that potential threats of various cyberattacks are strategically addressed. For instance, sensitive information could be better protected by embracing cloud-enabled cybersecurity services such as real-time monitoring and threat intelligence tools[53]. Therefore, a secure framework needs to be in place to ensure a high level of security against cyber incidents and hence, in delivering quality C&M services.

Cybersecurity aims to secure the cyber environment using techniques that progressively ensure system availability or integrity, authenticity, confidentiality and non-repudiation. Hence, organisations need to devise a comprehensive plan to proactively address cyber threats as well as ensure user's privacy. This is essential to establish user's trustworthiness towards service providers and the network.

However, it is not a "one size fits all" off-the-shelf security solution. The challenge is to provide customised approach suited to each organisation's unique situation. This requires creating critical job roles, nurturing technical competencies as well as experts with in-depth security knowledge.

As the digital economy unfolds to include data and enablement platforms, information security remains as a pillar to support seamless provision of evolving C&M services, including use of digital media. In view of this, telecommunications services along with secure network is a key enabler in IoT, Internet of Everything (IoE), cloud computing, data analytics, cross industry applications and building smart communities.

[53] PwC, The Global State of Information Security Survey 2016.

MODULE 8: POSTAL AND COURIER

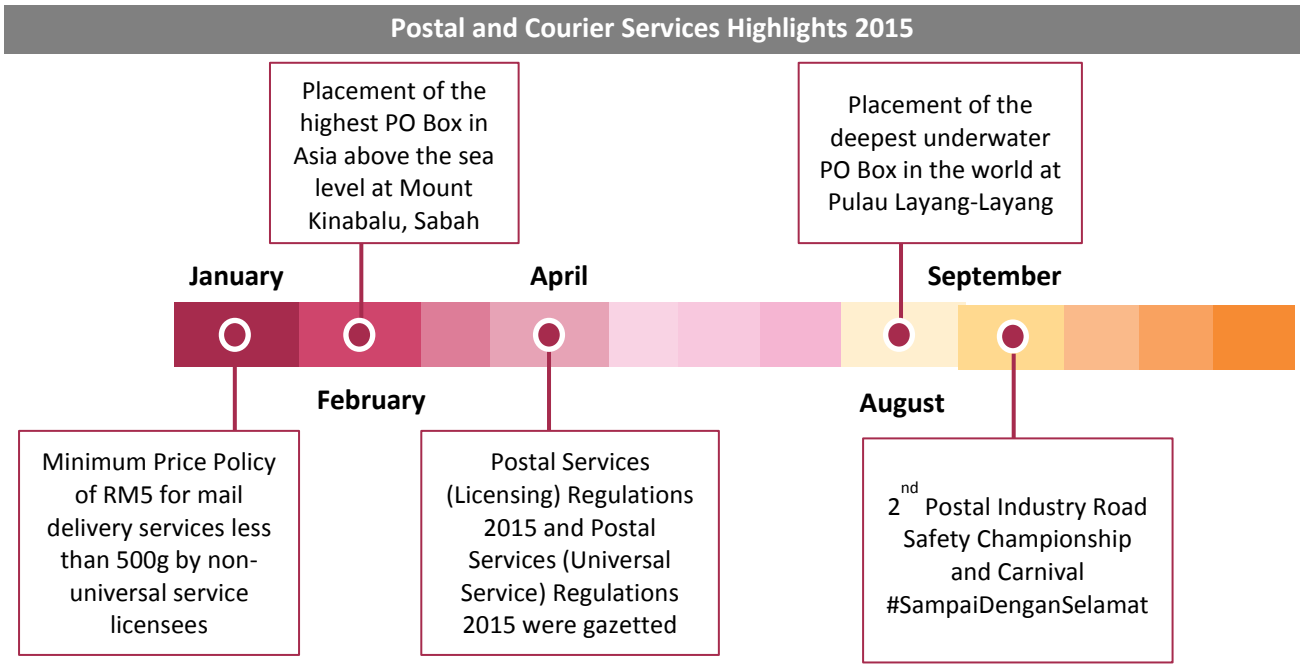
Postal and Courier Services Industry Performance

Postal and courier services delivery network is like the physical serial bus providing last-mile fulfilment services. This delivery super highway of universal postal communications system interloops the e-commerce and businesses especially Micro, Small and Medium Enterprises in Malaysia. Thus, contributing to the growth of national socio-economic roles is parallel with the trend of rapid digital technology advancement.

In Malaysia, Pos Malaysia provides the postal universal service. The courier service providers comprise multinationals and domestic companies. The multinationals are DHL, FedEx, United Parcel Service (UPS), TNT and Yamato that serve as global integrators with worldwide delivery capabilities and network infrastructures. The major domestic courier service providers with nationwide networks are GD Express, City Link Express and Nationwide Express. There are also niche companies focusing on major towns. Through their interconnected networks, postal articles including mails, documents and parcels can efficiently reach the destination – both domestically and across borders in an expedited manner.

Over the past five years, the total revenue of postal and courier services industry has increased by 41% or CAGR 8.9% from RM3.2 billion in 2011 to RM4.5 billion in 2015. This is 12.5% higher than RM4 billion in 2014. The courier services sector contributed 62% or RM2.8 billion while 38% or RM1.7 billion was from the postal services sector.

Postal and courier services industry is the socio-economic fabric in Malaysia, not only that it represents communication, infrastructure and logistics development; it represents jobs and career enhancement as well. In 2015, the industry has 30,700 employees, which represents 27% growth (2014: 24,160 employees). Pos Malaysia employed 18,925 employees or 61.6% of the total industry workforce. On the other hand, courier service providers employed 11,775 employees or 38.4% of the total industry workforce.



Source: MCMC

Figure 8.1 Postal and Courier Services Highlights 2015

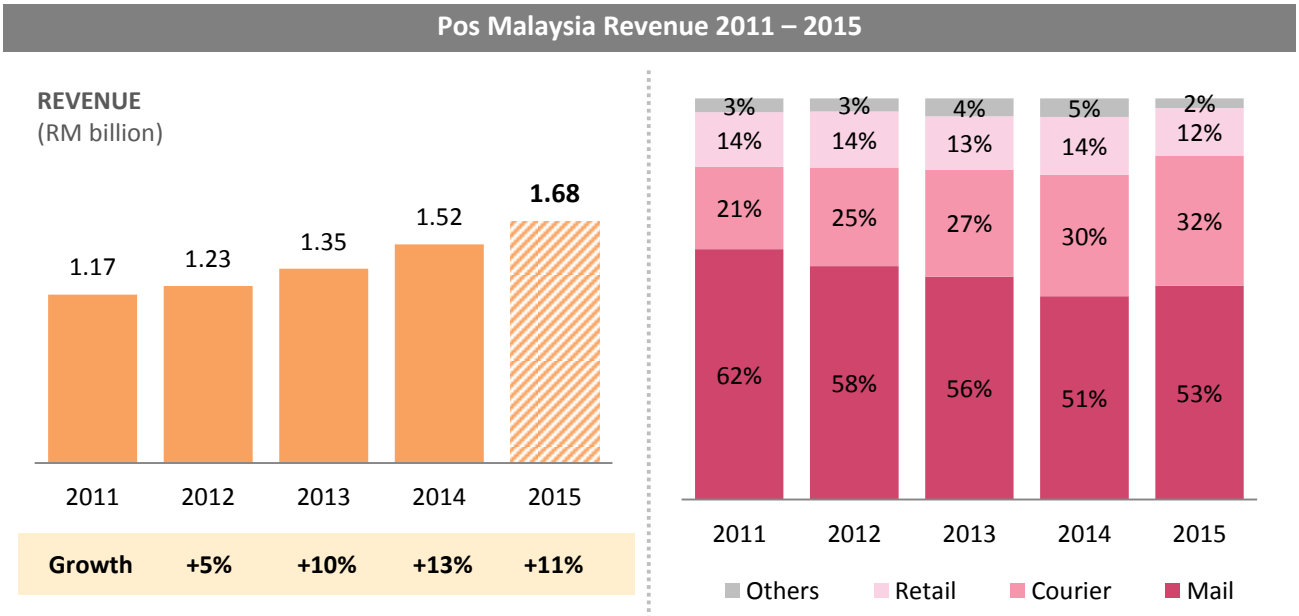
Postal Services

The goal of providing a universal postal service in Malaysia, a role by Pos Malaysia, is a concept that remains relevant today. This is in spite of emerging electronic communications infrastructure and changing customer demand. Innovation in the field of ICTs such as transmission of documents via fax in the late 1980s and the introduction of email services in the 1990s challenged Pos Malaysia in many ways. These innovations catered to the changing customer demand for immediate and low cost communications services.

Embracing new technologies and innovations in their operations has enabled Pos Malaysia to introduce new products and services beyond the traditional postal services. As such, Pos Malaysia remains resilient in its role as physical network service provider supporting economic activities, including acting as one-stop centre for bill payment and other financial services.

Pos Malaysia revenue grew by 11% to RM1.68 billion in 2015

Apart from telecommunications and broadcasting sectors going through transformation, the postal services sector is also following suit. Pos Malaysia has been strengthening its businesses and strategically positioning itself to create new services, generating growth to satisfy customer needs in the digital age. For example, the launch of *FlexiPack*[54] services is expected to provide customers with services and customised solutions that meet their needs.



