

Chapter 4 Operational Highlights

Performance by division

	Consumer Business Group	Enterprise Business Group	Home Business Group	Retail Business
Brand name	Taiwan Mobile	TWM Business Solution	TWM Broadband	momo
Services	<ul style="list-style-type: none"> ● Voice, data and mobile value-added services for consumers 	<ul style="list-style-type: none"> ● Voice and data mobile services for enterprises ● Fixed-line services ● Cloud and enterprise total solutions 	<ul style="list-style-type: none"> ● Pay TV services (CATV/DTV) ● Cable broadband services ● Others 	<ul style="list-style-type: none"> ● E-commerce ● TV home shopping ● Mail order

Unit: NT\$m

	Telecom business		Cable business	Retail business
	Mobile business	Fixed-line broadband business		
Market position	Second-largest mobile operator in a five-player market, with a market share of around 30% in terms of mobile service revenue	One of top three internet service providers (ISP), with a market share of 4.4%	Fourth-largest multisystem operator (MSO), covering about 11% of households in Taiwan	Ranked in the top 2 in B2C e-commerce
2017 revenue*	77,372		6,392	33,239
2017 EBITDA*	27,516		3,276	1,515

* Source: 2017 financial reports. The difference between the sum of each division and consolidated numbers was due to inter-division adjustments and eliminations.

Scope of Business

Business overview

Telecom Business

1. Telecom products and services

Consumer Business Group (CBG)

The Consumer Business Group is mainly engaged in providing mobile communication services to individual users. The Company offers a wide range of products, including SIM cards for postpaid subscribers, SIM and reloadable cards for prepaid subscribers that can be used for making/receiving calls, and value-added services, such as short messaging service (SMS), data and multimedia. Communication services related to Internet of Things products, such as wearable devices, have also emerged in recent years.

Service category	Description
Mobile	<ul style="list-style-type: none"> ● Basic telecommunication voice services, including making and receiving calls from fixed-line and mobile phones ● Data and value-added services, including voice mail, call forwarding, call waiting, conferencing, SMS, roaming, call barring, video calls, multimedia and content (e.g. mobile TV, music, games, financial information, online bookstore, messaging apps, video clips, video streaming), internet access using 4G/HSDPA/3G transmission, and etc.

Enterprise Business Group (EBG)

The Enterprise Business Group offers information and communication integrated total solutions to enterprise clients.

Service category	Description
Mobile	<ul style="list-style-type: none"> ● Mobile virtual private network (MVPN) ● Mobile data virtual private network (MDVPN) ● Mobile broadband service ● Business mobility services, including customized apps, mobile device management, instant messaging (M+ Messenger, enterprise edition), and enterprise mobility management (EMM) ● International roaming ● Fleet Management System (FMS) service
Fixed-line voice	<ul style="list-style-type: none"> ● Integrated voice solutions, including multi-port residential gateway (MRG), local calls, long-distance calls, international calls and fixed mobile convergence (FMC) ● 080 domestic toll-free service, audio conference, intelligent network services (e.g., 0209 services) and international simple resale (ISR)
Fixed-line data	<ul style="list-style-type: none"> ● Domestic leased line, Metro Ethernet, IP virtual private network ● International private leased circuit (IPLC) and ADSL VPN
Internet	<ul style="list-style-type: none"> ● Internet access via leased line, Metro Ethernet, ADSL and FTTx
Cloud	<ul style="list-style-type: none"> ● The only Uptime Tier III certified cloud data center in Taiwan. ● Infrastructure as a service (IaaS) ● Software as a service (SaaS), including web hosting, mail hosting, domain name system (DNS) management and video conference
Enterprise total solutions	<ul style="list-style-type: none"> ● Developed integrated enterprise solutions covering mobile & communications, cloud services, Internet of Things (IoT) and information security to provide enterprise clients with comprehensive solutions ● Developed an Enterprise Information Security Service to meet the needs of finance/securities/insurance/internet enterprise clients ● Developed integrated solutions by industries, such as Smart Retail Services, SME information security service, and SME surveillance service.

2. Telecom revenue breakdown (including CBG and EBG)

Unit: NT\$mn

Item	Year	2017	
		Revenue	% of total
Service revenue		58,022	75%
Device sales		19,350	25%
Total		77,372	100%

3. New telecom products and services

Consumer Business Group

- (1) Voice: Continue to roll out innovative rate plans catered to different segments based on their usage behaviors.
- (2) Value-added services: Focus on mainstream smart devices, wearables and IoT devices; develop a diverse range of services and digital content to meet consumers' mobile needs.

