BIS Research

Emerging Technology Market Intelligence

Global Wireless Charging Market Analysis & Forecast (2018-2024)

Focus on Applications, Components, Technology, Implementation, & Geography

January 2020

Sample

BIS Research is a leading market intelligence and technology research company. BIS Research publishes in-depth market intelligence reports focusing on the market estimations, technology analysis, emerging high-growth applications, deeply segmented granular country-level market data and other important market parameters useful in the strategic decision making for senior management. BIS Research provides multi-client reports, company profiles, databases, and custom research services.

Preface

In the current age of technological proliferation, semiconductors are an essential cornerstone for various consumer electronics applications which act as a data-processing aspect for any device, ranging from a smartphone to a spacecraft. The semiconductor industry is currently growing at a fast rate, due to several advancements in the integrated circuits such as improvements in terms of reliability, power consumption, cost, and system size for devices. The use of battery-backed electronic devices in our day-to-day lives has increased significantly in the past decade, courtesy the rapid changes in the micro-electronics industry. The growing demand for a convenient charging solution in the recent years has acted as one of the major catalysts for the growth of the wireless charging industry. The current opportunities for wireless power transfer are limitless; and the recent trends in the industry indicate a favorable market scenario for widespread growth.

The BIS Research study offers a wide perspective on the global wireless charging market, during the forecast period 2019-2024. The report also analyzes the market penetration by wireless technologies, components and applications, and their growth opportunities. The study focuses on the changing landscape of the wireless charging market, owing to the capacity developments of leading players. The research is based on extensive primary interviews (in-house experts, industry leaders, and market players), and secondary research (a host of paid, and unpaid databases), along with the analytical tools, that have been used to build the forecast and the predictive models.

This research has been conducted to answer some of the most crucial questions about the wireless charging market:

- What is the estimated growth pattern of the global wireless charging market size from 2019 to 2024?
- Which wireless charging technology is expected to be dominant in the forecast period?
- What are the revenue opportunities for wireless charging across various countries, globally?
- What are the key technological parameters which are influencing the growth of wireless charging market?

The report is a compilation of various segmentations including market breakdown by implementation such as integrated or aftermarket. While highlighting the key driving and restraining forces for the global wireless charging market, the report also provides a detailed study of the different applications for transmitters and receivers. The report is based on discussions and interviews with the top management of several leading wireless charging original equipment manufacturers (OEMs), tier 1 suppliers and solution providers.

The wireless charging market is not expected to play out in the same way for every region or application, hence, this report segments the market accordingly and breaks down the industry geographically as follows: North America (the U.S, Canada & Mexico), Europe (Germany, the U.K, France, and Rest-of-Europe), Asia-Pacific (China, India, Japan, South Korea and Rest-of-APAC), and Rest-of-the-World (Latin America, and Middle East & Africa).

BIS Mobility

January 2020

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Executive Summary

Rapid global advancement and integration of digital technologies are redefining various industry verticals to upgrade their fundamental operations. With certain technological advancements taking place in the field of digitalization, internet of things (IoT) has significantly revolutionized the way several industries work. The rise of automation in daily tasks has not only reduced industry workload but also improved the overall experience of the users. IoT is a massive network of devices connected to each other through internet. Adoption rate of IoT is significantly increasing worldwide and the technology is touted to bring about massive transformation in numerous industry verticals such as healthcare, retail, consumer electronics, manufacturing, and automotive, among others. One of the impactful factors propelling the penetration rate of IoT technology is rapidly increasing data transmission rate, attributing to the increase in the number of connected consumer devices such as smartphones, tablets, and laptops.

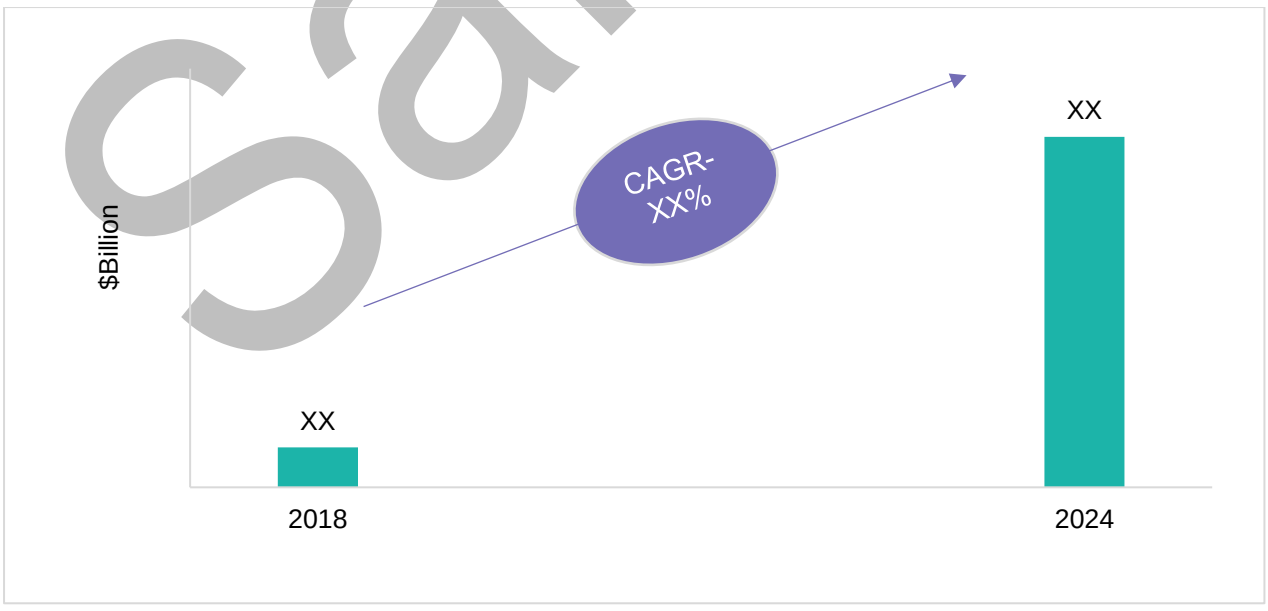
A constant improvement of mobile technologies in terms of connectivity, AR/VR gaming experience, and touch sensitive controls, among others, resulting in an improved battery power demand of the smart devices. These devices are being used for longer durations and their real-time connected feature uses the battery of any connected device quite frequently. Though, this feature of connected ecosystem helps any user to get the real-time information at all instances, it also makes it necessary for the device to stay charged adequately. This can be done either by wired or wireless charging, with the latter being in demand by the consumers for the convenience and comfort.

Wireless charging, put simply, means eliminating the use of wires to power devices. The wireless charging technology enables a battery-powered device to be charged automatically when placed near a transmitter. Wireless charging has witnessed significant developments in the past three years and the reliability and advantages it offers open avenues toward a huge potential for the wireless charging industry. Adoption of *Qi* (pronounced as chee) standard by the majority of the companies has been a major boost for the wireless charging industry, as the technology enables interoperability between devices. Further, owing to establishment of specific standards and extensive adoption of wireless technology by the smartphone and wearable devices market, wireless charging is bound to expand into other applications such as healthcare and aerospace and defense as well in the coming years. The emergence of wireless power transfer has significantly reduced the hassles of using wires and taking the chord everywhere for charging. This has given more comfort to the end user to wirelessly charge their devices via inductive charging or electromagnetic radiation.

The global wireless charging market is driven by several factors such as increased shipments of smart handheld devices, technological and dynamic design enhancements, standardization of wireless regulations driving consumer inclination, and increasing battery anxiety among the consumers. Innovations and ongoing research in the consumer electronic devices such as smartphones and wearable devices have been fueling the growth of the wireless charging market. Wireless charging is considered the next big thing in the smartphone industry, and many manufacturers have already started manufacturing smartphones enabled with wireless charging. However, the majority of the phones with wireless-enabled technology fall under the premium smartphone category at present. As the market grows and the demand for wireless power transmission increases, the technology is expected to be embedded in larger range of devices such as drones, laptops, and handheld devices, among others and mid- and low-range devices as well.

Companies such as Samsung Electronics Co. Ltd., Google LLC, LG Electronics Inc., Microsoft Corporation, Apple Inc., and Motorola Inc., have already incorporated wireless charging in the smartphones. Additionally, the establishment of New Jersey-Based-Wireless Power Consortium (WPC, a multinational technology consortium, estb.2008) has been a landmark development in the wireless charging market, as it has paved the way for the manufacturers to get their products certified, which are then accepted on a global scale.

Figure 1: Global Wireless Charger Market Outlook, $Billion, 2018 and 2024



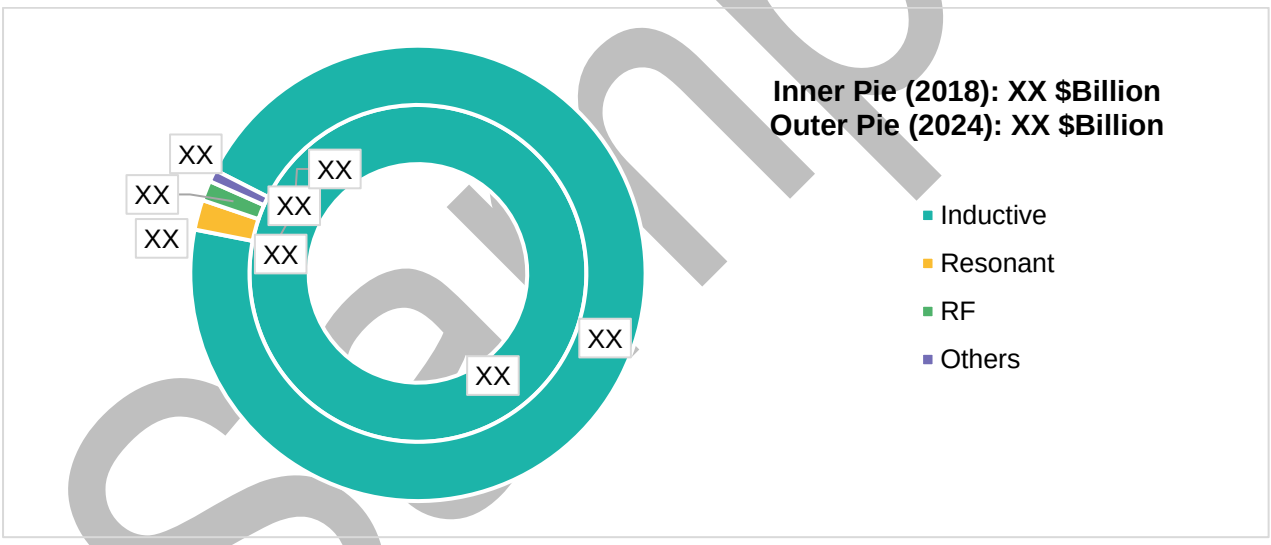
Source: Expert Interviews, Secondary Research, and BIS Research Analysis

The global wireless charging market was valued at $XX billion in 2018 and is projected to reach $XX billion by 2024, registering a compound annual growth rate (CAGR) of XX% between 2019 and 2024. Wireless charging takes place when energy is transferred as electromagnetic waves from a transmitter to a receiver. Inductive wireless charging is currently the most adopted solution for wireless charging and accounted for approximately XX% of the global wireless charging market in 2018. This is largely because of the greater consumer inclination for more efficient and fast charging capability of inductive charging.

Inductive Charging Dominating the Global Wireless Charging Market (by Technology)

The global wireless charging market in terms of technology has been categorized into inductive, resonant, radio frequency (RF), and others.

Figure 2: Global Wireless Charging Market Size (by Technology), $Billion, 2018 and 2024



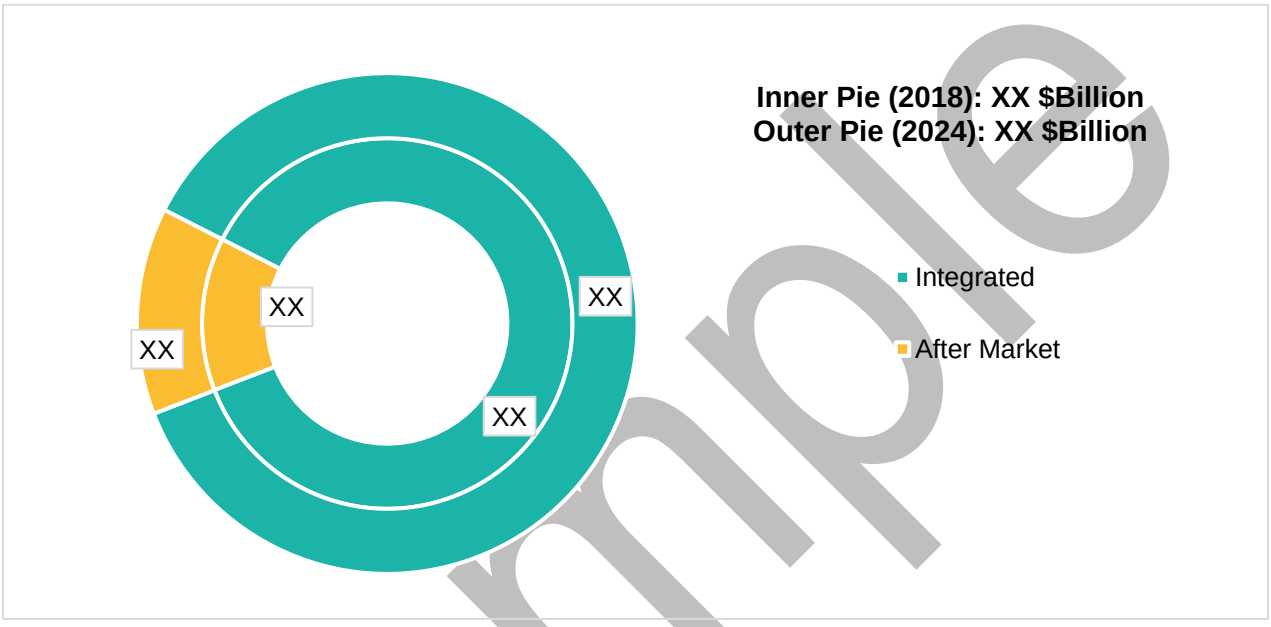
Source: Expert Interviews, Secondary Research, and BIS Research Analysis

In terms of market value, inductive technology accounted for $XX billion in 2018 and is estimated to reach $XX billion by 2024 at a CAGR of XX% during the forecast period 2019-2024. The high growth is majorly attributed to the widespread adoption of Qi standard for inductive wireless charging technology for smartphones. Most device manufacturers have partnered with the technology providers to integrate the Qi standard to market their products. However, recent developments in the resonant technology by AirFuel Alliance, have demonstrated an increase in the efficiency of wireless chargers and have further contributed to the growth of resonant technology devices market.

Integrated Category Expected to Dominate the Wireless Charging Market (by Implementation)

The global wireless charging market, in terms of implementation, has been primarily categorized into integrated and aftermarket segments. Further analysis has been done individually for transmitters and receivers.

