A New Adoption Intention Model of Drone Application in Food Delivery Services in Malaysia: A Conceptual Paper

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Abstract: - The current Industrial Revolution era seems to enforce new ways of implementing online food delivery services, one of which is the use of drone delivery. One of the problems is that the existing food delivery services use human riders which are prone to accidents, for example about 1600 death cases were reported in 2020 involving p-hailing (food and parcel) riders. Also, the use of drones is needed to help victims of natural disasters such as floods, typhoons, and landslides. Malaysia has commenced the trial use of drone food delivery to tackle these problems. Particularly, consumers' behavioral intentions to use drone food delivery services have been laid low with complex aviation rules and regulations. Hence, the main objective of this study is to examine the predictors of adoption intention in drone food delivery among food delivery providers and consumers in Malaysia. The research methods used are qualitative and quantitative research designs. The quantitative data will be collected using an online survey and will be analyzed using structural equation modeling (SMART PLS). For qualitative technique, the telephone interviews with 15 food delivery service providers and drone collaborators will be conducted and analyzed using verbatim analysis. The expected output is a new adoption intention model of drone food delivery services, one Master student (by research), two publications, and one IP. The result will be significant to the nation in terms of increasing the adoption of delivery drones hence increasing automation in line with the Fourth Industrial Revolution (IR 4.0). This research also improves the economy and societal benefit through efficient supply chain and transportation of services in urban and affected areas such as the spread of diseases or natural disasters, i.e., floods and landslides.

Key-Words: - Adoption intention, drone technology, food delivery services, technology readiness, technology acceptance, Malaysia.

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1 Introduction

The title is about the adoption intention of drone food delivery services in Malaysia. The title is new in the drone area because limited empirical studies have been done before on drone adoption intention in food delivery services in Malaysia. Such empirical studies on drone food delivery services have been conducted in the USA and Korea. Secondly, the underpinning theories have not been used in drone studies since the models have only been used in traditional marketing areas. Hence, more empirical studies using underpinning theories need to be conducted to close these gaps. The current industrial revolution era seems to enforce new ways of implementing marketing strategies such as in online food delivery services using drones. However, the usage of drones is very

limited and has not been adopted by food delivery services in Malaysia. Drone has been used in other industries in Malaysia such as for border security surveillance, area photography, agriculture, topography, [1], and natural disasters such as flood relief operations including delivery of critical supplies, [2], but not in food delivery services. Hence, Malaysian marketers must step up the usage of drones for food delivery because other countries such as Spain where drone food delivery is delivered to yachts (Aerocamaras), [3], Singapore (i.e., Food Panda), [4], United Kingdom (Amazon.com), [5], Thailand (Minor Food Group), [6], and the United States (i.e., Wing, Amazon.com, Google), [7], have already widely used this new drone technology. The existing food delivery services use human riders who are prone to accidents due to busy traffic, for example, about 1600 death cases were reported in 2020 involving p-hailing (food and parcel) riders, [8]. Therefore, the usage of drone delivery is needed because it can reduce accidents and death cases as reported earlier. The drone's adoption and usage might expand due to its innovative roles and usefulness in surveying, tracking, security, surveillance, and logistics. Furthermore, during the novel Coronavirus, COVID-19 pandemic, which affected not fewer than 320 million people worldwide with a death toll of over 5.52 million and in Malaysia, there were 2.8 million affected cases and a total 31,750 of deaths, [9], no contact services are highly preferred, the demand for drone delivery service has been driven up hence increase automation in line with the Fourth Industrial Revolution (IR 4.0). As a result, it has driven society and the authorities to reconsider, understand, and make use of drone innovation, especially in food delivery services in Malaysia. Furthermore, only a few empirical theoretical studies have been conducted regarding drone adoption intentions in Malaysia such as, [10], [11]. However, the mentioned studies investigated drone application for general purposes (e.g., stock take activity at logistic firms and parcels) instead of drone adoption intention in food delivery services. Therefore, the current research will contribute to the development of the body of knowledge on drones' adoption intention. In other words, the current research will indirectly increase the awareness of Malaysian citizens towards drone food delivery services. Besides, the suggested model for drone adoption intention would benefit entrepreneurs interested in investing in drone technology and policymakers who may use it to consider modifying aviation regulations in favor of drone technology. Thus, there is a need to study the adoption intention of drone applications and usage in food delivery services in Malaysia.

