Understanding Gen Z's Switching Intention to E-Commerce Drone Delivery: An Updated Diffusion of Innovation

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Abstract

Drone delivery is an emerging innovative service changing last mile delivery for e-commerce retailers. Understanding what mechanism influences online shoppers' switching intention in e-commerce drone delivery services is imperative at this technology's early development and adoption stage. Based on the lens of innovation diffusion theory, this research builds a psychometric research model to examine the switching intention of online shoppers from standard truck delivery to drone delivery services. An empirical survey and structural equation modeling are used for data collection and analysis. The findings suggest that the speed and compatibility of the drone delivery and other shoppers' service adoption behavior are significant predictors of their switching intention at this early adoption stage. Theoretical and practical implications are discussed based on the findings of the study.

Keywords: drone delivery, innovation, herd behavior

1. INTRODUCTION

An Unmanned Aerial Vehicle (UAV), commonly known as a drone, is an autonomous aircraft without any human onboard (Austin, 2010). Originally developed for military applications, drone technology into the civilian domain has been quickly adopted by various industries such as agriculture (Mogili & Deepak, 2018), disaster management (Tanzi et al., 2016), and healthcare (Yaprak et al., 2021). Drones also offer e-commerce industries a promising solution to the challenges associated with truck-dominated last-mile product delivery (Zhu et al., 2020; Leon et al., 2021) by offering faster delivery time, lower maintenance costs, and environmental friendliness (Lee et al., 2016). With this potential, large domestic retail companies such as Amazon, Google, and Walmart also have started pilot-testing drone delivery services for their needs (Wu & Lin, 2018). Australians have taken the lead in receiving the most products via drone delivery, experiencing a 500% increase (Business Wire, 2021). Globally the use of drone package delivery has grown from $0.68 billion in 2020 to $0.99 billion in 2021, at a compound annual growth rate of 45.5% (Business Wire, 2021). Furthermore, the growth of drone usage is expected to increase

more in the advancing days. The number of commercial unmanned aircraft systems registered with the Federal Aviation Administration that deliver purchased products or goods directly to consumers will rise to 70,000 in 2023, compared to 24,000 in 2020 (eMarketer, 2021).

Inflation, the Ukraine war, and the global pandemic have worsened environmental uncertainty, disrupting global supply chains. Due to the increasing number of unpredictable events, retailers are having difficulty filling and delivering orders on time. Order uncertainty has caused customers to feel anxious and dissatisfied (Yaprak, Kılıç, & Okumuş, 2021). Because Gen Zers are active users of e-commerce, they could feel the most impact during uncertain times. Eighty-seven percent of Gen Zers are Amazon Prime members or had been (Statista, 2022). Gen Zers are time- and cost-sensitive when it comes to online delivery. A fast and cheaper delivery service such as drone delivery could be crucial to Gen Zers during these uncertain times.

As an emerging technology, drone delivery research is limited and nascent, especially in understanding what would impact the acceptance of the last-mile drone delivery service (Yoo et al., 2018) for Gen Zers. Looking through the lens of diffusion of innovation theory (Rogers, 1983) and a herd behavior perspective, this study asks, "*As an emerging service with uncertainty, will drone delivery services offered by online retailers influence the behavior of Gen Zers who are online shoppers to switch to drone delivery?*" Additionally, this paper asks, *"Are there intention differences among different demographic groups of gender, neighborhood style, and Amazon membership?"* The objective is to examine the antecedents of Gen Zers' switching intentions from standard truck delivery to drone delivery and inform e-commerce vendors about developing and promoting this emerging service.

This paper is organized as follows. First, we present a literature summary on innovation diffusion, switching behaviors, and the Gen Z demographic. We then present our hypotheses and our methodology to test those hypotheses. Finally, we close with a summary of implications and future research.

