

Global Business Strategy for Commercializing a Technology of Drone: A Lesson Learned from DJI Drones and Parrot Drones

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Abstract

Global business strategy is needed now to be able to compete globally in the industrial era 4.0. In designing a global strategy, companies must decide how to change or adopt a core business model to achieve above-average returns when the company operates globally. In the last few years, the drone industry has developed rapidly in various sectors. Sales trends are also increasing every year, which makes research related to drones interesting for further research. This research will discuss the global business strategy of commercializing drone technology by looking at companies that have successfully compete globally. The companies studied were DJI Drone and Parrot Drone. This research aims to find lessons learned by drone companies in designing global business strategies to obtain above-average returns and the distribution/comparison of drone companies to see it commercialize the technology. The research approach uses strategy management with a combination of I/O (Industry/Organization) models and resource-based models. The data used in analyzing this comparative study is qualitative data that is secondary data obtained on the internet and previous research. The result is that DJI Drone's focus is on commercial innovations that are needed quickly and easily in all countries. However, Parrot Drone excels in the latest innovations produced with production facilities provided with 4K video and adopts a corporate acquisition strategy.

Keywords: Commercialization Technology, Comparative Study, DJI and Parrot Drone, Lesson Learned and Global Business Strategy

1. Introduction

The company is currently required to compute and connect to the internet in running its business to compete in the era of Industry 4.0. This can enable business transactions globally without borders (Motohashi, 2015). In general, companies will make business strategies to compete globally. In designing a global strategy, companies must decide how to change or adopt a core business model to achieve above-average returns when the company operates globally (Motohashi, 2015). The study of global business strategies becomes interesting in seeing how a company adopts a core model of its business strategy to compete globally successfully.

Industry 4.0 generally focuses on creating smart products, processes and procedures. In this era new innovative business models become important to be able to embrace the new possibilities offered by new technology. Drone technology can be said to be a clear new technology that offers new possibilities and enables new innovative business models. Nowadays, drones are seen as a revolutionary tool for Industry 4.0. Drones can be integrated in workflows provided to help companies do things that are easier, more efficient and safer (Amza et al, 2018). Drones

have functions to support this. According to Amza et al (2018) it was explained that drones have the main features of industry 4.0, which these features aim to facilitate human work now and in the future.

In developing technology to become a business, it must consider its commercialization technology as market acceptance. So that technology does not fall into the valley of death. The success factor in commercialization is to produce a good internal and external environment and aim for market acceptance (Ghabid et al, 2015). The commercialization of this technology has become important in the development of drone technology to achieve global business.

In recent years, the drone industry, in China also known as the Unmanned Aerial Vehicle (UAV) industry, has developed rapidly with intensive use of UAVs in various sectors (Peng L, 2019). Drone sales trends increase every year (Khofiyah et al., 2018). This research will discuss the global business strategy of the commercialization of drone technology by looking at companies that have succeeded in competing and making them learning for companies in developing countries like Indonesia. The companies studied were DJI Drone and Parrot Drone.

DJI Drone is a Chinese technology company headquartered in Shenzhen, Guangdong, with factories throughout the World. DJI is the dominant market leader in the civil drone industry, which controls more than 70 percent of the World's drone market (Borak, M, 2018). The company's products have also used by the military and police (Schmidt and Vance, 2020). In 2020 various institutions at the local and federal levels continue to use DJI products (Corfield, 2017). DJI Drone is known to have a very competitive internal culture, with frequent teamwork being pitted against each other to design better products (Schmidt and Vance, 2020). DJI tries to compete with its technology from the start (Xu and Muneyoshi, 2017).

Parrot Drone is one of the drone companies around for a long time, founded in 1994 by Henri Seydoux (CEO). Parrot is the number 2 consumer drone market in the World, with ease of use. Today Parrot is the leading European group in the fast-growing drone industry, Visionary, at the forefront of innovation. Parrot is the only group positioned throughout the value chain, from equipment to services and software. Parrot Group designs and manipulates its products in Europe, especially in France and Switzerland. It currently employs more than 500 people worldwide and makes the most of its sales outside France (Parrot.com).