2 Literature Review

2.1 Malaysian Drone Food Delivery Services

Drone delivery services in Malaysia have been tested in Cyberjaya in June 2019. This testing is continued by AirAsia Group Bhd and officially launched by the Minister of Science, Technology, and Innovation on 3rd March 2021, [12]. Drone food delivery has been tested in the main city, which is Cyberjaya because customers who order food delivery are busy and prefer convenience and are mainly from main cities, [13]. Furthermore, the usage of drones is more suitable in main cities to overcome traffic congestion (blog.dronebase.com).

The first trial test was conducted by 'Express Food, while the drone was provided by Average Drone Sdn Bhd which has been in operation since 2014. According to its CEO, Hamdee Hamdan stated that the cost of delivery through drones could be as low as RM2.50. The drone can be flown through light rain however cannot fly in heavy rain, [14].

2.2 Factors Affecting Consumer's Acceptance of Drone Food Delivery Services

The usage of drone production through various sectors has grown as the distribution of drones has improved efficiency and operating efficiencies, [15]. This has also been considered effective in emergency circumstances. Consumers aged 18 to 34 had positive perceptions about these drone food delivery services available. We have viewed drone delivery as new, futuristic, revolutionary, and useful, albeit risky. For example, with drone delivery, they get their purchased merchandise, like food, faster, [16]. In addition, consumers have also seen drone delivery services as a relatively environmentally friendly option, [17].

Drone usage was a fast and inexpensive service delivery tool as it reduced delivery time to as low as 30 minutes and delivered the goods to the doorstep of the customer, which in effect improved the competitiveness and versatility of customers in everyday life, [18], [19]. These benefits underpin the desire of consumers to pursue drone food delivery services because it is a fast, cost-effective, and environmentally friendly alternative. The usage of drone delivery expanded due to its innovative

roles and usefulness in surveying, tracking, security, surveillance, and logistics especially during the novel Coronavirus, COVID-19 pandemic, which affected not fewer than 320 million people worldwide with a death toll of over 5.52 million.

2.3 Advantages of using Drone Food Delivery Services

The rise of on-call apps has given an upward push to a predictable trend: younger customers are ordering food more frequently than any era before. Restaurant owners have prioritized supplying dependable and green delivery services to fulfill this expanded demand.

2.3.1 Customer Satisfaction

The use of drones cannot be a gimmick. The aim is to deliver food more efficiently and reliably than ever. Achieving this purpose will increase consumer satisfaction and loyalty as a result.

2.3.2 Marketing

Chad Bailer, Pieology's vice chairman of advertising and marketing, points out that drones carrying a logo's merchandise through the air provide specific and natural advertising and marketing opportunities. While delivering food, a brand can also illustrate to humans on the floor how tech-pleasant and forward-thinking the business enterprise is.

2.3.3 Sustainability

Most food delivery drones would not be specifically large. They also would not require large resources while traveling from the restaurant to a customer's location. This makes them a sustainable opportunity for conventional delivery methods.

2.3.4 Quick Delivery

The reason for a delivery drone is to offer services for food delivery unexpectedly and in out-of-the-way locations. These drones may be programmed to deliver specific items from their restaurants to a chosen area – the deal with the individual who ordered the food. Delivery drones permit restaurants to deliver food quicker, and faster in less than normal traffic duration. Plus, workers may have extra time every day, and less hassle on the road.

