COMMERCIAL DRONES MARKET

By Type (Fixed Wing, Rotary Blade, Quad Rotor), Technology (Energy & Propulsion System, Automation, Collision Avoidance), Application (Government, Agriculture, Manufacturing, Retail) & Geography

GLOBAL FORECAST TO 2020
MarketsandMarkets is a global market research and consulting company based in the U.S. We publish strategically analyzed market research reports and serve as a business intelligence partner to Fortune 500 companies across the world. MarketsandMarkets also provides multi-client reports, company profiles, databases, and custom research services.

MarketsandMarkets covers fourteen industry verticals, including aerospace and defence, advanced materials, automotives and transportation, banking and financial services, biotechnology, chemicals, consumer goods, energy and power, food and beverages, industrial automation, medical devices, pharmaceuticals, semiconductor and electronics, and telecommunications and IT.
1 INTRODUCTION

1.1 OBJECTIVES OF THE STUDY

- To define, describe, and forecast the global commercial drones market on the basis of application, technology, and geography.
- To forecast the market size in terms of value for various segments, with regards to four main regions the Americas, Europe, Asia-Pacific, and RoW
- To provide detailed information regarding the major factors influencing the growth of the market (drivers, restraints, opportunities, industry specific challenges, and burning issues)
- To strategically analyze the micro-markets with respect to the individual growth trends, future prospects, and contribution to the total market
- To analyze the opportunities in the market for stakeholders, by identifying the high growth segments of the global commercial drones market
- To strategically profile the key players and comprehensively analyze their market share and core competencies along with, detailing the competitive landscape for the market leaders
- To track and analyze competitive developments such as joint ventures, mergers and acquisitions, new product developments, and research and development in the global commercial drones market

1.2 MARKET DEFINITION

The definition of commercial drones for this market study is as follows: “Commercial drones are the unmanned air vehicles which are operated without direct human control and are guided by a remote control. They are being designed for various commercial applications such as energy sector, agriculture, manufacturing, infrastructure, retail, media and entertainment along with, scientific research and environmental missions.”
1.3 STUDY SCOPE

1.3.1 MARKETS COVERED

The report covers both the demand and supply sides of the market. The supply side market segmentation includes several technologies, processes, and machine configuration. On the other hand, the demand side segmentation includes various verticals and regions. The following diagram gives an overview of the micro-markets covered for the report.

FIGURE 1 MARKETS COVERED

Source: Expert Interviews and MarketsandMarkets Analysis

Global commercial drones market, by type

- Fixed wings
- Rotary blade
- Nano
- Hybrid

1.4 STAKEHOLDERS

The intended audience for this report includes:

- Semiconductor foundries
- Original Equipment Manufacturers (OEMs) (application or electronic product manufacturers)
- ODM and OEM technology solution providers
- Research Institutes
- Market research and consulting firms
- Commercial drones forums, alliances, and associations
- Technology investors
- Governments and financial institutions
- Analysts and strategic business planners

End-users who want to know more about the commercial drones technology and the latest technological developments in the commercial drones industry research methodology
2 RESEARCH DATA

2.1 INTRODUCTION

FIGURE 2 RESEARCH DESIGN

HISTORICAL DATA FOR THE COMMERCIAL DRONE MARKET

INFLUENCING FACTORS (Market Trends and Dynamics)

Market Drivers:
- Increase in demand from commercial applications
- Prominent technological advancements over the last couple of years
- Effective adoption of drones for law enforcements

Market Restraints:
- Stringent government regulations
- Scarcity of trained pilots
- Security and safety issues
- Air traffic management

Burning Issues:
- Use of commercial drones for delivery of products

Agreements, Collaborations, & Partnerships:
- More than 20 deals in the last three years

New Product Launches:
- More than 20 new product launches in the last three years

Industry Trends:
- Regulatory approvals
- Increase in adoption for commercial applications

