

GlobalData Industry Profile

Global Mobile Phones
March 2022

Reference Code: GD0199-0152IP

Publication Date: March 2022

1. Executive Summary

1.1. Market value

The global mobile phones market shrank by 1.9% in 2021 to reach a value of \$715.2 billion.

1.2. Market value forecast

In 2026, the global mobile phones market is forecast to have a value of \$879.4 billion, an increase of 23% since 2021.

1.3. Market volume

The global mobile phones market grew by 0.2% in 2021 to reach a volume of 674.9 Average MOU.

1.4. Market volume forecast

In 2026, the global mobile phones market is forecast to have a volume of 590.7 Average MOU, a decrease of 12.5% since 2021.

1.5. Market rivalry

There is a high degree of rivalry within the global mobile phones market. There are only a handful mobile network operators (MNO) that provide cellular and mobile broadband services in each market, with just a few mobile carriers operating on an international scale. These companies are highly competitive with each other, providing the same core wireless services, making it difficult to differentiate from each other. Market consolidation and the roll-out of 5G technology has intensified rivalry in recent years.

1.6. Competitive Landscape

International and national mobile network operators (MNO) are the largest players in the global mobile phones industry. Mobile virtual network operators also operate in this market but these are required to lease bandwidth from rival MVNOs at wholesale prices giving them a distinct disadvantage, many MNOs also operate their own brand MVNOs using multi-brand strategies to attract larger shares of the mobile market. Most market players compete on a national scale and tend to focus on their domestic market; In countries such as China and India which have large populations and growing smartphone and internet penetration, a strong domestic environment has formed some of the world's largest telecommunication companies and mobile service providers. The Chinese mobile phone market is dominated by three state owned corporations, meaning the market experiences little competition between incumbents and little threat from new entrants or market disruptors. The largest of the three state owned communication

corporations is China Mobile Limited which has close to one billion mobile customers and is recognized as the world's largest mobile service operator. In Europe there are more international mobile operators as MVOs expand into new markets to achieve scale. Companies such as Vodafone, Telefonica and Deutsche Telekom serve a large portfolio of customers across multiple markets competing both domestically and internationally with one another. There is little competition between markets in North America with mobile network operators focusing on their home market with little intent to expand into neighboring countries. The US mobile phone market has historically been dominated by two large mobile network operators and national telecommunication companies, Verizon and AT&T. However, a merger between the third and fourth largest mobile service companies T-Mobile and Sprint has shaken up the competitive landscape by creating a new large T-Mobile brand which now has the customer base and network coverage to compete at the same scale as its rivals. Incumbents continue to accelerate the deployment of 5G networks which has become a strategic priority for mobile companies as data consumption drives market growth.

TABLE OF CONTENTS

1.	Executive Summary	2
1.1.	Market value.....	2
1.2.	Market value forecast.....	2
1.3.	Market volume	2
1.4.	Market volume forecast	2
1.5.	Market rivalry	2
1.6.	Competitive Landscape	2
2.	Market Overview	9
2.1.	Market definition.....	9
2.2.	Market analysis.....	9
3.	Market Data.....	11
3.1.	Market value.....	11
3.2.	Market volume	12
4.	Market Outlook	13
4.1.	Market value forecast.....	13
4.2.	Market volume forecast	14
5.	Five Forces Analysis	15
5.1.	Summary.....	15
5.2.	Buyer power	16
5.3.	Supplier power	18
5.4.	New entrants	20
5.5.	Threat of substitutes	22
5.6.	Degree of rivalry	23
6.	Competitive Landscape	25
6.1.	Who are the leading players?.....	25
6.2.	What strategies do leading players follow?	26

6.3.	Have there been any significant mergers or acquisitions in recent years?	27
7.	Company Profiles.....	30
7.1.	China Mobile Communications Group Co., Ltd	30
7.1.1.	Company Overview	30
7.1.2.	Key Facts	30
7.2.	China Telecom Corporation Limited	32
7.2.1.	Company Overview	32
7.2.2.	Key Facts	32
7.2.3.	Business Description	32
7.3.	Deutsche Telekom AG	36
7.3.1.	Company Overview	36
7.3.2.	Key Facts	36
7.3.3.	Business Description	36
7.4.	Telefonica, S.A.	41
7.4.1.	Company Overview	41
7.4.2.	Key Facts	41
7.4.3.	Business Description	41
7.5.	Verizon Communications Inc.	46
7.5.1.	Company Overview	46
7.5.2.	Key Facts	46
7.5.3.	Business Description	46
7.6.	Vodafone Group Plc.....	51
7.6.1.	Company Overview	51
7.6.2.	Key Facts	51
7.6.3.	Business Description	51
8.	Macroeconomic Indicators.....	55
8.1.	Country data	55
9.	Appendix.....	56
9.1.	Methodology	56
9.2.	Industry associations	57
9.2.1.	CTIA - The Wireless Association	57
9.2.2.	GSMA	57

9.2.3.	Regulierungsbehörde für Telekommunikation und Post	57
9.2.4.	Ofcom (Office of Communications)	57
9.2.5.	China Mobile Communications Association	57
9.3.	Related GlobalData research	58
9.3.1.	Industry Profile	58
9.4.	About GlobalData	59

LIST OF TABLES

Table 1: Global mobile phones market value: \$ billion, 2017–21	11
Table 2: Global mobile phones market volume: Average MOU, 2017–21	12
Table 3: Global mobile phones market value forecast: \$ billion, 2021–26	13
Table 4: Global mobile phones market volume forecast: Average MOU, 2021–26	14
Table 5: China Mobile Communications Group Co., Ltd: key facts	30
Table 6: China Mobile Communications Group Co., Ltd: Key Employees	31
Table 7: China Telecom Corporation Limited: key facts	32
Table 8: China Telecom Corporation Limited: Annual Financial Ratios	34
Table 9: China Telecom Corporation Limited: Key Employees	35
Table 10: Deutsche Telekom AG: key facts	36
Table 11: Deutsche Telekom AG: Annual Financial Ratios	38
Table 12: Deutsche Telekom AG: Key Employees	39
Table 13: Deutsche Telekom AG: Key Employees Continued	40
Table 14: Telefonica, S.A.: key facts	41
Table 15: Telefonica, S.A.: Annual Financial Ratios	43
Table 16: Telefonica, S.A.: Key Employees	44
Table 17: Telefonica, S.A.: Key Employees Continued	45
Table 18: Verizon Communications Inc.: key facts	46
Table 19: Verizon Communications Inc.: Annual Financial Ratios	48
Table 20: Verizon Communications Inc.: Key Employees	49
Table 21: Verizon Communications Inc.: Key Employees Continued	50
Table 22: Vodafone Group Plc: key facts	51
Table 23: Vodafone Group Plc: Annual Financial Ratios	53
Table 24: Vodafone Group Plc: Key Employees	54
Table 25: Global exchange rate, 2017–21	55

LIST OF FIGURES

Figure 1: Global mobile phones market value: \$ billion, 2017–21	11
Figure 2: Global mobile phones market volume: Average MOU, 2017–21	12
Figure 3: Global mobile phones market value forecast: \$ billion, 2021–26	13
Figure 4: Global mobile phones market volume forecast: Average MOU, 2021–26	14
Figure 5: Forces driving competition in the global mobile phones market, 2021	15
Figure 6: Drivers of buyer power in the global mobile phones market, 2021	16
Figure 7: Drivers of supplier power in the global mobile phones market, 2021	18
Figure 8: Factors influencing the likelihood of new entrants in the global mobile phones market, 2021	20
Figure 9: Factors influencing the threat of substitutes in the global mobile phones market, 2021	22
Figure 10: Drivers of degree of rivalry in the global mobile phones market, 2021	23

2. Market Overview

2.1. Market definition

Industry profiles are updated once per year and the reports provide a snapshot of GlobalData's view of the industry at the time of publication. For the most up-to-date data and forecasts please see the Market Analyzer which can be found under Databases > Sector Databases > Market Analyzer. The GD Explorer Market Analyzer is a single platform that allows users to explore, analyze and visualize data across multiple dimensions such as sector, category and geography.

The Mobile Phones market includes mobile phone service revenues and average minutes of use (MOU). Market values are made up of total mobile revenues containing revenues from mobile service providers and other members of the mobile service value-chain for the provision of mobile telephony services, excluding revenues from the sale of devices. Market volumes are made up of two segments: prepaid and postpaid, which consist of prepaid average monthly MOU and postpaid average monthly MOU. Minutes of use are made up from the average of voice minutes used in mobile subscriptions, including both incoming and outgoing calls, but not including M2M/IoT voice services.

All market data and forecasts are represented in nominal terms (i.e. without adjustment for inflation) and all currency conversions used in the creation of this report have been calculated using constant 2021 annual average exchange rates.

Forecast figures in this report have taken into account the estimated impact that the COVID-19 pandemic will have on the market, though the length of the pandemic and restrictions imposed by governments around the world is not certain, therefore the impact on the market is difficult to predict.

For the purposes of this report, the global market consists of North America, South America, Europe, Asia-Pacific, Middle East, South Africa and Nigeria.

North America consists of Canada, Mexico, and the United States.

South America comprises Argentina, Brazil, Chile, Colombia, and Peru.

Europe comprises Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Russia, Spain, Sweden, Switzerland, Turkey, and the United Kingdom.

Scandinavia comprises Denmark, Finland, Norway, and Sweden.

Asia-Pacific comprises Australia, China, Hong Kong, India, Indonesia, Kazakhstan, Japan, Malaysia, New Zealand, Pakistan, Philippines, Singapore, South Korea, Taiwan, Thailand, and Vietnam.

Middle East comprises Egypt, Israel, Saudi Arabia, and United Arab Emirates.

2.2. Market analysis

The global mobile phones market experienced weak growth during the historic period. Declining market revenues in 2020 were offset by 6.0% annual growth in 2021. Moderate market growth is expected to resume over the forecast period.

The global mobile phones market is approaching saturation due to the growing penetration of mobiles and smartphones around the world. There are approximately 8.1 billion mobile subscriptions, which is more than the global population (7.9 billion). This weakens market growth as there is little value that can be generated from new mobile subscribers. However, data usage has been increasing due to the expansion of smartphones, the availability of various rate plans, and the proliferation of high-speed data services. Mobile data services have

added value to mobile packages and driven market growth. Consumers tend to keep hold of mobile phones for extended periods of time, as they often are expensive and if on a contract, consumers are obliged to pay for the phone over an agreed time period, commonly around one or two years. As a result, demand tends to stem from upgrades, which are infrequent. However, consumers are starting to hold on to phones for longer, prioritizing attractive mobile data packages over new mobile hardware releases. Fewer handset sales, combined with intense price competition, has caused declines in postpaid and prepaid average revenue per user (ARPU) and lower hardware volumes, causing the market's overall value to stagnate.

The global mobile phones market had total revenues of \$757.9 billion in 2021, representing a compound annual growth rate (CAGR) of 0.1% between 2016 and 2021. In comparison, the Asia-Pacific and US markets grew with compound annual growth rate (CAGR)s of 0.5% and 0.9% respectively, over the same period, to reach respective values of \$317.1 billion and \$197.3 billion in 2021.

The market experienced an unexpected downfall in 2020 as a consequence of the COVID-19 pandemic, which caused changes in consumer behavior and preferences, resulting in weaker mobile revenues. Fewer mobile phone upgrades, a significant drop in roaming traffic, the weak performance of small and medium-sized businesses, and lower communications spend by corporate customers were the primary reasons for a -1.9% drop in market value during 2020.

However, during 2020, global mobile services providers started to activate their 5G mobile networks and launch commercial 5G mobile services as compatible next generation mobile phones. High demand for 5G services mitigated losses from roaming charges in 2020 and fueled market growth in 2021.

Market consumption volumes declined with a compound annual rate of change (CARC) of -1.3% between 2016 and 2021, to reach a total of 658.9 average MOU in 2021. The market's volume is expected to fall to 578.9 average MOU by the end of 2026, representing a CARC of -2.6% for the 2021-2026 period.

Average voice calls minutes and texts will continue to drop as smartphone users substitute texts and calls for internet-based messaging services, including social media sites such as WhatsApp and Facebook messenger. However, this has resulted in a surge of mobile data consumption.

The postpaid segment experienced the highest volume of consumption in 2021, with a total of 503.5 average MOU, equivalent to 76.4% of the market's overall consumption volume. The prepaid segment contributed 155.3 average MOU in 2021, equating to 23.6% of the market's aggregate volume.

Post-paid mobile subscriptions are the most common in Mexico, because they are seen as the best value for money. Mobile phone consumption is high in Mexico and there is a strong demand for packages with unlimited texting, messaging, and data services, which would be too expensive to purchase on a prepaid basis. Prepaid services are better suited for consumers who use their mobile phones less and only want to pay for the small amount of services they use without having to pay monthly bills. However, price competition and cheap SIM only plans have convinced many consumers to switch to post-paid contracts in recent years.

The performance of the market is forecast to accelerate, with an anticipated CAGR of 3.7% for the five-year period 2021 - 2026, which is expected to drive the market to a value of \$910.9 billion by the end of 2026. Comparatively, the Asia-Pacific and US markets will grow with CAGRs of 4.5% and 3.4% respectively, over the same period, to reach respective values of \$394.3 billion and \$232.7 billion in 2026.

While the pandemic continues to have an impact on the economy and mobile phone revenues, the market is hopeful that the rollout of vaccines in 2021 will help market recovery. A growing number of 5G compatible devices will drive growth over the forecast period as a growing demand for data encourages consumers to invest in 5G mobile packages. AT&T and Verizon will launch their C-BAND spectrum in 2022, which the pair bought collectively for \$68.8 billion in 2021. C-BAND is the country's largest available swath of mid-band 5G spectrum and the rollout of 5G across this radio range will significantly increase the coverage of 5G in the US. The number of 5G users in China is expected to exceed 560 million by 2023, when the 5G network will be used by over 40% of personal mobile phone users, according to an industry development guideline issued by the MIIT in July 2021. According to leading 5G infrastructure company Ericsson, by the end of 2027, 5G subscriptions are expected to reach 4.4 billion globally. Mobile data usage continues to increase strongly on the back of the growing use of products such as mobile video apps and mobile gaming. Demand for data will drive mobile phone revenues over the forecast. However, market revenues will be subjected to regulatory changes, as well as sustained price and competitive pressure, which will offset growth over the forecast period.

3. Market Data

3.1. Market value

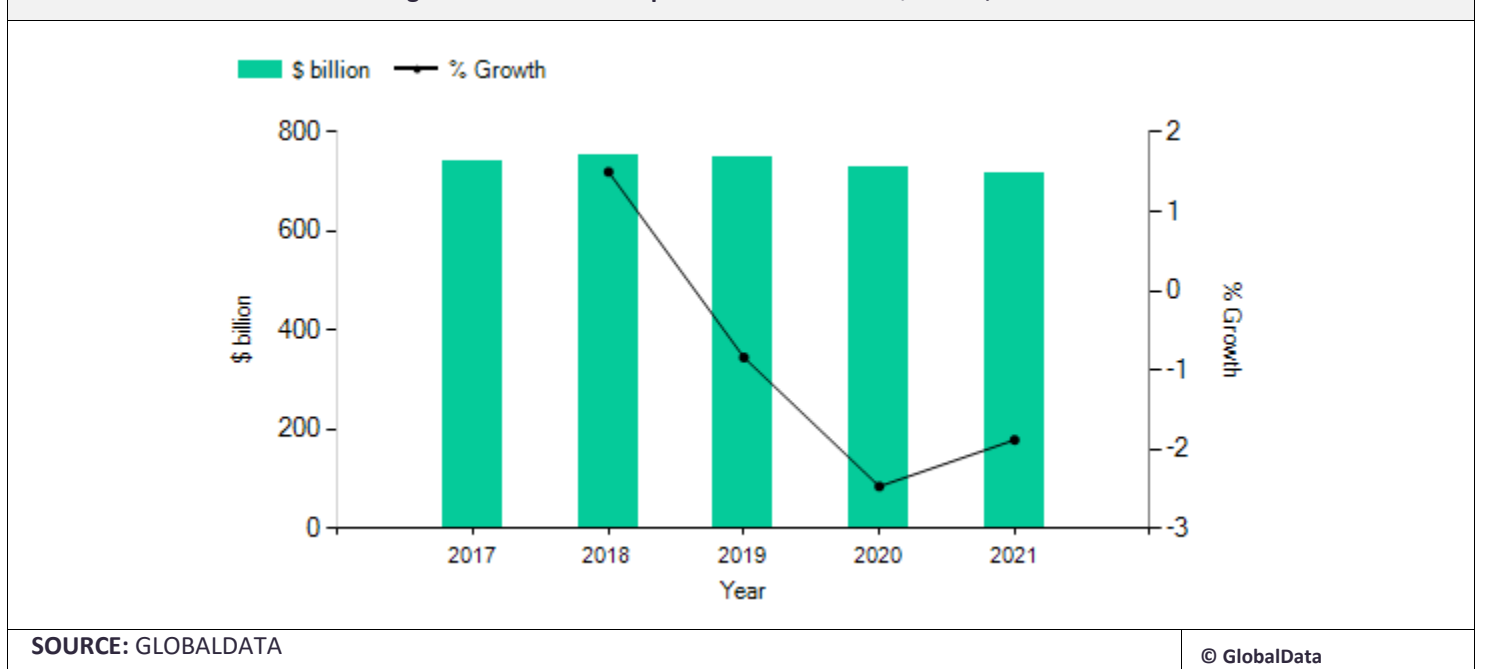
The global mobile phones market shrank by 1.9% in 2021 to reach a value of \$715.2 billion.