Enterprise Business Group

- (1) M+ Enterprise Mobility (EM):

M+ Enterprise Mobility is an innovative mobility service for enterprises which overturns fixed-line voice market. By implementing this service, no calls will be missed. All unanswered calls on desk phones are automatically transferred to mobile phones. Moreover, desk phones will no longer be a necessity for enterprises in the near future. Thus, enterprises can not only improve communication efficiency, but also lower cost.

- (2) Information security solutions:

TWM provides comprehensive information security solutions, including multilayer anti-DDoS, managed security services, vulnerability assessment, intrusion prevention system, information security integrated services and equipment. Other solutions, such as advanced persistent threat protection and email security, are under development.

- (3) Mobile office:

Combines business mobile service for SME clients with enterprise cloud document management service, online work flow and Office 365.

- (4) myHealth:

A self-managed health service in which users take their own health measurements, with the data automatically being uploaded to the cloud. Users can contact the call center for professional advice if they have any questions about their health data or statistics.

- (5) Azure Stack cloud service:

A collaboration between TWM and Microsoft, Azure Stack cloud service can assist businesses in meeting regulatory requirements, while dramatically reducing internet access time, thereby enhancing business efficiency. TWM's experienced cloud team can assist clients in deploying the service within the shortest possible time.

- (6) Business cloud document management:

This service provides enterprise clients with cloud storage space that can synchronize files automatically and

make multiversion backups; data deduplication, which eliminates duplicate copies of repeating data to save on storage space; and instant storage change for more flexible use of space.

(7) Smart retail:

A smart screen and customer flow analysis help retailers optimize sales strategies and daily operation.

(8) Enterprise FTTx solutions:

Enterprise FTTx solutions can assist enterprise clients in introducing not only high quality and low cost FTTx service but also variety services such as enterprise firewall, surveillance, and cloud services.

(9) IoT SIM management platform:

Enterprise clients can manage their IoT SIM remotely and improve enterprise efficiency via the platform.

4. Mobile business operating status

(1) Postpaid products and services

The Company focused on boosting smartphone sales and migrating its customers to 3G/4G services to raise its ARPU. As of December 2017, 3G/4G customers accounted for 100% of its client base.

The Company has excellent loyalty programs in place to secure its client base and minimize churn rates. With the aid of business intelligence tools and its direct marketing network, the Company uses market segmentation to target and provide customers with services that better match their needs. For high ARPU customers, the Company has an exclusive program called “myVIP.” The Company also offers a credit card program that allows customers to earn cash rebates based on their phone bills and credit card spending.

(2) Prepaid products and services

The Company has continued to increase its prepaid overseas roaming service coverage. In 2017, it added data roaming service in South Korea.

Home Business Group (HBG)

1. CATV products and services

Leveraging off the group's resources – from mobile and fixed-line to innovative cloud technology – HBG provides digital convergence services across “four screens and a cloud” to home users. TFN Media (TFNM), a subsidiary of the Company, holds a cable television system operator's license and a Type II telecommunication license. Its subsidiary, TV production company Taiwan Win TV Media Co., Ltd., offers original content, such as the “momo family channel,” and owns distribution rights to a large number of outstanding domestic and foreign TV content, enabling it to provide subscribers with a wide range of digital audiovisual entertainment services

Service category	Products / Services	Description
Pay TV	Digital TV	Uses high bandwidth coaxial cable to transmit a wide range of TV channels and programs to home TVs.
	High-definition digital TV	Subscribers can use the set-top box provided to view high-definition digital video content.
Broadband internet access	Cable fiber-optic broadband internet access	Provides high-speed internet access service via a hybrid fiber/coaxial (HFC) network deployed by the CATV system operator, together with DOCSIS 3.0 broadband internet access technology.
Content agency	Digital TV channels	Distributes high-quality domestic and foreign TV content on digital TV services by licensing the broadcasting rights of these channels to other CATV system operators and video service platforms.
Digital home services	OTT set-top box service	Provides high-definition on-demand video, audio and interactive applications/content by combining video on demand, internet TV and digital TV onto a single platform. Subscribers can access these contents on their TVs, computers, smartphones and tablets anytime, anywhere.
	Personal Video Recorder (PVR)	An interactive TV program recording device with 500G storage that enables subscribers to record TV programs through multiple devices, including computers, TVs and handsets.
	HomeSecurity service	Offers round-the-clock protection for households and SMEs by providing a multi-screen monitoring and cloud storage system that sends out alerts via apps for smart devices, OTT platforms, SMS and e-mails.
	HealthCare service	A collaboration with Taipei Medical University Hospital to provide connected health services to remote areas, including on-call professional health managers and devices.

