PUBLIC SUPPORT FOR DRONE IMPLEMENTATION IN PARCEL DELIVERY

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DECLARATION OF ORIGINAL WORK

I hereby declare that all the work of this thesis entitled "PUBLIC SUPPORT FOR DRONE IMPLEMENTATION IN PARCEL DELIVERY" is original done by myself and no portion of the work encompassed in this research project proposal has been submitted in support of any application for any other degree or qualification of this or any other institute or university of learning.

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DEDICATION

I would like to appreciate the dedication of my beloved family members who educated me and motive me to learn until degree level. And also, I express a deep sense of gratitude to my lecturer whom also my supervisor for my final year project, ASSOC. Prof. Dr Mohammed Hariri bin Bakri and my fellow friends. They have provided me fully support and advice throughout this research. Without their blessing and encouragement, this research is impossible to complete within short period of time. I want to thank me for believing in me, I want to thank me for doing all this hard work. I want to thank me for having no days off. I want to thank me for never quitting. I want to thank me for always being a giver and trying to give more than I receive. I want to thank me for trying to do more right than wrong. I want to thank me for being me at all times.

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ABSTRACT

Unmanned aerial vehicles (UAVs), or drones, were being used in more and more countries to get perishable goods liked medicine and supplies to remote areas where they would never get there on time without them (such as trucks). Since delivery drones were expected to took over a large number of jobs that were currently done by traditional carriers, this changed was likely to had a big impact on how much it costed to delivered packages in the last mile. In this researched, there were three things that needed have been figured out: the UTAUT factors that affected the public's support for used drones to delivered packages, the relationship between UTAUT factors and the public's support for used drones to delivered packages, and the level of importance of the UTAUT factors for the success of getting the public to support used drones. Used a quantitative method, the researcher looked at how the variables were related. This method used a variety of Statistical Packages for the Social Sciences (SPSS) and graphical tools to measured and analyse the independent variable (PE, EE, SI, FC, and trustworthiness) and the dependent variable (public acceptance of used drones to delivered packages). A questionnaire with a Five-point Likert scale had been used to get information from the respondent. As part of a quantitative studied, a questionnaire was used to interview 382 people living in Bandaraya Melaka. This studied used Cronbach's Alpha analysis, descriptive analysis, and other types of analysis. Analysis of Pearson's Correlation and Analysis of Multiple Regression. In this studied, the trustworthiness correlation valued was the one with the highest correlation. There was a very strong link between trustworthiness and how the public felt about used drones to delivered packages. Lastly, the researcher could say that trustworthiness was an important part of the public's willingness to used drones to delivered packages.

Keywords: drone delivery, public’s support, drone

ABSTRAK

Kenderaan udara tanpa pemandu (UAV), atau drone, digunakan di lebih banyak negara untuk mendapatkan barangan mudah rosak seperti ubat-ubatan dan bekalan ke kawasan terpencil di mana mereka tidak akan sampai ke sana tepat pada masanya tanpa mereka (seperti trak). Memandangkan drone penghantaran dijangka mengambil alih sebilangan besar pekerjaan yang sedang dilakukan oleh pembawa kurier biasa, perubahan ini berkemungkinan besar memberi kesan besar pada kos penghantaran pakej dalam jarak terakhir. Dalam kajian ini, terdapat tiga perkara yang perlu telah diambil kira: faktor UTAUT yang mempengaruhi sokongan orang ramai terhadap dron terpakai untuk menghantar pakej, hubungan antara faktor UTAUT dan sokongan orang ramai terhadap dron terpakai kepada pakej yang dihantar, dan tahap kepentingan faktor UTAUT untuk kejayaan mendapatkan orang ramai menyokong dron terpakai. Menggunakan kaedah kuantitatif, pengkaji melihat bagaimana pembolehubah tersebut berkaitan. Kaedah ini menggunakan pelbagai Pakej Statistik untuk Sains Sosial (SPSS) dan alat grafik untuk mengukur dan menganalisis pembolehubah tidak bersandar (PE, EE, SI, FC, dan kebolehpercayaan) dan pembolehubah bersandar (penerimaan awam dron terpakai kepada pakej yang dihantar.). Soal selidik dengan skala Likert Lima mata telah digunakan untuk mendapatkan maklumat daripada responden. Sebagai sebahagian daripada kajian kuantitatif, soal selidik telah digunakan untuk menemu bual 382 orang yang tinggal di Bandaraya Melaka. Kajian ini menggunakan analisis Alpha Cronbach, analisis deskriptif, dan jenis analisis lain. Analisis Kolerasi Pearson dan Analisis Regresi Berganda. Dalam kajian ini, korelasi kebolehpercayaan yang dinilai adalah korelasi yang paling tinggi. Terdapat hubungan yang sangat kuat antara kebolehpercayaan dan perasaan orang ramai tentang dron terpakai untuk menghantar bungkusan. Akhir sekali, penyelidik boleh mengatakan bahawa kebolehpercayaan adalah bahagian penting dalam kesediaan orang ramai untuk menggunakan dron untuk menghantar bungkusan.

Kata kunci: penghantaran drone, sokongan orang ramai, drone

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CHAPTER 1

INTRODUCTION

1.1 Background of the research

The usage of drones, which are a mix of planes and unmanned helicopters, first began with surveillance tasks but has since expanded into civil applications in the sectors of military and defence, such as entertainment, photography, and the extinguishing of fires. Unmanned aerial vehicles, sometimes known as UAVs, are a kind of delivery drone that are capable of delivering lightweight products. The items are pushed and secured underneath the body of the drone with the help of anywhere from four to eight propellers and rechargeable batteries. Drones used for deliveries may be flown autonomously or remotely controlled, and their pilots may be responsible for monitoring many aircraft at once. Drones are being put to use in many different regions of the globe to make time-sensitive deliveries, such as those of medication, as well as those that are impossible to carry out using conventional vehicles. (Drone Delivery - Fehr & Peers,).

The focus is now shifting more and more toward logistical considerations. In a logistics warehouse, drones may be used to perform activities related to storage, transporting items by air, and security. Testing for usage in the delivery of products to the final customer has already begun in a number of enterprises in the United States (Stock Logistics, 2019). DHL Express has entered into a partnership agreement with UAV provider Aerodyne Group in Malaysia to investigate the commercial potential of drone technology and to establish business models for usage in maritime supply and life studies. The goal of the partnership is to develop business models for use in areas such as maritime supply and life studies (Joe, 2020).

Drones are becoming more prevalent in today's society as a means of putting more cutting-edge technology to work in the performance of routine human activities. Many customers are reluctant to adopt new technology because they are aware of the potential dangers involved. Traditional ideas of safety, security, privacy, ownership, responsibility, and regulation are being called into question as a result of the proliferation of drones. Drones

have the ability to collect data and transport loads, which is causing a shift in the way we think about our physical environment. They were also saddled with the image of being surveillance technology, and people as well as activist groups challenged their usage in business settings (Rao et al., 2016).

The amount of social awareness in a nation determines the degree to which its citizens will accept the adoption of drones (Kitanovic, 2020). At the moment, the Drone Readiness Index for Malaysia is positioned in the top three, and the country has the largest market size in all of ASEAN. IR4.0 will be implemented, Drone Technology will be improved, and more Malaysian Drone Technology companies will be made global champions. The Malaysian government sector is also helping to raise awareness on the Drone Technology local ecosystem, safe flying practises, and the benefits of Drone Technology (New Straits Times, 2021).

Because it offers several benefits to both consumers and businesses that provide delivery services, the usage of drones as a kind of future delivery technology must be examined and embraced by the public. It is less expensive when compared to a truck since distribution is simpler. On the other side, since there are less people using the airspace, it can be delivered more rapidly. In addition, drones can visit locations that are inaccessible by traditional forms of transportation. Because there are no roadways linking Sabah's rural and urban communities, for instance, it is frequently difficult for the villagers in the more remote areas of the state to get vaccinations and medications (Joe, 2020). Regardless of the terrain, this infrastructure gap may be closed with the use of drones that can deliver packages. Drones have a less carbon footprint than more conventional methods of transportation, such as vehicles or boats, in addition to having the advantages of being faster, costing less, and being safer.

1.2 Problem Statement

Unmanned aerial vehicles (UAVs), or drones, can deliver time-sensitive commodities like medicine and difficult-to-ship supplies. Delivery drones are expected to replace a large portion of traditional carriers' final-mile deliveries, changing the economics of package delivery. Multiple delivery drones may be monitored at once manually or remotely. Industrial giants, semiconductor firms, informatics consultants, and large defence contractors are investing heavily in the commercial drone market. Europe, Asia, and North America still have early-stage producers (Insider, 2021).

From vehicle standards to airspace control, regulatory authorities must formulate unambiguous rules. The Civil Aviation Authority of Malaysia (CAAM) is in charge of all aircraft-related affairs in Malaysia; however, it does not have drone operator licences according to Malaysian legislation (Chih, 2020). Customers were unfamiliar with drone supply and had a negative opinion of it because it is uncontrolled, unsafe, risky, lacks quantifiable risk assessments, intimidation, military, and defense-related concerns, and a long procedure is necessary to run food supply services using drones. (2019)

Drones are still in the early stages of development, and over the next few of years, their capabilities will continue to expand. Society and law enforcement agencies need to be aware of the potential dangers that this might cause. The concept of using drones as a mode of delivery transportation is still in its early phases of growth, which means that there is still room for a great deal of progress as well as observation. In addition, drones may also travel to places that aren't reachable by other means of transportation. Vaccinations and drugs are often difficult to obtain in rural regions of Sabah since there are no roads connecting rural and urban populations, for example. However, one obstacle that drone companies must overcome is the lack of coverage in more remote places, making it impossible for clients to receive items via drone. Furthermore, drones cannot reach their objective since there is no link to the area. As a result, the purpose of this research is to explore the public's attitude toward the introduction of drone-based package delivery in the nation.

1.3 Research Question

Following the explanation of the context of this study and the issue statement that was presented earlier, the purpose of the current research is to answer three questions concerning the link between public support and the use of drones in the delivery of packages.

a. What is the level of public acceptance for the use of drones for parcel delivery?
b. What are the elements that contributed to public acceptability of the usage of drones for package delivery?
c. What is the future suggestion on how to get the public to accept drones?

1.4 Research Objective

The following research objectives have been developed to guide the aim and direction of this study:

- To determine the UTAUT factors that influenced the public support for drone implementation in parcel delivery
- To analyze the relationship between UTAUT factors and the public support for drone implementation in parcel delivery
- To examine the level of importance among the UTAUT factors toward the successfulness of public support for drone implementation

1.5 Scope of study

The people in the public who have prior experience with a courier service will be the focus of this research. This study will establish whether customers are willing to accept packages being delivered by drones and will provide suggestions for the development of future technologies related to drone-delivered packages.

1.6 Significance of study

The usage of drones for package delivery will revolutionise the delivery system now in place and will be beneficial to the logistics industry in Malaysia. People in Malaysia may have their perspectives on the usage of drones and the adoption of drone technology altered if there is a favourable influence on the use of drones. The results of this research will contribute to a greater level of public awareness about the use of drones for delivery purposes. When used as a mode of delivery transportation, particularly over shorter distances, drones may be more energy efficient than vehicles. However, when transporting larger products over greater distances, drones release more carbon dioxide than lorries do (French, 2020) This research will help Malaysia Digital Economy Corporation (MDEC) MyDroneTech Initiative achieve its goal of rapidly expanding Malaysia's drone technology industry and high-potential businesses through the implementation of forward-looking policies, the development of collaborative ecosystems, and connections between relevant communities and the growth programme.

1.7 Structure of the Thesis

This thesis is organised into five chapters that each have a central subject.

In the first chapter, a quick overview of the research on public support for the deployment of drones in package delivery was offered. This support, which has been steadily deteriorating owing to the ageing problem, was discussed. Additionally, the need of educating the general public about drones was emphasised in this chapter. In its most basic form, unmanned aerial vehicles (also known as drones) are a cross between aircraft and helicopters that are designed to carry out certain tasks. Drones used for deliveries may fly independently or be controlled remotely, and their controllers can monitor many drones at once. In many parts of the globe, people use drones for deliveries of time-sensitive items like medicine, as well as for deliveries that are impossible to complete with traditional vehicles. The results of this study will also serve to further educate the general public on the use of drones. In the latter part of the chapter, the research questions, and goals, as well as the overall purpose of the study and the research implications, were discussed.

In the second chapter, we conduct a literature analysis on public support for drone deployment in package delivery. Additionally, we provide an overview of public support for drones and the theory that was used in this research. In addition to that, the research's conceptual framework as well as its hypotheses are presented below.

The research methodology that was used in this study is discussed in Chapter Three. This covers topics such as the population and sample size, in addition to the procedures that were utilised to operationalize the components of the study's theoretical model. In conclusion, a comprehensive explanation of the statistical methods that were used throughout the data analysis is presented below.

The outcomes of the investigation are presented in Chapter Four utilising the statistical methods that were used throughout the study. After presenting descriptive statistical figures to the audience, the next part of the talk will focus on factor analysis. After that, an examination of the dependability of the variables is presented, which is then followed by a description of the correlation and regression analyses that were carried out, along with the conclusions of each of those analyses.

The broad findings and implications of the research are discussed in Chapter Five. This chapter addresses the most important findings and explains how those findings have implications for knowledge, practise, and policymakers. The limitations of this study are also highlighted, along with some recommendations for further research and some last thoughts and observations.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter includes a review of past literature considered important to the issue of this research in satisfying the study's aims and objectives, as stated in Chapter 1. Discussion of the chosen theory used in this research, as well as the selected independent and dependent variables, is also included. The final component of this chapter goes into the creation of the research framework and hypotheses.

So, for this chapter we can get know many things such as benefits of drone delivery. Drone delivery benefits are presently being explored, but they might include cheaper prices, increased operational efficiency, new income sources, immediate fulfilment, less crowded streets, fewer accidents, and lower emissions. Because delivery drones are not yet a well-established solution, some of the limitations being investigated include package weight limitations, flight time and range constraints due to battery life, collision avoidance systems, and how to deal with unpredictable events such as weather or being hacked.