2. LITERATURE REVIEW

Diffusion of Innovation Theory

There is a plethora of research using the Diffusion of Innovation Theory (Rogers, 1995) to help explain the factors that influence people's attitudes toward new innovations (Al-Jabri & Sohail, 2012; Tan & Teo, 2000; Thong, 1999). Since its introduction, this theory has made it the top list of most popular to study the factors that affect an individual to adopt innovative products, services, or technologies (Al-Jabri & Sohail, 2012). Many studies have applied the theory to different innovative service contexts to study people's adoption intentions and behaviors, including internet banking and mobile applications (Tan & Teo, 2000). Rogers (1995) proposed five constructs in the diffusion of innovations theory (DoI) on the work of Taylor and Todd (1995b) regarding the different dimensions of attitudinal beliefs toward innovations. These five dimensions are relative advantage, compatibility, complexity, trialability, and observability. Relative advantage refers to the extent to which an innovation is perceived to improve upon and/or supersede the performance of prior innovations (Rogers, 1995). The compatibility of innovation describes how familiar it is to existing consumers, consistent with the values of those who intend to adopt the innovation (Rogers, 1995). The degree to which an innovation is difficult to understand or use describes its complexity (Rogers, 1995). How much a person can experiment and use a technology describes its trialability, offering a limited installment of how the innovation functions (Rogers, 1995). Lastly, observability refers to how visible the use and practice of the innovation are in sight and noticeable to others in a social system (Rogers, 1995).

Previous literature indicates that relative advantage, complexity, and compatibility are more prominent factors influencing the diffusion of innovation (Kang et al., 2015; Agarwal & Prasad, 1998). We anticipate that for people to switch to using drove delivery service, the complexity of the technology itself (e.g., navigation, licensing, etc.) is hidden from immediate view from the consumer. Therefore, for the purposes of this study, we aim to look specifically at relative advantage and compatibility, as they are visible and more tangible to the e-commerce consumer.

Switching Behaviors

Switching intention refers to the decision of users to abandon current services and embrace new services (Bansal et al., 2005). Research has investigated a multitude of factors that have influenced people's switching intentions. For example, Sun (2013) proposed a new construct of "imitating others" in his longitudinal study of new technology adoption based on a herd behavior perspective.

Herd behavior has been witnessed in many consumers' behaviors in situations involving uncertainties and risks. For example, Keynes (1930, 1936) and other economists, including Minsky (1975) and Kindleberger & Aliber (2005), explained financial herd behaviors in the stock market as the outcome of the sociological and psychological forces in uncertain times. According to them, uncertainty encourages people to believe what others believe and do what others do. Studies involving technology also identify the same behavior patterns in using a new software application (Duan et al., 2009).

Imitating others means that "a person who is herding observes others and makes the same decisions or choices that others have made" (Sun, 2013). It differs from subjective norm - one of the most adopted constructs in IS research. Social norm (Fishbein and Ajzen, 1975; Davis et al., 1989; Venkatesh et al., 2003) refers to a person's perception of what others think they should or should not do. So, motivation-wise, imitating others meant avoiding costs or mistakes rather than being concerned for social impressions.

Gen Z

Generation generally refers to individuals born and raised at a similar time. Generation Z, or post-millennials, was born in the 1990s and raised in the 2000s (Pew Research Center, 2019). The specific social and economic developments associated with time will likely generate characteristics, attitudes, values, and capabilities unique to each generation (Berkup, 2014). Since the 1990s, personal computers and internet technologies have profoundly changed societies. Generation Z is born and brought up in a world filled with the internet, laptops, smartphones, Wi-Fi, digital media, and social networks (Bascha, 2011). New technologies are a part of the natural environment for Generation Z. They have grown to be the most technologically sophisticated generation and are called digital natives, .com generation, iGen, etc. (Levickaite, 2010).

Growing up with technologies, Generation Z has developed a high dependency on technology and is instant-minded (Singh & Dangmei, 2016). Speed addiction is part of Generation Z's most distinctive traits (Berkup, 2014). They want anything to happen quickly and instantly. Therefore, the faster speed offered by drone delivery is likely to be highly attractive and regarded by them. Second, although technology is part of Generation Z's identity, and they are tech-savvy, Generation Z is still in their teens or early 20s and reaching maturity. The excessive exposure and use of technologies have repercussions. For example, in a quest for social affiliation and virtual bonding, they can be less concerned about privacy and continuously share too much personal information on social platforms (PrakashYadav & Rai, 2017). They lack problem-solving skills and have not demonstrated the critical thinking to check a situation in context, analyze it, and decide (Joseph Coombs, 2013). Social influence becomes a significant predictor of their adoption of technologies such as e-Books (Srirahayu et al., 2021) and m-commerce (Meghisan-Toma et al., 2021) and their purchasing behaviors (Kahawandala et al., 2020). Generation Z likely demonstrates the same behavioral tendency in their switching intention to innovative technology-enabled drone delivery by imitating peers. Yet, there is little research about how these digital natives perceive and react to drone delivery.

