On call: The proliferation of mobile phones spurs demand for wireless service
About this Industry

Industry Definition
This industry operates and maintains switching and transmission facilities to provide direct communication through radio-based cellular networks. Industry services include cellular mobile phone services, paging services, wireless internet access and wireless video services.

Main Activities
The primary activities of this industry are:
- Providing wireless network communication service for local, long-distance and international calls
- Providing messaging services, such as short message services (SMS) and multimedia messaging services (MMS)
- Providing wireless internet services and other non-messaging data
- Selling cell phones and other wireless devices
- Renting out wireless telecommunications equipment
- Wholesaling wireless infrastructure capacity to telecommunications resellers
- Operating and maintaining of switching and transmission facilities

The major products and services in this industry are:
- Advanced PCS services
- Cellular voice services
- Text messaging
- Paging
- Other data services
- Other services

Similar Industries
51711c Wired Telecommunications Carriers in the US
Wired telecommunications companies offer wired services, a substitute for wireless. The mobility and pricing of wireless is giving wireless carriers the upper hand.

51711e VoIP in the US
Providers of VoIP services offer Voice over Internet Protocol services.

51791a Telecommunications Resellers in the US
Telecommunications resellers purchase access and network capacity of telecommunications networks and resell these services. Resellers of wireless services are competitors at the retail end.

51791 Satellite Telecommunications Providers in the US
Satellite communications providers offer telecommunications services by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications.
About this Industry

Additional Resources

For additional information on this industry

www.ctia.org
CTIA – The Wireless Association

www.fcc.gov
Federal Communications Commission

www.bls.gov
US Bureau of Labor Statistics

IBISWorld writes over 700 US industry reports, which are updated up to four times a year. To see all reports, go to www.ibisworld.com
Industry at a Glance
Wireless Telecommunications Carriers in 2014

Key Statistics
Snapshot

Revenue
$204.7bn
Annual Growth 09-14
4.2%
Annual Growth 14-19
6.6%
Profit
$14.3bn
Wages
$17.5bn
Businesses
863

Market Share
Verizon Wireless 42.1%
AT&T Inc. 33.0%
Sprint Nextel Corporation 16.2%
Deutsche Telekom AG 3.4%

Key External Drivers
Number of mobile internet connections
Percentage of services conducted online
Price of semiconductor and electronic components
Per capita disposable income

Products and services segmentation (2014)

Revenue vs. employment growth

Number of mobile internet connections

Industry Structure
Life Cycle Stage
Growth
Regulation Level
Medium
Revenue Volatility
Low
Technology Change
High
Capital Intensity
High
Barriers to Entry
None
Industry Globalization
Low
Concentration Level
High
Competition Level
High

FOR ADDITIONAL STATISTICS AND TIME SERIES SEE THE APPENDIX ON PAGE 41
SOURCE: WWW.IBISWORLD.COM
Industry Performance

Executive Summary

The Wireless Telecommunications Carriers industry has benefited greatly from the rapid development of mobile devices over the past five years. The popularity of these devices bolstered growth despite, and partly thanks to, a weak economic environment. Although the purchase of this discretionary device may be postponed during difficult times, households have opted to disconnect their landlines instead. The portion of households with only wireless telephone connections has increased markedly since 2008, according to data from CTIA – the Wireless Association. As a result, revenue is expected to grow to $204.7 billion in 2014, averaging 4.2% growth per year over the past five years. In 2014 alone, revenue is expected to grow 3.2%. Although profitability fluctuated during this period due to the high cost of manufacturing new devices, margins are expected to increase over the next five years as consumer demand rises.

During the past five years, the industry has been defined by its transition from primarily providing voice services to increasingly focusing on providing data services. Technological change, namely, the transition to fourth-generation (4G) wireless data services and the long-term evolution (LTE) standard, will further transform this industry into one that primarily delivers broadband connectivity. Additionally, Japanese wireless carrier Softbank’s recent acquisition of Sprint, Sprint’s subsequent purchase of Clearwire and T-Mobile’s acquisition of prepaid carrier MetroPCS indicate that the industry is in the midst of a long-expected consolidation phase. Over the next five years, Sprint and T-Mobile are anticipated to bolster their competitive positions against AT&T and Verizon through acquisitions and the rapid expansion of their 4G-network coverage.

Industry revenue is projected to reach $281.3 billion by 2019, driven by growth in the number of subscribers as the population, and therefore number of devices requiring mobile data, expands. As broadband-enabled smartphones proliferate, more consumers will perceive on-the-go internet access as an essential function of cell phones. These perceptions, further stimulated by apps encouraging the use of mobile services, will benefit the industry and are forecast to drive annualized revenue growth of 6.6% over the next five years, slightly faster than in the previous five years. Going forward, a crucial factor will be how the competition unfolds for wireless spectrum, an increasingly rare commodity.

Key External Drivers

Growing demand for mobile internet access is the greatest driver of demand for wireless telecommunications. As broadband-enabled smartphones and tablets have proliferated throughout the country, demand for the industry has increased markedly. Furthermore, industry participants garner significantly more revenue from consumers that use broadband-enabled mobile devices than those that use older cell phones that provide only voice and text messaging services. The number of mobile internet connections is expected to increase during 2014, representing an opportunity for the industry.

The percentage of services conducted online both reflects and encourages demand for wireless internet access,
Industry Performance

Key External Drivers

continued

the industry’s fastest-growing product segment. Consumers now have the ability to make financial transactions and purchases on broadband-enabled mobile devices, increasing demand for the industry. The percentage of services conducted online is expected to increase during 2014.

Price of semiconductor and electronic components

As the cost of smartphone components, and by extension, smartphones, decreases, more consumers will have access to them, increasing demand for wireless data services. Wireless firms will also be able to reduce their handset subsidies, improving profitability. The price of semiconductor and electronic components is expected to decrease during 2014.

Per capita disposable income

Higher disposable incomes encourage consumers to purchase devices such as tablet computers, which may require dedicated mobile internet connections. As disposable income increases, spending on industry services also rises. Per capita disposable income is expected to increase during 2014; however, a sluggish growth rate could represent a potential threat to the industry.
Industry Performance

Current Performance

The Wireless Telecommunications Carriers industry has performed well over the past five years, as the number of broadband connections exploded at an annual rate of 36.8%. The industry generated strong revenue growth and profitability due to infrastructure investments and advancements in technology. In the five years to 2014, revenue is expected to grow 4.2% per year on average to $204.7 billion, including an increase of 3.2% in 2014 alone. Profitability has improved as well; profit margins among the major players increased to an estimated 7.0% of revenue in 2014, primarily due to the high level of mergers and acquisitions over the period.

Data-driven growth

Demand for mobile data services has grown at a strong pace over the past five years, and the industry’s major players have taken advantage of the opportunity. According to The Wireless Association’s latest data, the number of wireless subscriber connections has increased from 255.4 million in 2007 to 326.4 million in 2012. Industry players have been trying to keep up with demand, which has outpaced their current capacity. More than any other, one device is responsible for this situation: the Apple iPhone. Although it is not the first smartphone, no other device has had such a profound impact on this industry. The iPhone and its slew of competitors – particularly devices running Google’s Android operating system – dramatically increased the value of mobile data plans to consumers. Before the iPhone, those plans were not useful enough to warrant their cost for most consumers.

Apple has also led the charge in promoting third-party applications (apps) for smartphones. These apps allow consumers to use services on their phones that were previously only available on-location (e.g., mobile banking and video viewing). Consumers have become increasingly reliant on conducting services online via their broadband-enabled phones, increasing the overall demand for smartphones. As a result, data services are expected to account for about 30.0% of industry revenue in 2014.

Wireless providers have struggled to keep up with demand, using a significant amount of resources to expand network capacity. In particular, the fight for wireless spectrum has been a large source of competition. The desire for spectrum spurred AT&T’s attempt to acquire T-Mobile in 2011, an acquisition the Federal Communications Commission (FCC) ultimately ruled against. Similarly, Sprint’s purchase of the remaining stake in Clearwire that it did not already own was motivated by Clearwire’s vast spectrum holdings. As more devices depend on wireless internet connectivity and as the bandwidth demands of wireless devices grow, spectrum will become increasingly valuable and essential for providing robust nationwide wireless coverage.
## Industry Performance

### Wireless or wired

In the wake of the financial crisis, many families made the decision to cut phone services that they found unnecessary. Far more often than not, consumers chose to eliminate landlines rather than wireless connections. In addition, more broadband-enabled mobile devices, such as tablet computers and e-readers, are expected to achieve wider penetration in the coming years. From 2007 to 2012, the percent of households with only wireless service increased from 15.8% to 38.2%, according to the latest available data from CTIA – the Wireless Association. The percentage of households with both services declined from 59.6% to 50.8%, while the landline-only portion tumbled from 21.8% to 8.6%. This data indicates that, for most Americans, the mobility of wireless is worth more than the speed or stability of a landline. As the population increasingly purchases wireless devices, revenue from wired phone devices is decreasing.

Furthermore, the advantage of higher speeds that wired connections enjoy is diminishing. Although recent technical innovations have improved the bandwidth of wired connections, the latest generation of wireless technology promises download speeds of up to 100 megabits per second on long term evolution (LTE) networks. This speed is as fast as a hardwired connection and can be offered at about the same price.

### Concentration and competition

Wireless telecommunications firms consolidate to eliminate redundant costs, expand coverage and improve profitability. For example, two companies might require two separate cell towers to provide service to the same area (or, more likely, two separate leases on the same cell tower). Once merged, they can eliminate the costs of one of these leases. More importantly, combined firms can merge spectrum licenses and sell off superfluous licenses. The depreciation of those licenses is almost twice the depreciation of fixed assets on a yearly basis. Reducing the number of parties bidding on spectrum also brings down the cost of acquiring new spectrum.