2.3.5 Provide a Better Degree of Efficiency

With GPS technologies, delivery drones can easily navigate to a customer's location when food is ordered. This technology has a better fulfillment fee in comparison to people whilst acting the equal task. Although there will constantly be houses that are not appropriately charted with the aid of using those systems (like a GPS manual telling a person to show right, which might lead them right into a building), this problem is one good way to sooner or later remedy because the system and drone technology keeps evolving.

2.3.6 Might Impact Shareholders/Restaurant Owners

One of the important things that a restaurant might revel in during the use of a drone delivery is the development in efficiency. That might translate right into a cost-financial savings system that would lessen prices for the organization. Shareholders might gain from the growth in dividends, even as senior managers would possibly get hold of rewards for his or her creativity with a bump in their pay. There might be fewer people doubtlessly wanted as well, which might similarly grow those reimbursement elements.

2.3.7 Convenient Service during Pandemic and Natural Disaster

As we all know COVID-19 made every one of us be away from human connection. So, food deliveries via drones are the best option as it prevents human connection and interactions. Furthermore, drones were used to ease flood relief in Selangor in December 2021.

2.4 Disadvantages of using Drone Food Delivery Services

Of course, there also are a few negative aspects to the use of drones in this capacity. They include:

2.4.1 Technical Limitations

Big corporations like Uber have the assets vital to start experimenting with drones now. On the other hand, it could take numerous years for smaller restaurants to feasibly look at this technology themselves.

2.4.2 Regulations

Drones are new in the market. This means the systems and regulations that detect them are on the other hand still developing. Restaurant owners who use them to supply meals should proactively study relevant legal guidelines and make certain all drone operators obey them.

2.4.3 Maintenance

The more restaurant owners start experimenting with drone-based food delivery; it is probably that

malfunctions will occur. Simply false impressions of how a heavy load can lessen a drone's performance might also result in technical problems. Restaurant owners ought to discover ways to preserve their drones in cost-powerful methods to make certain constant carriers.

2.4.4 Less Work Opportunity

Whenever there is a shift in a generation that modifies the manner of workers, most companies take the method that the difficulty is "now no longer their hassle". Workers might want new education packages simply to maintain their jobs. There might additionally be fewer entry-degree positions in which no level is vital, which places a better degree of strain on the instructional packages that could equip human beings for work. Most of those systems are already incapable of serving the desires in their network at a 100% rate. Delivery drones might sincerely increase the difficulty.

2.4.5 Chances of Delivery Drones to be Stolen

Nowadays, it no longer takes plenty of talent to disconnect the gadgets from a delivery drone. This danger is what every owner might face. Since they are expensive, being stolen would cost a lot of money. Anyone can take the device away at any time via means of ordering a small product from their favored e-trade platform. Once this movement occurs, it can be hard for the enterprise to have any manner to evoke their property. Regulations and legal guidelines might probably want a replacement to address this danger if this carrier ever grows to be a reality.

2.5 Generation Gap

In light of the rise of new technology and a lack of communication between both older and younger people, generational differences have an impact on not just relationships but also day-to-day activities. Through a series of well-organized programs that included training seminars and social service initiatives, Phillips concentrated on creating a partnership model that connected universities, schools, and local communities. To break the "ice" and develop a close parent-child connection, the intergenerational gap needs to be closed by the combined efforts of both generations.

Several issues, including inequality, access, the caliber of the information, and the impact of new technology on children's educational and social development, have been brought up by the popularity of the internet. It has been observed that the older generation also seems to share this quality of ambivalence especially as their children become more expert with handling new technologies and the internet.

2.5.1 Different Perceptions of Relationships

It indicates that parents and teenagers may view their connection with one another differently. In a study, 2590 adult child and older parent dyads from the national survey of families and households were examined and their perspectives of intergenerational solidarity were contrasted. It is widely recognized that parent-child connections are among the most significant and are a significant factor in both generations' emotional and psychological well-being. These interactions have also been linked to different forms of help between the generations. Although there is generational consensus on some issues, the research found that parents are more likely to see their relationships with their kids favorably. Recent works have examined the social, and structural aspects of intergenerational relationships in later life which suggests that "societies and individuals within them are ambivalent about relationships between parents and children in adulthood".