The compound annual rate of change of the market in the period 2017–21 was -0.9%.

Table 1: Global mobile phones market value: \$ billion, 2017–21

Year	\$ billion	€ billion	% Growth
2017	742.6	627.6	
2018	753.7	637.0	1.5%
2019	747.4	631.6	(0.8%)
2020	728.9	616.1	(2.5%)
2021	715.2	604.4	(1.9%)
CAGR: 2017–21			(0.9%)
SOURCE: GLOBALDATA			© GlobalData

Figure 1: Global mobile phones market value: \$ billion, 2017–21



3.2. Market volume

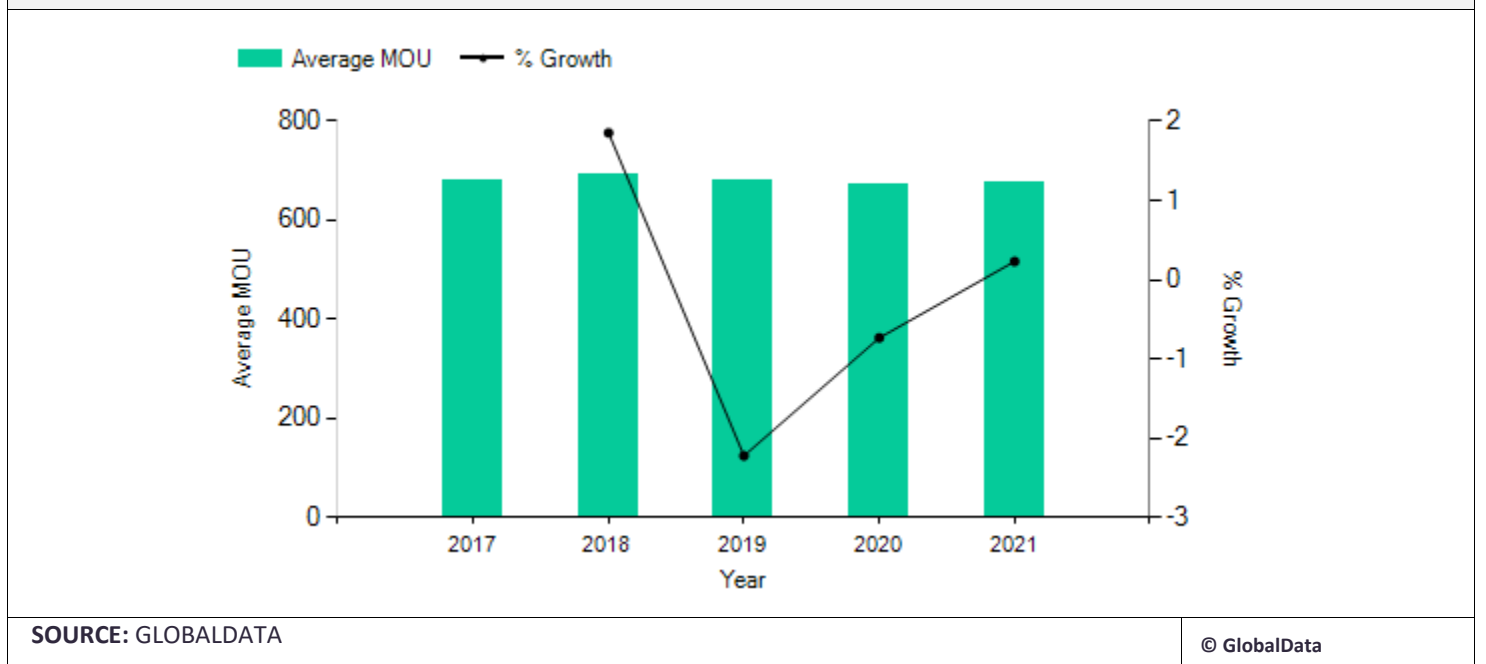
The global mobile phones market grew by 0.2% in 2021 to reach a volume of 674.9 Average MOU.

The compound annual rate of change of the market in the period 2017–21 was -0.2%.

Table 2: Global mobile phones market volume: Average MOU, 2017–21

Year	Average MOU	% Growth
2017	681.1	
2018	693.8	1.9%
2019	678.3	(2.2%)
2020	673.4	(0.7%)
2021	674.9	0.2%
CAGR: 2017–21		(0.2%)
SOURCE: GLOBALDATA		© GlobalData

Figure 2: Global mobile phones market volume: Average MOU, 2017–21



4. Market Outlook

4.1. Market value forecast

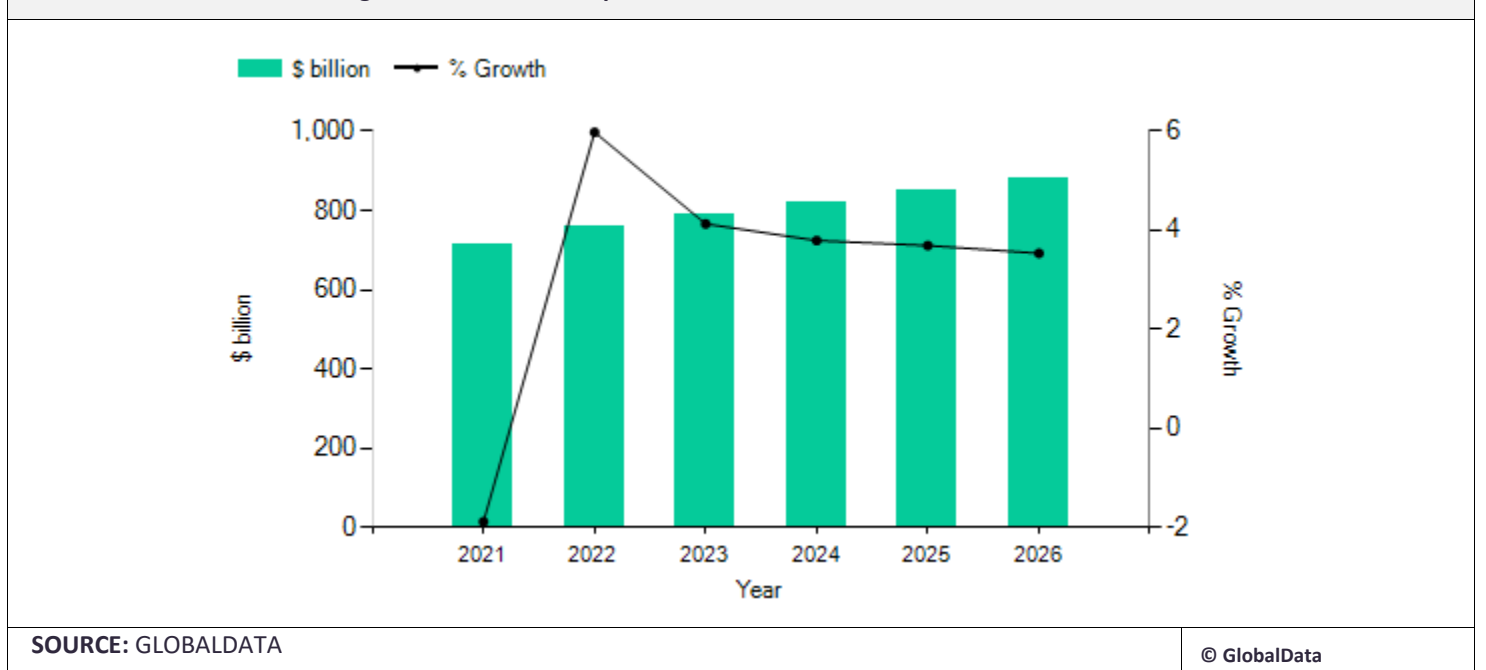
In 2026, the global mobile phones market is forecast to have a value of \$879.4 billion, an increase of 23% since 2021.

The compound annual growth rate of the market in the period 2021–26 is predicted to be 4.2%.

Table 3: Global mobile phones market value forecast: \$ billion, 2021–26

Year	\$ billion	€ billion	% Growth
2021	715.2	604.4	(1.9%)
2022	757.9	640.6	6.0%
2023	789.2	667.0	4.1%
2024	819.1	692.3	3.8%
2025	849.4	717.9	3.7%
2026	879.4	743.2	3.5%
CAGR: 2021–26			4.2%
SOURCE: GLOBALDATA			© GlobalData

Figure 3: Global mobile phones market value forecast: \$ billion, 2021–26

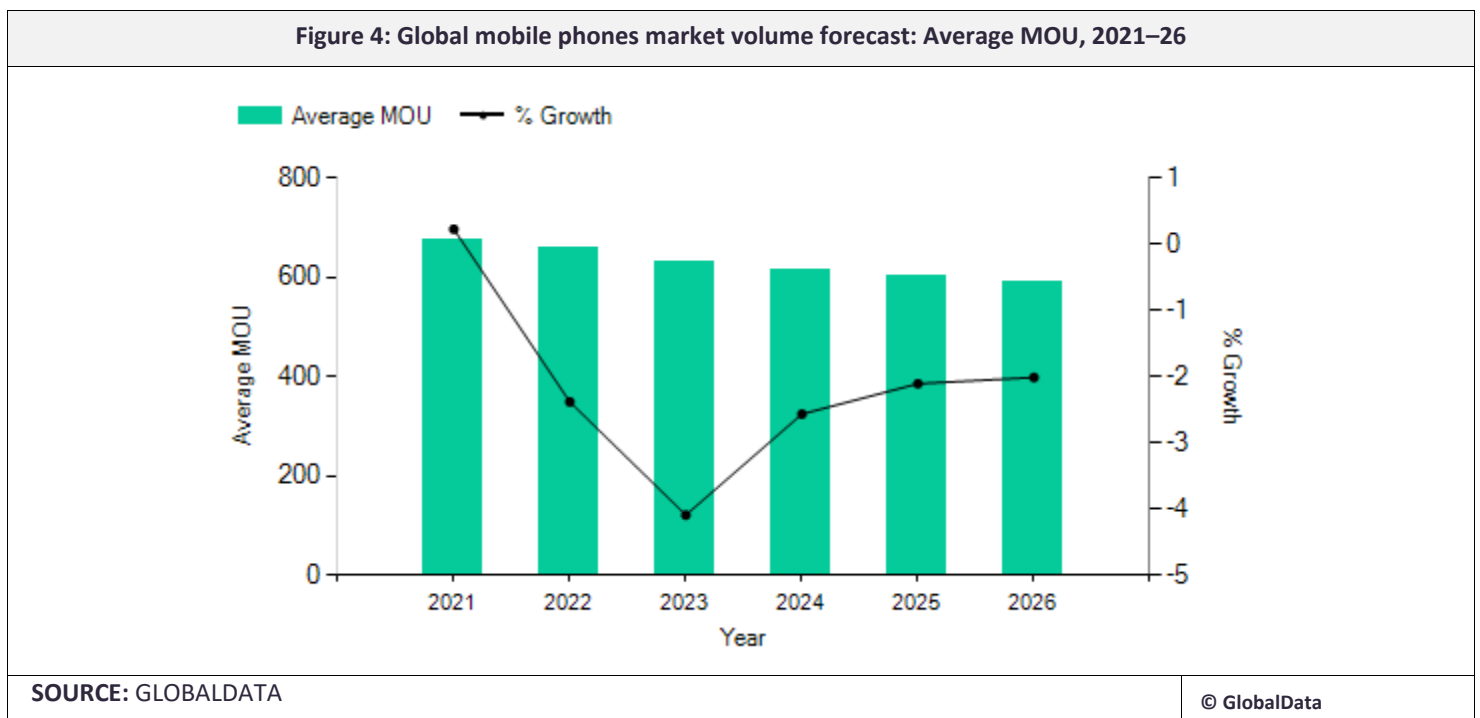


4.2. Market volume forecast

In 2026, the global mobile phones market is forecast to have a volume of 590.7 Average MOU, a decrease of 12.5% since 2021.

The compound annual rate of change of the market in the period 2021–26 is predicted to be -2.6%.

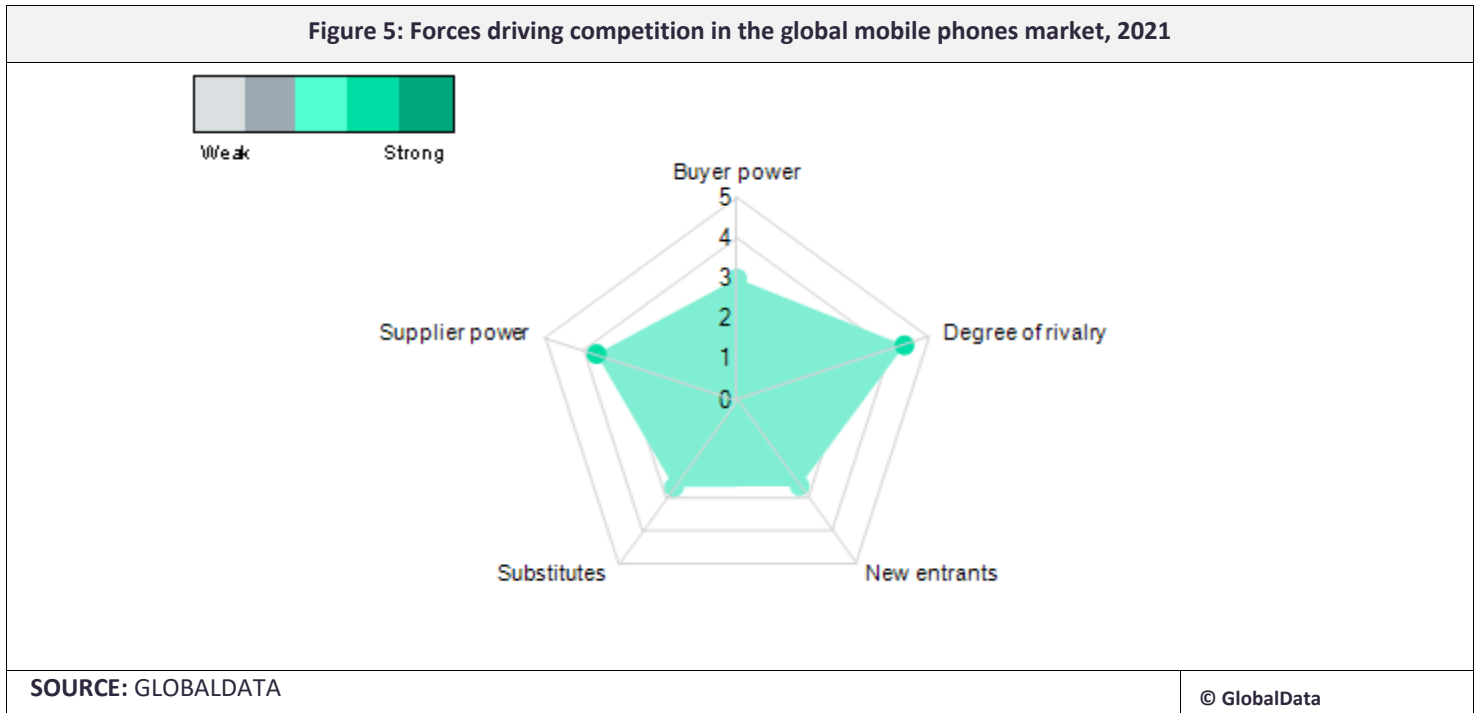
Table 4: Global mobile phones market volume forecast: Average MOU, 2021–26		
Year	Average MOU	% Growth
2021	674.9	0.2%
2022	658.9	(2.4%)
2023	631.9	(4.1%)
2024	615.7	(2.6%)
2025	602.8	(2.1%)
2026	590.7	(2.0%)
CAGR: 2021–26		(2.6%)
SOURCE: GLOBALDATA		© GlobalData



5. Five Forces Analysis

The mobile phones market will be analyzed taking mno's and mvno's as players. The key buyers will be taken as consumers and businesses , and mobile phone manufacturers, government organizations and mobile infrastructure businesses as the key suppliers.

