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Publication metadata

Title: An Adapted TPB Approach to Consumers' Acceptance of Service Delivery Drones

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Journal: Technology Analysis & Strategic Management,

DOI/Link: <https://doi.org/10.1080/09537325.2016.1242720>

*This is an Accepted Manuscript of an article published by Taylor & Francis Group in Technology Analysis & Strategic Management on 12/10/2016, available online: <https://www.tandfonline.com/doi/full/10.1080/09537325.2016.1242720>.*

How to cite this post-print from LAUR:

Ramadan, Z. B., Farah, M. F., & Mrad, M. (2017). An adapted TPB approach to consumers' acceptance of service-delivery drones. Technology Analysis & Strategic Management. Doi: <https://doi.org/10.1080/09537325.2016.1242720>/Handle: <http://hdl.handle.net/10725/7207>

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## **An Adapted TPB Approach to Consumers' Acceptance of Service Delivery Drones**

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## **Abstract**

Organizations and marketers have long debated the consumer–brand relationship. Theorizing related to this debate led to self-service technologies (SSTs), which were implemented to both reduce costs and increase productivity by turning customers into co-producers of services or merely to keep up with technological developments. With the emergence of disruptive technologies, it is imperative to discuss the potential shift from a customer co-created value to a customer-technology relationship that could disrupt the value-based relationship model. In line with advancements in service delivery drones, and based on the theory of planned behavior (TPB) framework, this paper pioneers the discussion on consumers' intention to accept their use based on their related perceived risks, potential functional benefits, and relational attributes, leading to a new type of relationship with the brand –namely, the customer–drone relationship. This discussion opens a new direction for retailers and academics alike to reflect on during the coming years.

**Keywords:** drones, consumer–brand relationship, globalization, self-service technology

## **Introduction**

Technological advancements are changing the ways customers and shoppers interact with brands and retailers alike (Orel and Kara 2014). Nowadays, retailers are shifting to the vigorous employment of diverse technologies to execute complex activities (Meuter et al. 2005). This shift generally results in reduced employee involvement and increased customer participation in both service creation and delivery, bringing about both new opportunities and challenges to retailers (Anitsal et al. 2002). In order to cope with the technological advancements, retailers are increasingly embracing an assortment of self-service technologies (SSTs) (Orel and Kara 2014).

Self-service technologies have been defined by Meuter et al. (2000, 50) as “technological interfaces that enable customers to produce a service independent of direct service employee involvement”. Retailers often adopt such technologies in order to offer technology-based self-service delivery options to their customers through various mediums, including: vending machines, automated telephone services, automated teller machines (ATMs), touchdown screen stalls in shopping centers, automated self-ordering machines at fast-food restaurants, and self-checkout machines at grocery stores (Anitsal et al. 2002). The utilization of such information technology developments has improved self-service delivery and transformed the service setting by enhancing customer involvement (Lin and Hsieh 2011). In fact, SSTs do reduce costs and increase productivity by turning customers into co-producers of services (Hilton et al. 2013; Meuter et al. 2005; Roggeveen et al. 2012).

In order to stay competitive in globalized markets and keep up with technology advancements, companies must continuously provide customers with easier services and seamless access to needed products. These innovations have a noteworthy impact on the interaction and communication patterns between retailers and their customers and, ultimately, on customer satisfaction and loyalty to particular retailers. In this context, it is crucial to shed light on the emergence of new technological developments, particularly those implemented through the adoption of service-based drones. The adoption of such technologies is responsible for the shift of the consumer–brand

relationship from a customer co-created value (e.g., Automatic Teller Machines - ATMs) to a customer–technology relationship (e.g., drones).

