

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

Unit: NT\$m

	Telecom business		Cable TV business (CATV)	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 25% in terms of mobile subscribers	One of top three internet service providers (ISP), with a market share of 4.5%	Fourth-largest multiple system operator (MSO), covering about 11% of households in Taiwan	Ranked first in B2C e-commerce
2019 revenue*	67,385		6,090	51,830
2019 EBIT*	13,257		2,092	1,656

* Source: 2019 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

Besides providing basic mobile voice and broadband services, the Company also offers diversified value-added services to meet customers' needs for entertainment and smart living. These value-added services include video and music streaming, mobile commerce, instant messenger, IoT related services and wearable/smart home devices.

Enterprise Business Group

The Enterprise Business Group offers information and communication integrated total solutions to enterprise clients. Backed by its solid experience in telecoms, ranging from mobile and fixed-line voice & data to internet and cloud services, the Enterprise Business Group can serve as a partner in AI, IoT, cloud, ICT and information security services for enterprise

clients.

2. Telecom revenue breakdown

Unit: NT\$mn

Item	Year	2019	
		Revenue	% of total
Service revenue		48,337	72%
Device sales		19,048	28%
Total		67,385	100%

3. New telecom products and services

Consumer Business Group

- (1) Tariff: Continue to roll out innovative rate plans catering to different segments based on big data analysis.
- (2) Diversified value-added services: Develop 5G services, cloud gaming and applications.

Enterprise Business Group

- (1) TWM Cloud PBX service:

With TWM's Cloud PBX service, traditional private branch exchange (PBX) on-premise systems are no longer needed. Incoming calls will automatically show up on desk phones, mobile phones, desktops or laptops. Intercompany calls are also free, allowing enterprises to not only improve communication efficiency, but also lower costs.

- (2) Information security solutions:

TWM is working with leading corporations to provide comprehensive information security solutions, including cloud web application firewall (WAF) and virtual private network (VPN) devices for businesses.

- (3) NCHC AI cloud service:

TWM in 2018 assisted in building the National Center for High-performance Computing's (NCHC) Taiwan 2. The AI high-speed computing platform is developing AI applications for IoT, smart city, fintech and smart medical solutions this year.

- (4) Cloud services:

Leveraging off its cloud computing service, TWM can provide large-scale international cloud, AI, IoT platform and blockchain integrated solution services to enhance its value.

- (5) IoT solutions:

TWM is developing IoT solutions for smart cities and industries. Enterprise users can track, analyze and manage all company devices through this platform with full information security protection.

Cable TV Business (Home Business Group)

1. CATV products and services

Its main operations cover a variety of products and services, including cable TV, HD digital TV, high-speed fiber-optic internet access, over-the-top (OTT) service platform, personal video recorder, HomeSecurity services for households, businesses and communities, HealthCare service, A1 Box and digital TV channel content agency. In addition, its subsidiary, TV production company Taiwan Win TV Media Co., Ltd., offers original content, such as the “momo family channel” and an HD channel for children, and owns distribution rights to a large number of outstanding domestic and foreign TV content.

2. CATV revenue breakdown

Unit: NT\$m

Item	Year	2019	
		Revenue	% of total
Pay TV service		3,537	58%
Cable broadband service		1,435	24%
TV content agency and others*		1,118	18%
Total		6,090	100%

* Including channel leasing revenues

3. New CATV products and services

(1) HD digital TV services:

TWM has led the industry in ushering in a whole new era in home entertainment with its introduction of 4K content and multi-angle vision.

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

Given the increasing demand for high-speed internet access, TWM Broadband adopted DOCSIS 3.1 network technology and infrastructure to offer 1Gbps fiber-optic internet access.

(3) Digital home services:

TWM was the first to launch “A1 Box” – an open platform integrating cable TV channels and diverse OTT content – to offer not only a variety of cable TV, HD digital TV and OTT content, but also networking applications and Bluetooth voice remote control. The Company plans to further extend interactive applications and voice control services.

Retail Business (momo.com Inc.)

1. Retail products and services

momo offers e-commerce and TV home shopping services

(1) e-commerce

a) 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.

b) Product offering

momoshop: Sells over 2.7 million stock keeping units (SKUs), 25% of which offer 24-hour delivery guarantee.

momomall: Hosts over 5,000 suppliers with 83 million SKUs.

c) Customer service

Provides 24-hour online customer service and a supplier contact platform to satisfy customers' shopping needs.

(2) TV home shopping

Self-owned professional studio and filming team provides momo TV programs for 5 million cable TV and 2.1 million MOD subscribers nationwide.

