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Authors:

Robin Li

Lingling Peng

Handset ODM Industry White Paper

Smartphone ODM market
continues to grow, duopoly
Wingtech and Huaqin
accelerate diversified layout

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Handset ODM market review and outlook

In 2019, the global smartphone market shipped 1.38 billion units, down 2.2% year-over-year (YoY). The mature markets such as North America, South America, Western Europe, and China all declined. China's market though is going through a transition period from 4G to 5G, and the shipments of mid- to high-end 4G smartphone models fell sharply in 2H19. China's market shipped 361 million smartphones in 2019, a YoY decline of 7.6%. In the early stage of 5G switching, the operator's network coverage was insufficient. Consequently, 5G chipset restrictions led to excessive costs, and expectations of 5G led to short-term consumption suppression. The proportion of 5G smartphone shipments was relatively small while shipments of mid- to high-end 4G models declined sharply.

The overall shipment of smartphones from Chinese mobile phone manufacturers reached 733 million units, an increase of 4.2% YoY. However, demand in China's market declined; yet, growth came from shipments in the overseas markets with 434 million smartphones shipped in the overseas market, an increase of 12.4% YoY. OPPO's overseas market shipments increased by more than 60% in 2019. Its sub-brand, Realme, shipped 25 million units in 2019, mainly concentrated in the Southeast Asian market. In 2019, Xiaomi's smartphone shipments hit 87 million units in the overseas market, an increase of 32% YoY, and its market share in the European market grew rapidly in 2H19.

China's mobile phone original design manufacturers (ODMs) shipped a total of 325 million mobile phones in 2019, a slight increase from 320 million mobile phones in 2018. Additionally, the net increase in smartphones of ODM manufacturers exceeded 20 million units, concentrated in key customers such as OPPO, Samsung, LG, and Nokia. Meanwhile, smartphone shipments from Huawei's and Meizu's outsourcing projects declined. OPPO increased the number of mid- and low-end projects and fully collaborated with ODM Wingtech, Huaqin, and Longcheer to develop new products to fulfill all market segments, including its emerging brand, Realme. In 2019, OPPO's outsourced projects increased by more than 50 million units, including ODM and independent design house (IDH) models. Samsung began to cooperate with Wingtech in the mid- and low-end models in 2019. Likewise, in 2019, its outsourcing projects shipped more than 25 million units, and it began to collaborate with Huaqin on new projects. More than 60 million outsourcing projects are expected to ship in 2020.

Because of the continued concentration of smartphone shipments from the top 10 OEMs, outsourcing project orders of major customers determined shipment volume and revenue of ODM companies. According to smartphone shipments, Xiaomi, OPPO, Huawei, Samsung, and Lenovo were the main partners of mobile phone ODMs in 2019. The corresponding ODM suppliers were mainly concentrated in companies such as Wingtech, Huaqin, Longcheer, and Chino. In 2019, shipments of Xiaomi's outsourced projects were approximately 95 million units; the collaboration between Xiaomi and ODMs mainly adopted the IDH model. Longcheer participated in the production and assembly of some projects in 2019. Meanwhile, OPPO's outsourced projects shipped

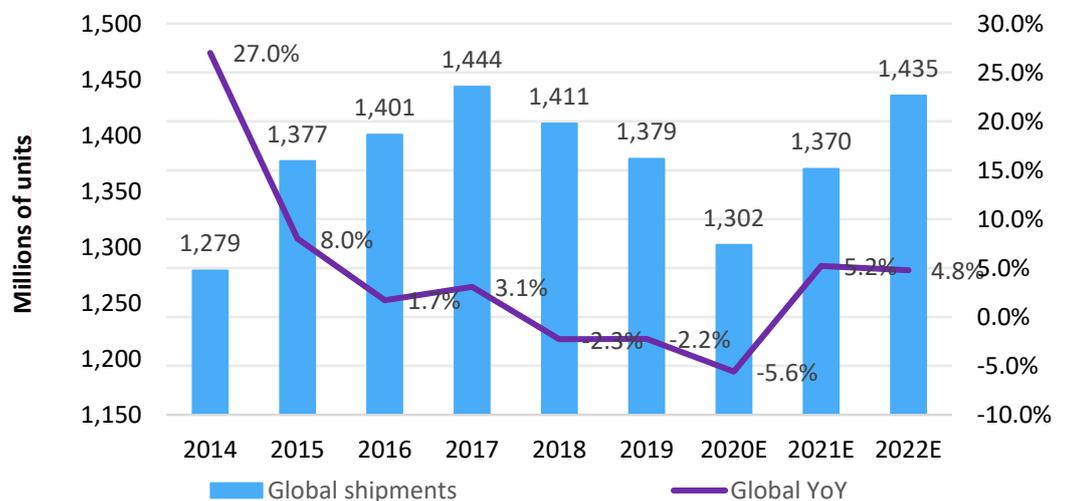
roughly 59 million units while the collaborative projects of Wingtech and Huaqin adopted the ODM model, and the IDH model was adopted in cooperation with Longcheer. Samsung's outsourcing project began mass production in 2H19, and it collaborated with Wingtech. Samsung's outsourcing projects adopted an all-outsourcing model and its single project shipments were large, making it the largest customer by revenue in 2019.

The bottleneck of the early popularization of 5G mobile phones is that the bill of materials (BOM) cost and selling price are too high, and cost control has always been the advantage of ODMs. For ODMs, research and development (R&D) of 5G mobile phones, product unit price, production, and assembly revenue have all significantly improved. The high technical threshold avoids vicious competition, and the increase in orders from large customers will directly promote the performance growth of ODMs. At the same time, Wingtech and Huaqin are actively planning overseas production and manufacturing. The product line continues to expand to ecological products such as tablets, smartwatches, True Wireless Stereo (TWS) headsets, and Internet of Things (IoT) products. For the leading ODMs, in-depth cooperation with multiple product lines with core customers will play an increasingly important role in the industry chain. This will also help to enrich customer queues and product line layouts to ensure healthier development.

Global smartphone market continued to decline in 2019

In 2019, the global smartphone market shipped 1.38 billion units, down 2.2% YoY. The mature markets such as North America, South America, Western Europe, and China all declined. China’s market though is going through a transition period from 4G to 5G, and the shipments of mid- to high-end 4G smartphone models fell sharply in 2H19. China’s market shipped 361 million smartphones in 2019, a YoY decline of 7.6%. Because of a consumption upgrade, the smartphone BOM cost increased as the key devices’ screens, cameras, chipset, and fingerprints were also upgraded. Combined with the expectations of the upcoming 5G smartphones, the demand from the replacements market has decreased and the replacement cycle has been significantly extended. In the early stage of 5G switching, the operator’s network coverage was insufficient, 5G chipset restrictions led to excessive costs, and expectations of 5G led to short-term consumption suppression. The proportion of 5G smartphone shipments was relatively small while shipments of mid- to high-end 4G models decreased sharply in 2019. In 2020, 5G smartphones are expected to rapidly spread in markets such as China and South Korea, and 5G smartphones will lead the next round of market reversal.