5.1. Summary



There is a high degree of rivalry within the global mobile phones market. There are only a handful mobile network operators (MNO) that provide cellular and mobile broadband services in each market, with just a few mobile carriers operating on an international scale. These companies are highly competitive with each other, providing the same core wireless services, making it difficult to differentiate from each other. Market consolidation and the roll-out of 5G technology has intensified rivalry in recent years.

There is little threat from new entrants because of the high cost associated with cellular infrastructure and maintenance, as well as the limited availability and access to spectrum – radio frequencies allocated to the mobile industry and other sectors for communication over the airwaves.

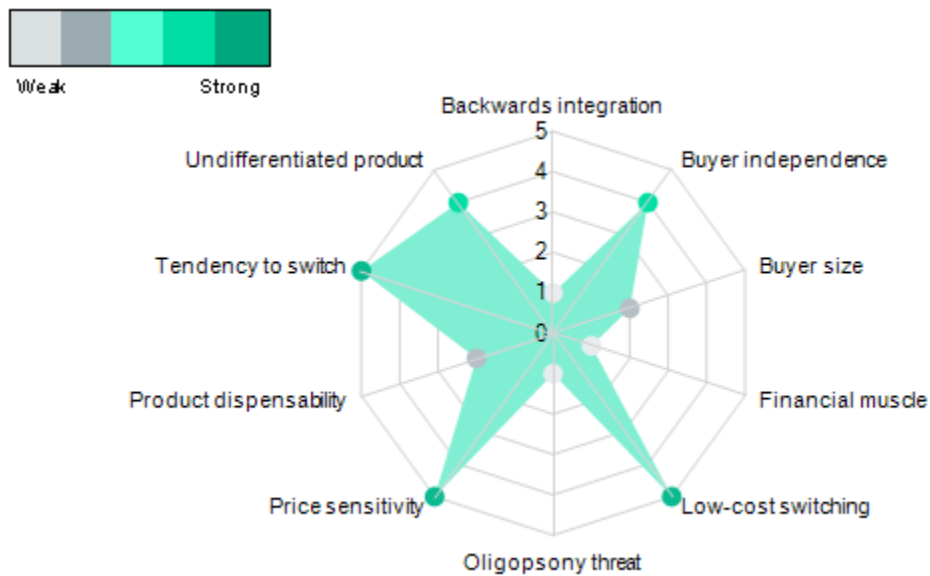
Buyers, which include end-consumers, have limited choice when choosing their mobile network and weak financial power means their bargaining power is weak. Smartphones are becoming integrated parts of everyday life, particularly in developed markets. However, consumers are price sensitive and tend to switch to the most affordable mobile packages.

Supplier power is strong. MNOs have limited options when securing suppliers of mobile devices and 5G infrastructure companies. However, changing consumer trends have meant players rely less on mobile handsets to drive sales, which has reduced expenditure on mobile phone suppliers.

Alternatives to mobile phones are limited. Fixed line services are the only reasonable substitute but lack mobility and many of the attractive features associated with mobile phones, such as high-quality cameras, access to social media, and entertainment applications.

5.2. Buyer power

Figure 6: Drivers of buyer power in the global mobile phones market, 2021



SOURCE: GLOBALDATA

© GlobalData

This market consists of large mobile network operators (MNO) and mobile virtual network operators (MVNO) that sell post-paid and prepaid mobile subscriptions to the end user. These companies tend to serve millions of customers. The world's largest mobile carrier is China Mobile, which serves almost 1 billion mobile subscribers in the Chinese mobile market. The large number of potential customers weakens buyer power, as individual buyers have little influence on the performance of the business.

Buyers are also restricted by the availability of cellular services. While most markets have nationwide mobile data coverage, some areas may only be supplied by a single network, significantly reducing the available options for consumers to choose from.

MNOs benefit from their wireless network infrastructure, which it sells to MVNOs, which lease mobile coverage and data bandwidth at wholesale prices and then resell mobile services to customers at wholesale prices. MVNOs wield little buyer power, as leasing infrastructure is the only way the companies can operate mobile services. High fixed costs and limited radio wave spectrum prevent MVNOs from backward integrating and creating their own mobile infrastructure. The presence of MVNOs in the market increases the buyer power wielded by the end consumer by increasing the number of available mobile brands, which encourages competition. However, many of these brands are owned by larger MNOs.

Buyers usually display little loyalty to mobile operators and often shop around for the best valued deal before committing to a new mobile contract. This increases buyer power and forces MNOs and MVNOs to compete and offer consumers better value mobile deals. Many mobile operators record churn rate, the rate at which customers stop doing business with a company over a given period. Leading European MNO Vodafone reported a Europe mobile contract customer churn rate of 13.7% during FY2021. However, by offering longer mobile postpaid deals, MNOs and MVNOs can reduce their churn rate.

Switching mobile provider is relatively easy and sometimes cost free, particularly for prepaid subscribers that pay for the services they use and are not locked into lengthy contracts. However, for post-paid customers, mobile service providers can often charge exit fees if a consumer chooses to upgrade or switch to an alternative provider before their mobile contract has ended.

Most mobile subscribers across developed countries purchase mobiles using post-paid monthly contracts, while less economically developed countries favor prepaid services. This is because prepaid customers only pay for the services they use, making them more financially manageable when compared to lengthy contracts. Pay-monthly continued to be the most common type of mobile subscription globally. In 2021, 76.4% of the global mobile phones market's value was generated by postpaid mobile subscriptions.

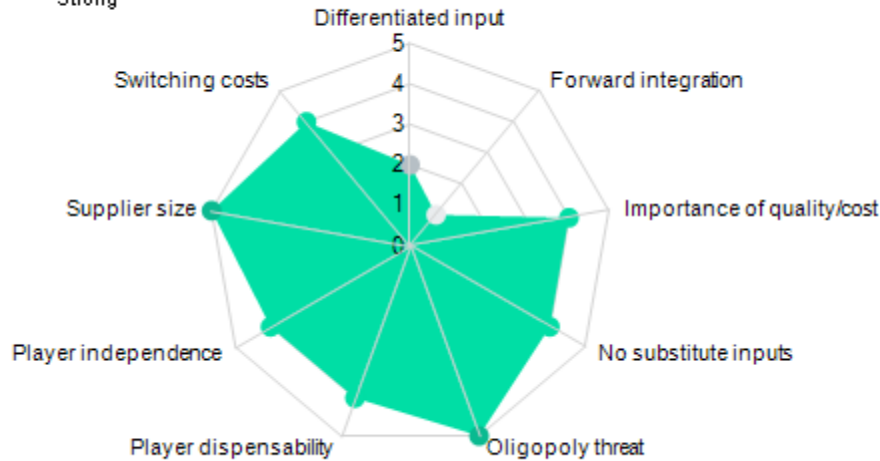
Market players generally provide the same wireless services, including calls, texts, access to data and data roaming. However, network operators often try to differentiate their products to appeal to end-users and increase their market share. Convergence plans have become increasingly popular, combining mobile services with broadband and TV services to create a more valuable product for customers. Demand for mobile data is growing rapidly and new technologies cause consumers to consume more data than ever before. This has caused players to create more data centric mobile packages, including unlimited data plans, often competing on price. The end-consumer is highly price sensitive and often searches for the cheapest deals. New phone models help encourage customers towards higher value mobile plans; however, generally, consumers search for plans with high data allowances at low costs. This price sensitivity increases the consumer's tendency to switch and increases buyer power, as operators often must find ways to reduce costs, to create more competitive mobile packages.

While mobile phones are not essential for survival, they are considered an essential item by many people, particularly in developed markets where mobiles have become integrated parts of everyday life. According to World Bank data, there were 107.5 mobile phone subscriptions per 100 people in 2020. Such a large percentage of the global population owning a mobile device is indicative of a high demand and dependency on mobile phone services.

Overall, buyer power is assessed as weak.

5.3. Supplier power

Figure 7: Drivers of supplier power in the global mobile phones market, 2021



SOURCE: GLOBALDATA

© GlobalData

Mobile phone manufacturers are some of the most significant suppliers for mobile service providers. Large mobile companies, such as Apple, Samsung, and Huawei, sell products directly to consumers, but generate the majority of sales through indirect distribution channels, including third party mobile network carriers, wholesalers, retailers, and resellers. Mobile carriers usually purchase handsets upfront and receive an inflow of cash to cover the cost of the handset over the length of the contract. Alternatively, carriers can also sell handsets as a third party seller and then offer SIM contracts, which allows consumers the freedom of choice when choosing their mobile phone and contract.

MNOs spend billions of dollars on wireless equipment each year. In 2020, leading US mobile operator Verizon spent \$19.8 billion on wireless equipment. However, expenses on wireless devices was down 13% annually. In recent years, consumer habits have changed, causing the elongation of the handset upgrade cycle. Consumers are holding onto their phones in response to new smartphone releases becoming increasingly expensive, with less notable improvements. As a result, mobile carriers have experienced a decrease in wireless equipment expenses as sales are driven by data centric mobile plans instead of new mobile releases. This has weakened supplier power, with mobile carriers becoming less reliant on new handset models to drive sales.

Infrastructure costs are high and essential for mobile network operators to maintain operations. Building network infrastructure requires supplies of building materials, software development, and other advanced technologies used for communication services. The emergence of 5G technologies has increased supplier power as network operators compete to launch the most advanced 5G networks with the largest coverage. This is expected to be detrimental to future business growth over the forecast period as 5G technologies facilitate consumers' growing demand for data. 5G infrastructure, such as radio access units, are built by a limited number of companies. Finnish firm Nokia, Sweden's Ericsson, and Chinese mobile manufacturer Huawei are the main providers of 5G technology. In the US and some of the globe's leading economies, federal governments have implemented legislation to prevent network operators from using any 5G infrastructure that could compromise national security. Many countries introduced regulations to restrict the use of 5G infrastructure developed by Huawei after pressure from the US and growing security concerns associated with Huawei's 5G technology, fearing it could be used by the Chinese government for espionage. Because of the small number of available suppliers, the failure of any part of the supply chain, such as suppliers or distributors, may have an adverse effect on the business and financial condition of each market player.

Mobile network operators also rely on a supply of radio wave spectrum, a specific frequency allocated to the mobile industry and other sectors for communication over airwaves. Spectrum is a sovereign asset; therefore, the government or designated national regulated authority is responsible for its allocation. While governments receive a significant amount of revenue from leasing spectrum to mobile operators, the cost is usually reasonably priced to prevent the inflation of mobile phone costs for the end-consumer. However, spectrum is a finite resource and access to radio frequency can help determine the market position of a mobile network operator, making it one of the most valuable supplies in the market. The cost of spectrum can vary from country to country depending on the competitiveness of the market, the amount of available spectrum at auction, and the design of the auction itself.

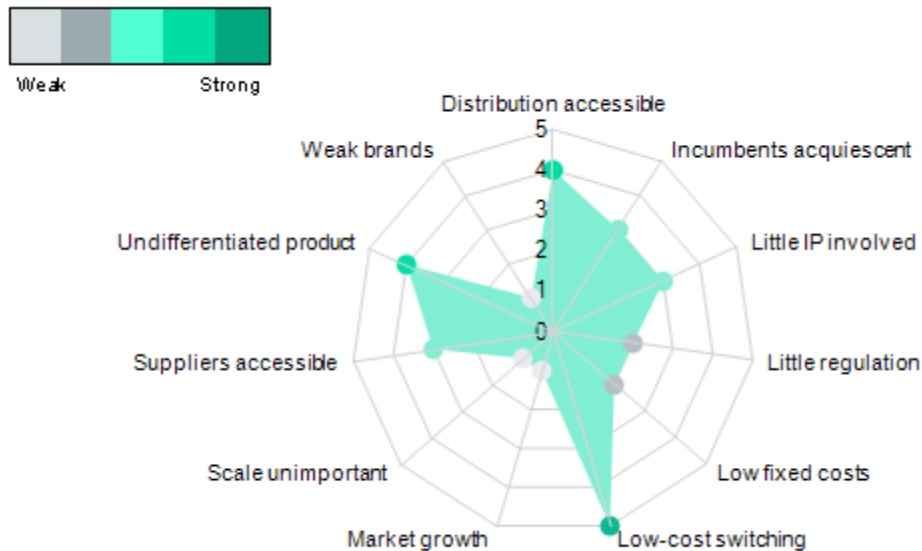
The Italian federal government and Italian communications authority – AGCOM – completed the auction of 5G spectrum in 2018, raising EUR6.5 billion (\$7.3 billion) in the process. Market leading Telecom Italia purchased a 80Mhz block of spectrum in the sought after 3.7Ghz range, ideal for 5G, and acquired spectrum at higher and lower bands, spending a combined total of EUR4.2 billion (\$4.7 billion). In comparison, Finnish mobile network operators, Telia, Elisa, and Telenor-owned DNA, each spent \$7.9 million. However, this was largely due to the conservatism of the county's incumbents and a decision to share spectrum. In January 2020, a record US 5G spectrum auction yielded \$81 billion, with companies such as Verizon determined not to fall behind competition. November 2021 auctions for mid-band 5G ended with a total of \$21.9 billion in winning bids.

In contrast to Western markets, where spectrum is awarded to the highest bidder during a series of auctions, China allocates spectrum according to the requirements and capabilities of telecom carriers. By doing so, incumbents can accelerate the development of network construction, and this stops the companies from acquiring large sums of debt. However, spectrum allocation also gives MNOs little power and can prevent them from acquiring the frequencies they want most. The Ministry of Industry and Information Technology (MIIT) issued nationwide 5G trial licenses in China during December 2018.

Overall, supplier is assessed as strong.

5.4. New entrants

Figure 8: Factors influencing the likelihood of new entrants in the global mobile phones market, 2021



SOURCE: GLOBALDATA

© GlobalData

Entry into the global mobile phones market is limited by high fixed costs and the existence of strong brand names already competing within the market. There are just a handful of MNOs operating in each market, including recognizable brands such as: Vodafone, Telefonica, and Deutsche Telekom. These companies operate large infrastructure networks that provide nationwide mobile and mobile broadband coverage. To create a new mobile network infrastructure would involve significant capital expenditure, unaffordable for most companies. Secondly, there is only a limited amount of spectrum allocated for mobile communications, including 5G. This means just a small number of mobile operators are able to purchase the airwaves needed to provide mobile services. Furthermore, spectrum is only likely to be allocated to companies that already have the infrastructure and technology in place to readily provide communication services.

Despite difficulties in becoming an MNO, some companies have been able to succeed in becoming a network operator. In June 2019, German MVNO, 1&1 Drillisch, successfully participated in the 5G auction of the Federal Network Agency, paying EUR1.1 billion (\$1.2 billion) for 70 MHz. Before the auction, the company had no network capacity and relied on leased cellular coverage from Telefonica. The group has retained its right to rent some Telefonica capacity through to 2025. However, with the frequencies acquired through auction, the company is now in a position to build a high-performance mobile radio network and intends to become the market's fourth MNO. Before its bid for network infrastructure, the company served 14.7 million customers via its MVNO brands; 1&1, yourfone, and winSIM.