3. HYPOTHESES DEVELOPMENT

Relative Advantage of Drone Delivery.

Many users are attracted to the relative advantages of delivery speed (Kornatowski et al., 2018). Rogers (1983) asserts that the critical driver for the diffusion of innovation is the relative advantages of the innovation. Previous research indicates that the more the perceived advantages, the higher the likelihood of innovation adoption (Agarwal & Prasad, 1998; Kang et al., 2015). Studies and surveys suggest that innovative drone delivery provides a significant benefit - delivery speed (Yoo et al., 2018). Online shoppers perceive a speedy delivery as the main advantage because drones fly over ground obstacles and in the optimal path and are not affected by road infrastructure or traffic congestion (Joerss et al., 2016). The packages can be delivered at the desired time because delivery time can be correctly predicted (Joerss et al., 2016). Accordingly, this study proposes that the perceived advantages of speedy delivery will lure online shoppers into switching from standard truck services to drone delivery.

H1: the relative advantage of delivery speed increases the switching intention from standard truck delivery to drone delivery.

Compatibility of Drone Delivery.

Tornatzky and Klein (1995b) find that innovations are more likely to be adopted when they are compatible with individuals' job responsibilities and value systems. Rogers (1983) defines compatibility as the degree to which an innovation meets the needs of potential

customers with experience and existing values. Extant research shows a positive association between compatibility and adopting new technologies such as Uber (Min et al., 2019). This research argues that if online shoppers perceive drone delivery to be compatible with their lifestyles and values, shopping preferences and habits, and new technologies acceptance attitudes, they are more likely to have a stronger switching intention to switch delivery services. Hence, we propose:

H2: the perceived compatibility increases the switching intention from standard truck delivery to drone delivery

Imitation of Drone Delivery

Sun's (2013) study suggests that imitation can help reduce post-adoption regret for making a choice; thus, potential adopters legitimate it as an effective strategy to choose a technology. Sun also points out that the two primary factors influencing "imitating others" are behavior observability and perceptions of uncertainty about the new technology. The previous discussion mentioned that observability is inapplicable in drone delivery due to unavailability. Thus, uncertainty is the main drive for online shoppers to imitate others in drone delivery. In other words, "imitating others" helps mitigate the uncertainty perception of innovations. Thus, we propose:

H3: imitating others positively affects switching intention from standard truck delivery to drone delivery.

Figure 1 illustrates the final research model for this research with hypotheses.

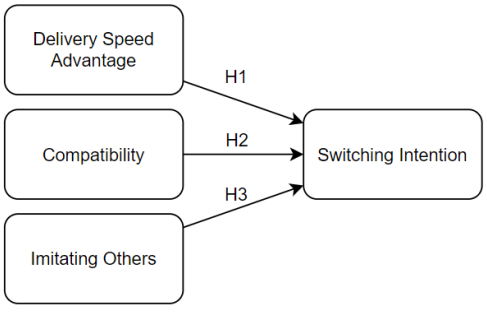

Figure 1: Research Model

Data Collection Procedure

This research studies the emerging character of drone delivery and how it affects a person's perceptions about switching to such services. Our experimental study asked the respondents to watch a video about drone delivery first. A scenario refers to a description of a possible future situation, including the path of development leading to that situation (Kosow & Gabner, 2008). Scenarios are not intended to represent a complete description of the future but rather to highlight a possible future's central elements and draw attention to the key factors. Our scenario asks respondents to step into the situation where researchers want them to be and answer the question, "what would you do in this scenario" (Bishop et al., 2007).

4. METHODOLOGY

Structural equation modeling (SEM) with SmartPLS and a PLS algorithm is used to test and analyze the hypotheses of our reflective research model (Hair et al., 2017). Partial Least Squares SEM allows us to explore and estimate hypothesized complex predictive relationships between latent constructs (Hair et al., 2017). The advantages of no assumption on normal data distribution and the model convergence on a relatively small sample size fit our proposed exploratory theory (Hair et al., 2017).

