

Comprehensive Method to Study the Development of Tuya Company and Provide Development Suggestions

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ABSTRACT

With the explosion of mobile Internet technology and cloud computing technology, the technology continues to iterate, and market awareness is gradually improved. After such a long time since the introduction of the word intelligence, it has accumulated an unimaginable amount of data in history. This provides sufficient materials and experience for the follow-up development of smart technology. More and more industries are paying more and more attention to smart technology. Artificial intelligence has also transitioned from the stage of technology education market to thinking about how to combine technology with business. The stage of reconstructing the traditional industrial value chain with partners, the era has entered the eve of the extensive and in-depth integration of artificial intelligence and traditional industries. Through the combination with the Internet of Things, artificial intelligence and other technologies, the interdisciplinary nature of intelligent decision-making technology is emphasized, the development of computer science and artificial intelligence is linked, and the development of information systems and decision support systems are linked. Intelligent technology can better serve people.

Keywords: *Technology intelligence, Business analytics, PEST analysis, SWOT analysis.*

1. INTRODUCTION

This article discusses Tuya company's current development of intelligent technology and discusses the company's future development prospects. First, it briefly introduces the company, including the company's main business and the status of the industry, and combines it with Yahoo! The stock price data of Tuya on the economic website draws a simple graph, and then analyzes the current situation of Tuya company through the use of PEST analysis and SWOT analysis methods, and finally, the financial analysis of Tuya company was carried out, and some reasonable suggestions were put forward.

2. FIRM DESCRIPTION

Tuya Smart (NYSE: Tuya) is the world's leading IoT cloud platform that connects the smart needs of brands, OEMs (original equipment manufacturers), developers, and retail chains, and provides one-stop IoT PaaS-level solutions [1]. It includes hardware development tools, global cloud services and intelligent business platform development, and provides a comprehensive ecosystem

authorization from technology to marketing channels to build the world's leading IoT cloud platform [2].

Tuya Smart mainly provides aiot PAAS, industry SaaS, smart hardware equipment and value-added services and other categories. The company has three clear development paths.

PAAS Internet of Things Service (module + platform)
 The company has Internet of Things business, purely genuine Internet and advanced development (smart device manufacturers) to provide PAAS Internet of Things services for smart devices, operational management

Internet of things SaaS services + smart device services (central buying and selling). Later, as the business grew, it evolved to provide SaaS internet services to (smart device users).

Value-added services after adding value-added cloud services to [users and end users] such as big data processing, storage, etc.

From Tuya Inc's financial report in Q1 2021, the total revenue increases approximately 200%, it will not possibly keep increasing in that high rate with the influence of Covid-19. And from the official website of

Tuya, 86% of revenue are contributed by premium customers. We think the change of revenue of Tuya mainly comes from the premium customers (see figure 1).

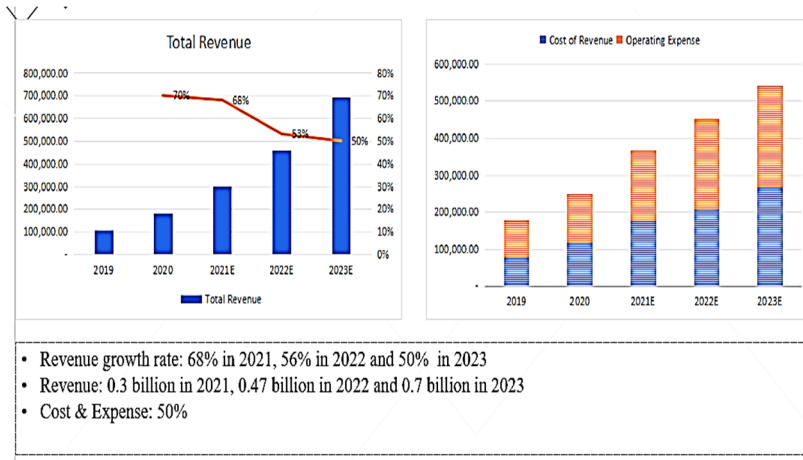


Figure 1. Various revenue of Tuya Inc

3. PEST ANALYSIS

3.1 Politics

National policies have repeatedly highlighted the term artificial intelligence, reflecting the country's emphasis on artificial intelligence. In August 2016, the "Thirteenth Five-Year" National Science and Technology Innovation Plan issued by the State Council put forward the concept of catalyzing the creation of new economy, new industries, new business forms, and new models. Later, in December 2016, the State Council issued the "Thirteenth Five-Year" National Informatization Plan, and the organization and implementation of artificial intelligence innovation projects was listed as one of the key tasks during the "Thirteenth Five-Year" period, and then this year, in March 2021 the "Outline of the Fourteenth Five-Year Plan for the National Economic and Social Development of the People's Republic of China and the Long-term Goals for 2035" was officially announced. In recent years, the State Council has put forward relevant policies and plans on the artificial intelligence industry, laying a policy foundation for the development of my country's artificial intelligence industry.