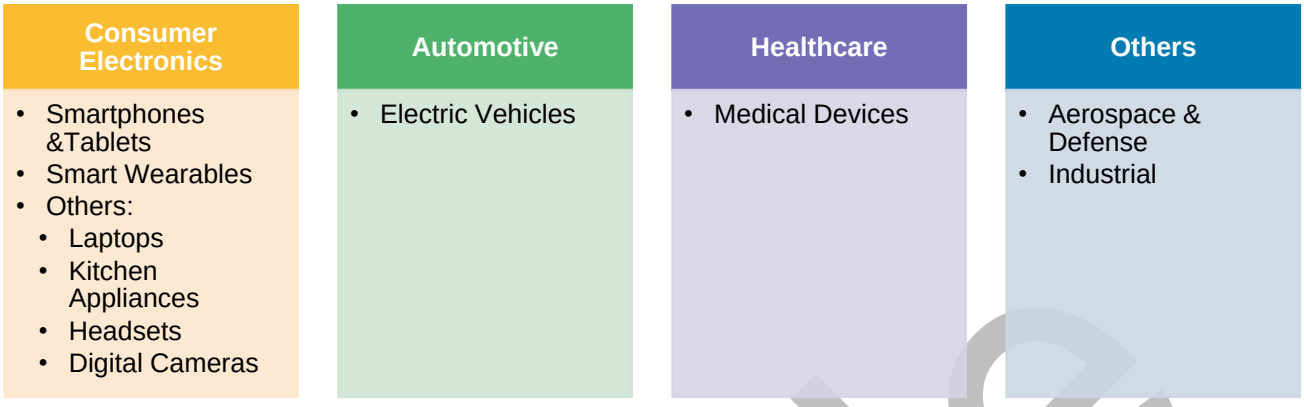
Figure 3: Global Wireless Charging Market Size (by Implementation), $Billion, 2018 and 2024



Source: Expert Interviews, Secondary Research, and BIS Research Analysis

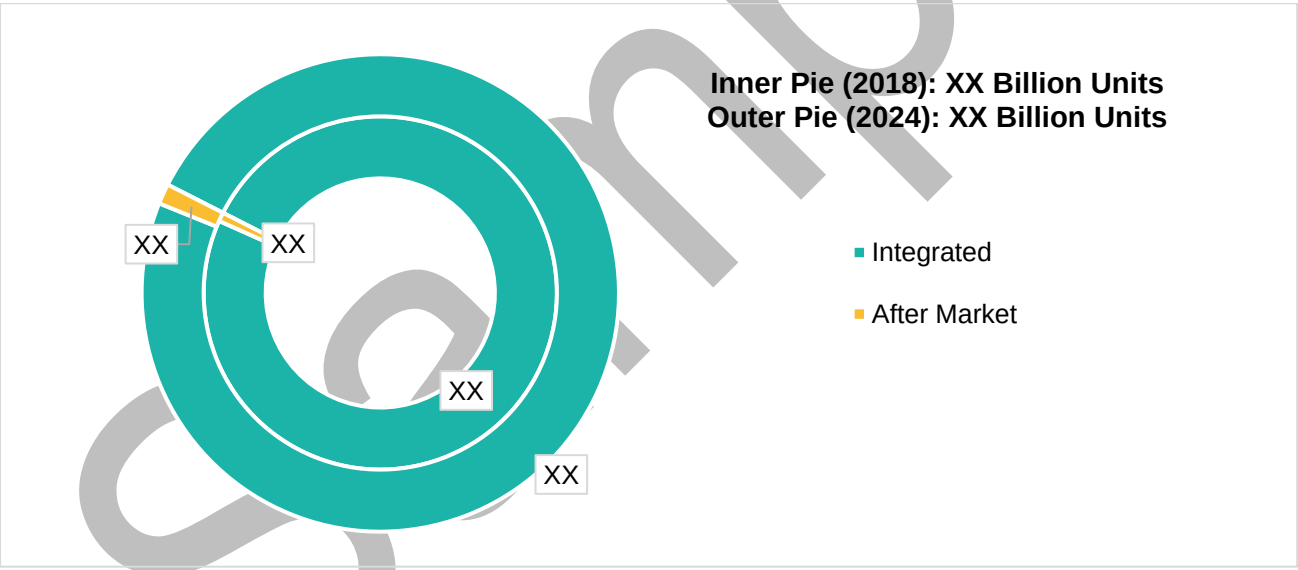
In terms of market value, integrated wireless charging technology accounted for $XX billion in 2018, and is estimated to reach $XX billion by 2024 at a CAGR of XX% during the forecast period 2019-2024. The increasing demand for smartphones and smart wearable devices in the consumer segment has largely fueled the demand for integrated wireless charger devices. This is because of the less effective aftermarket solutions wherein the consumer has to use an aftermarket phone case or a similar product to get the wireless charging capabilities.

Figure 4: Wireless Charging Receivers: Application Areas



Source: Expert Interviews, Secondary Research, and BIS Research Analysis

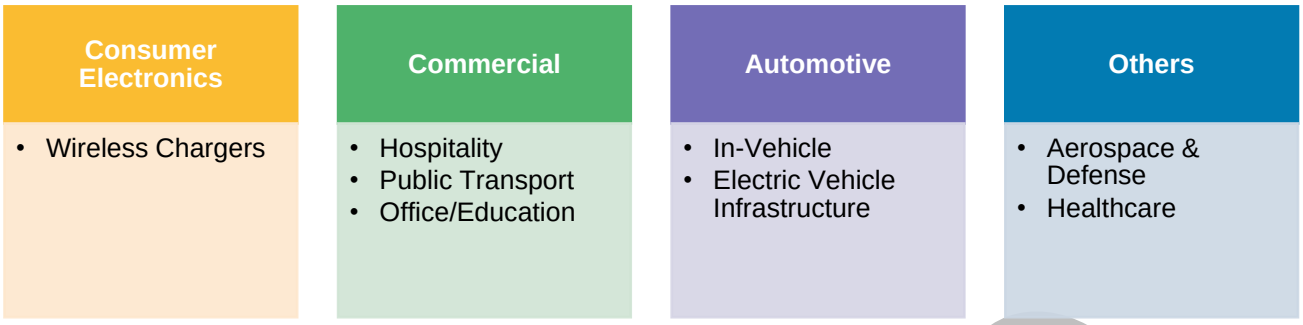
Figure 5: Global Wireless Charging Market (by Receiver Implementation), $Billion, 2018 and 2024



Source: Expert Interviews, Secondary Research, and BIS Research Analysis

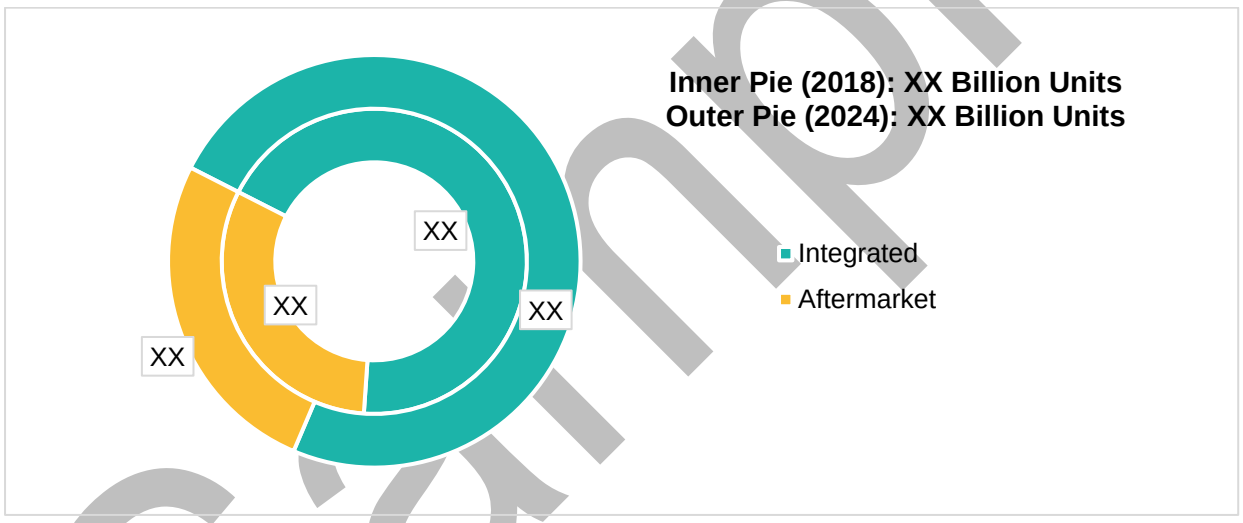
The consumer electronics segment currently dominates the global receiver market for wireless charging, both in terms of volume and value. In terms of revenue, the consumer electronics generated revenue of $XX billion in 2018 and is estimated to reach $XX billion by 2024 at a CAGR of XX% during the forecast period 2019-2024. The dominance of consumer electronics is majorly attributed to the increased shipment of smartphones which are wireless charging-enabled.

Figure 6: Wireless Charging Transmitters: Application Areas



Source: Expert Interviews, Secondary Research, and BIS Research Analysis

Figure 7: Global Wireless Charging Market (by Transmitter Implementation), $Billion, 2018 and 2024



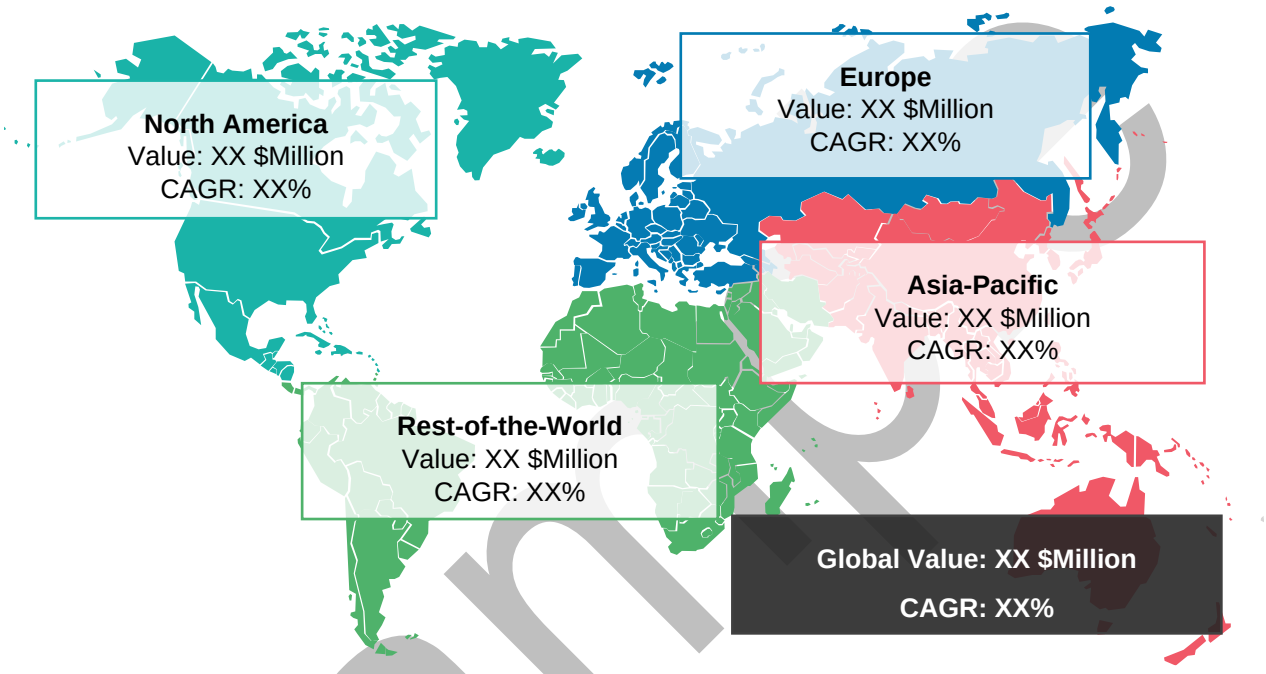
Source: Expert Interviews, Secondary Research, and BIS Research Analysis

The consumer electronics segment dominates the global transmitter market for wireless charging, both in terms of volume and value. In terms of revenue, the consumer electronics segment generated a revenue of $XX billion in 2018, and the revenue is estimated to reach $XX billion by 2024 at a CAGR of XX% during the forecast period 2019-2024. The dominance of consumer electronics is majorly attributed to the increased shipment of smartphones which are wireless charging-enabled.

APAC to Witness Fastest Growth in Global Wireless charging Market in the Forecast Period

This report also covers the global wireless charging market, by region, and consequently provides the revenue of the key regions which include North America, Europe, Asia-Pacific (APAC), and Rest-of-the-World (Middle East, Africa, and Latin America).

Figure 8: Global Wireless Charging Market Size (by Region), $Million, 2018-2024



Source: Expert Interviews, Secondary Research, and BIS Research Analysis
Note: The volume in the above figure is given for 2018, and CAGR is for the forecast period 2019-2024

North America dominated the global wireless charging market and accounted for XX% of the total market share in 2018 and is anticipated to maintain its dominance throughout the forecast period. The North American wireless charging market accounted for $XX billion in 2018 and is anticipated to reach $XX billion by 2024, growing at a CAGR of XX% between 2019 and 2024. Developed economies such as the U.S., Germany, and France are identified as the leading markets in the wireless charging sector. With the demand of electric vehicles (EV) rising at an exponential rate; various EV manufacturers are now moving to wireless charging systems. For instance, BMW 530e is one of the models offered by BMW in the U.S. which offers wireless charging systems for its consumers. Additionally, consumer electronics is also one of the key application areas of wireless charging in the country. The steady introduction and implementation of wireless technology in Samsung's Galaxy smartphones, the Apple Watch, and other wearable devices are also expected to boost the demand for wireless charging for consumer electronics in the country.

Competitive Landscape

The competitive landscape of the wireless charging market exhibits an inclination toward companies adopting strategies such as partnerships and collaborations, business expansions, product launches, and acquisitions of small-scale start-ups and emerging players. Moreover, the industry is at a growing stage, and manufacturers are adopting the aforementioned strategies to increase their market presence along with organizing and taking part in numerous events. Most of the wireless charging manufacturers are of similar financial capability, and the industry landscape is quite competitive because of the existence of a large number of players in the market.

The global wireless charging market, though an emerging market, is also one of the most competitive industries, with leading players competing against each other so as to attain a stable hold over the pool of customers. Some of the leading players in the global wireless charging market are Energous Corporation, Integrated Devices Technology Inc., Infineon Technologies, NXP Semiconductors, Qualcomm Inc., Aircharge, Belkin International, Witricity Corporation, Samsung Electronics Ltd., and Texas Instruments. These companies are aiming for a wider range of product portfolio and collaborations in order to further enhance the performance and quality of the wireless charging infrastructure.

1. Market Dynamics

1.1 Definition

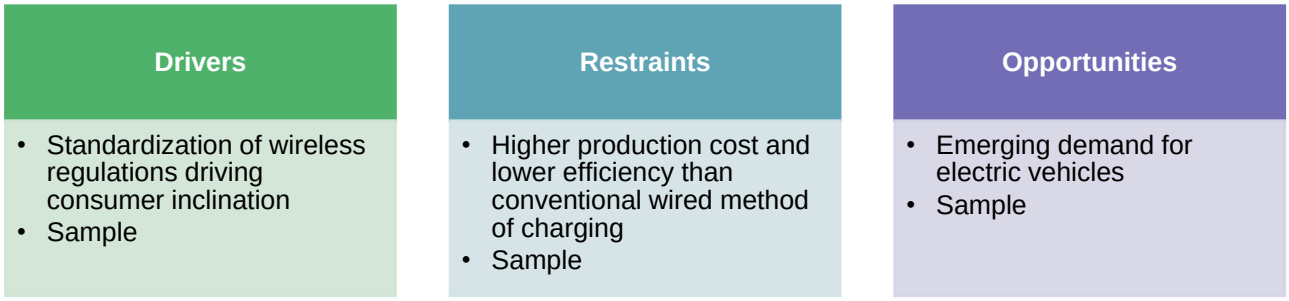
The process that includes the wireless transfer of power or electrically charging battery-powered equipment and devices without the requirement of wired electric connection is termed as wireless charging. It is often referred to as inductive charging, in which power is transferred wirelessly through electromagnetic induction.

In the case of inductive charging, electromagnetic waves are used instead of conventional wired cables to transfer energy. Nowadays, wireless chargers are easily compatible with numerous consumer devices such as smartphones. The only condition to be fulfilled is the apparent design and technical similarity of communication models. Both the transmitter and receiver are expected to fulfill QI standards. It operates on a very basic principle where the Qi transmitter is involved in transferring the required energy to Qi receiver. It is often used for charging small handheld devices such as mobile phones.

1.2 Market Overview

The global wireless charging market is expected to grow at a healthy rate during the forecast period 2019-2024. The market is rapidly expanding, driven by continuous advancements and innovation in wireless charging technology. The demand for a convenient and hassle-free charging is a primary factor which has led to the adoption of wireless charging technology. The market has been majorly driven by the increase in the number of shipments of wireless charging-enabled smartphones and wearable devices. Standardization of regulations for wireless charging by Wireless Planning and Coordination (WPC) and an increase in several embedded wireless charging solutions have acted as some of the key drivers for this industry. However, inefficiency when it comes to fast charging and high price associated with wireless charging have served as some of the major challenges for the market.

Figure 1.1: Market Dynamics



Source: BIS Research Analysis, Secondary Research and Expert Interviews

1.3 Market Drivers

This section discusses the key driving forces for the global wireless charging market which are expected to further enable the market growth during the forecast period. The established presence of smartphones and wearable devices has been one of the major factors for the growth of this market.