2. CATV revenue breakdown

Unit: NT\$m

Item	Year	2017	
		Revenue	% of total
Pay TV service		3,853	60%
Cable broadband service		1,350	21%
TV content agency and others ¹		1,189	19%
Total		6,392	100%

¹ : Including channel leasing revenues.

3. New CATV products and services

(1) High-definition digital TV services:

In line with the government's push to achieve 100% digital CATV penetration, TWM Broadband positioned itself to maximize the opportunity by expanding its HDTV economies of scale and digitizing audio-visual home entertainment. With digitalization having been completed at the end of 2017, CATV system operators can

increase their signal transmission capacity to offer a wider range of viewing options and more value-added services. TWM Broadband plans to offer more 4K content for consumers and to lead the industry into a whole new era of home entertainment.

(2) High-speed fiber-optic internet access services:

Consumer demand for high-speed internet access has soared with the fast-growing popularity of online videos and social media. TWM Broadband was ahead of the trend in upgrading its fiber-optic network, enabling it to provide up to 500Mbps high-speed broadband access services. In the near future, DOCSIS 3.1 network technology and infrastructure will be adopted to deliver speeds of up to 1Gbps.

(3) Digital home services:

Since 2017, TWM Broadband has collaborated with TWM OTT service myVideo, which provides high-definition on-demand video, audio and interactive applications & content, by combining video on demand, internet TV and digital TV onto a single platform. Furthermore, TWM Broadband has entered the healthcare market by cooperating with medical institutions to provide remote home care services, such as professional consultancy and health monitoring devices.

Retail Business (momo.com Inc. or “momo”)

1. Retail products and services

momo offers TV home shopping, e-commerce, mail order service, travel services, and property and life insurance sales.

Service category	Products / Services	Description
TV home shopping	Programing producer	Self-owned professional studio and filming team provides 24-hour momo TV programs for 5mn households nationwide.
	Product orders	Provides 0800 toll-free hotline and mobile app for consumers to purchase products featured on momo TV programs or the momo TV app.
	Customer service	Customer service team works around the clock to answer questions about product features, purchase and return policy.
E-commerce	Supplier recruitment service	momoshop: Recruits suppliers across Taiwan to provide clients with premium products and the best services. momomall: Assists suppliers interested in e-commerce to establish and operate online platforms.
	Product orders	momoshop: Sells over 2.1mn stock keeping units (SKU) and provides express delivery for selected products. momomall: Gathers over 3,000 suppliers with 15mn SKUs.
	Customer service	Provides 24-hour online customer service and supplier contact platform to satisfy customers' shopping needs.
Catalogue /Mail order	Merchandising	Selects prime products from momo's TV home shopping and online B2C shopping platforms and highlights their selling points.
	Catalogue production	Designs catalogue layout and highlights product features for customers.
	Member service	Distributes 500K copies by mail to momo members.

	Product order and customer service	0800 toll-free 24-hour hotline manned by a professional customer service team that answers questions about product features, purchase and return policy.
Travel service	Domestic and international tourism travel e-voucher sales	Works with leading travel agencies to sell domestic and international services, including tours, accommodations and amusement park tickets, via e-vouchers.
Property/Life insurance	Property/life insurance products and services	Provides property/life insurance products and services through 100% owned insurance agency subsidiaries.