Note: Pos Malaysia revenue adjusted based on a calendar year; Others include hybrid mail

Source: Industry, MCMC
Figure 8.2 Pos Malaysia Revenue 2011 – 2015

[54] FlexiPack is a cost saving services launched in November 2014, offering prepaid boxes and packets for domestic and international mails to assist Small and Medium Enterprises (SMEs) in their online businesses.

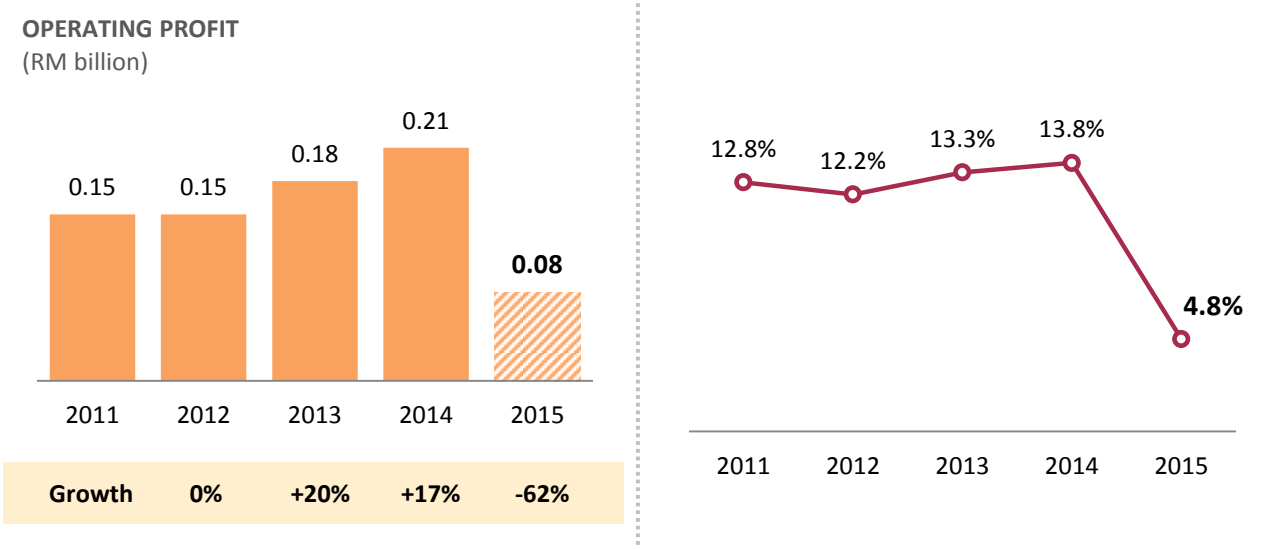
In 2015, Pos Malaysia posted revenue of RM1.68 billion, a double digit growth of 11%, compared with RM1.52 billion in 2014 (Figure 8.2). This growth was driven mainly by its mail and courier services segments.

Despite mail volumes continuing to trend down, the segment still posted significant growth of 16% to RM0.89 billion in 2015 compared with RM0.77 billion in 2014. This is partly due to higher revenue in transhipment business.

The courier services segment for Pos Malaysia registered revenue of RM0.54 billion in 2015 or 17% growth compared with RM0.46 billion recorded in 2014. The upward performance was driven by combination of increased connectivity and changes in consumer spending behaviour, which resulted in increased demand from e-commerce activities.

Despite increased revenue in 2015, Pos Malaysia operating profits declined 62% due to higher operating cost resulting from the expansion of workforce to meet capacity demand. Operating margin fell to 4.8% in 2015 compared with 13.8% in 2014.

Pos Malaysia Operating Profit and Margin 2011 – 2015



Note: Pos Malaysia revenue adjusted based on a calendar year

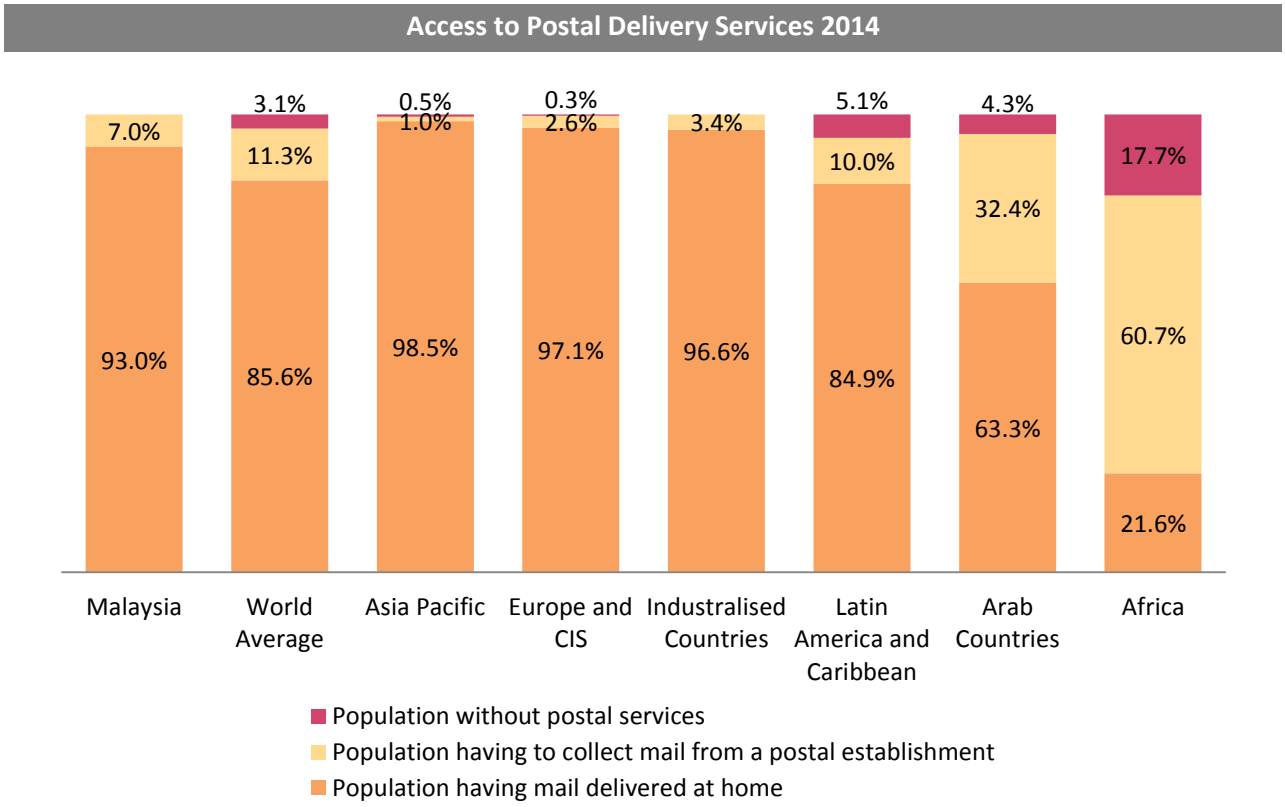
Source: Industry, MCMC

Figure 8.3 Pos Malaysia Operating Profit and Margin 2011 – 2015

Postal Services Access

Postal services access is an enabler for an effective, universal and low cost physical communications service to serve customers and also boosting businesses especially SMEs. According to Universal Postal Union (UPU)[55] more than 90% of the population in Asia Pacific (98.5%), Europe and Commonwealth of Independent States (97.1%), and industrialised countries (96.6%) have their mail delivered to the home in 2014 (Figure 8.4).

It is worth noting that almost 93% of Malaysian population has postal items delivered to their home in 2014. By end of 2015, almost 94% of Malaysian residents have access to postal delivery services, with only the balance 6% population having to collect mail from a postal establishment[56]. This contrasts favourably to the world average in 2014 at 85.6%.



Source: UPU, MCMC

Figure 8.4 Access to Postal Delivery Services 2014

In the efforts to expand postal services access in Malaysia, Pos Mel – Pos Malaysia's mail business has leveraged on the strength of its physical delivery network. With a network of 24 postal automated machines, 329 delivery branches and an international gateway at the Kuala Lumpur International Airport (KLIA), such size of operations provides greater efficiency and effectiveness to the general public.

Completing this delivery chain are the fleet of 7,168 motorcycles and a combination of 2,950 for trucks and automobiles, together with more than 8,000 postmen including Community Postmen and Community Postal Agents in Sabah and Sarawak. They deliver to about eight million addresses throughout the country daily in urban, suburban and rural areas.

[55] UPU, Development of Postal Services 2014.
[56] MCMC, Postal and Courier, 2015.