Provides 0800 toll-free hotline and mobile app for consumers to purchase products featured on momo TV programs or the momo TV app. A customer service team works around the clock to answer questions about product features, purchase and return policy.

2. Retail revenue breakdown

Unit: NT\$m

Item	Year	2019	
		Revenue	% of total
E-commerce		45,477	88%
TV home shopping and others		6,353	12%
Total		51,830	100%

3. New categories and services

- (1) momoshop has continued to introduce more international brands and to enhance long-term relationships with brand partners. With the aid of key opinion leaders, live-streaming, social commerce marketing and cross-selling within Fubon Group, momo has added new categories, such as books, used cars and fresh food, to boost sales. Its TV home shopping has also continued to develop new categories and introduce more overseas niche products to enhance its unique platform and broaden its customer base.
- (2) momo has stepped up its logistics network build-out to accelerate last-mile delivery for e-commerce. As part of its three-hour delivery service plan in Greater Taipei, it has expanded its fleet of scooters to provide prompt delivery of select items, such as fresh food, and deployed AI to boost voice and image searches to improve users' experience.
- (3) momo's TV home shopping business has steadily adapted to changes in consumer's lifestyle and trends. To enhance engagement with its client base and boost customer stickiness, it has expanded its TV fan clubs' operation, launched a TV app, broadcast live-stream videos on Facebook and listed on MOD. It has also laid out plans for launches on major OTT platforms and boosting its internet celebrity live-streaming business.
- (4) momo has set up logistics centers in central and southern Taiwan to boost its order fill rate across the nation.

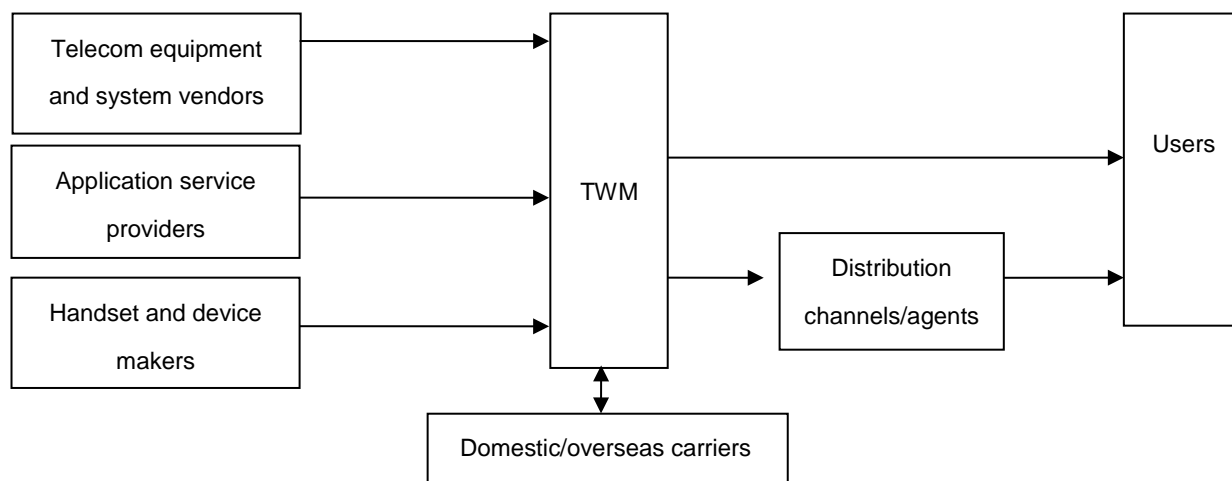
Industry overview

Consumer Business Group

1. Industry status and development

In 2019, the telecom industry entered a pure 4G era. To cope with declining revenue due to a higher uptake of low-cost unlimited plans, carriers proactively launched differentiated products and services to boost sales. With the launch of 5G services in 2020, the industry expects revenue to increase by providing innovative value-add services.