Although the four largest firms now control 95.1% of the market, the industry has shown signs of further consolidation in recent months. In October 2012, T-Mobile acquired wireless prepaid carrier MetroPCS. Similarly, Softbank, a Japanese wireless carrier, acquired a 70.0% stake in major player Sprint. Shortly after Softbank’s acquisition request in December 2012, Sprint reached an agreement to purchase the remaining share of spectrum-rich Clearwire that it did not already own. Final FCC approval for the merger of Sprint and SoftBank, as well as for Sprint’s acquisition of Clearwire, was granted on July 3, 2013. Consolidation and intense competition have decreased the number of enterprises at a rate of 2.2% per year on average over the past five years. IBISWorld estimates that there are 863 wireless telecommunications enterprises in 2014. Mergers and acquisitions, combined with the economic difficulties associated with the financial crisis, have caused employment to decrease, but it has recently recovered to the pre-financial-crisis high, growing at a small average
Industry Performance

Concentration and competition continued

annual rate of 0.1% over the five years to 2014. The industry is expected to have 278,644 employees in 2014, with growth mitigated by the 3.1% and 8.9% drops in 2009 and 2010, respectively.

The FCC has indicated that industry consolidation has reached its limits, at least as far as AT&T and Verizon, the industry’s largest players, are concerned. If these firms are involved in more merger and acquisition activity, it will likely involve selling or exchanging significant portions of their assets to smaller firms in order to obtain regulators’ approval. For example, approval of Verizon’s deal to purchase spectrum from a consortium of cable companies was contingent upon Verizon exchanging spectrum licenses with smaller rival T-Mobile. Nevertheless, the FCC has been corroborating with the carriers on other issues, agreeing to allow customers to unlock their mobile phones in order to use a competitors’ network.

Industry Outlook

The Wireless Telecommunications Carriers industry is well positioned for future growth. Expanding demand for wireless data services is anticipated to offset declining demand for voice-only services, particularly as more broadband-enabled mobile devices like tablet computers and e-readers achieve wider penetration. Over the five years to 2018, the number of wireless subscribers is expected to continue increasing. As a result, revenue is projected to grow at an average annual rate of 6.6% over the next five years, reaching $281.3 billion in 2019.

The battle to establish a dominant fourth-generation (4G) technology appears to have come to an end. Verizon and AT&T have settled on long term evolution (LTE) as their preferred 4G technology, while Sprint-Nextel has indicated that it will be transitioning from WiMax, a wireless technology similar to Wi-Fi, to LTE as well. The emergence of LTE as the dominant 4G wireless technology is expected to enable a more rapid transition by consumers to 4G devices. A format war between LTE and WiMax would likely have kept many consumers from committing to either as they waited to see which standard would emerge victorious and offer the greatest service area. The speedy victory of 4G technology is expected to increase industry revenue by reducing capital costs, allowing industry operators to focus on further developing this technology instead of two separate options.

As 4G becomes the new standard, industry revenue will increase with lower capital costs

Cutting the cord

The enhanced speed of 4G networks (compared with 3G) will encourage more customers to abandon landlines altogether. IBISWorld projects that the percent of US households with only wireless service will increase to 48.4% in 2019, while the portion of households with both landline and wireless service is projected to decline to 35.8% in that same period. Although service revenue from landline phones is expected to decrease, this loss will be offset by the overwhelming increase in the purchase and use of wireless phones.
Industry Performance

Cutting the cord continued

Notably, the LTE standard will treat voice calls as packet-switched data, much like Voice over Internet Protocol (VoIP), rather than circuit-switched voice calls, which require a dedicated line. Therefore, the widespread transition to 4G networks will dramatically alter the revenue makeup of industry operators and will likely force them to adjust pricing structures. Before 4G, carriers could charge more for voice services on the basis that circuit-switched voice services were more stable and more costly to provide. Because voice and data will be identical from a network standpoint, firms will likely alter price structures to reflect this factor. Voice services have cost users $33.54 per month on average in 2013, and data services cost $12.30. These figures will likely switch, with circuit-switched voice access eventually requiring either specialized or archaic handsets and a surcharge. The net effect on revenue is anticipated to be insubstantial if executed properly.

Future industry landscape

Due to a significant level of mergers and acquisitions, T-Mobile and Sprint are expected to solidify their competitive positions with respect to Verizon and AT&T over the next five years. Notably, if a third player (either Sprint or T-Mobile) emerges as a legitimate challenger to Verizon and AT&T, regulatory pressures on these market leaders’ activities would likely ease.

While the benefit of major consolidation by industry players has likely reached its limit by way of the Federal Communications Commission regulations, significant expenses could be reduced in the form of decreased employment and a greater level of outsourcing. Although many industry employees work on-location, such as equipment installers and repairers, IBISWorld expects that as many as 40,000 customer service and technical support jobs could be relocated to countries with lower labor costs. Even though labor costs make up only 8.7% of industry costs, it is the largest expense over which this industry has control. Other expenses, including exchange fees, spectrum license fees and infrastructure costs, are beyond the control of any single firm and cannot be relocated easily.

As a result of outsourcing less-technical positions, industry profit is expected to rise slightly

However, additional contractors and employees needed for next-generation network rollouts are forecast to boost employment over the next five years, even as less-technical positions are outsourced. As a result of these two offsetting factors, IBISWorld expects employment in the industry to increase over the five years to 2019 at an annualized rate of 4.8% to 353,056 people. This increase is also stimulated by the 2.3% expected increase to 12,546 establishments in 2019.

As a result of outsourcing less-technical positions, profitability is expected to improve slightly over the period. In addition, the continuously falling price of semiconductors, projected to decrease an average 2.1% annually in the five years to 2019, will reduce input prices slightly, boosting profit from an estimated 7.0% of revenue in 2014 to a projected 7.6% in 2019.
Industry Performance

Life Cycle Stage

Strong consumer demand continues for wireless telephony services

New products and services are being introduced at a rapid rate

The industry’s economic contribution is expanding faster than GDP
Wireless telecommunications carriers operate in a highly dynamic, technologically intensive industry that is in the growth phase of its life cycle. Industry growth is expected to easily outpace the overall economy over the 10 years to 2018. During this time, IBISWorld projects that industry value added, which measures an industry’s contribution to the overall economy, will grow 3.7% annually on average, compared with the forecast 2.7% annualized growth of GDP over the same period.

Technological advancement requires continuous reinvestment in infrastructure. While building out its 4G networks, AT&T (the second-largest wireless carrier) is still expanding its 3G network even as competitors build their 4G infrastructures with significantly faster service speeds. Despite rapid growth, consolidation is a commonly used expansion tactic in this industry. The unusually high levels of consolidation, despite being in a growth phase, reflect some key characteristics of the industry: large existing major players with ample cash flow, relative homogeneity of services and the use of subscriber contracts. Even as wireless telephony supersedes traditional wired phone service, new technologies (i.e. VoIP) will also threaten the substantially high profit margins of this industry in the next five years.
Products & Services

Wireless telecommunications providers use a variety of radio frequencies to transmit both voice and data. The Wireless Telecommunications Carriers industry thus comprises one-way radio applications, such as paging, and two-way applications, such as cellular telephone services and personal communication services (PCS). PCS encompasses a range of advanced wireless mobile technologies and services. It enables communication to anyone, anywhere, and anytime while on the move. PCS offerings are divided into three categories: narrowband, broadband and unlicensed. For a detailed explanation of the differences, refer to the Technology and Systems section.

Voice, text messaging and other data services

Cellular telecommunications services (e.g. voice and text messaging) will account for about 78.5% of total revenue. Included in this segment are 2G, 3G and 4G services, along with narrowband PCS. Analog (1G) services were shut down in early 2008 and 2G services are in decline. 3G services are the industry’s product mainstay, with 4G services in their infancy. Sprint Nextel is the only carrier presently offering 4G services over its new WiMax standard network. Other wireless carriers began buildouts of the competing LTE 4G infrastructure in 2010.

Voice and network access services remain the primary uses within this key segment. Voice usage continues to increase, but the rapid price reductions of phones and wireless service due to intense competition are tempering revenue growth from this service. Instead, data is now propelling overall...
### Products & Markets

#### Demand Determinants

Consumption patterns are important in determining demand. Over the past five years, the Wireless Telecommunications Carriers industry has benefited from a shift in consumer demand away from traditional wired services. The two key drivers behind the shift in demand have been price and connectivity. The past decade has marked the development of a mobile-phone using culture, which has seen consumers become far more demanding of wireless products and services. And, a growing proportion of the population in the developed world, especially young tech-savvy consumers, views cell phones as their sole phone. This consumer group expects their cellular telecommunications service to access to the internet. Wireless Local Area Networks (WLAN), otherwise known as hotspots, are becoming mainstream in airports, hotels and even coffee shops, such as Starbucks. Network upgrades and greater selection of phones and tablet computers have also supported the growth of advanced PCS services.

#### Advanced Personal Communication Services (PCS)

Advanced PCS services, permitting communications to anyone, anyplace and anytime, are expected to account for 18.0% of wireless revenue. These services consist of broadband and unlicensed PCS. This fast-growing product segment has expanded considerably over the past four years, since the introduction of the WiFi standard that provides wireless access to the internet. Wireless Local Area Networks (WLAN), otherwise known as hotspots, are becoming mainstream in airports, hotels and even coffee shops, such as Starbucks. Network upgrades and greater selection of phones and tablet computers have also supported the growth of advanced PCS services.

Other services will account for 7.0% of total revenue. More than half of this revenue is generated from the resale of a variety of telecommunications equipment, such as cables and networking systems. Other wireless telecommunications services include installation, maintenance and repair services for telecommunications networks.

### Products and services segmentation (2014)

<table>
<thead>
<tr>
<th>Service</th>
<th>Revenue Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cellular voice services</td>
<td>52.2%</td>
</tr>
<tr>
<td>Advanced PCS services</td>
<td>18.0%</td>
</tr>
<tr>
<td>Text messaging</td>
<td>16.7%</td>
</tr>
<tr>
<td>Other services</td>
<td>7.0%</td>
</tr>
<tr>
<td>Other data services</td>
<td>5.6%</td>
</tr>
<tr>
<td>Paging</td>
<td>0.5%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

Total $204.7bn

SOURCE: WWW.IBISWORLD.COM
Products & Markets

Demand Determinants continued

Industry operators market wireless services to three core markets: general consumers, small and medium businesses and corporations. Each market segment has specific service needs and values different aspects. For example, the consumer market is categorized by increased price sensitivity, while the corporate market prioritizes service reliability. As a result, wireless carriers tend to differentiate business units to target a specific market.