2.6 Adoption Intention

The study, [20], suggested that the adoption intention to use a given technology has a significant influence on usage behavior. In general, the term adoption intention is defined as the individual's inclination to accomplish a given activity or behavior, for example when the banks introduced Internet Banking, there was the adoption intention by customers and it was successful in increasing the ease of transactions and the number of transactions, therefore there was a rise in profitability and revenues for the banking industry, [21]. Therefore, when drone technology is to be introduced for food delivery, then the consumers, as well as food and beverage suppliers, shall have the intention to adopt this effectively to gain the entire benefits from it.

The study, [22], from the University of Warwick, United Kingdom, it was found that perceived newness, perceived benefit, and product evaluation have a significant co-relationship with adoption intention. This therefore supports that in the digital era with process innovation and the search for convenience and speedy services, the usage of drone/UAV systems for food delivery is expected to be a fruitful choice. Moreover, [23], have concluded that drones are less expensive, faster, eco – friendly and so innovation may be positively related to the adoption intention of customers in favor of drone technology being

introduced for food delivery but privacy risks, delivery risks, performance risks and complexity are hurdles for the drone delivery adoption.

The study, [24], found that it is necessary to strengthen user perception in engaging any new products and services, therefore positive user attitudes and convenience motivation are vital in encouraging 732 respondents of users to adopt online food delivery in 10 cities in Indonesia. Moving on, in Fiji, it was understood that social influence is crucial in perceived usefulness and perceived ease of use for women to adapt themselves to tech-savvy goods and services, [25]. Further to that, [26], a study entitled "Drone Delivery Services: An Evaluation of Personal Innovativeness, Opinion Passing and Key Information Technology Adoption Factors" surveyed 182 respondents and found that marketing, technology adoption and personal innovativeness support customers' intention to adopt drone delivery services and hence this concludes that customers nowadays are mature and willing to accept drone delivery services. Recently, in 2020, Knobloch and Schaarschmidt identified that there exists physical risk, loss risk, financial risk, data risk, noise risk, harassment risk, or spy risk in engaging drone technology in delivery services, hence the risks shall be reviewed and prevented by suppliers willing to engage drone technology for food delivery, [27]. Overall, it can be seen from the above journal articles that the analysis of adoption intention for drone technology to be introduced for food delivery is positive and can be successful via marketing, technology adoption, social influence, perceived newness, perceived usefulness, and personal innovativeness. However, privacy risks, delivery risks, performance risks, and complexity shall be avoided when drone technology is to be introduced for food delivery so that customers feel secure and protected when engaging the services using drone technology.

2.7 Underpinning Theories

Established theories related to adoption behavior such as the TRA, TPB, TAM, TRI, and TRAM models will be reviewed as possible underpinning theories to be used in this study.

2.8 Technology Acceptance Model

2.8.1 Technology Readiness and Acceptance Model (TRAM)

TRAM is the latest development that blends the growing personality dimension of TRI with the unique aspect dimension of TAM. It discusses how personality factors can affect the experience of an individual, and how it incorporates new technology. The dimensions of TRI personalities are comparable to TAM. Throughout this case, the addition of actual use complements the previously conducted study.

2.8.2 Technology Readiness Index (TRI)

The Technology Readiness Index (as shown in Figure 1) methodology used was, to calculate the general beliefs and thoughts of an individual towards delivery drone technology. TRI was chosen because it could discern whether a person was a user of the technology. This may also group users in a more nuanced way based on positive and negative beliefs about the system. The study, [28], states that individuals who possess optimism and innovation, as well as experience less discomfort and feelings of insecurity, are more likely to adopt new delivery technology. They are optimism, innovation, discomfort, and insecurity.

2.9 Predictors of Adoption Intention in using Drone Technologies

Based on the idea of TRAM which has been tested through numerous studies, when a technology is taken into consideration on usefulness that might be a chance to use those technologies. TRAM suggests that the perceived ease of use and perceived usefulness are concurrently figuring out an individual's aim to utilize this technology.