In line with the materialization of the technology based on drone-service delivery, this conceptual paper is the first to examine the emergence of drones as a service-based technology in retailing provided the customer accepts to utilize the latter service-delivery technology. Based on the perceived risks (safety risks, privacy risks), functional benefits (service quality and performance), and relational attributes (drone personification), this paper discusses consumers' acceptance of the drone technology by applying the theory of planned behavior model (Ajzen 1991). The latter is a widely used and largely validated model that can readily be adopted to predict customers' attitude toward drone usage, and hence their intention to adopt this service delivery mode in the future. Indeed, the literature has proven the TPB with its main three components namely attitudes, subjective norms and perceived behavioral control (PBC) to predict "behavioral intention" with a relatively significant precision, and hence, to be a viable and effective model in predicting the acceptance of numerous SSTs by customers (e.g., Chen et al. 2009; Demoulin and Djelassi 2016). The discussion of the paper concludes with the potential implications of the adoption of this technological breakthrough for marketing practices, and proposes recommendations for future research.

### **Drones: Unmanned Aerial Vehicles (UAVs)**

Drones, autonomous, or tele-operated flying machines have recently captured the interest and imagination of consumers, although they have been an active area of research for decades (D'andrea 2014). As drone usage for commercial intent is currently being devised, drones are slowly proliferating into our world and, more specifically, into shoppers' lives. Indeed, the use of unmanned aerial vehicles (UAVs) or unmanned aircraft systems (UASs), also called drones, for commercial applications offers great potential to be investigated (Ravish 2015). According to the Association for Unmanned Vehicle Systems International, by 2025, the drone industry will employ 100,000 people and be worth \$82 billion globally (Holden 2014). Proponents lobbying for the enactment of laws allowing the usage of drones for commercial purposes argue that this industry will require a considerable manufacturing workforce specialized in the design, operation, and maintenance of these devices which would result in additional earnings directly benefiting consumers and the economy as a whole (Joel 2013).

The shopper is expected eventually to start considering drones not only as part of the brand, but also as part of the retail experience as a whole. The drone — whether a delivery tool at Amazon.com or a brand activation touch point means — will become a core element of the interaction with the brand. As a result, the relational experiences between the consumer and the brand will have to be re-assessed in instances where the drone is acting as the main interface in this relationship. Indeed, relational experiences in the form of customer–brand and customer–customer interactions related to the brand are becoming increasingly important (Keeling et al. 2013). Remarkably, marketing actions have shifted from a focus on functional features and benefits marketing to being centered around marketing experiences (Schmitt et al. 2014). These activities are gradually being conquered by the digital world, with the expectation that the coming years will be marked with a different cycle of striking changes, presumably calling upon consumers to become more involved with technological machines like drones (Schmitt et al. 2014).

UAVs are expected to invade the commercial sector soon through uses in at least five areas: (1) aerial imaging, including video and photography for news and journalism, event planning, landscaping, real estate, and film making; (2) agriculture, by being paired with farming apps to be used by farmers managing broad areas of land, crops, and livestock; (3) disaster relief and public service and safety as drones facilitate tracking fires, surveying damages, and locating injured individuals; (4) advertising, with for instance a hexacopter flying at low altitudes to provide banner advertising; and, last but not least (5) product transport and drone-delivery services. The use of such devices for commercial purposes in the USA is expected to gain the approval of the Federal Aviation Administration (FAA) during 2016.

The three giants of the freight, forwarding and logistics industry — namely, DHL, FedEx, and UPS — recently launched intensive research to determine their firms' capabilities of using these artificially intelligent devices within their delivery services. Aiming to tap into UAVs' ability to deliver faster, safer, and cheaper services, these companies are exploring the possibility of using drones for service delivery, which could extensively affect how promptly and easily packages could be delivered, especially in dangerous or remote areas (Hern 2014). Indeed, in 2014, DHL tested its microdrone copter in a restricted flight area of 12 kilometers from the town of Norden in North Germany to the North Sea island of Juist to deliver medicine rapidly. While freight and logistics companies in the West are still struggling to get through their testing stage, packages are already up in the air in China. SF Express, China's largest mail carrier, currently distributes more than 500 packages daily via drone in cities in southern and eastern China. In fact, drone usage for commercial delivery purposes is legal in China, with companies only having to obtain approval from the aviation authorities based on the kind of drone utilized (Engelking 2015).