Consumers
This is the largest market segment for wireless carriers. Winning business in this market is heavily dependent on price, whether it be positioning against competitors or substitute services. Ultimately, the demands of consumers have seen wireless carriers pitch plans that make cell phones a more price competitive telecommunications service than fixed-line offerings. For full-service carriers, this has meant a cannibalization of total revenue. However, wireless operations have seen revenue from consumers grow as a share of total revenue over the past five years. Price is not the only thing that matters to this market; service reliability and next-generation applications are also important. Indeed, this market’s increasing sophistication makes it more important for carriers to provide 3G services, such as GPS, internet browsing and mobile TV, as did the iPhone for AT&T. The rapid success and uptake of smartphones, such as the iPhone, has increased the proportion of revenue consumers generate as they increase their use of data and apps. The introduction of 4G services has produced a surge in demand from consumers. Much of this represented a spike in data-intensive content consumption, such as video.
Products & Markets

Major Markets continued

Major market segmentation (2014)

- **55%** Consumer and residential clients
- **30%** Small and medium businesses
- **15%** Corporate clients

Total $204.7bn

**Small and medium businesses (SMB)**

SMBs were once a key target for wireless carriers due to the importance of mobility to business operations and the higher average revenue per user from the high-use business customers. But the strong uptake of smartphone wireless devices within the consumer segment has recently eroded SMB’s share. As a result, this market’s share of industry revenue has fallen over the past five years.

The next evolution of this service offering is cell phone tethering and fixed-mobile solutions, which use the additional power of a 4G network. Cell phone tethering enables a subscriber to use their cell phone as a modem for their laptop, like a data card. SMBs will be attracted to this offering because it combines good value with high convenience.

Fixed-mobile services enable subscribers to use their cell phone to dial into their local wired network to make calls. In doing so, subscribers benefit from the cheaper call costs, as the average call on a landline phone is cheaper than one on a mobile phone, while avoiding line rentals and the like. Because the SMB market is still quite price sensitive, the cost savings for such service offers will be valuable to both SMBs and consumers.

**Large corporations**

A number of players concentrate on the corporate segment because it is typified by long-term contracts and more predictable usage patterns. Corporate businesses value service quality and, as a result, this market has maintained a relatively stable share of industry revenue over the past five years.

The keys to service quality are reliability for voice and speed for data. Speed is becoming increasingly important with the proliferation of wireless internet services. The uptake of wireless services has been surging within the corporate segment, particularly in those fields (e.g., sales) that value mobile office solutions. Popular wireless business solutions include wireless virtual private networks (VPNs), vehicle-fleet tracking and management, push-to-talk, workforce management applications and enterprise messaging.

The introduction of 4G services has provided wireless carriers with the opportunity to substantially increase revenue generated from the corporate segment through managed cloud-computing services. Cloud computing services provide common business applications online that are accessed from a web browser, while the software...
Major Markets continued

and data are stored on third-party managed servers. So within the wireless space, cloud computing is providing carriers with an opportunity to provide solutions that depend on wireless access.

If wireless carriers only end up being enablers of cloud computing through providing infrastructure, they face the prospect of becoming a low-margin business like other utility providers. But if wireless carriers can manage cloud-computing services, then they have the opportunity to achieve low costs per bit at the network level and high value per bit at the retail level. Managing the service would involve coordinating the three segments of cloud computing: hardware-as-a-service (HaaS), software-as-a-service (SaaS), and platform-as-a-service (PaaS). These delivery models charge customers a subscription fee for use, rather than requiring the purchase of a physical product.

Packaging HaaS, SaaS and PaaS together with wireless connectivity to meet the specific needs of business customers will support a high-margin business. The health, utility, transport and government sectors would be particularly receptive to end-to-end cloud-based solutions that depend on mobility. Ultimately, 4G cloud-based services will have applications throughout the entire economy. Indeed, online portals will be the critical connection point between business and consumers.

International Trade

International trade is not a major component of this industry, though wireless carriers often have operations internationally. US wireless telecommunications carriers receive income from foreign telecommunications companies for directing calls from overseas to cell phones. Conversely, the US carriers pay overseas telecommunication companies for directing calls made in America on cell phones to destinations in foreign countries. The majority of international calls are made using wired services because the service costs are cheaper.
The geographic spread of the Wireless Telecommunications Carriers industry follows the nation’s demographic profile, in particular its population density. While establishment shares correlate with population shares, some regions move against this trend for various reasons.

The Southeast region accounts for 27.8% of industry establishments. This region has exhibited the sharpest fall in establishment numbers since the industry began a phase of consolidation post-2005. Over the past five years, struggling enterprises have exited the industry, and there has been a consolidation in establishments of surviving operators. Wireless operators have consolidated their presence within this market because it has generally been over-serviced.

The populations of the West region, particularly California’s, are renowned for being technologically savvy and early adopters. Like the Southeast, the West was hit hard by the economic meltdown.

The Mid-Atlantic region accounts for 14.5% of industry establishments. The Mid-Atlantic region is a relatively affluent region, which is why subscriber density is high. Population in this region is in decline, and as population growth is a key driver for subscription demand, subscriber numbers in this region have also declined. A decreased population made the region less attractive to new establishments. As a result, the establishment proportion has remained relatively constant during the period.

The recession devastated the car manufacturing sector that was the lifeblood for so many families in the Great Lakes region, which accounts for 13.9% of industry establishments. The region is the poorest in the United States, and unemployment in the region is also the highest. The poor economic environment is a key reason why the region had the lowest level of subscriber penetration in 2009.

The West region accounts for 15.9% of industry establishments. The West region is the most mature market, with the highest level of mobile penetration at 96.6%, compared with a national average of 91.3%. This high penetration level is not in line with establishment numbers, with subscribers per establishment remaining above the national average.

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Competitive Landscape

Market Share Concentration | Key Success Factors | Cost Structure Benchmarks
Basis of Competition | Barriers to Entry | Industry Globalization

**Market Share Concentration**

**Level**

Concentration in this industry is **High**

The Wireless Telecommunications Carriers industry exhibits a high level of concentration. In 2013, the top four major players in this industry (AT&T, Verizon, Sprint Nextel and T-Mobile) accounted for about 94.7% of industry revenue. This higher concentration is consistent with the high level of merger and acquisition (M&A) activity that has taken place over the past five years. The purpose of the substantial M&A activity has been to acquire subscribers and expand coverage by acquiring spectrum licenses. M&As have become popular because increasing market penetration has made customer acquisition more expensive than when the industry was in its strong early growth phase. As the industry offers increasingly homogeneous products and services, operators are now scrambling to build their subscriber base. A large subscriber base is critical to competitiveness, as it delivers considerable scale economies and thereby enables a carrier to offer cheaper prices and realize higher margins. With a stronger cash flow, a carrier is able to invest more heavily in upgrading its network infrastructure to deliver new and improved services. Ultimately, it is easier to defend a large subscriber base than to build one.

**Key Success Factors**

IBISWorld identifies 250 Key Success Factors for a business. The most important for this industry are:

**Developing close relationships in other industries**

It is important for wireless carriers to develop strategic alliances with leading businesses in supplier and buyer industries. Supply-side relationships are critical to providing competitive service offerings and the best devices.

**Ready access to investment funding**

Building network infrastructure is particularly capital intensive, and subscriber numbers depend on network coverage and capabilities. Therefore, it is important that carriers can access capital for funding infrastructure upgrades.

**Ability to quickly adopt new technology**

There is a rapid rate of technological innovation in the field of wireless telecommunications. This means technology life cycles are particularly short, which makes it essential for carriers to quickly embrace technology developments.

**Having a high profile in the market**

Name recognition is becoming increasingly important as the cell phone market nears saturation. Key brand aspects include service reliability, network coverage and service pricing.

**Exclusive product sales contracts**

Exclusive access to highly desired products, as with Apple’s iPhone, can give a wireless carrier a significant advantage.

**Economies of scale**

Wireless participants are focusing their activity of retaining and building their subscriber base. A larger subscriber base enables more spreading of fixed network costs, which improves profitability.
Competitive Landscape

Cost Structure

Benchmarks

Profit

Companies in this industry are forecast to earn an average profit margin (earnings before interest and taxes) of about 7.0%. Notably, the industry’s small players command smaller profit margins than the four nationwide providers that dominate the industry. Despite having suffered losses in the previous five years due to the high cost of updating their technology, upgrading infrastructure to keep up with fast-changing consumer demand and subsidizing smartphones, the industry has once again picked up large profit. The increase is due to the recovery from these high costs, as well as merger and acquisition activity, which has allowed the major companies to consolidate market share and boost their margins through economies of scale.

Purchases

Purchases represent the largest operating expense for wireless operators, at about 34.3% of revenue. Purchases for this industry fall into two categories: cost of services expenses and equipment expenses. IBISWorld estimates that cost of services expenses account for 23.8% of industry revenue. Cost of services represents the expense of operating and accessing the wireless network, as well as roaming and long-distance costs. Following a number of large mergers in recent years, major players are attaining greater scale and synergies.

Equipment purchases account for about 10.5% of industry revenue. Most operators entice customers to their networks by offering subsidized smartphones. Continued growth in smartphones, particularly those using Google’s open source Android operating system, will increase purchasing expenses over the next five years, given the high rate of technological change and consumers’...
Competitive Landscape

Basis of Competition

Level & Trend

Competition in this industry is **High** and the trend is **Steady**

**Internal competition**
The US Wireless Telecommunications Carriers industry is the most competitive in the telecommunications sector. One indication of the level of competition is the churn rate, which refers to the number of customers an industry player loses over a given period of time. Most players experience a high monthly churn rate due to the industry’s high level of competition. Within the industry, competition is based on price, services offered, value-added product innovation and geographic coverage.