This article offers a framework for the effectiveness of implementing global strategies on company performance (Yaparak, 2011). This study aims to find lessons learned by drone companies in designing global business strategies to obtain above-average returns by comparing two successful global companies: DJI Drones and Parrot Drones. This paper highlights the company's advantages and challenges from the internal and external sides. This study produced a proposed model that successfully controlled the commercialization of drone technological innovation in two companies as a case study. This study's value is a step forward in filling the literature gap regarding the appropriate technology commercialization model for commercializing a drone technology.

2. Literature Review

The following literature review explains theories about the concept of global business strategy, strategic management, and state of the art from previous research.

2.1 Global Business Strategy Concept

Globalization in the world economy by using power in the political, cultural, and economic fields to promote an interdependent global environment and move towards a global system has driven many organizations and industries to become global (Buckley and Ghauri, 2004, and Kim et al., 2003). Such a global sector is primarily has driven by three structural forces: economies of scale, comparative advantage, and regulated markets (Birkinshaw and Morrison, 1995). Companies that compete in such industries have gradually adopted a global strategy in which they no longer view their subsidiaries located worldwide as independent sub-units, but as highly interdependent networks. The global strategy is thus has characterized as developing competitive advantage through operations in interconnected national markets by exploiting differences in national resources (Malnight, 1996). First of all, to adopt a global strategy as part of a corporate management strategy, it is needed to analyze differences in internal and external business environments (Motohashi. K., 2015).

2.2 Strategic Management Concept

Strategic Management Process is a series of commitments, decisions, and actions needed for a company to achieve strategic competitiveness and get above-average returns (Hitt et al., 2007). The management strategy's objective is to effectively utilize corporate management resources, such as personnel and technology, following external environmental factors such as competition and customer needs (Motohashi. K., 2015). The strategic management concept is generally has divided into two models, namely the Industrial/organization (I / O) model, by looking at the external environment and the resource-based model that looks at the internal environment. The following is an explanation of each model:

2.2.1 The Industrial Organization (I/O) Model (External Environment)

According to Hitt et al. (2007), From the 1960s through the 1980s, the external environment was thought to be the primary determinant of strategies that firms selected to be successful. The industrial organization (I/O) model of above-average returns explains the external environment's dominant influence on a firm's strategic actions. The model specifies that the industry in which a company chooses to compete has a more substantial impact on performance than the choices managers make inside their organizations. The I/O model suggests that above-average returns are have earned when firms implement the strategy dictated by the characteristics of the general, industry, and competitor environments. Companies that develop or acquire the internal skills needed to implement strategies required by the external environment are likely to succeed, while those that do not are likely to fail. The I/O model considers a firm's strategy to be a set of commitments, actions, and decisions formed in response to the industry's characteristics in which the firm has decided to compete.

According to Hitt et al. (2007), most firms face external environments that are highly turbulent, complex, and global— conditions that make interpreting them increasingly difficult. An essential objective of studying the global environment is identifying opportunities and threats. An opportunity is a condition in the general environment that, if exploited, helps a company achieve strategic competitiveness. A threat is a condition in the general environment that may hinder a company's efforts to achieve strategic competitiveness.

2.2.2 The Resource-Based Model (Internal Environment)

According to Hitt et al. (2007), the resource-based model assumes that each organization is a collection of unique resources and capabilities. The uniqueness of its resources and capabilities is the basis for a firm's strategy and ability to earn above-average returns. This model assumes that firms acquire different resources and develop unique capabilities based on how they combine and use the resources; that resources and certainly, capabilities are not highly mobile across firms. The differences in resources and capabilities are the basis of competitive advantage. Through continued use, capabilities become stronger and more difficult for competitors to understand and imitate as a source of competitive advantage, a capability (Hitt et al., 2007).