Global smartphone shipments in 2019



Smartphone shipments from Chinese mobile phone manufacturers such as Huawei, OPPO, Xiaomi, Vivo, and Transsion continued to grow in 2019. OPPO's smartphone shipments were 134 million units, a YoY increase of 21%; shipment growth was concentrated in Southeast Asia and India. On the other hand, the trade conflict in 2019 affected Huawei and Realme. Its smartphone shipments in the overseas markets declined in 2H19, but its shipments and market share in China grew rapidly with an overall increase of 16.7%. Huawei's shipments for the overseas market are limited, leading Samsung to be the biggest beneficiary. Its smartphone shipments rebounded in 2019, reaching 297 million units, a YoY increase of 2.3%. Xiaomi and Vivo grew slightly; their respective shipment growth was also concentrated in the overseas market. Meanwhile, Apple's smartphones performed poorly in the first half of the year, especially in China, where its smartphone shipments in 2019 declined to more than 10 million units. However, because of cuts in the selling price, camera and chipset upgrades, and excellent workmanship, the new iPhone 11 series has received positive feedback from the market. As a result, its shipments of the iPhone 11 increased in 4Q19.

At the beginning of 2020, because of the spread of the new coronavirus disease (COVID-19) in China, the government adopted a strict isolation and control policy. This caused offline mobile phone stores to close, which caused a direct negative impact on the offline market in the mobile phone market. Smartphone shipments in China market fell rapidly in January and February, but it began to recover gradually in March. It is expected that smartphone shipments in the China will decline approximately 8% throughout the year. However, COVID-19 quickly broke out in other regions outside of China and all offline stores of Apple, except in China, were closed. Based on the rapid spread of COVID-19 in regions other than China, the global smartphone market is expected to decline sharply by 12.7% in 2020; shipments of all mobile phone manufacturers will be affected.

Top 10 smartphone OEMs in the global market

(millions of units)

Rank	Company	Jul-18	Market share	Jul-19	Market share	YoY
1	Samsung	289.9	20.6%	296.5	21.5%	2.3%
2	Huawei	206.1	14.6%	240.6	17.4%	16.7%
3	Apple	208.0	14.8%	192.8	14.0%	-7.3%
4	OPPO	115.3	8.2%	133.8	10.1%	21.0%
5	Xiaomi	118.7	8.4%	124.0	9.0%	4.5%
6	vivo	103.9	7.4%	105.2	7.6%	1.2%
7	Lenovo	41.8	3.0%	38.2	2.8%	-8.6%
8	Tecno	34.4	2.4%	37.7	2.7%	9.6%
9	LG	44.2	3.1%	34.4	2.5%	-22.2%
10	TCL-Alcatel	17.1	1.2%	14.0	1.0%	-18.1%
	Others	230.2	16.3%	161.6	11.3%	-32.2%
	Total	1,409.7	100.0%	1,378.8	100.0%	

Source: Omdia

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In the initial stage of 5G, China will continue to decline

China's smartphone market shipped 361 million units in 2019, a decline of 7.6% YoY. In the early stage of 5G switching, the operator's network coverage was insufficient. The excessive cost caused by 5G chipset restrictions and the expectation of 5G led to short-term consumption suppression. The proportion of 5G smartphone shipments is relatively small in 2019 whereas shipments of mid- to high-end 4G models declined rapidly. Moreover, Qualcomm and HiSilicon concentrated the supply of 5G chipsets in 2019, both had external 5G baseband only, which were used in conjunction with their high-end 4G chips. In 2019, Samsung, Huawei, OPPO, Xiaomi, and Vivo all launched their smartphones using the first generation of 5G chipsets, but single-model shipments were limited. In the second half of 2019 (2H19), Huawei's high-end model, the Mate30 series, used HiSilicon's 5G system-on-a-chip (SoC). It began shipping in November 2019, driving the growth of 5G smartphone shipments. In December 2019, Xiaomi, OPPO, and Vivo all released mid- and high-end 5G mobile phones based on Qualcomm, MediaTek, and Samsung 5G SoCs, but all began shipping in January 2020.

According to the research data from Omdia, Huawei's smartphone shipments in the overseas markets declined because of the restrictions in the trade ban in 2019. Consequently, it turned to China's market for growth. In 2019, Huawei's smartphone shipments in China increased 35.4% YoY and its market share reached 39.4%. In 2H19, Huawei's market share exceeded 40%. Except for Huawei, other OEMs' shipments declined and the market share continued to be centralized. The overall market share of the top five OEMs—Huawei, Vivo, OPPO, Xiaomi, and Apple—were close to 95% in 2019. In contrast, Samsung, Meizu, Lenovo, ZTE, and other brands all had a weaker presence in China. Among them, Samsung mainly sold its flagship models S and Note series in China. Additionally, its A series models were at a disadvantage and shipments were limited.

Top 10 smartphone OEMs in China

(millions of units)

Rank	Company	2018	Market share	2019	Market share	YoY
1	Huawei	105.0	26.9%	142.1	39.4%	35.4%
2	Vivo	73.8	18.9%	66.6	18.4%	-9.8%
3	OPPO	75.2	19.2%	66.2	18.3%	-11.9%
4	Xiaomi	52.8	13.5%	37.0	10.2%	-29.9%
5	Apple	39.5	10.1%	29.4	8.1%	-25.6%
6	Meizu	9.0	2.3%	3.7	1.0%	-59.3%
7	Samsung	5.5	1.4%	2.7	0.7%	-51.1%
8	OnePlus	2.2	0.6%	1.4	0.4%	-34.9%
9	Lenovo	1.7	0.4%	0.6	0.2%	-64.2%
10	ZTE	1.3	0.3%	0.6	0.2%	-55.9%
	Others	24.8	6.3%	10.7	3.0%	-56.7%
	Total	390.8	100.0%	361.0	100.0%	-7.6%

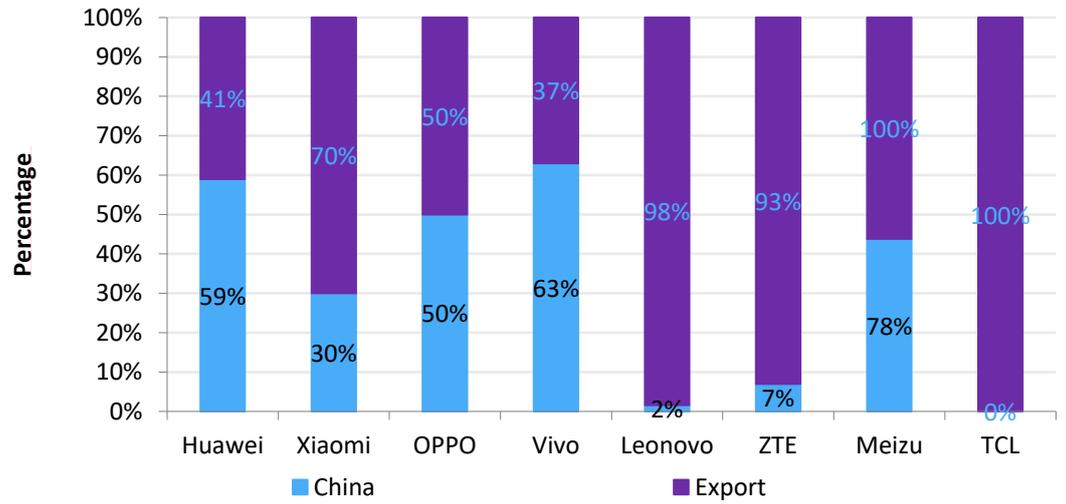
Source: Omdia

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The overall shipment of smartphones from Chinese mobile phone manufacturers reached 733 million units, an increase of 4.2% YoY. Demand in China's market declined, but growth came from shipments in the overseas markets with 434 million smartphones, an increase of 12.4% YoY. OPPO's shipments in the overseas market increased by more than 60% in 2019. Meanwhile, Realme shipped 25 million units in 2019, mainly concentrated in the Southeast Asian market. In 2019, Xiaomi shipped 87 million smartphones in the overseas market, an increase of 32% YoY, and its market share in the European market grew rapidly in 2H19.