The most common method through which MNOs can infiltrate the market is through the acquisition of an existing incumbent. The largest threat of acquisition comes from large multinational MNOs or domestic or international telecommunication companies looking to expand into the mobile communications market. During 2015, leading broadband, pay TV services, and fixed line services company, BT Group, completed the acquisition of EE for GBP12.5 billion (\$15.8 billion), a mobile carrier formed through a joint venture between Deutsche Telekom and Orange.

Generally, across Europe, communications legislation does not limit foreign investments or foreign ownership in the telecommunications sector. However, MNOs tend to be large brands with extensive customer-bases; therefore, a significant amount of capital is needed to purchase an incumbent. Usually it is the fourth or third largest MNO that is acquired. French telcom, Iliad, entered the Italian market in 2018 in a bid to become the country's fourth mobile network operator. The company offered low-cost packages costing EUR5.99 (\$6.73) per month, with 30 gigabytes of

traffic and unlimited SMS messages. By the end of 2019, the company had acquired a customer base of 5.3 million subscribers. The company disrupted the French market in a similar manner after launching its mobile service, Free. The company was only able to infiltrate the market by acquiring the mobile infrastructure from the third and fourth largest operators in the Italian retail mobile market, Hutchison and VimpelCom. Hutchison and VimpelCom merged together to create Wind Tre in 2016, however, to overcome competition concerns with the deal, the companies had to agree to divest some their assets to Iliad.

Market entry is more achievable for MVNOs. These companies do not own mobile infrastructure and rely on cellular coverage purchased at wholesale prices from MNOs. The consumer's tendency to switch to affordable mobile phone services means new entrants are able to acquire customers with attractive and affordable mobile packages and strong customer services. Virtual networks traditionally offer contracts much cheaper than their parent networks and also offer some good value SIM-only deals, which have grown in popularity as a result of handset fatigue. Successful MVNOs often use existing market assets such as media, telecom brands, customer databases, and other channel infrastructure. For example, in Spain, Euskaltel, a telecoms company that operates on a local scale, recently introduced a new market player, Virgin Telco, which intends to cover over 85% of the population with mobile coverage. Euskaltel expects the move to more than double its current customer base, both in terms of fixed and mobile services.

MVNOs can often face retaliation from larger network operators that have the financial power to acquire competitors and launch their own competitive MVNO brands. MVNO acquisitions help network operators increase their customer base and product offerings.

Until recently, access to the Chinese market has been obstructed by strict regulations and legislation preventing foreign ownership, but recently, China has opened up its telecommunications market to foreign investment and has liberalized its mobile market, allowing easier access for new entrants. In 2019, BT Group was the first non-Chinese telecoms firm to get a nationwide operating license in China from the MIIT. The group was awarded a China nationwide domestic IP-VPN license and China nationwide internet service provider (ISP) license, allowing it to compete with the country's domestic mobile service providers. However, the company has targeted foreign companies operating in China and has not yet had access to China's domestic mobile customers.

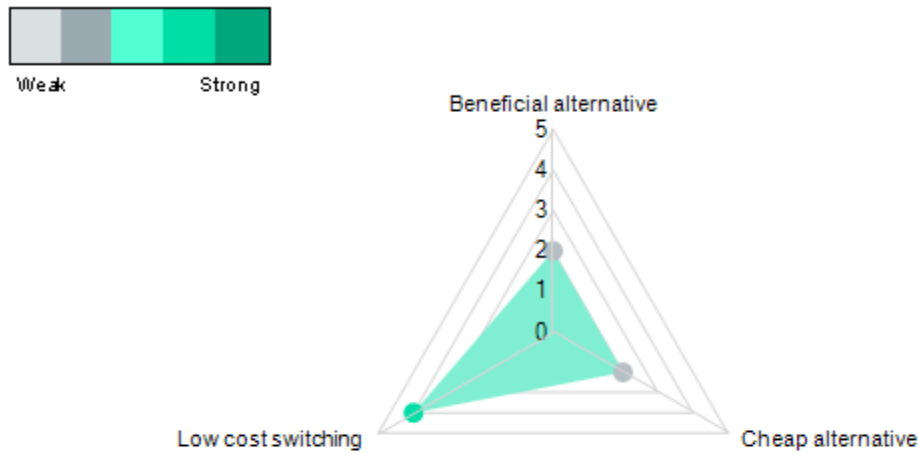
The risk of new entrants can vary depending on market saturation. Europe is a mature and highly penetrated mobile market, with 472 million people in Europe (86% of the population) subscribed to mobile services, according to the GSMA. Because of its saturated market environment, the market is unlikely to experience significant growth in new mobile subscribers, which makes it difficult for newcomers to attract customers. New entrants would have to find ways of competing with market leaders and eat into their market shares, which often results in incumbents retaliating to new competition.

In contrast, markets such as India have much lower mobile penetration rates and a strong macroeconomic environment that is expected to stimulate growth in mobile ownership. Indian government initiatives have support growth of the mobile phones market. Digital India is a flagship program of the Indian government, with a vision to transform India into a digitally empowered society and knowledge economy. Providing cheap and affordable mobile plans was central to the initiative's strategy to increase the adoption of digital infrastructure in India. India's young demographic and the increased access to and affordability of mobile and internet services is driving growth in this market. In addition, a fall in smartphone prices has been stimulated by increased local manufacturing, encouraged by the government's Phased Manufacturing Program. Cheaper smartphone prices will drive hardware sales and demand for mobile services will increase. Because of the country's rapidly growing smartphone penetration, the market is expected to experience significant growth in new mobile subscribers, which will make it much easier for new entrants to acquire customers by reducing the need to compete with the market's leading players.

Overall, the threat from new entrants is assessed as weak.

5.5. Threat of substitutes

Figure 9: Factors influencing the threat of substitutes in the global mobile phones market, 2021



SOURCE: GLOBALDATA

© GlobalData

One possible substitute for mobile phones is fixed-line telephones. However, this threat is seen as minimal, as mobile phones offer the advantage of being able to use them over a much wider geographical area – wherever they pick up a signal. Not only this, but there has been an observed increase in households that have substituted fixed-line telephones with mobile phones. Moreover, many mobile phones now offer benefits that have enabled them to become substitutes for many other electrical appliances, including laptops, televisions, MP3 players, and cameras.

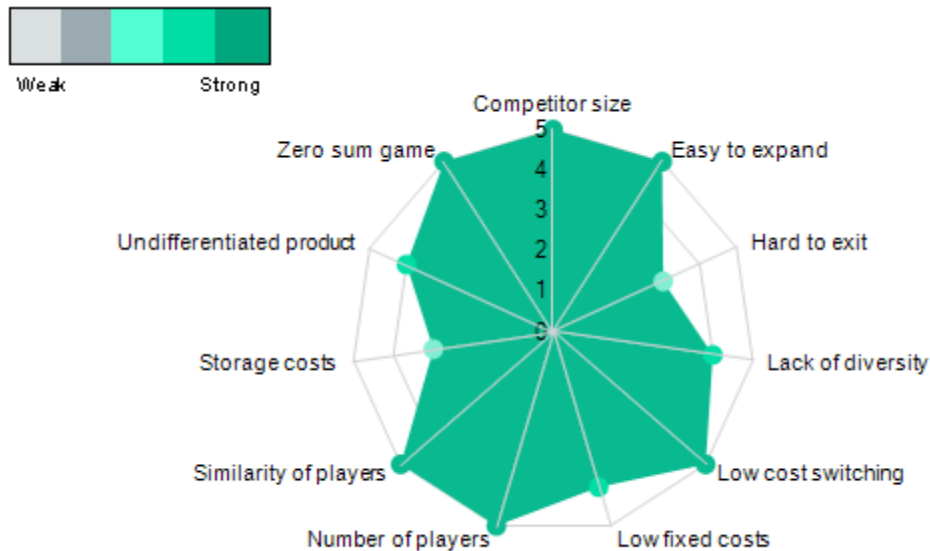
Whilst laptops also offer many of the features that mobile phones are marketed on, such as internet access, video calling through programs such as Skype, email, TV, GPS, music, entertainment, and portability, they are not a strong substitute, as they do not possess many of the benefits of a mobile phone, such as size, weight, and the seamless ability to call others. As smart phones have developed, they have gradually eaten into PC sales, with consumers showing a preference towards mobile devices.

Tablet computers could be seen as a substitute for smartphones, but large-screened smartphones (known as "phablets") negate this threat to a large extent. The fact that tablet sales have declined globally for the last several consecutive years supports this. This has led to many players operating in the tablets market, such as HTC and Dell, pulling out of that market, emphasizing the fact that the mobile phones market has successfully been able to counter the impact of this potential substitute.

Overall, the threat of substitutes is assessed as weak.

5.6. Degree of rivalry

Figure 10: Drivers of degree of rivalry in the global mobile phones market, 2021



SOURCE: GLOBALDATA

© GlobalData

A small number of large mobile network operators competing within a commercial, sales driven market creates a highly competitive environment with a strong degree of rivalry. Vodafone, Telefonica, Deutsche Telecom, and China Mobile are some of the primary MNOs competing in the global mobile phones market and compete intensely for a share of mobile subscribers and mobile service revenues. However, rivalries often remain at a national scale, with mobile operators across the region focusing exclusively on the domestic market. Leading players are continuously trying to improve customer experience, price, quality of service, scope of services, network coverage, sophistication of wireless technology, breadth of distribution, selection of devices, and branding and positioning to gain a competitive edge over rivals.

In saturated markets such as the US and most of Europe, competition remains intense because of high rates of smartphone penetration in the wireless market. The mobile market is one of the most mature segments of the global telecommunications industry. It is characterized by high penetration rates, leading to increased competition, and leaving MNOs battling to retain existing and attract new customers. This competitive landscape is one of the most influential factors continuing to impact the mobile market. When a market is saturated, incumbents need to try to attract new customers by causing them to switch from rival operators. Innovation, new technology, designing new mobile packages, and adding value to postpaid subscriptions helps to reduce customer churn and attract new customers. This kind of direct competition for consumers creates fierce rivalry.

In recent years, the European mobile phones market has been characterized by a wave of consolidation, with most markets reducing the number of mobile operators from four down to three. One of the most recent occurrences of consolidation was the merger of two of UK's leading mobile carriers in 2020. A decision to block the merger between Telefonica-owned mobile carrier, O2, and Three, owned by Hong Kong's CK Hutchison, in 2016 was overturned during May 2020, allowing the GBP10.2 billion (\$13 billion) deal to proceed, creating a larger, more competitive MNO to rival market leading players Vodafone and EE. Rivalry also intensified in the Netherlands after T-Mobile and Tele2, the third and fourth largest mobile network operators in the country, merged together, combining both companies' infrastructure and mobile subscribers. The new company, operating under the T-Mobile brand, was able to accelerate the rollout of its 5G network and increase the competitive pressure on market leaders, KPN and Vodafone.

In the US, rivalry was intensified in 2020 after T-Mobile and rival mobile service provider, Sprint Corporation, completed a mega-merger, resulting in the new T-Mobile becoming a much fiercer rival and reducing the number of

competitors down to three. The merger has received hostility from Verizon and AT&T, who together petitioned the government to prevent T-Mobile from accessing additional wireless spectrum. The FCC has continued to encourage competition in the mobile market and has ensured that there will be equal opportunity for all three MNOs to secure 5G spectrum in the future.

In comparison to North America and Europe, the Asia-Pacific mobile market has experienced little consolidation and many markets have experienced an increase in the number of competitors in recent years as an attempt to lower mobile prices for the end consumer. In Japan, stronger market competition has weakened existing rivalry between MNOs as they start to switch their attention to managing competition from smaller emerging mobile carriers.

The similarity of players and their products also encourages rivalry. Each of the market's leading players provide the same core wireless services: calls, texts, data, and data roaming. Companies can attempt to differentiate themselves from competition in terms price and value-added services. As a result of the similarity of players, consumer choice is usually dictated by price, which creates a highly competitive market, with the companies offering the lowest priced mobile packages expected to attract the highest number of subscribers. This can be offset somewhat by the quality of services provided, including mobile coverage, device selection, and the availability of data. Consumers may be willing to pay premium prices for services such as unlimited data plans. In recent years, the market has slowed in response to a surge in competition, including price competition between major operators, the re-emergence of unlimited plans, and active promotion by new MVNOs.

Previously, this market was heavily driven by handset launches. Today, while handset innovation continues, the cost of a new mobile device has increased substantially, leading to consumers keeping their handsets for longer. This has also had an impact on store footfall. An increase in demand for SIM-only contracts and large data bundles is driving market growth.

5G technology has intensified competition in recent years. The performance of the mobile phone market is becoming increasingly reliant on data consumption trends. Consumers are demanding more data and 5G is a necessary technology for mobile operators to provide fast, low latency cellular broadband that better facilitates consumer data consumption and digital services. Competition has become increasingly fierce as mobile operators race to deploy nationwide 5G coverage.

Overall, rivalry is assessed as strong.

6. Competitive Landscape

International and national mobile network operators (MNO) are the largest players in the global mobile phones industry. Mobile virtual network operators also operate in this market but these are required to lease bandwidth from rival MVNOs at wholesale prices giving them a distinct disadvantage, many MNOs also operate their own brand MVNOs using multi-brand strategies to attract larger shares of the mobile market. Most market players compete on a national scale and tend to focus on their domestic market; In countries such as China and India which have large populations and growing smartphone and internet penetration, a strong domestic environment has formed some of the world's largest telecommunication companies and mobile service providers. The Chinese mobile phone market is dominated by three state owned corporations, meaning the market experiences little competition between incumbents and little threat from new entrants or market disruptors. The largest of the three state owned communication corporations is China Mobile Limited which has close to one billion mobile customers and is recognized as the world's largest mobile service operator. In Europe there are more international mobile operators as MVOs expand into new markets to achieve scale. Companies such as Vodafone, Telefonica and Deutsche Telekom serve a large portfolio of customers across multiple markets competing both domestically and internationally with one another. There is little competition between markets in North America with mobile network operators focusing on their home market with little intent to expand into neighboring countries. The US mobile phone market has historically been dominated by two large mobile network operators and national telecommunication companies, Verizon and AT&T. However, a merger between the third and fourth largest mobile service companies T-Mobile and Sprint has shaken up the competitive landscape by creating a new large T-Mobile brand which now has the customer base and network coverage to compete at the same scale as its rivals. Incumbents continue to accelerate the deployment of 5G networks which has become a strategic priority for mobile companies as data consumption drives market growth.

6.1. Who are the leading players?

China Mobile Limited is the leading telecommunications services provider in the mainland of China. The group provides full communications services in all 31 provinces, autonomous regions and directly administered municipalities throughout the mainland of China and in the Hong Kong Special Administrative Region. Its businesses primarily consist of mobile voice and data business, wireline broadband and other information and communications services. As of December 31, 2020, the group had a total of 454,332 employees, and a total of 942 million mobile customers and 210 million wireline broadband customers, with its annual revenue totaling RMB768.1 billion (\$120.75 billion).

China Telecommunications Corporation is one of the largest mobile telecommunication providers in China. The company provides wireline and mobile telecommunications services, internet access services, information services and other value-added telecommunications services primarily in the People's Republic of China. As of December 2021, the company served 372.43 million mobile subscribers. In 2020, the group's mobile service revenues amounted to RMB181.7 billion (\$28.56 billion), representing an Y-o-Y increase of 3.5% and accounting for 48% of the company's total revenue for the year which amounted to RMB378.1bn (\$59.4 billion).

Deutsche Telekom AG is a German telecommunications company that provides fixed-network and mobile services as well as wholesale telecommunications services for the group's other operating segments in Germany and other operating markets including US and various European markets. The company served 241.8 million mobile customers in 2020 including 48.5 million mobile subscribers in Germany. Deutsche Telekom reported total revenues of EUR101.0 billion (\$113.5 billion) including EUR27.9 billion (\$31.2 billion) in Germany.

Verizon Communications Inc. is an US multinational telecommunications conglomerate and leading mobile service provider. The company operates one of the most extensive wireless networks in the US under the Verizon brand and through wholesale and other arrangements. As of December 31, 2020, the group served 94.4 million prepaid and postpaid wireless communication customers and achieved service revenue of \$64.88 billion.