Table 1.1: Impact Analysis of Drivers

Drivers	Impact (1-3yr)	Impact (3-5yr)
Standardization of Wireless Regulations Driving Consumer Inclination	Sample	Sample
Technological and Dynamic Design Enhancements	Sample	Sample
Increasing Battery Anxiety Among the Consumers	Sample	Sample
Increasing Shipments of Smart Handheld Devices Fueling the Demand	Sample	Sample

Source: BIS Research Analysis

1.3.1 Standardization of Wireless Regulations Driving Consumer Inclination

With the ongoing research and development in the field of consumer electronic devices, the need for an efficient charging infrastructure has increased since the inception of next-generation smartphones. There is currently a huge demand for charging infrastructure which transfers power safely to the device, puts minimal strain on the charging port, and is easier to use. With wireless charging emerging as one of the major technologies in the smartphone industry, several manufacturers such as Samsung Electronics Co. Ltd., Google LLC, LG Electronics Inc, Microsoft Corporation, Apple Inc., and Motorola Inc. have started incorporating wireless charging in their premium segment

smartphones. As wireless charging technology is still in a development phase, manufacturers in various industries such as aerospace and consumer goods are trying to incorporate it in a number of their products such as drones and laptops. The presence of numerous wireless chargers in the market, raises the need for certification and standardization, to ensure that a consumer receives an authentic and good quality wireless chargers.

The wireless charging industry has been witnessing a similar trend in terms of standards and associations driving the growth of this technology. Wireless Power Consortium (WPC) is one of the major organizations fuelling the growth of wireless charging. The consortium headquartered in New Jersey was established in 2008 and has XX members, which include companies from various industries such as semiconductors, consumer electronics, and wireless operators. WPC operates a network of labs in various countries where wireless charging products can be verified for the Qi (“chee”) standard, focused on inductive charging. Furthermore, the organization has facilitated the use of Qi-standard wireless charging applications at restaurants, hotels, airports, and public charging points, through various partnerships between organizations and end users. Additionally, WPC is also focused on the PowerbyProxi standard for resonant charging for one-to-one or one-to-many solution.

Other prominent organizations in the wireless charging industry include AirFuel Alliance, headquartered in the U.S., formed after the merger of Power Matters Alliance (PMA), and Alliance for Wireless Power (A4WP) in 2015. The organization is responsible for inductive, resonant, and other wireless power transfer technologies. AirFuel Alliance has been developing standards, infrastructure, and network protocols, among others, for the wireless charging industry.

As the industry matures, the wireless charging market witnessed the standardization in place, thus providing a universal interoperable standard that can be followed by manufacturers to deliver an improved user experience. The devices adhering to these standards have the capability to provide power to multiple devices with different power requirements simultaneously, with the least interference from other RF frequencies. Hence, the standards and associations are pivotal to the growth of the wireless charging industry in the current scenario and would continue to do the same during the forecast period (2019-2024).

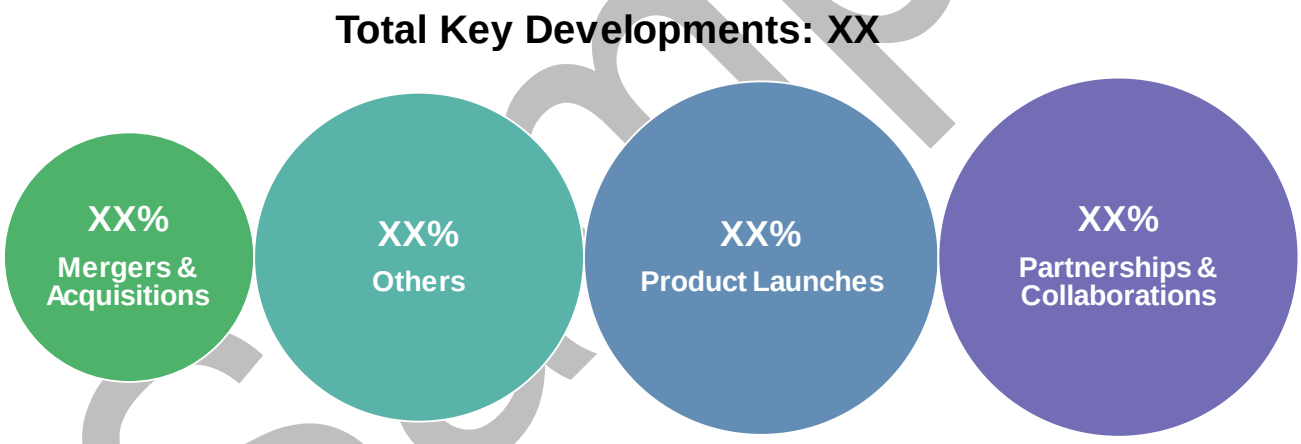
2. Competitive Landscape

2.1 Key Strategies and Partnerships

The global wireless charging market has witnessed several strategic and technological developments in the past few years, undertaken by the different market players to attain their respective market shares in this emerging domain. Some of the strategies covered in this segment are product launches, partnerships and collaborations, and mergers and acquisitions. The preferred strategy for the companies has been product launches to strengthen their position in the global wireless charging market.

Note: The detailed lists of key developments and strategies mapped from January 2016 to November 2019 are covered in Annexure I.

Figure 2.1: Key Strategies and Developments

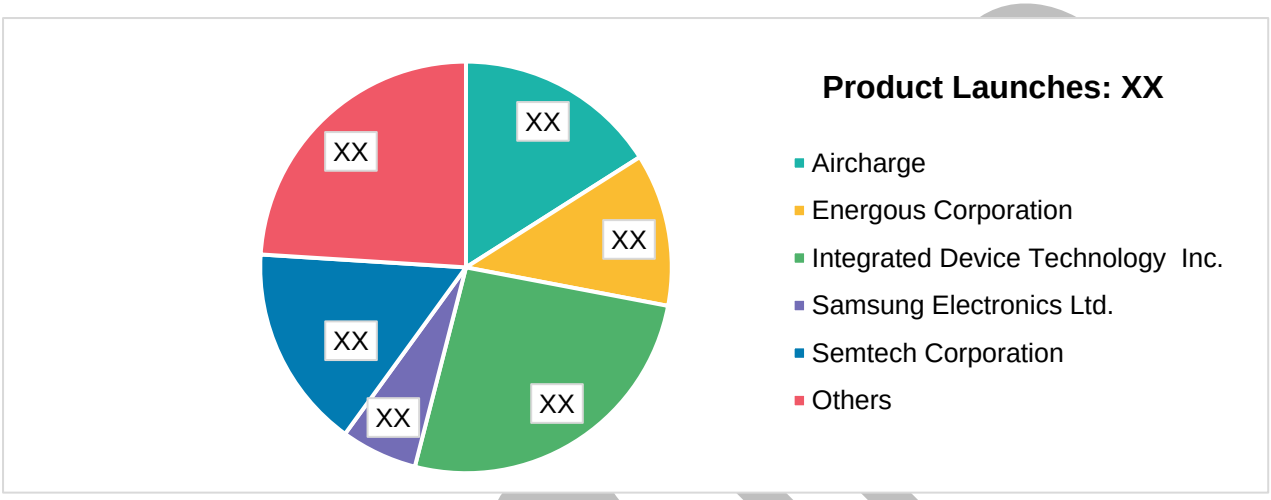


Source: Secondary Research and BIS Research Analysis

2.1.1 Product Launches

The prominent market players in the global wireless charging market are launching various products to match with the competitors' product portfolio. Product launch has become one of the most critical strategies for gaining competitive advantage in growing wireless charging industry. The following graph represents the product launches by different companies:

Figure 2.2: Product Launches, 2016-2019



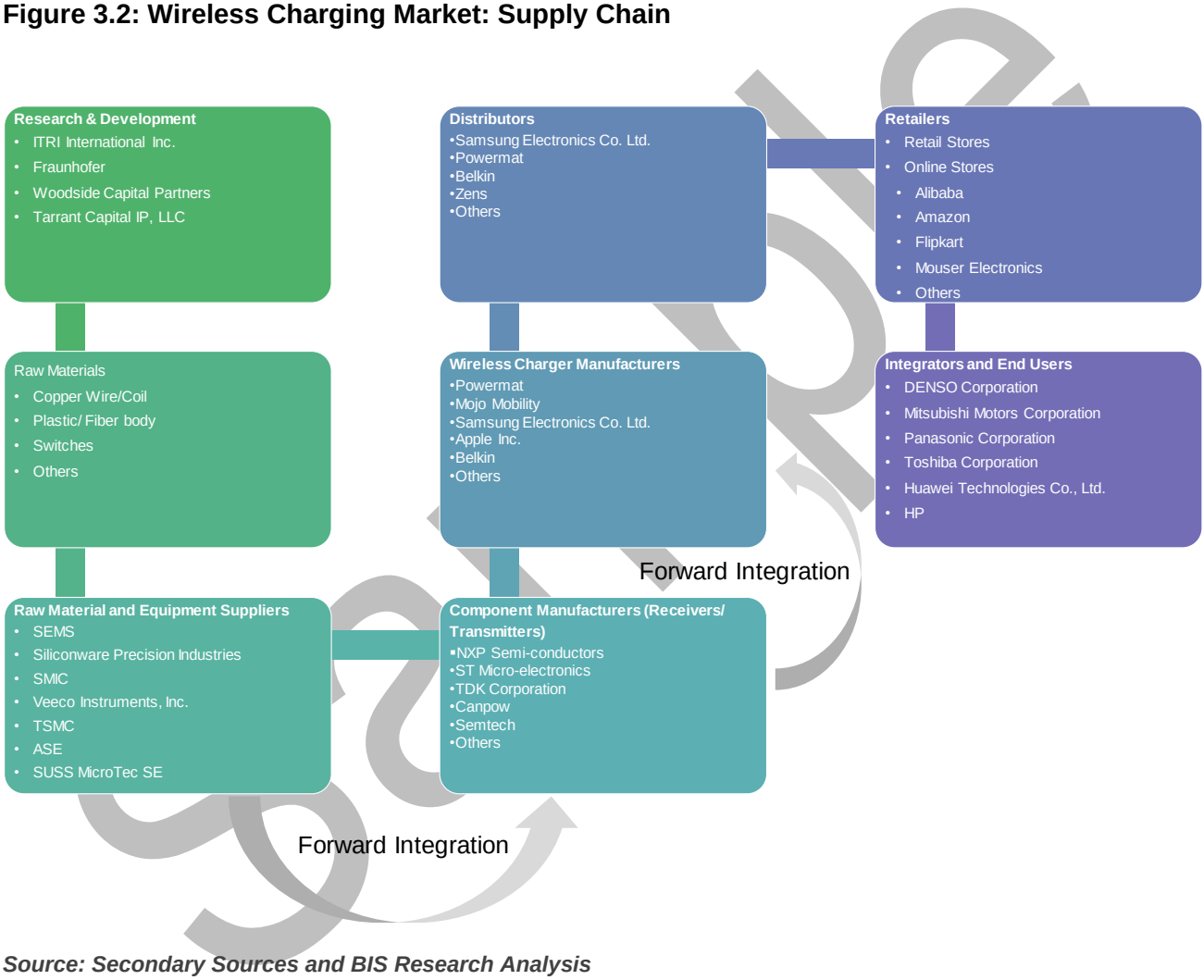
Source: Secondary Research and BIS Research Analysis

3. Industry Analysis

3.1 Supply Chain Analysis

The following figure depicts the supply chain of wireless charging, which includes research and development (R&D), technology providers, raw material and equipment suppliers, and device manufacturers, integrators, and end users, among others.

Figure 3.2: Wireless Charging Market: Supply Chain



Source: Secondary Sources and BIS Research Analysis

The preceding figure depicts the supply chain analysis of the wireless charging market. ITRI International Inc., Fraunhofer, Woodside Capital Partners, and Tarrant Capital IP, LLC, are some of the globally renowned organizations deeply engaged in the research and development of wireless charging. The various raw materials used in the manufacturing of wireless charging include copper wire/coil, plastic/fiber body, and switches, among others. The transmitters and receivers are then manufactured with compatible standards such as Qi standard to improve interoperability between Qi-

enabled devices. Furthermore, the integration of components is done by the device manufacturer. The companies operating in the wireless charging market channelize their distribution through owned-outlets or online retail stores. Forward integration (the strategy to expand the business of a company to control distribution and supply of the company's product directly), is possible in this supply chain as the companies prefer to improve their distribution channels and services.

4. Global Wireless Charging Market, by Technology

4.1 Assumptions & Limitations

Assumptions

- The scope of this report is focused on wireless power transfer
- The market has been mapped on the lines of the type of components in wireless charging, namely transmitters and receivers.
- Based on the classification, the average selling price (ASP) was calculated by the weighted average method. ASP calculations are completely based on the number of data points taken into account while conducting the research.
- The base currency considered for the market analysis is US$. Currencies other than the US$ are converted to the US$ for all statistical calculations, considering the average conversion rate for that particular year.
- The currency conversion rate is taken from the historical exchange rate of Oanda website.
- Nearly all recent developments, from January 2016 to November 2018, are taken into account in this research study.
- The market size for the component types is considered in terms of volume and value in the wireless charging market.
- The wireless charging market size by application, by component, by the implementation, and by region is also analyzed in terms of volume and value.
- The compound annual growth rate (CAGR) is calculated from 2018 to 2023.

Limitations

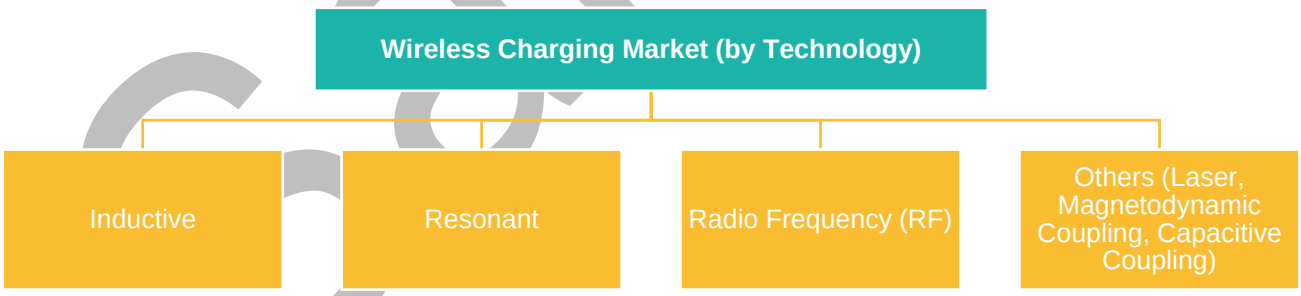
- The market has been classified by component type, application, type of implementation, and geography in the wireless charging market.
- The geographical areas have been segmented into North America, Europe, Asia-Pacific, and the Rest-of-the-World (RoW). For a structured analysis, North America is divided into the U.S., Canada, and others; Europe into Germany, the U.K., France, and others; Asia-Pacific into India, China, Japan, India, South Korea, and others; and RoW including Latin America, Middle East, and Africa.

- The information rendered in the report is a result of the in-depth expert interviews, surveys, and secondary analysis.
- Where relevant information was not available, proxy indicators and extrapolation were employed.
- The economic downturn in the future was not taken into consideration for the market estimation and forecast.
- Technologies currently used are expected to persist through the forecast period with no significant breakthroughs in technology.

4.2 Wireless Charging Technology Market Overview

This section provides an overview of the technology used for wireless charging market. Wireless charging market has witnessed considerable technological revolution in the past decade, which has resulted in the development of wireless charging for near-field and far-field applications. The technology used for wireless charging can be broadly classified into three categories; inductive, resonant, and radio frequency (RF) technology. However, various other technologies exist in the market which have not witnessed a significant adoption in this market.