Because of the impact of COVID-19, smartphone shipments in China market is expected to decline by roughly 30% in the first quarter of 2020 (1Q20). Since March, however, the market has gradually recovered. Although, overall shipments are expected to continue to decline by approximately 8.2% in 2020. Unfortunately, COVID-19 began to spread rapidly in other regions outside of China in late February, and there are many uncontrollable factors. The overseas expansion for Chinese OEMs also encountered the biggest crisis up to date. However, the short-term downturn in the market environment will not lead to changes in the industry's megatrends. The Chinese market has been close to full recovery since March. The post-pandemic impact of COVID-19 will simultaneously spawn new formats and accelerate the integration of 5G-related industries. The Chinese mobile phone market is also expected to experience a rapid rebound in the second half of the year (2H20).

Comparison of smartphone shipments of key Chinese OEMs, 2019



Source: Omdia

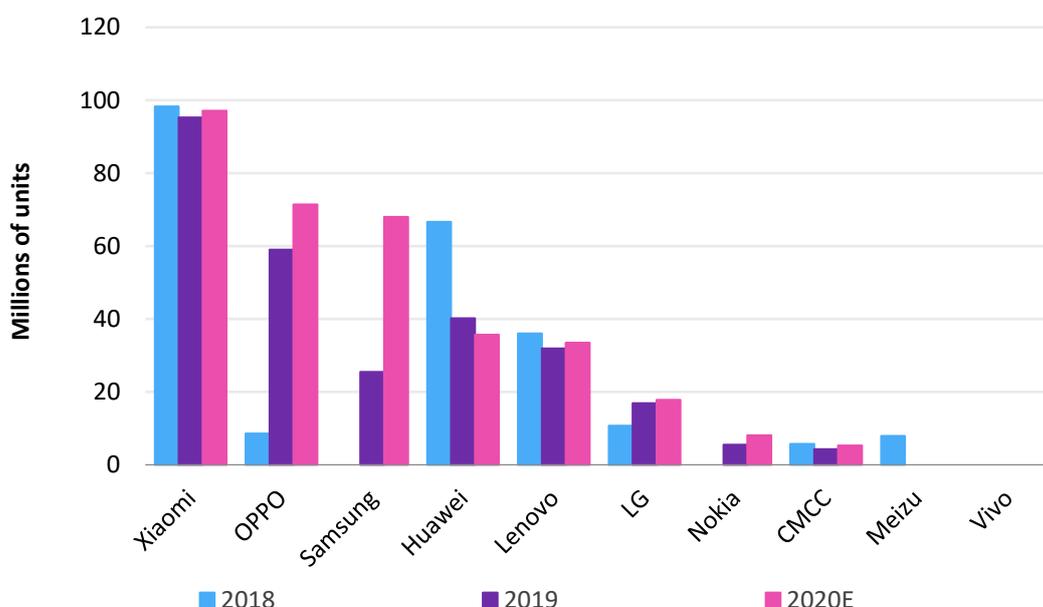
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Outsourcing strategies of the top 10 OEMs

OPPO and Samsung started to collaborate with ODMs since 2018. Currently, the top 10 OEMs (except Apple and Vivo) have all cooperated with ODMs to develop low- and mid-end smartphones and mobile phones in the ecological chain. In the low-end smartphone market, ODMs Wingtech and Huaqin have obvious advantages in R&D capabilities, cost control, and manufacturing. At present, Wingtech, Huaqin, and Longcheer have introduced systematic management processes, integrated product development, integrated supply chain management, and other advanced process management reforms to improve operational efficiency and ensure quality.

Because of the continued concentration of smartphone shipments from brand manufacturers, the outsourcing project orders of major customers directly affect the shipment and revenue scale of ODMs. According to the shipment scale of smartphones, Xiaomi, OPPO, Huawei, Samsung, and Lenovo were the main partners of mobile phone ODMs in 2019. The corresponding ODM suppliers are mainly concentrated in companies such as Wingtech, Huaqin, Longcheer, and Chino. The shipments of outsourcing projects of Xiaomi in 2019 is roughly 95 million units. The collaboration between Xiaomi and ODMs mainly adopts the IDH model. ODMs only participate in R&D, not material procurement and assembly. In 2019, some Longcheer models participated in the production and assembly, accounting for a relatively small amount. The shipments of OPPO outsourcing ODM projects in 2019 were approximately 59 million units, of which the collaborative project of Wingtech and Huaqin adopted the ODM model and the cooperation with Longcheer adopted the IDH model. Longcheer's production and assembly capacity were relatively limited in 2019 while Huawei's outsourced projects contracted. Affected by the trade ban, shipments of its ODM projects decreased, which affected the shipment volume of Huaqin and Chino. Meanwhile, Samsung cooperated with Wingtech and Huaqin in 2019, and Wingtech's collaborative project began to ship in the second half of the year. Because of Samsung's all-outsourcing model and large single-project shipments, it contributed most of Wingtech's 2019 revenue. Over at Lenovo, its ODM suppliers are relatively scattered. In 2019, it collaborated with the top five ODMs; its shipments of outsourcing projects were approximately 32 million units in 2019.

ODM smartphone shipments of the top 10 OEMs, 2019



Source: Omdia

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Xiaomi’s smartphone business is divided into the Xiaomi and Redmi series. The Xiaomi series is positioned at the mid- to high-end while the Redmi series is positioned at a price-performance ratio. The cooperation between Xiaomi and ODMs is mainly based on the Redmi series, which mainly adopts the IDH model. ODMs are responsible for R&D and design. Xiaomi directly controls the procurement of materials while third-party electronics manufacturing services (EMS) complete production and assembly. In 2019, Xiaomi's outsourced projects accounted for roughly 77% of shipments. Longcheer, Huaqin, and Wingtech were Xiaomi's major ODM suppliers. Longcheer shipped more than half, followed by Huaqin and Wingtech. Because of the increase in overseas shipments of low-end models, Xiaomi’s shipments of outsourced projects are expected to grow slightly in 2020. In the Indian market, Xiaomi is expected to gradually open its production and assembly orders to ODM suppliers.

OPPO began to cooperate with ODMs since 2018. In 2019, the net increase in smartphone shipments exceeded 50 million units, including OPPO and Realme brands. Shipments of the Realme brand are mainly in the overseas markets; Wingtech and Huaqin are major ODM suppliers. Meanwhile, Longcheer participated in some IDH projects. Thanks to the increase in shipments in the overseas markets, OPPO is expected to continue to grow shipments of outsourced projects in 2020.

Huawei's current high-end models all use the Hisilicon Kirin chips, all of which are self-developed. In 2019, the proportion of Hisilicon chips continued to increase. The low-end models used MTK and Qualcomm platform projects, mainly in collaboration with ODMs—Huaqin, Wingtech, Chino, and Longcheer were main partners. Huawei contracted the number of outsourcing projects in 2019, affected by the trade ban. Since May 2019, Qualcomm shipped very little platform projects. In 2019, smartphone shipments of outsourcing projects for the whole year were 41 million units. In 2020, Huawei’s new outsourcing projects will all use the MediaTek platform, focusing on 5G models. The

projects are concentrated in Huaqin and Wingtech. Because of limited shipments in the overseas markets, the number of outsourcing projects is expected to continue to decline.