2.10 Antecedents of Optimism

An extra-optimistic approach is generally more powerful in accomplishing the anticipated outcomes. In other words, optimists generally tend to bring awareness to bad activities and could get hold of the extra flawed technology. Optimism appears in the generation as extra beneficial and smooth to apply and they are now no longer so troubled about the bad outcomes of technology, [29]. Optimism is an inclination to trust that most humans will enjoy the best as opposed to the wrong matters in life, [30].

2.11 Delivery Risks

Delivery risks are generally the chance or probability of risk of default of delivery due to various factors and they may exist due to multiple factors such as physical risk, loss risk, financial risk, and performance risks. This list is not exhaustive because there could be other factors that may contribute to delivery risks. This means that the supplier of food delivery or service provider could

fail in accomplishing their side of services to customers and this is high in using drone/UAV systems for food delivery. In a 2020 journal article by Ngui entitled "Crashed! Why Drone Delivery is Another Tech Idea Not Ready to Take Off", delivery risks have been identified for engaging drone technology for food delivery because this area is unregulated, dangerous, and intimidating because confusion can arise in many ways, [31]. Therefore, there has been reluctance by food services to use drone technology for food delivery, [32]. Moreover, [33] found in his study entitled "How reliable does a delivery drone have to be?" explained that drones are subject to delivery risks due to sensor failure, gearbox or motor failure, logic failure, strike on the power line, tree, shotgun blast or bird, battery exhaustion, battery charging fault causing fire and malicious attack or hacking to disrupt delivery. Hence, the optimal solution to delivery risks whilst using drone technology for food delivery shall be taken to achieve reliability in using drone technology for food delivery. Apart from that, [34], in his study entitled "Exploring perceived risk in building successful drone food delivery services" examines the delivery risks' impact on the image of drones being reliable in food delivery services. In his study, it was concluded that there are time risks, performance risks, and psychological risks in delivering food to customers using drone technology and this leads to a negative image, thus reducing the adoption intention of food suppliers and customers. In addition, identified that there exist delivery risks such as physical risk, loss risk, financial risk, data risk, noise risk, harassment risk, or spy risk in engaging drone technology in delivery services, hence the risks shall be reviewed and prevented by suppliers willing to engage drone technology for food delivery.

2.12 The Conceptual Framework

This study is unique since the usage of drones is very limited and it has been used in other industries but none in food delivery services in Malaysia. In previous studies, TRA, TPB, TAM, TRI, and TRAM have been adopted in other fields such as border safety surveillance, photography, land survey, and medical and agriculture sectors but not in food delivery services. Hence, the usage of these underpinning theories is a new application for food delivery services.

The first gap in the usage of drone technology for food delivery services in Malaysia is still scarce. However, it has been widely used in the USA, Europe, and some Asian countries such as Singapore and Thailand. Hence, drone usage in food delivery can be applied and is a necessity in Malaysia. This vacuum is a good opportunity for food delivery services and other small businesses to embark on this advanced technology usage of drones in line with IR 4.0. The second gap is regarding very limited empirical studies conducted in Malaysia in drone studies compared to other countries such as South Korea, USA, Spain, etc. The third gap is the existing studies on drones have been conducted in other settings such as the telecommunication industry. Additionally, there is an effect of the generation gap on technology adoption. Millennials (generation Y) have often led older citizens in their adoption and use of technology, and this largely holds till today. However, older generations, such as Generation X and baby boomers, have seen a major increase in digital use, [35]. As a result, there is a pressing need to bridge the gap as technology continues to evolve.

Optimism, innovativeness, discomfort, insecurity, attitude towards adoption, and delivery risk are the personality dimensions that are viewed in technology readiness, personality dimensions affect people's tendency to embrace and use new technologies. In this regard with the dimensions, mental empowering is done through optimism and innovativeness, while acknowledgment and acceptance of new technology are mentally inhibited by discomfort and insecurity. Figure 1 shows the conceptual framework of the study.

