

# Development Situation, Trend and Countermeasure of Consumer-level UAV Market in China

Yu-Lei KANG<sup>1</sup> and Yang XI<sup>2,a</sup>

<sup>1</sup>*Beijing Institute of Fashion Technology, Business School, China*

<sup>2</sup>*Beijing Institute of Fashion Technology, Business School, China*

**Abstract.** This paper is based on the status of Chinese consumer-level UAV(Unmanned Aerial Vehicle) market. According to the main problems in Chinese consumer-level UAV market, the author analyses the trends of Chinese consumer-level UAV market. Then, the author put forward some suggestions to develop Chinese consumer-level UAV market. In 21<sup>st</sup> century, the research and development expenditure presents the explosive growth in Chinese consumer-level UAV market. From the year of 2012, DJI released their first consumer-level UAV product. Amazon, Facebook, Google and other companies have announced their entry into the UAV market. In 2016, Huawei also announced that it will enter the UAV market.

## 1 Introduction

With the continuous emergence of new technologies and the improvement of people's living standards, more and more consumers are beginning to pay attention to consumer-level UAV products. Today, the domestic superstar show have a quickly development. It is worth mentioning that the aerial shot in the program are mostly from consumer-level unmanned aerial vehicle. The introduction and development of the superstar show promote the development of consumer-level UAV. According to national customs statistics, China exported 891,000 unmanned aerial vehicles in 2015, increased 427.2% than 2014. The main export markets for the EU, Hong Kong and North America, the average export price equivalent to about 3670 yuan. Of these, 40% of exports to Hong Kong and re-exports to North America and the European Union. At the same time, China imported 14.5 million unmanned aerial vehicles, increased 1350% than 2014. The average import price is 4817 yuan. At present, China has about 400 UAV manufacturers, supply about 70% of the global demand for unmanned aerial vehicles market. This paper is based on the status of Chinese consumer-level UAV(Unmanned Aerial Vehicle) market. According to the main problems in Chinese consumer-level UAV market, the author analyses the trends of Chinese consumer-level UAV market. Then, the author put forward some suggestions to develop Chinese consumer-level UAV market.

Consumer-level UAVs are mainly used for aerial photography, delivery of gifts, mainly to meet the consumer's entertainment needs. And consumer-level UAV audience is mostly individual consumers. Relative to the professional UAV, consumer UAV to get started faster, lower prices, a wider audience.

---

<sup>a</sup> Corresponding author: 13407008@qq.com

## 2 Development status of consumer UAV market in china

### 2.1 Consumer UAV market is rapidly expanding

The KPCB (Internet Trends Research Institute) data shows that 2013-2015 global consumer UAV market size grow from 1.49 billion yuan to 11.05 billion yuan, the average annual compounded growth rate of 171.87%.China's civilian UAV market reached 2.33 billion yuan in 2015.According to DJI innovation company accounted for 70%-80%, we can estimated that China's consumer-level UAV market size is 1.75 billion yuan in 2015.

### 2.2 Upstream and downstream industry chain matures, production costs continue to decrease

Due to the success of DJI, Parrot, 3DR and other companies in the consumer UAV market, many manufacturers with unmanned aerial vehicle (UAV) related components manufacturing capacity rapidly enter the industry. What's more, the newly entered the market of UAV companies began to enter the UAV design and manufacturing industry.

With the explosive development of the consumer UAV market, due to the large increase, the manufacturers in the upstream industry chain have greatly expanded their production scale, and finally reduced the production cost of the upstream manufacturers. Because of declining parts prices, the UAV manufacturers' profits rising, shipments continue to grow. The UAV industrial chain enter a snowball-style outbreak period.

The Table 1 shows that the price of UAV related components have a significant reduction.

**Table 1.** The change of consumer-level UAV common components' price

The name of component	Model	The price in Apr.2015 (RMB)	The price in Oct.2016 (RMB)	Reduction (%)
Lithium battery	5300mAh 14.8V	527	280	46.8%
Flight control	APM2.6 APM	470	399	15.1%
GPS	APM	369	348	12.2%
Frame	DJI-F450	188	169	10.1%
Forward and reverse oar	1047 carbon fiber (a pair)	30	20	33.3%

### 2.3 More industry giants to enter the consumer market

The global civil unmanned aerial vehicle market has entered the "civil unmanned aircraft first year" in 2016. With the DJI, 3DR, Parrot and other unmanned aerial vehicles innovation company in the consumer UAV market has achieved great success, consumer UAV market has become very popular. Amazon, Facebook, Google and other companies have announced their entry into the UAV industry. Amazon announced they would use the unmanned aircraft to delivery. It can greatly improve delivery speed and reduce labor costs.