Market Opportunities:
- Low operational cost
- Monitoring terrorist activities

Challenge:
- To develop low cost, reliable, and highly automated commercial drones

FORCAST

Historical Data of the Market

Impact Analysis of Market Trends

Market Size & Forecast, by Technology

Market Size & Forecast, by Application

Arrive at the market size, share, and CAGR of the commercial drone market

Source: Annual Reports, SEC Filings, Press Releases, Investor Presentations, Expert Interviews, and MarketsandMarkets Analysis
2.1.1 SECONDARY DATA

In the secondary research process, various secondary sources have been referred to for identifying and collecting important information for this study. Secondary sources include annual reports, press releases and investor presentations of companies, white papers, and certified publications, articles from recognized authors, directories, and databases. The secondary research has mainly been used to obtain the key information about the industry’s supply chain, the market’s monetary chain, the total pool of key players, market segmentation according to industry trends to the bottom-most level, geographic markets, and key developments from both market and technology oriented perspectives.

After the complete market engineering (which includes calculations for the market statistics, market breakdown, market size estimations, market forecasting, and data triangulation), an extensive primary research has been conducted to gather information as well as verify and validate the critical numbers arrived at.

Research has also been conducted to identify and analyze the segmentation types, industry trends, key players, and competitive landscape of commercial drones supplied by different market players; key market dynamics such as drivers, restraints, opportunities, burning issues, winning imperatives, industry trends, and key player strategies; and Porter’s five forces. In the complete market engineering process, both the top-down and bottom-up approaches have been extensively used along with several data triangulation methods to perform market estimation and market forecasting for all the market segments and sub-segments listed in this report. An extensive qualitative and quantitative analysis has been performed on the complete market engineering process to list the key information/insights throughout the report.

2.1.1.1 Key data from secondary sources

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SECONDARY SOURCES</th>
</tr>
</thead>
</table>
| Market size | • Company Financials  
• Magazines  
• Journals |
| Revenue of Companies | • Press Releases  
• Paid Databases, and  
• The MarketsandMarkets Data Repository |
| Qualitative Information (Market Dynamics, Market Trends) | • Annual Reports  
• Company Websites  
• Public Databases, and  
• The MarketsandMarkets Data Repository |

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<tr>
<th>PARAMETER</th>
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</tr>
</thead>
</table>
| • Company Websites  
• Annual Reports  
• Press Releases, and  
• The MarketsandMarkets Data Repository |
2.1.2 PRIMARY DATA

Extensive primary research has been conducted after acquiring knowledge about the commercial drone market scenario through secondary research. Several primary interviews have been conducted with market experts from both the demand (diagnostic centers and hospitals) and supply side (commercial drones’ manufacturers and distributors) across four major geographies, namely, North America, Europe, Asia-Pacific, and Rest of the World (Latin America, the Middle East, and Africa). Approximately XX% and XX% primary interviews have been conducted with both the demand and supply side, respectively. This primary data has been collected through questionnaires, mails, and telephonic interviews.

2.1.2.1 Key data from primary sources

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>KEY DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geographic Split</td>
<td>▪ The overall market and sub-segments in 2013</td>
</tr>
<tr>
<td></td>
<td>▪ CAGR of each region during the forecast period (2014 – 2020)</td>
</tr>
<tr>
<td>Global Market Size</td>
<td>▪ The global market size for 2013</td>
</tr>
<tr>
<td></td>
<td>▪ CAGR for the forecast period (2014 – 2020)</td>
</tr>
<tr>
<td>Market Split</td>
<td>▪ Energy and propulsion systems, automation, collision avoidance, cyber security and jamming, and on-board data processing</td>
</tr>
<tr>
<td></td>
<td>▪ Law enforcement, energy and power, agriculture, manufacturing, infrastructure, media, and retail</td>
</tr>
</tbody>
</table>