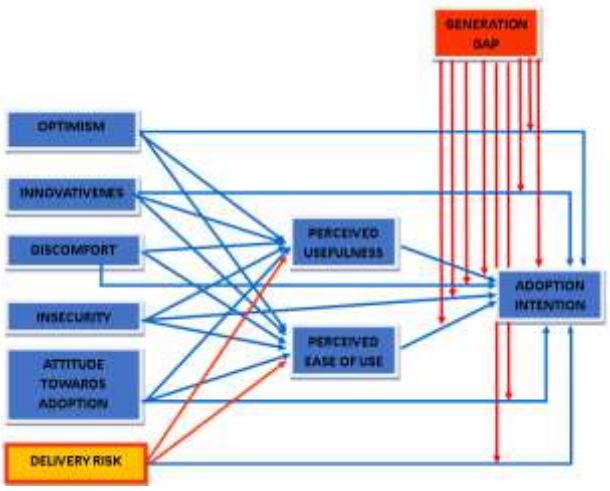


Fig. 1: The Conceptual Framework

3 Research Methodology

3.1 Research Design

Quantitative and qualitative research approaches will be the research designs of the study. This study adopted a quantitative cross-sectional data approach in the data collection process based on past studies. Thus, data will be collected, analyzed, and summarized statistically. Quantitative data will be obtained through an online survey to accommodate COVID-19 pandemic restrictions. This will enable us to obtain information relating to beliefs, attitudes, perceptions, or even opinions from other people in their natural environment, [36], [37], [38]. The online collection method will be conducted through social media platforms such as WhatsApp, Facebook, and Instagram. For qualitative technique, telephone interviews and online focus group discussions with selected food delivery service providers and collaborators (Easyfly Autonomous Solution Sdn Bhd and Civil Aviation Authority of Malaysia) will be conducted.

3.2 Sampling Method

Unit analysis of this study is consumers for the quantitative method and food delivery service providers for the qualitative method. For the quantitative method, a multistage sampling method will be conducted based on generation gap and location. Generation will be divided into four: Gen baby boomers, X, millennial (Y), and Z. The reason for selecting generation gaps is the adoption level of technology varies among each gap. The location will be in Kuala Lumpur, Selangor, Penang, and Johor, and selected food delivery service providers in Malaysia. The main reasons for selecting the four states are (1) drone services have been tested and used in main cities such as Cyberjaya, AirAsia Group Bhd, and lately, flood relief in Selangor (2) customers who ordered food delivery are busy and prefer convenience and are mainly from main states, (3) usage of drone are more suitable in main states to overcome traffic congestion (blog.dronebase.com), (4) the selected states are representing most developed and populous states in Malaysia.

For the qualitative method, the researchers will conduct telephone interviews with 15 selected food service delivery providers in Malaysia. Also, telephone interviews will be conducted with the Civil Aviation Authority of Malaysia (CAAM) and drone collaborator, Easyfly Autonomous Solution Sdn Bhd to interrogate information regarding rules and regulations on drone aviation policy.

3.3 Population

The population for consumers will be based on the population of citizens in each of the four states (Selangor, Kuala Lumpur, Penang, and Johor) selected for the study and the population of food delivery service providers will be based on all food delivery service providers in Malaysia.

3.4 Sample Size

The sample size is 384 or about 400 samples will be needed according to, [39], based on the sample size table which is calculated based on the population size specified above, i.e., the number of consumers in Selangor, Kuala Lumpur, Penang, and Johore and selected food delivery service providers in Malaysia.

The sample size for the qualitative method through in-depth telephone interviews is 15 selected food service delivery providers in Malaysia. The 15 food service delivery providers are selected using systematic random sampling i.e., every fourth company in the directory list. According to the four locations (Kuala Lumpur, Selangor, Johore, and Penang). Also, in-depth telephone interviews with two authorities will be conducted: the Civil Aviation Authority of Malaysia (CAAM) and drone collaborator, Easyfly Autonomous Solution Sdn Bhd to obtain information regarding rules and regulations on drone aviation policy.