Figure 4.1: Global Wireless Charging Market (by Technology)



Source: Secondary Research & BIS Research Analysis

Wireless charging or power transfer occurs when energy is transferred in the form of electromagnetic waves. Inductive wireless charging is currently the widely adopted solution for wireless charging and accounted for approximately XX% of the global wireless charging market in 2018. The following table represents the market outlook of wireless charging in terms of technology:

Table 4.1: Wireless Charging Market (by Technology), Units Million, 2018-2024

Technology	2018	2019	2020	2021	2022	2023	2024	CAGR (2019-2024)
Inductive	XX	XX	XX	XX	XX	XX	XX	XX
Resonant	XX	XX	XX	XX	XX	XX	XX	XX
RF	XX	XX	XX	XX	XX	XX	XX	XX
Others	XX	XX	XX	XX	XX	XX	XX	XX
Total	XX	XX	XX	XX	XX	XX	XX	XX

Source: Expert Interviews, Secondary Research, and BIS Research Analysis

Table 4.2: Wireless Charging Market (by Technology), $Million, 2018-2024

Technology	2018	2019	2020	2021	2022	2023	2024	CAGR (2019-2024)
Inductive	XX	XX	XX	XX	XX	XX	XX	XX
Resonant	XX	XX	XX	XX	XX	XX	XX	XX
RF	XX	XX	XX	XX	XX	XX	XX	XX
Others	XX	XX	XX	XX	XX	XX	XX	XX
Total	XX	XX	XX	XX	XX	XX	XX	XX

Source: Expert Interviews, Secondary Research, and BIS Research Analysis

The inductive technology dominated the global wireless charging industry, both in terms of sales volume and sales revenue in 2018. The sales volume generated by the inductive wireless charging technology was XX million units in 2018 which is estimated to reach XX million units by 2024 at a CAGR of XX% during the forecast period. In terms of revenue, the inductive technology generated revenue of $XX billion in 2018 and is estimated to reach $XX billion by 2024 at a CAGR of XX% from 2018 to 2024. The dominance by the inductive technology can be attributed to the increased adoption of this technology for better efficiency as compared to resonant and RF technology. Additionally, the resonant technology for wireless charging emerged only recently, leading to a widespread adoption of inductive charging.

The following table illustrates the key parameters of the technologies used for wireless charging:

Table 4.3: Key Parameters of Different Technologies Used for Wireless Charging

Technology	Range	Directivity	Frequency
Inductive	Sample	Sample	Hz-MHz
Resonant	Sample	Sample	kHz-GHz
RF	Sample	Sample	GHz
Laser	Sample	Sample	>THz
Magneto Dynamic Coupling	Sample	Sample	Hz
Capacitive Coupling	Sample	Sample	kHz-MHz

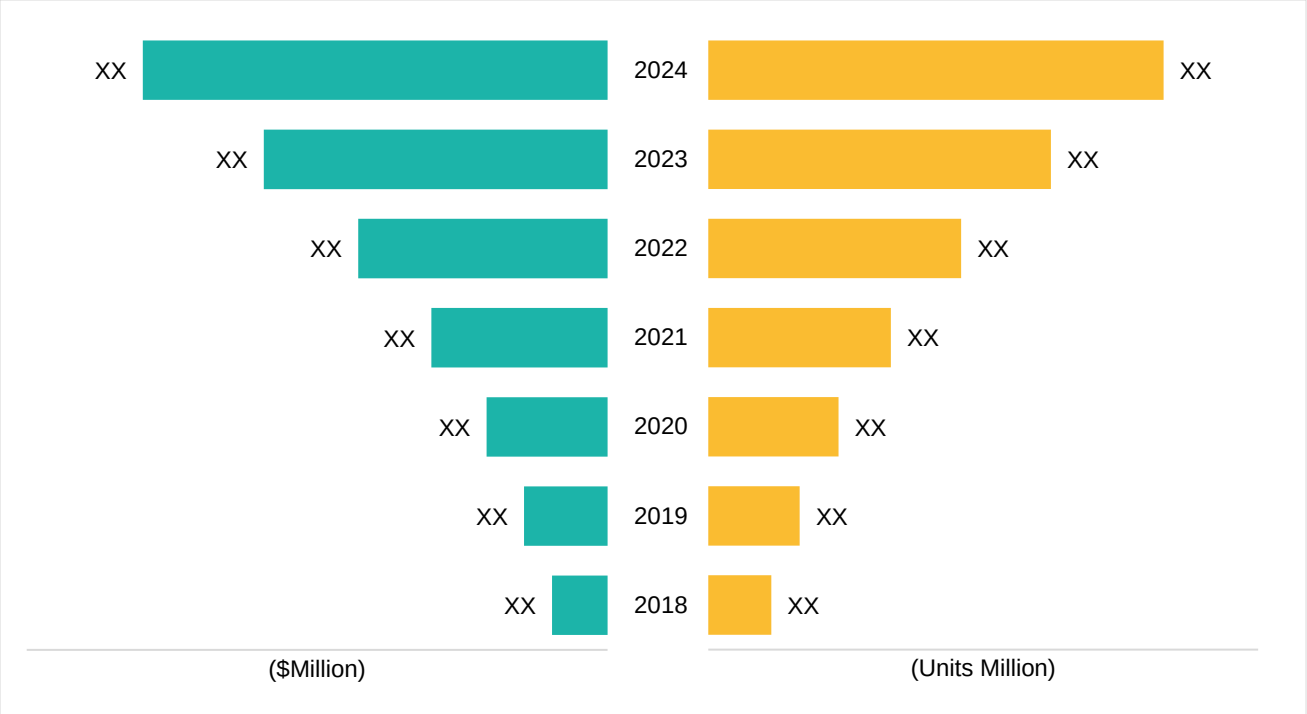
Source: Secondary Research and BIS Research Analysis

4.3 Inductive Technology

Inductive wireless charging technology transfers power using an electromagnetic field from the inductive coupling. The power is transferred from a transmitter using an induction coil to create alternating electromagnetic current, which is received by a receiver coil in the form of the electromagnetic field. This electromagnetic field is then converted into an electrical current and is used to charge a device. “Qi” (pronounced as ‘chee’) standard has majorly catered to the growth of this technology for wireless charging. Most of the smartphone manufacturers, which constitute the majority of the wireless charging market, have adopted the Qi standard for wireless charging. This widespread adoption has further propelled the market growth of inductive charging.

In the current scenario, Wireless Power Consortium (WPC), which developed the Qi standard, has more than XX members (including Samsung, Nokia, Apple, and HTC, among others). Qi standard has enabled the interoperability of various wireless transmitters and receivers. Every Qi-enabled receiver can work perfectly with Qi-enabled transmitters. The following figure illustrates the current market scenario for inductive wireless charging market:

Figure 4.2: Inductive Wireless Charging Market, 2018-2024



Source: Expert Interviews, Secondary Research, and BIS Research Analysis

In 2018, the devices for inductive technology for wireless charging market was XX million units which is expected to reach XX million units by 2024, at a CAGR of XX%. In terms of market value, inductive technology accounted for $XX billion in 2018, and is estimated to reach $XX billion by 2024 at a CAGR of XX% during the forecast period 2019-2024. The high growth is majorly attributed to the widespread adoption of Qi standard for inductive wireless charging technology for smartphones.

5. Global Wireless Charging Market, by Implementation

5.1 Market Overview

Transmitters and receivers together form foundational base of wireless charging and plays most crucial role. For transfer of power in any electronic device wirelessly, both the transmitter and receivers are expected to meet Qi standards. Demand for both have witnessed significant growth in recent years, owing to the widespread adoption of Qi standard in the case of receivers. Shipment for receivers has driven the demand for transmitters in recent years. Companies are now focusing on creating a wireless charging ecosystem for devices by making them available readily for the consumer.

Worldwide sales of these transmitters and receivers are carried out through two channels -- integrated and aftermarket. This chapter presents the market outlook in terms of the implementation of these components. The following figure illustrates the wireless charging market by the implementation of these components:

Table 5.1: Wireless Charging Market (by Implementation), Units Million, 2018-2024

Implementation	2018	2019	2020	2021	2022	2023	2024	CAGR (2019-2024)
Integrated	XX	XX	XX	XX	XX	XX	XX	XX
Aftermarket	XX	XX	XX	XX	XX	XX	XX	XX
Total	XX	XX	XX	XX	XX	XX	XX	XX

Source: Expert Interviews, Secondary Research, and BIS Research Analysis

Table 5.2: Wireless Charging Market (by Implementation), $Million, 2018-2024

Implementation	2018	2019	2020	2021	2022	2023	2024	CAGR (2019-2024)
Integrated	XX	XX	XX	XX	XX	XX	XX	XX
Aftermarket	XX	XX	XX	XX	XX	XX	XX	XX
Total	XX	XX	XX	XX	XX	XX	XX	XX

Source: Expert Interviews, Secondary Research, and BIS Research Analysis

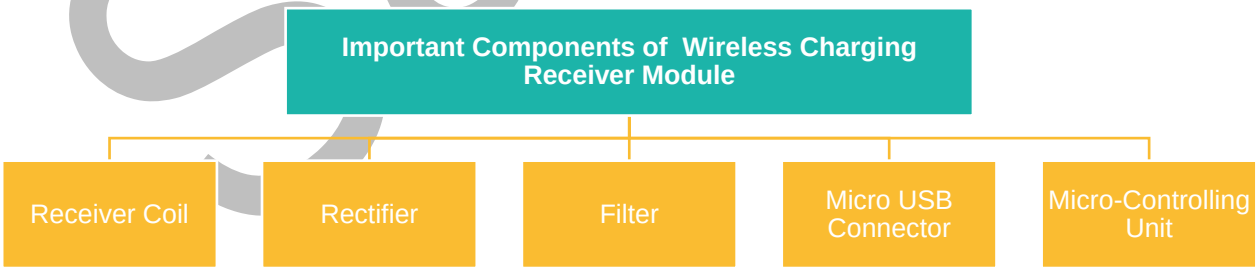
In 2018, the integrated wireless charging technology market accounted for XX million units which is expected to reach XX billion units by 2024, at a CAGR of XX%. In terms of market value, integrated wireless charging technology accounted for $XX billion in 2018 and is estimated to reach $XX billion by 2024 at a CAGR of XX% during the forecast period 2019-2024. Aftermarket of wireless charging technology accounted for the minority share of approximately XX% in 2018, of the total market in terms of value. The share for aftermarket is expected to continue to hold only a minority share in the coming years, owing to the technical difficulties of installing wireless charger with aftermarket and concerns about their efficiency.

5.2 Receivers Market, by Implementation

5.2.1 Integrated

Integrated receivers are the ones that are implanted in the device, during manufacturing procedure itself. Receivers are kept in contact or within specified range to receiving magnetic plate that is functioned to convert magnetic signals into electric current. The receiver market for wireless charging technology is dominated by the integrated type of solution. The growing demand for wireless charging-enabled devices governed by the development of Qi standard has led to a majority of the Smartphone manufacturers, smart wearables manufacturers, and other consumer electronics manufacturers such as electric toothbrush and kitchen appliance manufacturers, to integrate wireless charging receivers in their products. Companies such as Samsung Electronics, Apple, and Panasonic have introduced products integrated with wireless charging.

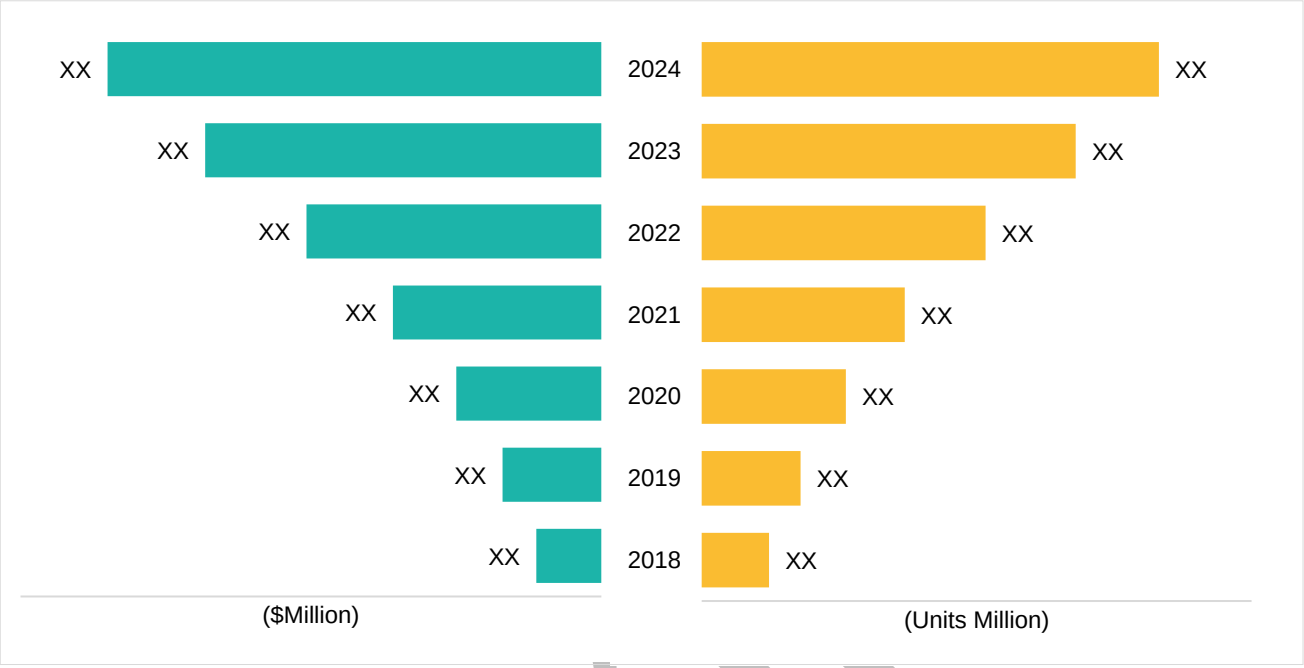
Figure 5.1: Important Components of Wireless Charging Receiver Module



Source: Secondary Research, Expert Interviews, and BIS Research Analysis

The following figure illustrates the market outlook for integrated wireless charging receiver market:

Figure 5.2: Integrated Receiver Market for Wireless Charging, 2018-2024



Source: Expert Interviews, Secondary Research, and BIS Research Analysis

In 2018, the integrated receiver wireless charging technology market accounted for XX million units, and the volume is expected to reach XX billion units by 2024, at a CAGR of XX%. In terms of market value, an integrated receiver for wireless charging accounted for $XX billion in 2018 and is estimated to reach $XX billion by 2024 at a CAGR of XX% during the forecast period 2019-2024.

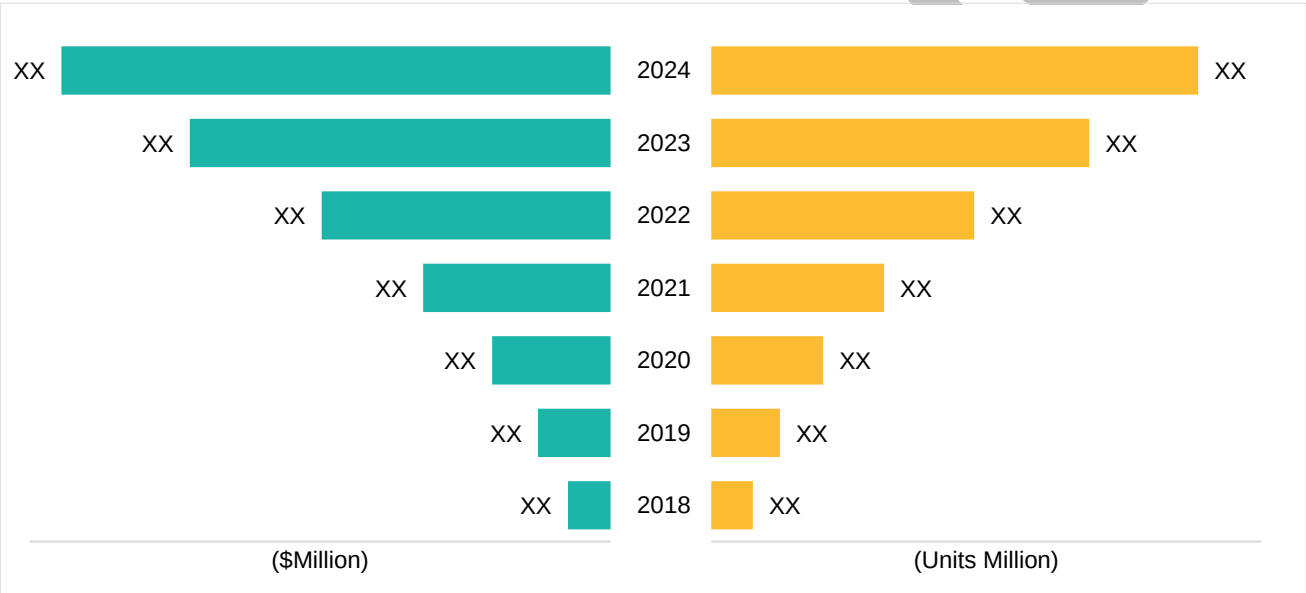
5.2.2 Aftermarket

The receivers that are implanted after electronic devices manufacturing are considered in this segment. In order to ensure significant degree of adoption of the wireless technology, market players are ensuring that these wireless chargers are compatible to conventional electronic devices as well. For instance, instead of purchasing a fully new smartphone that supports wireless charging, consumers are opting phone cases that support the technology. Aftermarket or accessory market for wireless charging receivers include products such as mats and accessory that can enable wireless charging for any device. Aftermarket for wireless charging is not an attractive market currently, on account of users opting wireless charging accessories such as phone case which is quite low . However, there are solutions available in the market offering phone cases that can enable wireless

charging in a device, which is not integrated with wireless charging receiver. However, keeping in mind low efficiency of these solutions and amount of time consumed for charging as compared to a turbo or fast-wired charging, this has resulted in a slow adoption rate of these products.