2. Retail revenue breakdown

Unit: NT\$m

Item	Year	2017	
		Revenue	% of total
E-commerce		26,572	80%
TV home shopping, mail order service and others		6,667	20%
Total		33,239	100%

3. New retail products and services

- (1) Develop new product categories: Product variety is critical to maintaining TV home shopping viewership and effectively promote a marketing campaign to engage target customers. momo has successfully explored and introduce new product categories, including premium dietary supplements and international boutiques, and new services to sustain buyers' interests.
- (2) Enhance cooperation with brand vendors: momo is committed to cooperating with more brand-name vendors, which offer prolific marketing resources, product quality and stable supply chains. momo intends to tighten brand relations and maximize the synergy between channels and brands through market resources sharing.
- (3) Expand business platforms: With CATV penetration nearing saturation, traditional TV viewership falling, and digital TV and mobile platforms becoming ever-more popular, TV home shopping is looking to adapt to changes in consumer's lifestyle and trends. To enhance engagement with its customer base and boost customer stickiness, momo has expanded its TV fan clubs' operation, streamed live videos on Facebook since 2016 and listed two channels on MOD in 2017.
- (4) Build up mobile commerce: As sales from mobile devices continue to increase, momo aims to aggressively promote mobile commerce products by providing a better user experience to increase user stickiness and raise mobile commerce's share of total revenue.
- (5) Improve services: Logistics and IT play key roles in addressing the "last-mile" issue. momo aims to enhance suppliers' delivery capabilities and improve its logistics and warehousing facilities to provide fast, transparent and timely deliveries.

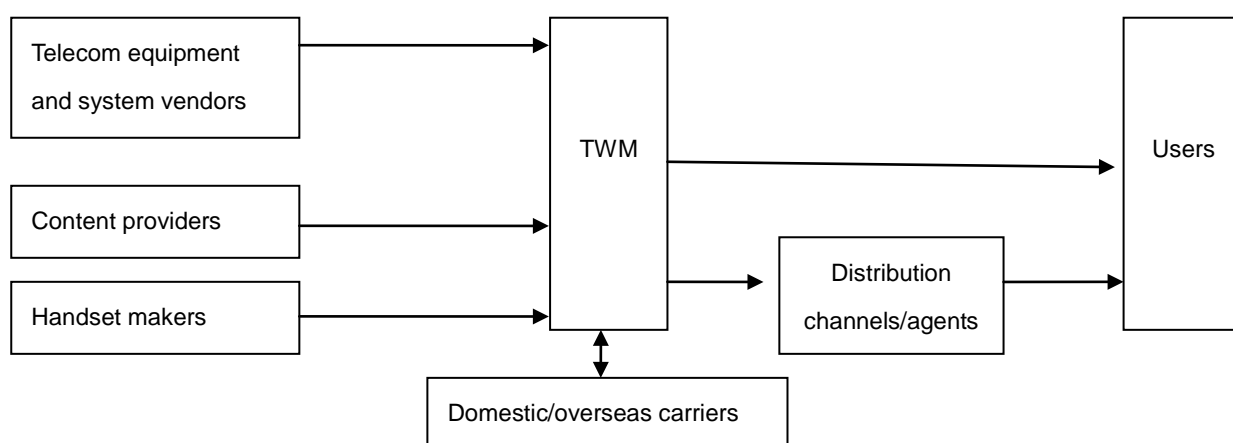
Industry overview

Consumer Business Group

1. Industry status and development

Though telecom operators have launched their 4G services one after the other since 2014, smaller players remain constrained by a lack of competent 4G network infrastructure and subscriber economies of scale. The three major operators will likely continue to dominate the market.

2. Industry value chain



3. Product development trends and competitive landscape

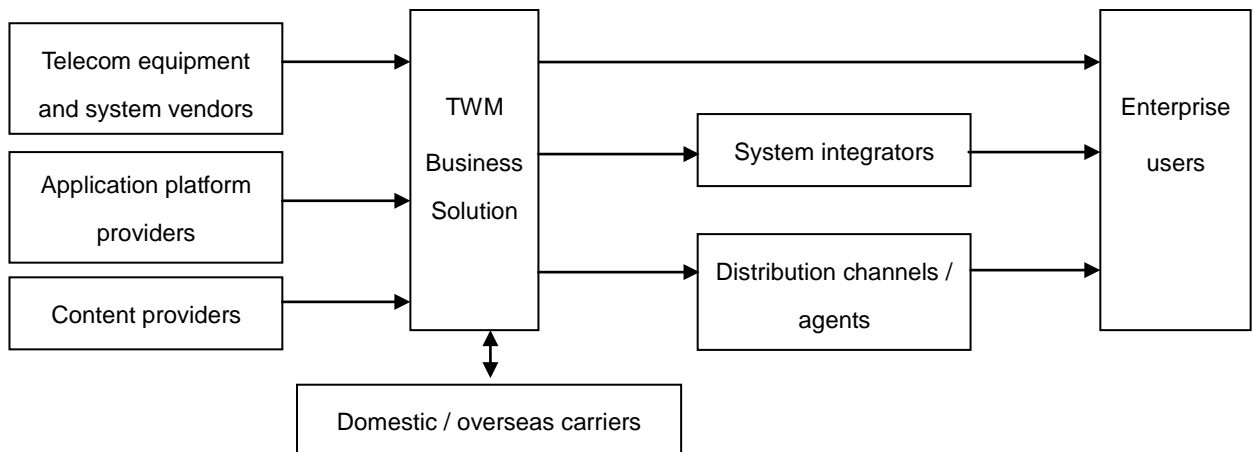
The operators are seeking to further expand the mobile broadband market in the 4G era. However, due to the intensifying competition and limited growth in data revenue, TWM has introduced a variety of new value-added services to improve ARPU. This should be an important future revenue growth driver for the post-paid segment. As for the prepaid segment, pricing competition continues.