Increased size enables major players to seek out scale economies and negotiate better handset rates. The importance of economies of scale has led to increased merger and acquisition activity in the industry, the most recent being the proposed acquisition of T-Mobile by AT&T (which was subsequently blocked by the US government as an anti-trust measure). AT&T and Atlantic Tele-Network (ATN) have also filed applications to merge. Intense price competition has caused major operators to pass on many margin-enhancing benefits to consumers in the form of lower prices. Likewise, higher-margin services, such as Multimedia Messaging Services (MMS) and web browsing, have meant wireless carriers are able to cut prices on traditional voice and Short Message Service (SMS) offerings to attract subscribers. Both of these trends increase demand for wireless products and services.

Cost Structure

Benchmarks continued

desire to own the latest handset. Operators do generate revenue from selling handsets, so the net cost of equipment purchases is lower. But even when accounting for revenue derived from handset sales, operators still generate a loss. The importance of equipment subsidies to industry success can be seen in AT&T’s (now expired) agreement with Apple, which gave AT&T exclusive rights to sell the iPhone. The agreement greatly improved AT&T’s subscriber numbers but also increased its handset subsidy expense.

**Depreciation**
Depreciation is a significant portion of the wireless business because of the huge amount of capital tied up in network infrastructure, which has a limited life cycle. For example, 2G services are now in the decline phase of their life cycle, with 3G being the product mainstay and 4G soon to be the new standard. However, not only wireless networks depreciate; spectrum licenses are also depreciable assets. Depreciation expense had been in decline while the industry’s subscriber base expanded (i.e. more subscribers over which to spread depreciation). But in 2009, subscriber growth and revenue slowed as the voice market approached maturity, while large investments in upgrading infrastructure remained a focus of the major participants. IBISWorld expects depreciation to account for about 13.9% of revenue.

**Marketing**
Marketing accounts for about 5.9% of industry revenue. Marketing efforts are critical in attaining subscriber growth and are often reflected in customer acquisition costs. Acquisition costs will increase as carriers fight harder for subscribers in a market approaching saturation.

**Other**
Other costs include administration expenses, selling expenses, legal expenses, fuel and electricity, repairs and maintenance and all other operating expenses.

**Level & Trend**

Competition in this industry is **High** and the trend is **Steady**
Competitive Landscape

Basis of Competition continued

**Price**
Price is a major basis of competition since product differentiation is often difficult. In some instances, industry operators (particularly those operating on a regional basis) offer similar coverage with similar services. Price includes airtime charges and handset costs, which are often subsidized, and is in turn affected by the carrier’s cost structure. Many of the industry’s largest cellular mobile players, including AT&T, Sprint Nextel and T-Mobile, have resorted to price cutting in the face of an increasingly saturated and competitive market. The merger and acquisition activity, which has resulted in improved economies of scale, enables major players to reduce prices while maintaining margins.

Innovative packaging and marketing structures can stimulate demand. For example, bundling services (i.e. cross-selling) is a means through which integrated telecommunications companies can leverage their subscriber base and boost overall use. One key marketing promotion that continues to impact the industry is the use of price caps, which give users a high dollar value of calls for a set amount.

**Service**
Service has become a more important competitive weapon, as cell phone customers have placed greater emphasis on service reliability and problem resolution. A number of cell phone carriers invest heavily in deploying new technologies and upgrading their networks in an effort to differentiate their offerings on the basis of service quality and network coverage. Cell phone companies also offer customer support services at different price points. In some instances, multiple service packages are provided to different market segments. Fundamentally, customer service is paramount in achieving customer loyalty (i.e. reducing churn rates and maintaining subscriber numbers).

Over the past five years, there has also been a considerable increase in the range of services offered. A large range of services can provide competitive advantages in economies of scale and scope. For example, the ability to offer a full suite of products can boost demand for other products and services the carrier offers. Since the enactment of the 1996 Telecommunications Act, carriers can offer one-stop telecommunications services shopping with bundled services that include local, long distance, internet and cable TV services along with wireless services. In addition, with many customers preferring to receive one invoice rather than several from a range of service providers, the ability to offer an integrated communications, information and entertainment package is of increasing importance.

**Product innovation**
Product innovation is a critical competitive weapon within the cell phone space. This is because the commercialization of new technologies can be incredibly valuable in boosting use, bolstering margins and attracting new customers. During the past five years, 3G and 4G technology, as well as network advances have been vital in improving margins, providing the faster and reliable service desired by customers. As product and application life cycles are so short in the wireless space, cell phone operators invest a lot of money in bringing to market the latest value-added features that the new technology generation enables. Some recent technology introductions have included polyphonic ring tones, e-mail, broadband access, Global Positioning System (GPS) mapping, TV feeds and e-commerce. Innovative product bundling is also becoming a significant competitive point. Players offer integrated combinations of the latest products and services to encourage...
Competitive Landscape

Basis of Competition continued

customers to become multiproduct users. In the future, 4G technology will generate another wave of new value-added products as the cloud impacts social and business environments.

Geographic coverage
Geographic coverage has increased in importance, as witnessed by the scramble among players such as AT&T, Verizon and T-Mobile to achieve maximum US coverage. In the past, the desire to achieve coverage on a national scale prompted a number of regional participants to combine their resources to enlarge their geographic footprint. Expanded geographic coverage offers economies of scale and higher efficiencies as an additional competitive advantage.

Consumers can, in theory, choose from among three to eight wireless service providers. More than 277 million Americans (roughly 91.0% of the total US population) have the choice of three or more wireless providers, while 250 million (or 82.0%) can choose from among four wireless providers. Today, each of the large national carriers possesses licenses for nearly every major market, with a combined subscription base in excess of 260 million people. There are four nationwide carriers: Verizon, AT&T, Sprint Nextel and T-Mobile.

External competition
Traditional external competition has come from various telecommunications resellers and satellite operators. Over the past decade, there has been strong growth in the number of mobile virtual network operators (MVNOs). MVNOs are companies that buy airtime on a major wireless network then resell it using their own logo.

Competition from these players has been quite intense, particularly the larger players Virgin Mobile USA and TracFone. But in July 2009, Sprint Nextel announced that it would acquire seven-year-old Virgin Mobile USA and its 5.4 million subscribers. So the competitive threat from the MVNO looks to be subsiding; the carriers’ increasing scale is giving them the economies to explore niche markets (i.e. the reseller’s core markets).

However, as a result of the convergence trend in the communications sector, wireless participants will be faced with an increasing level of external competitors in the future. Communications and media heavyweights have identified the potential growth that wireless infrastructure will provide in the digitalized future. Major cable companies Cox, Comcast and Time Warner Cable have formed an alliance and developed mobile strategies, acquiring 150,000 hotspots and allowing their customers to roam on each others’ networks. Google is also making waves in the industry, and will pose a serious threat to wireless carriers in the future. Google’s wireless intentions were made public in 2008, when it was looking to bid in the 700MHz auction.

Barriers to Entry

Spectrum availability and the regulatory conditions are the most formidable barriers to entry into the wireless industry. Existing regulatory rules limit the number of participants in each market. Additionally, spectrum scarcity means there is a finite number of companies that can operate cellular or personal communication services (PCS) services within a specific geographic location and frequency. Once all spectrum licenses have been allocated within a specified area, then it will be closed to new entrants until the spectrum next comes up for auction. Furthermore, the cost of spectrum is high: more than $19.0 billion was spent in the 2008 700MHz auction. Cost is considered a substantial barrier to entry.

Level & Trend
Barriers to Entry in this industry are High and Increasing
Competitive Landscape

Barriers to Entry continued

Spectrum licenses are not the only prohibitive expense. The capital intensity of this industry acts as a deterrent to prospective entrants. The cost associated with building base stations, towers and other network infrastructure is high. Achieving national coverage can cost billions of dollars. Sprint Nextel has earmarked that its 4G WiMax network will cost $5.0 billion over a number of years. This will provide coverage to 125 million Americans.

Industry incumbents have established well-entrenched positions, making market entry difficult. IBISWorld estimates that the four national network providers — AT&T, Verizon, Sprint and T-Mobile — have a 93.0% market share, which is classified as a high level of concentration. The incumbents enjoy considerable cost advantages arising from economies of scale and scope. Over many years, the entrenched players have widened their subscriber base, enabling them to spread depreciation and interest expenses across a larger group of customers as well as negotiate lower handset rates. A number of the incumbents also offer the full array of telecommunications services that enables a competitive advantage from bundling packages together. By bundling services, integrated operators can undercut pure wireless providers while also building switching costs to reduce customer churn. Service integration means advertising and marketing costs can be spread across a number of different service lines. Ultimately, a new player will face much higher costs per customer — especially if they only offer cell services — than entrenched players and have difficulty winning customers.

Subscriber growth is slowing as the market makes its way toward saturation, further reducing opportunities for new players. This slowdown means acquisition costs will generally escalate as subscriber wins become harder to come by and concentration levels remain high. The wireless industry has undergone a tremendous amount of merger and acquisition (M&A) activity over the past decade. The driving force behind the M&A activity is the desire to expand subscriber base and resultantly enjoy improved economies of scale. Ultimately, M&A activity continues to increase concentration and has been the driving factor pushing up entry barriers for the industry.

### Barriers to Entry checklist

<table>
<thead>
<tr>
<th>Level &amp; Trend</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competition</td>
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<td>Concentration</td>
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<tr>
<td>Life Cycle Stage</td>
<td>Growth</td>
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<tr>
<td>Capital Intensity</td>
<td>High</td>
</tr>
<tr>
<td>Technology Change</td>
<td>High</td>
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<td>Regulation &amp; Policy</td>
<td>Medium</td>
</tr>
<tr>
<td>Industry Assistance</td>
<td>None</td>
</tr>
</tbody>
</table>

SOURCE: WWW.IBISWORLD.COM

### Industry Globalization

**Level & Trend**

Globalization in this industry is **Low** and the trend is **Increasing**

The wireless industry has a low, but increasing, level of globalization. The top four US wireless carriers — Verizon, AT&T, Sprint Nextel and T-Mobile — account for 93.0% of revenue and are all majority-owned US companies. The fourth largest wireless carrier, T-Mobile USA, is a subsidiary of German telecommunications provider Deutsche Telekom.