In the current scenario, companies such as Antye, Nillkin, and Tech Corp offer solutions that can convert any phone to wireless charging-enabled phone. These products, basically pads or mats that can stick to the backside of a smartphone, have been considered for the aftermarket of receivers for wireless charging. The following figure illustrates the analysis of the aftermarket wireless charging receivers' market:

Figure 5.3: Receivers Aftermarket for Wireless Charging, 2018-2024



Source: Expert Interviews, Secondary Research, and BIS Research Analysis

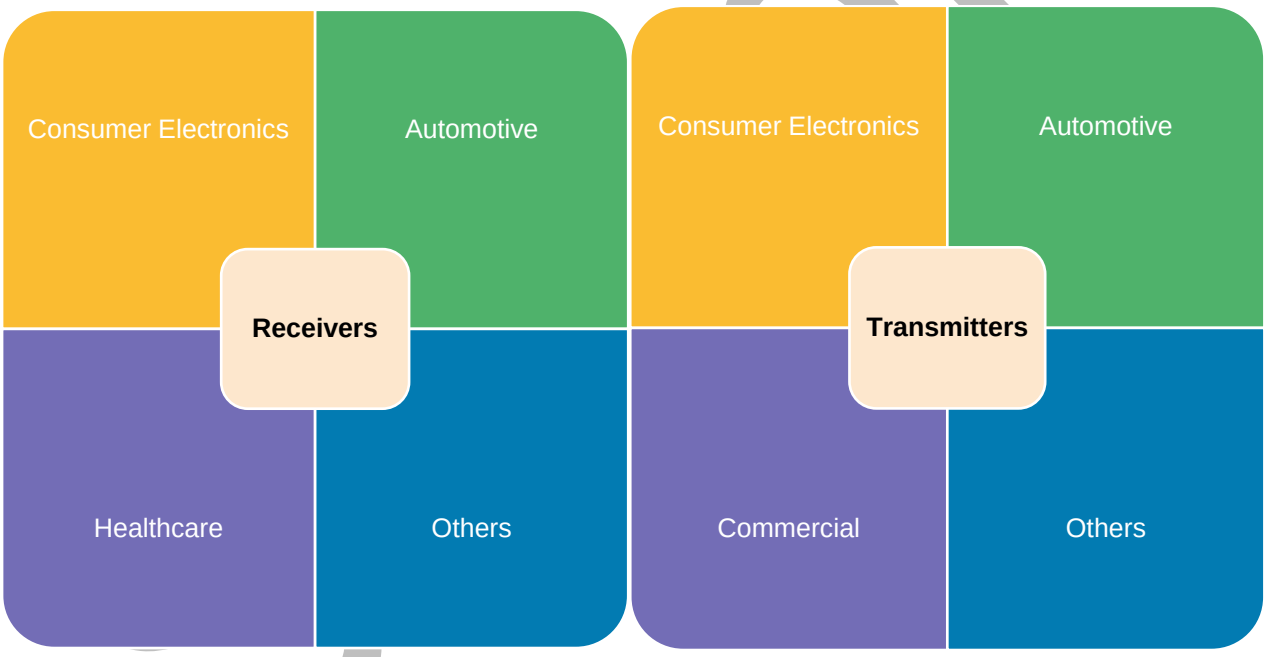
In 2018, the aftermarket for receiver wireless charging technology market accounted for XX million units which is expected to reach XX million units by 2024, at a CAGR of XX%. In terms of market value, the aftermarket for a receiver for wireless charging accounted for $XX million in 2018 and is expected to reach $XX million by 2024 at a CAGR of XX% during the forecast period 2019-2024. The aftermarket for receivers is expected to witness a decent growth during the forecast period. However, the adoption rate for aftermarket receivers is on the lesser side as compared to the integrated solutions, moreover, low efficiency of these solutions and the high price of former products are proving to be a hindrance.

6. Global Wireless Charging Market, by Application

6.1 Market Overview

Wireless charging has recently witnessed a great degree of popularity in diversified consumer electronics, automotive, and healthcare applications. This section provides an in-depth analysis of the different application verticals; wherein wireless charging is being used. With the constant evolving technology for wireless charging transmitters and receivers, wireless charging is bound to expand into many more application areas in the coming years. Applications such as smartphones, tablets, electric vehicle (EV), medical devices, and advanced driver-assistance systems (ADAS) are some of the major contributors in the growth of the wireless charging market.

Figure 6.1: Wireless Charging Market Receiver and Transmitter Applications



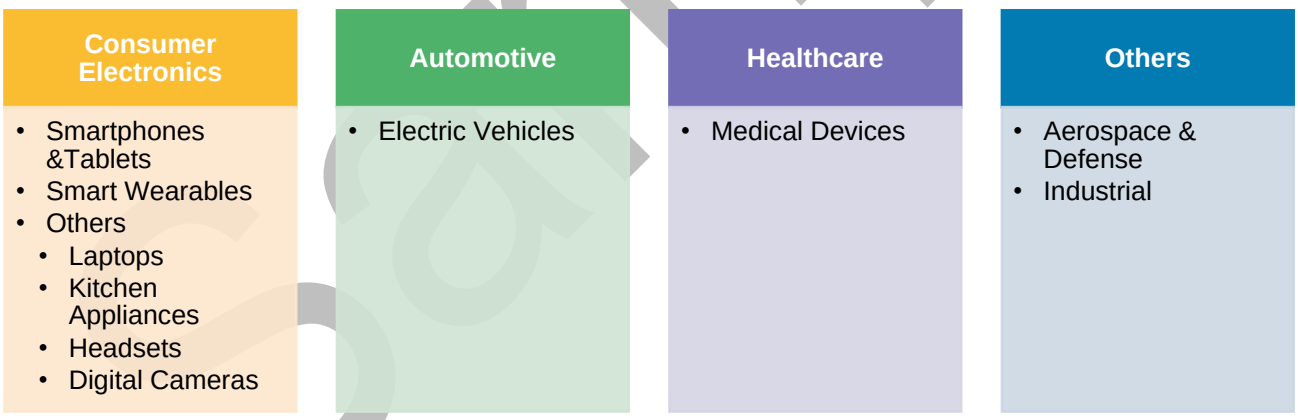
Source: Secondary Research and BIS Research Analysis

6.2 Global Receivers Market for Wireless Charging, by Application

At present, wireless charging is used in diversified applications such as smartphones and wearables, notebooks and tablets, power tools and service robots, electric toys, medical devices, smart home IoT devices and in-car charging, among others. This section deals with the different application verticals in which wireless charging receivers are used as integrated products or aftermarkets. Applications such as consumer electronics, healthcare, and automotive, among others, have significantly contributed to the growth of wireless charging and are expected to continue so during the forecast period 2019-2024.

Despite the increased mobility in the modern times, people still use wired chargers to charge their phones. Wired charging has provided solutions that have reduced the time of charging devices significantly. However, the hassle of dealing with wires, along with the long duration time required for charging, are some of the barriers to be overcome in the charging field. This has led to the development of wireless charging solutions which use receiver and transmitter and transfer power using electromagnetic waves.

Figure 6.2: Receivers Wireless Charging Applications



Source: Expert Interviews, Secondary Research, and BIS Research Analysis

The following table illustrates the global receivers wireless charging application market:

Table 6.1: Global Receivers Market (by Application), Units Million, 2018-2024

Application	2018	2019	2020	2021	2022	2023	2024	CAGR (2019-2024)
Consumer Electronics	XX	XX	XX	XX	XX	XX	XX	XX
Smartphones &Tablets	XX	XX	XX	XX	XX	XX	XX	XX
Smart Wearables	XX	XX	XX	XX	XX	XX	XX	XX
Other	XX	XX	XX	XX	XX	XX	XX	XX
Automotive	XX	XX	XX	XX	XX	XX	XX	XX
Healthcare	XX	XX	XX	XX	XX	XX	XX	XX
Others	XX	XX	XX	XX	XX	XX	XX	XX
Total	XX	XX	XX	XX	XX	XX	XX	XX

Source: Expert Interviews, Secondary Research, and BIS Research Analysis

Table 6.2: Global Receivers Market (by Application), $ Million, 2018-2024

Application	2018	2019	2020	2021	2022	2023	2024	CAGR (2019-2024)
Consumer Electronics	XX	XX	XX	XX	XX	XX	XX	XX
Smartphones &Tablets	XX	XX	XX	XX	XX	XX	XX	XX
Smart Wearables	XX	XX	XX	XX	XX	XX	XX	XX
Other	XX	XX	XX	XX	XX	XX	XX	XX
Automotive	XX	XX	XX	XX	XX	XX	XX	XX
Healthcare	XX	XX	XX	XX	XX	XX	XX	XX
Others	XX	XX	XX	XX	XX	XX	XX	XX
Total	XX	XX	XX	XX	XX	XX	XX	XX

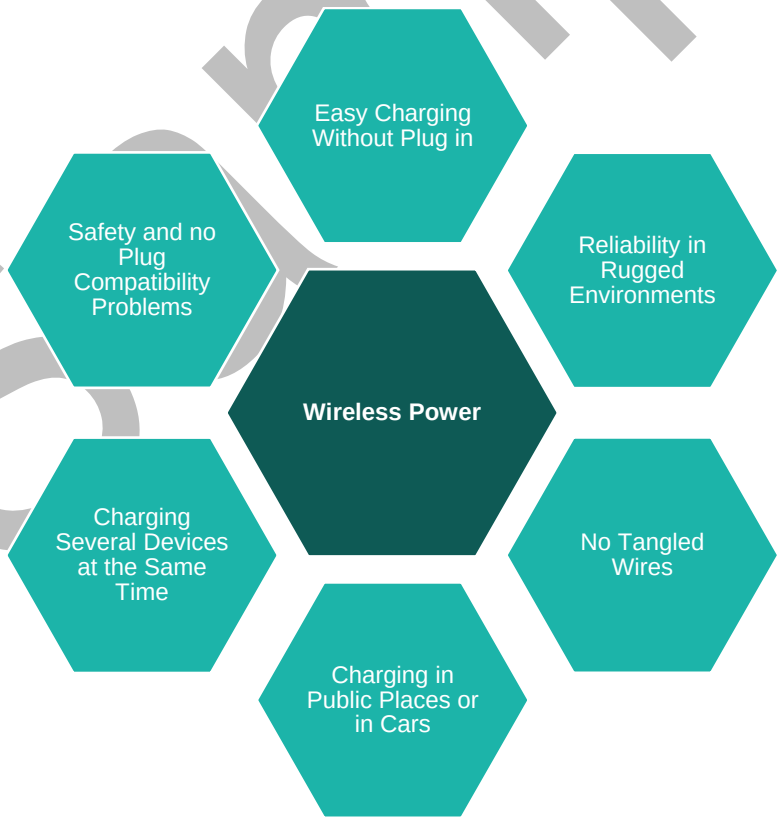
Source: Expert Interviews, Secondary Research, and BIS Research Analysis

The consumer electronics segment currently dominates the global receiver market for wireless charging, both in terms of volume and value. The sales volume generated by receiver for consumer electronics was XX million units in 2018 and is estimated to reach XX million units by 2024 at a CAGR of XX%. In terms of revenue, the consumer electronics application generated a revenue of $XX billion in 2018, and the revenue is estimated to reach $XX billion by 2024 at a CAGR of XX% during the forecast period 2019-2024. The dominance of consumer electronics is majorly attributed to the increased shipment of smartphones, which are wireless charging-enabled.

6.2.1 Consumer Electronics

Consumer electronics accounts for approximately XX% of the global receiver market for wireless charging. The numerous benefits of using wireless charging act as one of the key factors driving the growth of this segment in the past two years. Consumers have laid more focus on convenient charging solutions for wireless charging, which can offer increased freedom of positioning and shorter charging times, among others.

Figure 6.3: Benefits of Wireless Charging



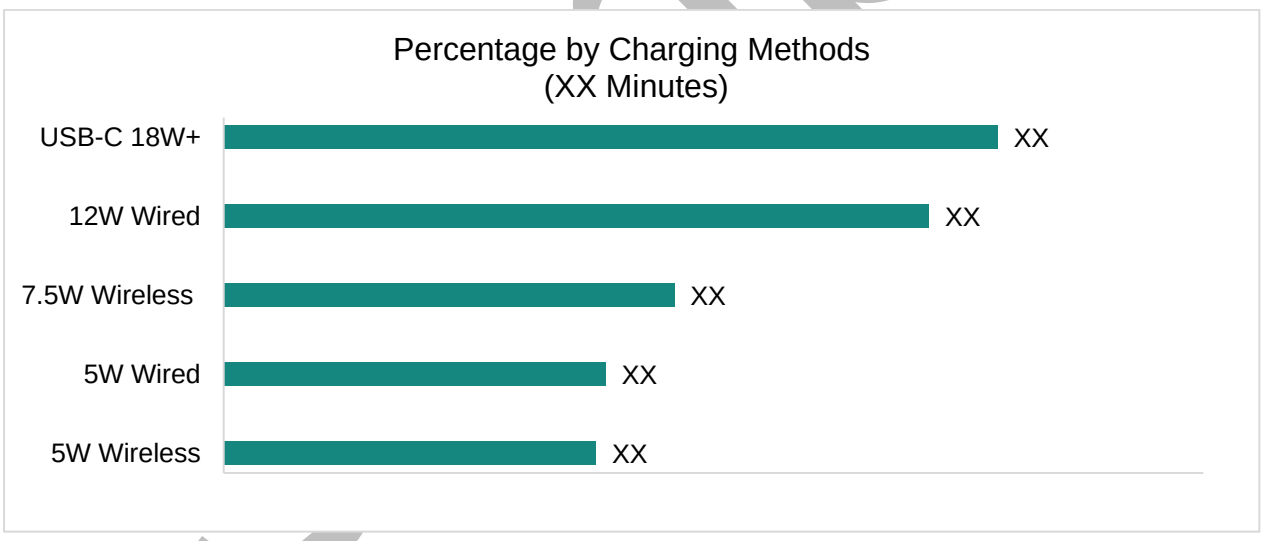
Source: Secondary Research and BIS Research Analysis

The aforementioned benefits have significantly contributed to the adoption of wireless charging in the recent years.

6.2.1.1 Smartphones & Tablets

Among various other consumer electronics devices, majority of the market demand is witnessed in smartphone and tablets applications. Users with conventional phones with absence of wireless charging functionality are opting separate phone case with complete set up of wireless charging. Wireless charging for smartphones and tablets has finally taken off with the increasing adoption of the Qi standard by various manufacturers such as Samsung, Apple, Google, and Nokia, among others. Samsung is among the early adopters for wireless charging technology, with its announcement for the same back in 2015 to integrate wireless charging in Galaxy, their flagship phones. Furthermore, Apple adopted the Qi standard in 2018 by launching iPhone 8 and 8 Plus.