As for other aspects such as e-commerce continues to rise and traditional modes of distribution become less effective, delivery businesses are experimenting with the use of drones. Drone trials have been conducted by companies such as USPS, Amazon, and Google as a viable alternative for expansion. Time-sensitive products such as medication and food, as well as tiny items for same-day delivery, are now the most common use cases for delivery drones.

2.2 Overview of drone technology

An unmanned aircraft is referred to as a drone. Unmanned aerial vehicles, or UAVs, are another name for drones. Unmanned aircraft systems (UAS) is another term for drones. A drone is essentially a flying robot that can be controlled remotely or flown autonomously using software-controlled flight plans in its embedded systems. These software-controlled flight plans work in conjunction with onboard sensors and a global positioning system. Drones have become increasingly popular in recent years (GPS). The flying mode and the navigation system are the two primary functions of a drone. Drones cannot take off without some kind of power source, such as a battery or fuel. In addition, they are equipped with rotors, propellers, and a frame. In order to decrease its overall weight and improve its mobility, the frame of a drone is often constructed out of a lightweight composite material (Lutkevich & Earls, 2021). Controllers are essential to the operation of drones because they allow the pilot to launch, steer, and land the aircraft via remote controls. Radio waves, such as Wi-Fi, are utilised for communication between the controller and the drone.

The use of drones to carry packages and other sorts of commodities is attracting significant investment from major companies located in a variety of countries across the world. It is just a matter of time before the drone package delivery service aspirations of huge firms such as Amazon, Walmart, UPS, Google, and other global postal organisations become a reality. These companies have all invested in drone delivery initiatives. (Corrigan, 2020)

Will there be a day when we may gaze up into the sky and see thousands of drones buzzing around, working hard to carry packages, pizza, medication, and other items ranging from little to medium in size? It will probably only be a matter of a few years until the skies are filled with drones that are delivering packages to customers. There are unquestionably a great number of technical obstacles to be conquered. In addition to this, there are broad privacy concerns that need to be addressed. It's possible that package delivery through drones will only be available in particularly remote or inaccessible areas. (Corrigan, 2020)

2.2.1 Types of drones

Below is a list of the best drones for delivering packages, which are now being utilised by the most successful organisations to transport packages and are shown below. Wing delivery drone, Matternet M2 package delivery drone, Wingcopter 178 Heavy Lift delivery drone, Rakuten Tenku delivery drone, Condor parcel delivery drone, Zipline autonomous delivery drone, and Flirtey delivery drone. This drone has previously been put to service by their firm to complete deliveries. There are a wide variety of applications for drone technology, including package delivery, advertising, cinematography, site surveying, mining, humanitarian and environmental missions, and other fields. (Corrigan, 2020)

2.2.2 Uses of drone

Drones are employed in a wide range of industries, and the answers to that question may be found here. Drones are saving lives, helping the environment, helping archaeologists, farming, managing properties, mining, and building infrastructure, just to name a few of the many applications. There is a steady stream of news releases and academic publications outlining the many new applications for drones that are being developed. In some of these areas, the use of helicopters and aircraft was already completed by employing drones. However, they are expensive to hire and may not be available at the time they are needed. It takes a long time to fly in helicopters and planes, because they have to fly in from other places and then do their tasks. Additionally, we examine potential future applications for drones that are still in the experi17mental and research stages, as well as current applications. In the future years, drones will be used for a wide range of purposes. This post also includes a number of excellent videos. (Corrigan, 2019)

The following is a brief summary of the various applications for drones now in use. You can see that it practically spans virtually every industry, and new applications are being found for it almost every week.

1. Rescue
2. Film making
3. Fire Fighting
4. Site surveying
5. Parcel Deliveries
6. Precision agriculture
7. Family Fun Occasions
8. Environmental
9. Conservation

2.3 Overview of drone delivery in logistics

The sectors of logistics and transportation are currently undergoing a period of fast expansion, which is being bolstered by a robust evolution of innovative practises. The recent boom in the e-commerce industry, which has been made possible by the widespread availability of the internet around the world, in conjunction with the growing number of innovations related to new delivery methods, has led to a dramatic increase in the number of packages that need to be delivered by a variety of businesses on an annual basis. (Benarbia & Kyamakya, 2022)

There has been an increase in the level of customer expectations, which have led to a rise in the delivery time and cost of things ordered online. There is a direct correlation between this and the increased freight costs that enterprises must pay to carry goods to houses, as the city becomes more and more spread out. In order to save transportation expenses, packages that must be delivered to the same region are grouped together. Unit transportation costs rise as a product approaches its ultimate destination, reaching their highest point in the last mile. Logistics suppliers and their e-commerce clients alike confront this so-called "last mile dilemma." Because transportation expenses are no longer shared (or only very loosely) with other items and each package's delivery is unique, this final delivery

phase is the most expensive and difficult of the delivery process.(Benarbia & Kyamakya, 2022)

Packages are more likely to be spread in rural locations, which means they will go farther, but they will do so unorganised (or just extremely badly organised). To put it another way, the cost of delivery of a shipment at the final "mile" has skyrocketed. It has led to major shifts in the delivery techniques of online retailers, who must keep their prices fair to remain competitive. Drone-based delivery systems, for example, might be a promising new avenue for exploring new forms of self-driving delivery. When it comes to speedy and adaptable distribution, these technologies seem like a potential option. Furthermore, logistics with drones might considerably cut transportation costs associated with last-mile vans/trucks, resulting in considerable savings on shipping prices. Additionally, drone-based delivery might be a great option for rural areas and metropolitan suburbs when parcel delivery volume is low and delivery destinations are spread out over a large area.(Benarbia & Kyamakya, 2022)

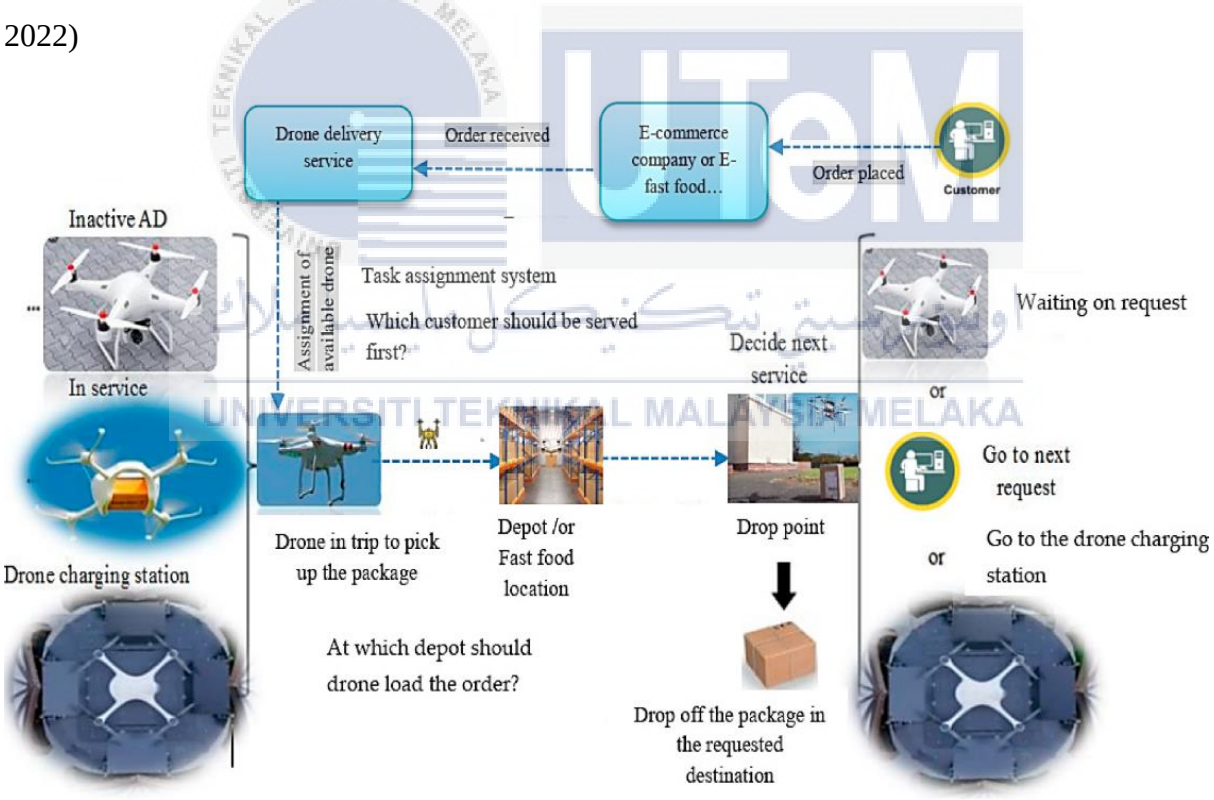

Figure 2.3: Shared autonomous drone package delivery system operations.

2.3.1 Challenge of using drone delivery in logistics

It is the future of transportation, but there are a lot of obstacles that need to be overcome before we can have a delivery system that is completely autonomous. The drone delivery system is something that we are really interested in, although it appears that the concept is not yet fully developed. Even while drones can currently use AI technology to figure out flight plans, delivery systems, weight distribution, analysis, order tracking, and a great deal more, the method of delivery will not be possible for a few more years. (*InterDrone*, 2018)

The employment of drones in the logistics industry presents several challenges, including those posed by the impact of weather, drone abuse, range, power lines, and package theft. When we think about drone delivery, we frequently forget about the weather influence that impacts the drone, but this is something that should not be forgotten. For example, if the temperature is really high, the air density will decrease. This will have an effect on the amount of weight that the drone can lift. The same thing happens when it is really cold, which has a significant impact on the drone's ability to maintain its energy capacity. Using modern technology, it is possible to overcome both of these problems; but the difficulty with the weather cannot be circumvented. Keep in mind that the delivery systems used by drones need to be able to operate in all types of weather, including snow, fog, rain (including lightning), windy scenarios, and so on. It is not feasible to construct a delivery system that is trustworthy. (*InterDrone*, 2018)

Next, regarding the misuse of drones, it's regrettable that some individuals are actively attempting to destroy drones for whatever reason. It would appear that individuals have an excessive amount of spare time on their hands or are, for some unknown reason, dissatisfied with the concept of autonomous flying drones. The drone delivery system has suffered a significant setback because of this issue, and businesses are having problems locating a solution. Due to the high cost of the drones, businesses need to devise strategies to prevent incidents like this in order to safeguard their assets from being mismanaged or stolen. (*InterDrone*, 2018)

The drone will also have difficulties in terms of its range. When it comes to electric gadgets, one of the most significant challenges is, without a doubt, the battery power. Any electrical solution must get through this point since it is the solution's weakest link. There are a lot of different factors that might impact the amount of power that a drone's battery has, such as the wind and the size and weight of the drone. The range is also subject to a great deal of unpredictability as a result of the weather. For instance, if there is a lot of wind outside, the drone's range will be significantly reduced. Companies need to make precise calculations in order for the delivery system to function properly, and they may need to alter their packing methods in order to make their products more resistant to the effects of the elements and more aerodynamic. (*InterDrone*, 2018)

Drones are equipped with vision sensors that have seen significant development over the past several years. These sensors are used to inspect electrical lines. However, they are still not excellent for detecting small things, and their performance does not remain consistent regardless of the weather. Power lines are hazards that should be avoided at all costs. Even helicopters have had trouble navigating around electrical wires in the past, so it should come as no surprise that drones have an even greater challenge in this regard given that they must navigate on their own. This is a significant setback for the drone delivery system, and businesses are working around the clock to develop improved visualisations for drones that are capable of monitoring even more minute items. (*InterDrone*, 2018)

Theft of packages is the last but not least. They have to deal with the issue of packages being stolen now. Unfortunately, there are some people who will steal a package that has been placed on your porch. When it comes to drones, this is a greater issue because anyone can see them approaching and follow the delivery from a distance. Drones may safely land in your back yard thanks to specialised helipads or other technologies that you should deploy in a safe location (for example, your driveway). The drone delivery system is becoming better all the time. A lot of these issues are being solved by businesses, and we may see this technology in our daily lives sooner than you think. eCommerce enterprises who want to make a difference in the delivery of their products should invest in this technology, even if it appears to be a few years away. (*InterDrone*, 2018)

2.3.2 Issue of using drone delivery in logistics

In several African nations, such as Tanzania and Rwanda, rural areas have recently benefited from the utilisation of drone delivery systems for the shipment of blood supplies and pharmaceuticals. The technology behind drones is evolving at an astounding rate, and at the moment, drones created by Amazon can carry up to 2 kg, which is equivalent to 90 percent of the things they sell. On-demand delivery in the United States may be closer than you think, but before you start seeing clouds of autonomous drones bringing our stuff, they have a lot of challenges to sort out before they hit the general market. In the United States. (*FW Logistics*, 2018)

The topic of making sure packages is delivered in a secure manner is one that comes up very frequently in the news. It has been centuries since humans began delivering things, and despite the many years of experience gained via trial and error, there still appears to be an extremely high number of mistakes. It would appear that one of the problems with drone delivery is that the items don't have a secure place to land. They are unable to access mailboxes, as porches and back yards are typically guarded by dogs, and they cannot open covered porches. There are several businesses that have developed a mechanism for the distribution of parachutes, however it is unreliable and is depending on the weather. Amazon has proposed the installation of drone delivery pads in private houses and commercial buildings. DHL's solution is to have the drones deliver to a safe "smart locker," and after the package has been delivered, the recipient will receive a unique code that can be used to open the locker. (*FW Logistics*, 2018)

In addition, one of the topics that is being heavily discussed is security. After the problem with the landing has been resolved, the next thing to address is the issue of safety. The computer system that controls the drones will need to be impenetrable to hackers since the drones will be moving on their own. This is not just to avoid theft, but also because a drone that is controlled by a hacker poses a hazard to the property, people, and other aircraft in the area. And what happens if something goes wrong with the drone, and it falls out of the sky? (*FW Logistics*, 2018)

Rules and regulations are another important factor to consider. Airspace is the issue at hand. It's possible that hundreds, if not thousands, of delivery drones might be too many for the already crowded skies over cities. Companies will need to demonstrate that their autonomous drones pose no threat to persons or property if they are to market their products

as a low-cost alternative to traditional hand delivery. Who owns the space above your house is another nebulous issue in the law that this raise? If a drone needs to be 400 feet away from an area to properly navigate, are they trespassing if they fly over your house? The FAA states that they are responsible for "navigable airspace," which is defined as the area below 500 feet in height for commercial and general aircraft. Is it okay if your neighbour flies their drone around 50 feet over your house? Lawmakers have only started to address this apparent discrepancy in the legislation. (*FW Logistics*, 2018)

Acceptance comes as the final step. It is vitally necessary to have a discussion about this topic since the majority of people in the general public do not understand and may be resistant to the idea of using drones to deliver packages. This is as a result of a number of reasons, including noise pollution, the safety of packaging, and their privacy. It's possible that this will be the most difficult problem to tackle. (*FW Logistics*, 2018)

2.4 Theory utilized

The UTAUT model and its function have been the subject of a great deal of research and writing. The social psychology notion of reasoned action is also thought to have been an inspiration for the model (TRA). According to Fishbein and Ajzen (1997)., individuals' subjective standards and attitudes toward behaviour can have a significant impact on how those individuals actually act on their stated intentions. In addition, TRA has offered the justification for the belief that some behaviours can be predicted by studying the components that determine a user's behavioural intention. Daviset al. (1989) proposed the technology acceptance model (TAM), which is grounded on TRA and has helped shed light on why people are willing to adopt novel technologies and information systems. However, it has been challenging to study any connection in the context of technology due to the TAM model's restriction in its application to specific details (Agarwal and Karahanna, 2000).