There has been a worldwide trend toward cross-border investments in the global telecommunications industry. The 1998 agreement on basic telecommunications, the Fourth Protocol to the WTO’s General Agreement on Trade in Services, was such that 78 WTO member countries agreed to liberalize markets and investment in
Competitive Landscape

Globalization continued

There has also been a growing trend toward alliances with foreign telecommunications companies. For example, Verizon Wireless is a joint venture between Verizon Communications and the UK’s Vodafone. Japanese Softbank Corp. acquired the Sprint Nextel, the third largest US mobile carrier in June 2013, allowing Japanese carriers to enter the American wireless market.

The majority of wireless revenue is generated nationally. International revenue is sourced from roaming termination charges, but these revenue sources account for much less than 25.0% of total revenue. International roaming revenue is being negatively impacted by the growth of VoIP technology, particularly peer-to-peer services, such as Skype, which offers free international communication.
New York-based Verizon Communications Inc. (VZ) provides communication, information and entertainment products and services to customers, businesses and governmental agencies across the United States. Operating in two segments, the company offers wireless voice and data services and equipment through Verizon Wireless (VW). Voice, internet access, broadband video and data, internet protocol network services, network access, long distance and other services are offered through Wireline. Up until January 9, 2009, VW comprised the merged operations of three US wireless carriers: Bell Atlantic Mobile, GTE Wireless and AirTouch Cellular. Then, VW purchased Alltel, the fifth-largest cell phone carrier in the United States, making it the largest wireless operator in the United States. In 2013, VW serves about 115.8 million wireless subscribers.

VW offers voice and data services on a prepaid (6.0% of customers) and postpaid (94.0%) basis using third generation (3G) and fourth generation (4G) network technologies. Verizon’s code division multiple access evolution-data optimized 3G-enabled network helps facilitate data services such as music downloads and video on demand at speeds of up to 1.4 megabits-per-second. The firm’s 4G long-term-evolution network was launched in late 2010 and is expected to completely cover Verizon’s current 3G footprint by the end of 2013. Wireless service offerings include push-to-talk, short message service and multimedia messaging services, mobile web, V Cast Mobile TV and the V Cast Music Store. Verizon distributes its wireless offerings via company stores, kiosks and carts, as well as through RadioShack, Best Buy and a large number of indirect retail locations.

In recent years, VZ has become increasingly dependent on its wireless segment’s operating profit and is attempting to feed this growing segment. In 2008, VW acquired a 60.0% increase in spectrum inventory, further cementing its dominance in this industry. In late 2011, VW entered into an agreement to acquire spectrum licenses from cable operators Time Warner, Comcast, Bright House Networks and Cox Communications. Under the terms of the $3.9 billion purchase, the companies would resell each other’s services and Verizon would acquire the cable operators’ unused advanced wireless services (AWS) spectrum. In 2012, VW entered into license exchange agreements with T-Mobile and Cricket License Company, LLC, a subsidiary of Leap Wireless, to exchange certain AWS licenses. As of January 2013, Verizon’s 4G LTE network covers more than 273 million people, nearly 89.0% of the US population.

Another major change occurred in 2012, as the company launched Share Everything plans that feature domestic unlimited voice minutes, unlimited text, video and picture messaging and a single data allowance that can be shared among up to 10 devices. Share Everything accounts currently represent about 25.0% of retail postpaid accounts. In 2012, the
Major Companies

Player Performance continued

Dallas-based AT&T Inc. owns AT&T Mobility, an integrated telecommunications provider and the second-largest wireless telecommunications carrier in the United States. AT&T Mobility, formerly Cingular Wireless, was formed in 2000 as a joint venture between SBC Communications and BellSouth. In 2005, SBC Communications, which owned 60.0% of Cingular Wireless, acquired AT&T Corp. and changed its name to AT&T Inc. In 2006, AT&T Inc. acquired BellSouth, achieving the largest takeover in US telecommunications history. As part of the takeover, AT&T Inc. acquired the remaining shares of Cingular Wireless that it did not already own. With 100.0% ownership, AT&T Inc. announced that it would rebrand Cingular Wireless and rename it AT&T Mobility. Cost-saving measures initiated after the acquisition resulted in the company reducing its workforce by about 10,000 employees from

Verizon Communications (wireless services segment) – financial performance

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue ($ million)</th>
<th>(% change)</th>
<th>Operating Income ($ million)</th>
<th>(% change)</th>
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<td>7.2</td>
<td>10,560.3</td>
<td>22.5</td>
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</tbody>
</table>

*Estimates

SOURCE: ANNUAL REPORT AND IBISWORLD
2007 to 2009; in 2013, the firm employs about 256,000 people.

AT&T Mobility claims to have the largest digital voice and data network in the United States. In August 2009, AT&T began the process of switching on 3G services in the 850MHz frequency band. Over the past four years, AT&T Mobility has invested billions of dollars in enhancing and upgrading its Global System for Mobile Communications (GSM) network infrastructure to facilitate high-speed downlink packet access (HSDPA), an advanced 3G network protocol.

Launched in 2009, “It Can Wait” is leading the fight against texting and driving, increasing public awareness. In 2012, AT&T introduced DriveMode, an app that, when enabled and a vehicle is moving 25+ miles per hour, automatically sends customizable auto-reply messages to incoming texts. AT&T is collaborating with wireless device makers and app developers to develop new no-text-and-drive technology.

In May 2009, AT&T entered into an agreement with Verizon Wireless in which AT&T would acquire licenses, network assets and 1.5 million subscribers. Verizon was required to divest these assets as part of the regulatory approval granted for Verizon’s purchase of Alltel. In March 2011, AT&T’s offer to acquire T-Mobile was blocked by the US Department of Justice on anti-trust grounds, and the Federal Communications Commission also fought to block the merger. Finally, on December 19, 2011, AT&T withdrew its acquisition. More recently, in July 2013, AT&T announced its intention to buy Leap Wireless International, a prepaid cellphone service provider, which would allow it to gain five million new customers and acquire Leap’s network, licenses and retail stores.

**Financial performance**

During the five years to 2013, AT&T’s wireless revenue is forecast to grow at a 6.3% annualized rate to $63.8 billion. The increase in data use, propelled by the success of the iPhone, was a boon to AT&T in 2008. It not only supported strong wireless revenue growth, but also delivered a considerable improvement in the profitability of AT&T’s wireless operations. Average revenue per user (ARPU) increased 33.8% for the year, which increased data revenue and resulted in an impressive 6.1% improvement in the operating margin of AT&T’s wireless services. AT&T has stated that about 3.0% of customers account for 40.0% of data traffic and has changed its contract for new customers to a tiered data-usage pricing scheme. Falling operating profit in 2013 can be attributed to upgrade activity and subsidies associated with growing smartphone sales.

### AT&T Inc. (wireless services segment) – financial performance

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue ($ million)</th>
<th>(%) change</th>
<th>Operating Income ($ million)</th>
<th>(%) change</th>
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<td>63,751.2</td>
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*Estimates

SOURCE: ANNUAL REPORT AND IBISWORLD
Kansas-based Sprint Nextel emerged in August 2005 from the merger of Sprint Corporation and Nextel Communications in a $35.0 billion cash and stock deal. As of 2012, Sprint Nextel provides wireless coverage to over 262.0 million people, which includes services in all US states, Puerto Rico and the US Virgin Islands using code division multiple access (CDMA) and evolution data optimized (EV-DO) network technology. The company has operated this network and Nextel’s single-transmission integrated Digital Enhanced Network (iDEN) in tandem since the merger; however, Nextel’s aging network will be completely phased out over the next year as part of the company’s Network Vision plan.

Sprint Nextel announced in August 2006 that it would use worldwide interoperability for microwave access (WiMax) technology as the basis for its 4G wireless network. However, because all other wireless carriers have backed LTE (Long Term Evolution), a competing set of technologies, Sprint has transitioned away from this strategy. The company is currently rolling out an LTE network and plans to reposition its existing WiMax network as the network for its prepaid customers. In 2012, Sprint announced that it would begin selling WiMax devices under its prepaid Boost Mobile and Virgin Mobil brands.

2012 brought significant change to Sprint. In October, Japanese wireless carrier Softbank acquired a 70.0% interest in Sprint for about $20.0 billion. Shortly following the acquisition, Sprint acquired spectrum holdings and 585,000 customers from US Cellular, a regional carrier, for about $480.0 million. Finally, in December, Sprint announced that it had reached a deal to buy the remaining stake in wireless broadband provider Clearwire that it did not already own (about 50.0%) for about $2.2 billion, or $2.97 a share. The deal would give Sprint full control over Clearwire’s spectrum licenses, which Sprint could use to build out its network. The deals were approved in July 2013.

**Financial performance**

During the five years to 2013, Sprint Nextel’s overall revenue is expected to decrease at an annualized rate of 0.1%, reaching an estimated $35.5 billion. Sprint’s operating income, overall and industry specific, has dropped almost every year since 2007, and high debt loads, large capital expenditures and write-downs have forced the company as a whole to operate at a loss over this period. Industry-specific revenue is, however, expected to increase 4.0% to $31.3 billion, yet industry-specific operating income is expected to fall.

The company has struggled with a heavy debt load ever since it was created through the merger of Sprint Corporation and Nextel Communications. The deal produced $30.0 billion in write-down-related losses and integration problems. Sprint’s relatively low credit rating will only increase the cost of servicing its debt. Sprint’s majority interest in Clearwire Corporation has also hampered the company; Sprint’s share of Clearwire’s losses was $1.3 billion in 2010. Now that Sprint has bought out the remaining interests in Clearwire, the company’s future success will likely hinge on leveraging Clearwire’s vast spectrum holdings to expand its 4G network coverage and increase its subscriber base.
Deutsche Telekom (DT) is one of the world’s largest mobile telecommunications providers, with 129.0 million wireless subscribers in 50 countries. DT operates in the US market under the T-Mobile brand name, using a GSM-based network. T-Mobile USA has about 33.0 million wireless subscribers, with 27.5% of revenue coming from data services. T-Mobile USA is primarily focused on major metropolitan markets and has the smallest network footprint of the major US wireless carriers. In October 2012, DT entered into an agreement to merge T-Mobile with prepaid carrier MetroPCS, the nation’s fifth-largest wireless carrier. Under the terms of the deal, DT would hold 74.0% of the merged business and pay MetroPCS shareholders $1.5 billion in cash.