We collected our survey data from 83 undergraduate students at a business school. This group best represents Generation Z, our target demographic in understanding perceptions of drone delivery. All responses were recorded on a 7-point strongly disagree (1) – strongly agree (7) Likert scale except for the switching intention construct, which has multi-item semantic-differential scales. Different scales within the same survey questionnaire help lower common method bias, as suggested by research (e.g., Podsakoff et al., 2003; Heppner et al., 2008). In addition, manipulation questions such as speeder trap and attention filter are used to eliminate common method bias further (Oppenheimer et al., 2009; Meade & Craig, 2012; Berinsky et al., 2014). In the beginning, a draft of the adapted items was reviewed and pretested within a group of students consisting of six graduate and four undergraduate students. The items' wording and organization were revised based on the feedback to ensure clarity in the drone delivery context. Next, an online pilot survey collected 50 responses. The proposed original research model with the relative advantage in speed, compatibility, complexity, trialability constructs of diffusion of innovation theory, and additional imitating others construct was tested while observability was not because it is not applicable in the context. The insignificant results suggest eliminating the constructs of complexity and trialability in the context of drone delivery.

Instruments were also fine-tuned further based on the results from the data collected. At last, the survey questionnaire with 24 items, including questions to capture the demographics of respondents and usage patterns in shopping, was finalized and used to collect 83 effective responses. Table 1 shows the demographic snapshot of respondents of the main study.

Sample Size:	N = 83
Gender	%
Female	34.9
Male	65.1
Transportation Access	%
Yes	92.8
No	7.2
Commercial Drone Proximity	%
Yes	4.8
No	7.2
Amazon Prime Membership	%
Never had	7.2
Formerly, not currently	16.9
Current member	75.9
Current Neighborhood	%
Extremely close (tight)	32.5
Very close	36.1
Moderately close	27.7
Not close (distant)	3.6
Frequency of deliveries	*Avg*
Per month	1.8
Distance to the closest shopping center	*Avg*
Minutes	7.1

Table 1: Demographic Sample Statistics

Survey Instruments

The constructs in this study were measured using items adapted from previously validated studies (Appendix A). We adopt three likelihood semantic items from Bansal et al. (2005) to gauge the switching intention to drone delivery. For example, respondents were asked to rate the chance of switching to drone delivery, such as "the likelihood that you would switch from truck delivery to drone delivery." There are four items to measure the attitude of respondents towards the advantages of delivery speed offered by drone delivery. These items were initially designed to test the emerging technology diffusion process (Moore & Benbasat, 1991). Extant research has applied them to various technology-enabled service contexts such as mobile banking (e.g., Al-Jabri & Sohail, 2012). Imitating others was adapted from Sun (2013). We removed the three reverse-coded items after the first round of the pilot study due to the inconsistent survey results. Research indicates that reverse-worded items failed to prevent response bias and contaminated data due to respondent inattention and confusion (Sonderen et al., 2013). The final constructs and their associated definitions are presented in Table 2.

Construct	Definition
Delivery Speed Advantage (ADVS)	The improved relative advantage offered by drone delivery service over traditional truck delivery.
Compatibility (COMP)	The harmonious offering was given by drone delivery service with respect to traditional truck delivery.
Imitating Others (IMI)	The duplication of others' observed actions in the use of drone delivery service.
Switching Intentions (SWINT)	The committed resolve to use drone delivery service over traditional truck delivery (when available).

Table 2: Construct Definitions

5. RESULTS AND DISCUSSION

Measurement Model

The measurement model estimates the accuracy of variables (measurement items), the relationships between the measured variables, and the latent constructs they represent. This involves assessing and evaluating items' loadings, construct's composite reliability, convergent and discriminant validity, and overall measurement model fit. Table 3 provides the final operationalized items loadings, and Table 4 the descriptive statistics of each construct.

Nunnally (1978) suggests that composite reliability should be 0.7 or higher for a construct to demonstrate adequate reliability. Convergent validity refers to the extent to which items for each construct are related and measures the same construct, evaluated by average variance extracted (AVE). A larger than 50% variance in each construct is suggested (Hair et al., 2009). Table 5.