Despite the evolution of drone-related regulations at different paces in various countries, the increasing appeal of using drones as cost-effective tools in numerous sectors remains restrained by two major challenges: (1) getting legal approval for utilization based on yet-to-be-completed regulatory policy in most countries, and (2) ensuring a positive public perception related to the effect of drone usage on customers' safety and privacy (Windju 2015).

### **Worldwide Legal Environment Regulating Commercial Drones**

UAVs present unparalleled and challenging legal concerns. The various regulatory bodies working on policy for the testing and utilization of drones for commercial purposes are evolving at various speeds, with the USA seemingly lagging behind the UK, China, Australia, and even Brazil.

In the USA, the planning for regulation of commercial drones under the FAA began in 2007, yet to date no concrete applicable law has been enacted to allow for the testing of this technology, despite various retailers' ambitious claims. The reason for this delay may be related to the fact that drones seem to challenge the Fourth Amendment to the United States Constitution, which entitles the American people to personal privacy (Sengupta 2013). The slow progress of the regulatory process in the USA has encouraged companies keen to tap unto the various opportunities that drones can offer to perform delivery-testing operations in other countries that are more permissive to drone testing endeavors. These countries include: (1) the UK and Canada, where Amazon.com has immigrated to test its multi-copter delivery drones developed to carry a five-pound load, which is enough to deliver most of the products on its inventory; (2) China, where Alibaba.com, the giant e-company, tested tea bags drone delivery for 450

customers over 3 days in February 2015; (3) Brazil, where a local bakery tested the delivery of its products in São Paulo in April 2015; (4) Australia, where Google started testing its 'Wing' delivery project in 2013 (Madrigal 2014); and (5) Russia, which - despite its strict UAV regulations - allowed for the testing of pizza drone-delivery as the device fell under regulations given its size, weight, and radio frequency (Windju 2015).

Eager to explore the potential of drones in their business, global brick-and-mortar retailers have started using these devices as a shopper-marketing tool within their retail spaces to help shoppers lift selected SKUs to their trolleys or as product sampling tools within stores. As we consider the commercial potential drones offer for shoppers to engage with products featured in stores, the possibilities are endless. For instance, the shoe manufacturer Crocs inaugurated a store staffed by drones in Tokyo to promote its new pair of Norlin sneakers. To highlight its exceptionally lightweight sneakers, Crocs developed a fleet of drones with arms built to pick the sneakers off the shelves and deliver them to customers inside the store (Alba 2015). The entire customer experience in the store is automated, with minimal human interaction, opening the door to the evaluation of how this innovative customer-drone relationship may affect consumers' perceptions of retailers utilizing drones.

### **Consumers' Perceived Risks of Drones' Usage**

Together with the numerous opportunities that drones promise in the commercial sector, there is indisputably growing fear on the side of the customer that the rise of automation linked to drones usage will lead to (1) a decrease in privacy and (2) an increase in safety issues (D'andrea 2014). These two possible consequences, together with the law governing citizens' rights, may be the factors moderating the speed at which legislation is evolving in various countries.

#### ***Privacy Risks***

The commercial drone usage – if permitted – will introduce compelling privacy concerns to consumers given the devices' capabilities to collect a wide range of data by legitimately invading people's personal spaces. Regulatory bodies distinguish the complexity of keeping track of all the people who – once allowed – could use drones irresponsibly, posing a threat not only to national airspace, ground safety and national security, but also to citizens' or consumers' privacy. Indeed, the authorization of drones' utilization fuels consumers' apprehension about their privacy and security, as the technology is believed to be easily used for surveillance and cyber spying, thereby allowing for the collection of large pools of data through facial recognition cameras, digital imprints, thermal imaging, mobile devices snooping, etc. Hence, before consumers accept drones as a requisite device in the new delivery arena, drone manufacturers, security firms, governments, and regulatory bodies need to cooperate to regulate flight permissions based on the premise of minimizing aerial threats and protecting customers' privacy (Ravish 2015).