2. Industry value chain



3. Product development trends and competitive landscape

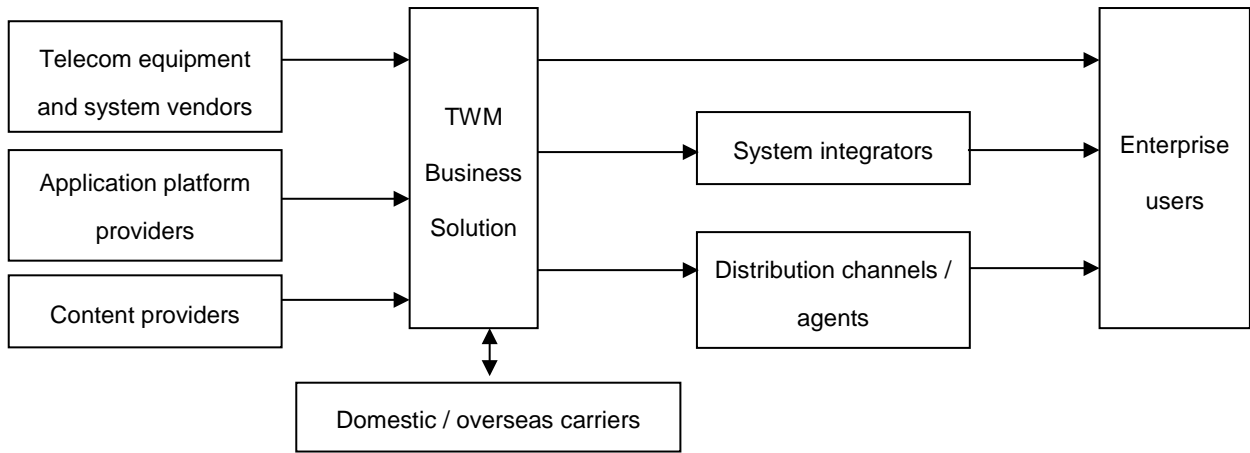
As SIM-only low-cost unlimited plans proliferated, 4G internet access became more affordable. Telecoms competed to offer more product and service differentiation to meet increasing demand for wearables, smart home devices and audiovisual content.

Enterprise Business Group

1. Industry status and development

According to the National Communications Commission (NCC), there were 83 Type I telecommunication providers, including four fixed-line operators, 15 mobile operators and other circuit leasing operators, and 386 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% of long-distance network service and international network service revenue.

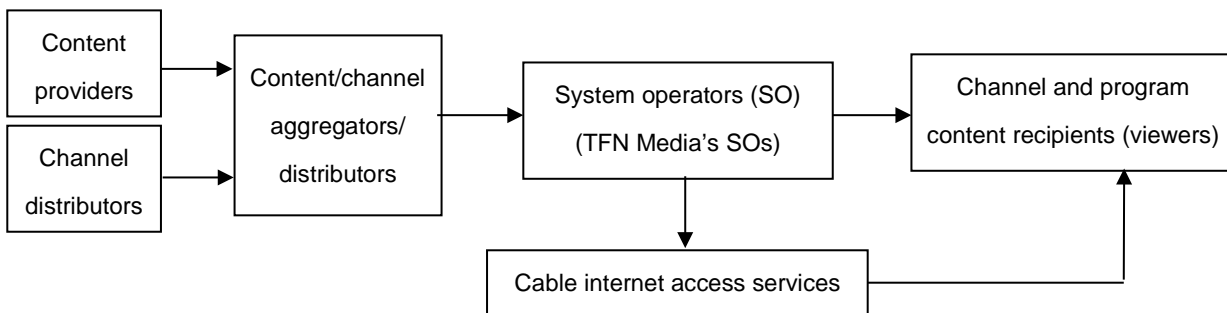
Cloud, IoT and enterprise mobility applications will be the main trends in the future. Carriers will provide various efficient and effective mobile commercial application services to enhance the competitiveness of enterprise clients.

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 cable TV industry is facing a critical period of transformation.

2. Industry value chain



Thanks to its control over last mile access to customers, TWM Broadband is aiming 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

Fixed broadband is a saturated market that is dominated by Chunghwa Telecom and characterized by slowing growth. However, with the advance of technology, fiber-optic internet access service speed has reached 1Gpbs. Operators now

compete on price and speed. Furthermore, with the CATV industry becoming fully digitalized, user demand for high-definition digital TV channels and OTT content has increased. Smart home applications services, such as 4K content, networking and voice control services, are the future trends.

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.

2. Industry value chain



momo sources its products from suppliers and sells 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 largest B2C operation in Taiwan.
- (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 collaborating with key opinion leaders or influencers, launching its own mobile apps, and leveraging its social platform and capabilities, including live streaming, to bolster engagement with its members and customer base.

Research and development expenditure

Research and development expenses totaled NT\$163,166 thousand in 2019 and NT\$17,111 thousand in January 2020. Continued investment in the research and development of more advanced technologies is expected to increase customer satisfaction, which in turn should boost value-added service revenue and overall operations growth.