Enterprise Business Group

1. Industry status and development

According to the National Communications Commission (NCC), there were 82 Type I telecommunication providers, including four fixed-line operators, 13 mobile operators and other circuit leasing operators, and 406 Type II telecommunication providers, such as ISR, ISP, VoIP and other value-added service providers. Given intense competition in the fixed-line market and the growing trend toward IP network and digital convergence, telecommunication providers have to offer not only infrastructure, but also applications and total solutions.

2. Industry value chain



3. Product development trends and competitive landscape

Data provided by the NCC shows that Chunghwa Telecom (CHT) has a virtual monopoly of the telecom market. It has an over 90% share of local network service revenue, and about 50% share of long-distance network service and international network service revenue. TWM teamed up with cable operators to provide business FTTx service, hoping to level up market shares.

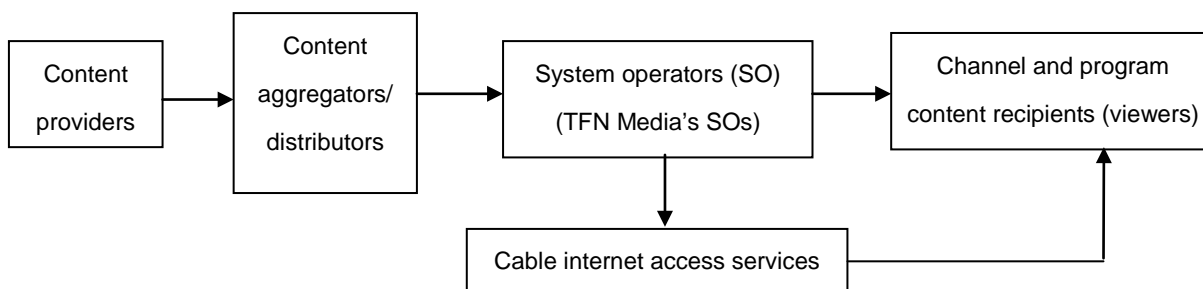
Cloud, IoT and enterprise mobility applications will be the main trends in the future. Carriers will provide various efficient and effective mobile commercial application services to enhance the competitiveness of enterprise clients.

Home Business Group

1. Industry status and development

Cable TV has become a must-have video platform, but it faces challenges from alternative services, such as IPTV, digital terrestrial TV and other emerging media (e.g., OTT video streaming) that have successively entered the market. The CATV industry must aggressively provide innovative digital TV value-added services to attract traditional CATV subscribers to switch to digital TV.

2. Industry value chain



TFN Media has the advantage of controlling “last mile” access to customers. TWM Broadband aims to take the lead in vertical integration to build up its core competitiveness and explore new business opportunities in the digital age.