#### ***Safety Risks***

In the context of this paper, and based on previous definitions of consumers' perceived risks (e.g., Dowling and Staelin 1994), the authors define perceived risk as consumers' perception of the possible uncertainty and unpleasant outcomes resulting from the

usage of a drone. Given the states of anxiety and distress that may be caused by high levels of perceived risks (Martins et al. 2014), it is vital to examine the latter effect on the attitude and acceptance of drone usage. According to Martins, Oliveira, and Popovič (2014), perceived risk is negatively related to adoption intention. In their theory of planned behavior, Ajzen and Fishbein (1980) demonstrate that attitude is positively related to intention; and interestingly, that one's perceived behavioral control (PBC) also affects his/her intention to behave in a certain manner; consequently, perceived risk is likely to be negatively related to one's attitude and ultimately intention to use a drone.

With the increased testing of drones and the permission for them to be used for commercial purposes becoming a closer reality, the probability of accidents and mid-air collisions is no longer theoretical. In fact, the news increasingly reports accidents in various parts of the world where drones are flying (Ravish 2014). These incidents have certainly exacerbated the anxiety of both legislators and citizens, who see their lives threatened by the overwhelming automation surrounding them.

In addition, customers may be apprehensive of the risks of drone delivery services and potential logistical roadblocks. Typically, established postal and delivery services are held accountable for property that is damaged or stolen during the distribution process. In contrast, retail organizations launching drone deliveries will not be able to guarantee faultless deliveries, especially in major cities, where accessing apartments within skyscrapers can be extremely challenging.

Only once retailers have dealt earnestly with all citizens' related concerns will customers start acknowledging the drone delivery service as "a faster, safer and more economical delivery mode than shipping via overland routes" (Harell 2014). Accordingly, regulations designed to ensure air safety should be applicable to drone operations (Clarke and Moses 2014). Thus, we propose the following proposition:

P1: The lesser the perceived risk driven by both privacy and safety concerns, the more favorable the consumer's attitude toward the use of the drone.

### **Functional Benefit of Drones' Usage**

In the near future, the main role of commercial drones in the retail sector will be related to delivery service. When consumers see no perceived benefits in the use of self-service technologies (SSTs), they either dismiss such services or delay their use unless forced to use them (Liljander et al. 2006). Previous studies on the use of SSTs revealed the performance of the service to be a crucial variable in the use of technologies (Meuter et al. 2005). Accordingly, the performance of the drone delivery service is expected to be of utmost importance for customers.

Based on the latter rationale, the future development of related empirical studies will need to measure the functional benefit of drone's usage to customers. Despite their individual limitations (Bagozzi 2007), many of the extant theories in the literature – such as the theory of reasoned action (TRA), which was at the base of the TPB, the technology acceptance model (TAM), the technology readiness index (TRI), and the service quality model (SERVQUAL), to name a few – can be considered to develop the construct of the "functional benefit of drones' usage". Indeed, the main tenet of the TRA is that an individual's perception of the outcomes of performing a certain behavior influences his/her attitude toward the related behavior (Fishbein and Ajzen 1975). Moreover, the technology acceptance model indicates that the perceived usefulness of a technological innovation's adoption in terms of improving one's job performance

may influence his/her attitude toward the innovation, hence resulting in the intention to use the innovation (Davis et al. 1989; Porter and Dontu 2006). TAM also suggests that the perceived ease of use of technology influences one's decision about how and when to adopt the innovation. Similarly, the TRI, referring to an individual's tendency to adopt new technologies to achieve personal or work-related goals (Parasuraman 2000), indicates that consumers are motivated to embrace an innovation mainly because of the functionality and usefulness of the specific innovation (Lin et al. 2007). On a related note, Meuter et al. (2000) highlight that the concept of "did its job" is usually connected to the specific adoption of technology-based self-service (SST).