2.1.2.2 Key industry insights

“"We are very much positive about the FAA regulations and can see huge potential for the commercial drones market”
- Founder and CEO, Leading Drone Distributors

“"In a couple of years, we can see a prominent demand of UAVs from non-military applications”
- CEO, Leading Drones Service Provider Company

“"The future of commercial drones for advertising is quite good”
- Founder & CEO, Media & Advertising Firm

“"Law enforcement is the major application where we can see a lot of market for commercial drones”
- President and CEO, Leading Drone Maintenance Company

Source: Industry Experts and MarketsandMarkets Analysis
2.2 FACTOR ANALYSIS

2.2.1 INTRODUCTION

The description and analysis of a market in this deliverable defines the structure and restrictions of the potential market analysis through the supply and demand side factors. In this background, it is vital to discuss and define these factors in order to comprehend the mechanism of inferences obtaining processes, which include the analysis of the demand side drivers and the factors influencing the creation side or supply side in the studied market. The analysis of the studied market and the estimations of the market sizes and their growth patterns depend upon factors such as the political environment, the overall economic and market conditions that include, but are not limited to historical trends, seasonal effects, or business cycles. For the report, we have used statistical/quantitative techniques to estimate the impact of demand and supply side variables to arrive at the market size numbers of the forecast period. Statistical techniques have been used to primarily understand the correlation of the demand and supply variables with the studied market, and assign weightages to these variables to develop a model for forecasting market numbers. Wherever such analyses were not feasible, due to the lack of availability of data and other statistical/quantitative constraints, the inferences were made using judgmental forecasting techniques.

2.2.2 DEMAND-SIDE ANALYSIS

Our forecast of the size of the global commercial drones market for 2020 is the product of a bottom-up model constructed by integrating inputs of the key drivers and trends of the demand outlined in the main report. In chapter 4, we have outlined the key drivers and trends that are expected to shape the global commercial drones market in the future. The key driver that is expected to have a high impact on the market is the increase in demand from law enforcement application.

This section provides an overview of the modeling approach adopted and the data sources that were used as inputs for each of the demand drivers. The section also describes how the data points were integrated to develop an overall view of the global commercial drones market by 2020.
Demand side factors

- Effective solution for law enforcement and controlling terrorism
- Increase in demand from non-military applications

2.2.2.1 Effective solution for law enforcement and controlling terrorism

Drones play a very important role in law enforcement and controlling terrorism. With provisions in the FAA Modernization and Reform Act of 2012, the usage of drones in the United States is set to expand rapidly over the next couple of years. The said Act includes provisions to make the licensing process easier and quicker for law enforcement, and by 2015, commercial entities would also be able to apply for a drone authorization.

To assess the rising threats of terrorism across the world, various terrorism incidents have been studied and recorded. The areas that face a major threat from drone activities of extremist groups have been analyzed. Many countries such as Afghanistan, Iraq, Syria, and many more face severe political and security issues. These issues tend to raise the violence levels and exacerbate the existing internal instability in the country.

The most likely conflicts such as the limited military intervention in Syria’s civil war, cyber attacks on the critical infrastructure in the U.S., military strikes against Iran, instability due to withdrawal of the U.S. troops from Afghanistan, and many more are considered as high priority that are expected to occur and have been included in the world map below. However, other potential crises in this category have received less attention. An example for this would be the Al-Qaeda that has been positioning themselves as a strong extremist group in the Arabian Peninsula. This has occurred due to political instability in Yemen owing to the backfiring of the U.S. anti-terrorism expeditions that included civilian deaths caused by a drone strike that hit a Yemeni wedding.

The moderate levels of conflicts indicated in the world map below covers the Indo-Pakistan violence and the military conflicts between China and their neighbor Japan in the South and East China seas. China’s establishment of an Air Defense Identification Zone (ADIZ) over the East China Sea in 2013 resulted in a conflict with Japan over the “Senkaku Islands”.