Vodafone Group Plc is a British multinational telecommunications company with over 625 million global customers including 300 million mobile customers. The company provides a range of mobile services, enabling

customers to call, text and access data whether at home or travelling abroad. During FY2021, 77%, or GBP43.8 billion (\$55.4 billion), of its revenue was generated in Europe

Telefónica, S.A. is a Spanish multinational telecommunications company and one the largest telecommunications service providers in the world. The company primarily operates in Europe and Latin America and served 266 million prepaid and postpaid mobile customers globally in 2020. The company is a leading player in the German, Spanish, UK and Brazilian markets. In 2020, Telefónica reported revenues of EUR43.07 billion (\$48.4 billion).

6.2. What strategies do leading players follow?

The emergence of the 5th generation mobile network (5G) - a new global wireless standard designed to connect machines, objects, and devices - has created a strong demand for new mobile phones. Therefore, providing customers with 5G coverage has become a priority for most mobile phone service companies. China Mobile has taken steps to encourage customers to subscribe to 5G packages, using 5G devices, accelerated 5G migration and promoted the development of 5G through the companies '5G+'. As of the end of June 2020, China Mobile has accumulatively deployed and put in use 188,000 5G base stations in over 50 cities in China to provide commercialized 5G services. The number of 5G package consumers totaled 70.2 million, around 7.4% of the company's mobile subscribers.

China Mobile has adjusted its business model to focus on four core markets: the customer market, the home market, the business market and the new market (CHBN). The market focus is primarily on the development of 4G and 5G networks to maintain the company's market leading position in China in terms of handset data traffic and leading position in the commercialization of 5G technologies.

China Telecommunications Corporation has achieved 187.8 million 5G subscriptions, while this is lower than China Mobile, it accounts for 50% of the company's total mobile customers and leads the market in terms of the percentage of customers it has transferred onto 5G packages. In comparison, during 2020, China Unicom's 5G package subscribers reached 70.83 million, and the penetration rate of 5G package subscribers reached 23%. Applications such as e-Surfing ultra HD, cloud gaming and cloud VR are becoming increasingly popular in China which is driving demand for fast speed 5G networks.

China Telecom and China Unicom entered into a strategic cooperation agreement in 2016 to promote resource-sharing between the two companies. The areas of strategic cooperation include sharing capital expenditures such as their new rural 4G network, promoting a new smartphone standard, and jointly negotiating international roaming rates. In 2019, China Telecom collaborated with CUCL, a wholly-owned subsidiary of China Unicom. Together the companies have accelerated the roll-out of 5G networks by co-building and co-sharing. This has enabled them to leverage their complementary network and spectrum resources to save costs on network construction, operation and maintenance. In response China Mobile is also considering external cooperation for 5G network construction and sharing and has been in discussion with certain third parties to explore the potential cooperation arrangement.

Verizon deployed commercial 5G services for the first time April 3, 2019. Initially It was made available in in parts of Chicago and Minneapolis. By December 2020, 230 million people were able to access Verizon's 5G capabilities. Dynamic Spectrum Sharing technology has allowed the company to use its full portfolio of current spectrum resources to serve both 4G and 5G on the same radio waves. This has allowed the company to save expenditure on 5G infrastructure and accelerate the roll-out of 5G services across the US.

During 2020 T-Mobile expanded its 5G network across the US, delivering 5G speeds by the end of the year, its 5G network covered nearly 280 million people via the 600 MHz band and 106 million people with Ultra Capacity 5G in the 2.5 GHz band. Ultra-Capacity. Its 5G mobile services are available in more than 2,000 cities and towns across the country, including major markets such as Chicago, Houston, Los Angeles, New York City, Philadelphia, and Washington D.C. The coverage of 106 million people surpassed the company's aggressive goal of 100 million Americans by the end of 2020. The company announced five-year, multi-billion-dollar agreements with both Ericsson and Nokia to continue the expansion of its 5G network. In response to the acceleration of T-Mobile's 5G network roll-out, AT&T and Verizon reportedly petitioned the government regulator, FCC to block T-Mobile from accessing additional 5G spectrum, arguing that T-Mobile's low and mid-band holdings already exceed the

spectrum screen limits - a benchmark used to ensure organizations hold fair and reasonable levels of spectrum holdings.

Deutsche Telekom has started to offer new convergence plans to add value to mobile packages by combining mobile and fixed-line services. On September 22, 2020, the group launched its MagentaEINS Plus rate plan, the company's first fully integrated product – fixed-line and mobile network in a single contract. The plan gives customers unlimited data in Germany for the domestic internet connection and mobile surfing including 5G and has been successful in acquiring new customers looking for convenient mobile packages. The MagentaEINS convergence product remains very popular among customers, with some 5.1 million customers having opted for MagentaEINS by the end of 2020. In addition, Deutsche Telekom continued to exploit add-on services such as video streaming, music streaming and gaming by offering its StreamOn packages which allows customers to use these features without reducing their included data allowance. Customers of StreamOn packages can stream certain music, gaming, or video services without reducing their included data allowance. At the end of 2020, almost 4 million customers were using this option, up by around 30 % year-on-year. New convergence plans have helped increase the number of Deutsche mobile contracts. During 2020, Deutsche Telekom won a total of 2.3 million mobile customers in 2020. Of these, 649 thousand were high-value contract customers under the company's Telekom and congstar brands.

Vodafone is also moving towards convergence packages, introducing its new Vodafone Together, which combines mobile and broadband in one bill. In June 2021, Vodafone announced EVO, the company's new mobile plan which enables Pay Monthly mobile customers to choose how much they want to pay up front for their smartphone, smartwatch or tablet, and over how long it will take them to pay it off, from 12 to 36 months. Customers can also choose a number of additional services including Battery Refresh, Unlimited Data Boost, entertainment (Amazon Prime, Spotify Premium or YouTube Premium), roaming in 81 destinations and free 5G roaming.

In 2019, Telefónica approved a five-point plan which included five strategic decisions: focus investment and growth in the most important markets of the company (Spain, Brazil, the UK and Germany); the creation of Telefónica Tech; the creation of Telefónica Infra; operational spin-off of Hispanoamérica; and the redefinition of the corporate center.

Telefónica is operational in 14 different countries, but 80% of its company revenues are generated in its four core markets. By streamlining its business and focusing investments in Spain, Brazil, the UK and Germany, the company hopes to capitalize on potential growth during a new era of mobile connectivity. This includes the roll-out of 5G networks in each of these markets. Telefónica has switched on its 5G network in the company's four core markets; in Spain it achieved 75% nationwide coverage by the end of 2020 and proceeded with the launch of commercial 5G services during September 2020.

In 2020, Telefónica partnered with The Walt Disney Company Iberia to deliver Disney+ services to consumers. The group's Movistar is now an exclusive distributor of Disney+, a world leading video streaming services, in Spain. The company can converge its mobile contracts with Disney+ subscriptions to attract consumers to its mobile plans.

6.3. Have there been any significant mergers or acquisitions in recent years?

In February 2020, the Federal Court of Australia approved the proposed merger of Vodafone Hutchison Australia and TPG Telecom Limited ruling that it would not substantially lessen competition. The Australian Competition and Consumer Commission (ACCC) subsequently announced it would not appeal the court decision. Vodafone and Hutchison Telecommunications Limited each own an economic interest of 25.05% in the merged entity, with TPG shareholders owning the remaining 49.9%. The merger was part of the group's decision to reshape its business focusing on two scale platforms in Europe and Africa. The new company, TPG Telecom Limited, combines a mobile network covering more than 22 million Australians. During November 2020, Optus announced plans to acquire Australia's leading mobile virtual network operator, Amaysim. The deal is valued at \$250 million and subject to completion conditions, including the company's shareholder approval, and payment adjustments. However, if approved, Optus will increase its customer base by almost 1.2 million mobile contracts.

In September 2021, Qatari multinational telecommunications company, Ooredoo Group and CK Hutchison announced a \$6.0 billion merger of their Indonesian businesses to create a new world-class digital telco for Indonesia. Under the conditions of the merger, Indosat Ooredoo and Hutchison 3 Indonesia (H3I) joined forces creating PT Indosat Ooredoo Hutchison Tbk, a deal which was completed January 4, 2022. The merger combines two of Indonesia's largest telcos creating the country's second largest market player with an estimated annual revenue of approximately \$3 billion. Indosat Ooredoo Hutchison now has the scale, financial strength and capabilities needed to accelerate Indonesia's economic growth and transformation into a digital society, while putting pressure on Telkomsel who is expected to experience greater rivalry from its new competition.

The most significant deal in the US mobiles market in 2020 was a merger between T-Mobile US Inc and the fourth-largest mobile network operator in the US, Sprint Corporation. The \$23 billion merger was eventually completed on April 1, 2020, after going through numerous competition investigations, creating a new company which continues to operate under the T-Mobile brand name. Not only has the merger expanded the brand's mobile subscriber base, but it has also accelerated the deployment of nationwide 5G networks by combining both company's infrastructure. To ease anticompetitive concerns, T-Mobile agreed with the Department of Justice and the Federal Communications Commission to divest Sprint's prepaid wireless business to DISH Network Corporation as part of the merger process. This was fulfilled on July 1, 2020, with T-Mobile receiving approximately \$1.4 billion. However, new and existing DISH wireless customers will have full access to the new T-Mobile network in a phased approach through a mobile virtual network operator (MVNO) arrangement, as well as through an infrastructure mobile network operator (MNO) arrangement. The company is confident that synergies achieved from the integration on Sprint has the potential to unlock massive scale and unleash at least \$43 billion in value for shareholders.

During September 2020, Verizon announced its intentions to acquire TracFone Wireless, Inc - the largest reseller of wireless services in the US, serving approximately 21 million subscribers through a network of over 90,000 retail locations nationwide. The current owner, América Móvil, plans to sell the business for \$3.125 billion in cash and \$3.125 billion in Verizon common stock as well as an additional \$650m in future cash consideration related to the achievement of certain performance measures and other commercial arrangements. More than 13 million Tracfone subscribers currently rely on Verizon's wireless network through an existing wholesale agreement. However, the company is confident the acquisition will help the company capitalize on consumers seeking value wireless plans with improved experiences and enhanced services, including fixed wireless residential broadband solutions, 5G access and expanded international calling and roaming options.

During May 2020, Telefónica announced it would be merging its UK operations with Liberty Global - an Anglo-Dutch-American multinational telecommunications company with 3.3 million mobile customers in the UK and 5.6m fixed line customers serviced by its Virgin Media brand. Not only did the 50:50 joint venture expand Telefónica's base mobile subscriptions in the UK but it also significantly improved the group's broadband network. The company intends to utilize Virgin Media's giga-ready network and O2's 5G mobile deployment to provide customers with fully converged platform services. However, the mega merger which is valued at GBP31bn (\$39.2bn) is currently under investigation from the UK's Competition and Markets Authority (CMA) over fears the merger could have an impact on competition in the telecommunications market.

During September 2020, Verizon announced its intentions to acquire TracFone Wireless, Inc - the largest reseller of wireless services in the US, serving approximately 21 million subscribers through a network of over 90,000 retail locations nationwide. The current owner, América Móvil, plans to sell the business for \$3.125 billion in cash and \$3.125 billion in Verizon common stock as well as an additional \$650 million in future cash consideration related to the achievement of certain performance measures and other commercial arrangements. More than 13 million Tracfone subscribers currently rely on Verizon's wireless network through an existing wholesale agreement. However, the company is confident the acquisition will help the company capitalize on consumers seeking value wireless plans with improved experiences and enhanced services, including fixed wireless residential broadband solutions, 5G access and expanded international calling and roaming options.

Vodafone is also planning to spin off its Pan-European mobile mast company which is known as TowerCo. The company will become Europe's largest towers company, comprised of 61,700 Vodafone masts across 10 countries, with 75% of the sites in principal European markets Germany, the UK, Italy and Spain. The proceeds, which could reach a value of EUR20 billion (\$22 billion), will be used to pay down Vodafone's mounting debt pile, which will reach EUR48 billion (\$54 billion) after the company completes its EUR18.4 billion (\$20.7 billion) deal to buy Liberty Global's German and eastern European cable assets to cover the costs of the company's 5G spectrum

bids. However, the sale of TowerCo will sacrifice approximately EUR1.7bn (\$1.9 billion) of annual revenue and EUR900 million (\$1.01 billion) of profit each year.

7. Company Profiles

7.1. China Mobile Communications Group Co., Ltd

7.1.1. Company Overview

China Mobile Communications Group Co., Ltd (CMC) is telecommunication service provider. The company provides mobile voice communication services through its subsidiary China Mobile Limited. It offers data, internet protocol telephone and multimedia services. CMC provides services such as local call, domestic long-distance call, domestic roaming, international long-distance call, international roaming, e-mail communication, caller identity, reminder, call forwarding, mobile newspaper, call conceal, CRBT, conference call, mobile Internet, voice mailbox, call barring, GSM and GPRS roaming, mobile short messages, multimedia message, mobile data application and wireless music club services. The company also provides support center services such as service hall, on-line service center, hotline and text message service center. CMC is headquartered in Central, Hong Kong.

7.1.2. Key Facts

Table 5: China Mobile Communications Group Co., Ltd: key facts	
Head office:	60 Floor The Center, 99 Queen's Road Central, Central, Hong Kong Special Administrative Region of China
Website:	www.chinamobileltd.com
Financial year-end:	April
SOURCE: COMPANY WEBSITE	
© GlobalData	

Table 6: China Mobile Communications Group Co., Ltd: Key Employees

Name	Job Title	Board
Dong Xin	Chief Financial Officer	Executive Board
Dong Xin	Director	Executive Board
Dong Xin	Vice President	Executive Board
Grace Wong	Secretary	Senior Management
Moses Cheng Mo Chi	Director	Executive Board
Paul Chow Man Yiu	Director	Non Executive Board
Stephen Yiu Kin Wah	Director	Non Executive Board
Yang Jie	Chairman	Executive Board
Yang Qiang	Director	Non Executive Board
SOURCE: COMPANY FILINGS		© GlobalData

7.2. China Telecom Corporation Limited

7.2.1. Company Overview

China Telecom Corporation Limited (China Telecom or 'the company') is an integrated information service provider. The company offers a range of telecommunications services including wireline voice services, mobile voice services, internet access services, value-added services, integrated information application services, information application services, outsourcing services, and network equipment services and other related services. China Telecom also provides wireline, internet and mobile value-added services including super cordless telephone services, SMS, caller ID services, color ring tone services, and telephone payment services. China Telecom through its subsidiaries operates in various geographical regions including the Americas, Europe, Asia-Pacific and Africa. The company is headquartered in Beijing, China.

The company reported revenues of (Renminbi) CNY393,561 million for the fiscal year ended December 2020 (FY2020), an increase of 4.7% over FY2019. In FY2020, the company's operating margin was 7.3%, compared to an operating margin of 7.7% in FY2019. In FY2020, the company recorded a net margin of 5.3%, compared to a net margin of 5.5% in FY2019. The company reported revenues of CNY110,004 million for the third quarter ended September 2021, a decrease of 2.1% over the previous quarter.

7.2.2. Key Facts

Table 7: China Telecom Corporation Limited: key facts	
Head office:	31 Jinrong Street, Xicheng District, , Beijing, Beijing, China
Telephone:	861058501800
Fax:	861066010728
Number of Employees:	281192
Website:	www.chinatelecom-h.com
Financial year-end:	December
Ticker:	728
Stock exchange:	Hong Kong Stock Exchange
SOURCE: COMPANY WEBSITE	
© GlobalData	

7.2.3. Business Description

China Telecom Corporation Limited (China Telecom or 'the company') offers a range of telecommunications services, including wireline voice services, mobile voice services, internet access services and value-added services. The company also offers integrated information application services, telecommunications network resource services and lease of network equipment services and other related services. It primarily operates in China.

The company classifies its business operations into five reportable segments: internet services, voice services, information and application services, telecommunications network resource and equipment services, and others.

Under internet services segment, it provides wireline internet access services, including dial-up and broadband services, and wireless internet access services. As of December 2020, the company had 153.5 million wireline broadband subscribers. In FY2020, the internet services segment reported revenue of CNY208,019 million, which accounted for 52.9% of the company's revenue.