Figure 6.4: iPhone X Battery Percentage by Charging Method (Wired vs. Wireless vs. USB) (Time: 60 Min)

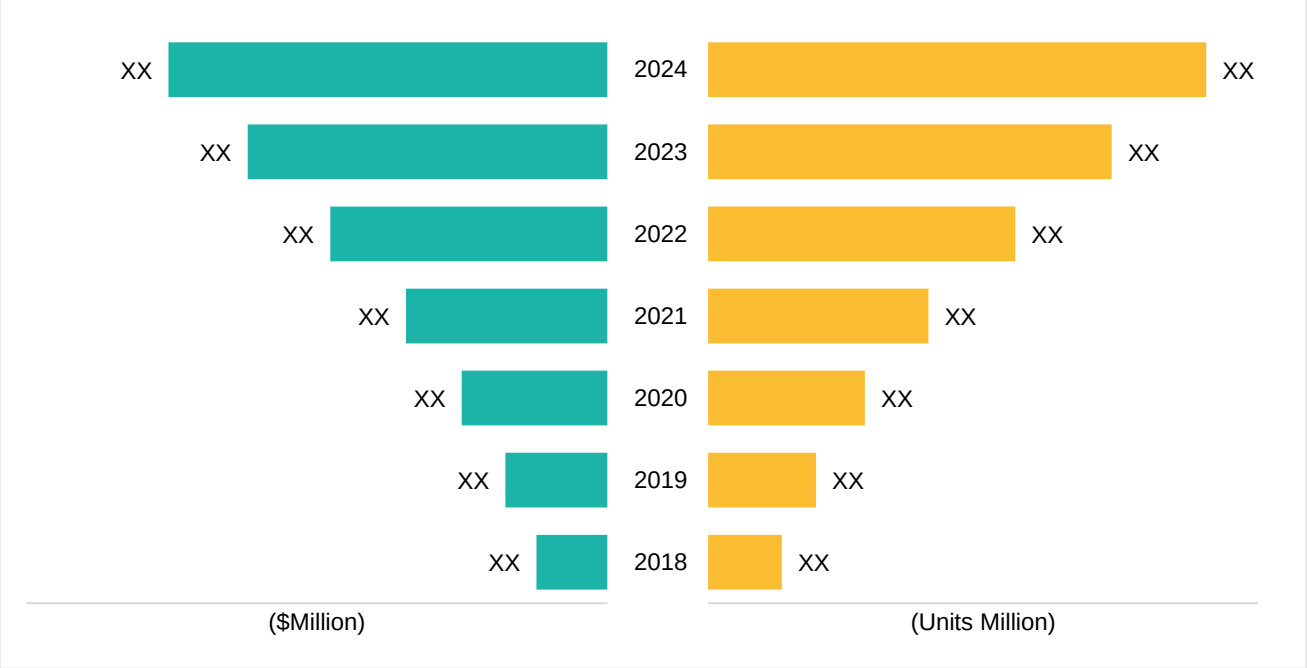


Source: Secondary Research and BIS Research Analysis

Although wireless charging has been around for the past three years, the adoption rate for this technology is quite less as compared to other smartphones technologies, such as Bluetooth and infrared. However, the establishment of Qi standard is one of the major factors that is expected to significantly guide the growth in the coming years. Tablets have also witnessed a similar trend in terms of wireless charging-enabled devices. The growth for such devices has not been at par with that of smartphones, majorly due to the relatively smaller market potential and annual shipments.

At this stage, the industry is majorly focusing on increasing its consumer base by ensuring consumer trust and awareness, which are key factors for a widespread adoption of wireless charging in the coming years. However, there are many challenges that the wireless charging industry needs to address in terms of fast charging, efficiency, and cost of these products. The following figure represents the market scenario for wireless charging receiver for smartphones and tablets:

Figure 6.5: Global Smartphone and Tablets Wireless Charging Receiver Market, Units Million & $Million, 2018-2024



Source: Expert Interviews, Secondary Research, and BIS Research Analysis

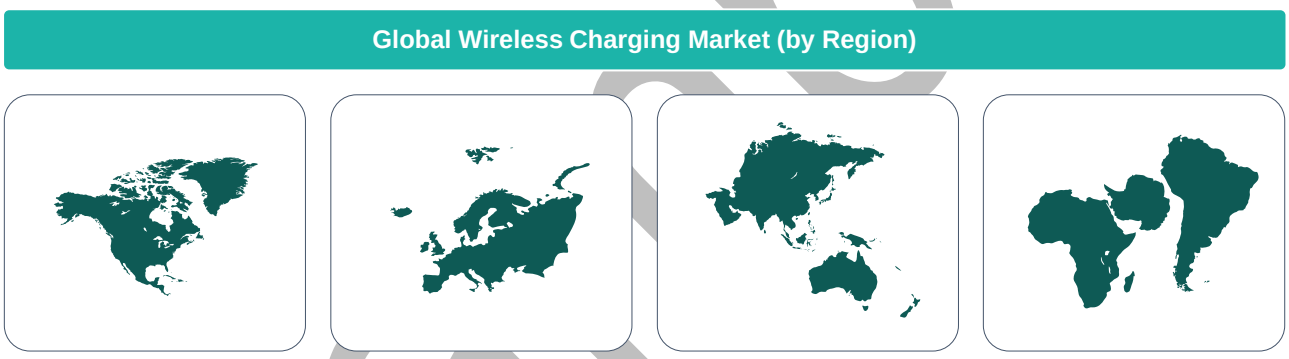
The sales volume generated by receiver for smartphone and tablets was XX million units in 2018 and is estimated to reach XX million units by 2024 at a CAGR of XX%. In terms of revenue, the receiver for smartphone and tablets generated a revenue of $XX billion in 2018, and the revenue is estimated to reach $XX billion by 2024 at a CAGR of XX% during the forecast period 2019-2024. The XX growth of this segment is majorly attributed to the increased shipments of smartphones that are wireless charging-enabled.

7. Global Wireless Charging Market (by Region), $Million and Units Million, 2018-2024

7.1 Market Overview

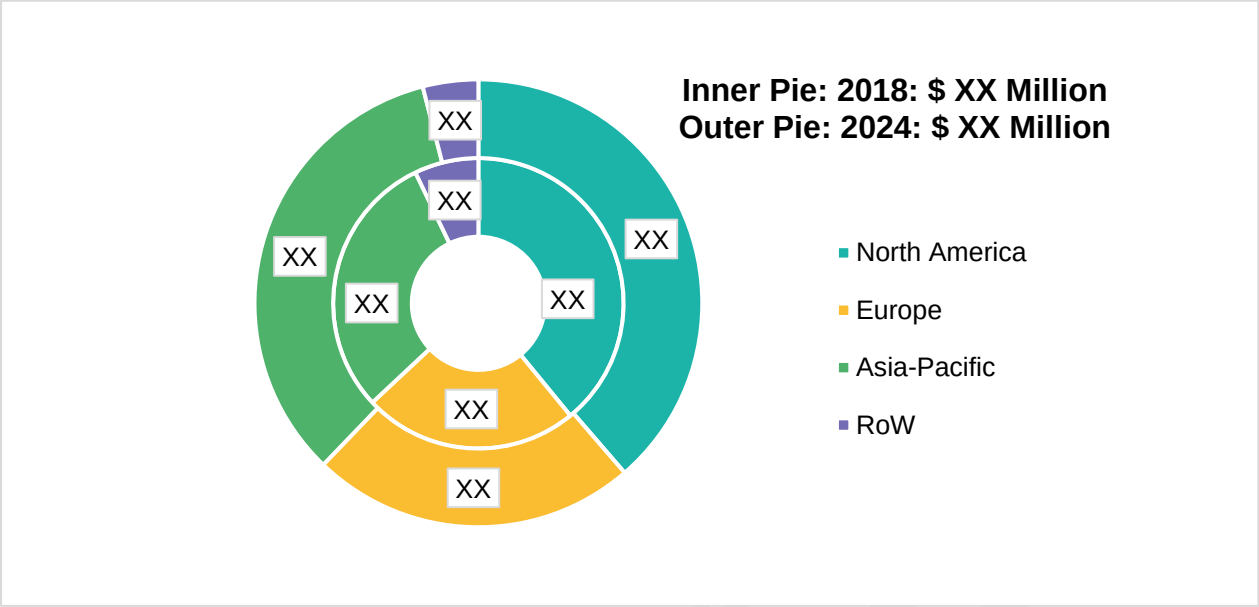
The chapter covers the geographical analysis of the wireless charging market with respect to different regions – North America, Europe, Asia-Pacific (APAC), and Rest-of-the-World (RoW). The chapter identifies key growth enablers based on a detailed push-and-pull force analysis. The segment further analyzes the ongoing trends in the industry in major regions by probing into the past and the present governmental regulations, the macro and micro economic factors, and significant completed, ongoing, and future projects. The following figure provides a holistic overview of the market growth, by region.

Figure 7.1: Global Wireless Charging Market – Regional Segmentation



Source: BIS Research Analysis

Figure 7.2: Global Wireless Charging Market (by Region), 2018 and 2024



Source: Expert Interviews, Secondary Research, and BIS Research Analysis

Table 7.1: Global Wireless Charging Market (by Region), Units Million, 2018-2024

Region	2018	2019	2020	2021	2022	2023	2024	CAGR (2019-2024)
North America	XX	XX	XX	XX	XX	XX	XX	XX
Europe	XX	XX	XX	XX	XX	XX	XX	XX
Asia-Pacific	XX	XX	XX	XX	XX	XX	XX	XX
RoW	XX	XX	XX	XX	XX	XX	XX	XX
Total	XX	XX	XX	XX	XX	XX	XX	XX

Source: Expert Interviews, Secondary Research, and BIS Research Analysis

The global wireless charging market was valued at $XX million in 2018, and is projected to reach $XX million by 2024, registering a CAGR of XX% between 2019 and 2024. In 2018, North America dominated the global wireless charging market with a market size of $XX billion, which is projected to reach $XX million by 2024, registering a CAGR of XX% between 2019 and 2024. This is due to the increasing demand from end-user applications, such as automotive, consumer electronics, healthcare, and others. In terms of volume, Asia-Pacific is expected to be the fastest growing market

during the forecast period. This is on account of the increasing dominance of wireless charging in the consumer electronics industry. Additionally, recent hike in the demand for electric vehicles and in government initiatives toward the reduction of the use of fossil fuels are a few other factors propelling the demand for wireless charging in the Asia-Pacific region.

Table 7.2: Global Wireless Charging Market (by Region), $Million, 2018-2024

Region	2018	2019	2020	2021	2022	2023	2024	CAGR (2019-2024)
North America	XX	XX	XX	XX	XX	XX	XX	XX
Europe	XX	XX	XX	XX	XX	XX	XX	XX
Asia-Pacific	XX	XX	XX	XX	XX	XX	XX	XX
RoW	XX	XX	XX	XX	XX	XX	XX	XX
Total	XX	XX	XX	XX	XX	XX	XX	XX

Source: Expert Interviews, Secondary Research, and BIS Research Analysis

7.2 North America

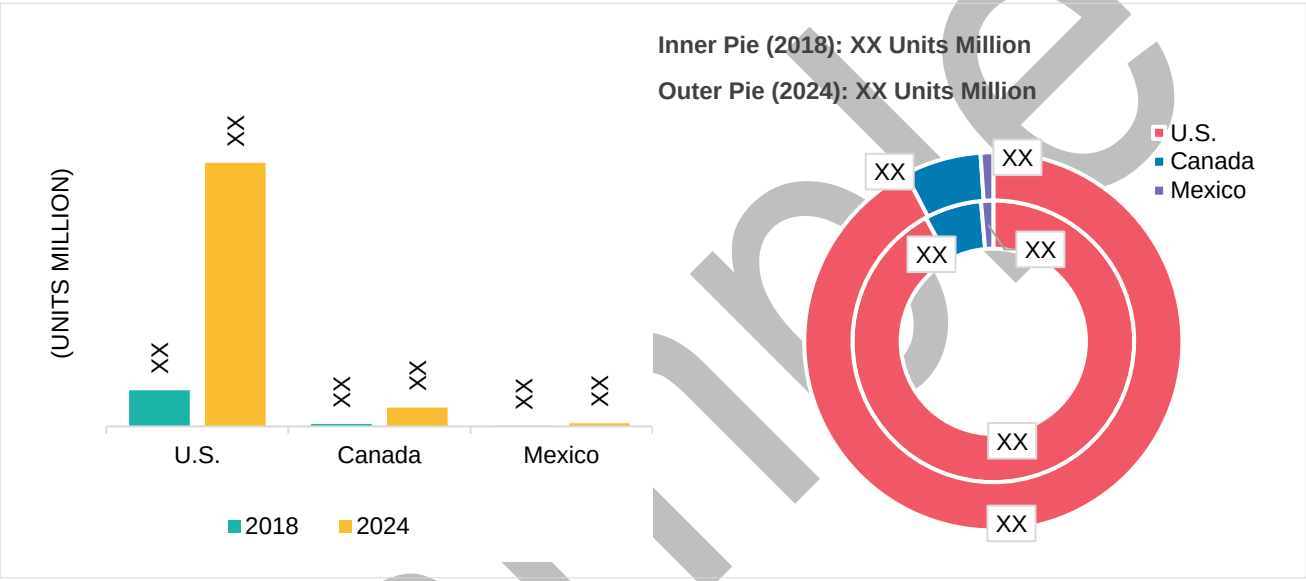
North America has been at the forefront of wireless charging in the global scenario and accounts for a significant market share, approximately XX% of the global market in terms of volume. Being one of the fastest adopters of new technologies, the countries in North America have been using the wireless charging technology for quite a while now. In North America, the U.S., and Canada are identified as the major markets for wireless chargers. The presence of large semiconductor companies in the region such as Infineon Technologies, Intel Corporation, Xilinx, National Semiconductor Corporation, Fujitsu Microelectronics, and ON Semiconductor help in the adoption of latest technological advancements at an early stage.

The abundance of the key contributors, such as Belkin International, Integrated Device Technology, Inc. and Apple Inc., among others, in this region has significantly driven the global adoption of wireless charging in various applications, such as consumer electronics, automotive, and commercial, among others. Additionally, Qi-enabled wireless charging smartphone shipment is another key factor accounting for the current market scenario in North America.

Furthermore, the North America region has the most evolved electric vehicle market at present, owing to a large number of key electric vehicle players that operate in this region. Companies such as Tesla and General Motors, have pioneered electric vehicle and electric vehicle battery technology, that in turn, has witnessed the evolution of the automobile industry in the region.

7.2.1 North America Wireless Charging Market (by Country)

Figure 7.3: North America Wireless Charging Market (by Country), Units Million, 2018 and 2024



Source: Expert Interviews, Secondary Research, and BIS Research Analysis

Table 7.3: North America Wireless Charging Market (by Country), Units Million, 2018-2024

Country	2018	2019	2020	2021	2022	2023	2024	CAGR (2019-2024)
U.S.	XX	XX	XX	XX	XX	XX	XX	XX
Canada	XX	XX	XX	XX	XX	XX	XX	XX
Mexico	XX	XX	XX	XX	XX	XX	XX	XX
Total	XX	XX	XX	XX	XX	XX	XX	XX

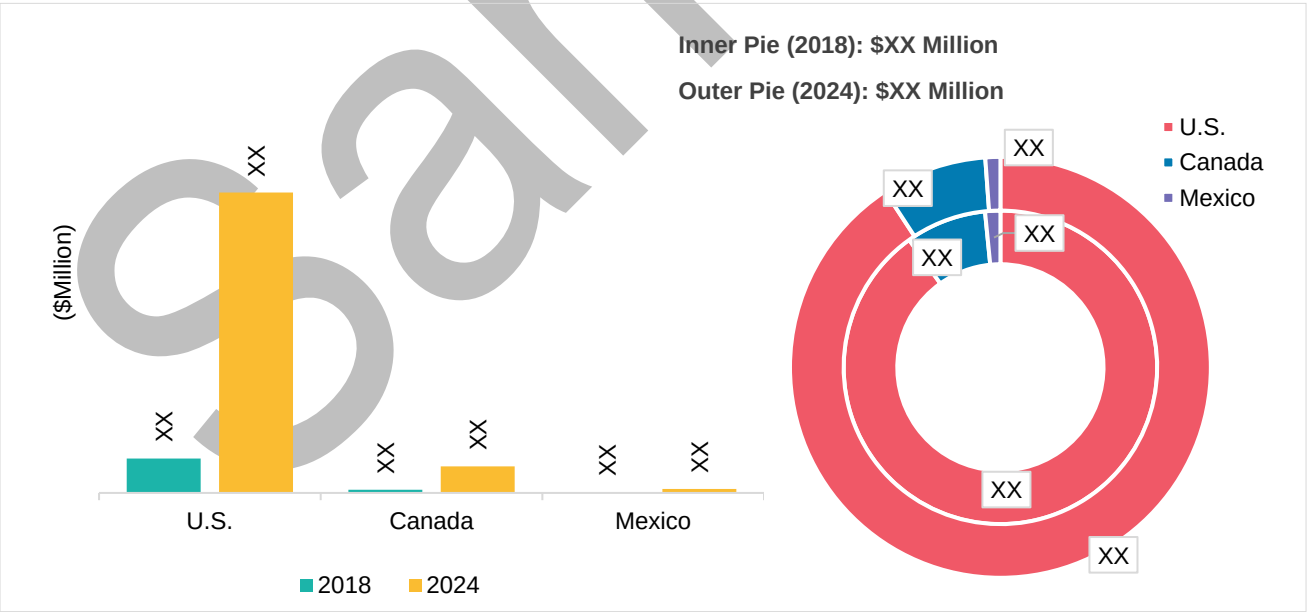
Source: Expert Interviews, Secondary Research, and BIS Research Analysis

North America is currently dominating the wireless charging market in terms of volume. Its market size was valued at XX units million in 2018 and is expected to reach XX units million by 2024, growing at a CAGR of XX% from 2019 to 2024. The development in this region is primarily attributed to the growing demand for devices offering high speed and efficient processors, such as latest generation smartphone and tablets. Moreover, the region is known for its advancements in technology and a huge semiconductor industry with a base to many key players, thus, leading to the major breakthroughs happening in the North American market first.