In contrast, discriminant validity ensures that variables of each construct are not interrelated and only measure their associated constructs. It can be evaluated using a Fornell-Larcker criterion

and a heterotrait-monotrait ratio of correlations (HTMT) in SmartPLS. The Fornell-Larcker values (square root of every AVE), reported in bolded font and the diagonal of the correlation matrix (Table 4), are larger than the corresponding off-diagonal correlations among any pair of latent constructs (Fornell & Larcker, 1981), indicating suitable discriminant validity. The HTMT is a new method outperforming classic approaches to discriminant validity assessment (Voorhees et al., 2016; Henseler et al., 2015). The values (Table 5) are smaller than 1, indicating good discriminant validity (Ab Hamid et al., 2017; Kline, 2011).

Item	ADVS	COMP	SWINT	IMI
ADVS1	0.841			
ADVS 2	0.905			
ADVS 3	0.888			
ADVS 4	0.808			
COMP1		0.728		
COMP2		0.781		
COMP3		0.806		
COMP4		0.824		
COMP5		0.717		
IMI 1			0.858	
IMI 2			0.916	
IMI 3			0.816	
IMI 4			0.825	
SWINT 1				0.964
SWINT 2				0.956
SWINT 3				0.938

Table 3: Outer Model Loadings

Construct	No. of Items	Mean	Std Dev.
Delivery Speed Advantage (ADVS)	4	5.12	1.13
Compatibility (COMP)	5	4.90	1.41
Imitating Others (IMI)	4	4.27	1.34
Switching Intentions (SWINT)	3	3.24	1.53

Table 4: Descriptive statistics for each construct

The overall standardized root mean square residual (SRMR) measures the model's residual discrepancies between observed and hypothesized correlations. Our SRMS (.090) is at par with the suggested cut-off values (Hu & Bentler, 1999; Byrne, 2016; Kline, 2011), demonstrating a good model fit (McDonald & Ho, 2002).

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Structural Model and Hypotheses Testing

Figure 2 and Table 6 summarize the model results, including the standardized path coefficients for each hypothesized relationship and associated ρ values. Our overall model's R^2, representing the variance explained in the

Variable	1	2	3	4	AVE	CR	α
1. Delivery Speed Advantage (ADVS)	[0.861]				0.742	0.967	0.884
2. Compatibility (COMP)	0.541	[0.772]			0.742	0.920	0.884
3. Imitating Others (IMI)	0.422	0.510	[0.855]		0.731	0.915	0.883
4. Switching Intentions (SWINT)	0.483	0.565	0.488	[0.953]	0.597	0.881	0.830

Note:
Model Fit Statistics: SRMR = .090, χ^2 = 287.4;
AVE: average variance extracted, CR: composite reliability, α: Cronbach's alpha, N = 83
√AVE represented on diagonal in [ ]
Confirmed both discriminant and convergent validity using Fornell and Larcker (1981) method

Table 5: Latent Variable Correlations, AVE, CR, and Cronbach's alpha (reliability)

exogenous construct Switching Intention is 0.402, a reasonable outcome measuring the model's predictive accuracy (Hair et al., 2011; Chin, 1998; Falk & Miller, 1992). Testing H1, the delivery speed advantage (relative advantage) resulted in a significant relationship to switching intention (β = 0.211, ρ = 0.049<0.05), showing support for this hypothesis. The direct relationship of compatibility is also found to be significant (β = 0.334, ρ = 0.002<0.01), supporting H2. The final relationship between imitation and switching intention is significant (β = 0.229, ρ = 0.012<0.05) supporting H3.

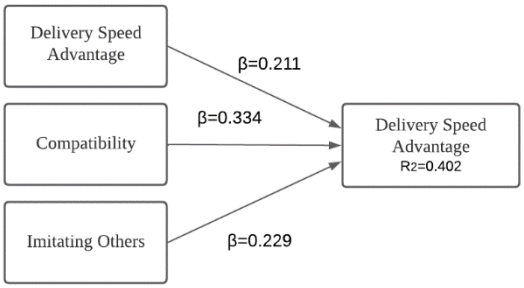

Figure 2: Model Results

Hypothesis	Supported
H1: ADVS -> SWINT	YES
H2: CPAT -> SWINT	YES
H3: IMI -> SWINT	YES