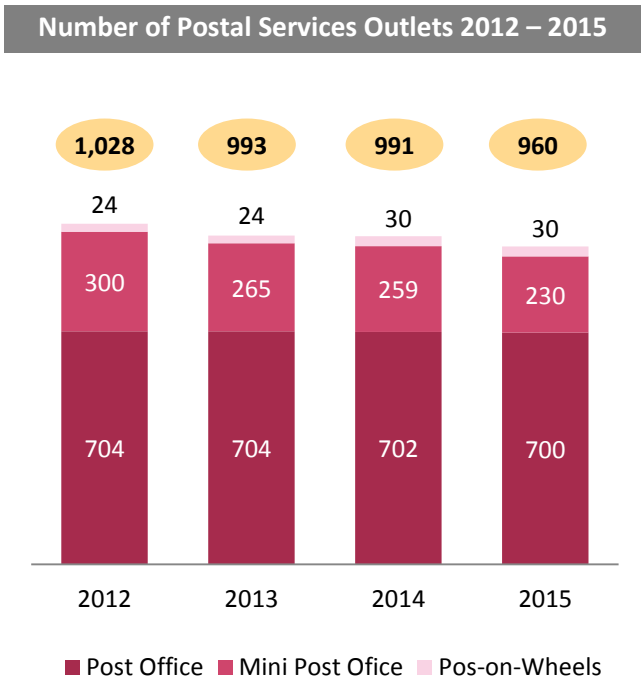
Interestingly, mail in some rural areas in Sabah is delivered by horseback due to the geographically remote and challenging terrain.

In addition, the Postal Transformation Programme for Sabah and Sarawak continued into 2015 after completion of its second phase in 2014. A total of 450 Community Postmen and 600 Community Postal Agents handle postal items for their respective communities, fostering integration of postal links between Peninsular Malaysia and East Malaysia[57].

Furthermore, the "Address for All" initiative has assigned complete addresses to many households in the rural areas of Selangor, Pahang, Negeri Sembilan, Terengganu and Sarawak.

There were more than 950 postal services outlets in 2015

The postal services physical network has been streamlined over the years to meet changing consumer demand and competition for better provision of services. Figure 8.5 shows the breakdown of total postal services outlets in Malaysia over the past four years.



Source: MCMC

Figure 8.5 Number of Postal Services Outlets 2012 – 2015

As at end of December 2015, there was a total of 930 computerised operational postal services outlets in Malaysia. This comprised 700 post offices and 230 mini post offices (a single counter post office by third party appointed by Pos Malaysia). Of these, there are 451 and 249 computerised post offices in urban and rural areas respectively.

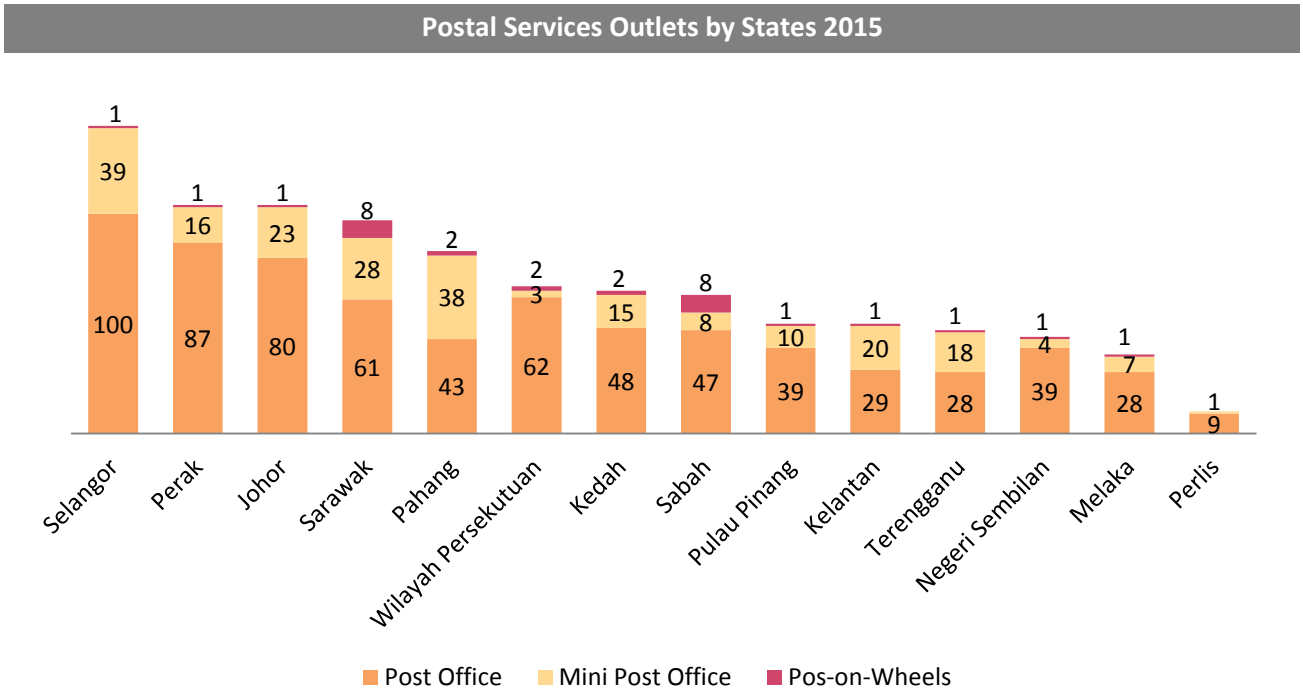
The number of operational postal services outlets is now less than recorded in 2014 at 991 outlets, a decline of 3%. This is due to factors including commercial driven decision and business restructuring mostly involving mini post offices which are run by appointed third party.

Total Pos-on-Wheels[58], a mobile unit of Pos Malaysia, remained relatively unchanged since the previous year at 30 outlets for 2015. In addition to the number of postal services outlets, there are 2,129 stamp agents nationwide.

[57] Pos Malaysia, Annual Report 2015.

[58] Pos-on-Wheels is equipped with Very Small Aperture Terminal (VSAT) to allow online transactions to be performed extending the postal access to rural areas.

The total number of postal services outlets by states (Figure 8.6) highlights Selangor having the most postal services outlets although the number has decreased marginally to 140 compared with 143 in 2014. This comprises 100 post offices, 39 mini post offices and one PoW. Whilst all the states have unchanged positions compared with 2014, Pulau Pinang and Melaka saw a double digit decline of postal services outlets by 15.3% (2014: 59 postal services outlets) and 10% (2014: 40 service outlets) respectively.



Source: MCMC

Figure 8.6 Postal Services Outlets by States 2015

Postal Services Traffic

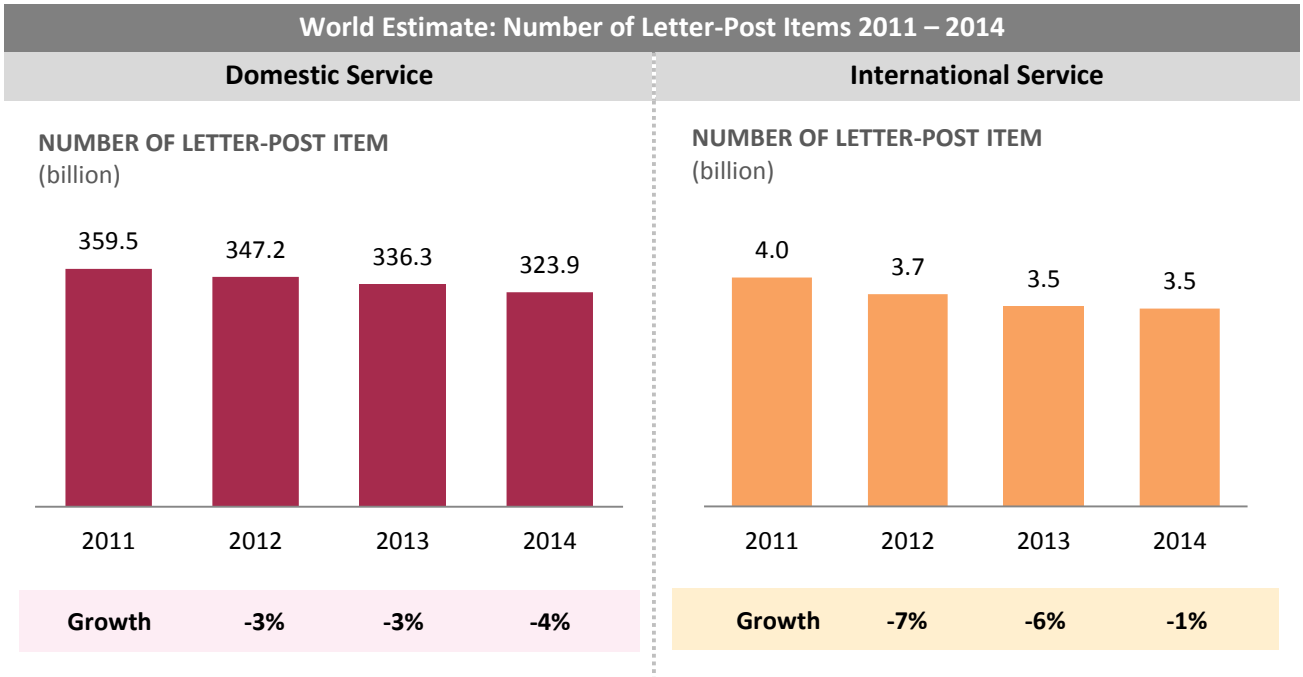
Postal services traffic is defined as the number of postal items such as letter-post items and ordinary parcels [59] posted to domestic and international destinations. In recent years, technology substitution as well as globalisation has dramatically transformed both supply and demand for postal services traffic. This can be said to be impacted by increasing use of Internet and e-commerce.