Low levels of conflicts are expected in Venezuela, Ethiopia, Sudan, and so on. For instance, Venezuela is affected by the political crisis after the death of Hugo Chavez and clashes between the Muslim Rohingyas and Buddhists in Myanmar.
2.2.2.2 Increase in demand from non-military applications

The commercial drones are getting mainstream exposure with the approvals from the FAA. Many companies such as Amazon.com Inc. (U.S.) have unveiled plans to use the drones to deliver packages directly to the customers. Due to such developments, drones are now being targeted for use in other commercial applications such as media and entertainment, energy and power, agriculture, mining, infrastructure, and environmental monitoring. The companies such as DJI (China) have developed Spreading Wings S800 EVO, which is a powerful drone that offers professional photography and videography solutions. PrecisionHawk (U.S.) has developed the fully automated PrecisionHawk UAV and a data-processing tool to help the farming industry professionals to better analyse their crops and farmland to increase productivity and reduce cost. Parrot (France) has developed the Parrot AR. Drone 2.0 Wi-Fi and GPS enabled quadcopter.
EXECUTIVE SUMMARY

The total Commercial drone market is expected to reach $XX billion by 2020, at an estimated CAGR of XX% between 2014 and 2020. This report covers the key applications of the commercial drone market, including the energy and power, law enforcement, agriculture and manufacturing, retail, scientific research, infrastructure, and media and Entertainment. Among all the applications, the law enforcement is expected to be the largest contributor to the overall commercial drone market, holding over XX% of the market share and is expected to reach $XX million by 2020, at a CAGR of XX% between 2014 and 2020. The energy and power application is estimated to have the highest growth potential and is expected to reach $XX million by 2020, at CAGR of XX% between 2014 and 2020.

Many new types of drones are in various stages of commercialization. The overall commercial drone market has been divided into fixed blade, rotary wing, nano, and hybrid types. The rotary wing type currently holds the major share of the overall commercial drone market at ~XX% and is expected to grow at a CAGR of XX% between 2014 and 2020. Among the various drone related technologies covered in this report, the energy and propulsion market was the largest in 2013 as it is one of the most important systems used in the drone manufacturing process.

There is a huge scope for research and development of drones by increasing their operational efficiency and providing complete autonomy in terms of the decision-making process. Investments are being made by the growing regions to adopt the autonomous control systems for various applications. The exponentially increasing demand for applications such as crime investigation and remote monitoring in the energy and power segment is driving the demand for the drones.

In the near future, the use of drones for maximum commercial and civilian applications is an imminent reality. A number of organizations such as Amazon Prime Air, Google Project Wing, Facebook, and NASA are working towards adapting the drone technology for use in the commercial sector.

Over the last decades, drones have emerged as a prominent technology for various applications including law enforcement and scientific research applications. Rapidly evolving technology, increasing competition, and the adoption of nanotechnology characterize the major technology changes in the commercial drone market. The first drone or UAVs were used during the First World War by the military and defense services. The commercial drone's chronological development is given in the figure below:
FIGURE 4  ROADMAP FOR THE DRONE TECHNOLOGY

- First use of primitive unmanned air vehicle technology for combat and surveillance
- First use of UAVs for stealth surveillance in Vietnam war
- Aggressive development of drones for military and defense sector
- Development of reliable, compact, and highly automated drones for commercial applications
- Development of micro aerial vehicles for surveillance

Source: Press Releases, Technical Presentations, Industry Journals, and MarketsandMarkets Analysis
FIGURE 5  ENERGY AND POWER APPLICATION SEGMENT IN THE COMMERCIAL DRONE MARKET TO GROW AT A CAGR OF ~XX% DURING 2014-2020

*Market share has been rounded off to the nearest digit.
*CAGR has been calculated from 2014 to 2020.
Source: Investor Presentations, Annual Reports, Press Releases, Expert Interviews, and MarketsandMarkets Analysis
FIGURE 6  U.S. SHOWS THE HIGHEST POTENTIAL FOR GROWTH IN THE COMMERCIAL DRONE MARKET