3. Product development trends and competitive landscape

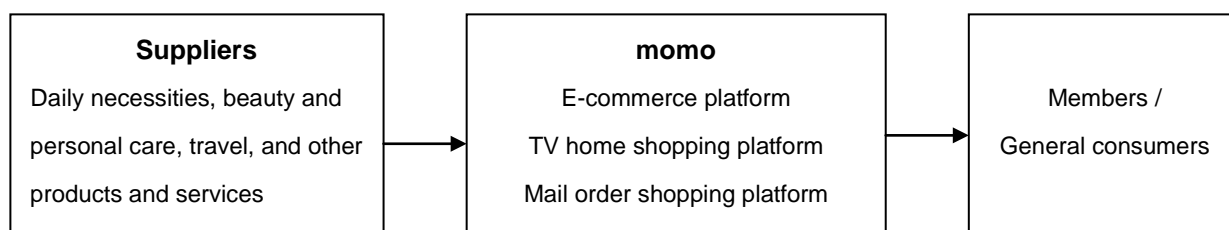
Although fixed broadband is a saturated market that is dominated by Chunghwa Telecom, TWM Broadband managed to grow its subscriber number in the cable internet business by bundling cable broadband products with HD DTV services in its CATV service areas, following the example of leading global operators, such as PCCW in Hong Kong, as well as AT&T and Comcast in the US. To fend off competition, TWM Broadband provides not only high-speed broadband internet access service, but also an increasing number of HD programs and more innovative digital value-added services to let subscribers enjoy a whole new experience in home entertainment.

Retail Business

1. Industry status and development

The proliferation of CATV, digital TV and smart devices has given rise to a new breed of home shoppers. Consumers can order by telephone or through virtual platforms, choosing from a plethora of convenient payment options and receive the product within a short period of time.

2. Industry value chain



momo sources its products from suppliers of daily necessities, beauty and personal care, travel services, and other products and services, and sell them through its TV home shopping networks, online shopping sites and mail order catalogues for members and general consumers.

3. Product development trends and competitive landscape

- (1) E-commerce: Although momo entered the market later than industry peers such as Yahoo! Taiwan and PChome Online, it has made major strides as a comprehensive B2C e-commerce player, growing rapidly by leveraging its know-how in TV home shopping. momo is the second largest B2C operation in Taiwan in 2017.
- (2) TV home shopping: Aside from momo, leading players in the industry include Easter Home Shopping (EHS) and viva. The rise of virtual shopping platforms, such as e-commerce and mobile commerce, has intensified competition in TV home shopping. momo has countered this by launching its own mobile apps and leveraging its social platform and capabilities, including live streaming to bolster engagement with its members and customer base.
- (3) Catalogue / Mail order: The mail order business attracts different types of players, from TV home shopping operators (e.g., momo, EHS and viva) to direct marketing players (e.g., Amway, Avon, Herbalife and Nu Skin), and Japanese mail order companies (e.g., DHC and Orbis). momo's main rivals in this business are direct marketing players and Japanese mail order companies.

Research and development expenditure

Investment in research and development and its ratio as a percentage of total revenue are shown in the table below. For 2018, the Company plans to spend NT\$680.2mn on the research and development of more advanced technologies to increase customer satisfaction, which in turn should boost value-added service revenue and overall operations growth.

Year	2017	2018 (As of January 31)
R&D expense (NT\$'000)	699,692	56,511
As a % of total revenue	0.60%	0.54%

Major research and development achievements

Project name	Description
5G mmWave communications and green communication technology	<p>Research on 5G millimeter wave communication and green energy technology:</p> <ul style="list-style-type: none"> • Energy-efficient architecture for mmWave communications • Green communication technology • Evaluation of the impact of green communication base stations on the human body • Utilize data measurements to analyze the effect of electromagnetic waves on the human body • Power-saving and throughput enhancement of hierarchical transmission for LTE eMBMS (Evolved Multimedia Broadcast Multicast Service)
Personalized music and video recommendation services	Use machine learning algorithms to analyze personal profiles and interests to provide personalized music and video recommendations.

Project name	Description
M+ Messenger	Provide video conferencing, integrate PBX and support money transfer to improve communication efficiency and productivity.
TAMedia mobile advertisement platform	Develop new interactive advertising forms – vertical video, 360-degree panoramic ad and proximity detection application; and improve advertising performance by integrating third-party tracking mechanism.
myVideo	Provide video recommendations and Google browser video playback; augmented reality + virtual reality (AR+VR) for live baseball games to enhance user experience; and expand the market for large-screen video viewing.
Mobile payment	Launched the first mobile EasyCard co-branded credit card that allows auto top-up and other lifestyle features, and for subscribers to exchange loyalty points with each other.
myBook	Revamp user experience for both iOS and Android applications.
myMusic	Integrate service in which users register only once to listen to their choice of music anytime, anywhere via TV, wearable devices, in-vehicle infotainment systems, etc. to enhance the listening experience.

Sales development plans

Consumer Business Group

1. Short-term plan

- (1) Develop various packages to meet the needs of different types of customers and introduce a new store concept that provides optimal service processes and quality in order to give customers the best service experience.
- (2) Boost channel performance and competitiveness by enhancing management and deployment.