2.4.1 UTAUT model

According to UTAUT's theoretical model, people's intentions about how they'll use technology end up being the deciding factor. Expectations about how the technology will work, how much effort will be required to use it, how much social pressure will be exerted, and how conducive the environment will be all have a direct role in how likely people are to adopt the technology. A person's age, gender, level of expertise, and whether or not they are using the predictors voluntarily all play a role in reducing or increasing their impact (Venkatesh et al., 2003).

The UTAUT model has helped business owners, managers, and executives gauge the strain of integrating new technology into their operations, provide quantitative justifications for employees' willingness to embrace said technology, and foresee how those employees would react to said technology (Gunda, 2014). UTAUT explains over 50% of the variation in actual technology use and nearly 70% of the variation in behavioural intentions to utilise technology (Straub, 2009). Expectations for performance and effort, as well as social influence and supportive environments, are the four cornerstones of UTAUT.

2.5 UTAUT constructs

2.5.1 Performance expectancy

Performance expectancy (PE) is the amount of improvement in performance that people think they will see as a result of using detailed new information or technology (Venkatesh et al., 2003). In the context of this research, the new drone technology can give customers more choices about how quickly they want their packages delivered. The most important thing about drone delivery is that drones don't have to deal with road or traffic problems. Drones may convey packages to their destination without being delayed by traffic or deviating from a predetermined route. A mechanism is needed to enable delivery drones to fly independently outside the pilot's line of sight. If drones are equipped with GPS, clients will have their orders delivered to their precise location in less than 30 minutes (Sharma, 2019). Also, as of right now, using a drone isn't exactly a cost-effective option. You can purchase a consumer model that does the job for a few hundred dollars, but the drones needed for firms to invest in game-changing technology and systems would cost several thousand dollars apiece, and they could need a whole fleet of them. This is used as the definition of PE.

2.5.2 Effort expectancy

The amount of ease that a new piece of information or technology seems to offer is called effort expectancy (EE) (Venkatesh et al., 2003). It is also defined as "the degree of ease of using the system," which means that the system or technology is easy to use, learn, and understand, and that it requires less work from each person. In this study, EE is defined as the ease of use through convenience. This is because they are cheaper, easier to use, and take less time to deliver. Drones are being used to make door-to-door deliveries because they are efficient and can reach faraway places. When a firm has a local presence in the region, clients will experience faster delivery times and more convenience when the company uses drone technology. The time it takes to transport and handle a cargo drops from two to three days to only a few hours, and the likelihood of the package being damaged during transport and handling is reduced as a result of the drone's very smooth flight (Brar et al., 2015).

2.5.3 Social influence

Social influence (SI) is a measure of how much a consumer trusts that important people will recommend that they use new IT. Like the idea of subjective norm, this idea is about how much important people have an effect on how a person act. In this study, the risk of using drones is used to explain what SI means. People care about their privacy, and future technology and laws will make it possible for drones to fly in cities while disturbing people's privacy as little as possible. The difficulties that may be caused by toy guns, slingshots, and birds; mechanical or weather-related malfunctions; and falling objects that can injure pedestrians while delivering their shipments are the most common threats that drone delivery service providers face. In addition, falling objects can cause malfunctions in the machine itself (Liu et al., 2020). According to the FAA, the area below 500 feet in height is considered "navigable airspace" for both commercial and general aviation (*FW Logistics,* 2018).

2.5.4 Facilitating conditions

Facilitating conditions (FC) are, according to Venkatesh et al. (2003), the degree to which users believe that the organisation and infrastructure are well-equipped to help them use information systems. These could also include technical support, training, and the ability

to connect. In this study, the safety of delivery and the packages is used to define FC. Issues including the technological elements, hazards, and logistics of drone delivery need to be addressed before we can start expecting them to supply the requirements and pleasures, we desire from them (Editor-in-Chief, 2019). Concerns and difficulties associated with bringing drones up to speed as delivery bots include the following: drone communication, avoidance technology, testing protocols, landing and drop-off points, accurate GPS, building requirements, and recharging Stations. Here is a list of some of the concerns and difficulties associated with bringing drones up to speed as delivery bots (Editor-in-Chief, 2019). Before you can come up with and implement good safety policies and risk communication, you need to know how people react to different safety concerns.

2.5.5 Trustworthiness

In this study, trustworthiness is added as the fifth thing to measure. With the rise in popularity of drones, insurance companies are writing more policies about privacy, the safety of aerial vehicles, and cyberattacks. Aviation and cyber insurance companies are likely to compete for this field since they will have to price both the product's cyber security and its reliability. FAA rules and guidelines, new constitutional and privacy cases, state, and local efforts to manage and regulate drones, and vulnerabilities in terms of autonomy and operational components are all factors that will affect how underwriters write policies, pay premiums, and handle claims (Beyer, Dulo, & Wu 2014). Most insurance policies for commercial drones have a very high risk, so AIG and Lloyd, which are known for writing these kinds of policies, are the main companies that offer security insurance for drones. (Perlman, 2017). Many modern drones have built-in technologies that help them avoid collisions, avoid obstacles, and return to their home bases in accordance with predetermined paths. Radio-frequency identification (RFID) tags and low-power radiofrequency (RF) transmitters allow for this to happen. This guarantees that the item is always inside safe, authorised access areas (Yaacoub et al., 2020).

2.6 Conceptual framework

Based on the UTAUT model and the inclusion of trustworthiness, a framework is built for this study's investigation. While trustworthiness is not a part of UTAUT's original four-concept model, it has been included to this research.

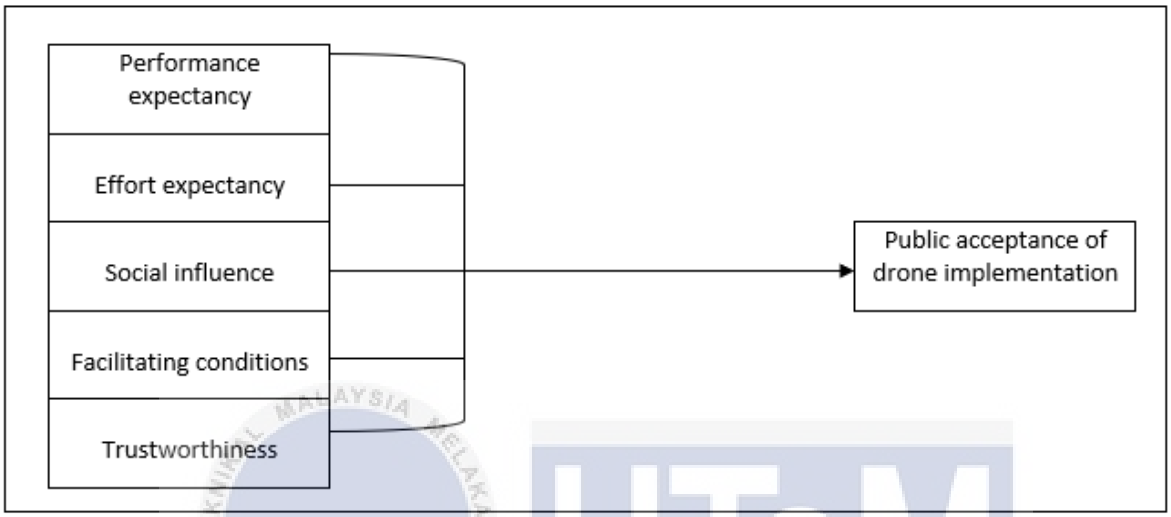

Figure 2.6: Research frameworks

2.7 Summary

The researcher offered an overview of public support for drone deployment in parcel delivery in this chapter. Later, the definitions of crowdfunding and how it functioned were underlined. According to the literature, five conceptual framework constructions, in addition to the risk construct, are employed as independent variables, while public acceptability of drone adoption is the dependent variable. This chapter suggested three hypotheses to meet the study objectives. The next chapter discusses the study design, research tools, population, sample, and analytic technique used.

CHAPTER 3

RESEARCH METHODOLGY

3.1 Introduction

The goal of this research is to identify the factors that affect potential donors' giving intentions and to measure the degree to which those factors have an impact on those donors' decisions. As a direct consequence of this, the fundamental aspects of this study are broken down and discussed in this chapter. This chapter not only discusses how the work was finished to fulfil the goals of the research, but it also provides a description of the methodologies that were employed. The chapter is broken up into sections that discuss the study's design, data collection, research instruments, population and sample, and the method for data analysis.

3.2 Research design

The Descriptive Research Design requires the researcher to provide in-depth explanations or descriptions of the problem or scenario that they are investigating in their research materials. This kind of study design is entirely based on theoretical premises, and it entails the person collecting data, analysing it, preparing it, and then presenting it in a way that can be comprehended by others. It is the kind of study design that has the broadest scope. In order to investigate one or more variables, a descriptive design could make use of a large number of different research methods. In descriptive research, as opposed to experimental research, the researcher does not have any influence over or ability to modify any of the variables; rather, he or she just observes and measures those variables. In other words, qualitative research may also be used for descriptive purposes; yet a descriptive technique of research design is often considered to be a kind of quantitative research. This is despite the fact that qualitative research can also be used for these reasons. To provide evidence that can

be relied upon, it is essential that the methodology behind the research be carried out appropriately. (Edu, 2021)

This research will be carried out in line with each of the various objectives that have been developed, all with the explicit aim of accomplishing the overall goal of this study, which is the goal that will be reached by the end of this study. Due to the fact that there are three goals to choose from, the strategy and method that is used must also have three components. For the purpose of this investigation, the method of collecting quantitative data will be used. The quantitative research technique that will be used in this investigation is going to be questionnaires. Quantitative research has an advantage in that it has a bigger sample size, which indicates that there is a greater participation rate and that the results may be generalised to a greater extent.

3.3 Research hypothesis

After the design of the study was completed, research hypotheses were generated to explore the link between independent factors and the variable that was being studied (the dependent variable). The following concepts will be treated as independent variables throughout this investigation: PE, EE, SI, FC, and trustworthiness.

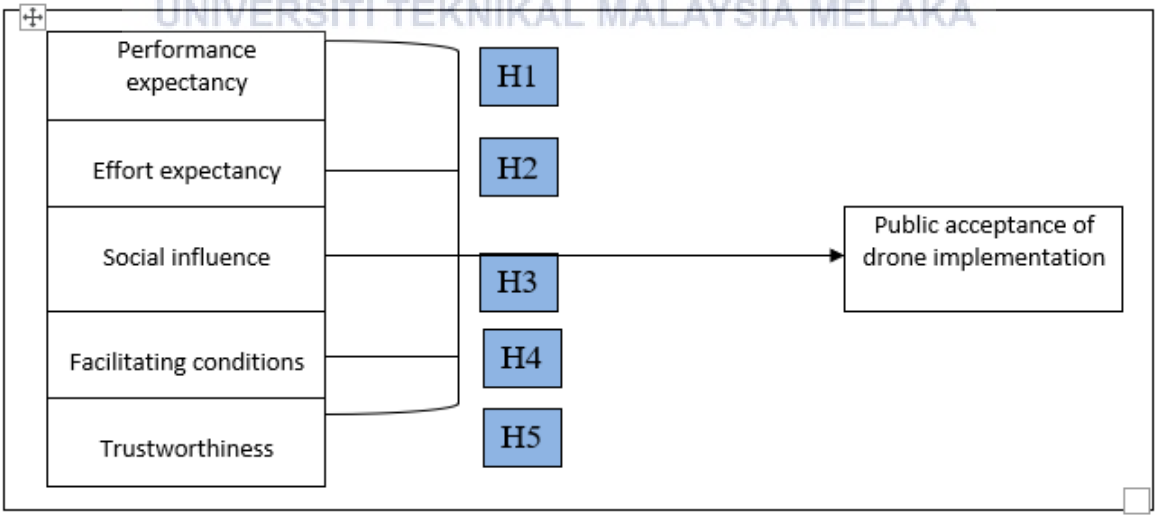

Figure 3.3: Research hypothesis

3.3.1 Performance expectancy and public acceptance of drone implementation

Positive relationships between the PE construct and intent to change behaviour have been documented by Venkatesh et al (2003). Earlier research on e-government shown that behavioural intention had a favourable influence on PE (Awuah, 2012). Similarly, Lung et al. (2008) revealed that PE positively affects behavioural intention and usage, based on their research into mobile communication. Daily Mail reports that the drones can fly in winds of up to 45 miles per hour and in temperatures as low as -4 degrees Celsius. Now more than ever, you may choose from a variety of drones capable of making lightning-fast deliveries. Because of this, the following theory is put forth:

H1: Performance expectancy has a positive effect on public acceptance of drone implementation

3.3.2 Effort expectancy and public acceptance of drone implementation

Positive associations have been found between EE and behavioural intent (Venkatesh, 2003). Evidence from prior research suggests Benefits of using drones for distribution versus more traditional methods (Minhaj, 2022). The growth and success of drone delivery systems are limited by a few barriers, much like in many other industries that transition to a new kind of technology (Minhaj, 2022). Additionally, drone delivery in the future is convenient because to their faster delivery times, reduced prices, autonomous and safer delivery, easier distribution to isolated or rural locations, and good influence on the environment. Drone delivery has environmental benefits as well. Thus, the following theory is offered for EE:

H2: Effort expectancy has a positive effect on public acceptance of drone implementation

3.3.3 Social influence and public acceptance of drone implementation

Social pressure has a major effect in both the decision to e-file taxes in the United States and the decision to adopt ICT among fishermen (Mazuki et al., 2013). (Carter et al., 2011). SIs, such as social networks and peer effects, have been cited as having a significant impact on users in previous research. To a lesser extent, the success of drone delivery may also be attributed to the use of pre-existing social networks, such as those formed via government. However, despite the many benefits of drone delivery, there is rising public worry that these devices may pose more risks than the current methods of product delivery by truck and by hand. One such risk is that a drone would malfunction, resulting in damage to property and harm to persons (Editorial, 2020). A commercial drone may have hundreds of parts and millions of lines of code in order to do its many tasks, including drone delivery. Almost any part failure might cause the entire system to collapse, leading to the end of the controlled flight or the complete destruction of the delivery vehicle. Public opinion on drone delivery can be affected by the resultant SI. As a result, we offer the following theory for SI:

H3: Social influence has a positive effect on public acceptance of drone implementation

3.3.4 Facilitating conditions and public acceptance of drone implementation

Despite the fact that prior research has indicated that problems with drone delivery's technological components, potential dangers, and logistics must be addressed before we can begin counting on them to deliver the goods and services we need and want, a common barrier to their widespread implementation is a lack of adequate information and statistical systems (Editor-in-Chief, 2019). It has been shown by Venkatesh (2003) that FC can improve behaviour. The following are the conditions under which FC will be evaluated.

H4: Facilitating conditions has a positive effect on public acceptance of drone implementation

3.3.5 Trustworthiness and public acceptance of drone implementation

According to Carter and Bélanger (2005), the likelihood that people would utilise a drone delivery service in the future is correlated with how trustworthy they view the technology. The public's willingness to accept drone deliveries could also be affected by how trustworthy they are seen to be. Concerns about data privacy and security have often surfaced in studies of electronic commerce and government services. Due to the high-risk nature of commercial drone insurance plans, the market is dominated by AIG and Lloyd, both of which specialise in this field. I. Background (Perlman, 2017). Because of this, the following hypothesis regarding reliability is put forth:

H5: Trustworthiness has a positive and negative effect on public acceptance of drone implementation

3.4 Operationalization of constructs

In this study, the quantitative approach consisted of administering a survey in order to collect information from the participants. For the purpose of putting the investigated constructions to the test, the questionnaire serves as an effective data gathering instrument. A questionnaire is a research instrument that consists of a series of questions and is used to gather meaningful information from respondents. Questionnaires are often sent electronically. The structure of these instruments is similar to that of an interview, and they consist of questions that may either be written or spoken. (Lucid, 2022)

Using questionnaires as survey tools comes with both benefits and drawbacks, depending on how you look at it. It is quick and easy to collect results with online and mobile tools, and questionnaires and surveys allow you to gather information from a large audience. One of the advantages is that questionnaires are one of the most affordable ways to gather quantitative data. Another advantage is that questionnaires are one of the most effective ways to gather qualitative data. However, there are also certain drawbacks associated with utilising questionnaires as survey instruments. These drawbacks include the possibility that respondents would not be honest, the possibility that some questions will be overlooked or left unanswered, and the possibility that respondents may be biased. (Pointerpro, 2022)

In this study, the items on the questionnaire were measured on a five-point Likert scale to get detailed information about PE, EE, SI, FC, and trustworthiness. On the Likert scale, 1 meant "Strongly Disagree" and 5 meant "Strongly Agree." Table 3.1 shows that the questionnaire was broken up into three parts: Section A, Section B, and Section C. Section A was made up of demographic questions that were meant to find out more about the respondent's background. In Section B, however, there were questions about identifying factors, and in Section C, there were questions about what the potential investor wanted to do.

3.4.1 Section A: Background of the respondents

No.	Items	Sources
1	Gender	Moon and Hwang (2018)
2	Please indicate your age	
3	Please indicate your education level	
4	Please indicate your occupation	
5	Please indicate your experience about drone delivery	
6	Please indicate your willingness to use drone to delivery your parcel	
	Total	**6**

Table 3.4.1: Background of the respondents

3.4.2 Section B: UTAUT Factors

No.	Items	Sources
Performance expectancy		
1	The use of drone as an alternative to delivering parcel would be useful for public.	Moon and Hwang (2018)
2	Using drone as an alternative to delivering parcel will increase the performance delivering in Malaysia.	
3	Drone as an alternative to delivering parcel will make the lives of the people in Malaysia more convenient.	
4	Drone, as an alternative to delivering parcel, will provide new ways and opportunities for people in developing countries.	
Effort expectancy		

1	It is likely to be easy to use drone because the maintenance of drone is easy to use.	Moon and Hwang (2018)
2	It is likely to be easy to learn the function of drone	
3	Drone maintenance of delivering parcel is likely to be straightforward and easy to understand.	
Social influence		
1	People around me seem to be excited to use drone as their courier	Moon and Hwang (2018)
2	Most of the people who are important are willing to drone as their new courier.	
3	People around me are likely to use drone as their courier to deliver parcel.	
Facilitating conditions		
1	The drone will be able to give me enough technical help to solve the problems that have arisen between courier company.	Moon and Hwang (2018)
2	The drone will have (or have) systems to be use to deliver the parcels	
3	Drone will be building systems to communicate with the technical project manager.	
Trustworthiness		
1	The insurance companies can be trusted to carry out the responsible about the safety of drone.	Carter and Belanger (2005)
2	I think that FAA rules and laws will change how underwriters write policies, pay premiums, and deal with claims.	
3	I trust FAA rules and laws to keep the drones are safety to be use.	
Total		**16**

Table 3.4.2: UTAUT Factors

3.4.3 Section C: Opinion of the public about drone

No.	Items	Sources
1	I plan to use (keep using) drones for package delivery in the future.	Moon and Hwang (2018)
2	I will always try to use drones to send packages in my everyday life.	
3	I plan to use drones to send packages in the future.	
4	Drone delivery is better for the environment than other ways of delivering.	
	Total	**4**

Table 3.4.3: Opinion of the public about drone

3.5 Population and sampling

For this study, the public was the level of analysis, so the people who live in Bandaraya Melaka were chosen as the population. Since the point of the study was to find out how the public felt about drone delivery, their input was important. Bnadaraya Melaka has about 75,000 peoples, and Krejcie and Morgan's (1970) table shows that a population of 75,000 needs a sample size of 382. As for the sampling method, this study used a convenience sampling method, which is a type of non-random or nonprobability sampling in which members of the target population who meet certain useful criteria, such as being close by, easy to reach, willing to take part, or available at a certain time, are included in the study. Convenience sampling is also called Accidental Sampling or Haphazard Sampling (Dornyei, 2007).

3.6 Data analysis

The first step in the process of data analysis was to figure out the size of the sample. Roscoe said in 1975 that the best size for most research is a sample size of more than 30 and less than 500.

The model was then looked at to see how reliable and valid the data were. After that, the correlations between the relationships between the independent variables and the dependent variable were measured. It also showed the direction, strength, and importance of

the bivariate relationships between all of the study's variables. The last step in analysing data was the regression analysis, which was used to measure how important the predictors were.

3.6.1 Reliability and validity of research instruments

In order to measure an assessment, it is important that the assessment itself is not biased or skewed in any way. This makes sure that the whole process of assessing is sound. Reliability and validity are two important ideas that are used to describe and measure bias and distortion.

Validity means that a research tool measures what it is supposed to measure (Heale and Twycross, 2015). It is also a measure of how well an instrument does what it was made to do. Validity is usually measured in degrees because it is rare, if not nearly impossible, for an instrument to be 100 percent valid. Validation is the process of gathering and analysing data to figure out how accurate an instrument is. The external and internal validity of the study design as a whole are looked at. Internal validity is reached when the design is a good way to test the hypotheses, and external validity is when the results can be used in other situations.

On the other hand, reliability means that an instrument always measures what it is meant to measure (Heale and Twycross, 2015). Sekaran and Bougie (2010) say that there are four main ways to measure reliability: the test-retest method, alternative forms, split halves, and Cronbach's Alpha. Cronbach's Alpha is the best method and a perfectly good measure of internal consistency when the best number is greater than 0.70. Statistical Package for the Social Sciences (SPSS) v.21.0 was used to look at the data.

3.6.2 Factor analysis

To look at the answers to the pilot test, an exploratory factor analysis (EFA) was done. Field (2005) said there are three reasons why an EFA should be done: (1) To get an idea of how the people who are being studied see the structure of what is being studied. For example, it's how the questions on the questionnaire are put together in terms of ideas; (2) to figure out how reliable the questionnaire is and how to cut down on the number of questions on it. As explained, the EFA is "a multivariate statistical technique that analyses data on a

relatively large set of variables and produces a smaller set of factors, which are linear combinations of the original variables, so that the set of factors capture as much information as possible from the data set" (Parasuraman et al., 1991).

In order to do the EFA, you have to do two main steps, such as extraction and rotation. During the extraction process, the factors behind a number of variables are looked at (Miller et al., 2002). Most of the time, researchers use the principal component analysis (PCA) because it is a good way to measure variables that doesn't make any mistakes (Luck and Rubin, 1987).

After extraction, the pattern of loadings is turned around to make it easier to understand. In this study, the researcher did the EFA with the help of PCA and the orthogonal model with Varimax rotation. When compared to the oblique rotation, the orthogonal rotation has more power to generalise and replicate. It's also easier to understand because the factors don't affect each other (Tabachnick and Fidell, 2001).

3.6.3 Correlation analysis

Pearson correlation matrices show the direction, strength, and importance of bivariate relationships between all of the variables that are measured on an interval or ratio level in research. In the current study, this step was used to find out which independent variables had positive or negative relationships with dependent variables and to identify strong factors that contribute to public support for using drones to deliver packages.

Pearson r correlation is the most common correlation statistic used to measure the strength of the relationship between two variables that are related in a straight line. It is also used to analyse the relationship between two independent variables. For this study, the researcher wanted to find out how these factors affected the intention. Pearson r correlation was used to figure out how close the two were.

3.6.4 Multiple regression analysis

Multiple regression analysis was used to find out if the constructs were positive predictors that were statistically significant. In the first analysis, a standard multiple regression was done with all five construct inputs as independent variables and intention as

the dependent variable. The result was used to test the idea of a cause-and-effect relationship that was built up during this research.

Multiple regression was a good choice for this study because it lets you figure out how well you can predict an outcome when you know all the things that can affect it (Vogt, 2007). The method also lets you know how far you can predict an outcome variable when you know all the predictors (Vogt, 2007).

3.7 Summary

In this chapter, the approach that was followed in this investigation was discussed. In this study, the qualitative research approach was used to identify the elements that influence public acceptability of drone adoption and to assess the magnitude of the consequences that those factors have. A discussion was also held on the operationalization of each variable that was used in the creation of the research instruments for this study. This chapter additionally included details about the target demographic as well as the respondents that took part in the research. Last but not least, this chapter emphasised the analysis that was used for the present research. Some of the analyses that were utilised were reliability analysis, multiple regression analysis, and correlation analysis. The findings of the investigation are going to be revealed in the next chapter, which is going to be Chapter4

CHAPTER 4

RESULT AND DISCUSSION

4.1 Introduction

This chapter presents the study's analysis and findings. The respondents' demographic information was analysed first using a frequency count. The data was then subjected to a second round of analysis, this time using descriptive statistics to determine the average and standard deviation of each question's metric. After collecting data, the researcher utilised Cronbach's Alpha to assess the consistency between tests of a given research variable. The chapter next displays the correlation results and discusses the findings after testing the hypotheses through regression analysis.

4.2 Rate of response

Throughout the collection of data, the questionnaires were distributed using an online platform so that data could be collected easily compared to manual or face to face distribution. Since the targeted respondents for this research are the public in Bandaraya Melaka, the questionnaire is then distributed by various means using the online platform. At the end of the data collection process, 382 data were collected. Since the sample needed for a population of 75,000 as according to sample and population table by Krejcie and Morgan (1970) was 382, the researcher managed to obtain all the data needed.

4.3 Frequency analysis

In order to analyze the background of the respondents, frequency analysis was used, which included questions on the respondents' gender, age, and education level. Other information included their occupation, their experience in drone delivery, and their general knowledge about drones

a) Gender

Table 4.1 shows the gender of the respondents. From the results, it can be seen that 53.1% (or 203) of the respondents were male, and 46.9% (or 179) were female.