T-Mobile USA is the fourth-largest wireless carrier within the United States, offering all digital voice, messaging and high-speed wireless data services across its GSM/GPRS 1900 MHz network. T-Mobile also operates an HSPA+ 3G cellular network, using spectrum in the 1.7GHz and 2.1GHz frequency bands. This network offers speeds comparable with the first wave of 4G networks used by other firms. T-Mobile also offers a variety of integrated voice and General Packet Radio Service (GPRS) Wi-Fi data capable devices, including PC internet cards and Blackberry devices. It also operates the largest carrier-owned Wi-Fi (802.11) broadband network in the country through its T-Mobile HotSpot Unit. T-Mobile Wi-Fi is available in more than 10,000 public access locations across the country, including Starbucks coffee shops, FedEx Kinko’s, Hyatt Hotel and Resorts, and many airports and selected airlines.

T-Mobile was the first wireless carrier to offer Google-branded Android phones, the most popular alternative to Apple’s iPhone. As of April 2013, however, the company is offering iPhones as well, gaining over one million customers, many of which are contract subscribers. T-Mobile recently pronounced itself an Un-carrier, a wireless carrier that does not act like one. As part of this philosophy, the company unveiled the Simple Choice and Uncarrier options that offer no-contract choices. It later announced, in 2013, that it launched Jump, a program that enables customers to upgrade their phones more frequently.

### Sprint Nextel Corporation (wireless services segment) – financial performance

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue ($ million)</th>
<th>(% change)</th>
<th>Operating Income ($ million)</th>
<th>(% change)</th>
</tr>
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<tbody>
<tr>
<td>2008</td>
<td>25,657.2</td>
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<td>N/C</td>
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<td>-1,672.3</td>
<td>-6.4</td>
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*Estimates

SOURCE: ANNUAL REPORT AND IBISWORLD
Major Companies

Player Performance continued

Financial performance
During the five years to 2013, T-Mobile’s revenue is anticipated to grow at an annualized rate of 18.8%, with a jump of 27.5% in 2013 alone, to $6.5 billion. The company’s operating profit has been hurt by a consistently shrinking subscriber base; T-mobile lost 802,000 customers in the last quarter of 2011 alone. A large payment from AT&T, due to the failed merger, has somewhat softened the blow. DT’s global revenue, however, is large enough to support the American segment through its short-term financial struggles, as North America accounts for only 26.8% of total revenue. Due to spectrum transfer deals with Verizon and AT&T, T-Mobile will be able to begin rolling out LTE services in 2013. Furthermore, the firm is expected to spend about $4.0 billion over the next five years as it upgrades and expands its 3G network to 4G LTE. Although DT’s size and presence in a variety of markets will provide support for its financial struggles, T-Mobile may struggle to keep subscribers because Verizon and AT&T are well ahead in rolling out 4G services.

T-Mobile USA (wireless services segment) – financial performance

<table>
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<tr>
<th>Year</th>
<th>Revenue ($ million)</th>
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<td>2013*</td>
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<td>330.0</td>
<td>-60.0</td>
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</table>

*Estimates

Source: Annual Report and IBISWorld

Other Companies
Other companies in this industry consist of regional wireless carriers with market shares of less than 3.0%. Major players tend to acquire these smaller competitors when their operations begin acquiring significant subscriber bases, such as Verizon’s purchase of Alltel in 2009 and T-Mobile’s acquisition of prepaid carrier MetroPCS. The sixth-largest wireless telecommunications company in the United States, Leap Wireless, is also expected to be an attractive acquisition target over the next year.
Operating Conditions

Capital Intensity

The wireless carriers industry is increasingly capital intensive, reflecting the high level of capital resources tied up in wireless telecommunications networks and infrastructure. Using wages as a proxy for labor and depreciation as a proxy for capital, IBISWorld estimates that for every dollar spent on labor, $1.60 is spent on capital. In recent years, industry participants have invested considerable capital resources (more than $100.0 billion over the past five years) in expanding the capacity of existing wireless networks and rolling out new networks. This can be seen in the rapid increase in cell sites that has taken place over the past five years. Furthermore, these cell sites are being upgraded, which requires even more capital investment. Players such as Verizon and Sprint Nextel are in the process of

Tools of the Trade: Growth Strategies for Success

New Age Economy

Recreation, Personal Services, Health and Education. Firms benefit from personal wealth so stable macroeconomic conditions are imperative. Brand awareness and niche labor skills are key to product differentiation.

Investment Economy

Information, Communications, Mining, Finance and Real Estate. To increase revenue firms need superior debt management, a stable macroeconomic environment and a sound investment plan.

Traditional Service Economy

Wholesale and Retail. Reliant on labor rather than capital to sell goods. Functions cannot be outsourced therefore firms must use new technology or improve staff training to increase revenue growth.

Old Economy

Agriculture and Manufacturing. Traded goods can be produced using cheap labor abroad. To expand firms must merge or acquire others to exploit economies of scale, or specialize in niche, high-value products.

Change in Share of the Economy

Capital Intensity

Capital units per labor unit

2.0
1.5
1.0
0.5
0.0
Economy Information Wireless Telecommunications Carriers

Dotted line shows a high level of capital intensity.

SOURCE: WWW.IBISWORLD.COM
Operating Conditions

There is a high rate of technological change in the Wireless Telecommunications Carriers industry. The two defining characteristics of this trait are short product life cycles and high investment in both research and development and technological infrastructure. Ultimately, the cost of providing various services using a range of infrastructures determines retail price points. Accordingly, a higher investment in technology, spectrum and infrastructure will increase service prices.

Switched off: 1G

The first generation of wireless technology was Advanced Mobile Phone System (AMPS), an analog system that was developed in the United States. This technology used different frequency carriers to create communications channels and only had voice functionality. Analog services were switched off in early 2008.

Declining dominance: 2G

A widely used technology within the US wireless market is 2G. The defining characteristic is that it offers limited data functionality as well as voice. Services for 2G and 2.5G are provided on two standards: Global System for Mobile Communications (GSM) and Code Division Multiple Access (CDMA).

GSM initially originated in Europe and is a second-generation cellular mobile radio technology that supports voice, data and text messaging, and allows roaming among different networks. AT&T and T-Mobile use GSM-based technology. CDMA is a wireless communications technology that uses the principle of spread spectrum communication. Under CDMA, communications channels are created by assigning a special coding scheme to information flows. Verizon and Sprint Nextel use CDMA network technology. Sprint Nextel also uses Integrated Digital Enhanced Network (iDen) developed by Motorola and SouthernLINC Wireless; however, this network will be completely phased out by 2013.

The stepping-stone between 2G and 3G is 2.5G. The technology increases the functionality of 2G in that it offers enhanced data services, such as Wireless Application Protocol (WAP). WAP offers mobile internet connectivity, albeit at slow speeds. WAP technologies can be used on a variety of handheld digital wireless devices (e.g. cell phones, pagers, smartphones and two-way radios) and on a range of wireless networks, including CDMA and GSM. Due to inhibited data speeds, WAP services failed to take off on 2.5G networks.

General Packet Radio Service (GPRS) allows information to be sent and received across a GSM mobile telephone network and supplements Short Message Service (SMS) technologies. Enhanced Data rates for GSM Evolution (EDGE) is an update of GPRS technology used on the GSM network. By using EDGE, operators can handle three times more subscribers than GPRS; the technology triples operators’ data rate per subscriber or can add extra capacity to their voice communications. EDGE, similarly to CDMA2000, offers slightly superior performance relative to GPRS but is not considered 3G technology. The Apple iPhone is GSM EDGE enabled, which is why an exclusivity agreement was reached between Apple and AT&T.

Meanwhile, most other companies are boosting their 3G infrastructure and planning future rollouts of 4G networks.
which made AT&T the only carrier for iPhones until February 2011. CDMA2000 is a bridging technology that can be classified as both 2G and 3G.

Mobile internet: 3G
Technologies for 3G have assumed market dominance in the United States. SK Telecom in South Korea first offered 3G in October 2000. In the United States, all the major carriers offer 3G services; the appeal is that it enables faster data transfers for users with 3G compatible devices. Such devices include cell phones, smartphones, tablets and laptops that use a 3G card. Services for 3G have increased the demand for new value-added services which can offer higher margins and new revenue streams for carriers. Such value-added services include internet browsing and downloading, mobile commerce, e-mail applications and mobile TV.

Wideband Code Division Multiple Access (W-CDMA) is a spread spectrum multiplexing technique, not a standard, which is owned by Qualcomm (owner of CDMA2000). W-CDMA was developed in 2001 by the Japanese mobile operator NTT DoCoMo, the largest wireless telecommunications carrier in the world. CDMA2000 1x EV-DO is a CDMA-based 3G technology that generally offers data transfer of between 300 kbps and 600 kbps. It was first commercialized in 2002. Verizon uses this technology for its 3G services.

The term 3.5G simply refers to enhanced 3G services that do not reach the agreed parameters for services classified as 4G. It typically refers to High Speed Downlink Packet Access (HSDPA), an advanced 3G network that offers downlink speeds of up to 14.4 Mbps and is compatible with the Universal Mobile Telecommunication System, or UMTS. HSDPA is an advancement on W-CDMA and many major carriers have or are in the process of upgrading their network to this standard so that more data-intensive applications can be supported.

The future: 4G
Services for 4G support transmission speeds of up to 100 megabits per second (Mbps) for downlinks when a user is traveling at high speeds and 1 Gbps when traveling at low speeds. Such speeds will see complete device and network convergence (i.e. any network will be able to deliver any service over any device). Services such as on-demand media will be available on a handheld device, mobile or laptop, using a 4G data card.