In China, MI technology company announced they are starting the research of consumer-level UAV in 2016. What's more, they held a first flight live show by MI-UAV in May.2016. In addition to this, Jingdong announced the pace of keeping up with Amazon, plans to use UAV delivery. Tencent, Huawei and other technology companies have announced plans to enter the consumer UAV market.

## 3 The main problems of china's consumer - level UAV market

Some scholars pointed out that the prospect of consumer UAV market is excellent. However, the imperfect industry standard system, product safety, privacy and other issues cannot be avoided. At

present, the management of consumer-level market is far behind the development speed in China.

### **3.1 Consumer UAV flight policy requirements and standard system need to be improved**

In June.2009, the Civil Aviation Administration of China (CAAC) promulgated the Measures for Air Traffic Management of Civilian Unmanned Aerial Vehicles (UAVs), which stipulated that civil unmanned aerial vehicles (UAVs) should apply for and design airspace in accordance with relevant regulations and voluntarily accept flight management.

In November 2013, the Civil Aviation Administration of China promulgated the Provisional Regulations on Driver Pilot Management of Civil UAV Driving Aircraft Systems. The civil unmanned aerial vehicles (UAVs) were classified into micro unmanned aerial vehicles (UAVs), light unmanned aerial vehicles (UAVs), small UAVs and large unmanned aircrafts. machine. The Regulations require that these four unmanned aerial vehicles should be managed classified.

In April 2015, China Civil Aviation Authority awarded China AOPA (China Aircraft Owners and Pilots Association) UAV the access of driver qualification management. This is the second time China Civil Aviation Authority to give its authorization.

In December 2015, China Civil Aviation Administration issued a "light UAV operation requirements (Trial)", asked some unmanned aerial vehicles involved in cloud and the use of electronic fence.

In July 2016, the Civil Aviation Administration of China officially released "civil unmanned aerial vehicle pilot regulations", increase the new classification of UAVs, so that the provisions of the coverage more clearly.

Although the Chinese Civil Aviation Administration issued these regulations and standard system, but the illegal flight, UAVs crash caused by casualties still exist.

### **3.2 Some products have security risks**

In China, the advanced consumer-level UAV technology are mostly concentrated in the DJI Innovation company, Beijing University of Aeronautics and Astronautics Institute and a small number of leading companies among the industry. At present, China has more than 400 unmanned aerial vehicles company, which means most of the consumer UAV technology is more backward. In addition, in order to obtain corporate profits, some UAV enterprises privately modified processing brand products. They can obtain the function of increased UAV load and extended battery life.

These privately changed unmanned aerial vehicle products which can not conform the requirements of scientific and security. If these products enter into the market, it will bring a huge security risk.

Due to UAV player's improper operation or violation of the provisions of the use of unmanned aerial vehicles, the number of UAV-accidents increase rapidly. US Federal Aviation Administration data show that from August 2015 to January 2016 period, only the record of the UAV security incidents there are about 600 cases. The most serious accident occurred in August 2015, an unmanned aerial vehicle UAVs will rise to the airport no-fly zone, a flight from the aircraft in just 20 feet, a great threat to the aircraft and passengers of the security.

### **3.3 The consumer-level UAV may infringe upon the privacy of people, and even facilitate the criminals committing the crime**

In 2015, a US government intelligence officer in the use of four-rotor unmanned aerial vehicle without operational experience, so that the UAV disappeared into the night sky. In the next morning, the UAV was found crashed in the White House lawn. The US government attaches great importance to this matter. The presidential security affairs of the Secret Service has launched an investigation.

In the use of UAV aerial photography, whether it is fair use or improper use, there may be

violations of other people's privacy and even national security, causing unnecessary misunderstanding. Moreover, there will be criminals using unmanned aerial vehicles to deliver drugs and other criminal acts, in addition to its received in pursuit, but also by the people used to continue to challenge the legal and social bottom line.

## **4 Development trend of consumer UAV market in china**

### **4.1 Chinese consumer-level market will continue to grow**

With the Chinese consumer-level unmanned aerial vehicle technology matures, the upstream and downstream industry chain is more mature, the popular development of consumer-level UAVs into the technical threshold of the market continue to decrease. It will attract more enterprises and manufacturers to participate in the entire industry, which will undoubtedly give China's consumer-level UAV market to bring greater opportunities for development and space.