In the second half of 2019, the cooperation project between Samsung and Wingtech began to ship; 26.5 million units were shipped throughout the year, all concentrated in Wingtech. Huaqin began to participate in Samsung's new projects in 2019; mass production and shipments began in 1Q20. Samsung's outsourcing projects currently use all outsourcing methods. ODM suppliers are responsible for R&D, material procurement, and production, which contributes more to their revenue. At the same time, through cooperation with ODMs, the cost of Samsung's low-end mobile phones has improved greatly. In 2020, Samsung will continue to increase outsourcing ODM projects. However, because of the need to consolidate Samsung's supply chain, some of Samsung's new projects in 2020 will begin to adopt the model of designated suppliers or customer supply for core materials.

In 2019, the overseas markets, which accounted for more than 95% of shipments (mainly by the Moto brand), continued to dominate Lenovo's smartphone shipments. The low-end projects of the C, E, and G series of the Moto brand are outsourced to ODM suppliers for R&D, design, production, and assembly. Currently, Huaqin, Wingtech, Longcheer, Chino, and Tinno are all of Lenovo's ODM suppliers. Shipments of ODM projects in 2019 were approximately 32 million. As Lenovo projects are relatively fragmented and single-item shipments have relatively no advantage, Wingtech, Huaqin, and Longcheer have limited support for Lenovo. In the second half of 2019, the Lenovo Moto brand began to collaborate with Chino and Tinno.

Key smartphone OEMs' ODM/IDH partners

OEMs	Out-house design 2019	Out-house design 2020E	ODM/IDH suppliers				
Samsung	9%	22%	Wingtech	Huaqin			
Huawei	17%	18%	Huaqin	Wingtech	Chino	Longcheer	
Xiaomi	77%	74%	Longcheer	Huaqin	Wingtech		
OPPO	44%	51%	Wingtech	Huaqin	Longcheer		
Lenovo	84%	89%	Huaqin	Wingtech	Longcheer	Chino	Tinno
LG	49%	56%	Huaqin	Wingtech	Longcheer	Chino	
CMCC	70%	100%	Huaqin	Wingtech			
Nokia	54%	88%	Wingtech	Huaqin	Longcheer	Chino	
Meizu	0%	0%	Wingtech				

Source: Omdia

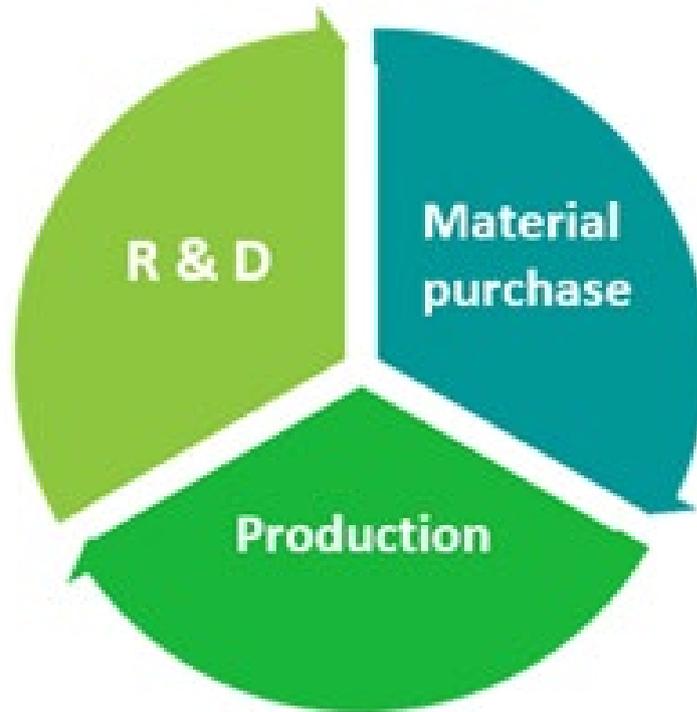
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ODM market structure and business model analysis

In 2019, the top five mobile phone ODMs shipped 285 million smartphones, a net increase of 20 million units YoY. Smartphone customers focused on mobile phone brands such as OPPO, Xiaomi, Huawei, Samsung, Lenovo, and LG. The top three ODMs—Wingtech, Huaqin, and Longcheer—accounted for more than 90% of smartphone shipments. Samsung and OPPO increased outsourcing ODM projects in 2019, mainly concentrated on Wingtech and Huaqin. The advantages of the duopoly of Wingtech and Huaqin continued to magnify. In 2019, Wingtech and Huaqin's ODM business revenue scale all exceeded ¥30 billion and the average unit price of products exceeded ¥300. Their advantages in strong R&D, quality control, supply chain management, manufacturing, and product diversification are obvious. Their business is expected to continue to grow rapidly in 2020. Longcheer's ODM business was relatively small compared with Wingtech and Huaqin as it mainly adopted the IDH model with major customers Xiaomi and OPPO. Additionally, because of limited production capacity, there is still a gap in terms of revenue and average unit price.

OPPO, Samsung, Xiaomi, Huawei, and Lenovo were the main partners of mobile phone ODMs in 2019. The corresponding ODM suppliers were mainly concentrated on Wingtech, Huaqin, and Longcheer. In 2019, OPPO increased outsourcing ODM projects and all previous project collaborations were through the ODM model. ODM suppliers participated in R&D, non-core material procurement, and production assembly, which helped ODMs improve their revenue levels. Samsung's outsourcing projects started shipping in the second half of 2019, mass production projects were concentrated in Wingtech, and the early ODM suppliers were responsible for R&D, material procurement, and production. The outsourcing projects shipped 26.5 million units in 2019, contributing more than 40% to Wingtech's revenue. Huawei and Lenovo continue to use core materials such as chipsets, memory, screens, camera modules, and batteries for customer supply. LG and Nokia both currently adopt the ODM model because their supply chains have no cost advantage compared with ODMs.

Model phone ODM business model



Source: Omdia

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Customer	Design	Supply chain & purchase		Assembly	Remark
		ODM fully purchase	Non-key material purchase		
Samsung	✓	✓	✓	✓	ODM
OPPO	✓		✓	✓	ODM+IDH
Huawei	✓		✓	✓	ODM
Xiaomi	✓	✗	✗	✓	Mainly IDH model
Lenovo	✓		✓	✓	ODM
LG	✓	✓	✓	✓	ODM

Source: Omdia

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The global smartphone market is currently saturated. The mature markets such as China, Europe, and North America all declined in 2019. The replacement market has intensified price competition, especially in China and India. Samsung, LG, Nokia, and other manufacturers have no advantage over Chinese manufacturers such as Huawei, Xiaomi,

and OPPO in competing with low-end models in terms of cost, response speed, and product positioning. Samsung's cooperation with ODMs in 2019 significantly helped costs, R&D speed, and product definition of low-end models, especially in the Indian market. In 2020, it will continue to increase collaboration with ODM projects. The ODM industry is fiercely competitive and the overall profit is low. However, with the gradual penetration of 5G, more mobile phone manufacturers will enter the multi-category model and launch the external cooperation model. Challenges and opportunities co-exist in the ODM market, and its competitive advantages will also give brand manufacturers very effective support.