Resources, capabilities, and core competencies provide the foundation of competitive advantage. Resources are the source of a firm's capabilities. Resources are bundled to create organizational capabilities. In turn, capabilities are the source of a firm's core competencies, which are the basis of competitive advantages. Resources is a company asset, including people, brand value/brand. Capabilities are a collection, and a series of resources will shape the company's capabilities. Reflects the ability to use resources in an integrated manner to achieve specific goals. Interaction between tangible and intangible resources. Development through the process of exchanging information and human capital knowledge. The capability source is unique skills and knowledge from company employees and employee functional expertise. Capabilities are often developed in certain useful or certain parts of an organization. Resources and capabilities are sources of a company's competitive advantage that differentiate a company's competitive level and reflect its personality (Hitt et al., 2007).

2.3 State of The Art from Previous Research

There have been many previous studies conducted by researchers in the World about the commercialization of drones. Commercialization in terms of technology and market aspects. In Dai (2015), research Commercialization of a Drone Mapping and Sensing Technology of Aranca and help show the direction of the market by type of innovation. Then in research, Ipsos Business Consulting (2017) examines the commercialization of the adoption of drones in agriculture in disruption and opportunity. From the two previous studies, it can be seen that drone technology's commercialization is new issues to discuss. Besides, there is also a case study research company DJI Drone to be interesting to consider because it is the first drone company that is overgrowing in sales today in the

World. As in the research of Xu and Muneyoshi (2017) that discusses the DJI Drone, the Top Drone Maker in the World case study. Then in the study of Chin et al. (2017), which explains the DJI the Future of Possible.

But from the many studies conducted by the predecessor researchers, what distinguishes this research is that no research discusses the comparison of business strategies in two successful drone companies by looking at the company's internal and external aspects. In previous studies, only consider the success factors DJI Drone alone does not compare with other companies. The novelty in this study comparing two drone companies, namely DJI Drone and Parrot Drone.

3. Methodology

The methodology in this study uses a comparative study of lesson learning from two companies in commercializing DJI drone and Parrot drones technology as a case study. This study uses the concept of compare I/O Model, and Resources-Based Model of Above-Average Returns in strategic management as a framework for analyzing the formulation of global business strategies. Five stages are used as an approach in analyzing the two companies. Figure 1 represents the framework used in this study.

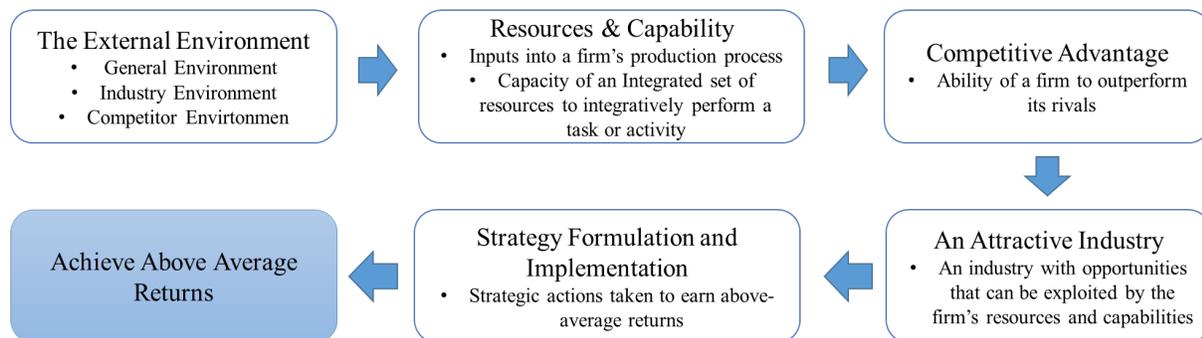


Figure 1. Comparative Study Framework

The data used in this study are secondary data obtained from the internet and previous research with a span of the last ten years, namely in 2010-2020. This research uses data analysis from previous research with case studies in DJI Drone Company and Parrot Drone Company. As in the research (Xu and Muneyoshi, 2017) and (Chin et al., 2017) that discussed how DJI's drone company managed to build its company into the number 1 company in the World.

4. Result and Analysis

The following are the results and analysis of global business strategies in two companies (DJI Drone and Parrot Drone) with a framework selection comparative strategy management framework.

4.1 Product Comparison

Table 1 explains the comparison of one of the products in the DJI Drone and Parrot Drone companies, which has almost similar specifications.