In the particular context of the service delivery drone, the performance of the drone is described in terms of how the consumer perceives the technology-based self-service reliability and accuracy. This is supported by Dabholkar's (1994) study, which describes the concept of performance, as perceived by the consumer, in terms of the reliability and accuracy of the self-service technology. Indeed, reliability has been recognized in the literature as a significant element in the assessment of (SERVQUAL) the quality of a given service (Parasuraman et al. 1988). According to Evans and Brown (1988), customers may be particularly concerned about the reliability of SSTs because they may foresee some performance risk related to these services. This risk perception linked to a given SST significantly affects consumers' attitude toward its use (Weijters et al. 2007). In addition, the satisfactory performance of a self-service technology is usually positively related to the attitude that a customer holds towards it (Dabholkar and Bagozzi 2002).

In support to the previously discussed literature, and given that drones consist of a technological advance that is somewhat similar to SST, consumers' perception of a drone's performance is predicted to affect their attitudes toward its usage. Thus, we hypothesize the following:

P2: The higher the drone's service performance, the more favorable the consumer's attitude toward its usage.

Much of the anxiety related to commercial drones' usage stems from their ability to collect and save large amounts of information on consumers. However, as soon as drones demonstrate their ability to execute delivery services more effectively and efficiently than traditional delivery medium, consumers are expected to start not only accepting them, but also perhaps demanding them from companies. This expectation stems from the wide and previously unforeseen acceptance of consumers to carry their mobile phones everywhere, in full knowledge that they can transmit their location – and much more information that is far too personal – to any entity with a developed tracking system. The latter fact acts as a showcase that consumers have already willingly handed some of their privacy over to companies in return for convenience and efficiency, which altogether may predict their possible acceptance of commercial drones in the near or medium term (Morrison 2015).

### **Relational Attribute of Drones: Drone personification**

Developing a relationship with consumers is considered the most valuable direction for companies today as it drives loyalty and consumer engagement (Algesheimer et al. 2005; Valta 2011). Relationship marketing (RM) efforts, a key element in any company's marketing strategy, include all activities directed toward establishing, developing, and maintaining successful relational exchanges (Morgan and Hunt 1994).

At the core of the RM process is a focus on long-term customer relationships, rather than a transaction-oriented approach. Outcomes of successful RM efforts include customer loyalty, positive word of mouth, and expectations of continuity from customers, leading to increased firm performance (Palmatier et al. 2006).

With the commoditization of the marketing mix elements where differentiation cannot be sustained, the most valuable asset to companies becomes the relationship with their consumers (Harker and Egan 2006). The basis of this relationship is driven by a strong brand identity, value proposition and credibility (Aaker and Joachimsthaler 2009), two-way communication, interactivity with consumers, emotional exchange (Veloutsou 2007), and a deep understanding of the consumer (Aaker and Joachimsthaler 2009). For the relationship to develop, commitment from both parties in the relationship is a necessary condition (Morgan and Hunt 1994), where trust and commitment become key drivers of the long-term success of the consumer–brand relationship (Chen et al. 2014).

A relationship with a customer develops because of the development of a strong brand identity (Aaker and Fournier 1995; Lin and Sung 2014). When the brand is viewed and related to as a person, its identity becomes the key influencer in the brand–consumer relationship (Stokburger-Sauer et al. 2012). In this respect, brands are perceived as having their own personality to which the customer can relate (Stokburger-Sauer et al. 2012). This concept is inspired by the actions and behaviors of a brand, which foster the brand’s personality (Fournier 1998). The different behaviors entail specific personality traits with which consumers can associate (Huang et al. 2014). Consequently, brand personality is based not only on consumer perception, but also mainly on the attitude and behavior of the brand and their consistency (Hayes et al. 2015). The brand is linked to the consumers’ self-concept and living patterns, which will determine the consumers’ interests, values, and beliefs and drive their long-term commitment to the brand (Aaker and Joachimsthaler 2009).