Competitive advantages of the leading ODM companies

R&D capability

Short R&D cycle: 6–8 months for the new platform of 4G smart machines and 4–6 months for the normal cycle
 Focus on low-end chipset platforms, compared with low-end single-chip platform projects from OEMs, shipments are larger and cost allocation is lower
 The cost of R&D personnel is relatively low, and the normal project investment is \$30–50 million

Supply chain cost control

The supply chain system standards focus on low-end specifications, and the standardization and shipment scale help to lower the cost
 Adopt mature technology, quality problems can be effectively controlled after scale

Improve resource efficiency of OEMs

R&D resources can be more concentrated on high-end models and new product and technology investment
 Reduce low-end products cost and enhance product competitiveness
 With the help of ODMs' R&D, capital, supply chain and factory resources, OEMs can reduce its own operating costs and risks

Flexible operating model

Mature platform products are quickly copied and applied to new customers
 Diversified production to reduce operational risks
 Wingtech and Huaqin shipped more than 100 million units overall; they have advantages over small and medium OEMs, helping small and medium manufacturers to take advantage of their differentiation, such as China Mobile and Nokia

Currently, the bottleneck of the popularity of 5G mobile phones is high BOM costs and selling prices, and cost control has always been the advantage of ODMs. For mobile phone ODMs, 5G mobile phone R&D, product unit price, and production and assembly parts revenue have significantly improved. Additionally, the high technical threshold avoids vicious competition and the increased orders from key customers will directly promote the performance growth of ODMs. At the same time, Wingtech and Huaqin are actively deploying overseas manufacturing and the product line continues to expand to ecological products such as tablets, smartwatches, TWS headphones, and IoT. Through in-depth cooperation with multi-product lines of core customers, leading ODMs will play an increasingly important role in the industrial chain to help enrich the customer queue and product line layout to ensure a more benign and healthy development.

Key growth points of the mobile ODM industry in 2020

5G

- 5G focus on mid- and high-end models in 2020
High technical threshold avoid vicious competition

Profit ↑ ~20%

BOM ASP ↑ 10–20%

Production cost ↑ 50%

Smartphone shipments growth

- Outsourcing smartphone projects shipment growth for Samsung, OPPO, etc.
- ODM smartphone market will grow to more than 50 million units

Overseas production

- ODM overseas factory layout
- Representative: Wingtech India factory will produce Samsung projects
- Own factory: Wingtech Equity participation to EMS companies - Huaqin, Longcheers

Tablets, notebooks, and IoT

- Wingtech: Tablets, notebooks, 5G CPE
- Huaqin: Tablets, notebooks, smartwatches, servers
- Longcheer: Tablets, IoT
- Wingtech/Huaqin: Huawei M6 tablet
- Huaqin: Huawei Smartwatch GT2

The top five mobile phone ODMs

Mobile phone ODMs shipped a total of 325 million mobile phones in 2019, a slight increase from 320 million mobile phones in 2018. Smartphone shipments from ODMs increased by more than 20 million units, concentrated in customers such as OPPO, Samsung, LG, and Nokia. The shipments of outsourcing projects from Huawei and Meizu declined relatively. OPPO increased the number of mid- and low-end outsourcing projects in 2019 and opened cooperation with ODMs Wingtech, Huaqin, and Longcheer to develop new products to cover different product price segments, including its Realme brand. Shipments of its outsourcing projects exceeded 50 million units, including ODM and IDH models. Samsung started cooperating with Wingtech in 2019 for low and mid-range models. It shipped more than 25 million units of its outsourcing projects in 2019. Meanwhile, it began to collaborate with Huaqin on new projects. LG's outsourcing ODM projects continued to increase in 2019 while Nokia began to cooperate with ODMs. In 2019, Huawei's outsourced projects contracted. Affected by the trade ban, the number of new ODM projects shrank and orders for mass production projects were revised down. Meizu's mobile phone shipments continued to decline, and there were no outsourced ODM projects in 2019. Similarly, smartphone shipments of overseas customers such as Micromax, LAVA, Intex, and Spice suffered a rapid decline because of the impact of Chinese mobile phone manufacturers. The growth of the ODM industry in 2019 continued to focus on large customer projects, which is mainly concentrated with the top three ODMs—Wingtech, Huaqin, and Longcheer.

Top 10 smartphone ODMs, 2019

(millions of units)

Rank	ODMs	2017	2018	2019	YoY
1	Wingtech	83.7	90.2	110.0	22.0%
2	Huaqin	79.1	84.9	85.0	0.1%
3	Longcheer	34.2	60.0	73.4	22.3%
4	Chino/OnTim	5.9	17.8	15.2	-14.6%
5	TINNO	15.4	11.5	6.5	-43.5%
6	Wind	17.3	5.0	/	/
7	Arima	2.7	1.2	/	/
8	CCI	2.6	1.0	/	/
9	Ragentek	8.1	0.0	/	/
10	CK	4.8	0.0	/	/

Notes: Smartphone shipment data based on model design.

Source: Omdia

© 2020 Omdia

shipments in 2019 reached 110 million units, a YoY increase of 22%. Shipments of Samsung's projects increased by 26.5 million units and shipments of OPPO's projects increased by more than 20 million units. In 2018, Wingtech:

- Adjusted for mobile phone customers
- Increased cooperation with Samsung and OPPO in new projects
- Reduced new projects with Huawei and Xiaomi
- Avoided the impact of Huawei's trade ban in 2019
- Gained significant revenue growth

The best-selling models in 2018 included the OPPO A5 series, the Xiaomi CC9 series, and Samsung's new A series. Meanwhile, Huaqin shipped 85 million smartphones in 2019, which was flat overall. Shipments of new OPPO projects in 2019 increased by 22.5 million units while shipments of Xiaomi and Lenovo also increased slightly. However, because of the reduction of new projects and the restrictions of the trade ban, Huawei's overall shipments declined, but its ODM business revenue continued to grow steadily. The best-selling models in 2019 included the OPPO Realme 3 series, Redmi 8 series, and the Huawei Enjoy 9 series. Over at Longcheer, its smartphone shipments were 73.4 million units in 2019, a YoY increase of 22.3%. Shipment growth was concentrated on new projects with Xiaomi and OPPO. The shipments of Xiaomi projects increased by 14 million units and the shipments of OPPO projects increased by 8.9 million units, but mainly with the IDH model. Chino, on the other hand, shipped 15.2 million smartphones in 2019, a YoY decline of 14.6%. At the same time, Huawei's project shipments declined. LG and Nokia's new projects began mass production in 2H19; therefore, shipments contributed less in 2019. Tinno shipped 6.5 million smartphones in 2019; shipments of its Wiko brand and the volume of its customer project shipments in the overseas markets both fell sharply. As a result, it started participating in new Moto projects in 2019, which began shipping in 2H19.

ODMs have advantages in cost control, and the top three ODMs provide very good support to customers in R&D and the supply chain. In 2020, Samsung, OPPO, LG, Nokia, and other customers will continue to increase their outsourcing projects. LG and Nokia are fully seeking cooperation with mobile phone ODMs. The total increase is estimated to be 50 million units in 2020. New projects from Samsung, Xiaomi, Huawei, and OPPO will continue to focus on Wingtech, Huaqin, and Longcheer while LG, Nokia, and Lenovo will collaborate with Chino and Tinno; the top three ODM suppliers will focus on shipping smartphones. For smartphones, except for the top five ODMs, other ODMs have withdrawn. Meizu's market has declined but ODM projects have been recovered, which led to its ODM supplier, Wind, to stop its ODM business in 2019. Meanwhile, Arima, CCI, and CK have abandoned the mobile ODM business. Moreover, shipments of Ragentek smartphones is mainly focused on the Gome brand, but with very few shipment volumes.