Table 4.1: Gender analysis

Gender	Frequency	Percent (%)
Male	203	53.1
Female	179	46.9
Total	**382**	**100.0**

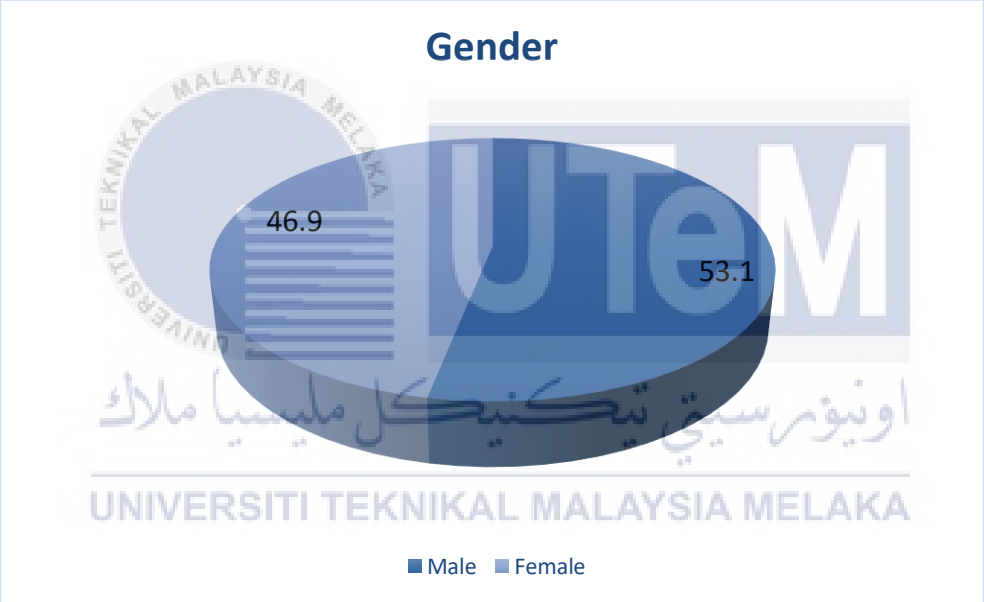

Figure 4.1: Gender analysis

b) Age

Regarding age, the respondents were categorized into six main groups: “20 years and below”, “21 years to 30 years old”, “31 years to 40 years old”, “41 years to 50 years old”, 42 “51 years to 60 years old” and “61 years old and above”. From Table 4.2 which illustrates the distribution of the respondents’ ages, it can be seen that the highest number belongs to the “18 years to 30 years old” group which, at 47.4%, equals 181 respondents; the second-highest number is that of the “less than 18 years old” group, at 17.3% or 66 respondents; and the

lowest number belongs to the “41 years to 50 years old” and “above 50 years old” , group at 9.4% which equals to 36 respondent.

Table 4.2: Age of respondents

Age	Frequency	Percent (%)
Less than 18 years old	66	17.3
18 – 30 years old	181	47.4
31 – 40 years old	63	15.5
41 – 50 years old	36	9.4
Above 50 years old	36	9.4
Total	**382**	**100.0**

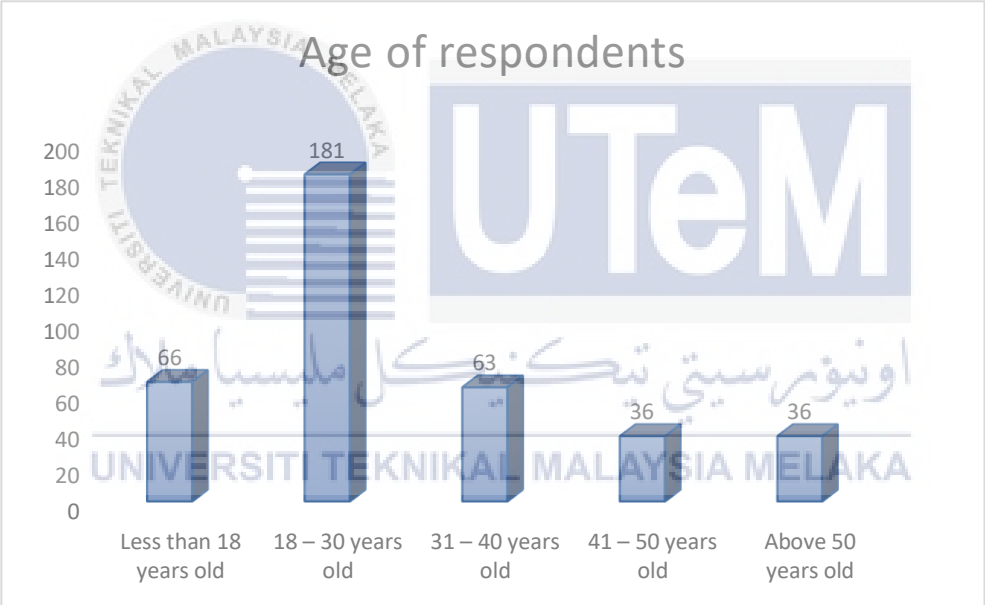

Figure 4.2: Age of respondent

c) Education level

Table 4.3 shows the results of the education level among all the respondents, in which 41.1% of the respondents are graduates from nearby universities and college, and another 9.9% are postgraduates. Only 10.7% of the respondents do not have formal education. This shows that education is considered important in today’s society.

Table 4.3: Education level among the respondents

Education	Frequency	Percent (%)
No formal education	41	10.7
Non-graduate	145	38
Graduate	158	41.4
Postgraduate	38	9.9
Total	**382**	**100.0**

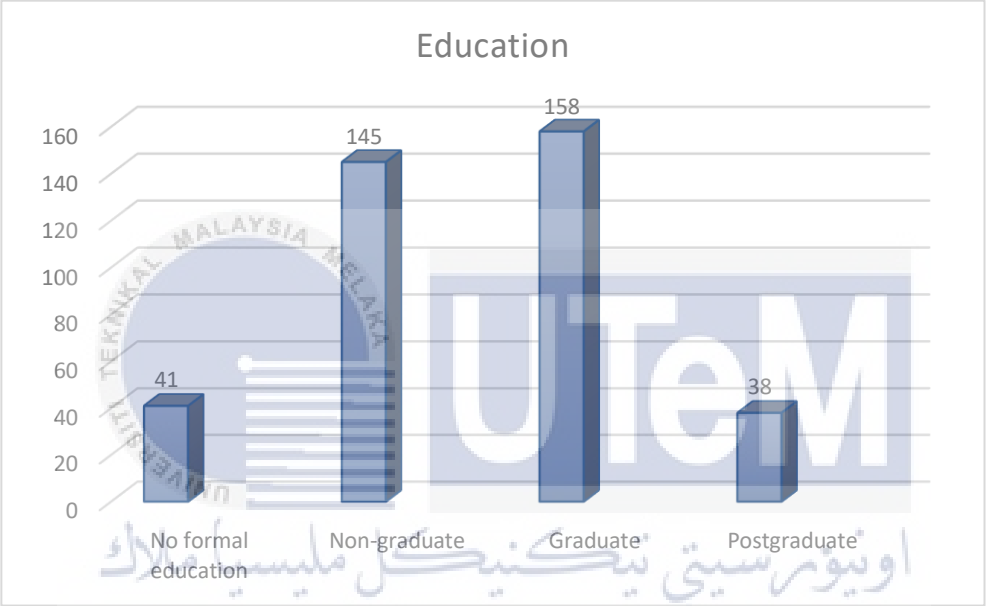

Figure 4.3: Education level among the respondents

d) Occupation

In terms of their occupation sector, most of the respondents were employed, which represents 62% of the total of respondents. Other respondents are likely student from nearby universities and college which is 38%.

Table 4.4: Occupation of the respondents

Occupation	Frequency	Percent (%)
Student	145	38
Employer/Employee	237	62
Total	**328**	**100**

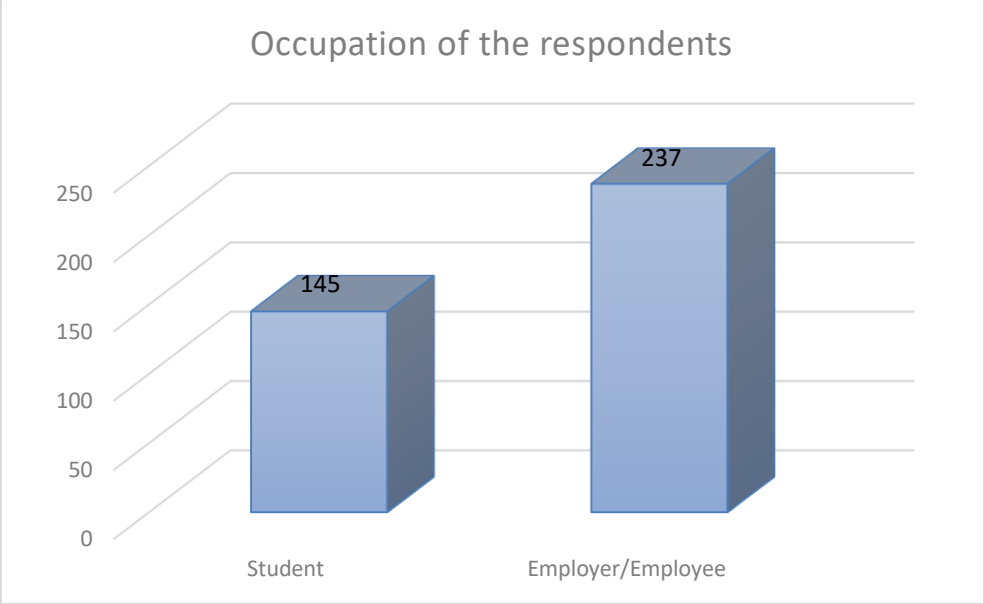

Figure 4.4: Occupation of the respondents

e) Experience in drone delivery

Next, the respondents were asked about their experience in drone delivery. Surprisingly, most did not have experience in using drone delivery. Only 19.6% of the total of 382 respondents had experience in drone delivery, as displayed in Table 4.5. This result may suggest that knowledge and awareness of the public regarding drone delivery is still low.

Table 4.5: Respondents' experience in drone delivery

Status	Frequency	Percent (%)
Experienced	75	19.6
No experienced	307	80.4
Total	**382**	**100.0**

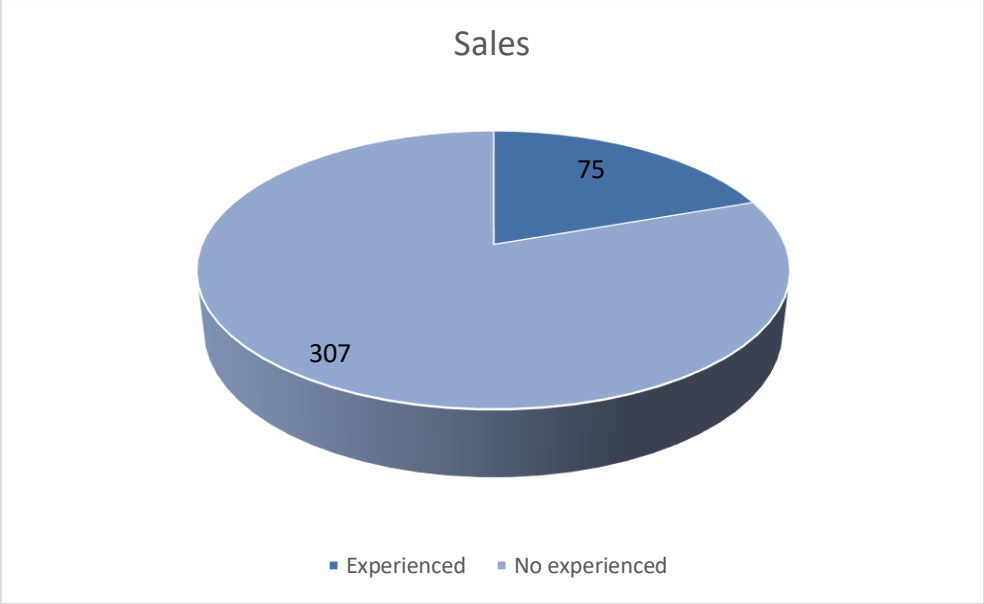

Figure 4.5: Respondents' experience in drone delivery

f) General knowledge about drones

Next, the respondents were asked about their general knowledge about drones. From Table 4.6, only 25.7% of the respondents are have high general knowledge about drone. Most of the respondents have moderate general knowledge about the drone with 43.7% of them, which equals to 167 respondents.

Table 4.6: Respondents' general knowledge about drones

Status	Frequency	Percent (%)
Low	117	30.6
Moderate	167	43.7
High	98	25.7
Total	**382**	**100**

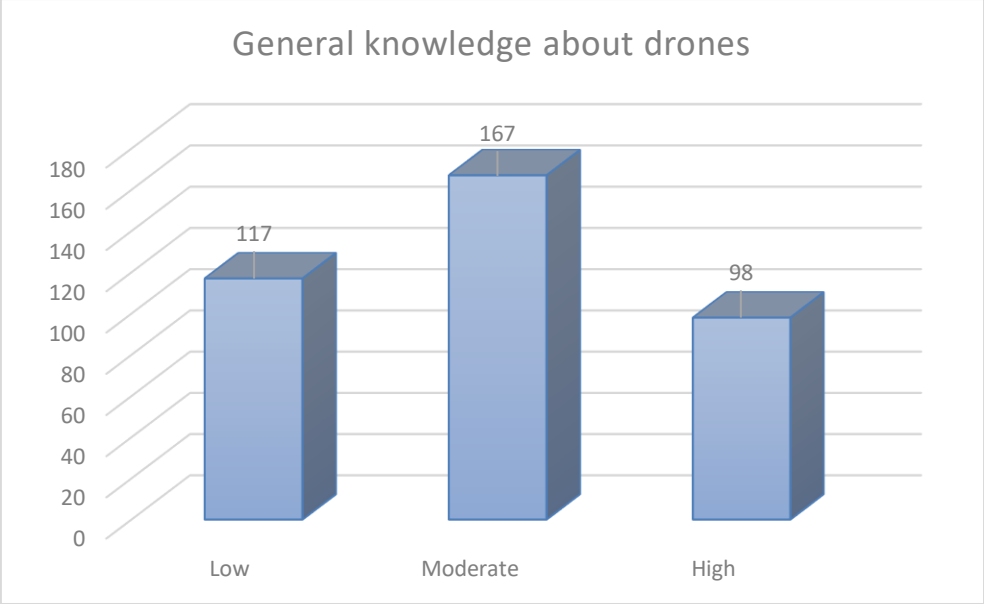

Figure 4.6: Respondents' general knowledge about drone

4.4 Descriptive analysis of independent variables

In this part of the chapter, the researcher discusses the descriptive statistics on each variable, including the independent and dependent variables. Descriptive statistics can show how exactly the dimensions of the variables are examined. The value of standard deviation and mean will accordingly show how exactly the statistics are widely dispersed nearby to the mean value.

