

Understanding post-adoption behaviour in the context of ride-hailing apps: The role of customer perceived value

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Abstract

Purpose- Despite the perceived role of customer value in post-adoption behaviour in the context of ride-hailing apps such as Uber, there has been limited research on the subject. This paper seeks to enrich the understanding of the relationships between customer perceived value, particularly hedonic value and economic value, customer satisfaction and continued use intentions of ride-hailing apps.

Design/methodology/approach – Our analysis is based on field data collected from 567 users of ride-hailing apps in Ghana. Data collected from the survey was analysed using the partial least square (PLS) approach to structural equation modelling (SEM).

Findings – The paper provides evidence that hedonic value, as well as economic value, positively predicts customer satisfaction and continued use intentions of ride-hailing apps.

Further analysis reveals customer satisfaction directly predicts continued use intentions in addition to partially mediating the influence of customer perceived value on continued use intentions of ride-hailing apps. Finally, our findings suggest that hedonic value has a stronger impact on continued use intentions than economic value, while economic value has a greater impact on satisfaction than hedonic value.

Originality/Value – The study contributes to post-adoption behaviour research by providing evidence on the relationships among the study constructs in a developing country context. Overall, our findings will stimulate future empirical debates on the subject, and guide practitioners in decision-making concerning customers' usage of ride-hailing apps.

Keywords: Continuance, User satisfaction, Disruptive technology, e-services, Survey, Partial least squares

Paper type: Research paper

Introduction

Good things happen when people can move, whether across town or towards their dreams. Opportunities appear, open up, become reality. What started as a way to tap a button to get a ride has led to billions of moments of human connection as people around the world go all kinds of places in all kinds of ways with the help of our technology - *Uber Technologies Inc.*

The confluence of whistle-stop technological changes and increased consumer awareness for efficiency and expedited access to services has revolutionised the way people commute in today's ever dynamic taxi industry (Nurvala, 2015). Ride-sharing is increasingly becoming a first choice, well over traditional livery vehicles (Lee and Kim, 2018). This alternative consumption mode, known as the sharing economy, offers more value for less cost (Lamberton and Rose, 2012; Lee and Kim, 2018). This model, the peer-to-peer-based activity of obtaining, giving, or sharing the access to goods and services, coordinated through community-based online services such as Uber treats convenience through a mobile application (app); however its continued use has remained a top priority question for researchers (Hamari *et al.*, 2016). The literature suggests that actors in the sharing economy require an additional set of imperatives if they are to be successful in retaining customers in these turbulent times (Babin *et al.*, 1994; Lee *et al.*, 2018; Overby and Lee, 2006; Yang *et al.*, 2018). The need to combine economic, social and technological perspectives to shape a holistic picture has also been reiterated by some scholars (e.g. Davlembayeva *et al.*, 2019). Mobile applications that match taxi drivers and passengers have become prevalent in the taxi industry. Market leaders in this domain are Uber, Bolt (formerly Taxify), Hailo, Lyft, and Sidecar. BlackJet is like Uber, but for private jets. Swifto, similarly, works like Uber, but for dog walking. The motorbike hailing service, Gokada, works in a similar fashion. The share growth of the concept of the sharing economy cannot be underestimated. McKinsey estimates that a whopping 162 million people in the United States of America and the European Union work in the sharing economy – a figure equivalent to about 20 - 30 per cent of the workforce (Manyika *et al.*, 2016). Numbers in the developing world are equally soaring. Due to its perceived low-cost, sharing economy business models have disrupted many brick-and-mortar industries and gained unprecedented popularity in recent years. Critical success factors of a sustainable ride-hailing application such as Uber, today, combine aspects of business, technology and economic foundations of modern operations, which are: the emergence of new classes of consumers (18-44 and above 65 age

categories of operators); price consciousness of consumers to minimise household expenditure; the environmentally friendly nature of the service reducing clutter and waste; and the availability of digital platforms to drive the service (Hasan and Birgash, 2016; Yuan *et al.*, 2019).