Table 1. Product Comparison

	DJI Mavic 2 Pro	Parrot Anafi
Photo Product		
Flight time	31 Minutes	25 minutes
Flight Speed	20 m/s	15.3 m/s
Flight Distance	18 km	4 km
Weight	907 g	320 g
Volume	6518.57 cm ³	2730 cm ³
Dimension	241 x 84 x 322 mm	175 x 65 x 240 mm
Price	\$ 1.729 (DJI Store)	\$ 700 (Parrot store)
Video Recording	2160 x 30 fps	2160 x 30 fps
Main Camera	20 MP	21 MP
Field of View	77°	84°
Battery Power	3850 mAh	2700 mAh
External Memory	128 GB	16 GB
Product excellent	Has a serial shot mode Can create panoramas in-camera Obstacle detection	Smaller product dimensions Product price is lower

Source: versus.com

From the table above, we get a significant comparison, where DJI Mavic 2 Pro is superior to Parrot Anafi, but the price is almost 2.5 times. The above specifications if the total comparison between the two products is 100 points for DJI Mavic 2 Pro and 73 points for Parrot Anafi according to versus.com.

4.2 External Environment

This external environment needs to be analyzed to determine global conditions in designing strategic management because most companies face complex and challenging situations (Hitt et al., 2007).

1) General Environment

The general environment consists of demographic segments, economic segments, political/legal segments, and technological segments of DJI drone and Parrot drones companies. As shown in table 2.

Table 2. General Environment

	DJI Drones	Parrot Drones
Demographic Segment	DJI Drone originates from China, founded in 2006. The geographical distribution of DJI Drone covers the entire World and continent, but the company operates in the United States, the Netherlands, Beijing, and others.	Parrot Drone originated in France, founded in 1994, is older than DJI Drone, but produced commercial drones in 2010.
Economic Segment	The inflation rate in China reached 3.05% in 2020. China inflation as a comparison between the central industrial countries and developing worldwide, China displayed the lowest increase in developing countries in 2019. (Textor, 2020).	The inflation rate in France in 2020 is 0.29%. The standard of living in France is quite high, life expectancy is among the highest in the World, and employment rates have stabilized or even increased slightly since 2009 (Plecher, 2020).
Political/Legal Segment	Regulations on the Use of Drones in China (Chin et al., 2017): 1. Drones above 250gr must apply the rules 2. All drones must do registered under the name of the owner 3. Drones that are heavy enough must do designed to move away from the no-drone zone 4. Report their positions to the factory in real-time 5. Third-party insurance must be purchased 6. Drone factories must have a mechanism for sharing data with the Chinese government.	Regulation of Drone Use in France (UAV Coach): 1. The owner must register the drone in AlphaTango if the weight exceeds 800gr, and the registration number must do affixed to the drone. 2. Drones may not be flown at night (except with special permission from the local prefect). 3. Drones may not do flown above 150 meters (492 feet), or higher than 50 meters (164 feet) above any object or building that is 100 meters (328 feet) or higher. 4. Drone pilots for non-recreational purposes must pass a basic theory and practice test.
The Technological Segment	Core competence is flight control software, which is known for its stability and superiority of reliability.	Parrot SA is engaged in the robotics and information technology industry. Its products include drones, wireless devices, and connected objects.

2) Industry Environment

The threat of new entrants to drone companies is the emergence of similar companies offering products of the same quality. However, lower prices pose a threat to these two companies, because many buyers compare prices and quality between companies, making it possible to threaten newcomers new. The threat of product substitutes is also almost the same, namely the emergence of renewable technology with smaller sizes and cameras that are more focused on the addition of more sophisticated features coupled with directly controlled by the robot so that there is automation in terms of use. Future technology like this could be one example of the threat of drone replacement products. For example, DJI drones are currently releasing products with a small size that can be easily carried and used by users wherever and whenever because it makes it one of the company's flagship products. This indicates that currently, users need products that are simple and easy to use.

Then by using the power of suppliers and buyers in the drone company. The number of suppliers is relatively low, although the company makes a strategy where the size of the drone is initially significant. Because the required power source is now being has changed using a smaller battery, it makes the drone more modest and convenient for users to carry and use. Influential buyers with easy access to information on the internet can easily compare prices and quality of products according to their needs. So the strategy a company must have to meet the buyer's power is to display product information correctly and in detail on the company's website.