Letter-post items traffic has been decreasing gradually

According to UPU, total traffic from letter-post was 327.4 billion items in 2014, comprising 323.9 billion (domestic service) and 3.5 billion (international service), falling by 4% compared with 2013. The declining volume of letter-post items reflect changing user behaviour embracing digital communications such as email and instant messaging.

Figure 8.7 presents the world estimate for total traffic from domestic service at 323.9 billion items (99% of total traffic) compared with international service recorded at only 3.5 billion items (1% of total traffic).

Overall in 2015, most of the postal services activities have been in the area of domestic postal services traffic rather than international, albeit showing declining trend while still above the 300 billion mark letter-post items delivered.



Source: UPU

Figure 8.7 World Estimate: Number of Letter-Post Items 2011 – 2014

[59] According to UPU, letter-post items basically consist of letter, postcards, printed papers, commercial papers, sample of merchandise and the like; whilst ordinary parcels are all parcels where the value is not declared by the sender.

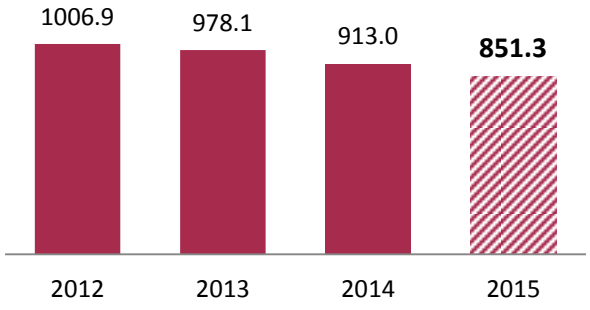
Similarly, the downward trend in the overall postal services traffic also occurred in Malaysia for both domestic and international service, as illustrated in Figure 8.8. According to Pos Malaysia, 851.3 million letter-post items for domestic service were recorded in 2015, a decline of 7% compared with 913 million items in 2014.

For international service, 5.3 million letter-post items were issued, while 13 million were received across border. In efforts to mitigate the declining letter-post items or mail volumes and uncertain economic climate, Pos Malaysia leveraged on the strength of its physical delivery network and customised solutions to meet customer needs.

Pos Malaysia: Number of Letter-Post Items 2012 – 2015

Domestic Service

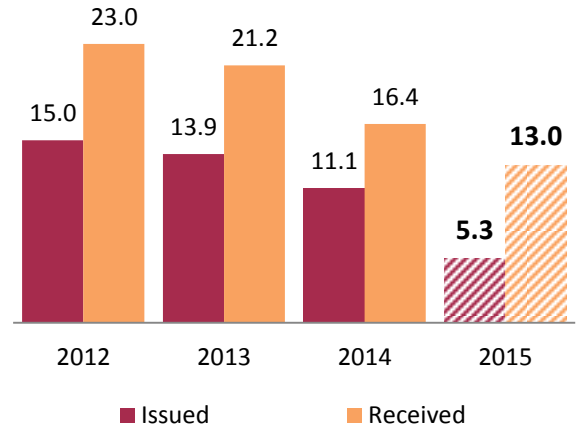
NUMBER OF LETTER-POST ITEM
(million)



Growth	-3%	-7%	-7%

International Service

NUMBER OF LETTER-POST ITEM
(million)

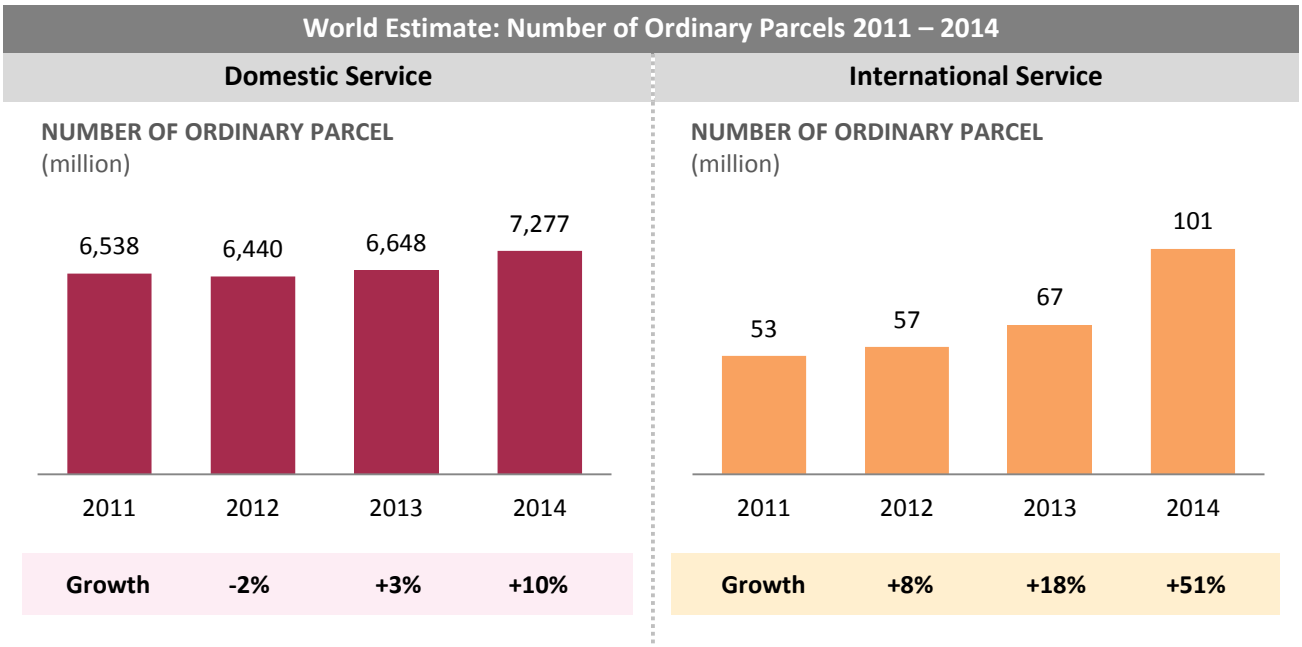


Source: Pos Malaysia, MCMC

Figure 8.8 Pos Malaysia: Number of Letter-Post Items 2012 – 2015

Ordinary parcels continue to grow globally, but not in Malaysia

Globally, the volume of ordinary parcels delivered continues to grow and is more competitive than the letter-post segment. UPU has estimated that 7,378 million ordinary parcels were distributed around the world in 2014, representing an increase of over 663 million ordinary parcels or 10% compared with 2013 (Figure 8.9). The domestic and international services both have experienced growth of 10% and 51% respectively in 2014. Online shopping and cross border trade and businesses supported by more pervasive online communications network have boosted this trend.

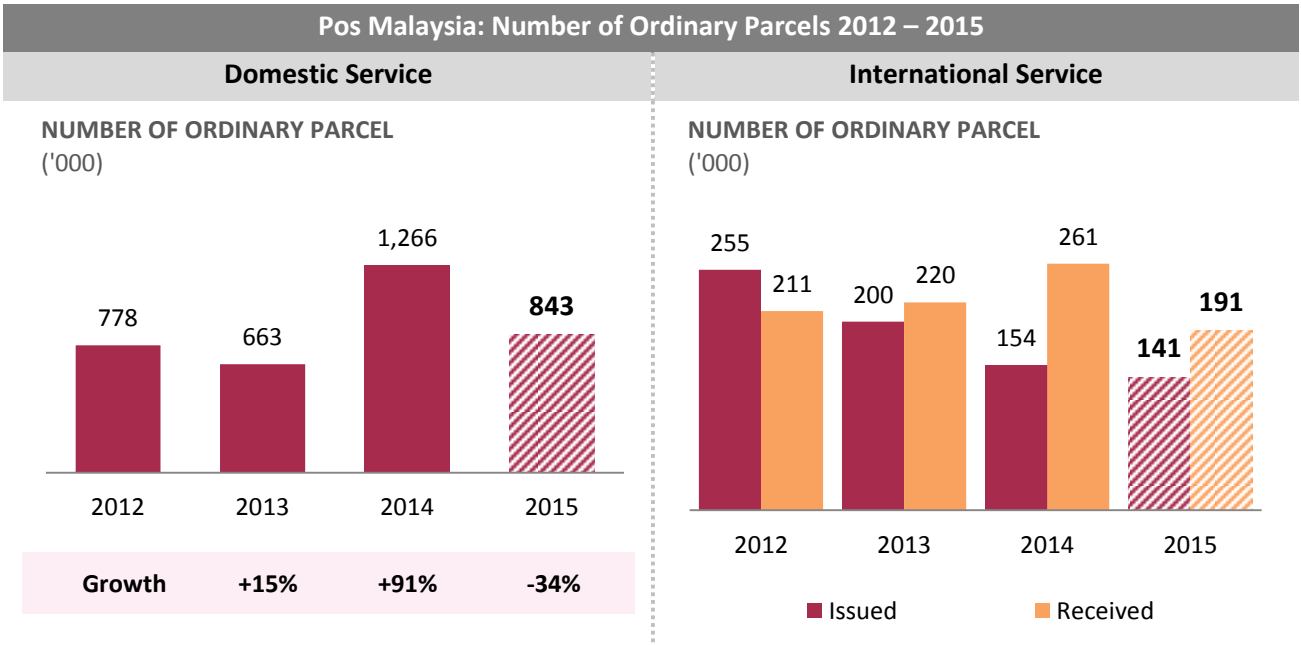


Source: UPU

Figure 8.9 World Estimate: Number of Ordinary Parcels 2011 – 2014

However, it is interesting to observe that the trend is rather different for Malaysia. The ordinary parcels volume from domestic and international service has decline for 2015. This could be due to Ringgit depreciation which has affected purchasing of international goods.