4.4.1 Performance expectancy

As displayed in Table 4.7, it shows the results from the descriptive analysis for PE, and the mean for all items ranging from 3.31 to 3.35. From the mean values, it can be concluded that most of the respondents somewhat agree with the items in the PE.

Table 4.7: Descriptive analysis for performance expectancy

Items	Mean	Std. Deviation
PE1 - The use of drone as an alternative to delivering parcel would be useful for public.	3.31	1.364
PE2 - Using drone as an alternative to delivering parcel will increase	3.33	1.407

the performance delivering in Malaysia.		
PE3 - Drone as an alternative to delivering parcel will make the lives of the people in Malaysia more convenient.	3.34	1.444
PE4 - Drone, as an alternative to delivering parcel, will provide new ways and opportunities for people in developing countries.	3.35	1.448

4.4.2 Effort expectancy

Table 4.8 shows the descriptive statistics for EE. The mean value for the items in EE ranges from 3.28 to 3.34, which shows that respondents mostly agreed with the statements in the items of EE.

Table 4.8: Descriptive analysis for effort expectancy

Items	Mean	Std. Deviation
EE1 - It is likely to be easy to use drone because the maintenance of drone is easy to use.	3.28	1.424
EE2 - It is likely to be easy to learn the function of drone	3.33	1.446
EE3 - Drone maintenance of delivering parcel is likely to be straightforward and easy to understand.	3.34	1.456

4.4.3 Social influence

Next, Table 4.9 displays the results of the descriptive analysis for SI. The results of the mean values of the variable range between 3.27 to 3.39. This could mean that the respondents somewhat agree to the items.

Table 4.9: Descriptive analysis of social influence

Items	Mean	Std. Deviation
SI1 - People around me seem to be excited to use drone as their courier	3.39	1.450
SI2 - Most of the people who are important are willing to drone as	3.27	1.435

their new courier.		
SI3 - My friends are likely to use drone as their courier to deliver parcel.	3.33	1.435

4.4.4 Facilitating conditions

As for FC, the descriptive analysis is displayed in Table 4.10. Here, the results of the mean value show that it ranges from 3.34 to 3.35. The value of means could be interpreted that most of the respondents agreed with the statements in the items.

Table 4.10: Descriptive analysis for facilitating conditions

Items	Mean	Std. Deviation
FC1 - The drone will be able to give me enough technical help to solve the problems that have arisen between courier company.	3.35	1.435
FC2 - The drone will have (or have) systems to be use to deliver the parcels	3.35	1.448
FC3 - Drone will be building systems to communicate with the technical project manager.	3.34	1.421

4.4.5 Trustworthiness

Finally, for trustworthiness, Table 4.11 shows the descriptive analysis of the variable. The mean values range from 3.32 to 3.36, which implies that the respondents mostly agreed with the statements in the items.

Table 4.11: Descriptive analysis for trustworthiness

Items	Mean	Std. Deviation
TW1 - The insurance companies can be trusted to carry out the responsible about the safety of drone.	3.33	1.429
TW2 - I think that FAA rules and laws will change how underwriters write policies, pay premiums, and deal with claims.	3.36	1.445
TW3 - I trust FAA rules and laws to keep the drones are safety to be	3.32	1.430

use.		

4.5 Descriptive analysis of the dependent variable

Table 4.16 displays the result for the descriptive analysis for the dependent variable, which is the prospect of intention. The mean value ranges from 3.31 to 3.35. The highest mean goes to PI3 “I plan to use drones to send packages in the future” and the lowest mean goes to PI2 “I will always try to use drones to send packages in my everyday life.”.

Table 4.12: Descriptive analysis for the prospect of intention

Items	Mean	Std. Deviation
PI1 - I plan to use (keep using) drones for package delivery in the future.	3.34	1.424
PI2 - I will always try to use drones to send packages in my everyday life.	3.31	1.417
PI3 - I plan to use drones to send packages in the future.	3.35	1.454
PI4 - Drone delivery is better for the environment than other ways of delivering.	3.34	1.434

4.6 Normality test

By analysing all of the variables in the suggested framework, the normality test was able to demonstrate whether or not the data satisfied the normalcy assumption. The skewness and kurtosis values were the primary ones utilised in this analysis. If skewness is between -2 and +2, and kurtosis is between -7 and +7, then the data falls into the "normal" range (Hair et al., 2010; Kline, 1998). Data in Table 4.13 shows that the skewness and kurtosis of all five variables (PE, EE, SI, trustworthiness, and public support on drone) fall within a desirable range (-0.374 to -0.407 for skewness, and -1.192 to -1.253 for kurtosis). All of the variables were consistent with the study's sample, as demonstrated by the results. In conclusion, the data supports the notion that the items follow a normal distribution.

Table 4.13: Normality of data

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Performance	384	-.402	.125	-1.211	.249
Effort	384	-.399	.125	-1.219	.249
Social	384	-.374	.125	-1.253	.249
Facilitating	384	-.399	.125	-1.236	.249
Trust	384	-.405	.125	-1.232	.249
Intention	384	-.407	.125	-1.192	.249

4.7 Factor analysis

In order to conduct a successful factor analysis, one must first determine if the data is appropriate, then extract relevant factors using rotation, and finally analyse the results. (Pallant, 2011)

First, you need to make sure you have a large enough sample. Although many authors have written about this topic from diverse perspectives, most of them believe that the bigger, the better.

In fact, this is the case since a weaker correlation coefficient results from a lower sample size. Furthermore, the strength of the relationships between the items is a concern. We recommend using the correlation matrix where the results are greater than 0.3. (Pallant, 2011). Furthermore, SPSS may create two statistical measures to test the factorability: Bartlett's test and Kaiser-Meyer-Olkin (KMO); KMO with an index of 0 to 1 is regarded appropriate, and Bartlett's test ($p > 0.05$) is a proper value for factor analysis (Pallant, 2011).

Step 2: Examine the minimum amount of factors utilised to display the correlation among the variables through the process of factor extraction (Pallant, 2011). The number of components utilised in this procedure varies depending on the objectives of the researcher, but the most frequent methodology is principal component analysis (PCA). In addition, the goal is to reduce the number of contributing components with a straightforward answer or to provide greater depth within the context of the provided information. Kaiser's criterion

(preferring eigenvalues greater than 1.0), Catell's scree test (plotting the eigenvalues by finding the point where the curve changes direction and becomes horizontal, all factors above the elbow are considered), and Horn's parallel analysis (comparing the size of eigenvalues with others obtained using similar data and size, eigenvalues that exceed the corresponding values are considered to be significant) are the three techniques used to determine the number of factors (Pallant, 2011).

Third, after the factor count has been calculated, it must be interpreted. For the sake of clarity, we shuffled everything around. There are two distinct types of rotation: orthogonal (Varimax, Quartimax, Equamax) and oblique (Direct Oblimin and Promax). For orthogonal rotation, Varimax is typically utilised, while Direct Oblimin is preferred for oblique rotation. This is because its goal is to reduce the size of those factors whose loadings are particularly high.

Table 4.15 displays the findings from the current investigation, which were obtained using PCA with Varimax rotation. KMO must be greater than 0.70 to comply with the regulation. KMO, as shown in Table 4.15, is 0.9, which means that the sample adequacy criteria for factor analysis has been met. Similarly, Bartlett's test of sphericity was found to be statistically significant at the 0.001 level, indicating that there was adequate correlation between the various parts. The lowest loading was 0.641, suggesting that all loadings were rather high.

Table 4.14: Factor analysis

Items	Component				
	1	2	3	4	5
PE1	.950				
PE2	.958				
PE3	.954				
PE4	.961				
EE1		.950			
EE2		.956			
EE3		.955			
SI1			.955		
SI2			.956		

SI3			.957		
FC1				.964	
FC2				.964	
FC3				.958	
TW1					.962
TW2					.960
TW3					.961

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.981
Bartlett's Test of Sphericity	Approx. Chi-Square	13166.373
	df	120
	Sig.	.000

4.8 Reliability analysis result

The primary goal of reliability testing is to assess the steadiness of scores obtained using the scale (Pallant, 2011). This measures how well all the parts of the structure stay put. Cronbach's Alpha coefficient is the gold standard for evaluating reliability. It has been stated by Pallant (2011) that a Cronbach's Alpha coefficient of greater than 0.7 is generally recognised. In this investigation, all dependability values above 0.7, much above the threshold for statistical significance. Cronbach's Alpha for each individual component is shown in Table 4.15.

Table 4.15: Reliability result

Variable	Cronbach's Alpha	Numbers of Items
Performance expectancy	.960	4
Effort expectancy	.948	3
Social influence	.931	3
Facilitating conditions	.937	3
Trustworthiness	.944	3

4.8 The relationship between independent variables and dependent variable

4.8.1 Correlation analysis

Both the magnitude and direction of a linear relationship between two variables (the dependent and independent ones, respectively) can be described by use of a technique called correlation analysis (Pallant, 2011). Correlation analysis was used to investigate the link between the independent variables (prospective investors' perceptions of the project's PE, EE, SI, FC, and trustworthiness) and the dependent variable (investors' intentions to participate in the crowd-funding campaign). Based on the work of Pallant (2011), correlation coefficients can only take on positive or negative values of +1 or -1.

Projected positive or negative correlations between two variables are indicated by the sign preceding them. If the sign is positive, then an increase in one variable will lead to an increase in the other. A negative sign, on the other hand, suggests that an increase in one variable could lead to a decline in the other. Furthermore, correlation coefficients can be calculated based on how robust the connection is. According to Cohen (1988), a weak link has a value of r between 0.10 and 0.29, a moderate value of r between 0.30 and 0.49, and a strong value of r between 0.50 and 1.0.

Based on the data, we can say that all of the potential predictors of the outcome had positive correlations. Correlation coefficients (r) between the variables were quite strong, ranging from 0.50 to 1.00. In Table 4.16, we see that the positive correlation between trustworthiness and intent was 0.947, with FC coming in at the bottom with a 0.937.

Table 4.16: Pearson's correlation

	Performance	Effort	Social	Facilitating	Trust	Intention
Performance	1					
Effort	.969**	1				
Social	.969**	.968**	1			
Facilitating	.973**	.973**	.975**	1		
Trust	.974**	.971**	.976**	.979**	1	
Intention	.939**	.941**	.945**	.937**	.947**	1
Correlation is significant at the 0.01 level (2-tailed).						

4.8.2 Multiple linear regression analysis

R^2 indicates the percentage of independent variables that can be explained by the dependent variables. From the model summary in Table 4.17, the R^2 of 0.911 indicates that 91.1% of the variation in the performance can be explained by the five independent variables tested in this study.

Table 4.17: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.954[a]	.911	.909	.41803	2.047

a. Predictors: (Constant), TW, EE, PE, SI, FC

b. Dependent Variable: PI

Following this, we can see that at least one of the independent factors was able to predict the dependent variable, as seen in Table 4.18, which displays the results of ANOVA. When the p-value is 0.000, it means that the model fits the data.

Table 4.18: ANOVA results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	669.635	5	133.927	766.412	.000[b]
	Residual	65.704	376	.175		
	Total	735.340	381			

a. Dependent Variable: PI

b. Predictors: (Constant), TW, EE, PE, SI, FC

Next, we'll look at the findings from a statistical analysis of the correlations between the independent factors and the dependent variable. Results demonstrate that all variables are favourably significant predictors of public approval for using drones for parcel delivery. ($p < 0.05$). The highest beta value, = 0.376, was found for trustworthiness, showing that it was the most influential factor in determining whether or not people would accept drones being used

for package delivery. After that, we have SI with = 0.314, EE with = 0.250, PE with = 0.144, and FC with = -0.120.

Additionally, additional assumptions must be made to satisfy the need for regression. As can be seen in Table 4.19, there is no multicollinearity issue because all the Tolerance values are greater than 0.10 and the VIFs (Variance Inflation Factors) are fewer than 10. If Tolerance is greater than 0.10, which is extremely low, it suggests that there is multicollinearity because there are likely strong multiple correlations with other variables. The Variance Inflation Factor (VIF) is just the inverse of the Tolerance; a VIF > 10 indicates multicollinearity (Tolieng et al., 2017b).

And second, per Table 4.17, the Durbin-Watson value is 2.047. There may be some autocorrelation in the residuals of the regression analysis, which can be detected using the Durbin-Watson test but may cause an incorrect standard error estimate and cloud one's ability to correctly assess the significance of the predictors. Statistics with values between 1.5 and 2.5 are considered to be within the "normal" range. Values outside this range might need further investigation. According to Field (2009), readings below 1 or above 3 should be taken seriously.