2. Long-term plan

The Company aims to provide subscribers with a variety of digital convergence services through 4G's faster transmission speed. The focus will be on the following:

- (1) Establishing a “quadruple-play” platform that integrates mobile communication, fixed line, broadband internet access and cable TV services to give the Company an edge over its competitors in offering digital convergence services. The company's myVideo, myMusic and myBook are domestic market leaders in convergence services.
- (2) Developing and introducing IoT technologies and platforms, e.g. connectivity management platform, embedded universal integrated circuit card (eUICC) and narrowband IoT. The initial focus will be on developing a connected car solution to provide global automakers with local connectivity and value-added services. The goal is to define and develop innovative and profitable business models in the IoT field.

Enterprise Business Group

1. Short-term plan

- (1) Develop comprehensive information security services.
- (2) Develop Azure Stack cloud service with Microsoft to meet the needs of different industries.
- (3) Build up IoT SIM management platform. Clients can manage their IoT SIM remotely via this platform, which provides autonomous diagnosis and self-management functions.
- (4) Develop unified communications (UC) and launch M+ Enterprise Mobility to integrate enterprise communication services. Unanswered calls on desk phones are automatically transferred to the users' mobile phones, ensuring that users never miss important calls. Moreover, employees can use the corporate directory in M+ to find a colleague's contact information immediately.

2. Long-term plan

The company's vision is to expand enterprise services from network-centric to mobile applications, IoT, information security, and cloud services through steady investments in the following:

- (1) Cloud computing and enterprise integrated solutions
- (2) IoT integrated solutions for enterprise clients
- (3) Channel integration to raise sales productivity and expand the SME market

Home Business Group

1. Short-term plan

- (1) TWM Broadband will continue to optimize its network infrastructure in regions where it is already operating CATV systems and provide high-definition digital content and video on demand to set the foundation for its digital services.
- (2) TWM Broadband plans to launch over 500Mbps super high-speed internet access service bundled with high-definition digital TV to boost its cable broadband and digital TV service penetration rates to improve its subscriber mix.

2. Long-term plan

TWM Broadband aims to become a one-stop shop for home digital services by integrating high-definition digital content, multiple-viewing terminal devices, high-speed fiber-optic broadband services and cloud technology, allowing families and individual subscribers to enjoy the benefits of "four screens and a cloud" (i.e., mobile phones, PCs, tablets and TVs).

Retail Business

1. Short-term plan

- (1) E-commerce: Provide differentiated value-added services, further enhance competitive advantages in mobile platforms, and leverage big data analytics and recommend more personalized products to clients. Leverage various social shopping platforms and profit-sharing mechanisms to create more significant revenue

contributions from community shopping websites.

(2) TV home shopping: Enhance the competitiveness in distribution channel by listing more branded products from overseas, cultivating fan bases on social platforms, such as Facebook and Line, and cooperate with e-commerce suppliers to expand product offerings.

(3) Catalogue / Mail order: Strengthen visual editing to refine the design of momo catalogs and develop e-catalog services to boost traction with customer base.

2. Long-term plan

Take a pro-active approach in raising momo's brand image, further exploit Southeast Asia's TV shopping market, export best-selling products across multiple countries, leverage the Group's marketing resources and sales channels to enhance operating efficiency, and provide innovative services through mobile and cloud platforms.

Customer satisfaction

To create the best experience for its customers, TWM conducts annual customer satisfaction surveys for consumer business clients by telephone to better understand their needs and expectations. Since 2016, annual surveys for enterprise and home business clients have been conducted as well, by online questionnaire and telephone respectively. The findings from these surveys are used as a reference to set new objectives and improve service quality. In all, about 85% of the consumer, enterprise and home business clients were reported to be satisfied in 2017.

Customer satisfaction¹ (%)	Key measurements	2015	2016	2017
Consumer Business Clients	customer hotline service satisfaction	86	87	85
Enterprise Business Clients	customer hotline service satisfaction	-	82	88
Home Business Clients	installation and maintenance service satisfaction	-	81	85

Note 1: Customer satisfaction (%) refers to the percentage of respondents who chose "very satisfied" and "satisfied."

Market and Sales Overview

Market analysis

Consumer Business Group

1. Main products and service areas

The Company provides mobile services nationwide, covering Taiwan and the outlying islands of Kinmen and Matsu.