Major research and development achievements

Project name	Description
Deep learning-based improvement of mobile communication networks' performance by adjusting base station resource allocation and strategy	Wireless signals embedded in environments are a major factor affecting network performance. To overcome this problem, this project collected various types of sensing data from user equipment and inputted them into a deep neural network (DNN) for modeling. An unmanned aerial vehicle (UAV) measured signals at different altitudes and used deep learning to locate areas where signals are weak. The object was to optimize deployment and resource allocation and improve communication quality.
M+	Provides bi-directional message mechanism and M+ Service Circle to enhance communication between enterprises and customers. Build up a hybrid cloud architecture to enhance businesses' operational efficiency.
myVideo	Support 4K video, build live chatroom, provide family packages and children's zone, and enhance recommendation mechanism. Integrate myVideo with Kbro A1 STB and extend myVideo to more OTT STB.
Smarter Home	Integrate MyMusic service, audiobooks, taxi-booking and customer services with Google Nest smart speaker to expand smart home business opportunities.
MyMusic	Integrate music service with Google Nest smart speaker and Garmin Smart Watch. Increase MyMusic members in cooperation with momo e-commerce store. Broadcast South Korea Melon Music Awards 2019 live event to MyMusic customers.
Commodity bin-packing recommendation system	Based on freight cost, carton size and historical packing statistics, find the most suitable and cost-saving packing combination.
Image search engine	Continually optimize the accuracy of image comparisons and extend recommendations of related products to boost purchase rate.

Sales development plans

Consumer Business Group

1. Short-term plan

- (1) Leverage Fubon Group resources and utilize big data to acquire new customers and retain existing customers, as well as design products to meet various needs.
- (2) Provide "Double Play bundles" and "Double Play adds on" packages – one-stop shopping for broadband and mobile services.
- (3) Renovate myfone stores and provide 5G applications and Smarter Home services.

2. Medium to long-term plan

- (1) Enhance content and create differentiation: enrich video content and add more original series, introduce deep-learning recommendation model and integrate with smart speakers, etc. Fulfill customers' demand for entertainment by creating differentiated and personalized Smarter Home services.

- (2) Utilize 5G network to develop new applications and increase 5G penetration rate and ARPU.
- (3) Build up a smarter home ecosystem by providing innovative products and services.

Enterprise Business Group

1. Short-term plan

- (1) Continue to develop services and total solutions that improve enterprise efficiency.
- (2) Cooperate with famous, international cloud operators to deliver cloud services in local data center to provide comprehensive cloud solutions. A specialized sales team will be built to service enterprise clients.
- (3) Expand government market to boost business opportunities.

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) Restructure organization and improve skills to merge key technologies and make strategic investments.
- (2) Develop IoT, cloud and AI total solutions for enterprise clients.
- (3) Channel integration to raise sales productivity and increase customer satisfaction.

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 more HD digital content and video on demand to set the foundation for its digital services.
- (2) TWM Broadband launched 1Gbps super high-speed internet access service and HD digital TV service to boost its cable broadband and digital TV service penetration rates, increase its ratio of high-speed broadband internet users and raise its subscriber numbers.

2. Long-term plan

The Home Business Group plans to integrate HD digital content, multiple-viewing terminal devices, high-speed fiber-optic internet access services and cloud technology to introduce more innovative and value-added digital TV services, allowing families and individual subscribers to enjoy the benefits of "multi-screens and a cloud" (i.e., mobile phones, PCs, tablets and TVs) and lead them toward smart living.

Retail Business

1. Short-term plan

- (1) E-commerce:

Provide differentiated and value-added services: Leverage big data analysis and recommend more personalized products to customers.

Integrate offline and online loyalty programs: Use big data technologies to optimize product portfolios and create synergies between brands and momoshop.

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

2. Long-term plan

- (1) E-commerce: Increase market share to further dominate B2C market by implementing a multi-channel sales strategy, optimizing search functions, facilitating short-chain logistics efficiency and improving user experience and user interface.
- (2) TV home shopping: 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.

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.

2. Market status

The penetration rate for mobile subscription reached 124% at the end of 2019. Despite a mature market, prospects are bright for 5G given rapid innovations in and increasing demand for IoT, mobile services, mobile broadband demand, smart devices and value-added services.

3. Competitive advantages

- (1) Diversification strategy

The Company integrates telecom, cable and e-commerce to provide diversified telecom bundle plans and increase user stickiness through cross-selling.

- (2) Universal service for digital convergence

The Company provides customers with a universal service for digital convergence, such as myVideo, MyMusic and myBook.

4. Opportunities and challenges

Positive factors

- (1) The rapid growth in 4G adoption has altered the landscape for mobile internet, enriching the variety of value-added services and bringing a massive influx of data on consumer behavior that promises huge business opportunities.
- (2) Taiwan has become an aged society and consumers have become even more health conscious. The Company is looking for partners in the wearable, IoT and health-related domains to create a health-IOT ecosystem.

Negative factors