The integration of drone technology into retailers’ delivery process implies a consumer–drone–retailer relationship, whereby the drone acts not only as a delivery agent, but also as a tangible representation of the retailer’s service. The functional benefit that the drone provides in this instance is closely associated with its service provider (Walker 2008). In this context, the drone as a person identity is based on a developed brand personality and advanced person-like attributes (Huang et al. 2014). This is based on previous theories suggesting that a relationship between the consumer and a brand entity is similar to intra-personal relationships (Fournier 1998; Naziri et al. 2015). As such, consumers might establish a close relationship with a drone by anthropomorphizing it (Dai 2015). This potential drone as a person relationship considers the levels of attraction, commitment, and exclusivity in the relationship (Li and Li 2014). Dabholkar (1996) establishes that consumers’ need for human interaction acts as an inhibitor to technology readiness; however, this may not be the case with commercial drones manifesting a similar interaction with the consumer as that between humans (Ferreira et al. 2014). Thus, we suggest the following proposition:

P3: The higher personification of the drone, the more favorable the consumer’s attitude toward its usage.

### **Adapted TPB Approach to Delivery-service Drone Usage**

Considering the lack of either theoretical or empirical work on the customer–drone relationship, the researchers chose to follow a cognitive route to advance understanding

of the customer–drone adoption decision. Therefore, a succinct form of the theory of planned behavior is used to propose a conceptual framework for this work. As one of the most dominant models of attitude–behavior relationships, the TPB offers an adequate conceptual framework for the assessment of attitude toward delivery service–drone usage and its usage intention. At the core of this causal model adoption is the assumption that human beings take into account all available information and consider the implications of their actions (Ajzen 1991) and that consumers’ intention to use delivery-service drones is the immediate determinant of that particular action. Indeed, the TPB has been effectively applied in the literature to both understand and predict the usage of various technologies by individuals (Mathieson 1991).

According to the TPB, a person’s performance of a particular behavior is determined by his/her intention to perform that behavior. This intention is chiefly a function of one’s attitude toward the outcome of that behavior (Ajzen and Fishbein 1980). Attitudes are defined as “general and enduring positive or negative feelings about some person, object or issue” (Petty and Cacioppo 1981). Attitudes are also conceptualized as stable underlying dispositions used to evaluate psychological objects or issues. The current study adopts this last definition, which stresses the affective component of attitudes and in which the evaluation is based on a dimension of favor or disfavor, good or bad, and like or dislike (Ajzen and Fishbein 2000). The attitude toward the behavior is simply the individual’s positive or negative feelings about performing the target behavior. A person is likely to have a more positive attitude toward performing an act if he or she believes the behavior will have consequences of a greater magnitude and these will be positive. In addition, attitudinal research theorized that attitudes would have a strong, direct, and positive impact on intentions (Fishbein and Ajzen 1975).

The idea that attitudes influence behavioral intentions (Farah and Newman 2010) has been widely examined in the literature in the context of technology adoption (Dabholkar 1996). Attitudes toward particular technologies can still be adequately assessed despite the fact that the concept of technology is generally not very stable, as people tend to form specific related attitudes (Daamen et al. 1990). Explicitly, the attitude toward using the drone as a delivery-service agent is expected to influence positively consumers’ intention to use or accept the retailer’s drone.

Hypothetically, the TPB also posits that two basic assumptions must be met for a given behavior to be adequately predicted. First, it should be assumed that humans are rational beings who can systematically use the information available to them in order to arrive at a behavioral decision in a reasonable manner. In this case, the availability of reliable information, which would decrease the perceived risks associated with the use of delivery-service drones, would favorably affect consumers’ attitude toward drone usage. Second, the TPB supposes that people consider the implications of their actions before they decide to engage or not in the behavior. If the consumers perceive the functional benefits of adopting the drone to exceed its drawbacks (i.e., perceived risks), and hence recognize the positive implications of this drone usage on their relationship with the retailer, they will be more likely to accept and adopt this technological advancement.

In addition, a central factor in the TPB is the individual’s intention to perform a certain behavior (Ajzen and Driver 1992). In this research, intention is the cognitive representation of a consumer’s readiness to adopt the usage of delivery-service drones, and it is considered to be the immediate antecedent of future drone adoption once this technology becomes a reality in the retail environment. Based on the earlier discussion,

and given the support of the belief–attitude behavior relationship in researching technology adoption, we suggest:

P4: The attitude toward drone usage will influence a consumer’s intentions to use that drone.