*Market share has been rounded off to the nearest digit.
Source: Annual Reports, Press Releases, Expert Interviews, and MarketsandMarkets Analysis

The Americas (U.S., Canada, Mexico and Brazil) accounted for the largest share of XX% of the global commercial drone market in 2013. The European region held the second largest share of XX%, followed by APAC with XX%. Among all the geographies, the Americas region is expected to grow at the highest rate in the next six years, at a CAGR of XX%. In this region, the drones are widely being used in risk-prone operations such as disaster response, reconnaissance, reconstruction, and rescue operations during crises. In spite of the strict regulations for the use of drones in the civil airspace, the enormous scope of the drones applications have provided a fillip to the drones’ R&D programs. The release of the FAA regulations regarding the use of drones in the civil airspace would further help to expand the commercial drone market in Americas.

In APAC, countries such as the China, Japan, Australia, and New Zealand have a high potential for growth in the commercial drone market. Japan uses the commercial drones mainly for agricultural applications. The Americas comprised the second largest market in 2013 due to being the hub of computer industry, smartphones, tablets, gaming consoles, and digital still cameras. The region leads in terms of technological innovations, which along with the strong growth in PC sales and storage devices drive the memory market in the same.

The major companies in this region include Airware Inc (U.S.), Drone Deploy (U.S.), DJI (Shenzhen), Precision Hawk Inc (U.S.), SenseFly ltd (U.S.), 3D robotics (U.S.), VDOS Global (U.S.), Trimble UAS (Belgium), and AeroVironment (U.S.).
TABLE 1  GLOBAL COMMERCIAL DRONES’ MARKET RANKING, BY KEY PLAYER, 2013

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Market Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>DJI</td>
<td>1</td>
</tr>
<tr>
<td>3D Robotics</td>
<td>2</td>
</tr>
<tr>
<td>SenseFly Ltd.(Parrot)</td>
<td>3</td>
</tr>
<tr>
<td>AeroVironment</td>
<td>4</td>
</tr>
<tr>
<td>Trimble UASD</td>
<td>5</td>
</tr>
<tr>
<td>Drone Deploy</td>
<td>6</td>
</tr>
<tr>
<td>Airware, Inc.</td>
<td>7</td>
</tr>
<tr>
<td>Precision Hawk, Inc.</td>
<td>8</td>
</tr>
<tr>
<td>VDOS Global</td>
<td>9</td>
</tr>
<tr>
<td>Aurora Flight Sciences</td>
<td>10</td>
</tr>
</tbody>
</table>

Source: Annual Reports, Press Releases, Expert Interviews, and MarketsandMarkets Analysis

DJI held the leading position in the Commercial drone market in 2014. The company specializes in the drone technology, as well as in designing and manufacturing easy-to-fly drones that are specially used in aerial photography applications. In order to sustain its leading position and ensure future growth, the company has adopted other strategies such as agreements and partnerships. With regards to this, the company has recently signed various agreements to expand its market reach.

3D Robotics held the second position in the commercial drone market in 2014. The company is engaged in the acquisition and partnership strategy to expand its presence in the drone market. For instance, it acquired Sifteo (U.S.), which mainly deals with the gaming industry. SenseFly Ltd. is a subsidiary of Parrot SA (France) and is ranked third in the commercial drone market. It has recently developed the ebee RTK, which is a surveying and mapping drone that can collect aerial photography and produce 3D models.

FIGURE 7  CONTRACTS, PARTNERSHIP AGREEMENTS, AND COLLABORATIONS COMPRISED ONE OF THE KEY STRATEGIES ADOPTED BY THE TOP COMPANIES

New product development was one of the key strategies adopted by the industry players, in order to achieve growth in the global commercial drones market.