3) Competitor Environment

Competitor environments from DJI and Parrot drone companies are other drone companies that also produce the same product and the same target and market segments. Another important thing in a competitor's environment is where the drone technology from other companies can match or exceed the innovations made by DJI drones and Parrot Drones. Figure 2. The following explains the sequence of the top 20 Q3 ranking drone companies in 2016, where there is a visible change in the growth of drone technology in the companies below.

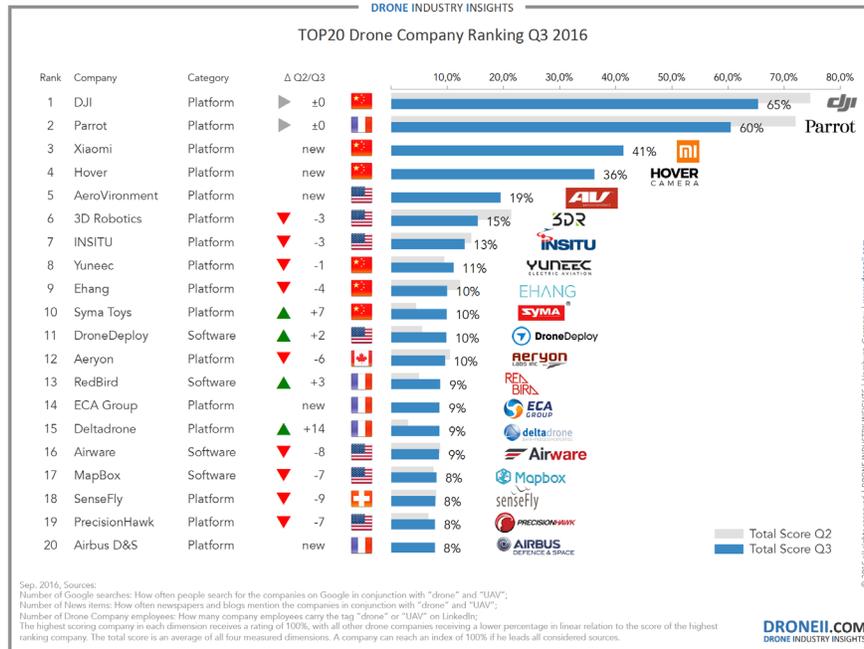


Figure 2. Top 20 Drone Company Ranking Q3 2016
 Source: Droneii.com

4.3 Resources and Capability

Comparison of DJI Drones and Parrot Drones companies based on company resources and capabilities. Resources are the source of the company's capabilities. Then, capabilities are collections, and a series of resources will shape the company's capabilities. As shown in the table 3.

Table 3. Comparison of Drones Companies (DJI Drones and Parrot Drones)

	DJI Drones	Parrot Drones
Resources	<ul style="list-style-type: none"> • In 2018, there were 14,000 employees from various countries. And has 1500 employees in the Research and Development Division. With an R&D center that covers 12,000 feet in Silicon Valley. • There are divisions in China, Japan, North America, Europe and Chile. • The team at DJI has a competitive internal culture. • DJI has an after-sales strategy that can be accessed at the online repair request on its official website • On the official website, there is a product comparison to determine the superiority of the product to be purchased and makes it easy to choose products according to needs. • The passion of a CEO and founder of DJI is so high. • Website: DJI.com. 	<ul style="list-style-type: none"> • Parrot Group designs and manipulates its products in Europe, especially in France and Switzerland. • Employs more than 500 people worldwide and makes the most of its sales outside France. • Payments made securely in Secure Data. • There is a 6-month warranty from the company for worn parts. • Parrot applies a great business strategy through acquisitions and investments. • Website: Parrot.com
Capabilities	<ul style="list-style-type: none"> • Products produced are many functions and varied, which exist for photography, videography, professional, agriculture and drone components • One of DJI's efforts in building a reputation is by taking corporate social responsibility (CSR). CSR efforts undertaken are by applying technology in the fields of humanity, education, and the environment (DJI, 2017). • DJI adopts a pricing strategy that reveals the actual value of its products because it has equipped with the most advanced technology that makes product prices relatively high. • DJI cuts the development process time, which only takes six months from the initial development to producing drones (Brewster, 2015). 	<ul style="list-style-type: none"> • Its expert capabilities are focused primarily on three vertical markets: (i) Agriculture, (ii) 3D Mapping, Surveying and Inspection, and (iii) Defense and Security. • Visionary, at the forefront of innovation, Parrot is the only group to be positioned across the entire value chain, from equipment to services and software. • Parrot, the World's number 2 of the consumer drone market, designs drones known for their high performance and ease of use. • In France, the Product is directly tested by the Special Operations unit for air reconnaissance. • Free Shipping is free standard Shipping for every drone purchase. • Secure payments in Secure Data. • A Warranty is six-month warranty support & assistance for worn parts.