The major part of the North America's share is contributed by the U.S., which accounted for almost XX% of the total volume in 2018. The U.S., being the second largest market for vehicles sales, has been providing the necessary impetus to the North America wireless charging market.

At present, Canada holds a small share in the North America wireless charging market, but it is expected to grow at a significant growth rate during the forecast period. To meet the ever-growing demands of electric vehicles and smartphones, several manufacturing companies have already started to set up their bases in Canada.

Figure 7.4: North America Wireless Charging Market (by Country), $Million, 2018 and 2024



Source: Expert Interviews, Secondary Research, and BIS Research Analysis

Table 7.4: North America Wireless Charging Market (by Country), $Million, 2018-2024

Country	2018	2019	2020	2021	2022	2023	2024	CAGR (2019-2024)
U.S.	XX	XX	XX	XX	XX	XX	XX	XX
Canada	XX	XX	XX	XX	XX	XX	XX	XX
Mexico	XX	XX	XX	XX	XX	XX	XX	XX
Total	XX	XX	XX	XX	XX	XX	XX	XX

Source: Expert Interviews, Secondary Research, and BIS Research Analysis

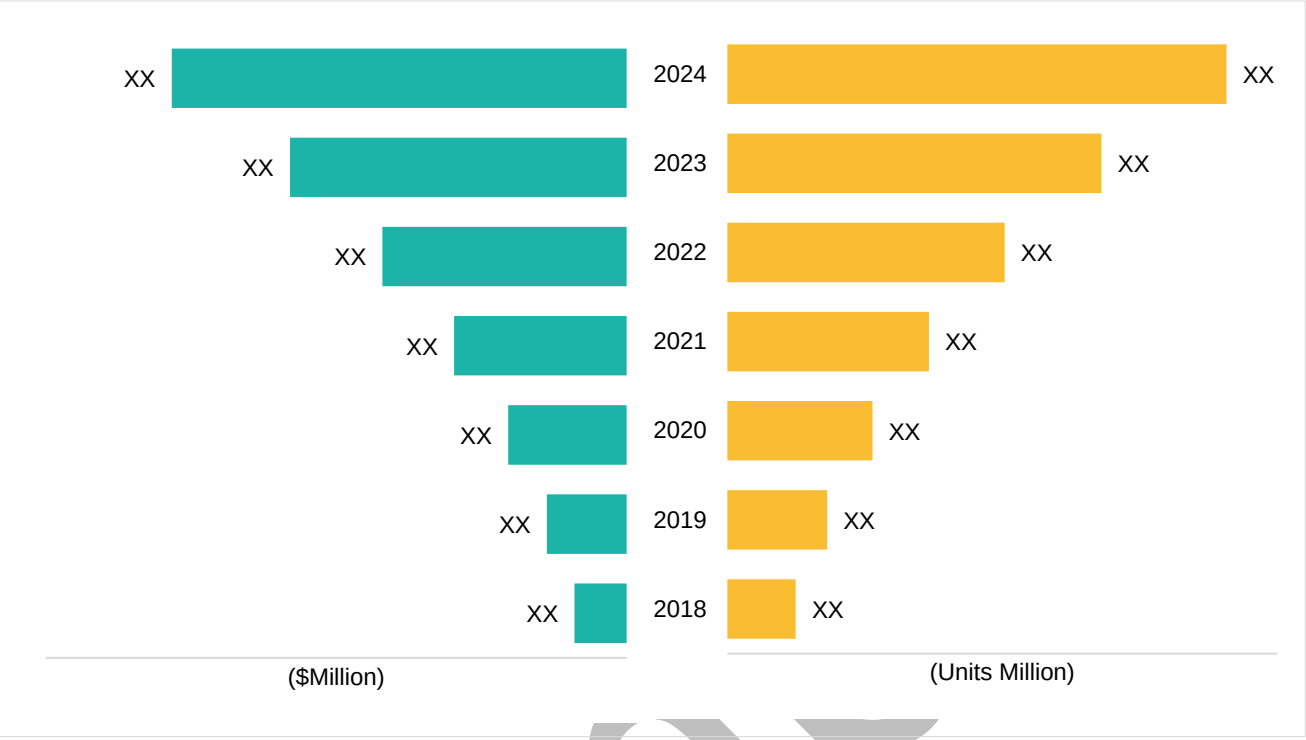
In terms of revenue, the U.S. is currently dominating the wireless charging market. Its market size was valued at $XX million in 2018 and is expected to reach $XX billion by 2024, growing at a CAGR of XX% from 2019 to 2024. The high growth and large share is attributed to the advanced technology adoption, and the race to stay ahead of other regions on the technology forefront. Also, the consumers have been aligned towards the continuously evolving microelectronics industry, which is reducing the device size and also making the device processor more powerful by increasing the microprocessor clock frequency.

7.2.1.1 U.S.

Like other disruptive technologies, the use of wireless charging has also extended its roots in the U.S. market. The International Technological Roadmap for Semiconductors (ITRS) developed by Semiconductor Industry Association (SIA) in the U.S., has constantly worked toward enhancing the semiconductor device scaling. This has led to increased technological advancements in terms of miniaturization and efficient power usage in consumer devices.

Adoption of wireless charging for industrial applications and increasing awareness of wireless power technology among consumers are a few of the key factors leading to the increased adoption of wireless charging in the country. With the demand for electric vehicles rising at an exponential rate, various EV manufacturers are now shifting to wireless charging systems. For instance, BMW 530e, a product by BMW sold in the U.S., offers wireless charging systems for its users. Additionally, the consumer electronics application is also one of the key application areas of wireless charging in the country. The steady introduction and implementation of wireless technology in Samsung's Galaxy smartphones, the Apple Watch, and other wearable devices are also expected to boost the demand for wireless charging for consumer electronics in the country.

Figure 7.5: U.S. Wireless Charging Market, 2018-2024



Source: Expert Interviews, Secondary Research, and BIS Research Analysis

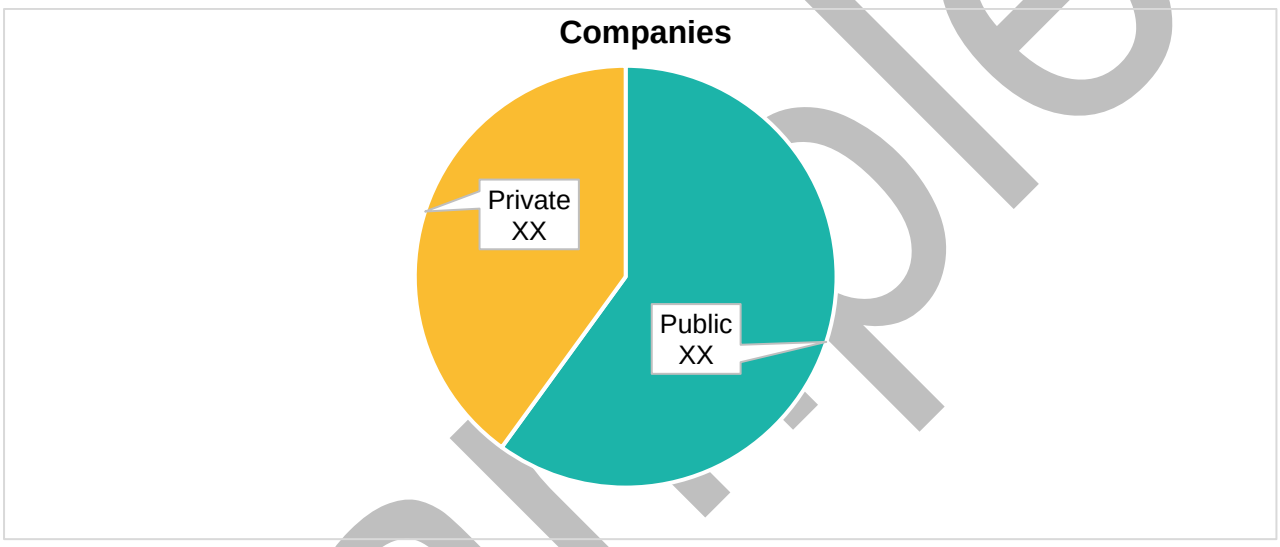
In 2018, the U.S. dominated the North America wireless charging market. Its market size was valued at $XX million in 2018 and is projected to reach $XX million by 2024 registering a CAGR of XX% between 2019 and 2024.

8. Company Profiles

8.1 Overview

The total number of company profiles include nine public and six private companies. Each company profiling details include overview table, overall product portfolio, financials, financial summary, and SWOT analysis. The criteria for all the companies profiled comprise product offerings, global presence, and revenue generated.

Figure 8.1: Profiles by Ownership Type



Source: Secondary Research, Expert Interviews, and BIS Research Analysis

The list of public companies profiled includes Energous Corporation, Integrated Devices Technology Inc., Infineon Technologies, NXP Semiconductors, Qualcomm Inc., Samsung Electronics Ltd., Semtech Corporation, TDK Corporation, and Texas Instruments.

The list of Private companies profiled incudes Aircharge, Belkin International, Convenient Power Ltd., Powermat, Witricity Corporation, and NuCurrent Inc.

8.2 Air Charge

8.2.1 Company Overview

Particulars	Specifications (As of 2018)
Website	www.air-charge.com
Contact Details	Aircharge Downsview House The Grove Technology Park Wantage, OXON OX12 9FA U.K. Tel: +44 1235773373
Year of Establishment	2014
Ownership Type	Private
Company Type	Manufacturer
Competitors	Qualcomm Incorporation Inc., Energous Corporation, and NXP Semiconductors, among others
Related Products and Services	Wireless Chargers, Wireless Charging Receivers, Z- Bar Wireless Charging Lamp, Wireless Charging Valet Tray, Surface Charger, Wireless Charging ORB Receiver, Airbridge, Point of Display Block, Double ORB Point of Display Block, Executive Point of Display Block, Wireless Charging Desk Mat, and Battery pack

Source: Air Charge Website and BIS Research Analysis

8.2.1 Role of Air Charge in Global Wireless Charging Market

The company, headquartered in Wantage OXON, designs and manufactures wireless charging solutions for offices and homes. Founded in 2014, the product portfolio of the company includes wireless chargers, wireless charging receivers, and surface chargers, among others. The products offered by the company find their applications in restaurants, airports, and hotels, among others. These products are deployed by top brands, such as Mercedes Benz, BMW, and Vodafone. The company is a member of Wireless Power Consortium and is compatible with existing and future Qi enabled devices (wireless charging). The company finds its presence in more than XX countries and in more than XX locations. In November 2018, the company installed wireless charging points for smartphones and tablets in London's waterloo trains, which are to provide the consumers with benefit of easy charging.

8.2.2 Product Portfolio

Products and Services	Description
Wireless Chargers	The company provides a variety of wireless chargers in the form of travel charger, simline charger, executive charger, Apple watch executive charger, and black edition executive charger.
Wireless Charging Receivers	The receiver's portfolio includes micro-USB wireless charging receiver, MFi Apple lightning wireless charging receiver, keyring receiver.
Wireless Charging Valet Tray	Sample
Surface Charger	Sample
Wireless Charging ORB Receiver	Sample
Airbridge	Sample
Point of Display Block	Sample
Double ORB Point of Display Block	Sample
Executive Point of Display	Sample
Wireless Charging Desk Mat	Sample
Battery Pack	Sample

Source: Air Charge Website and BIS Research Analysis

8.2.3 SWOT Analysis

The following figure depicts the SWOT analysis of Aircharge:

Figure 8.2: Aircharge: SWOT Analysis

Source: BIS Research Analysis

9. Research Scope and Methodology

9.1 Scope of the Report

The report constitutes of an extensive study of the global wireless charging market. It includes a thorough analysis of the different component types such as transmitter and receiver. The global wireless charging market has further been segmented in terms of applications, in order to understand the performance of technology in wireless charger. It further explains the driving forces, challenges, and growth opportunities of the wireless charging market. The major players pertaining to the wireless charging market have been identified based on revenue generation, geographical presence, and market developments. A detailed company profiling has been done to understand the players' strategic behavior. The wireless charging market has further been explained and analyzed on the basis of geography. The geographical analysis has been categorized into four regions, namely North America, Europe, Asia-Pacific, and Rest-of-the-World (Middle East & Africa and Latin America). Moreover, the country analysis has also been done to obtain a clear picture of the global wireless charging market.

The frequency in adopting wireless charging products, and ongoing developments in the regions by the private entities are some of the factors based on which different countries' growth rate has been calculated. The scope of the wireless charging market is summarized in the following figure:

Figure 9.1: Scope of the Report

By Implementation	By Application	By Geography

• **Receiver**
  • *Aftermarket*
  • *Integrated*
• **Transmitter**
  • *Aflemarket*
  • *Integrate*
	• **Receiver**
	  • *Consumer*
	  • *Electronics*
	  • *Automotive*
	  • *Others*
	• **Transmitter**
	  • *Consumer*
	  • *Electronics*
	  • *Commercial*
	  • *Automotive*
	  • *Others*
		• **North America**
		• **Europe**
		• **Asia-Pacific**
		• **Res-of-the-World (RoW)**

Source: BIS Research Analysis

9.2 Wireless Charging Research Methodology

The research methodology adopted for this specific study includes a mix of data collected from primary and secondary sources. Both primary sources (in-house experts, industry leaders, and market players) and secondary sources (a host of paid and unpaid databases), along with analytical tools, have been employed to build the forecast and predictive models.

Figure 9.2: Report Design

Source: BIS Research Analysis

Primary Data Sources

The primary sources involve the industry experts from the wireless charging industry including the suppliers, device manufacturers, and distributors, among others. Resources such as CEOs, vice presidents, marketing directors, and technology and innovation directors, have been interviewed to obtain and verify both qualitative and quantitative aspects of this research study.