According to IDC (United States International Data Corporation) predicted that China's civilian UAV product market size will reach RMB 20 billion. The Chinese consumer-level UAV shipments will reach 300 million units.

### **4.2 The gap between the consumer-level UAV company is likely to widen**

According to the Internet public information, although the UAV flight control technology and the main components gradually began to generalize on the market, more and more advanced GPS navigation technology, advanced sensors, intelligent target recognition technology are created. The UAVs equipped with these new technology become more and more competitive.

With the continuous innovation and progress of consumer-level UAV technology, the gap between enterprises within the industry continues to expand, but the position of DJI innovation as a leader within the industry will not change in the short term. DJI have a large number of self-developed technology, including PTZ control, anti-collision technology, and through the vertical integration of management, will be assigned to a larger "cake" to get greater profits and create greater research and development of investment. And those who are not high technical capacity of enterprises will be eliminated or acquired. For example, the US leader in 3DR unmanned aerial vehicles in 2015 announced its withdrawal from the consumer UAV market.

### **4.3 Small-scale self-timer UAV will become the mainstream of the consumer-level UAV market**

As technology continues to evolve and consumer demand increases, consumer-grade UAVs will be smaller, lighter, and easier to operate in the future.

In addition, along with the rapid development of social networking and smart phones, more and more people think the self-timer is a fashion. The self-timer will be became an essential element in life. A British newspaper made a survey about the time and frequency of self-timer from 2000 women. The survey data show that these women take the average self-timer 3 times a day. What's more, they take the average self-timer 5 hours per week. However, whether it is a smart phone self-timer or self-timer shot, there will be limited by viewing angle and position. Therefore, the small self-timer UAV is not only easy to carry, but also not subject to perspective and location constraints and can view the head of any angle.

## 5 Suggestions

### 5.1 Government should update and improve the small UAV flight management policies and regulations

With the rapid development of Chinese consumer-level UAV market, consumer-level UAV technology matures and simplifies, manufacturing costs are increasingly reduced, consumer-level UAV is no longer belongs to the professional-grade players' unique toys. More and more green hand join the queue of consumer-level UAV players, although consumer-level UAV mode of operation more and more simple, but still have some technical requirements for the players. So, these new players to join, it is easy to occur the situation of "bombing machine". We often see the news on "bombing machine" to hurt passers-by, invasion of privacy, the illegal flight and other hazards to social security News appears.

Therefore, the Chinese government should actively learn from the management experience of foreign small unmanned aerial vehicles, constantly update and improve the small UAV flight management policies and regulations for the consumption of UAV flight areas, flight distance and other flight control environment and strict management. Then, it will reduce the occurrence of unsafe events and make the whole consumer-level UAV market more healthy and safe development.

### 5.2 Enterprises should increase R & D investment, comply with the demand of market, improve independent innovation capability

China's consumer-level unmanned aerial vehicle products in the future development trend is based on small self-timer UAV-based, this UAV has a unique feature: easy to carry. At present, zero-degree intellectual control company launched the Dobby Pocket UAV, weighing only 199g, less than the US Federal Aviation Administration limit the registration of 0.55 pounds range.

With the development of consumer-level UAV market and consumer players are constantly updated, unmanned aerial vehicles enterprises should increase investment in research and development, improve the ability of independent innovation and accelerate the upgrading of products according to market demand.

### 5.3 Consumers should improve their operational skills and social safety awareness

At present, a large part of the consumer-level UAV accident is caused by the improper operation and inadequate awareness of owner. Of course, it can not be said that all accidents are due to this reason. With the continuous improvement of products and the strengthen management of government, consumers should also enhance our social security awareness. At the same time, consumers must show their own products in the prescribed security environment. What's more, consumers should consciously read the product operating instructions and continue to improve their operational skills, thereby reducing the consumption of UAV accidents.

## References

1. Lianbo Wang, Science & Technology and Enterprise, Research on Development and Development Trend of Unmanned Aerial Vehicle, **14**,349(2013)
2. Qingyu Wang, New West (theoretical version), Research on the Development of Domestic Unmanned Aerial Vehicle (UAV) Technology Based on Patent Analysis - Taking "Shenzhen Dajiang Innovation & Technology Co., Ltd" as an Example, **14**,(2016)
3. Greiner L.E, Harvard Business Review, Evolution and Revolution as Organization Grow,37-46,(1972)

4. Miller, D., Friesen, Academy of Management Journal, P.H. Momentum and revolution in organizational adaptation,23,591-614,(1980)