3.5 Data Collection Technique

For the quantitative method, a non-probability online survey method will be used. Several studies have been conducted to validate the use of non-probability sampling for online surveys. For this study, 800 questionnaires will be distributed online using social media platforms such as WhatsApp, Facebook, and Instagram method to Malaysian consumers in Kuala Lumpur, Selangor, Johor, and Penang. The method will be used to ensure a high response rate, [40]. For the qualitative method, the researchers will conduct telephone interviews with 15 selected food service delivery providers in Malaysia. Also, telephone interviews will be conducted with the Civil Aviation Authority of Malaysia (CAAM) and drone collaborator, Easyfly Autonomous Solution Sdn Bhd to interrogate information regarding rules and regulations on drone aviation policy.

3.6 Measurement of Construct

The variables of this study will be adapted from relevant past studies (adoption intention of drone,

optimism, innovativeness, discomfort, insecurity, attitude towards adoption, perceived usefulness, perceived ease of use, and delivery risk). All measurements will be pilot-tested to determine their reliability and suitability for the drone sector using factor analysis. All variables are measured using a 5-point Likert Scale from 1-strongly disagree to 5-strongly agree based on arguments from past studies. For the qualitative method, structured questions will be designed to accommodate RQ1 and RQ2. Additionally, structured questions will be developed to tap information from focus group discussions (FGD) with collaborators, such as Easyfly Autonomous Solution Sdn Bhd and the Civil Aviation Authority of Malaysia.

3.7 Analysis Method

Analysis methods for quantitative for this study are descriptive statistics using Statistical Package for Social Science (SPSS) version 20.0 and structural equation modeling (SEM) using partial least square (SMARTPLS) version 3.2.7. Hypotheses will be tested with SMARTPLS 3.2.7 to predict the extent to which independent variables (optimism, innovativeness, discomfort, insecurity, attitude towards adoption, and delivery risk) explain the dependent variable (adoption intention) with the mediating effects of perceived usefulness and perceived ease of use, and the moderating effect of the generation gap. This quantitative analysis will answer research objectives three to seven (RO3-RO7). For the qualitative method, verbatim analysis of the interview sessions. This qualitative analysis will answer research objectives one to two (RO1-RO2).

4 Conclusion

A journal article entitled "Consumer Acceptance of Drones in Urban Areas" found that drones may still have a high level of significant delivery risks when engaged for commercial purposes in Pakistan and hence retailers are reluctant to convert their traditional delivery services modes to drone/UAV systems. This was also the position in the study by, [41], which highlighted that the emerging technology in drone technology proposes solutions for the environment and traffic but has delivery risks that outweigh its benefits, and hence may not offer a widespread solution in food delivery. Moreover, [42], says innovation and advancement in technology are vital for reducing delivery risks that exist when using drone technology. Even, [43], confirmed that delivery risks such as sensor failure, and gearbox or motor failure exist when using drone technology systems. Therefore, precautions and contingency planning are a must for businesses engaging drone technology in delivery services.

In conclusion, delivery risks exist when using drone technology in food delivery so delivery service companies shall analyze both the pros and cons and engage in strategic planning tools to reduce service delivery failure risks in using drone technology so that customer confidence and reliability are kept at a high level.

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Contribution of Individual Authors to the Creation of a Scientific Article (Ghostwriting Policy)

- Yaty Sulaiman, Bryan Tiew Wing Khong, Lee Kai Lun, and Mior Qayyum Izzudin Mior Khairi carried out the data collection.
- Yaty Sulaiman had conducted the write-up on the literature reviews.
- Yaty Sulaiman and Noor Hasmini Ab Ghani were responsible for the Statistical Analysis and write-up on the methodology and analysis.

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Conflict of Interest

The authors have no conflict of interest to declare.

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