Table 4.19: Coefficient analysis of variables

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.128	.056		2.268	.024		
	PE	.146	.081	.144	1.808	.071	.038	26.530
	EE	.249	.077	.250	3.218	.001	.039	25.401
	SI	.313	.082	.314	3.829	.000	.035	28.284
	FC	-.119	.091	-.120	-1.308	.192	.028	35.325
	TW	.375	.092	.376	4.059	.000	.028	36.072

a. Dependent Variable: PI

4.8.3 Summary of hypotheses testing

All of the hypotheses were examined, and it was determined that some elements of hypotheses 2 and 3 as well as hypothesis 5 should be adopted. According to Table 4.20, there is a favourable relationship between EE, SI, and trustworthiness and public acceptance of drone implementation

Table 4.20: Hypotheses result

Hypotheses	Accepted	Not Accepted
H1: Performance expectancy has a positive effect on public acceptance of drone implementation.		√
H2: Effort expectancy has a positive effect on public acceptance of drone implementation.	√	
H3: Social influence has a positive effect on public acceptance of drone implementation.	√	
H4: Facilitating conditions have a positive effect on public acceptance of drone implementation.		√
H5: Trustworthiness has a positive effect on public acceptance of drone implementation.	√	

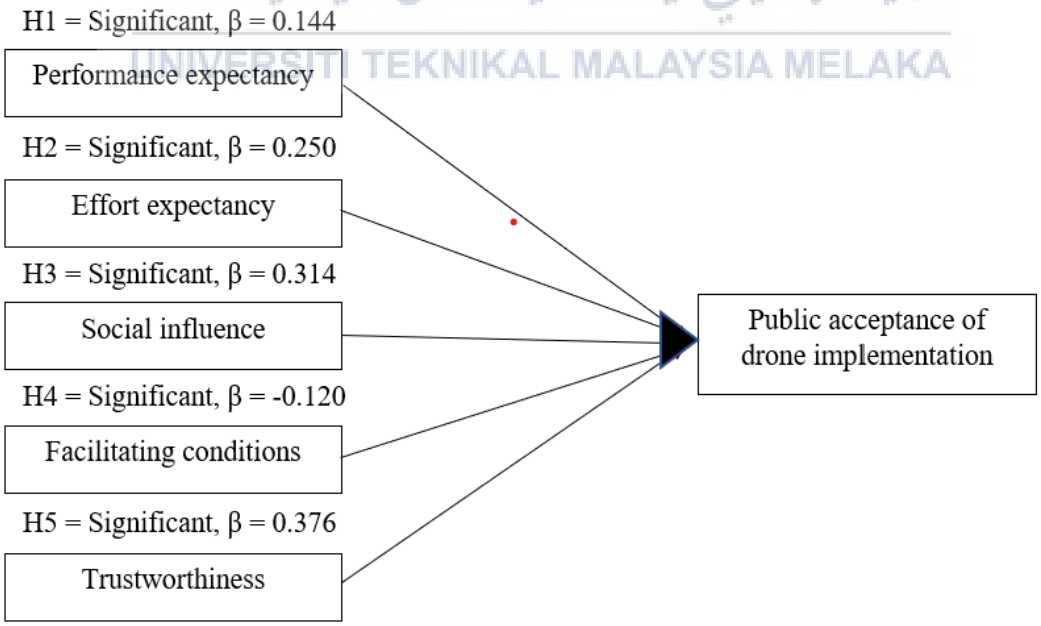

Figure 4.8.3: Framework Hypothesis

4.9 Discussion of findings

As noted in Chapter 1, the primary purpose of this research was to apply the UTAUT model, expanded to include trustworthiness, to the question of what influences potential investors' decisions to make contributions to crowd-funding projects.

H1: Performance expectancy has a negative effect on public acceptance of drone implementation.

The outcome indicates that PE is detrimental to public approval of drone implementation. Studies by Venkatesh et al. (2003), Awuah (2012), Shanab (2007), Zhou et al. (2010), Lung et al. (2008), and Jo observed a similar pattern of results (2015). However, when compared to the work conducted by Moon and Hwang (2018), the results of PE differ significantly. This study determined, through the collection of sufficient data, that the public's acceptance of drones would be influenced by methods for enhancing the performance and functionality of drones. As a messenger, drones have numerous advantages for the public, but there are also many disadvantages that can damage the public. Also, drones are anticipated to give new developments in the distribution industry, although the public remains unconvinced of their utility. Therefore, to boost the public's acceptance of drones, the performance of drone apps and platforms must also improve.

H2: Effort expectancy has a positive effect on public acceptance of drone implementation.

The results of this study indicated that EE has a positive and significant relationship with public acceptance of drone implementation. The outcome is consistent with the findings of previous researchers (Venkatesh, 2003; Chung, 2013; Hussin et al., 2011; Kim and Jeon, 2017). Accordingly, it has been demonstrated that, in order for the public to contribute and participate in the projects of accepting drones as delivery, the administrator must ensure that the acceptance process is simple, can be learned quickly, and is processed efficiently. This could suggest that if the process is complicated and difficult to comprehend, fewer individuals would accept drones as their courier. In addition, the platform should be easily accessible to individuals of various ages and educational levels.

H3: Social influence has a positive effect on public acceptance of drone implementation.

According to the results, SI plays a beneficial role in the general public's willingness to accept widespread drone use. Therefore, stronger encouragement should be provided with regard to SI in order to promote public acceptance of drone implementation. Since SI is dependent on the feedback of locals, it is crucial to constantly remind people of the value of drones. Smartphone internet users are a prime target audience; therefore, businesses should promote their products and services on social media sites like Facebook, YouTube, and Instagram. More people will hear about the state of public schools and universities, and maybe they will be moved to do something about it. The public approval on drone project could also benefit from the hiring of social media influencers by the event's organisers and administrators.

H4: Facilitating conditions have a negative effect on public acceptance of drone implementation

This research shows that public support for implementing drones is negatively significant by FC. It's comparable to what Kwon et al. (2014) and Venkatesh et al. (2014) have written (2003). This finding, however, runs counter to that of Moon and Hwang's research (2016). If the platform on which people are supposed to use the drone is in poor shape, then fewer people will be willing to take use of its benefits. Therefore, organisers and administrators should be alert to and ready to respond to questions from the public on the functionality and technical details of the platform at all times. Also, they should take public feedback into consideration and make adjustments as necessary to create a platform that is accessible to people of various backgrounds. Thus, public support for implementing drone technology is not considerably influenced by enabling conditions.

H5: Trustworthiness has a positive effect on public acceptance of drone implementation.

Last but not least, the result for trustworthiness is helpful in getting people to accept using drones in the real world. In addition, credibility was the most important factor in determining intent. Previous authors' findings (Bélanger and Hiller, 2005; Carter and Bélanger, 2005) are consistent with this finding. Both the government and the insurance provider must be trusted by the people. The FAA's leadership in this endeavour necessitates

public confidence in government. This suggests that public trust in the government as the project's administrator is essential to the widespread adoption of drone technology.

4.10 Summary

According to the sample size estimate by Krejcie and Morgan (1970), this study successfully collected 382 samples for analysis at the end of the data collection phase. First, a frequency analysis was performed on the data to determine the demographic breakdown of respondents with respect to age, education, occupation, and drone-related expertise. Second, the mean and standard deviation of all of the variables were calculated using descriptive analysis. Descriptive statistics like skewness and kurtosis can tell us if our data is normal or not. Finally, EFA was applied to the variables' items in order to determine whether or not those items were underlying. Finally, the validity of the items in the variables was determined by doing a reliability analysis of the variables themselves. Fifth, a correlation test and multiple regression analysis were run to establish the nature of the variables' connections to one another. By conducting this study, the researcher was able to ascertain what role the independent factors played in influencing the outcome. As a conclusion, the findings indicated that just three criteria were significantly favourable to public approval of drone implementation.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This study collected 382 samples from the general public in Bandaraya Melaka to find out what factors influence people's support for using drones for parcel delivery. The study's findings are summarised in this chapter. The chapter then addresses the implications of the findings for researchers, practitioners, and policymakers, before concluding by noting the study's limitations and offering recommendations for future investigation. The results of the research are presented at the chapter's end.

5.2 Summary of the findings

From the outset, this study proposed three research objectives, which are next summarized in meeting the objectives of this research.

5.2.1 Research objective 1: To determine the UTAUT factors that influenced the public support for drone implementation in parcel delivery

In Chapter 1, we established that one of our first goals was to learn what UTAUT elements influenced people's attitudes toward using drones for package delivery. Literature reviews have uncovered four UTAUT factors—PE, EE, SI, and FC—that have a favourable and significant impact on investors' propensity to give (Moon and Hwang, 2018). As the researcher saw it, since drones are still relatively new to the public and must be taken into account by the government, insurance companies, and the FAA, there needs to be a level of trust between the government and the people.

To this end, we altered a questionnaire from prior works (Carter and Bélanger, 2005; Moon and Hwang, 2018) and created our own based on the variables. Using a convenience sampling strategy, the researcher asked their friends and family to fill out the survey. When it

came time to fill out the survey, participants were instructed to use the corresponding Likert scale for each question.

The descriptive analysis showed that the majority of respondents (3.00 or more) agreed with all the statements of each question. Moreover, it demonstrates that most respondents felt that the aforementioned issues were the ones that could impact public acceptance for drone use in parcel delivery.

5.2.2 Research objective 2: To analyze the relationship between UTAUT factors and the public support for drone implementation in parcel delivery

When the data was finally collected, SPSS was used to analyse it. Correlation analysis was used to establish a link between the explanatory and criterion variables. In order to describe the nature and direction of a linear relationship between two variables (the dependent and independent ones), correlation analysis is typically employed (Pallant, 2011). Public support for drone deployment in parcel delivery was the dependent variable, and the correlation analysis investigated the relationship between the independent variables of PE, EE, SI, FC, and trustworthiness and the dependent variable.

Our findings show that there is a positive association between EE, SI, and trustworthiness on the one hand, and the independent variables (FC and PE) on the other. There is strong evidence of a link between the positive factors. It follows that when one independent variable is raised, the dependent variable will likewise rise. As a result, growing public support for using drones for package delivery coincides with rising EE, SI, and trustworthiness.

5.2.3 Research objective 3: To examine the level of importance among the UTAUT factors toward the successfulness of public support for drone implementation

According to the results, public support for drone deployment in parcel delivery is significantly influenced by the independent factors of EE, SI, and trustworthiness. According to their potential to sway public opinion, the following considerations were ranked in order of importance in the debate over whether or not to use drones for package delivery:

Table 5.1: Ranking of factor

Factor	Beta value	Rank
Trustworthiness	0.376	**1**
Social influence	0.314	**2**
Effort expectancy	0.250	**3**
Performance expectancy	0.144	**4**
Facilitating conditions	-0.120	**5**

When compared to the other independent variables in Table 5.1, trustworthiness ranks highest due to its strong beta value. Measures should be taken to increase trust as it relates to the reliance of citizens on the government's credibility. To ensure that new technology, like drones, are well received and that the public can trust drones as couriers, the government and the insurance sector may be more open and honest.

SI received the second-highest ranking. Since "social" refers to the people surrounding, public opinion will determine whether or not the drone becomes mainstream. Therefore, spreading the news about the potential of drones as future couriers through word of mouth is an effective strategy. Consequently, it is crucial that people are constantly informed of its significance so that they might inform and enlighten those around them.

The score that EE received was third overall. This study's "effort expectancy" referred to the amount of work we could reasonably anticipate the drone to put into making our lives easier. Drones simplify various processes, including the management of disposable income, due to their low cost and intuitive operation. Drones, as mentioned, can be used to reduce stress on the general population. Drones have the potential to be more convenient for customers because of how quickly they can deliver packages compared to standard delivery methods. That's why it's so important for managers and administrators to improve the infrastructure so that anyone may order a drone delivery.

The fourth participated in physical education. In this study's context, "PE" meant the anticipated outcome of drone maintenance. Consumers may get a taste of how quickly their items will be delivered via drone by ordering one themselves. In this case, the administrator

or management should show the final outcomes once the maintenance has been done to encourage more people to approve. The results of this work might encourage more people to start using drones.

And finally, FC received the least substantial impact. Administrators and managers can encourage more individuals to use drone delivery by making information about drones and their capabilities readily available to the public through publicly accessible infrastructure and technical systems. All users, regardless of their level of education, should be able to quickly and easily navigate the system.

5.3 Contribution of the findings

At the end of this research, the goal has been reached because the research goals, which were laid out in Chapter 1, have been met. So, this research's contributions can be broken down into three groups: knowledge, practise, and policymaker.

5.3.1 Research contributions to knowledge

The researcher was able to identify the characteristics that affect public support for drone implementation in parcel delivery by using UTAUT factors in this study. According to the UTAUT model, there are a number of important aspects that contribute to an individual's behaviour intention. It has been shown that the UTAUT factors have a substantial impact on the public's intention. This demonstrates that public interest in employing drones in attaining the goal, the amount of work required when using a drone as the courier, the level of social influence (SI) in the delivery area, and the FC of the system that must be used are all influenced by the project's success.

In addition to the previously established UTAUT criteria, this study also included reliability. Trust in government as an administrator was seen as an important factor by the researcher. At the end of the day, it proved that a person's credibility has the greatest effect on whether or not they will provide money. As a result, reliability might be considered in relation to the security of the parcels and the drone.

The purpose of this descriptive study was to identify and characterise the relevant factors in a given context. This study also made use of quantitative techniques. Given the nature of this investigation, only a quantitative approach was used. The created hypotheses were put to the test in order to gain a better understanding of the connection between all the independent factors and the dependent variable.

Furthermore, SPSS was used to analyse the data. The results of the statistical analyses performed in this study (frequency analysis, descriptive analysis, factor analysis, reliability analysis, and correlation analysis) were obtained with the use of SPSS. Thus, multiple linear regression analysis allowed the researcher to check the hypotheses.

5.3.2 Research contributions to the practice

This study has successfully added data empirically to the knowledge of drone delivery in the public use. The findings showed that only EE, SI and trustworthiness had a positively significant effect to the public support for drone implementation in parcel delivery project to the cause. Therefore, organizers, administrators, and the management of a drone delivery company could use this knowledge as a guideline or reference in developing more about drone delivery in future

In addition, organizers, administrators, and management may investigate all the factors and determine ways to enhance the support from the public. For example, regarding PE, maybe they could implement ways public to develop more about the systems that drone delivery use, based on their performance in delivering and completing maintenance projects. This would help to improve the competency and, at the same time, the integrity of the company selected to complete their work efficiently. This effort will also build the trust of the public toward the drone delivery company.

As for EE, they could perform a pilot test for targeted state or city in the drone delivery industry and systems. In this way, feedback, reaction, comments, and criticism could be received so that all levels of people could assess the platform. As such, the final product could generate a platform that is user friendly, sophisticated, and effective. The same for FC as it also involves the condition of the drone delivery systems.

To enhance more SI, the awareness surrounding drone maintenance could be communicated on a regular basis. Social media platforms may be a good mechanism in spreading this awareness. The organizer, administrator, and management could also present a real-time situation of the use drone in Malaysia. Aside from that, images and videos of drone delivering the packages and the maintenance of drone could be preview via social media. Furthermore, the company could encourage others by partnering with social media influencers so that the message and awareness could be received and exposed to the public.