Figure 8.10 shows the total number of ordinary parcels delivered was 843,000 in 2015, representing a 34% decrease. For international service, a combination of incoming and outgoing parcel volumes experienced a declined by 20%. Almost 141,000 and 191,000 parcels were issued and received, respectively.



Source: Pos Malaysia, MCMC

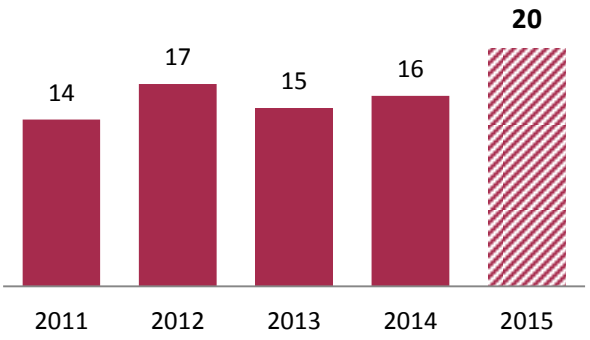
Figure 8.10 Pos Malaysia: Number of Ordinary Parcels 2012 – 2015

Overall, the decline in both letter-post and ordinary parcel volumes in Malaysia call for the need to transform the operations model for postal services. This development has created a need for increased co-distribution and the shared use of existing distribution networks, as well

as collaboration and partnerships with established entities. This is for the purpose of business expansion and new business segments, for example *EZiPoz*[60] service.

Philately

Number of Stamp Themes Issuance 2011 – 2015



Source: MCMC

Figure 8.11 Number of Stamp Themes Issuance 2011 – 2015

Philately can be described as a study and collection of postage stamps, postal services histories and other postal articles.

In 2015, MCMC has approved 20 special and commemorative[61] stamp themes issuance by Pos Malaysia. The stamps articulate the Malaysian experiences as well as commemorate events of significance occurring in the country.

Stamp Themes 2015		
No.	**Themes**	**Date of Issue (2015)**
1	Medicinal Plants Series III	20 January
2	Malaysia's Chairmanship of ASEAN	27 January
3	Farm Animals	16 February
4	Giant Panda Conservation	25 February
5	Coronation of DYMM Sultan Johor	23 March
6	Endangered Marine Life	13 April
7	175th Anniversary of Penny Black	30 April
8	Installation of DYMM Sultan Perak	6 May
9	150th Anniversary of International Telecommunications Union	17 May
10	Joint Issue Malaysia – Thailand	8 June
11	Herons and Bitterns	25 June
12	Pearl	29 July
13	ASEAN Community	8 August
14	Mosques in Malaysia	27 August
15	MALAYSIA #sehatisejiwa	15 September
16	World Post Day	9 October
17	Stamp Week 2015	27 October
18	Island and Beaches Series III	17 November
19	Four Nation Stamp Exhibition	4 December
20	Trains in Sabah	28 December

Source: Pos Malaysia

Figure 8.12 Stamp Themes 2015

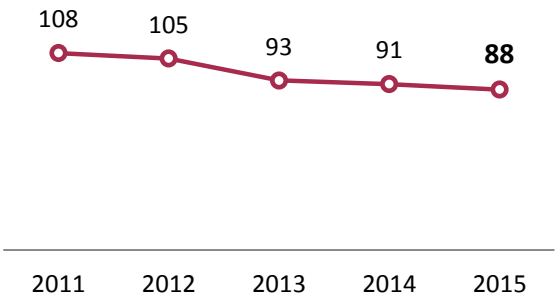
[60] EZiPoz is a platform that enables customers to shop directly from online merchants in the United States.

[61] Commemorates important events, taking place locally or internationally, that are significant such as inaugural ceremonies, anniversaries and coronation.

Courier Services

The courier services industry in Malaysia has been in operation since 1970s. Operationally distinct from the traditional postal services, the courier services industry has evolved and developed into a lucrative exchange business of physical communications, making it into a multi-billion Ringgit industry. Throughout 2015, more than 11,000 employees in the courier industry handled daily 161,000 documents and parcels generated both domestically and internationally.

Number of Courier Licenses Issued 2011 – 2015



Source: MCMC

Figure 8.13 Number of Courier Licenses Issued 2011 – 2015

Courier services play a significant role in e-commerce, serving the most vital part of the pickup and delivery for the completion of order fulfilment for e-commerce transactions.

As shown in Figure 8.13, the number of courier service licences in Malaysia has gradually decreased during the period of 2011 to 2015. By end of 2015, MCMC has licensed 88 courier service providers in Malaysia, comprising a mix of international and home-grown domestic service providers.

All courier service providers were successfully migrated to the new Postal Services Act 2012 in 2015. It is an important milestone for the Malaysian courier services industry where the shift towards new licensing regime (Figure 8.14) is intended to uplift the industry towards world class performance in the next few years to come.

Postal Services Act 2012
Class A
▪ Licensee may perform services as follows: a) international courier services; and b) domestic courier services nationwide ▪ Provide track and trace system within a year ▪ Provide at least five outlets locally within a period of two years ▪ Provide customer service appropriate to the courier business
Class B
▪ Licensee may perform service as follows: a) international inbound service only; and b) domestic courier services nationwide ▪ Provide track and trace system within a year ▪ Provide at least five outlets locally within a period of two years ▪ Provide customer service appropriate to the courier business
Class C
▪ Licensee services area limited within one state as preferred by the licensee to operate ▪ Due to geographical reasons, these areas are considered as one: a) Selangor, Kuala Lumpur and Putrajaya b) Sabah and Labuan

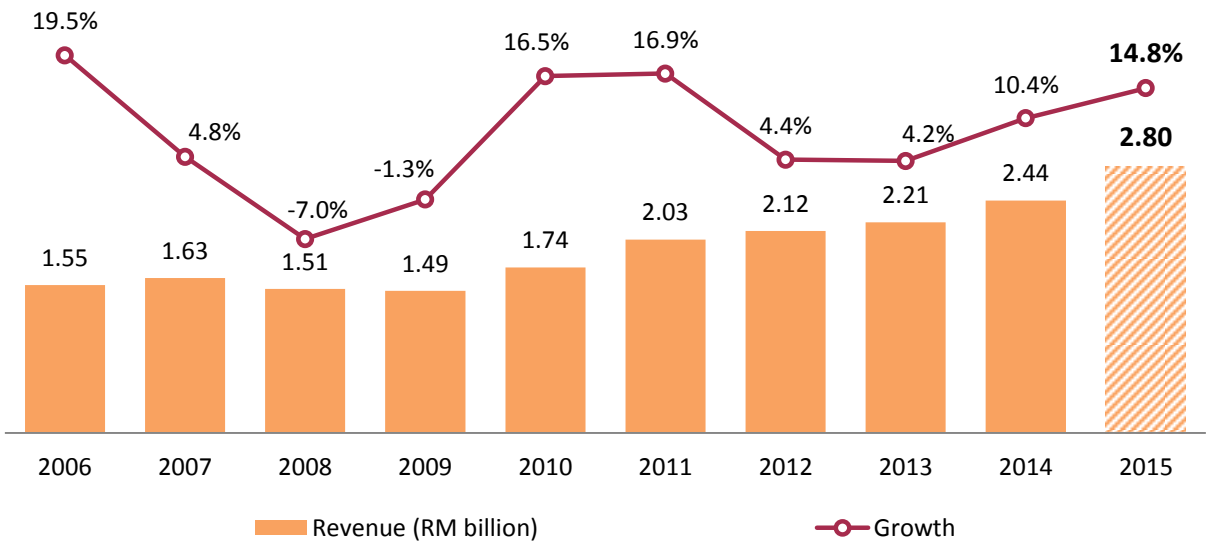
Source: MCMC

Figure 8.14 Postal Services Act 2012

Courier services industry continued to mark double digit revenue growth

Revenue generated from courier services industry marked the highest so far in 2015 at RM2.8 billion (Figure 8.15). This is an increase of 14.8% compared with 2014 at RM2.44 billion.

Courier Service Providers: Total Revenue and Growth 2005 – 2015



Source: Industry, MCMC

Figure 8.15 Courier Service Providers: Total Revenue and Growth 2005 – 2015

In this highly competitive market, courier service providers are compelled to provide innovative value added services that differentiate their business from competitors. For example, courier service providers are providing chilled delivery, cash on delivery, return and pick-up service, Applications Programme Interface (API) and e-payment platform and introduced web-based consignment notes.

Some of the local courier service providers are also leveraging on the network collaboration with Hong Kong, Taiwan, Japan, South Korea and China to expand business horizon domestically as well as internationally, benefiting from e-commerce. As the service providers strategise to face intensifying competition in the Malaysia market, competitive advantage will go to those with excellent service, risk management and adaptive pricing.