It is important to highlight at this point the principle of correspondence advanced by Fishbein and Ajzen (1975), explaining that when broad attitudes are used to predict specific actions, the correlation between the two would be low and insignificant. Accordingly, the model we propose in this paper specifically considers consumers’ attitude toward delivery-service drone usage and, hence, their intentions to use such commercial drones. Moreover, it is assumed that the stronger the intention to engage in a behavior, the more likely is its performance (Ajzen 1991; Farah 2014); however, the intention can lead to execution only if the behavior is under volitional control — that is, if the person has full control over his or her decision of whether or not to adopt the drone.

### **Figure 1: Consumers’ Acceptance of Service Delivery Drone Usage: An adapted TPB approach**

The present paper examines an emergent technological advancement related to the introduction of drones-delivery services for commercial purposes. It proposes that several factors may affect the consumer’s attitude toward using this type of delivery service. In sum, it is suggested that if consumers perceive the drone as entailing privacy and safety concerns, their attitude towards the usage of the drone will be less favorable. In addition, it is proposed that the higher the perceived functional performance of the drone-delivery service, the more favorable the consumer’s attitude toward the use of the drone. Besides, the personification of the drone is likely to encourage the consumer’s favorable attitude toward its usage and hence enhance the related drone-usage intention. Finally, and based on the TPB model adoption, it is suggested that forming a positive attitude towards the usage of commercial drones will be a major determinant in consumers’ intention to accept and ultimately adopt the usage of drone-delivery services.

### **Implications and Future Research**

The implications of the proposed framework and the potential for future research in this field are both sizable. This paper devises a working conceptual framework on an expected consumer–drone relationship that would rather complement than supersede consumer–brand relationship theories (Abosag and Farah 2014). Indeed, delivery-service drones acting as intermediaries in the relationship between brand/retailers and consumers would have an expectedly high impact on the overall value chain if consumers cognitively accept this technology.

Indeed, consumers are expected to start viewing the drone mainly as a sort of tangible representation of the retailer’s service. The quality of the service would be the main determinant of that relationship based on delivering a functional benefit that meets consumers’ expectations. Nonetheless, this would only be the first given step in that

relationship as consumers would then start to feel interdependent on this kind of advanced service. This would be followed by an assessment stage focusing on the direct relationship with the drone itself. The degree and intensity of that relationship might be further accentuated if the drone is branded as a stand-alone brand, making it easier for consumers to perceive a certain personification and entity to which they would attach different characteristics and identity drivers. As a result, retailers would have a heightened balance of power versus brands with regard to the relationship with consumers, as the delivery process becomes an integrated consumer experience within the complete shopping journey.

Nonetheless, the negative implications also need to be assessed. At the core of the potential risks would be the service quality component. For example, if a drone malfunctions and harms a shopper, the attitude and adoption process of the drone's service technology would be at risk. Far-reaching implications might affect the delivered brand, operating retailer, or even the manufacturer of the drone, resulting in deeper repercussions for the relationship with the retailer driven by heightened quality expectations and perceived risks. This would only start the debate for more stringent policymaking on the use of drones as consumer behavior will definitely affect and alter any commercial direction companies would implement in the future.

As the implications are potentially massive in scale, imminent future research in this area is crucial. Future research could investigate the specific aspects influencing consumer's attitude towards drones' usage with factors adopted from the various aforementioned theories as guiding principles. Empirical testing of the conceptualized model would be a clear direction in confirming the determining factors toward a consumer–drone relationship. This testing should be conducted across different geographical areas as retailers and brands are expected to increase their drones' usage in the coming years.

As drones proliferate further, this would entail the creation of different local laws regulating the operations of drones. Moreover, dimensions such as the drones' operational scale as well as consumers' technology proneness and the country's infrastructure are likely to vary greatly across different markets. Several sectors and industries need to be tested as well in relation to that framework. Indeed, as governments, consumer packaged goods companies, retailers, Internet service providers, and many other entities would be using drones to service their customers, the interest in drone-related research is expected to grow exponentially.

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