4.4 Competitive Advantage

When a company lacks the resources to replicate or cannot duplicate the benefits of the company's strategy, it is a sustainable competitive advantage that must do achieved. Thus, core competencies must not be replicable and cannot be substituted so that this competitive advantage is sustainable.

The competitive advantage of DJI's Drone Company is to have a company motto, 'The Future of Possible,' so that DJI devotes itself to innovating and investing heavily in research and development (Chin et al., 2017). Then in addition to that, other competitive advantages are the ease of buying products, with DJI's online drone store, and can be accessed anywhere through the website and e-commerce or can access DJI stores directly in many countries. The

company also offers a warranty or online service on its official website, so users/customers feel guaranteed when there is damage to the Product. Drone products are produced not only for photography/videography users but also provide drone products for agriculture, military, surveys, and others, which have dominated the market for drone products from several industries. One of DJI's efforts in building a reputation is by taking corporate social responsibility (CSR). CSR efforts are have carried out by applying technology in the fields of humanity, education, and the environment (DJI, 2017). Then also donating drones to help rescue in Nepal and training people in using drone technology to deal with disasters (The Swiss Foundation for Mine Action, 2016).

The Competitive Advantage of the Parrot Drone Company is that Parrot is the undisputed innovation leader in Technology in France. This company imagines, develops, and creates products that others find unreasonable. Parrot is always has based on the fun and innovation that makes this Parrot's core competency. The founder of Parrot believes that the Product produced is the latest solution in facilitating and enriching the daily life offered to users. Parrot Drone established since 1994 has a passion and DNA to innovate and create new markets with new experiences that benefit consumers and professionals. Through its robust ecosystem, Parrot offers advanced solutions today, along with Airinov, SenseFly, and Pix4D.

4.5 An Attractive Industry

The drone industry / unmanned aviation industry is attractive because it has high entry barriers, and the need for clear regulations, so players in this industry cannot quickly enter. Then suppliers and buyers have a weak position, the technology adopted in this industry. This is high technology so that suppliers of raw materials in this industry have a vulnerable position depending on the demand for the technology needed by the company and buyers. This industry must also understand this technology first and adapt it to the needs of business buyers. Hence, buyers have a weak position too. Then some threats from substitute products. And moderate competition among competitors, where many of these drone companies have emerged from various countries in the World with multiple business strategies. Attractive industries whose structural characteristics with opportunities that can be exploited by resources and the ability of the company aim to achieve above-average returns.

One of the efforts of the two companies in building an excellent reputation for customers is by taking corporate social responsibility (CSR). Both have the same strategy in this case, which is an analysis in the attractive industry. By taking part in this case, the company will certainly get the sympathy of the customer. The following strategies are have applied to the DJI Drone and Parrot Drone Companies.

The World is better with the technology of drones. Non-governmental organizations and humanitarian groups use drones to help animals, for example, to protect Kenyan elephants. They are then helping people like educating new generation engineers. Rescue organizations have saved hundreds of people from the dangers of using unmanned aircraft and many more. DJI encourages innovators who are pioneering new ways to use Drones for Good.