Additionally, more advertising and marketing should be done so that drone deliveries can be seen by all. For example, since the world has been significantly affected by the COVID19 pandemic, all economies have been disrupted and has caused the use of couriers to become one of the initiatives to restabilize the current economy. At that time drones were not welcomed because it was a new technology and until now drones have been used in various sectors and have had a positive impact on the public. Drones have also helped a lot during the Pandemic by delivering medicine and vaccines to rural places. Until today people have noticed the presence of drones in their lives. To spread more about drone these platforms are the most suitable platforms to be use. Furthermore, the efforts were supported by many social media influencers; thus, the awareness was rapidly spread globally. This shows that consciousness and awareness are needed so that more people can get well-known about drone delivery in the future.

5.3.3 Research contributions to policymakers

In the context of this research, as the policymaker or the government is the practitioner, this research was able to develop guidelines for practitioners, like the government, to follow in terms of enhancing the public support for drone implementation in parcel delivery. At present, many drone companies have published their drone technology to the investors and public, which may help to increase the number of user drone delivery

Since this study applied convenience sampling, 80.4% of the respondents have experienced in using drone delivery, similar to the researcher. Thus, it can be said that this initiative is supported and agreed upon by public servants. Perhaps the government, as a policymaker, could encourage public to use drone to reducing cost on delivery. By reducing this cost of delivering, it can ease public from wasted their money.

5.4 Limitations of the research

The following limitations restrict the findings presented in this study. The first limitation is that this study only focused on the public in Bandaraya Melaka, which is around 75,000 from the total population in Malaysia. Therefore, this finding could not be generalized to cover all Malaysians' acceptance of drone in public.

Secondly, this study only employed the quantitative method since because it was deemed appropriate for the context of this study. Hence the findings are more general and not presented in-depth compared to a mixed-methods or qualitative study.

5.5 Recommendations for future research

Given this research only focused on the public in Bandaraya Melaka, future studies could include all or a number of other states in Malaysia. The result would be more accurate in generalizing to other populations in Malaysians.

Further, this research applied UTAUT factors in determining public acceptance. However, this research did not use the moderator of the variables in the UTAUT model. As such, future research could use the entire model so that more refined findings could be achieved. Other theories and models could likewise be adapted to determine the intention of people, such as TPB, TRA, and others; future research could also apply other theories.

Additionally, the qualitative method and mixed-methods could be applied to determine people's intention in accepting drone as their courier. As such, more detailed results could be achieved by employing these methods. Finally, there are numerous topics under drone delivery that could be unfolded by future researchers. For example, the challenges and barriers of drone delivery in Malaysia, a developing action plan for drone delivery systems.

5.6 Conclusion

Thanks to their low prices, increased convenience, and delivery times of less than 30 minutes, drones are quickly replacing traditional shipping methods as the logistics industry's future. It will be used by both online and traditional stores to improve the efficiency of their final mile delivery processes. While brick-and-mortar shops like Walmart benefit from having a local presence in countries like the United States, consumers can save time and money by shopping online at places like Amazon.com. Those who adopt new technologies first stand to benefit the most, since they will be the ones to offer their services at lower costs and in shorter amounts of time.

But drone delivery is a novel technology that has the potential to completely alter the distribution process. This novel distribution strategy is quick, effective, and eco-friendly; it could revolutionise the way we do business. Drone delivery is still in its infancy; thus, many questions remain unanswered. If history is any indicator, though, drone delivery will be here to stay and will alter many aspects of our daily lives.

This study set out to identify what elements would sway the general public's approval of using drones for package delivery. The researchers opted for the UTAUT model to gauge people's interest in drones for package delivery. In addition to the four previously mentioned factors (PE, EE, SI, and FC), trustworthiness was also included. The degree to which the public backs using drones for package delivery was chosen to serve as the dependent variable. Five hypotheses were created based on the study's analysis of the available literature.

In this study, a self-administered questionnaire was used to perform descriptive research to test the hypotheses generated. Convenience sampling was used to collect data from 382 participants in this study. Only three independent variables were shown to be significantly related to people's desire to see drones used for parcel delivery. Therefore, EE, SI, and trustworthiness influence the public's support for drone implementation in parcel delivery.

Using the UTAUT factor in the context of drone delivery for public usage in Malaysia, this study successfully added to the body of knowledge in this area. This study has the potential to serve as a reference for professionals in the area and encourage more people to consider using drones as a form of delivery service. Finally, it is intended that this study would serve as a benchmark and guide for the future of drone delivery in Malaysia among policymakers.

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APPENDIX A

Sample size determination by Krejcie and Morgan (1970)

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

APPENDIX B

Table Mean Result by Moidunny (2009)

Mean Score	Interpretation
1.00-1.80	Very Low
1.81-2.60	Low
2.61-3.20	Medium
3.21-4.20	High
4.21-5.00	Very High

Source: Moidunny (2009).

PUBLIC SUPPORT FOR DRONE IMPLEMENTATION IN PARCEL DELIVERY /
SOKONGAN AWAM BAGI PELAKSANAAN DRONE DALAM PENGHANTARAN BUNGKUS

Dear respondents, I am a student of Bachelor Technology Management of Supply Chain and Logistic at University Technical Malaysia Melaka (UTEM). As partial fulfilment for the completion of my degree programme, I am now conducting research entitled: PUBLIC SUPPORT FOR DRONE IMPLEMENTATION IN PARCEL DELIVERY.

In order to make this study successful, your participation in this research is greatly appreciated. There is no right or wrong answers to the questionnaire as the study is on individual perceptions. This questionnaire would take a few minutes of your valuable time to complete answering all the questions.

Your personal particular will remain anonymous and will be treated as strictly confidential. The data collected is only used for the purpose of this academic research and only aggregate data will be used in the report. Once again, thank you very much for your participation.

Responden yang dihormati, saya merupakan pelajar Sarjana Muda Pengurusan Teknologi Rantaian Bekalan dan Logistik di Universiti Teknikal Malaysia Melaka (UTEM). Sebagai sebahagian daripada pemenuhan program ijazah saya, saya kini menjalankan penyelidikan bertajuk: SOKONGAN AWAM BAGI PELAKSANAAN DRONE DALAM PENGHANTARAN PARCEL.

Bagi menjayakan kajian ini, penyertaan anda dalam penyelidikan ini amatlah dihargai. Tiada jawapan betul atau salah bagi soal selidik kerana kajian adalah mengenai persepsi individu. Soal selidik ini akan mengambil beberapa minit masa berharga anda untuk menyelesaikan menjawab semua soalan.

Butiran peribadi anda akan kekal tanpa nama dan akan dianggap sebagai sulit. Data yang dikumpul hanya digunakan untuk tujuan penyelidikan akademik ini dan hanya data agregat akan digunakan dalam laporan. Sekali lagi, terima kasih banyak atas penyertaan anda.

SECTION A: BACKGROUND OF THE RESPONDENT / *LATAR BELAKANG RESPONDEN*

Please answer the questions below by placing a check mark (/) in the appropriate boxes or applicable by writing your response in the space provided. /

Sila jawab soalan di bawah dengan meletakkan tanda semak (/) pada petak yang berkenaan atau berkenaan dengan menulis jawapan anda di ruangan yang disediakan.

1. Gender / *Jantina*
    - Male / *Lelaki*
    - Female / *Perempuan*
2. Please indicate your age / *Sila nyatakan umur anda*
    - Less than 18 years old / *Kurang daripada 18 tahun*
    - 18 – 30 years old / *18 – 30 tahun*
    - 31 – 40 years old / *31 – 40 tahun*
    - 41 – 50 years old / *41 – 50 tahun*
    - Above 50 years old / *50 tahun dan keatas*
3. Please indicate your education level / *Sila nyatakan tahap pendidikan anda*
    - No formal education / *Tiada pendidikan formal*
    - Non-graduate / *Tiada ijazah*
    - Graduate / *Diploma atau ijazah*
    - Postgraduate / *Pascasiswazah*
4. Please indicate your occupation / *Sila nyatakan pekerjaan anda*
    - Student / *Pelajar*
    - Employer/Employee / *Majikan/Pekerja*
5. Please indicate your experience in drone delivery / *Sila nyatakan pengalaman anda dalam penghantaran drone*
    - Experienced / *Berpengalaman*
    - Not experienced / *Tidak berpengalaman*
6. Please indicate your general knowledge about drone / *Sila nyatakan pengetahuan am anda tentang drone*
    - Low / *Rendah*
    - Moderate / *Sederhana*
    - High / *Tinggi*

SECTION B: UTAUT FACTORS / *MENGENALPASTI FAKTOR UTAUT*

This section is to determine the public support for drone implementation in parcel delivery in Melaka. Please rate and select the satisfying level (1= strongly disagree, until 5= strongly agree) that best reflects your opinions towards the question. Please tick (/) on your answer. /

Bahagian ini adalah untuk menentukan sokongan orang ramai terhadap pelaksanaan dron dalam penghantaran bungkusan di Melaka. Sila nilai dan pilih tahap yang memuaskan (1= sangat tidak setuju, sehingga 5= sangat setuju) yang paling menggambarkan pendapat anda terhadap soalan tersebut. Sila tandakan (/) pada jawapan anda.

Performance expectancy / *Jangkaan prestasi*						
		1	2	3	4	5
PE 1	The use of drone as an alternative to delivering parcel would be useful for public. / *Penggunaan drone sebagai alternatif untuk menghantar bungkusan akan berguna untuk orang ramai.*					
PE 2	Using drone as an alternative to delivering parcel will increase the performance delivering in Malaysia. / *Menggunakan drone sebagai alternatif kepada penghantaran bungkusan akan meningkatkan prestasi penghantaran di Malaysia.*					
PE 3	Drone as an alternative to delivering parcel will make the lives of the people in Malaysia more convenient. / *Drone sebagai alternatif kepada penghantaran bungkusan akan menjadikan kehidupan rakyat di Malaysia lebih selesa.*					
PE 4	Drone, as an alternative to delivering parcel, will provide new ways and opportunities for people in developing countries. / *Drone, sebagai alternatif kepada penghantaran bungkusan, akan menyediakan cara dan peluang baharu untuk orang ramai di negara membangun.*					
Effort expectancy / *Jangkaan usaha*						
EE 1	It is likely to be easy to use drone because the maintenance of drone is easy to use. / *Ia berkemungkinan mudah untuk menggunakan dron kerana penyelenggaraan dron mudah*					

	digunakan.					
EE 2	It is likely to be easy to learn the function of drone / *Mungkin mudah untuk mempelajari fungsi drone*					
EE 3	Drone maintenance of delivering parcel is likely to be straightforward and easy to understand. / *Penyelenggaraan drone untuk menghantar bungkusan berkemungkinan mudah dan mudah difahami.*					
Social influence / *Pengaruh sosial*						
SC 1	People around me seem to be excited to use drone as their courier / *Orang di sekeliling saya nampaknya teruja menggunakan drone sebagai kurier mereka*					
SC 2	Most of the people who are important are willing to use drone as their new courier. / *Kebanyakan orang yang penting sanggup menggunakan drone sebagai kurier baharu mereka.*					
SC 3	People around me are likely to use drone as their courier to deliver parcel. / *Orang di sekeliling saya mungkin menggunakan drone sebagai kurier mereka untuk menghantar bungkusan.*					
Facilitating conditions / *Keadaan yang memudahkan*						
FC 1	The drone will be able to give me enough technical help to solve the problems that have arisen between courier company. / *Drone akan dapat memberi saya bantuan teknikal yang mencukupi untuk menyelesaikan masalah yang timbul antara syarikat kurier.*					
FC 2	The drone will have (or have) systems to be use to deliver the parcels. / *Drone akan mempunyai (atau mempunyai) sistem untuk digunakan untuk menghantar bungkusan.*					
FC 3	The drone systems will have sufficient knowledge and experience in delivering parcel. / *Sistem drone akan mempunyai pengetahuan dan pengalaman yang mencukupi dalam menghantar bungkusan.*					
Trustworthiness / *Kepercayaan*						
	The insurance companies can be trusted to carry out the responsible about the safety of					

TW 1	drone. / *Syarikat insurans boleh dipercayai untuk menjalankan tanggungjawab tentang keselamatan drone.*					
TW 2	I think that FAA rules and laws will change how underwriters write policies, pay premiums, and deal with claims. / *Saya berpendapat bahawa peraturan dan undang-undang FAA akan mengubah cara penaja jamin menulis polisi, membayar premium dan menangani tuntutan.*					
TW 3	I trust FAA rules and laws to keep the drones are safety to be use. */ Saya percaya peraturan dan undang-undang FAA untuk memastikan drone adalah keselamatan untuk digunakan.*					

SECTION C: PUBLIC SUPPORT FOR DRONE IMPLEMENTATION IN PARCEL DELIVERY / *SOKONGAN AWAM BAGI PELAKSANAAN DRONE DALAM PENGHANTARAN BUNGKUS*

PI 1	I plan to use (keep using) drones for package delivery in the future. / *Saya bercadang untuk menggunakan (terus menggunakan) dron untuk penghantaran pakej pada masa hadapan.*					
PI 2	I will always try to use drones to send packages in my everyday life. / *Saya akan sentiasa cuba menggunakan drone untuk menghantar pakej dalam kehidupan seharian saya.*					
PI 3	I plan to use drones to send packages in the future. / *Saya bercadang untuk menggunakan dron untuk menghantar pakej pada masa hadapan.*					
PI 4	Drone delivery is better for the environment than other ways of delivering. / *Penghantaran dron adalah lebih baik untuk alam sekitar daripada cara penghantaran lain.*					

APPENDIX D

Gantt Chart of Final Year Project (FYP) 1

WEEK/ ACTIVITIES	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
FYP talk									MID SEMESTER BREAK							
Search for FYP topic																
Meeting with supervisor																
Topic discussion																
Title confirmation																
RO & RQ Construction																
Submission Chapter 1																
Submission Chapter 2																
Submission Chapter 3																
First draft of FYP 1																
Submission of FYP 1																
Presentation 1																
Revised of FYP 1																

APPENDIX E

Gantt Chart of Final Year Project (FYP) 2

WEEK/ ACTIVITIES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Create Questionnaire									MID SEMESTER BREAK							
Distribute Questionnaire																
Collect Questionnaire																
Analysis Data																
Submission Chapter 4																
Submission Chapter 5																
Proposal Correction																
Slide Preparation																
Submission of FYP 2																
Presentation 2																