The important development in 4G technology is that the battle between two factions appears to be over. Ultra Mobile Broadband, the proposed 4G successor to CDMA2000, has been scrapped, with Qualcomm announcing it was ending development of the technology and favoring LTE instead. Carriers will now all support the GSM/UMTS faction’s Third Generation Partnership Project (3GPP), known as Universal Terrestrial Radio Access Network Long-Term Evolution (LTE). LTE will allow coexistence with a range of previous standards, allowing handoffs between cells supporting LTE and cells supporting UMTS, GSM/GPRS, and other systems.

NTT DoCoMo is the major proponent of 4G technology. In the United States, Verizon outlined its plan to introduce LTE 4G services in 2010, with a full service rollout to be achieved by the end of 2013. Meanwhile, Sprint Nextel has already begun its 4G rollout using WiMax standardized technology. WiMax is a standard that allows mobile broadband and has greater geographic coverage from Wi-Fi.

Wi-Fi and WiMax
Wi-Fi and WiMax are not technologies, but are standards. In order to carry these names, technologies must have met a strict set of rules and interoperability
tests for the standards governed by the Institute of Electrical and Electronic Engineers. These standards allow wireless internet access for a broad range of products that include laptops, PDAs and cells.

Super 3G wireless infrastructure has facilitated a significant improvement in wireless data, with flow on effects in services, use and revenue. Indeed, data revenue is presently one of the industry’s major growth drivers. However, the price and efficiency of data streaming to customers over super 3G infrastructures are not as cost competitive as the delivery of data services over Wi-Fi or WiMax standard technology. Building 3G cell sites (i.e. base stations) is much more expensive than establishing Wi-Fi or WiMax infrastructure, with about 75.0% of the expense associated with land, construction and maintenance. And this will be the same for LTE 4G.

Wi-Fi relies on proximity, which makes national blanket coverage nearly impossible. But because of its low capital and operating costs, Wi-Fi hotspots are commonplace in locations where wireless access adds value (e.g. airports, cafes and libraries). However, WiMax provides service to an area between three and 10 kilometers without needing a completely unobstructed path between the user and the network antenna, as well as with superior capacity and speed when compared with the Wi-Fi standard. This is why WiMax has been touted as a future technology for years.

But, WiMax has struggled to gain traction in the wireless space because of the dominance of GSM and CDMA technology. However, a large number of heavy hitters in the media, communications and IT industries are investing significant sums of money in WiMax. Sprint Nextel is staking its future on the technology standard through its 51.1% ownership of the WiMax company Clearwire. Meanwhile, other investors in Clearwire include companies, such as Intel (13.2%), Comcast (8.5%), Time Warner Cable (4.5%) and Google (4.1%). Importantly, WiMax is available to millions of businesses and consumers now, while 4G LTE is yet to arrive.

**Femtocells**

In 2010, wireless carriers began showing interest in commercial offerings of femtocells. Femtocells, a small version of a cellular base station, allow customers to increase cellular coverage wherever broadband internet connections are available. The technology operates in a similar manner to Wi-Fi routers, enabling two to eight cellular connections per femtocell. AT&T began offering its AT&T 3G Microcell femtocell to customers in September 2010.

For large carriers with persistent network integrity issues, particularly AT&T (which was unprepared for the data-intensive iPhone), femtocells improve coverage and service without significant infrastructure outlays. However, in the future, femtocells could be deployed by some companies to undercut the services of major wireless carriers. MagicJack, a provider of low-cost Voice over Internet Protocol (VoIP) service, announced in January 2010 that it intends to offer a low-cost GSM femtocell, enabling users to place VoIP calls over GSM wireless, a service the major carriers have been reluctant to allow.

Enhanced Specialized Mobile Radio Services is a digital service and applies digital systems to traditional dispatch specialized mobile radio in the 800 and 900 MHz bands. Aggregating this spectrum and applying a cellular-like digital network can provide cellular or PCS-like voice and data messaging services.
Operating Conditions

Revenue Volatility

The revenue volatility level for this industry is considered to be low. Subscribership is approaching saturation as revenue increased in every one of the past five years and experienced only a slight decline during the recession. Already, the number of mobile phone connections in the United States is almost equal to the US population. However, the onslaught of mobile data services has provided a jolt to what was a stagnating industry. While the resulting growth has increased revenue volatility, growth has remained significantly above zero. As mobile data penetration increases and 4G networks continue to be rolled out, revenue volatility is expected to increase slightly over the next five years.

A higher level of revenue volatility implies greater industry risk. Volatility can negatively affect long-term strategic decisions, such as the time frame for capital investment. When a firm makes poor investment decisions it may face underutilized capacity if demand suddenly falls, or capacity constraints if it rises quickly.

Regulation & Policy

The main regulatory body governing the operations of the US Wireless Telecommunications Carriers industry is the Federal Communications Commission (FCC). The Telecommunications Act of 1996 is a major piece of legislation governing the industry. The Act was based on two principles regarding regulatory philosophy. First, economic discipline by market forces should be the first option, as opposed to economic discipline meted out by regulation. Second, economic regulation should be presumed unnecessary unless there is credible evidence that market discipline is being abused to the detriment of the consumer and cannot be corrected outside of the regulatory process. The Act was designed to promote competition, reduce regulation, improve quality of services and encourage the rapid deployment of new telecommunications technologies.

Spectrum

Participants in the US industry are governed by a licensing system that is used to allocate the spectrum necessary to provide mobile telephony services. The FCC and the National Telecommunications and Information Administration (NTIA) share responsibility for managing the spectrum. NTIA manages spectrum used by the federal government and the FCC is responsible for spectrum used by others, including private organizations such as wireless carriers.
In 1994, the FCC introduced capped limits. Each carrier can have 45 MHz of spectrum in urban markets and 55 MHz in rural markets. Such caps were designed to ensure that there would be a minimum of four different licensees in each market. In fact, there are often more than four licensees per market, as licenses may be disaggregated or partitioned. Some markets have as many as eight wireless providers.

Because there is a finite amount of spectrum, and a growing demand for it, effectively managing the available spectrum is a strategic issue for the FCC and the NTIA. Effective spectrum management is seen as having five major components: allocation, service rules, assignment, monitoring and enforcement. In 2002, the Spectrum Policy Task Force was established to assist in identifying and evaluating changes in spectrum policy that will increase the public benefits derived from the use of the spectrum. Auctions are the preferred assignment method, as they recoup a portion of the spectrum’s value and they use an objective market-based approach to the assignment of spectrum licenses.

One of the biggest problems the wireless industry will face in the future is the need to find more airwaves to meet the needs of the burgeoning wireless industry as more and more consumers access the internet using laptops and smartphones.

In 2008, the highly anticipated 700-MHz band auction took place. The 700 MHz spectrum was considered the last great chunk of wireless real estate. The reason it was so highly anticipated is that 700Mhz waves penetrate walls fairly easily and travel well, which makes them perfect for long-range wireless broadband that could provide an invisible alternative to DSL and cable. Verizon came out as the auction’s biggest winner, nabbing a significant portion of the treasured C-Block spectrum. AT&T was another big winner, acquiring 227 licenses from among the B-Block of regional licenses. All told, AT&T spent $6.6 billion, and Verizon spent $9.6 billion at the auction. Both companies confirmed plans to use the newly acquired spectrum to begin building out LTE infrastructure.

If more wireless spectrum is made available, that also means more competition. The FCC will likely revise the rules so that spectrum cannot be snatched up by huge companies trying to hoard it and foreclose competition.

### Competition

In August 2009, the FCC began probing the level of competition in the wireless sector in a move that could lead to broader investigation of the communications industry. Importantly, regulators want to examine “vertical relationships” between upstream and downstream market segments, such as AT&T’s offering of Apple’s iPhone, and how these relationships affect the competition. The FCC at this stage is asking questions and seeking information about wireless industry business practices, but the inquiries could lay the groundwork for possible new regulations. The FCC also announced that the inquiry would look into ways it can support and encourage further innovation and investment in wireless. As mentioned, spectrum availability will be at the forefront of all discussions.

Additionally, the FCC is looking into antitrust laws as it receives more requests for mergers and acquisitions. In 2009, Verizon won approval to purchase Alltel Corp from Atlantis Holdings LLC. In 2011, AT&T dropped its bid for T-Mobile, was withdrawn as the Justice Department sued to block the deal and the FCC showed its intention to fight the merger.
Operating Conditions

The Justice Department’s top antitrust enforcer said in April 2013 he supports limiting wireless companies airwaves, discouraging new bids from Verizon and AT&T to purchase airwaves and spectrum. The antitrust division of the FCC showed support for limits that allow small carriers to compete in this highly concentrated market.

Pricing
As part of the competition inquiry, the FCC will investigate the possibility of rephrasing its rules to ensure that consumers are given more information about charges on their phone and cable television bills. For the most part, current billing rules require phone and wireless carriers to explain the line-item charges on subscribers’ phone bills. As the communications sector is in the midst of a convergence trend, the FCC is looking at whether it should also require cable and internet providers to offer similar disclosures.

Network neutrality
With the explosion of wireless internet connectivity, and the transition to data being the major revenue source for wireless carriers, internet and information regulation will have an increased impact on the future of the industry. Network neutrality is generating fierce debate. Net neutrality is the principle that data packets on the internet should be moved impartially, without regard to content, destination or source. But with more people streaming data-rich video and playing online games, the internet faces congestion concerns. Content and information service providers are seeking legislation to stop ISPs and telecommunications carriers from imposing extra costs for emerging services that typically require increased bandwidth (i.e. video on demand, web searches and VoIP).

ISPs and telecommunications carriers argue that they have invested substantial sums of money to provide better and faster access services to consumers, but companies like Google and YouTube, are generating returns without investing in the infrastructure that underlies their operations. Therefore, ISPs and telecommunications carriers are, in their words, bearing the risk without sharing in the rewards that Google is earning.