Under voice services segment, the company offers services such as local calls, domestic long distance calls, international long distance calls, intra-provincial roaming, inter-provincial roaming and international roaming. As

of December 2020, the company had a mobile subscriber base of 351 million and 107.9 million wireline telephone subscribers. In FY2020, the voice services segment reported revenue of CNY40,866 million, which accounted for 10.4% of the company's revenue.

Under information and application services segment, it provides various services such as Internet protocol TV, Whole-home WiFi, Family Cloud, e-Surfing Webcam, IDC, cloud computing, content delivery networks, Big Data, digital platform and system integration related services. It also provides caller display, SMS, multimedia messaging services, email services and music related content and applications services. As of December 2020, the company had 115.9 million e-surfing HD subscribers, and 237.6 million IoT connected devices. In FY2020, the information application services segment reported revenue of CNY96,885 million, which accounted for 24.6% of the company's revenue.

Under telecommunications network resource and equipment services segment, the company provides services relating to optic fiber and circuits such as the use of optic fiber and circuit; virtual private network; and use of bandwidth. It offers its services to large enterprise customers such as government authorities, large corporations and institutions. It also collaborates with various international telecommunications service providers to build global communications networks for multinational corporations. In FY2020, the segment reported revenue of CNY22,623 million, which accounted for 5.7% of the company's revenue.

Under others segment, the company is involved in sales, repairs and maintenance of customer-end equipment. In FY2020, the others segment reported revenue of CNY25,168 million, which accounted for 6.4% of the company's revenue.

Table 8: China Telecom Corporation Limited: Annual Financial Ratios

Key Ratios	2016	2017	2018	2019	2020
Growth Ratios					
Sales Growth %	6.44	3.88	2.97	-0.37	4.74
Operating Income Growth %	2.94		5.49	1.24	-1.48
EBITDA Growth %	1.12	7.37	1.99	12.48	1.42
Net Income Growth %	-10.15	3.32	13.93	-3.27	1.62
EPS Growth %	11.78	3.32	13.93	-3.27	20.54
Working Capital Growth %	37.78	-16.79	-8.80	2.99	-2.27
Equity Ratios					
EPS (Earnings per Share) CNY	0.22	0.23	0.26	0.25	0.31
Dividend per Share CNY	0.09	0.10	0.11	0.11	0.11
Dividend Cover Absolute	2.37	2.40	2.39	2.27	2.90
Book Value per Share CNY	3.90	4.03	4.24	4.36	4.49
Profitability Ratios					
Gross Margin %	72.69	74.73	76.65	87.47	87.23
Operating Margin %	7.72	7.43	7.61	7.74	7.28
Net Profit Margin %	5.11	5.08	5.62	5.46	5.30
Profit Markup %	266.11	295.74	328.21	698.21	683.11
PBT Margin (Profit Before Tax) %	6.84	6.81	7.46	7.19	6.96
Return on Equity %	5.71	5.71	6.18	5.82	5.74
Return on Capital Employed %	8.16	7.06	7.10	6.63	6.45
Return on Assets %	2.81	2.83	3.20	3.00	2.94
Return on Working Capital %	-11.11	-13.35	-15.44	-15.18	-15.31
Operating Costs (% of Sales) %	92.28	92.57	92.39	92.26	92.72
Administration Costs (% of Sales) %	45.19	46.37	48.58	53.18	52.50
Liquidity Ratios					
Current Ratio Absolute	0.23	0.26	0.28	0.28	0.31
Quick Ratio Absolute	0.22	0.24	0.26	0.27	0.30
Cash Ratio Absolute	0.08	0.07	0.06	0.08	0.09
Leverage Ratios					
Debt to Equity Ratio Absolute	0.36	0.32	0.28	0.34	0.26
Net Debt to Equity Absolute	0.27	0.25	0.21	0.27	0.17
Debt to Capital Ratio Absolute	0.26	0.24	0.22	0.26	0.21
Efficiency Ratios					
Asset Turnover Absolute	0.55	0.56	0.57	0.55	0.56
Fixed Asset Turnover Absolute	0.77	0.77	0.79	0.75	0.74
Inventory Turnover Absolute	16.91	20.06	19.67	12.21	16.22
Current Asset Turnover Absolute	4.63	5.03	5.22	5.14	5.01
Capital Employed Turnover Absolute	1.06	0.95	0.93	0.86	0.89
Working Capital Turnover Absolute	-1.44	-1.80	-2.03	-1.96	-2.10
SOURCE: COMPANY FILINGS				© GlobalData	

Table 9: China Telecom Corporation Limited: Key Employees

Name	Job Title	Board
Chen Shengguang	Director	Non Executive Board
Ke Ruiwen	Chairman	Executive Board
Ke Ruiwen	Chief Executive Officer	Executive Board
Li Zhengmao	Chief Operating Officer	Executive Board
Li Zhengmao	Director	Executive Board
Li Zhengmao	President	Executive Board
Liu Guiqing	Director	Executive Board
Liu Guiqing	Executive Vice President	Executive Board
Shao Guanglu	Director	Non Executive Board
Tse Hau Yin Aloysius	Director	Non Executive Board
Wang Hsuehming	Director	Non Executive Board
Xu Erming	Director	Non Executive Board
Yeung Chi Wai Jason	Director	Non Executive Board
Zhang Zhiyong	Executive Vice President	Senior Management
SOURCE: COMPANY FILINGS		© GlobalData

7.3. Deutsche Telekom AG

7.3.1. Company Overview

Deutsche Telekom AG (Deutsche Telekom or 'the company') is an integrated telecommunications services provider. The company offers fixed network or broadband and mobile communications, IPTV products and services for consumers, and information, communication and technology solutions for business customers and multinational corporations. It markets services under T-Systems, T-Mobile, and T-Home brand names. It sells terminal equipment and other hardware products to resellers, and mobile services to resellers and to companies that buy network services and market them to third parties such as mobile virtual network operators. The company presented across Europe, North America, South America, Asia, and Africa. Deutsche Telekom is headquartered in Bonn, North Rhine-Westphalia, Germany.

The company reported revenues of (Euro) EUR108,794 million for the fiscal year ended December 2021 (FY2021), an increase of 7.7% over FY2020. In FY2021, the company's operating margin was 12%, compared to an operating margin of 12.7% in FY2020. In FY2021, the company recorded a net margin of 3.8%, compared to a net margin of 4.1% in FY2020.

7.3.2. Key Facts

Table 10: Deutsche Telekom AG: key facts	
Head office:	Friedrich-Ebert-Allee 140 , Bonn, Germany
Telephone:	4922818188880
Fax:	4922818188899
Number of Employees:	216528
Website:	www.telekom.com
Financial year-end:	December
Ticker:	DTE
Stock exchange:	XETRA
SOURCE: COMPANY WEBSITE	
© GlobalData	

7.3.3. Business Description

Deutsche Telekom AG (Deutsche Telekom or 'the company') provides information technology (IT) and telecommunications services. The company offers a range of mobile and fixed telecommunications services, IT, internet and network services. It operates in more than 50 countries in four regions, including Europe, Asia, Europe, the Americas and Africa. As of December 2020, the company had 241.8 million mobile customers, 27.4 million fixed network customers, 21.7 million broadband customers. It had 48.5 million mobile customers in Germany, 17.6 million fixed network, 14.1 million broadband lines, and 3.9 TV customers. Apart from this, it had 81.4 million postpaid customers and 20.7 million prepaid customers.

The company's operations span across six business segments: the US, Germany, Europe, Systems Solutions, Group Development, and Group Headquarters and Services.

The US segment includes all mobile activities in the US market. In FY2020, the larger T Mobile US recorded an addition of approximately 5.5 million postpaid customers. In FY2020, the US segment reported revenue of EUR61,208 million, which accounted for 57.8% of the company's revenue.

The Germany segment offers all fixed-network and mobile services to business customers and consumers in Germany. It also provides wholesale telecommunications services to carriers and other operating segments of

the company. As of December 2020, in mobile communications, the company had more than 650,000 customers in Germany under the Telekom and congstar brand names. In FY2020, the Germany segment reported revenue of EUR23,779 million, which accounted for 22.4% of the company's revenue.

The Europe segment comprises all fixed-network and mobile operations of the national companies in Greece, Hungary, Poland, Romania, the Czech Republic, Croatia, Austria, the Netherlands, Slovakia, Albania, Macedonia, and Montenegro. It also offers information and communications technology (ICT) solutions to business customers. The Europe operating segment also includes the Deutsche Telekom Global Carrier (TGC) that provides wholesale telecommunications services to third parties and the operating segments. In FY2020, approximately 670,000 customers subscribed to a new mobile contract in Europe. In FY2020, the Europe segment reported revenue of EUR11,335 million, which accounted for 10.7% of the company's revenue.

The Systems Solutions segment offers convergent products and solutions, such as digitalization, mobile and fixed communications, security, and IT infrastructure services to business customers. In FY2020, the systems solutions segment reported revenue of EUR4,178 million, which accounted for 3.9% of the company's revenue.

The Group Development segment includes the operations of Deutsche Funkturm, T-Mobile Netherlands, Deutsche Telekom Capital Partners (DTCP), and Stoer SE & Co. KGaA. In FY2020, the group development segment reported revenue of EUR2,883 million, which accounted for 2.7% of the company's revenue.

The company's Group Headquarters and Group Services segment comprises all the company's units that cannot be allocated directly to any of the operating segments. It offers financial accounting, operational procurement, and human resources services. The segment also provides agency services through Vivento. In FY2020, the group headquarters and Group Services segment accounted for EUR2,556 million, which accounted for 2.4% of the company's revenue.

Table 11: Deutsche Telekom AG: Annual Financial Ratios

Key Ratios	2017	2018	2019	2020	2021
Growth Ratios					
Sales Growth %	2.53	0.95	6.44	25.42	7.72
Operating Income Growth %	2.39	-14.46	17.83	35.39	1.87
EBITDA Growth %	6.32	-8.79	22.59	40.60	6.78
Net Income Growth %	29.42	-37.44	78.49	7.58	0.41
EPS Growth %	58.31	-3.98	47.08	29.56	2.59
Working Capital Growth %	7.49	4.30	13.06	-101.92	-102.53
Equity Ratios					
EPS (Earnings per Share) EUR	0.84	0.81	1.19	1.54	1.58
Dividend per Share EUR	0.65		0.60		
Book Value per Share EUR	6.48	6.52	6.69	7.57	8.58
Profitability Ratios					
Gross Margin %	52.17	52.76	57.15	58.50	56.96
Operating Margin %	12.52	10.61	11.74	12.68	11.99
Net Profit Margin %	4.62	2.86	4.80	4.12	3.84
Profit Markup %	109.07	111.68	133.36	140.96	132.36
PBT Margin (Profit Before Tax) %	6.66	6.81	9.02	8.59	7.28
Return on Equity %	11.26	7.01	12.19	11.58	9.78
Return on Capital Employed %	8.23	6.91	6.86	5.62	5.37
Return on Assets %	2.39	1.51	2.45	1.91	1.53
Return on Working Capital %	-134.54	-110.34	-114.99	8103.80	-326100.00
Operating Costs (% of Sales) %	87.48	89.39	88.26	87.32	88.01
Administration Costs (% of Sales) %	22.54	23.21	22.08	19.62	18.00
Liquidity Ratios					
Current Ratio Absolute	0.75	0.75	0.75	1.00	1.00
Quick Ratio Absolute	0.67	0.69	0.70	0.93	0.93
Cash Ratio Absolute	0.12	0.13	0.16	0.35	0.20
Leverage Ratios					
Debt to Equity Ratio Absolute	1.80	1.93	2.62	3.82	3.33
Net Debt to Equity Absolute	1.69	1.81	2.45	3.46	3.15
Debt to Capital Ratio Absolute	0.64	0.66	0.72	0.79	0.77
Efficiency Ratios					
Asset Turnover Absolute	0.52	0.53	0.51	0.46	0.40
Fixed Asset Turnover Absolute	1.60	1.55	1.36	1.27	1.18
Inventory Turnover Absolute	19.84	18.94	20.55	19.66	16.87
Current Asset Turnover Absolute	3.19	3.58	3.46	3.26	2.86
Capital Employed Turnover Absolute	0.66	0.65	0.58	0.44	0.45
Working Capital Turnover Absolute	-10.75	-10.40	-9.79	639.23	-27198.50
SOURCE: COMPANY FILINGS				© GlobalData	

Table 12: Deutsche Telekom AG: Key Employees

Name	Job Title	Board
Adel Al-Saleh	Chief Executive Officer T Systems	Senior Management
Armin Sumesgutner	Chief Technology Officer Europe	Senior Management
Birgit Bohle	Chief Human Resources Officer	Senior Management
Birgit Bohle	Director Labor	Senior Management
Christian P. Illek	Chief Financial Officer	Senior Management
Claudia Nemat	Head Technology and Innovation	Senior Management
Constantin Greve	Director	Non Executive Board
Dagmar P. Kollmann	Director	Non Executive Board
Dina Tsybulskaaya	Chief Executive Officer Telekom Romania Mobile Communications	Senior Management
Dominique Leroy	Head Europe	Senior Management
Frank Sauerland	Director	Non Executive Board
Gottfried Ludewig	Senior Vice President Healthcare Division, T Systems International	Senior Management
Gunther Braunig	Director	Non Executive Board
Harald Kruger	Director	Non Executive Board
Helga Jung	Director	Non Executive Board
Karin Topel	Director	Non Executive Board
Karl-Heinz Streibich	Director	Non Executive Board
Kerstin Marx	Director	Non Executive Board
Lars Hinrichs	Director	Non Executive Board
Lothar Schroder	Director	Non Executive Board
Margret Suckale	Director	Non Executive Board
Michael Kaschke	Director	Non Executive Board
Nicole Koch	Director	Non Executive Board
Nicole Seelemann-Wandtke	Director	Non Executive Board
Odysseus D. Chatzidis	Director	Non Executive Board
Petra Steffi Kreusel	Director	Non Executive Board
Rolf Bosinger	Director	Non Executive Board
Sibylle Spoo	Director	Non Executive Board
Srini Gopalan	Managing Director Telekom Deutschland GmbH	Senior Management
Thorsten Langheim	Head USA and Group Development	Senior Management
SOURCE: COMPANY FILINGS		© GlobalData

Table 13: Deutsche Telekom AG: Key Employees Continued

Name	Job Title	Board
Timotheus Hottges	Chief Executive Officer	Senior Management
Ulrich Lehner	Chairman	Non Executive Board
Urs M. Kramer	Chief Commercial Officer, T-Systems International GmbH	Senior Management
SOURCE: COMPANY FILINGS		© GlobalData

7.4. Telefonica, S.A.

7.4.1. Company Overview

Telefonica, S.A. (Telefonica or 'the company') provides communication services, including mobile and fixed communication services. The company's services include wireline, wireless, digital subscriber line, television, and other digital services. It also offers mobile business, digital services and value-added services, wholesale services to telecommunication operators, business solutions and services. The company executes contact center operations, and customer relationship management solutions. Its major brands include Movistar, Vivo, Telefonica, and O2. Through subsidiaries, the company operates across Europe (Spain, the UK, and Germany) and Latin America (Argentina, Chile, Peru, Colombia, Mexico, Venezuela, Central America, Ecuador and Uruguay). Telefonica is headquartered in Madrid, Spain.

The company reported revenues of (Euro) EUR39,277 million for the fiscal year ended December 2021 (FY2021), a decrease of 8.8% over FY2020. In FY2021, the company's operating margin was 34.6%, compared to an operating margin of 9.6% in FY2020. In FY2021, the company recorded a net margin of 20.7%, compared to a net margin of 3.7% in FY2020.

7.4.2. Key Facts

Table 14: Telefonica, S.A.: key facts	
Head office:	Gran Via 28 , Madrid, Madrid , Spain
Telephone:	34911721589
Fax:	34914827987
Number of Employees:	104150
Website:	www.telefonica.es
Financial year-end:	December
Ticker:	TEF
Stock exchange:	Mercado Continuo Espana
SOURCE: COMPANY WEBSITE	
© GlobalData	

7.4.3. Business Description

Telefonica S.A. (Telefonica or "the company") is a telecommunications company with a diversified telecommunications network that provides a range of services. The company offers wireline, wireless, DSL, VoIP, TV, and other digital services. Telefonica has operations in 13 countries. As of December 2020, the company catered 345 million customers.