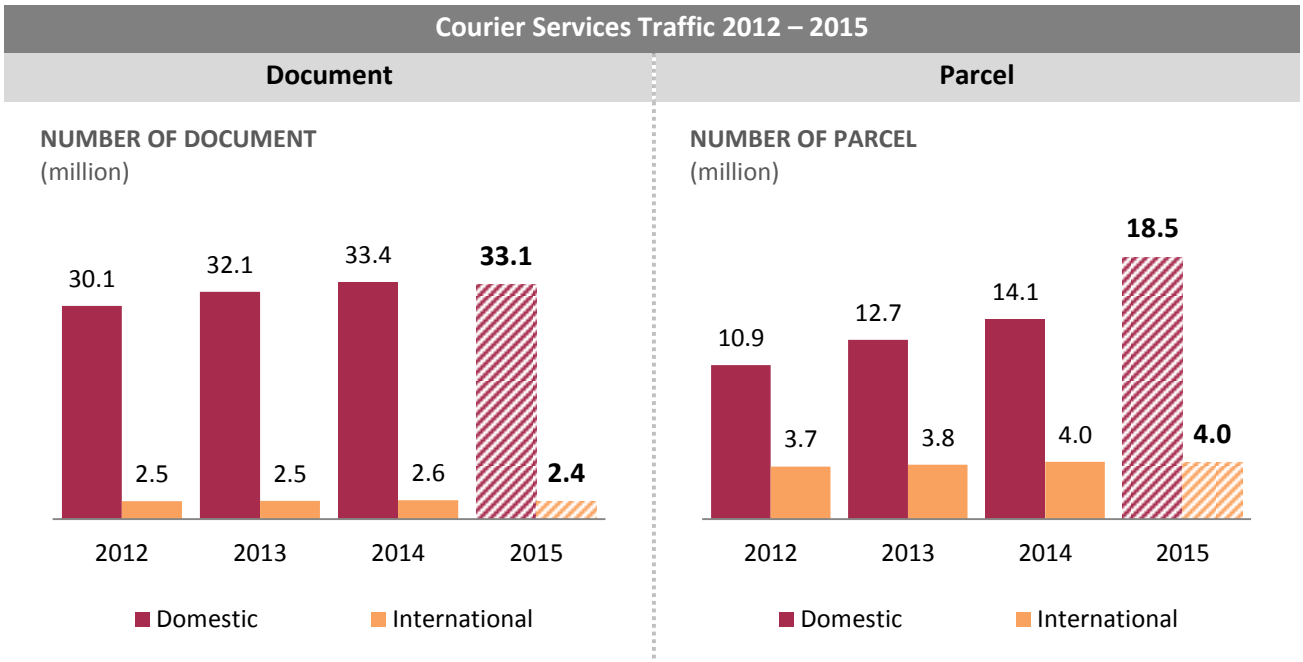
Courier Services Traffic

Courier services move to seize the opportunities related to e-commerce acceleration

Courier services traffic can be defined as the number of document and parcels posted and delivered to domestic and international destinations. By the end of 2015, the total number of documents delivered was 35.5 million, a marginal decrease of 1.4% compared with 2014. A total of 33.1 million (93.2% of total delivery) documents was for domestic, whereas 2.4 million (6.8%) was for international outbound.

The strong uptake of e-commerce has contributed to the increasing growth of parcels. Of the 22.5 million parcels delivered, 18.5 million (82.2%) was domestic and four million (17.8%) international.

Electronic devices, healthcare and beauty products, and clothing and apparels are the three most popular products for order fulfilment in Malaysia's e-commerce[62]. Given the growing requirements of the e-commerce market, courier service providers in Malaysia have diversified their businesses by offering self-collection, warehousing and repackaging services to businesses and individual customers.



Source: MCMC

Figure 8.16 Courier Services Traffic 2012 – 2015

Courier services sector employed almost 12,000 employees

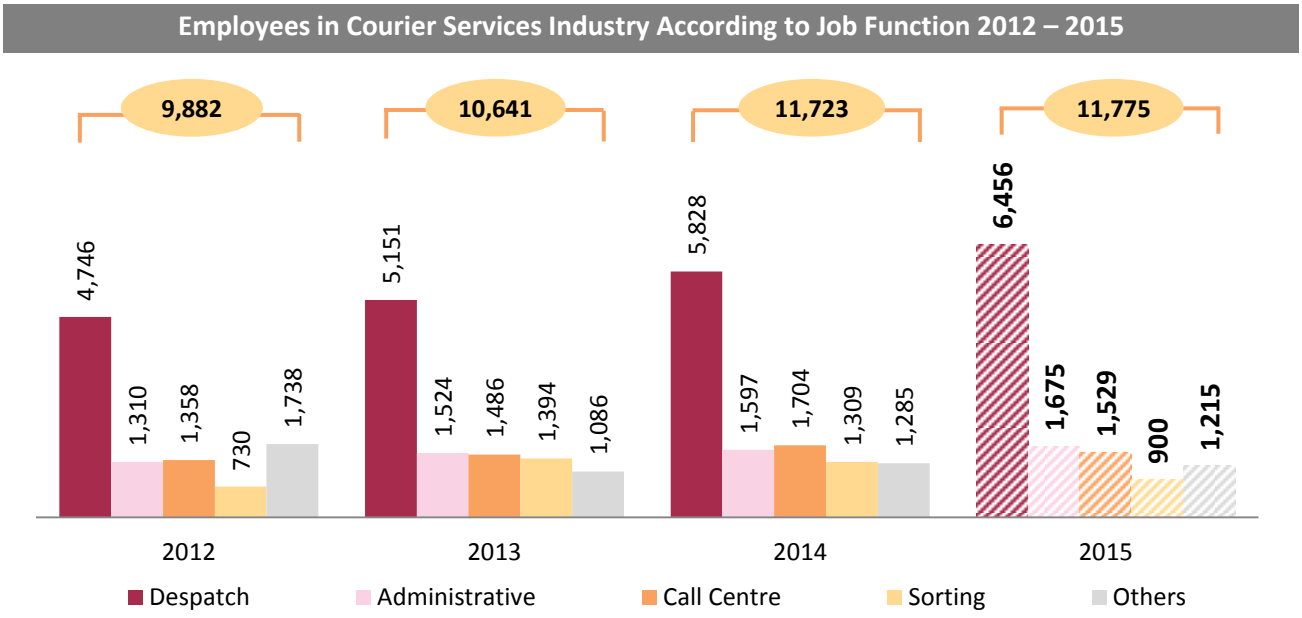
Despite automating courier service operations, the courier services sector remains labor-intensive. However, innovation needs to centre around the top priority of expediting the delivery of items to customers within the stipulated time frame.

In 2015, the courier services sector employed a total of 11,775 employees from 11,723 in 2014. The overall structure of employment can be viewed in Figure 8.17. Of this total

[62] IPR 2015 Questionnaire to Postal and Courier Companies.

employment, more than half comprises despatch group[63] that performs the critical role of pickup and delivery service. In line with the increase of e-commerce business sector and business expansion, the courier service providers expect to increase their workforce between 2% and 40% in 2016.

Three out of five job functions experienced a reduction of employment between 2014 and 2015. The decline was strongest in sorting service (31%), followed by call centre (10%) and "Others" category (5%). Reasons for these reductions could be the introduction of automation including automated sorting machines; business model expansion; and the explosion of Internet-enabled business and individual connectivity that has transformed customer engagement.



Note: Others include operation centre, sales, financial and customer service

Source: Industry, MCMC

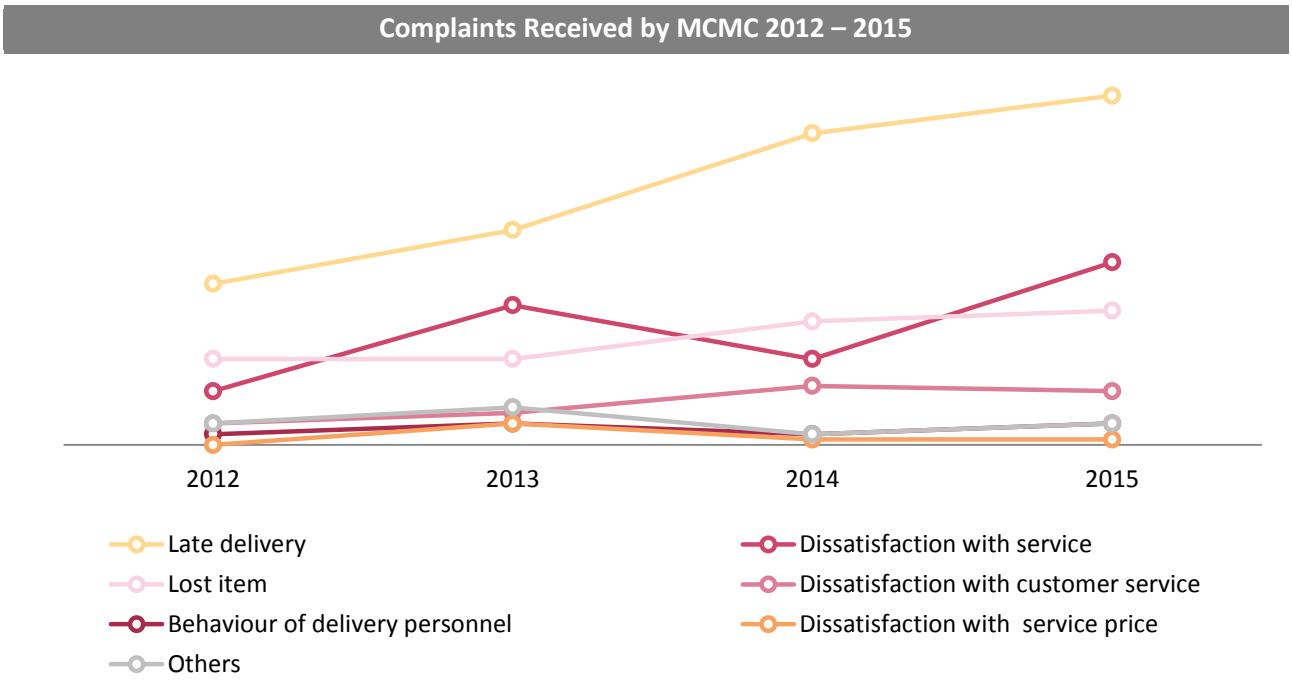
Figure 8.17 Employees in Courier Services Industry According to Job Function 2012 – 2015