3.2 Economy

During the 13th Five-Year Plan period, the GDP in 2019 will reach 99.1 trillion yuan, accounting for 16% of the global economy, and its contribution to world economic growth will reach about 30%, and the R&D expenditure of the whole society will increase by more than 7% annually. The market size of China's artificial intelligence industry in 2019 is about 130 billion yuan. In 2020, the artificial intelligence industry will usher in an explosive period, and the economic scale will exceed 150

billion yuan. It is estimated that by 2025, the artificial intelligence industry will exceed 450 billion yuan [3].

3.3 Society

We are in the midst of a profound demographic transformation, from a world where the majority of the population is relatively young to a world where a large proportion of the population over the age of 65 accounts for. This change is both a challenge and an opportunity for the design of intelligent technology [4]. With the improvement of living standards and the improvement of economic conditions, people's ideas and behavior patterns have also begun to change. People are willing to accept new things and new skills, and the national scientific research investment continues to increase. Among them, the new generation of artificial intelligence is a key area of national investment. At present, the company has a large customer base and developers. At the same time, the open architecture continues to attract more brands to join the Tuya Cloud Platform and integrate their devices into the Tuya Cloud Platform. Continue to join brands, OEM manufacturers, developers, etc. to promote the ecological prosperity of Tuya IoT cloud platform and broaden the boundary of the cloud platform. The continuous improvement and development of the cloud platform will also feed back the user group and provide more comprehensive and optimized services.

3.4 Technology

With continuous breakthroughs in technologies such as deep learning and big data, the penetration of AI in various industries has continued to increase, and the application scenarios have become more extensive. The application of artificial intelligence technology in image recognition and speech recognition has gradually matured. At the level of platform intelligence, the

company's The multi-cloud architecture can be seamlessly connected to major cloud infrastructures around the world, facilitating the development of products and new apps. Provide a variety of services at the technical level to fully meet customer needs.

4. SWOT ANALYSIS

In this era of science and technology, electronic equipment needs information and network management. The networking module is the first step to realize the intelligent upgrading of products. The remote control of intelligent products is achieved through the networking module and cloud communication. Unlike the traditional home decoration industry, the cost is high and the profit space is low. Smart home decoration and intelligent tools are the future trend. This is also a new breakthrough to change people's traditional ideas [5]. Over time, more and more smart devices may appear in our homes, including some outdoor vehicles, some wireless electronic devices, fitness equipment with calculated exercise records, watches, lighting systems, etc.

What I want to say here is that many companies are engaged in the production of single intelligent products, but this situation is not optimistic. With the wide application of the Internet of things, intelligent platforms is the ultimate development direction [6]. These intelligent devices not only bring convenience to our life, but also affect people's life to a great extent. For example, in the past, we needed to bring keys and access cards when we went out. Once we lost them, we couldn't go home. Now with the function of face recognition and intelligent lock, we don't need to carry these anymore [7].

The application of smart devices is not only in our home, but also in business. For example, some hotels now implement artificial intelligence to provide front desk services. Therefore, contact between people is avoided and the risk of infection is reduced at the moment of the pandemic.

As of 2020, the company has more than 5,000 customers, including 2,200 leading brands, more than 2,700 Internet of Things PaaS licenses, brand development of smart devices including Philips, Schneider Electric and other leading brands. According to CIC, the company connected more than 116.5 million smart devices in 2020, with a total of more than 204 million smart devices connected, making it the largest smart device supplier in the global iot PaaS market. And added 600 leading brand customers in the first quarter of 2021.

Tuya has just become a listed company this year. As a new enterprise, it is not very competitive on today's Internet of things platform. For example, Google and Amazon are very competitive in the market, both have strong cloud platform and technical advantages, and customer loyalty is also very high. It is still difficult to

gain an advantage in the market. The feasible way is to cooperate with these famous enterprises.

In the market of intelligent devices, generally speaking, they are much more expensive than traditional production devices. Although these smart devices will give people more convenience and serve consumers in a faster and more effective way, the high price limits the sales of such products to a certain extent. Whether in business or household equipment, for example, not every family has the economic ability to complete the transformation of intelligent furniture.

As an intelligent platform company, Tuya's core technology supplier is the chip, and the manufacturing cost of the chip is very high. Install chips on general devices, transmit data to the cloud platform through chip sensing and network connection, and return to the items after a series of sorting to form such a chain operation setting. This is the crucial role of chip prayer. It is the chip that makes this way work. However, due to the epidemic situation, chip manufacturers are short of goods and the cost is very expensive. This is not conducive to the development of enterprises [8].

At present, Tuya is not in a profitable stage, because our cost and raw materials in developing devices are very expensive, and the application of smart devices has not been recognized by most people, because it will involve the disclosure of personal privacy and some potential problems. However, in the future, this intelligent device will be popularized and applied in our life on a large scale, which will bring convenience for us to provide services.

5. FINANCIAL ANALYSIS

We create a model to estimate the revenue in next three years based on the number of premium customer and their willingness to pay. In our model, the revenue is the income from the existing premium customers plus income from new customers. The income from the existing premium customers is the product of the estimating increasement of existing premium customers payment and their payment last year and the income from the new customer is the product of the estimating number of new customer and the averaging willingness to pay.