One key benefit a ride-hailing service provides as opposed to the traditional taxi model is the economic benefit (value for money), which equates with the economic value (Babin *et al.*, 1994; Jones *et al.*, 2006). Previously, most consumption decisions were based on economic thoughts (Hirschman and Holbrook, 1982); however, in recent times, scholars have placed less emphasis on these functional and forthright solutions to consumption decisions by customers (Anderson *et al.*, 2014). The decline in the economic considerations has given rise to value offerings in the industry that attend to needs in a manner that entertains and addresses customers' emotional concerns (hedonic value) as well. To enhance customers' experience, in practice, ride-hailing services have gravely focused on social intelligence and emotional analysis, which are facets of consumer behaviour that "relate to the multisensory, fantasy and emotive aspects of product usage experience" (Hirschman and Holbrook, 1982, p. 92). According to Jang and Liu (2019) both economic value and hedonic value have an effect on continuance use.

Despite the colossal impact of ridesharing applications on traditional modes of transportation, few studies have focused attention on motivating factors that affect users' intentions toward continuance usage (Zhu *et al.*, 2017). In particular, the surge in new consumption models is rapidly gaining prominence in the literature and industry, well beyond anecdotal evidence, as there is a dearth of understanding as to the real reasons why people participate in the sharing economy (Hamari *et al.*, 2016; PWC, 2015), especially in emerging markets where institutional voids and poor infrastructure to a large extent increases the cost of doing business (Cheng, 2016). This study, therefore, sets forth to empirically investigate factors that affect continued use of the peer-to-peer ride-hailing applications and provides a new theoretical model that contributes to the emerging literature on the sharing economy through the lens of perceived value theory. Key questions to answer are as follows: What is the ride hailing-app service's best bet on retaining customers through its billion human connections? Put differently, will customers maintain their intention to continue patronising the services of ride-hailing apps? Secondly, what are the best predictors of customer satisfaction in the peer-to-peer ride-hailing domain – hedonic value or economic value?

Our research makes several important contributions to the literature. First, it provides a comprehensive understanding of customer satisfaction and continuance intentions of users of ride-hailing apps. We adopt perceived value theory to establish the foundation of the research framework. Second, this study contributes to the understanding of the role of customer perceived value in promoting customer satisfaction with ride-hailing apps usage by demonstrating that both hedonic value and economic value are significant predictors of customer satisfaction regarding ride-hailing apps. Invariably, this study enriches the literature on post-adoption behaviour context of sharing economy services. Finally, in the context of a developing country such as Ghana, the study predicts that economic value, rather than hedonic value, significantly predicts customer satisfaction in the ride-hailing apps domain.

The study includes the following sections: the second section examines the literature on the sharing economy, perceived value theory and hypotheses development. The third section comprises the research design, data collection procedures and analytical techniques for the study. The fourth section provides statistical results and analysis. The last section describes the overall research findings, discussions, implications, limitations and further research.