Mitigating Consumer Complaints

In today's Internet driven world, customers are more empowered than ever. A satisfied customer can often turn into loyal customers and even brand advocates, whereas a dissatisfied customer has the potential to tell friends and communities about the poor service. For each customer that complains, there are those who do not complain but simply stop doing business with the service providers concerned. The latter represent lost business without a chance to mitigate the problem or get feedback to improve service.

In 2015, a total of 143 complaints on postal and courier services were received by MCMC, an increase by almost 27% from 2014. As illustrated in Figure 8.19, the complaints relate mainly to late delivery, followed by dissatisfaction of service and lost of item; whilst only one complaint related to pricing.

[63] Despatch group delivers parcels and documents to clients at designated location.



Source: MCMC

Figure 8.18 Complaints Received by MCMC 2012 – 2015

Number of Complaints Received by MCMC 2012 – 2015				
Category	**2012**	**2013**	**2014**	**2015**
Late delivery	30	40	58	65
Dissatisfaction with service	10	26	16	34
Lost item	16	16	23	25
Dissatisfaction with customer service	4	6	11	10
Behaviour of delivery personnel	2	4	2	4
Dissatisfaction with service price	0	4	1	1
Others	4	7	2	4
Total	**66**	**103**	**113**	**143**

Source: MCMC

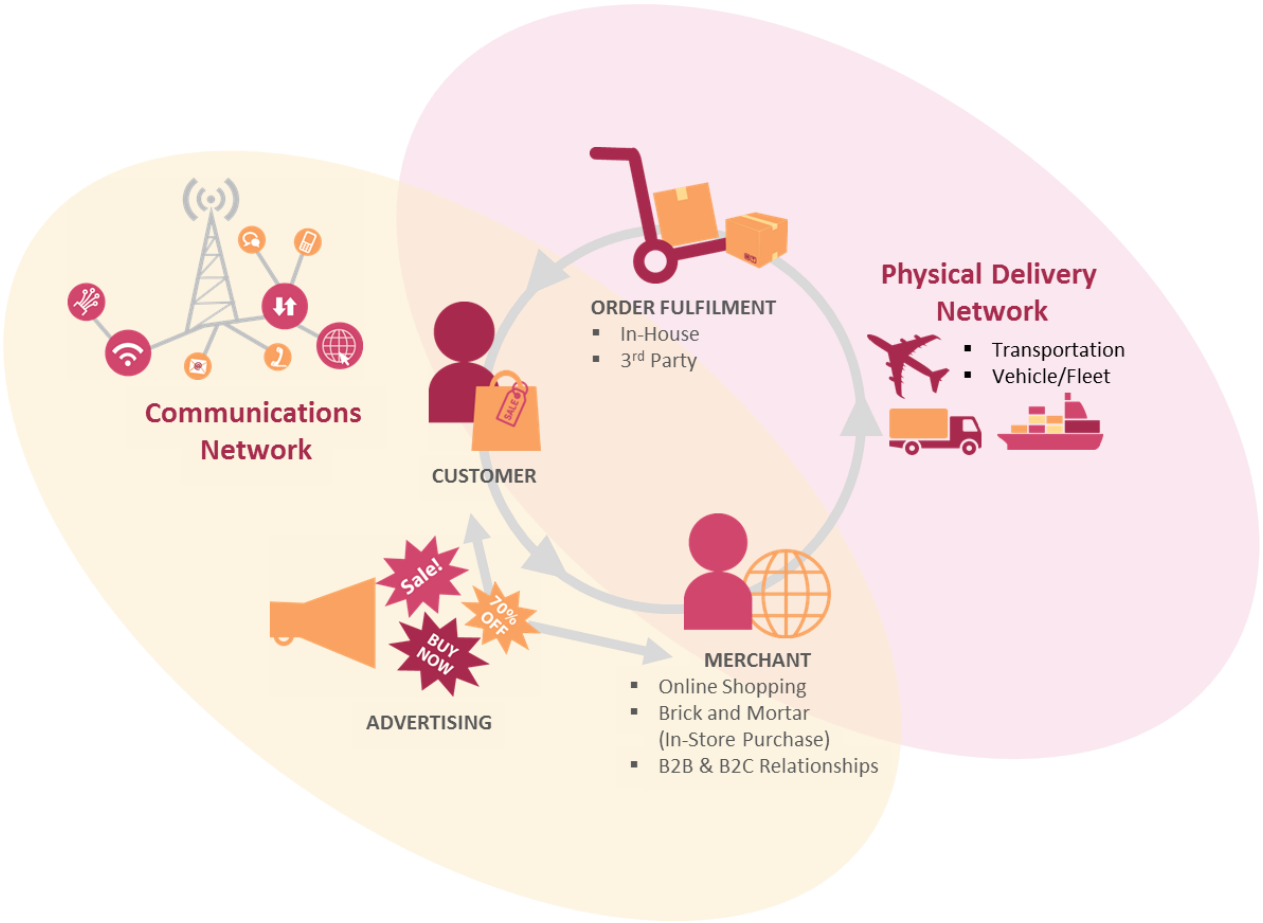
Figure 8.19 Number of Complaints Received by MCMC 2012 – 2015

The number of complaints has increased over the years, in line with the upsurge of e-commerce activities in Malaysia. As more consumers opt for online shopping, it creates major opportunities as well as new challenges for the postal and courier service providers. This includes procedures for redeliveries, expanded routes to residential neighbourhoods, return goods management policy and delivery capacity.

However, with the increasing number of complaints, the postal and courier service providers have instituted measures to efficiently deal with the matters arising by improving their processes along with their distribution/delivery channels and Business-to-Customer (B2C) networks. Among these efforts are educating customers on clearance protocols and packaging requirement, outsourcing package items to third party for efficient delivery, as well as staff counseling and management.

Convergence of Communications and Postal and Courier Services

Relationship between Communications and Postal and Courier Services



Source: MCMC

Figure 8.20 Relationship between Communications and Postal and Courier Services

Fixed and mobile services enabling Internet access together with courier services present opportunities for enterprises in digital economy environment. The converging communications, information and the physical delivery service are enabling online transactions and cross-border e-commerce.

That is, a store or retail channel and brands can reach their customers faster or even real time, and are more responsive towards requests by customers via various online social networking platforms.

The trusted courier service providers for purchase or order fulfilment in physical delivery network is also seamless through tapping ICT; ensuring seamless communications in purchase management and control between merchant and customers.

Similar approach as enabler platform in other industry verticals namely content, retail, healthcare and others are at different stages of development. This communications development including mobile apps, is expected to support new commercial activity and enhance relationships cross industry.

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MODULE 9: OUTLOOK 2016

C&M Industry to Remain Stable

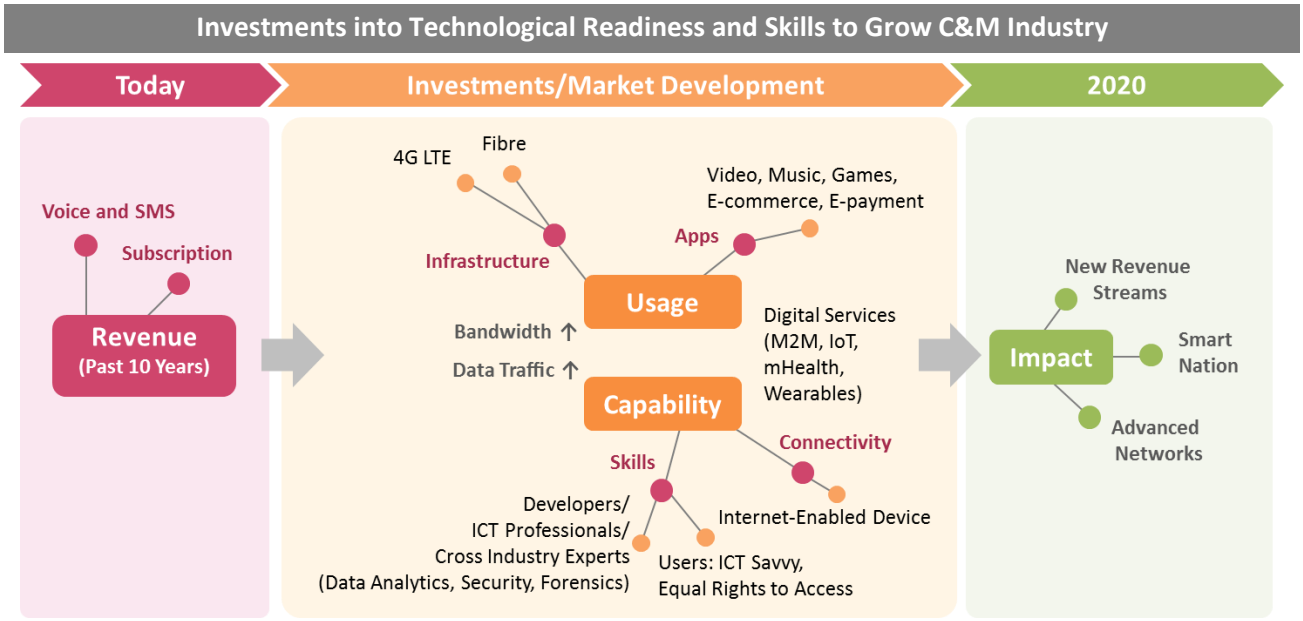
The 11th Malaysia Plan echoes 10th Malaysia Plan on follow up of C&M infrastructure development to ensure Malaysians have wide connectivity, access and can derive socio-economic benefit from broadband. Broadband is a key communications enabler to many economic sectors, which include growing services such as e-commerce, enablement platforms and electronic payments. Reliable and secure network infrastructure is the foundation of digital economy expansion and growth, which sustains national competitiveness.

