

Pandemic COVID-19 Effect on Future Courier Technologies

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EDITORIAL

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In Malaysia, when Movement Control Order (MCO) took place, many economic sectors are forced to shut down to control the pandemic. Most of the households are trapped in the house and trying to adapt to many new normal activities such as “work from home”, “virtual learning”, “online shopping” and many more. These new normal activities are increasing the demand of certain economic sectors such as Information and Communication Technology (ICT), digital banking, delivery services, etc.

Consumers at home started to get used to online shopping. The experience of convenience to order anything online with unlimited choices made many people addicted and this culture seems will remain even after the pandemic COVID-19 was abolished. Due to this, demand for courier services increased dramatically. New courier companies emerge and each courier company has to offer a very convenient service with the lowest delivery cost possible to compete in this very stiff competition (Leong, 2020).

Among many factors affecting consumers' choice of using a certain delivery service is the price of the service (Haron et al., 2017). This is one of the main reasons why J&T Express expand very rapidly in Malaysia and become the first choice of many business owners and consumers (Leong, 2020).

A shorter distance courier such as food delivery, GrabFood and foodpanda are among the favorite choices of Malaysian people due to their variety of food or restaurant choices and fast delivery. Since the main vehicle used to deliver those foods are motorcycles (Ibrahim et al., 2018), the delivery cost is reasonable and some of the restaurants offer to absorb the delivery cost.

Obviously, lower prices and fast delivery are two important factors that are mostly preferred by consumers, and service providers try to improvise. Choice of vehicle type is an important factor to achieve both lower price and fast delivery. Another type of vehicle that will be emerged as one of the important delivery vehicles is the drones (Kitjacharoenchai et al., 2019). Singapore did launch its first delivery drone last year delivering 2 kg of vitamins dropped onto a ship anchored off the Singapore island (The Star, 2020).

The delivery drone is believed to be a cheaper and faster option of transportation mode. It can be operated autonomously or remotely. The service provider may save more money by not required to hire many delivery personnel. The drone can reach any location even out-of-the-way location or offshore. Since the drones are not required to follow the specific route to deliver, it is believed that the use of a drone can save energy usage (Gaille, 2019).

Rules and regulations wise, according to Malaysia's national aviation authority, the Civil Aviation Authority of Malaysia (CAAM), flying a drone is legal in Malaysia. The drone may fly freely without restriction if it is not fly more than 400 feet (outside the aerodrome traffic zone), less than 20 kg, and not for a commercial purpose. As for the delivery drone, it requires official permission from the Director-General of CAAM (CAAM, 2017).

However, there are not many or nearly to no delivery drone could be seen around. There are few challenges faced by this new technology. The technology limitation of drones is depending on the type of drones. There are three types of drones available in the market. There are fixed-wing drones, single rotor drones (a.k.a. mini helicopter), and the most typical drone that would just pop up into everybody's mind when speaking about the drone is the multi-rotor drone. The differences between these drones can be seen in Figure 1 below (Herrick, 2017).

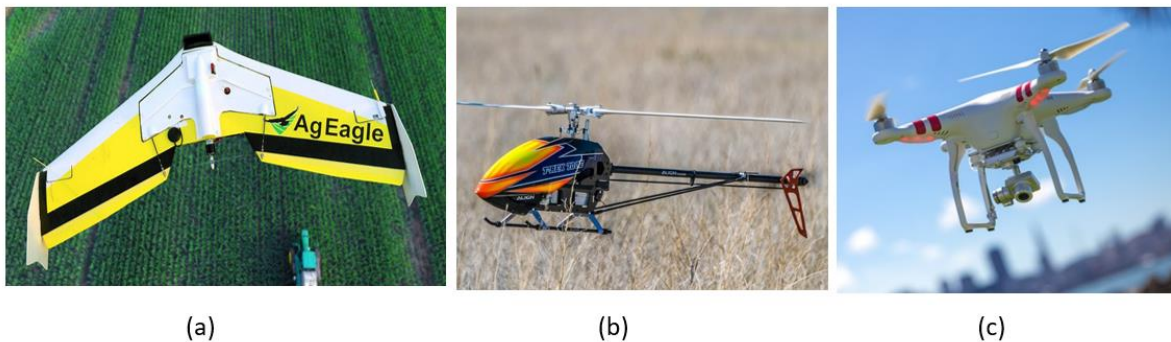


Figure 1: Three types of drone; (a) Fixed-wing drone; (b) Single rotor drone; and (c) Multi-rotor drone

The fixed-wing drone can operate up to 16 hours with gas engine-powered and can carry more weight but it could not hover in the air let alone to landing on a limited amount of space. It also usually required a launcher to get the fixed wing drone into the air. Single rotor drones can hover vertically and can have a longer flight time with a gas engine but its mechanism is complex and dangerous due to heavy spinning blades. Multi-rotor drones are usually powered by a battery, can take-off and land vertically, stable, and easy to control. However, its flying time is usually can last only 15-30 minutes with small payload capabilities (Herrick, 2017).

Each type of drone has its advantages and disadvantages to work as a delivery drone. However, to finally deal with end consumers, a multi-rotor drone is the safest, convenient and quiet option. Researchers around the world are working hard to increase the capability of multi-rotor drones to fly a longer distance, longer period, and could carry more weight so that it can become an ultimate courier vehicle.

Other than increase capability of multi-rotor drone's battery, hybrid powertrain between the gas engine and electric motor could be an alternative option. While take-off and landing, multi-rotor drones should use only the electric motor. This will ensure the quiet operation during close vicinity with humans. When the multi-rotor drone achieved the required altitude and far from human, it can change its power source to the gas engine. The gas engine could also charge the battery while the multi-rotor drone is flying. A pop-up wing might also be considered to assist with lifting force when it moves in one direction thus will increase the fuel economy of the gas engine.

With a single order through a cellphone, a dinner will be ready on the table delivered by a delivery drone is not far from reality. A bunch of crazy engineers together with a deep-pocket brave entrepreneur will make this happen and win the business competition and the heart of end consumers.

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