Table 6: Hypotheses Summary

Demographic Variations in Structural Model
For a study examining the interdisciplinary phenomenon, introducing controlling variables to check the influence of other extraneous or confounding variables can help enhance the model's internal validity (Tucker & Roth, 2006). Retailer proximity and shopping frequency are crucial factors that affect customer loyalty (Gahinet & Cliquet, 2018). However, this study did not find significant effects of the two variables. P-value is 0.984 for shopping center distance and 0.461 delivery frequency, with a 0.004 R^2 increase in the controlled model. Comparative analysis of drone delivery switching intention among demographics is strategically critical to understanding societal factors associated with attitudes and developing marketing campaigns. Hence, this research also runs multigroup comparisons across gender, AmazonPrime membership, and neighborhood styles. The group with less than ten respondences is excluded to ensure statistical power (Hair et al., 2017).

6. IMPLICATIONS, FUTURE RESEARCH, AND LIMITATIONS

Theoretical implications
Our study contributes to innovation diffusion and imitation as theoretical lenses. First, this study builds upon the diffusion of innovation theory that can help understand the reasons causing new technology adoption (E. Rogers, 1995; E. M. Rogers, 2010). Our study shows that speed and lifestyle compatibility are two variables critical to the increased intention of users to switch to drone delivery services. This finding confirms the importance of relative advantages and compatibility as two crucial attributes of innovations in drone delivery services. Thus, our finding increases the applicability and generalizability of the innovation diffusion theory to drone delivery services.

Second, unlike most innovation diffusion studies using adoption intention as the dependent variable (Salahshour Rad, Nilashi, & Mohamed Dahlan, 2018), this study adopts switching intention as the dependent variable. The dependent variable is the switching intention rather than the adoption intention, commonly used in the innovation diffusion theory. Using the unconventional dependent variable is another theoretical contribution to the current innovation diffusion literature.

Third, this study additionally adopts the theory of imitation (Kinnunen, 1996; Tarde, 2013) and incorporates the imitation variable into the research model. Our finding shows that users' decision to switch to drone delivery services depends on the suggestion-imitation process. The process is one of the primary reasons for the proliferation of social networks (Gibbs, 2008).

Furthermore, this finding corroborates previous studies on the influence of the imitation process on social movements, including adopting new technology and communication channels (Lee, Trimi, & Kim, 2013). The addition of imitation as the antecedent for the switching intention advances our understanding of drone delivery services. Increasing users' intention to switch to drone delivery services needs to improve technology capability, computability, and imitation process.

Practical implications
Gen Z-ers are particularly fascinated by the significant technological improvement of delivery speed over traditional trucking services. Suppose

e-commerce providers, such as Amazon, can deliver goods in a much shorter time frame (30 minutes for Prime Air services) than the current delivery speed (one to two days). In that case, Gen Z-ers are motivated to switch to drone delivery services. Therefore, e-commerce providers should focus on improving their own logistics systems or partner with logistics service providers (e.g., UPS and FedEx) to continuously improve the velocity of drone delivery services.
Drone delivery fits the mobility and technology-saturated lifestyle of Gen Z-ers. Generation Z or Gen Z are people born between the mid-late 1990s and the early 2010s. Gen Z-ers are digital natives accustomed to using social media, smartphones, apps, and other emerging technologies in their everyday lives (Kurzu, 2017). The mobility and technology-saturated lifestyle enable Gen Z-ers to learn new technologies proactively. Drone delivery services are another new technology compatible with Gen Z-ers' lifestyles. E-commerce vendors can focus on recruiting Gen Z-ers who are innovators or early adopters to experiment with drone delivery services. If these pioneers love drone delivery services, they will quickly inform and influence others to embrace them.

Observability or visibility is indispensable for the diffusion of innovation (Magsamen-Conrad & Dillon, 2020). Users are more likely to adopt or switch to an unproven technology if they see more people using it. Our study shows that the imitation process is the result of observability. When users see others using drone delivery services, they are more likely to embrace it while moving away from the current delivery method. The leading short video platforms, such as Tiktok, have leveraged the mimesis logic and design to encourage viewers to imitate and replicate popular videos to alter modes of sociality (Zulli & Zulli, 2020). E-commerce vendors may want to leverage the social community or social influencers to improve the visibility of drone delivery services. The increased visibility can ultimately result in the increased intention of users to switch to drone delivery services.