For the year 2016, it is expected that the C&M industry is to record low single digit growth on the back of slower national and global trade growth. The growth for the C&M industry is expected to be derived from increased fixed broadband and mobile data consumption. This is due to adoption of digital services and ICT in SMEs for business and innovative enhancements.

The C&M industry in 2015/2016 is in a transition towards usage of ICT in every aspect of our life and business. Higher bandwidth broadband services over fibre (fixed) and 4G LTE (mobile) require strategic investment, which can generate profitable returns to the service providers in the longer term. Voice and SMS services are no longer generating as much profits for the industry. However, growing demand for rich content applications is driving data traffic.

By leveraging their core assets vis-à-vis network infrastructure, large subscriber base and technical expertise, C&M service providers can generate the capacity to drive higher incremental revenues.

The year 2015 highlights the start of many ICT opportunities and emerging services to fulfil the needs of digital lifestyle and thriving towards a smart nation. These opportunities are for stakeholders in the C&M ecosystem to tap into, but they would need to deal with various issues along the way such as facilitating intense usage and enhancement of ICT skills via smart community initiative. Furthermore, capacity development and outreach is undertaken through 1Malaysia Internet Centre (PI1M). It is worthwhile to note that these opportunities can be fully capitalised when all stakeholders continue to join hands and leverage on each other's strengths.



Source: MCMC

Figure 9.1 Investments into Technological Readiness and Skills to Grow C&M Industry

Malaysia needs to improve on technological readiness with focus on connectivity and bandwidth capacity as well as enhance higher education and training for appropriately skilled workforce. A well-educated and trained workforce is critical as their skills will enable them to achieve high levels of digital development. These improvements can propel Malaysia to achieve developed nation status by 2020.

Connected Living Enabled by Communication Services

Connectivity underpins the foundation and revolution towards the digital economy for Malaysia. Streaming of media, real time analytics processing and real time content delivery need to be supported by reliable and quality network connectivity and access.

Technology trends namely mobile payments, smart home, 3D printing, cloud computing and storage and wearables[64] were picked by consumers as the technologies that will impact their lives. These technologies play an important role in the IoT ecosystem.

Moving on, the convergence of communications, information and the physical delivery services are bringing new trends in doing business. This convergence is enabling online transactions and cross-border e-commerce that in turn can contribute to boost national economic growth.

Digital readiness going forward is not only critical in infrastructure development to meet capacity needs but also emphasis on secure networks. Security has always been a priority and focus of development for C&M industry stakeholders. Similarly for consumers, security and privacy are key elements in adopting digital services.

Conclusion

MCMC in 2015, embarked on the review of the CMA and Malaysian Communications and Multimedia Commission Act 1998 (MCMC Act). Such review of the regulatory framework facilitates development in the changing industry landscape. Among the most important provision being reviewed is on social media content, taking into account the changing online environment since the CMA was enacted in 1998. The review also looked into decoupling the role of chief executive and that of chairman of MCMC in order to enhance its governance through ensuring continuity and the balance of responsibility.

The national policy objectives of the CMA serve to promote a competitive C&M industry environment and encourage investment to achieve seamless connectivity. With these overreaching objectives, the MCMC is guided to facilitate infrastructure development for service providers' innovation and creating value propositions for customers.

Going forward, the service providers need to continue looking into collaborative ways as well as cross industries, for instance, involvement in purchase fulfilment value chain for e-commerce and adjacent markets.

[64] GfK, Smart Home: A Global Perspective Towards the Smart(er) Home, 2016.

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LIST OF ABBREVIATIONS

3G	3rd Generation
4G LTE	4th Generation Long Term Evolution
	A
ACE	"Access", "Certainty", "Efficiency"
Adex	Advertising Expenditure
ADSL	Asymmetric Digital Subscriber Line
ASP	Applications Service Provider
API	Applications Programme Interface
ASEAN	Association of Southeast Asian Nations
	B
B2B	Business-to-Business
B2C	Business-to-Customer
BCDD	Broadband Commission for Digital Development
BCG	Boston Consulting Group
BDA	Big Data Analytics
	C
C&M	Communications and Multimedia
CA	Certification Authority
CAGR	Compound Annual Growth Rate
CASP	Content Applications Service Provider
CCAM	Creative Content Association Malaysia
CFM	Communications and Multimedia Consumer Forum of Malaysia
CIDF	Creative Industry Development Fund
CIS	Commonwealth of Independent States
CMA	Communications and Multimedia Act 1998
CMCF	Communications and Multimedia Content Forum of Malaysia
	D
DECT	Digital Enhanced Cordless Technology
DEL	Direct Exchange Line
DTH	Direct To Home
DTTB	Digital Terrestrial Television Broadcasting
DVD	Digital Versatile Disc
	E
EESAT	Extensive Endpoint Service Availability Test
	F
FDD	Frequency Division Duplex
FINAS	National Films Development Corporation Malaysia
FIR	First Information Report
FTA	Free-to-Air
FTTH	Fibre-to-the-Home
	G
GCC	General Consumer Code of Practice for the Communications and Multimedia Industry Malaysia
GCI	Global Competitiveness Index
GCR	Global Competitiveness Reports
GNI	Gross National Income
GSMA	Groupe Speciale Mobile Association
GST	Goods and Services Tax
	H
HD	High Definition
HFC	Hybrid Fibre Coaxial
HSBB	High Speed Broadband

	I
ICT	Information and Communications Technology
ID	Digital Identification
IDD	International Direct Dialing
IMD	Institute for Management Development
IoE	Internet of Everything
IoT	Internet of Things
IP	Internet Protocol
IPTV	Internet Protocol Television
ITU	International Telecommunication Union
	K
KKMM	Ministry of Communications and Multimedia
KLCC	Kuala Lumpur City Centre
KLESF	Kuala Lumpur Engineering Science Fair
KLIA	Kuala Lumpur International Airport
	L
LTE	Long Term Evolution
LRT	Light Rail Transit
	M
M2M	Machine-to-Machine
MAMPU	Malaysian Administrative Modernisation and Management Planning Unit
Mbps	Megabits Per Second
MDEC	Malaysia Digital Economy Corporation
MIPCOM	Marché International des Contenus Audiovisuels
MIPTV	Marché International des Programmes de Télévision
MMU	Multimedia University
MNO	Mobile Network Operator
MVNO	Mobile Virtual Network Operator
MyIX	Malaysian Internet Exchange
	N
NFC	Near Field Communication
NFP	Network Facilities Provider
NSP	Network Services Provider
	O
OTT	Over-the-Top
	P
PCS	Public Cellular Service
PI1M	1Malaysia Internet Centre
PSTN	Public Switched Telephone Network
	Q
QoS	Quality of Service
	R
RBB	Rural Broadband
RFI	Radio Frequency Interference
RFID	Radio Frequency Identification
	S
SET	Secure Electronic Transaction
SIM	Subscriber Identity Module
SIRT	Security Incident Response Team
SME	Small and Medium Enterprises
SMS	Short Messaging Service
SOC	Security Operations Centre
SSL	Secure Socket Layer
SUBB	Suburban Broadband
SVOD	Subscription Video On Demand

	T
TDD	Time Division Duplex
	U
UN	United Nations
UPS	United Parcel Service
UPU	Universal Postal Union
USD	United States Dollar
	V
VAS	Value Added Services
VOD	Video On Demand
VoIP	Voice over Internet Protocol
VSAT	Very Small Aperture Terminal
	W
WCDMA	Wideband Code Division Multiple Access
WCY	World Competitiveness Yearbooks
WEF	World Economic Forum
WiMAX	Worldwide Interoperability for Microwave Access
	X
xDSL	Digital Subscriber Line
	Y
YoY	Year on Year

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Numbers and percentages may not add up due to rounding practices. Information is correct at the time of printing.

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