The key data points taken from the primary sources include:

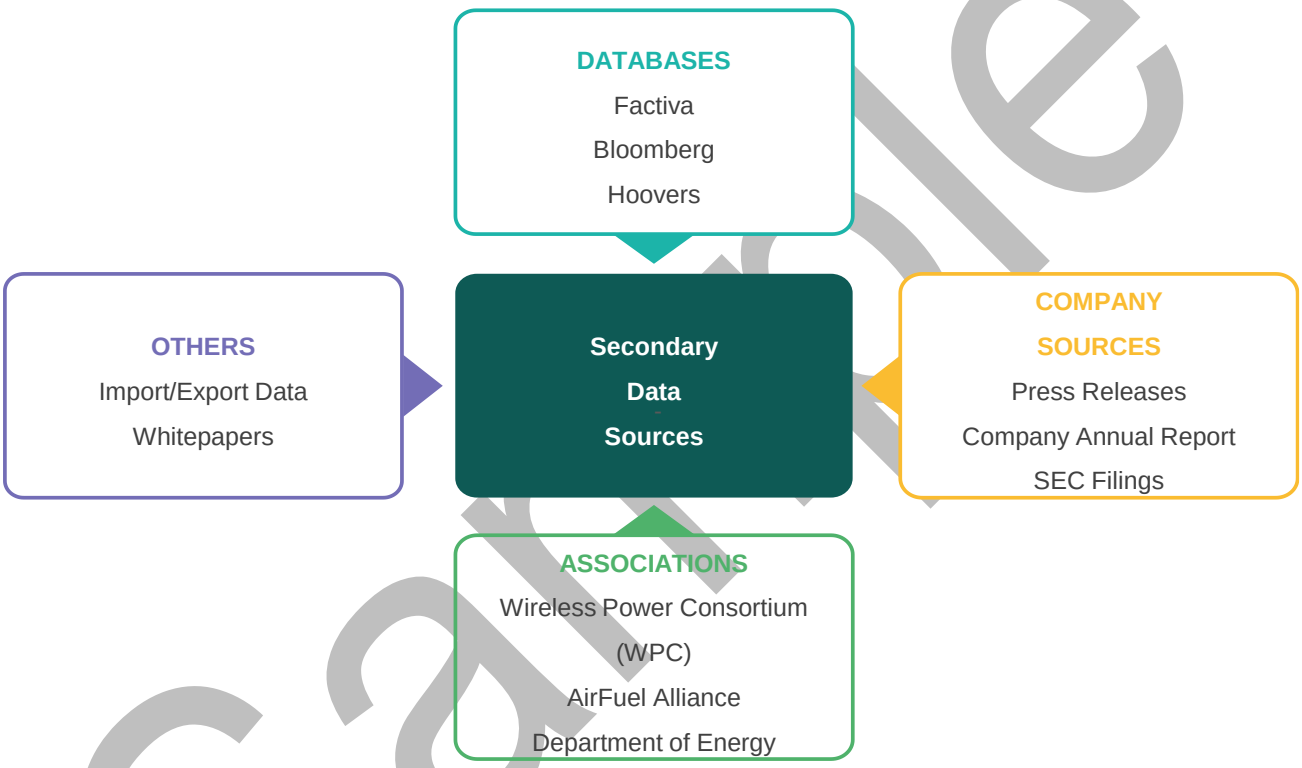
- validation and triangulation of all the numbers and graphs
- validation of report's segmentation and key qualitative findings
- understanding the competitive landscape
- current and proposed production values of a particular product by the market players
- validation of the numbers of various markets for market type
- percentage split of individual markets for geographical analysis

Secondary Data Sources

The research study involves the usage of extensive secondary sources such as databases, company website, and annual reports:

The following figure exhibits the key secondary data sources:

Figure 9.3: Secondary Data Sources



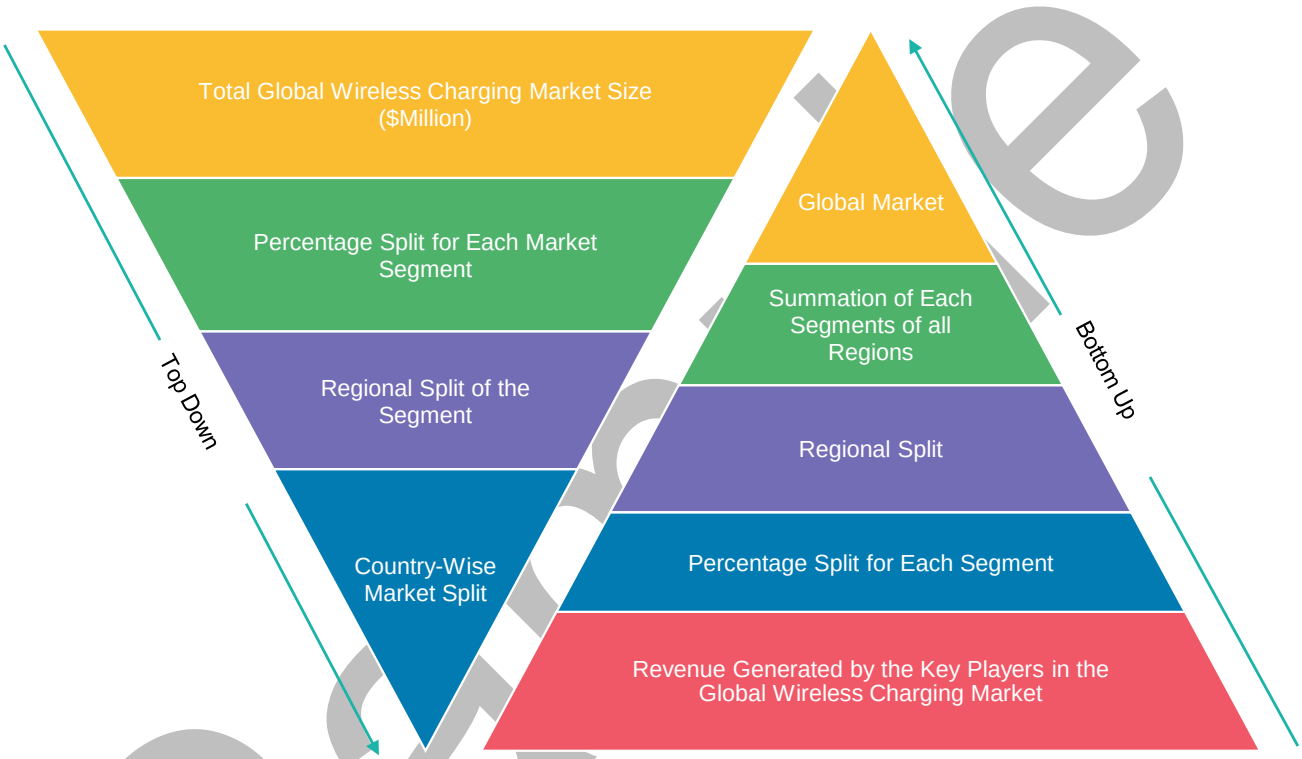
Source: BIS Research Analysis

The key data points from the secondary sources include:

- segmentation breakups, split-ups, and percentage shares
- data for market value
- key industry trends of the top players of the market
- qualitative insights in various aspects of the market, key trends, and emerging areas of innovation
- quantitative data for mathematical and statistical calculations

The main task for a thorough analysis of the global wireless charging market was to identify the set of underlying factors. In this case, the units sold of different types of devices in various applications, along with their average selling prices (ASPs), have been the basal factors considered for the market estimation. The following figure exhibits the detailed methodology adopted for estimating and forecasting the global wireless charging market:

Figure 9.4: Top-Down and Bottom-Up Approach

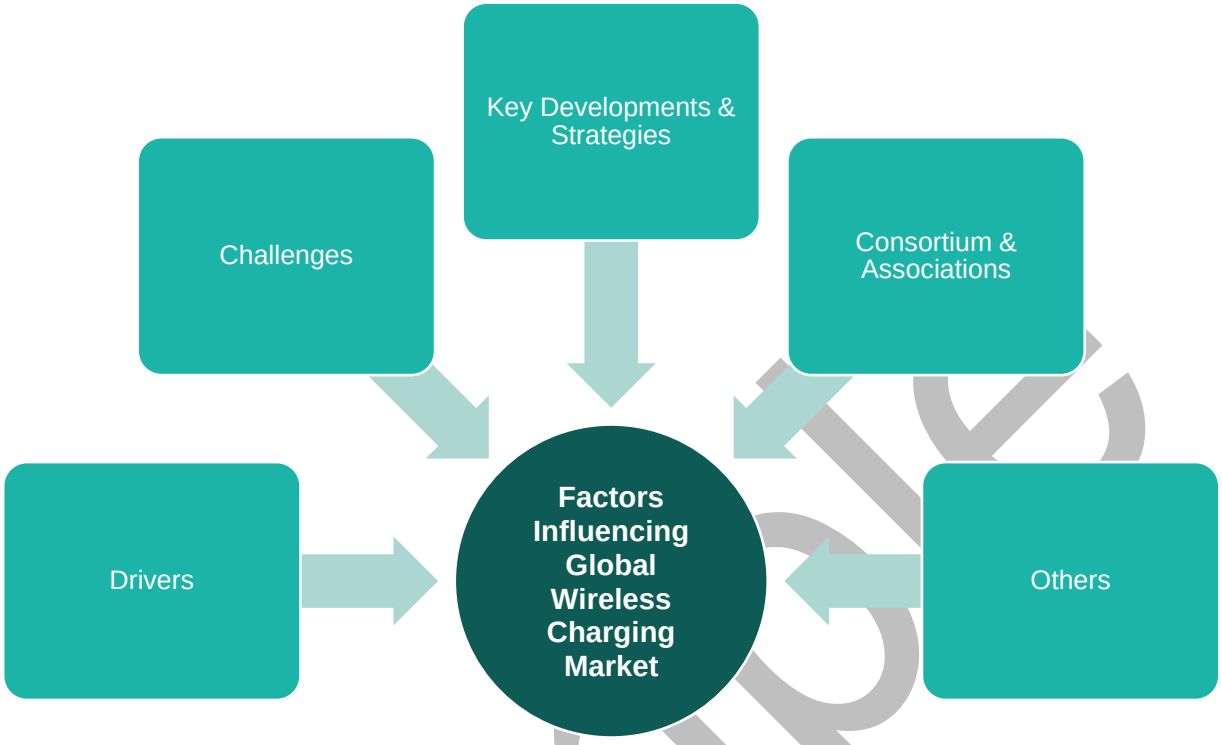


Source: BIS Research Analysis

Note: The aforementioned approach has been followed for the market estimation of all the devices, by technology and application, related to the global wireless charging market.

Having estimated the global market size, the forecast employs a set of macro factors, such as population, disposable income, and gross domestic product (GDP). Apart from these, the forecast of the global wireless charging market is based on the quantification of the following factors:

Figure 9.5: Wireless Charging Market Influencing Factors

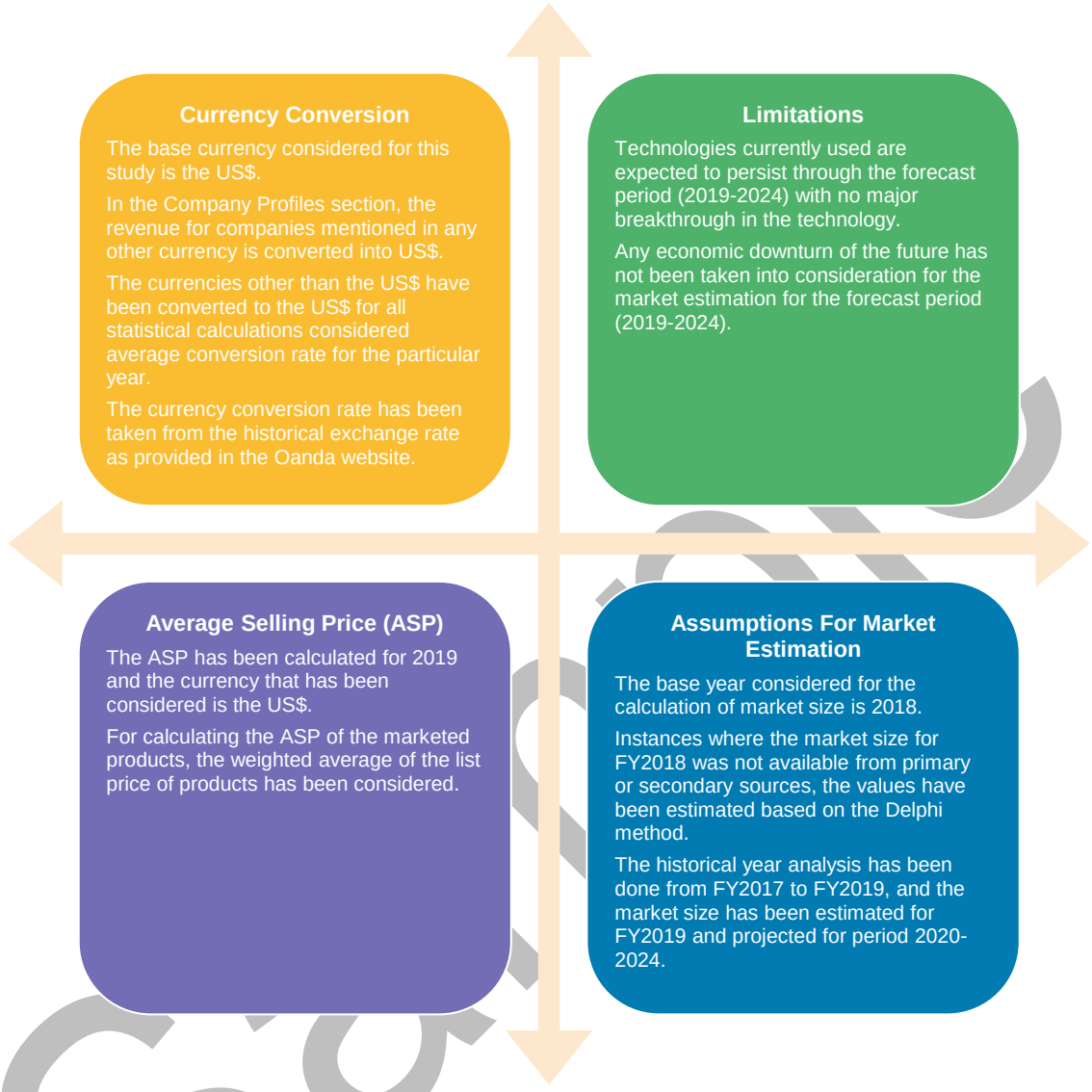


Source: BIS Research Analysis

Assumptions and Limitations

The following figure exhibits the standard assumptions and limitations, which have been followed throughout the research study of the global wireless charging market:

Figure 9.6: Assumptions and Limitations



Source: BIS Research Analysis

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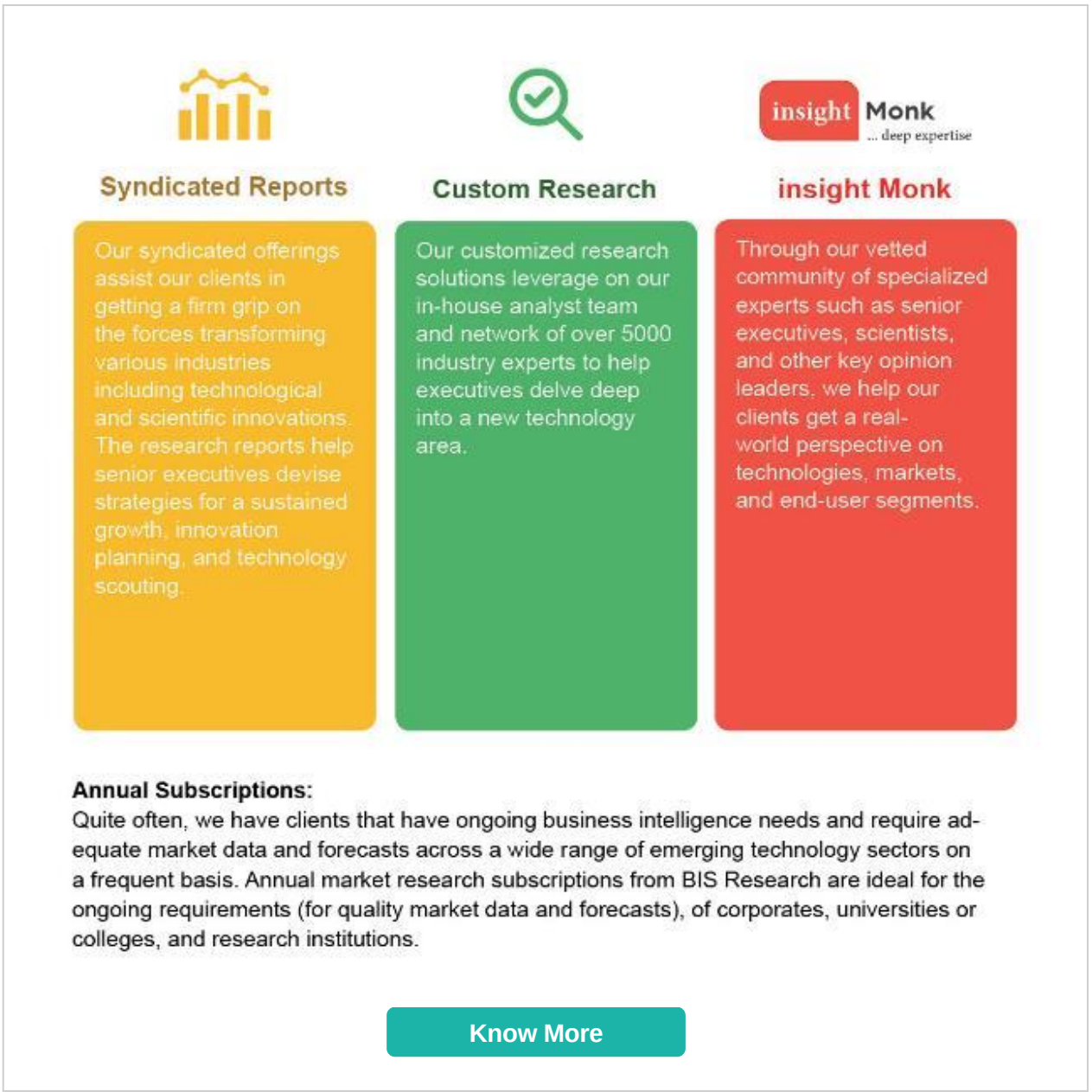

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