We assume that the number of premium customers and new customer will both increase in 2021 and the growth rate of them will decrease in 2022 and 2023. We also assume that the willingness to pay of premium customers keep the same and new customer will decrease due to the covid-19 [9]. So we can have the estimating growth rate of Tuya which is 68%, 56% and 50% and the rates are closed to 50% which is the estimating growth rate of Chinese market size of cloud platform. Based on those growth rate we can get the Tuya's revenue in following 3 years. It's 0.3 billion in 2021, 0.47 billion in 2022 and 0.7 billion in 2023.

In the income statement sheet of Tuya, the EBIDA equals to operating income and operating income is revenue minus cost of revenue and operating expense. We assume that their growth rate is 50% which is approximate to the average growth rate of revenue in next 3 years and also the increasing rate of expense in the past 2 years. Then we can get EBIDA in the following 3 years--67 million, 10 million and 151 million. As for the capital required, we use free cash flow to estimate. Free cash flow equals EBITDA minus capital expenditure minus increasing in working capital. We use Alibaba's growth rates of balance sheet from 2013 to 2016 because Alibaba also has cloud platform business, its cloud business had continued for 5 years in 2014 and it finished its IPO also in that year. We assume that Alibaba's 2014 is Tuya's 2021. Finally, we get the cash flow in following 3 years-- -90 million, 12.6 million, 136 million and if Tuya keeps expanding in this growth rate in 5 years, the current value calculated by DCF model is 196 million and the capital Tuya need in 2021 is 90 million (see figure 2).

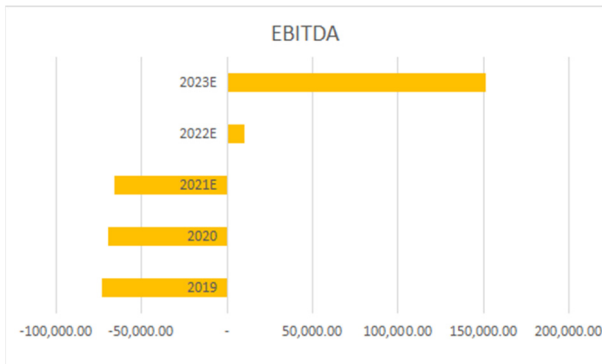


Figure 2. EBITDA of the firm

Increase issue to stocks, especially aimed at the existing stockholder because they are most willing to hold Tuya's stock. We also issue additional directional issues to tech-company with giant size like Tencent in China and private equity firm. Tencent already has 10% shares of Tuya. Tencent's positive attitude can make another company to hold Tuya's share. Tuya has a good fame in private equity firm and dealer such as Cinda and Tian Feng and increase the probability in getting a good stock price.

Issue convertible bond, which has the dual attributes of stock and debt. Its annual interest rate is only 1-2%, which is really much lower than the annual interest rate of 5-7% for bond financing. At the same time, it can also be converted into stocks. When creditors convert into stocks, creditors become shareholders of Tuya, and we do not have to pay back money, which can further reduce financing costs. Shareholders are still happy to see convertible bonds converted into shares which means they can own apart of Tuya, which will increase their willingness to buy [10].

Develop the technology of SaaS platform which is a new area without so many giants and the revenue of SaaS is incredibly increasing at a very high rate---about 200%. This area is a blue sea with lots of opportunity for Tuya [11].

Hire a more professional management team. Tuya now is a small company with 2000 people. If Tuya want to build the hole platform ecosystem for more and more customers, it should hire and manage more people to support the development. Now 70% of employees are in R&D department, professional management team.

Attract more premium customers. In the cloud platform market, Matthew effect works, which means the biggest company in the market will always win in the fierce competition. For the reason that user stickiness is high in that market and more user means more ability to provide better service in the future. In turn better service will attract more user to pay. In order to be the biggest, Tuya need to attain premium customers in the new market like SaaS market. In the first stage, surrender parts of profit to give customer free service is vital [12].

6. CONCLUSION

This article outlines the future development trend of Tuya company under the rapid development of smart technology today, through the government, economy, society, new technology, and the use of SWOT analysis to the company's current policies, overall economic conditions, and the elderly. And young people's cognition of smart technology, and more and more new technologies appear to bring more room for development to the company.

In the bright development prospects, because there are some threats, some large companies such as Google, Alibaba, Amazon and other multinational companies still pose great threats to the company. First of all, the founder of Tuya comes from the large company Alibaba. In some corporate strategies, it will inevitably be similar to Alibaba, and because Tuya is a small company that just went public this year, although it has a strong executive team, it is still weak in terms of corporate culture and customer loyalty, and in terms of raw materials. In this regard, because the materials used in the development of the equipment are all expensive materials, the prices of the products produced will be somewhat expensive, and there are still some people who do not recognize the convenience brought by smart technology. They think that smart technology has not yet at the maturity stage, some of the smart device echo technical problems have caused problems such as the leakage of users' personal privacy information.

This article analyzes the bright prospects of the development of Tuya and the problems it faces, but it does not give a corresponding solution strategy. It only points out the problem, and does not answer how the

company's problems should be solved or dealt with. And in terms of financial analysis, a new model created by the author will have some deviations.

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