Parrot supported the French medical profession during COVID-19 by sharing the project's open-source respirator, MakAir, his experience in machine design and integration. The engine is an important part that is very demanding in any ventilation device with constant power, controlled vibration, reliability, and durability sufficient to allow operation 24/24 for six weeks. Parrot offers 500 machines that meet the criteria for launching the MakAir project, which is ambitious, simple, and modular. In the end, as part of industrialization in France, Parrot will provide 5,000 machines for the project.

4.6 Strategy Formulation and Implementation

From the explanation in the previous four stages, namely External environment, resources & capability, competitive advantage, and attractive industry, it can do concluded that four formulation strategies make both companies successful, namely:

- 1) A strong drive from the CEO or founder to successfully achieve above-average returns
- 2) Never stop innovating to be better in creating technology every year, both regular employees, technology development teams, and the CEO and Stakeholders who lead the company.
- 3) Build interactions with customers by building good access to information for customers and producing products that are easy and needed by customers
- 4) Building a good reputation by selling products and having a positive impact on society by taking part in corporate social responsibility (CSR).

Implementation of the Strategy can do seen in the internal and external environments where both companies compete to achieve above-average returns, which is also supported by company resources and capacitation.

4.7 Achieve Above Average Returns

The achievement of above-average returns for DJI Drones Company is sales that have entered developed countries such as North America, Europe, Asia, including China, which control DJI's global share of almost 70% in the World (Xu and Muneyoshi, 2017). The company's revenue generated reached around \$ 2.8 billion in 2017, and the company's value is estimated to rise to \$ 8 billion. Then the number of workers reached 1500 workers.

The achievement of above-average returns in the Parrot Drone Company is the number of employees reaching 500 people. Parrot became the second top drone after DJI Drones. Parrot is the most innovative and most sophisticated company in France.

4.8 Lesson Learned (recommendation)

Lesson learned in the results of this study can be seen from the formulation of strategies carried out in the two companies as a comparison. The strategy has broadly divided into four factors, namely Stakeholder / CEO, Innovation, Marketing, CSR. The two companies, DJI and Parrot Drone, applied the strategy to be accepted in the global market and reach above-average return. However, the two companies have different focuses on carrying out this strategy. At DJI Drone, the focus is on commercial innovation that is needed quickly and easily obtained in all countries, where the located DJI Drone market in many countries. However, Parrot Drone excels at the latest innovations produced with production facilities provided with 4K video, and also another difference is that Parrot adopted the company's acquisition strategy. And most importantly also the two companies certainly build sophisticated information systems to support achieving strategic advantage and increase production efficiency. Substitution is less likely and possibly increase entry costs (Sutopo, 2019).

The explanation in this paper can be a business strategy recommendation for similar companies; one is Frogs Indonesia, where this company has succeeded in making products and commercialized. In 2020 Frogs Indonesia has finished launching passenger drone products covered by the media and can do seen product specifications on its official website, which is the first step in introducing products online. The results of the strategy analysis in this study can be recommendations for companies to implement to achieve an above-average return.

5. Conclusion

The study of global business strategies using a strategy management framework has carried out. The authors write the strategy used by DJI Drone and Parrot Drone companies in developing business globally. DJI's Drone Company achieves the above-average returns by emphasizing user-oriented, where marketing, products, ease of obtaining products, after-sales / warranty are all stressed to make it easier for consumers to find the information they need. Then aside from the website, Product and purchase information can quickly search on the internet and e-commerce. Parrot Drone Company emphasizes product facilities produced with 4K video, besides purchasing products, which is also accessible through the official website. Both companies have successfully reorganized in the world / developed abroad in various countries.

The proof is that these two companies can quickly get their products if the DJI Drones Company has an official store that has entered Indonesia. That way, the two companies have also implemented strategic entrepreneurship and successfully marketed innovation. This study compares the business strategies used by drone companies with global markets, so the results of this comparative study can be recommendations for similar domestic companies to implement their global business strategies to achieve above-average returns. A suggestion in future research is to use primary data obtained directly from company case studies. So researchers in analyzing global business strategies can be more precise, following the development of the company. Then also the companies selected in this case need to be considered related to the suitability of their products.

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