A key recent development in the memory market was the launch of Fujitsu’s new FRAM product MB85RC1MT. It has 1-megabit memory and is the highest density product with an I2C interface.

The contracts, partnership agreements, and collaborations strategy accounted for the highest share of XX% of the total strategic developments in the global commercial drone market. The leading companies adopted this strategy for

*The market share has been rounded off to the nearest digit.
Source: Annual Reports, Press Releases, Expert Interviews, and MarketsandMarkets Analysis
strengthening their product portfolio and catering to the demand from various sectors. The new product, solution, and technology development strategies accounted for XX% of the total number of strategies in the commercial drones market. Sense Fly launched a new solution known as drone aerobatics, which is a patent-pending technology for oblique images. It is an innovative approach which enables the fixed-wing mapping drones to take extraordinary images without the use of a gimbal.

The contracts, partnership agreements, and collaborations strategy accounted for the highest share in the commercial drones market. The key players involved in the implementation of these strategies are DJI (Shenzhen), Precision Hawk Inc (U.S.), SenseFly Ltd (U.S.), and 3D robotics (U.S.). The advanced research and engineering activities, innovation in the existing technologies, and the increased demand for highly compatible all-inclusive platforms have also forced the players to focus on product developments and launches. The other strategies including approvals, awards, testing, and research and development accounted for a noteworthy share of XX%. The FAA approvals and various awards would help the companies in terms of branding and increasing their market presence in different regions across the world.
4 MARKET OVERVIEW

4.1 INTRODUCTION

Commercial drones are the unmanned air vehicles which are operated with the help of remote controls. The UAVs or drones were initially used in the military and defense applications; due to various technological advancements and government approvals, they are being used in commercial sectors such as environment monitoring, media and entertainment, agriculture, mining, infrastructure, and others. This section covers the detailed analysis of the key market drivers, opportunities, restraints, and challenges pertaining to the global commercial drones market.

The increase in demand from commercial applications, prominent technological advancements in the last few years, and the adoption of drones for law enforcement are some of the significant growth drivers for the commercial drones market. However, the slow rate of commercialization, scarcity of trained pilots, security and safety concerns, and air traffic management are the key factors that are restraining the growth of the commercial drones market.

4.2 MARKET SEGMENTATION

4.2.1 COMMERCIAL DRONES MARKET, BY TYPE

The commercial drones market has been classified on the basis of various product types used in several commercial applications. The purpose of this segmentation is to give a detailed overview of the various product types and to estimate the size of the commercial drones market.

FIGURE 8 COMMERCIAL DRONES MARKET SEGMENTATION: BY TYPE

Source: Annual Reports, Press Releases, Research Journals, and MarketsandMarkets Analysis
4.2.2 COMMERCIAL DRONES MARKET, BY TECHNOLOGY

The commercial drones market has been broadly categorized on the basis of technologies which include energy and propulsion systems, automation, collision avoidance, safety, cyber-security and jamming, on-board data processing, communication data links, and radio frequency spectrum capacity. This segmentation helps to understand the adoption rate of such technologies and the market size for commercial drones.

FIGURE 9 COMMERCIAL DRONES MARKET SEGMENTATION: BY TECHNOLOGY

4.2.3 COMMERCIAL DRONES MARKET SEGMENTATION, BY APPLICATION

The various commercial applications considered to analyse the commercial drone market size are government, energy and power, agriculture, manufacturing, infrastructure, media and entertainment, retail, scientific research, and environmental missions.
4.2.4 COMMERCIAL DRONES MARKET SEGMENTATION: BY GEOGRAPHY

The commercial drones market has also been segmented on the basis of different geographic regions. The regions considered in the report include the Americas, Europe, APAC, and Rest of the World. This segmentation helps to analyze the global scenario for the commercial drones market by various regions. It provides the bird’s eye view of the various geographies and their demand pertaining to the said market. The regions are further divided into countries, thereby providing a detailed analysis of the market size estimation.
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