The company operates through seven business segments: Telefonica Spain, Telefonica Brazil, Telefonica Germany, Telefonica UK, Telefonica Hispam, Telxius Group, and Other Companies. These segments are engaged in providing wireless, wireline, Voice over IP (VoIP), cable, internet, broadband, mobile and Pay TV services, television businesses and other digital services.

Telefonica Spain offers fixed telephony, internet and data, mobile communications, Pay-TV, and wholesale services in Spain. As of December 2020, Telefonica Spain had 41.3 million total accesses. In FY2020, the Telefonica Spain segment reported revenue of EUR12,118 million, which accounted for 28.1% of the company's revenue.

Telefonica Brazil manages the company's telecommunications operations in Brazil. As of December 2020, the segment had 95.2 million total access. In FY2020, the Telefonica Brazil segment reported revenue of EUR7,406 million, which accounted for 17.2% of the company's total revenue.

Telefonica Germany serves the German market. As of December 2020, the segment had 48.8 million total access. In FY2020, the Telefonica Germany segment reported revenue of EUR7,500 million, which accounted for 17.4% of the company's total revenue.

Telefonica UK provides fixed telephony, internet and data, and mobile communications in the UK. As of December 2020, Telefonica UK had 36.5 million total access. In FY2020, the Telefonica UK segment reported revenue of EUR6,666 million, which accounted for 15.5% of the company's total revenue.

Telefonica Hispam offers the fixed and mobile telephony services, broadband, internet, data, broadband, television, value added services operations and their development in Colombia, Mexico, Central America, Ecuador and Venezuela. As of December 2020, Telefonica Hispam Norte had 64 108.5 million total access. In FY2020, the Telefonica Hispam segment reported revenue of EUR7,786 million, which accounted for 18.1% of the company's total revenue.

The Telxius Group of the company offers fixed wireless, mobile, Voice over IP (VoIP), Pay TV, FTTx and broadband services in Argentina, Peru, Chile, and Uruguay. In FY2020, the Telxius Group segment reported revenue of EUR322 million, which accounted for 0.7% of the company's total revenue.

The company's Other Companies segment offers cross-sectional services to other companies. In FY2020, the segment reported revenue of EUR1,288 million, which accounted for 3% of the company's total revenue.

Table 15: Telefonica, S.A.: Annual Financial Ratios

Key Ratios	2017	2018	2019	2020	2021
Growth Ratios					
Sales Growth %	-0.05	-6.37	-0.56	-11.04	-8.82
Operating Income Growth %	24.17	-3.96	-30.44	-8.77	228.24
EBITDA Growth %	7.07	-3.81	-2.90	-10.72	62.86
Net Income Growth %	32.21	6.35	-65.72	38.53	414.35
EPS Growth %	32.61	17.70	-77.99	147.58	-121.78
Working Capital Growth %	-40.98	-30.94	-7.07	-194.46	-110.22
Equity Ratios					
EPS (Earnings per Share) EUR	0.47	0.55	0.12	0.30	-0.07
Dividend per Share EUR	0.35	0.35	0.17		
Book Value per Share EUR	2.88	3.06	2.92	1.86	3.94
Profitability Ratios					
Gross Margin %	52.69	51.54	52.04	49.49	48.85
Operating Margin %	13.06	13.39	9.37	9.61	34.59
Net Profit Margin %	6.02	6.84	2.36	3.67	20.72
Profit Markup %	111.38	106.36	108.51	97.98	95.50
PBT Margin (Profit Before Tax) %	8.84	11.44	5.61	6.00	30.79
Return on Equity %	18.51	18.56	6.67	14.08	36.64
Return on Capital Employed %	7.90	7.73	5.12	5.38	16.23
Return on Assets %	2.62	2.91	0.98	1.41	7.60
Return on Working Capital %	-74.34	-103.38	-77.38	74.74	-2400.35
Operating Costs (% of Sales) %	86.94	86.61	90.63	90.39	65.41
Administration Costs (% of Sales) %	20.05	18.07	20.81	16.55	20.82
Liquidity Ratios					
Current Ratio Absolute	0.69	0.79	0.81	1.20	0.98
Quick Ratio Absolute	0.65	0.73	0.74	1.14	0.91
Cash Ratio Absolute	0.18	0.19	0.20	0.20	0.34
Leverage Ratios					
Debt to Equity Ratio Absolute	3.12	2.92	3.32	4.54	2.17
Net Debt to Equity Absolute	2.68	2.48	2.79	3.82	1.71
Debt to Capital Ratio Absolute	0.76	0.75	0.77	0.82	0.68
Efficiency Ratios					
Asset Turnover Absolute	0.44	0.43	0.42	0.38	0.37
Fixed Asset Turnover Absolute	1.47	1.44	1.34	1.27	1.33
Inventory Turnover Absolute	22.66	16.80	12.58	11.71	11.59
Current Asset Turnover Absolute	2.61	2.25	2.03	1.49	1.34
Capital Employed Turnover Absolute	0.60	0.58	0.55	0.56	0.47
Working Capital Turnover Absolute	-5.69	-7.72	-8.26	7.78	-69.39
SOURCE: COMPANY FILINGS				© GlobalData	

Table 16: Telefonica, S.A.: Key Employees

Name	Job Title	Board
Alfonso Gomez Palacio	Chief Executive Officer Telefonica Hispam	Senior Management
Angel Vila Boix	Chief Operating Officer	Executive Board
Angel Vila Boix	Director	Executive Board
Antonio Garcia-Mon Maranes	Corporate Legal Services	Senior Management
Antonio Garcia-Mon Maranes	Vice General Counsel	Senior Management
Antonio Garcia-Mon Maranes	Vice Secretary	Senior Management
Bernardo Quinn	Chief Executive Officer South Hispam	Senior Management
Carmen Garcia de Andres	Director	Non Executive Board
Chema Alonso	Chief Digital Officer	Senior Management
Christian Gebara	Chief Executive Officer Telefonica Brasil	Senior Management
Claudia Sender Ramirez	Director	Non Executive Board
Eduardo Navarro de Carvalho	Chief Corporate Affairs and Sustainability Officer	Senior Management
Emilio Gayo Rodriguez	Chief Executive Officer Telefonica Spain	Senior Management
Enrique Blanco	Chief Technology and Information Officer	Senior Management
Fabian Hernandez	Chief Executive Officer Telefonica Colombia	Senior Management
Francisco Javier de Paz Mancho	Director	Non Executive Board
Francisco Jose Riberas de Mera	Director	Non Executive Board
Guillermo Ansaldo Lutz	Chief Executive Officer Telefonica Infra	Senior Management
Ignacio Moreno Martinez	Director	Non Executive Board
Isidro Faine Casas	Vice Chairman	Executive Board
Jordi Gual Sole	Director	Non Executive Board
Jose Cerdan	Chief Executive Officer Business Solutions	Senior Management
Jose Cerdan	Chief Executive Officer Telefónica Tech	Senior Management
Jose Javier Echenique Landiribar	Vice Chairman	Executive Board
Jose Maria Abril Perez	Vice Chairman	Executive Board
Jose Maria Alvarez-Pallete Lopez	Chairman	Executive Board
Jose Maria Alvarez-Pallete Lopez	Chief Executive Officer	Executive Board
Juan Ignacio Cirac Sasturain	Director	Non Executive Board
Laura Abasolo Garcia de Baquedano	Chief Financial and Control Officer	Senior Management
Laura Abasolo Garcia de Baquedano	Head T. Hispam	Senior Management
SOURCE: COMPANY FILINGS		© GlobalData

Table 17: Telefonica, S.A.: Key Employees Continued

Name	Job Title	Board
Maria Garcia-Legaz	Chief Staff	Senior Management
Maria Luisa Garcia Blanco	Director	Non Executive Board
Mark Evans	Chief Strategy and Development Officer	Senior Management
Markus Haas	Chief Executive Officer Telefonica Deutschland	Senior Management
Marta Machicot	Chief People Officer	Senior Management
Pablo de Carvajal Gonzalez	Director	Executive Board
Pablo de Carvajal Gonzalez	General Council & Regulatory Affairs	Executive Board
Pablo de Carvajal Gonzalez	Secretary	Executive Board
Peter Erskine	Director	Non Executive Board
Peter Loscher	Director	Non Executive Board
Sabina Fluxa Thienemann	Director	Non Executive Board
Veronica Pascual Boe	Director	Non Executive Board
SOURCE: COMPANY FILINGS		© GlobalData

7.5. Verizon Communications Inc.

7.5.1. Company Overview

Verizon Communications Inc. (Verizon or "the company") is a provider of entertainment, communications and information products and services. The company offers wireless communications services, including voice and data services and equipment sales; and wireline communications services, including broadband data and video, security and managed network services, long distance voice services, corporate networking solutions, and global internet protocol (IP) networks. It offers products and services to retail and wholesale customers including enterprise businesses, government entities and telecommunications carriers. It has business presence across Asia-Pacific, Europe and the Americas. The company is headquartered in New York City, New York, the US.

The company reported revenues of (US Dollars) US\$133,613 million for the fiscal year ended December 2021 (FY2021), an increase of 4.1% over FY2020. In FY2021, the company's operating margin was 23.4%, compared to an operating margin of 21.1% in FY2020. In FY2021, the company recorded a net margin of 16.5%, compared to a net margin of 13.9% in FY2020.

7.5.2. Key Facts

Table 18: Verizon Communications Inc.: key facts	
Head office:	1095 Avenue Of The Americas , New York, New York, United States
Telephone:	12123951000
Number of Employees:	118400
Website:	www.verizon.com
Financial year-end:	December
Ticker:	VZ
Stock exchange:	New York Stock Exchange
SOURCE: COMPANY WEBSITE	
© GlobalData	

7.5.3. Business Description

Verizon Communications Inc. (Verizon or "the company") offers information, communications and entertainment products and services to businesses, consumers and governmental agencies. It offers a range of data, voice and video services and solutions. The company has presence in over 150 countries around the world.

The company classifies its business operations into three reportable segments: Verizon Consumer Group (Consumer), Verizon Business Group (Business), and Corporate and Other.

The Consumer segment comprises of wireless and wireline communication services and products which segment offers wireless voice and data services and equipment sales to consumer, business and government customers across the US. Verizon offers these services under the Verizon Wireless brand. The company offers wireless services on a postpaid and prepaid basis. Postpaid connections represent individual line of service for a wireless device for which a customer is billed one month in advance a monthly access charge in return for access to and usage of network service. The company's prepaid service enables individuals to obtain wireless services without credit verification by paying for all services in advance. The company also offers several categories of wireless devices, including smartphones, tablets, other internet access devices and basic phones. The Wireline provides voice, data and video communications products and enhanced services, including broadband video and data, corporate networking solutions, security and managed network services and local and long distance voice services. The company provides these services to consumers in the US, carriers, businesses and government

customers across the world. Based on targeted primary customers, the company's Wireline business consists of four customer groups: enterprise solutions, consumer markets, business markets and partner solutions. Consumer markets provide residential fixed connectivity solutions including Internet, TV, and voice services. The company offers these services over its 100% fiber-optic network under the Fios brand and over a traditional copper-based network to customers who are not served by Fios. Enterprise solutions offers traditional circuit-based network products and services and advanced networking solutions, including Private IP, Ethernet, and Software-Defined Wide Area Network, cyber security services, along with traditional voice services, and advanced workforce productivity and customer contact center solutions. Partner solutions provides communications services including data, voice, local dial tone and broadband services primarily to local, long distance, and wireless carriers that use our facilities to provide services to their customers. Business markets offers tailored voice and networking products, Fios services, IP Networking, advanced voice solutions, security, and managed information technology (IT) services to U.S.-based small and medium businesses, state and local governments, and educational institutions. In FY2020, Consumer segment reported revenue of US\$88,533, which accounted for 68.5% of the company's revenue. As of FY2020, the Consumer segment had 6.6 million broadband connections, 3.8 million Fios video connections, and 94.4 million wireless retail connections.

Through the Business segment, it provides wireless and wireline communication services. The wireless category provides voice, data and video communications products and enhanced services, including broadband video and data, corporate networking solutions, security and managed network services and local and long distance voice services. The company provides these services to consumers in the US, carriers, businesses and government customers across the world. Based on targeted primary customers, the company's wireline business consists of four customer groups: enterprise solutions, consumer markets, business markets and partner solutions. Consumer markets provide residential fixed connectivity solutions including Internet, TV, and voice services. The company offers these services over its 100% fiber-optic network under the Fios brand and over a traditional copper-based network to customers who are not served by Fios. Enterprise solutions offers traditional circuit-based network products and services and advanced networking solutions, including Private IP, Ethernet, and Software-Defined Wide Area Network, cyber security services, along with traditional voice services, and advanced workforce productivity and customer contact center solutions. Partner solutions provides communications services including data, voice, local dial tone and broadband services primarily to local, long distance, and wireless carriers that use our facilities to provide services to their customers. Business markets offers tailored voice and networking products, Fios services, IP Networking, advanced voice solutions, security, and managed information technology (IT) services to U.S.-based small and medium businesses, state and local governments, and educational institutions. As of December 2020, the company had 0.5 million broadband connections and 26.5 million wireless retail postpaid connections. In FY2020, the Business segment reported revenue of US\$30,962 million which accounted for 23.9% of the company's revenue.

The Corporate and Other segment includes the results of Verizon's Media business, branded Oath, telematics, branded Verizon Connect and other businesses, investments in unconsolidated businesses, unallocated corporate expenses, pension and other employee benefit related costs and lease financing. Corporate and other also includes the historical results of divested operations and other adjustments and gains and losses that are not allocated in assessing segment performance due to their non-operational nature. In FY2020, corporate and other segment reported revenue of US\$9,334 million, which accounted for 7.2% of the company's revenue.