Analysis of the top five ODMs

Wingtech

In 2019, Wingtech's smartphone shipments reached 110 million units, a YoY increase of 22%; its smartphone shipments continued to lead the market. OPPO and Samsung increased the number of their outsourced projects in 2019; Wingtech was the biggest beneficiary as a result. In 2018, Wingtech adjusted for its mobile phone customers, increased cooperation with Samsung and OPPO on new projects, and reduced new projects with Huawei and Xiaomi. Thus, it earned value gains from new customers and the overall revenue of its ODM business achieved substantial growth. The best-selling models included the OPPO A5 series, the Xiaomi CC9 series, and new models of the Samsung A series. In addition to the mobile phone ODM business, Wingtech participated in more than 8 million shipments of Huawei's tablet M6 series in 2019; IoT products have also begun to ship.

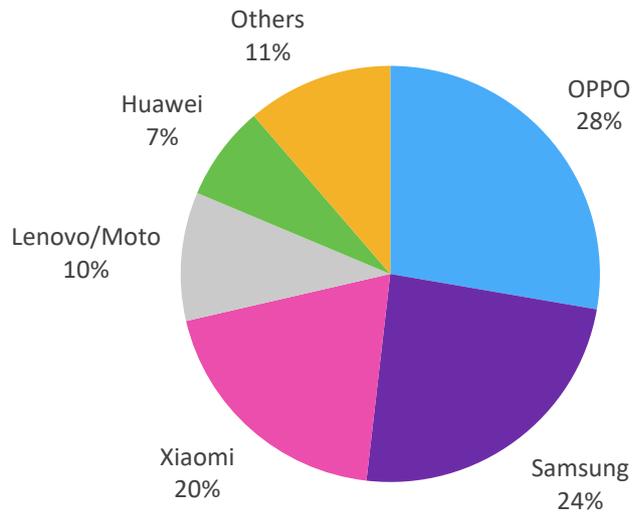
According to the current project from major customers, shipments of Wingtech smartphones are expected to reach 130 million units in 2020. The growth of smartphone shipments will be concentrated on new projects with Samsung, OPPO, and Huawei, which will be mainly based on the ODM cooperation model. At the same time, Wingtech has a first-mover advantage in the development progress of 5G smartphones. Wingtech 5G mobile phones are expected to mass-produce in 2Q20 and will cover multiple customers and position on the mid and high-end models. In addition to the mobile phone ODM business, Wingtech currently participates in Huawei and Xiaomi tablets, notebooks, smart wearables, and IoT products. Shipments of its non-mobile phone ODM products will grow simultaneously in 2020.

Wingtech currently has five R&D centers in Shanghai, Shenzhen, Xi'an, and Wuxi in mainland China and Taipei, Taiwan. It also has production factories in Jiaying and Wuxi in China as well as in India, and Indonesia. The R&D and manufacturing centers in Wuxi started operating in 2019; it is mainly used for R&D and producing smart hardware and notebook products. At the same time, Wingtech invested in the Kunming Intelligent Manufacturing Industrial Park located in the Yunnan Province, China in 2019; it is expected to be operational in the first half of 2021 (1H21). At present, Wingtech's major global factories have an annual production capacity of more than 80 million units, realized global order deliveries, and can operate both global material and production scheduling, which can be directly exported to the European and American markets. In the future, Wingtech plans to form a production capacity of 100 million units in China and 100 million units in the overseas market as well as industrial chain integration capacity.

In 2019, Wingtech completed the acquisition of Nexperia, opened the upstream and midstream of the industry chain, and formed an industrial platform that integrates chip design, wafer manufacturing, semiconductor packaging and testing, terminal product

R&D, design, and manufacturing. Nexperia is the global leader in semiconductor standard devices. Its predecessor was the NXP Standard Products Division with more than 60 years of integrated device manufacturing (IDM) experience. The company began to operate independently in 2017 and has a global sales network with customers covering many industries such as automotive, industrial and power, mobile and wearable devices, consumer, and computers. Major customers include Bosch, Cisco, Huawei, Apple, Samsung, and other leading global manufacturers. Nexperia products are mainly power semiconductor discrete devices—there are six categories of metal-oxide-silicon (MOS) tubes, transistors, diodes, electrostatic discharge (ESD) protection devices, and gallium nitride (GaN) field-effect tubes. At present, the market share of discrete devices, logic devices, and metal-oxide-semiconductor field-effect transistor (MOSFET) devices ranks in the top three in China. The company's performance has been stable. In 2018, the company's operating income was \$1.534 billion, and the average annual compound growth rate of revenue in 2010–18 reached 6.25%. Wingtech's acquisition of Nexperia will help Nexperia open the semiconductor market in China, expand its production capacity, and improve its profitability under the trend of substitution in China.

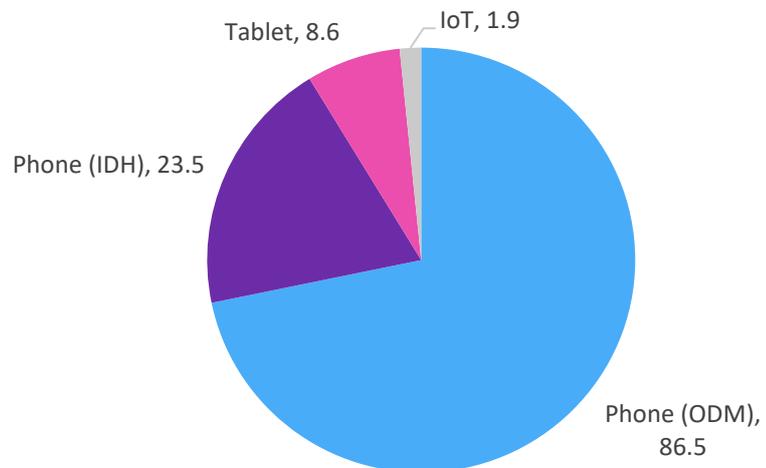
Wingtech: Market shares of key smartphone customers, 2019



Source: Omdia

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Wingtech: Shipments of key products, 2019



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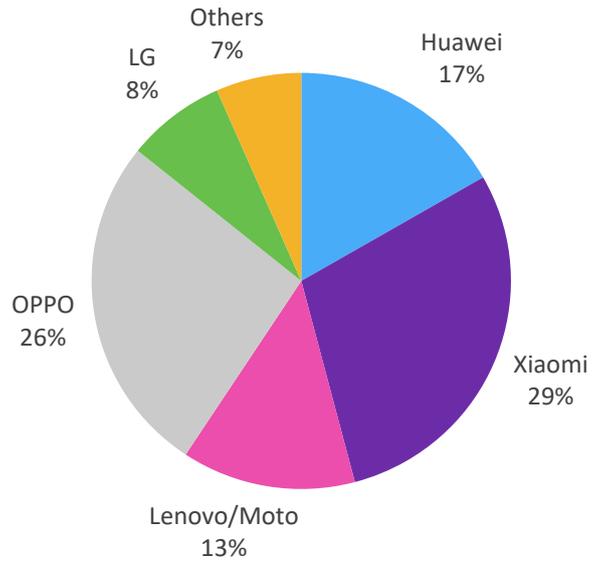
Huaqin

Huaqin's smartphone shipment reached 85 million units in 2019, which was flat overall. In 2019, OPPO's new project shipments increased by 22.5 million units. Xiaomi and Lenovo's shipments also increased slightly. However, because of the reduction in new projects and the impact of the trade ban, Huawei smartphone shipments declined. In addition to the mobile phone ODM business, its tablet, laptop, smartwatch, IoT, and server businesses have grown rapidly. In 2019, it participated in Huawei's tablet, notebook, and smartwatch business. Consequently, overall shipment exceeded 30 million units and the overall revenue of its ODM business has grown steadily. The best-selling models included the OPPO Realme 3 series, Redmi 8 series, and Huawei Enjoy 9 series. Xiaomi, OPPO, and Huawei are its top three customers. Shipments of smartphones accounted for 72.4% while shipments of Lenovo and LG projects remained stable.