Gen Z-ers grew up understanding new technologies and their technical benefits. This new generation of users is more receptive to unfamiliar technologies, such as drone delivery services. Our study suggests that Gen Z-ers are comfortable switching to drone delivery services if they can fit (compatibility) in their mobility lifestyle and deliver on their promise. E-commerce vendors and logistics service providers may be able to take advantage of a ripe market and attempt to overcome any technical glitches or barriers to innovating better drone delivery services.

Limitations and future research directions
The study has several limitations even after conducting a rigorous design and control of survey instruments and data analysis. First, this study surveyed only American subjects who had never used drone delivery services. Although respondents did spend time watching two short videos and learning about the benefits and risks of drone delivery services, they lacked real-life experiences of using them in their daily lives. Therefore, the findings based on these limitations may not generalize to other non-American subjects and users who have already had experiences using drone delivery services. Future research can survey users from different countries (e.g., Australia, China, and the United Kingdom) with varying drone delivery experiences.

Second, all subjects surveyed in this study are college students from a regional American university. These students are the best candidates for Gen Z-ers because they are educated and affluent with using different technologies to maintain their mobility and technology-saturated lifestyle. Surveying these subjects can provide a realistic observation of drone delivery adoption behaviors. Although Gen Z-ers are an excellent segment for drone delivery services, the findings of this study cannot be generalizable to other customer segments who are non-Gen Z-ers. Future research can also collect data from other populations to provide more insights into diverse drone delivery switching behaviors.

Third, this study closely examines the influence of two critical predictors for the rate of innovation adoption: relative advantage and compatibility (Min, 2019). However, this study did not examine the other critical elements of any innovation adoption: complexity, observability, and trialability. This study purposely eliminated these elements because respondents did not have prior knowledge or experience using drone delivery services. Future research can include these elements into the survey design by expanding this study with subjects with the experience of using drone delivery services.

Fourth, this study selects two short videos to ensure that subjects have exposure to the same information regarding drone delivery services. The questions used in the survey may not be able to fit perfectly with the content of the selected videos. As a result, the content and quality of

these videos may have influenced the survey results. However, the current research design could not filter out the uncontrollable bias. Future research can continuously look for videos more compatible with survey questions.

Fifth, this study developed an integrative research model by combining innovation diffusion and imitation theories. The factors derived from these theories provide limited observations about the switching behaviors of Gen Z-ers to drone delivery services. Although the integrative research model can explain 40% of the switching intention variability, other factors can further improve the predictive power. Future research can consider adopting an interdisciplinary perspective to better understand the switching behaviors of drone delivery services.

Last, our findings are about users' perceptions about switching to drone delivery services. Future research can use the qualitative research methodology for interviewing users to gain first-hand experiences using drone delivery services in everyday life (Kaufmann, Peil, & Bork-Hüffer, 2021). The qualitative approach can help cross-examine the findings of this study and provide richer observations of drone delivery switching behaviors.

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APPENDIX A
MEASUREMENT ITEMS

A1. Construct Measurement Items

Construct	Item	Reference
Relative Advantage (7-point Likert)	Drone delivery is a speedy way to deliver orders	Al-Jabri et al., 2012; Moore and Benbasat, 1991
	Drone delivery allows me to receive orders quickly	
	Drone delivery is useful in shortening the order delivery time	
	Drone delivery gives greater control over the speed of my delivery	
Compatibility (7-point Likert)	Drone delivery fits well with the way I like to manage my online order delivery	Al-Jabri et al., 2012; Moore and Benbasat, 1991
	I like to try new technologies	
	Drone delivery is compatible with my lifestyle	
	Using drone delivery fits into my online shopping style.	
Imitating Others (7-point Likert)	It seems that drone delivery is the future dominant shipping service, therefore I would like to use it as well	Sun, 2005
	I would follow others in accepting drone delivery	
	I would choose to accept drone delivery because many other people are using it	
	If I know that a lot of people have already accepted drone delivery. I might choose drone delivery.	
Switching Intention	Rate the likelihood that you would switch from truck delivery to drone delivery (Likely – Unlikely)	Bansai et al., 2005
	Rate the probability that you would switch from truck delivery to drone delivery. (Probable – Not Probable)	
	Rate the chance that you would switch from truck delivery to drone delivery (Certain – No Chance)	