The FCC’s proposed regulation of broadband will ensure the open nature of the internet. However, both the CTIA and the FCC have stated that wireless broadband is part of a complex unique ecosystem. As such, the FCC has acknowledged that it will need to recognize the unique aspects of wireless and perhaps alter wireline net neutrality rules to fit with the wireless environment.

Metered bandwidth pricing
The other part of the net neutrality debate looks at whether carriers will be able to sell multitiered access to heavy users. Cable executives gathered at the American Cable Association’s annual summit say that metered bandwidth pricing for internet service is coming. Sunflower Broadband’s COO Patrick Knorr says bandwidth-based billing is the only way to manage infrastructure. Knorr anticipates that as high-definition, high-bandwidth-consuming video and other service downloads increase, there is no way ISPs can keep up with demand at current flat rate prices.

Telecommunication companies, such as Verizon, are also tempted by metered billing, and if telecommunications providers decide to move on the idea, they will do so with a massive public relations push aimed at convincing the United States that it is in the majority of people’s best interests. They will focus on the fact a few heavy users are using the majority of bandwidth, yet paying no more than the average unlimited
Operating Conditions

Regulation & Policy continued

user. The only realistic way the market will shift from flat-rate to metered billing is if the entire industry moves in that direction.

In line with the liberalization of the general telecommunications industry and the World Trade’s Organization’s General Agreement in Trade in Services, under which governments must ensure that foreign-service suppliers are given access to the public telecommunications networks without discrimination, limitations on foreign ownership within the wireless sector have fallen in recent years. In 2013, 20.0% of the capital stock of a common carrier radio licensee may be foreign owned. However, provided that the FCC does not determine that foreign ownership is not in the public interest, this level may be exceeded.

Industry Assistance

Taxes on wireless services have become a highly contentious issue. Taxation issues relevant to this industry are contained within Title 26, Internal Revenue Code, Subtitle D, Miscellaneous Excise Tax, Chapter 32 Facilities & Services, Section 4251, Imposition of Tax. Of particular interest is the “Tax on Talking,” which dates back to 1898. First introduced as a “temporary luxury tax,” this tax today takes the form of a 3.0% federal excise tax that is levied on all telecommunication services.

According to CTIA, the average wireless consumer pays more than 15.0% of their monthly bill in taxes and fees. In some states, the average burden is more than 20.0% of the monthly bill. Since 2005, taxes on wireless cell phone services have risen at four times the average rate for goods and services.

It is agreed that wireless service can lead to an increase in the standard of living and education, yet high taxes are burdened on the service. The broadband policy is paradoxical in nature: On one hand, the US government is spending billions of dollars to bring access to people who currently do not have it. But on the other hand, they are taxing the service at a rate that prohibits some from purchasing it.

Ovum, in their September 2005 report “Impact of the US Wireless Telecommunications Carriers industry on the US Economy,” makes the point that in 2004, the industry paid over $60.0 billion in US federal and state government taxes and charges.

Industry groups, including CTIA, continue to push for tax reform. In 2009, new legislation titled the Cell Tax Fairness Act of 2009 was put forward to restrict any state or local jurisdiction from imposing a new discriminatory tax on cell phone services, providers, or property for five years, with the intervening period used to negotiate with affected companies. As of mid-2010, Congress had not held a vote on the legislation.
## Key Statistics

### Industry Data

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue ($m)</th>
<th>Industry Value Added ($m)</th>
<th>Establishments</th>
<th>Enterprises</th>
<th>Employment</th>
<th>Exports</th>
<th>Imports</th>
<th>Wages ($m)</th>
<th>Domestic Demand</th>
<th>Wireless Subscribers (Mils)</th>
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### Annual Change

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<th>Year</th>
<th>Revenue (%)</th>
<th>Industry Value Added (%)</th>
<th>Establishments (%)</th>
<th>Enterprises (%)</th>
<th>Employment (%)</th>
<th>Exports (%)</th>
<th>Imports (%)</th>
<th>Wages (%)</th>
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### Key Ratios

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<tr>
<th>Year</th>
<th>IVA/Revenue (%)</th>
<th>Imports/Demand (%)</th>
<th>Exports/Revenue (%)</th>
<th>Revenue per Employee ($'000)</th>
<th>Wages/Revenue (%)</th>
<th>Employees per Est.</th>
<th>Average Wage ($'000)</th>
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<td>9.17</td>
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**Figures are inflation-adjusted 2014 dollars. Rank refers to 2014 data.**

Source: www.ibisworld.com
Industry Jargon

AVERAGE REVENUE PER USER (ARPU) A key performance indicator in telecommunications that indicates whether revenue growth is due to increased customers or phone usage. ARPU is revenue divided by the average number of subscribers.

BROADBAND PCS Service in the 1850-1990 MHz spectrum range. Commonly used for mobile voice and data services, including cell phone, text messaging, and Internet.

CHURN RATE The rate of increase at which customers discontinue their service on a voluntary or involuntary basis.

LONG-TERM EVOLUTION (LTE) The successor technology to GSM, designed to operate on IP-based networks. LTE networks use a simpler, flat network architecture compared to GSM.

NARROWBAND PCS Service in the 901-902, 930-931, and 940-941 MHz spectrum range. Commonly used for two-way paging and telemetry. Telemetry includes services such as monitoring utility meters from off-site locations.

PERSONAL COMMUNICATIONS SERVICES (PCS) Family of mobile radio communications services that encompass mobile and ancillary fixed communications services to individuals and businesses.

PREPAID A service that is purchased prior to use. The subscriber purchases credit to use on a cell phone network and, in doing so, avoids ongoing billing.

UNLICENSED PCS Unlicensed PCS will accommodate a wide range of services for small areas such as data networking within office buildings.

WIMAX Also known as IEEE 802.16m, a telecommunications standard that operates on IP-based networks in the microwave spectrum.

IBISWorld Glossary

BARRIERS TO ENTRY High barriers to entry mean that new companies struggle to enter an industry, while low barriers mean it is easy for new companies to enter an industry.

CAPITAL INTENSITY Compares the amount of money spent on capital (plant, machinery and equipment) with that spent on labor. IBISWorld uses the ratio of depreciation to wages as a proxy for capital intensity. High capital intensity is more than $0.333 of capital to $1 of labor; medium is $0.125 to $0.333 of capital to $1 of labor; low is less than $0.125 of capital for every $1 of labor.

CONSTANT PRICES The dollar figures in the Key Statistics table, including forecasts, are adjusted for inflation using the current year (i.e. year published) as the base year. This removes the impact of changes in the purchasing power of the dollar, leaving only the “real” growth or decline in industry metrics. The inflation adjustments in IBISWorld’s reports are made using the US Bureau of Economic Analysis’ implicit GDP price deflator.

DOMESTIC DEMAND Spending on industry goods and services within the United States, regardless of their country of origin. It is derived by adding imports to industry revenue, and then subtracting exports.

EMPLOYMENT The number of permanent, part-time, temporary and seasonal employees, working proprietors, partners, managers and executives within the industry.

ENTERPRISE A division that is separately managed and keeps management accounts. Each enterprise consists of one or more establishments that are under common ownership or control.

ESTABLISHMENT The smallest type of accounting unit within an enterprise, an establishment is a single physical location where business is conducted or where services or industrial operations are performed. Multiple establishments under common control make up an enterprise.

EXPORTS Total value of industry goods and services sold by US companies to customers abroad.

IMPORTS Total value of industry goods and services brought in from foreign countries to be sold in the United States.

INDUSTRY CONCENTRATION An indicator of the dominance of the top four players in an industry. Concentration is considered high if the top players account for more than 70% of industry revenue. Medium is 40% to 70% of industry revenue. Low is less than 40%.

INDUSTRY REVENUE The total sales of industry goods and services (exclusive of excise and sales tax); subsidies on production; all other operating income from outside the firm (such as commission income, repair and service income, and rent, leasing and hiring income); and capital work done by rental or lease. Receipts from interest royalties, dividends and the sale of fixed tangible assets are excluded.

INDUSTRY VALUE ADDED (IVA) The market value of goods and services produced by the industry minus the cost of goods and services used in production. IVA is also described as the industry’s contribution to GDP, or profit plus wages and depreciation.
INTERNATIONAL TRADE The level of international trade is determined by ratios of exports to revenue and imports to domestic demand. For exports/revenue: low is less than 5% , medium is 5% to 20% , and high is more than 20% . Imports/domestic demand: low is less than 5% , medium is 5% to 35% , and high is more than 35%.

LIFE CYCLE All industries go through periods of growth, maturity and decline. IBISWorld determines an industry’s life cycle by considering its growth rate (measured by IVA) compared with GDP; the growth rate of the number of establishments; the amount of change the industry’s products are undergoing; the rate of technological change; and the level of customer acceptance of industry products and services.

NONEMPLOYING ESTABLISHMENT Businesses with no paid employment or payroll, also known as nonemployers. These are mostly set up by self-employed individuals.

PROFIT IBISWorld uses earnings before interest and tax (EBIT) as an indicator of a company’s profitability. It is calculated as revenue minus expenses, excluding interest and tax.

VOLATILITY The level of volatility is determined by averaging the absolute change in revenue in each of the past five years. Volatility levels: very high is more than ±20%; high volatility is ±10% to ±20%; moderate volatility is ±3% to ±10%; and low volatility is less than ±3%.

WAGES The gross total wages and salaries of all employees in the industry. The cost of benefits is also included in this figure.
At IBISWorld we know that industry intelligence is more than assembling facts
It is combining data with analysis to answer the questions that successful businesses ask

Identify high growth, emerging & shrinking markets
Arm yourself with the latest industry intelligence
Assess competitive threats from existing & new entrants
Benchmark your performance against the competition
Make speedy market-ready, profit-maximizing decisions

Who is IBISWorld?
We are strategists, analysts, researchers, and marketers. We provide answers to information-hungry, time-poor businesses. Our goal is to provide real world answers that matter to your business in our 700 US industry reports. When tough strategic, budget, sales and marketing decisions need to be made, our suite of Industry and Risk intelligence products give you deeply-researched answers quickly.

IBISWorld Membership
IBISWorld offers tailored membership packages to meet your needs.