For the mobile phone ODM business, Huaqin started collaborating with a new customer, Samsung, in 2019; mass production started in 1Q20. Shipments of Samsung projects are expected to reach 30 million units in 2020. Shipments of OPPO's, Xiaomi's, and Huawei's new projects will grow slightly with a shipment target of 140 million smartphones in 2020. For 5G mobile phones, Huaqin is currently involved in Huawei's, Xiaomi's, and OPPO's 5G mobile phone projects; mass productions are expected in the middle of 2020. Samsung's ODM projects and 5G smartphone shipments will significantly improve Huaqin's ODM performance. In addition to the mobile phone business, Huaqin is steadily changing and it is continuing to expand its scale advantage in tablets, laptops, and smartwatches. Huaqin's non-mobile ODM business revenue is expected to exceed 40% in 2020, and its product line and customer structure are further optimized to ensure the healthy development of its ODM business and reduce operational risks.

Huaqin currently has five R&D centers in Shanghai, Dongguan, Xi'an, Wuxi, and Nanchang in China as well as production bases in Dongguan and Nanchang, also in China. The Nanchang R&D and manufacturing center started operating in 2H19; the planned annual production capacity of intelligent terminal products exceeds 50 million units. In 2020, the annual production capacity of China factories in Dongguan and Nanchang will reach 120 million units. Overseas, Huaqin has two major manufacturing bases—in India and Indonesia. India mainly achieves overseas production and manufacturing layout through its shareholding in DBG. At present, all products shipped in India are produced through DBG while the Indonesian plant achieves its layout through its shareholding in the Indonesian PTSN. The overseas plants are expected to achieve an annual production capacity of 36 million units in 2020.

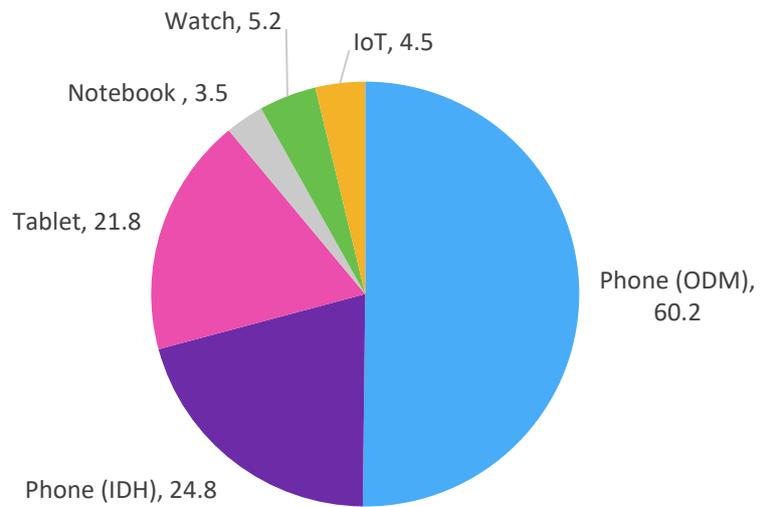
Huaqin: Market shares of key smartphone customers, 2019



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Huaqin: Shipments of key products, 2019



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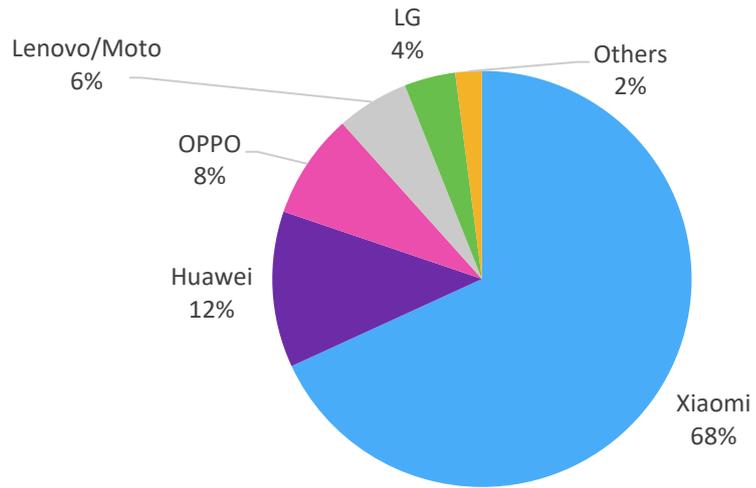
Longcheer

Longcheer shipped 73.4 million smartphones in 2019, a YoY increase of 27%, thanks to the increase in shipments of Huawei and OPPO projects. Huawei's project shipments are mainly the Honor Play series. Meanwhile, OPPO began cooperating with Longcheer in 2019. As a result, the Realme X2 series shipped more than 6 million units in 2H19. Xiaomi is still Longcheer's largest customer though with a shipment share of more than 60%, a stable share. Longcheer partly makes its star models, the Redmi Note 7 and Note 8 series. More than 15 million units of the Redmi Note 7 were shipped while 10 million units of the Redmi Note 8 were shipped. In contrast, Lenovo's overall shipments declined slightly, mainly for Moto brand models.

Xiaomi is currently Longcheer's largest customer. As such, the collaboration between the two companies has been stable and Xiaomi accounted for more than 50% market share of Longcheer in the past three years. In 2020, Longcheer will continue to cooperate with Xiaomi to develop the Redmi series projects, including the best-selling series such as the Redmi 9A and Note 9. Additionally, Longcheer began to participate in Huawei's ODM project since 2018; it shipped 8.9 million smartphones in 2019. Because of Huawei's contracted outsourced ODM project, shipments are expected to decline slightly in 2020. Meanwhile, Longcheer and OPPO's collaboration currently uses the IDH model. Longcheer does not participate in material procurement and production; thus, OPPO will increase cooperation projects in 2020 with IDH and ODM coexistence models. Consequently, its smartphone shipments will increase significantly in 2020. At present, Longcheer is also actively contacting Samsung and Vivo; they have an opportunity to cooperate through the mature IDH model.

In addition to smartphones, Longcheer's tablet products mainly cooperate with Huawei and Lenovo. Shipments have remained stable with 9 million units shipped in 2019. As online education accelerated the demand for tablets, shipments are expected to increase by 30% in 2020 to approximately 12 million units. For IoT products, a separate business unit was set up to operate independently in 2019 to enhance the strategic position of IoT within the company. Together with mobile phones and tablets, the company's three major businesses were formed. In 2019, shipments were mainly concentrated on Xiaomi's ecological chain products. In May 2019, Longcheer and AAC Technologies jointly signed an investment agreement for artificial intelligence (AI) wearable acoustics and other equipment projects. They also jointly made efforts in the field of wearable acoustics to continue expanding new IoT customers. IoT products currently shipped mainly include smartwatches, children's watches, smart speakers and virtual reality (VR); more than 8 million units were shipped in 2019.