Table 19: Verizon Communications Inc.: Annual Financial Ratios

Key Ratios	2017	2018	2019	2020	2021
Growth Ratios					
Sales Growth %	0.04	3.83	0.77	-2.71	4.15
Operating Income Growth %	-1.51	-3.62	12.63	1.64	15.51
EBITDA Growth %	1.59	-1.06	5.52	1.10	8.41
Net Income Growth %	129.31	-48.41	24.07	-7.60	23.95
EPS Growth %	-1.24	34.29	11.09	-12.14	12.41
Working Capital Growth %	-20.81	5.44	124.50	-301.95	-169.85
Equity Ratios					
EPS (Earnings per Share) USD	3.74	5.02	5.57	4.90	5.51
Dividend per Share USD	2.32	2.37	2.42	2.47	2.52
Dividend Cover Absolute	1.61	2.12	2.30	1.98	2.18
Book Value per Share USD	10.56	12.86	14.84	16.39	19.48
Profitability Ratios					
Gross Margin %	58.03	57.81	58.50	60.09	57.86
Operating Margin %	19.48	18.08	20.21	21.11	23.42
Net Profit Margin %	23.88	11.87	14.61	13.88	16.51
Profit Markup %	138.29	137.05	140.96	150.57	137.32
PBT Margin (Profit Before Tax) %	16.34	15.00	17.24	18.68	22.02
Return on Equity %	69.85	29.22	31.38	26.24	26.98
Return on Capital Employed %	10.95	10.43	10.79	9.78	9.79
Return on Assets %	12.01	5.95	6.92	5.85	6.46
Return on Working Capital %	-785.79	-718.28	-360.35	181.37	-299.90
Operating Costs (% of Sales) %	80.52	81.92	79.79	78.89	76.58
Administration Costs (% of Sales) %	22.98	21.59	22.32	23.41	21.65
Liquidity Ratios					
Current Ratio Absolute	0.91	0.91	0.84	1.38	0.78
Quick Ratio Absolute	0.87	0.88	0.80	1.33	0.71
Cash Ratio Absolute	0.06	0.07	0.06	0.56	0.06
Leverage Ratios					
Debt to Equity Ratio Absolute	2.72	2.13	1.82	1.90	1.84
Net Debt to Equity Absolute	2.67	2.08	1.77	1.58	1.81
Debt to Capital Ratio Absolute	0.73	0.68	0.64	0.66	0.65
Efficiency Ratios					
Asset Turnover Absolute	0.50	0.50	0.47	0.42	0.39
Fixed Asset Turnover Absolute	1.45	1.47	1.29	1.11	1.09
Inventory Turnover Absolute	47.31	46.59	39.69	31.82	23.21
Current Asset Turnover Absolute	4.48	4.05	3.66	2.79	2.93
Capital Employed Turnover Absolute	0.56	0.58	0.53	0.46	0.42
Working Capital Turnover Absolute	-40.34	-39.73	-17.83	8.59	-12.81
SOURCE: COMPANY FILINGS				© GlobalData	

Table 20: Verizon Communications Inc.: Key Employees

Name	Job Title	Board
Carol B. Tome	Director	Non Executive Board
Clarence Otis	Director	Non Executive Board
Craig L. Silliman	Chief Administrative, Legal and Public Policy Officer	Senior Management
Craig L. Silliman	Executive Vice President	Senior Management
Daniel H. Schulman	Director	Non Executive Board
Diego Scotti	Chief Marketing Officer	Senior Management
Diego Scotti	Executive Vice President	Senior Management
Gregory G. Weaver	Director	Non Executive Board
Hans Vestberg	Chairman	Executive Board
Hans Vestberg	Chief Executive Officer	Executive Board
James J. Gerace	Chief Communications Officer	Senior Management
K. Guru Gowrappan	Chief Executive Officer Verizon Media Group	Senior Management
K. Guru Gowrappan	Executive Vice President Verizon Media Group	Senior Management
Krista Bourne	Chief Operating Officer Verizon Consumer Group	Senior Management
Kyle Malady	Chief Technology Officer	Senior Management
Kyle Malady	Executive Vice President	Senior Management
Laxman Narasimhan	Director	Non Executive Board
Maggie Hallbach	Senior Vice President Public Sector	Senior Management
Manon Brouillette	Chief Executive Officer Verizon Consumer Group	Senior Management
Manon Brouillette	Executive Vice President Verizon Consumer Group	Senior Management
Manuel Sampedro	Senior Vice President Strategic Initiatives	Senior Management
Marc C. Reed	Executive Vice President	Senior Management
Mark T. Bertolini	Director	Non Executive Board
Matthew D. Ellis	Chief Financial Officer	Senior Management
Matthew D. Ellis	Executive Vice President	Senior Management
Melanie L. Healey	Director	Non Executive Board
Rima Qureshi	Chief Strategy Officer	Senior Management
Rima Qureshi	Executive Vice President	Senior Management
Rodney E. Slater	Director	Non Executive Board
Rose Stuckey Kirk	Chief Corporate Social Responsibility Officer	Senior Management
SOURCE: COMPANY FILINGS		© GlobalData

Table 21: Verizon Communications Inc.: Key Employees Continued

Name	Job Title	Board
Roxanne S. Austin	Director	Non Executive Board
Sam Hammock	Chief Human Resources Officer	Senior Management
Sam Hammock	Executive Vice President	Senior Management
Shellye L. Archambeau	Director	Non Executive Board
Tami Erwin	Chief Executive Officer Verizon Business Group	Senior Management
Tami Erwin	Executive Vice President Verizon Business Group	Senior Management
TJ Fox	Senior Vice President Industrial IoT and Automotive	Senior Management
Vittorio Colao	Director	Non Executive Board
SOURCE: COMPANY FILINGS		© GlobalData

7.6. Vodafone Group Plc

7.6.1. Company Overview

Vodafone Group Plc (Vodafone or 'the company') is a provider of telecommunications services including mobile, voice, messaging, IP-VPN, converged solutions, data, fixed broadband, internet of things (IoT), cloud and security, and carrier service. The company markets its products under Vodafone brand. It caters its services to wide range of industries including utilities, health, manufacturing, retail, automotive, consumer electronics, banking and financial services, transport and logistics, public services and smart cities, and among others. Through subsidiaries, Vodafone operates across various geographical regions including the Europe, Africa, the Middle East, and Asia Pacific. The company is headquartered in Newbury, Berkshire, the UK.

The company reported revenues of (Euro) EUR43,809 million for the fiscal year ended March 2021 (FY2021), a decrease of 2.6% over FY2020. In FY2021, the company's operating margin was 11.6%, compared to an operating margin of 9.1% in FY2020. The net profit of the company was EUR112 million in FY2021, compared to a net loss of EUR920 million in FY2020.

7.6.2. Key Facts

Table 22: Vodafone Group Plc: key facts	
Head office:	Vodafone House The Connection, , Newbury, United Kingdom
Telephone:	44163533251
Fax:	441635238080
Number of Employees:	96506
Website:	www.vodafone.com
Financial year-end:	March
Ticker:	VOD
Stock exchange:	London Stock Exchange (LON)
SOURCE: COMPANY WEBSITE	
© GlobalData	

7.6.3. Business Description

Vodafone Group Plc (Vodafone or 'the company') is a telecommunication service provider. The company operates in 22 countries. It partners with the local operators in 43 countries, offers IP-VPN service in 74 countries, and 4G roaming coverage in 168 countries. At the end of March 2021, it served 315 million mobile customers, 28 million broadband customers, 22 million TV users.

The company classifies its business operations into eight reportable segments: Germany, Italy, the UK, Spain, Other Europe, Vodacom, Other Markets, and Common Functions.

Under Germany segment, Vodafone provides fixed broadband, mobile, cloud and hosting, and Internet of Things (IoT) services. In FY2021, the Germany segment reported revenue of EUR12,984 million, which accounted for 29.4% of the company's revenue.

Under Italy segment, the company offers fixed broadband, mobile, cloud and hosting, Internet of Things (IoT), carrier services. In FY2021, the Italy segment reported revenue of EUR5,014 million, which accounted for 11.3% of the company's revenue.

Under the UK segment, it provides mobile, voice, messaging, data and fixed network services. In FY2021, the UK segment reported revenue of EUR6,151 million, which accounted for 13.9% of the company's revenue.

Under Spain segment, Vodafone provides fixed broadband, mobile, cloud and hosting, Internet of Things (IoT), carrier services. In FY2021, Spain segment reported revenue of EUR4,166 million, which accounted for 9.4% of the company's revenue.

Under Other Europe segment, it offers fixed broadband, mobile, cloud and hosting, Internet of Things (IoT), carrier services to Italy, Germany, the UK, Spain, and other European countries. In FY2021, the Other Europe segment reported revenue of EUR5,549 million, which accounted for 12.6% of the company's revenue.

Under Vodacom segment, the company provides financial services through M-Pesa brand. It operates in South Africa and certain other smaller African markets. In FY2021, the Vodacom segment reported revenue of EUR5,181 million, which accounted for 11.7% of the company's revenue.

Under Other markets segment, it also offers mobile communication, fixed line communications, TV services, financial services and cloud services. In FY2021, the Other markets segment reported revenue of EUR3,765 million, which accounted for 8.5% of the company's total revenue.

Under Common Functions segment, it mainly generated revenue from services, which offered outside of its operating areas. The segment also offers IP-VPN services in Singapore. In FY2021, the Common Functions segment reported revenue of EUR1,368 million, which accounted for 3.1% of the company's revenue.

Table 23: Vodafone Group Plc: Annual Financial Ratios

Key Ratios	2017	2018	2019	2020	2021
Growth Ratios					
Sales Growth %	-4.37	-2.23	-6.24	3.00	-2.59
EBITDA Growth %	13.78	-0.70	-39.87	106.61	5.06
Net Income Growth %	-16.50	138.73	-428.82	88.53	112.17
EPS Growth %			-141.32		
Working Capital Growth %	63.61	-11.60	-195.98	-100.97	1121.58
Equity Ratios					
EPS (Earnings per Share) EUR	-0.10	0.16	-0.07	-0.08	0.01
Dividend per Share EUR	0.15	0.15	0.09	0.09	0.09
Dividend Cover Absolute	-0.66	1.08	-0.73	-0.89	0.13
Book Value per Share EUR	2.71	2.54	2.28	2.29	1.98
Profitability Ratios					
Gross Margin %	27.41	29.63	30.93	31.78	31.32
Operating Margin %	7.82	9.23	-2.18	9.11	11.63
Net Profit Margin %	-13.22	5.24	-18.37	-2.05	0.26
Profit Markup %	37.76	42.11	44.78	46.58	45.61
PBT Margin (Profit Before Tax) %	5.86	8.33	-5.98	1.77	10.04
Return on Equity %	-8.72	3.61	-12.89	-1.50	0.20
Return on Capital Employed %	3.32	4.03	-0.81	3.04	4.03
Return on Assets %	-3.89	1.62	-5.56	-0.59	0.07
Return on Working Capital %	-22.11	-28.87	-6.65	-2948.92	-300.18
Operating Costs (% of Sales) %	92.18	90.77	102.18	90.89	88.37
Administration Costs (% of Sales) %	21.90	20.73	22.62	22.87	21.77
Liquidity Ratios					
Current Ratio Absolute	0.60	0.62	1.56	1.00	0.94
Quick Ratio Absolute	0.59	0.60	1.53	0.98	0.92
Cash Ratio Absolute	0.21	0.12	0.45	0.34	0.20
Leverage Ratios					
Debt to Equity Ratio Absolute	0.64	0.64	0.85	1.22	1.21
Net Debt to Equity Absolute	0.43	0.44	0.42	0.88	0.95
Debt to Capital Ratio Absolute	0.39	0.39	0.46	0.55	0.55
Efficiency Ratios					
Asset Turnover Absolute	0.29	0.31	0.30	0.29	0.27
Fixed Asset Turnover Absolute	1.45	1.59	1.57	1.33	1.08
Inventory Turnover Absolute	53.52	56.65	46.58	46.77	47.23
Current Asset Turnover Absolute	1.66	1.88	1.37	1.23	1.45
Capital Employed Turnover Absolute	0.42	0.44	0.37	0.33	0.35
Working Capital Turnover Absolute	-2.83	-3.13	3.05	-323.55	-25.80
SOURCE: COMPANY FILINGS				© GlobalData	

Table 24: Vodafone Group Plc: Key Employees

Name	Job Title	Board
Ahmed Essam	Chief Executive Officer Vodafone UK	Senior Management
Aldo Bisio	Chief Executive Officer, Vodafone Italy	Senior Management
Alex Froment-Curtill	Chief Commercial Officer	Senior Management
Colman Deegan	Chief Executive Officer Vodafone Spain	Senior Management
Crispin Davis	Director	Non Executive Board
Dame Clara Furse	Director	Non Executive Board
David Nish	Director	Non Executive Board
Deborah Kerr	Director	Non Executive Board
Hannes Ametsreiter	Chief Executive Officer, Vodafone Germany	Senior Management
Jean-Francois Van Boxmeer	Chairman	Executive Board
Joakim Reiter	Chief External and Corporate Affairs Officer	Senior Management
Johan Wibergh	Group Technology Officer	Senior Management
Leanne Wood	Chief Human Resources Officer	Senior Management
Margherita Della Valle	Chief Financial Officer	Executive Board
Margherita Della Valle	Director	Executive Board
Maria Amparo Moraleda Martinez	Director	Non Executive Board
Michel Demare	Director	Non Executive Board
Nicholas Jonathan Read	Chief Executive Officer	Executive Board
Nicholas Jonathan Read	Director	Executive Board
Rosemary Martin	General Counsel	Senior Management
Rosemary Martin	Secretary	Senior Management
Serpil Timuray	Chief Executive Officer Europe Cluster	Senior Management
Shameel Joosub	Chief Executive Officer Vodacom Group Ltd	Senior Management
Valerie Gooding	Director	Non Executive Board
Vinod Kumar	Chief Executive Officer Vodafone Business	Senior Management
SOURCE: COMPANY FILINGS		© GlobalData

8. Macroeconomic Indicators

8.1. Country data

Table 25: Global exchange rate, 2017–21	
Year	Exchange rate (€/€)
2017	1.1320
2018	1.1810
2019	1.1200
2020	1.1405
2021	1.1832

SOURCE: GLOBALDATA

© GlobalData

9. Appendix

9.1. Methodology

GlobalData Industry Profiles draw on extensive primary and secondary research, all aggregated, analyzed, cross-checked and presented in a consistent and accessible style.

Review of in-house databases – Created using 250,000+ industry interviews and consumer surveys and supported by analysis from industry experts using highly complex modeling & forecasting tools, GlobalData's in-house databases provide the foundation for all related industry profiles

Preparatory research – We also maintain extensive in-house databases of news, analyst commentary, company profiles and macroeconomic & demographic information, which enable our researchers to build an accurate market overview

Definitions – Market definitions are standardized to allow comparison from country to country. The parameters of each definition are carefully reviewed at the start of the research process to ensure they match the requirements of both the market and our clients

Extensive secondary research activities ensure we are always fully up-to-date with the latest industry events and trends

GlobalData aggregates and analyzes a number of secondary information sources, including:

- National/Governmental statistics
- International data (official international sources)
- National and International trade associations
- Broker and analyst reports
- Company Annual Reports
- Business information libraries and databases

Modeling & forecasting tools – GlobalData has developed powerful tools that allow quantitative and qualitative data to be combined with related macroeconomic and demographic drivers to create market models and forecasts, which can then be refined according to specific competitive, regulatory and demand-related factors

Continuous quality control ensures that our processes and profiles remain focused, accurate and up-to-date

9.2. Industry associations

9.2.1. CTIA - The Wireless Association

1400 16th Street, NW, Suite 600, Washington, DC 20036, USA

Tel.: 1 202 785 0081

Fax: 1 202 785 0721

www.ctia.org

9.2.2. GSMA

Floor 2, The Walbrook Building, 25 Walbrook, London, EC4N 8AF, GBR

Tel.: 44 207 356 0600

Fax: 44 20 7356 0601

www.gsma.com

9.2.3. Regulierungsbehörde für Telekommunikation und Post

Tulpenfeld 4, 53113 Bonn, DEU

Tel.: 49 228 14 0

Fax: 49 22 814 8872

www.bundesnetzagentur.de

9.2.4. Ofcom (Office of Communications)

Ofcom Contact Centre, Riverside House, 2a Southwark Bridge Road, London, SE1 9HA, GBR

Tel.: 44 20 7981 3040

Fax: 44 20 7981 3334

www.ofcom.org.uk

9.2.5. China Mobile Communications Association

11A East Area, Century Golden Resource Hotel, 69 Banjing Road, Haidian District, Beijing, CHN

Tel.: 86 10 88452655

Fax: 86 10 88452630

www.cmca.org.cn

9.3. Related GlobalData research

9.3.1. Industry Profile

Mobile Phones in Europe

Mobile Phones in Asia-Pacific

Mobile Phones in the United States

Mobile Phones in Japan

Mobile Phones in China



9.4. About GlobalData

GlobalData is a leading provider of data, analytics, and insights on the world's largest industries.

In an increasingly fast-moving, complex, and uncertain world, it has never been harder for organizations and decision makers to predict and navigate the future. This is why GlobalData's mission is to help our clients to decode the future and profit from faster, more informed decisions. As a leading information services company, thousands of clients rely on GlobalData for trusted, timely, and actionable intelligence. Our solutions are designed to provide a daily edge to professionals within corporations, financial institutions, professional services, and government agencies.

Unique Data

We continuously update and enrich 50+ terabytes of unique data to provide an unbiased, authoritative view of the sectors, markets, and companies offering growth opportunities across the world's largest industries.

Expert Analysis

We leverage the collective expertise of over 2,000 in-house industry analysts, data scientists, and journalists, as well as a global community of industry professionals, to provide decision-makers with timely, actionable insight.

Innovative Solutions

We help you work smarter and faster by giving you access to powerful analytics and customizable workflow tools tailored to your role, alongside direct access to our expert community of analysts.

One Platform

We have a single taxonomy across all of our data assets and integrate our capabilities into a single platform – giving you easy access to a complete, dynamic, and comparable view of the world's largest industries.

Disclaimer: All Rights Reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publisher, GlobalData. The facts of this report are believed to be correct at the time of publication but cannot be guaranteed. Please note that the findings, conclusions and recommendations that GlobalData delivers will be based on information gathered in good faith from both primary and secondary sources, whose accuracy we are not always in a position to guarantee. As such, GlobalData can accept no liability whatsoever for actions taken based on any information that may subsequently prove to be incorrect.