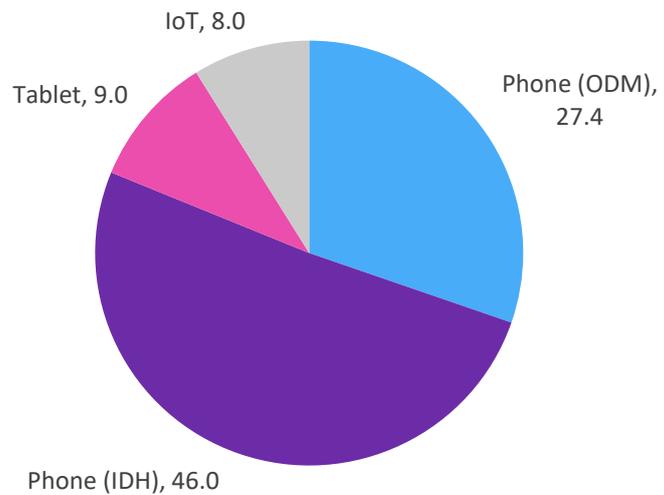
Longcheer: Market shares of key smartphone customers, 2019



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Longcheer: Shipments of key products, 2019



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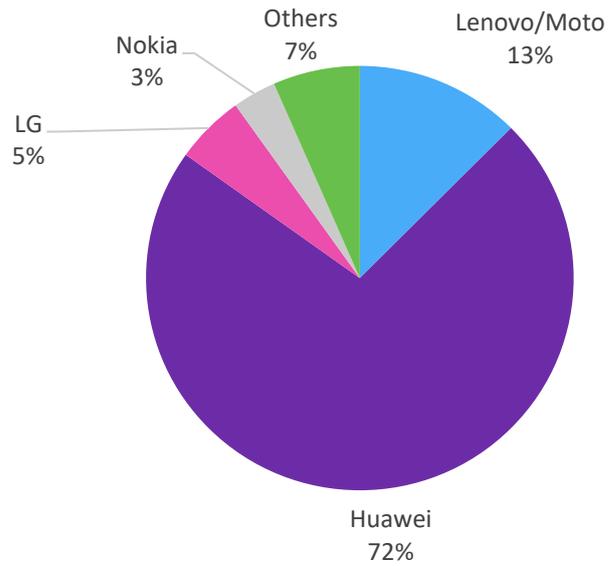
Chino

Chino's key customers were Huawei and Lenovo (Moto and Lenovo brand) in 2019. However, because of the recycling of Huawei's ODM projects, Chino had no new projects to participate in. At the same time, Lenovo's projects decreased. Shipments in 2019 were mainly from Huawei's mass-produced projects such as the Huawei Play 8C. Its smartphone shipments were 15 million units in 2019, down 15% YoY.

The cooperation model was mainly the ODM model. Huawei and Lenovo supplied the key components for Huawei's and Lenovo's projects while Chino purchased the other materials. Chino was also responsible for the procurement of materials for other customers' projects such as the Lenovo brand, LG, and Nokia. Chino was fully involved in R&D and production assembly. However, the overall shipment volume was limited, and the share of self-purchase was low. Because Chino had no advantage in the quantity and amount of procurement, it had a weak bargaining power in the supply chain.

The low- and mid-end models of the Lenovo Moto brand are expected to become the main force of Chino shipments in 2020 while LG and Nokia shipments will also increase slightly. At the same time, Chino will participate in Lenovo's mid- to low-end 5G models in 2020; shipments are expected to start in the second half of 2020 (2H20). At the same time, Chino is also actively expanding its IoT business in search of new growth points.

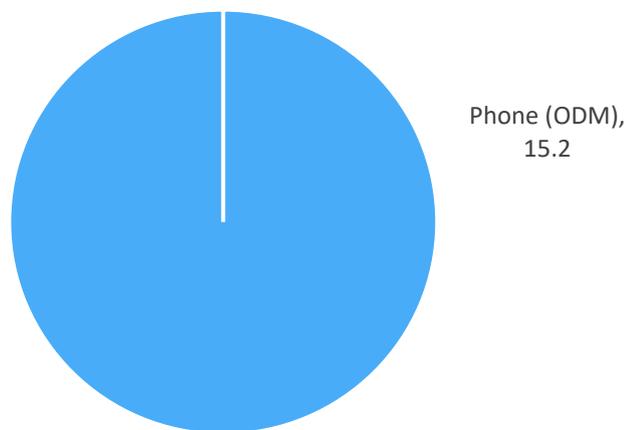
China: Market shares of key smartphone customers, 2019



Source: Omdia

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China: Shipments of key products, 2019



Source: Omdia

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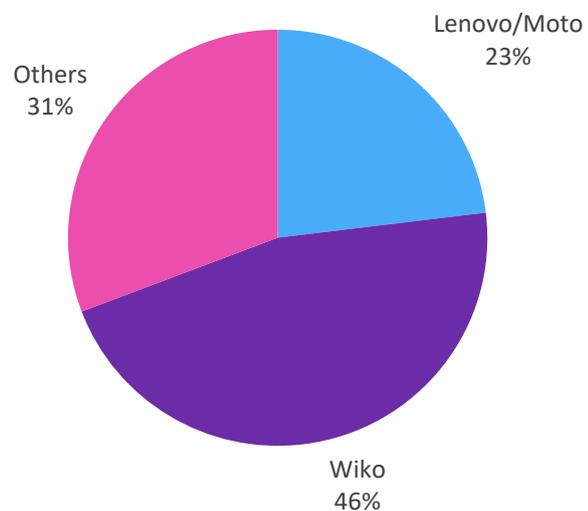
Tinno

Tinno’s smartphone shipments are mainly concentrated in overseas customers such as its brands, Wiko and MMX. Because of the rapid growth of Chinese OEMs—OPPO, Xiaomi, and Vivo—in the Indian market, shipments of the leading brands in the local market have shrunk rapidly. Its overall shipments have declined for four consecutive years.

Tinno began to participate in the Lenovo Moto brand project in 2019 with low-end specifications; it began shipping in 4Q19. Tinno's bargaining power was relatively weak in the supply chain for a limited shipment volume though.

Because of the shipments of Lenovo's Moto project, Tinno’s overall shipments are expected to will increase in 2020, making Lenovo Tinno's largest customer. Currently, Samsung, OPPO, Xiaomi, and Huawei are mainly focused on Wingtech, Huaqin, and Longcheer; Tinno can compete for customer projects from LG and Nokia in 2020.

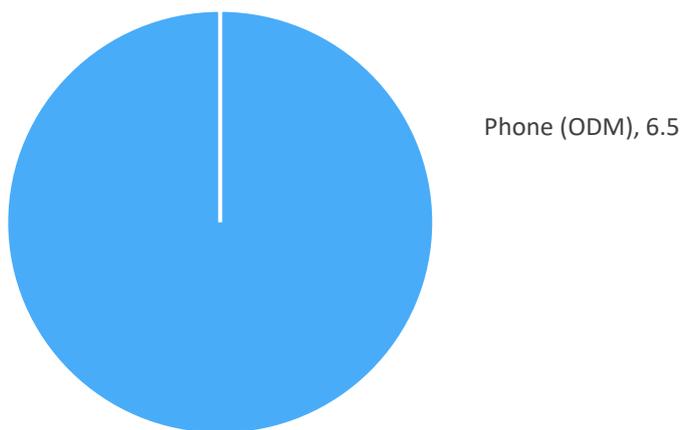
Tinno: Market shares of key smartphone customers, 2019



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Tinno: Shipments of key products, 2019



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Appendix

Authors

Robin Li
Senior Analyst, China Research
robin.li@omdia.com

Lingling Peng
Senior Analyst, Semiconductors and
Components
lingling.peng@omdia.com

Get in touch

www.omnia.com
askananalyst@omnia.com

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