Literature review and hypotheses development

Sharing economy

The sharing economy deviates from the traditional economy where the transaction objective is transferring the ‘ownership of’ the product or service. It is rather an economy “based on ‘access to’ instead of ‘ownership of’ material or human resources such as time, space, abilities or characteristics that satisfy certain needs” (Bonciu, 2016, p. 44). Hamari *et al.* (2016, p. 2047) define the sharing economy as “peer-to-peer-based activity of obtaining, giving, or sharing the access to goods and services, coordinated through community-based online services”. Giachino *et al.* (2017) view the sharing economy as an economic model based on sharing under-utilised assets from spaces to skills to stuff for monetary or non-monetary benefits and largely discussed in relation to peer-to-peer (P2P) market places. However, equal opportunities lie in the business-to-customer (B2C) models. The term, according to Kim *et al.* (2015), was first used in 2008 by Professor Lawrence Lessig at Harvard Law School. Kim *et al.* (2015) added that the sharing economy operates on the basis of trust, however vague. The sharing economy has been utilised by different people in providing access to commercial service. Such instance is having access to cars and bikes (Relay rides and Wheelz), taxi services (Uber, Zipcar and Lyft), dining (Eatwith) and rooms or accommodation (Airbnb, Roomorama) (Malhotra and Van Alstyne, 2014). The main drivers for the sharing economy are social media and information technology. These drivers allow for seamless interactions on websites, which serve as the dominant platform of the sharing economy (Heinrichs, 2013). Kim *et al.* (2015, p. 4) assessed the effect of trust and relative advantage on consumers’ propensity to share, in comparison with the traditional economy and concluded that “exclusive features of the sharing economy such as social benefit, economic benefit, and epistemic benefit will impact an individual’s perceived relative advantage in comparison with traditional service”. Other benefits include reduced cost of the product or service. Cheng *et al.* (2018) investigated factors that affect online and offline service quality with respect to a sharing economy driven car-hailing commerce. The study confirmed the relationships between service quality, satisfaction, and loyalty.

As suggested by Maslow (1954), self-esteem need is good enough motivation for people to engage in certain actions. At its launch in Ghana in 2016, Uber purported itself as a semi-luxury brand occupying a relevant gap in the transportation industry in Ghana. Its unbranded and unpainted taxi provided the ordinary Ghanaian an alternative to the usual yellow-branded, dusty, and air conditionless taxis that plied the streets of the major metropolises and suburban regions of the country. Unlike in most developed economies, taxi fares in Ghana are not determined by taximeters but rather by bargained fares prior to the trip. This inconvenience of bargaining for rides mostly accounted for the surge in use of ride-hailing apps since Uber’s inception in Ghana. Major ride-hailing apps currently operating in Ghana include Uber, Bolt and Yango. Uber or Bolt rides are expected to arrive at a rider’s location in the typical florid style but this is not mostly the case. Depending on how adept drivers are with in-app navigation, arrival time could take longer than anticipated. This perianal problem may also be due to the fact that the addressing system in Ghana is either inefficient or absent in most cases, except for the newly developed digital addressing system launched in 2017, which is largely unpopular. The security features that usually come with ride-hailing app services have gained prominence and adoption among the youth. Notable security features of Uber include trusted drivers, displayed driver profiles, speed limit alerts, 24/7 customer support, emergency assistance and personal safety support. Uber, Bolt and Yango have done considerably well in an informal economy such as Ghana but traditional taxi services continue to pose big challenges to their existence in a country where cash is still the main form of payment. In recent literature, trust

has been noted as a key value proposition for ride sharing app customers (Liang *et al.*, 2018; Mittendorf, 2018; Aw *et al.*, 2019; Shao, 2019) but in an economy where necessity overrides convenience due to poor transport infrastructure, other customer perceived variables such as economic value and hedonic value stand out (Hsu and Lin, 2016; Hernandez-Ortega *et al.*, 2017). Economic value and hedonic value are premised on the perceived value theory.

Perceived value theory

The ‘perceived value’ concept in the literature is often confused with other related constructs - such as ‘price’, ‘values’, ‘quality’ and ‘utility’; furthermore, despite several conceptual and empirical attempts to conduct research in this area, the relationships between these constructs remain largely unclear (Sánchez-Fernández and Iniesta-Bonillo, 2009). The concept of value is borne from the ‘trade-off’ relationship between sacrifice and potential benefits of customers - in other words, the complex relationship between the service provider and the customer (Rokeach, 1968). Neoclassical economic theory suggests that ‘value’ is the utility derived from a product or service, drawing inspiration from the ‘theory of utility’ (Grant and Van Zandt, 2009). The theory of utility posits that consumers use price to gauge the difference between ‘utility’ derived from a product or service and its ‘disutility’. Price may also be viewed as the monetary value of a service or product. A full gamut of this construct includes effort, time and search efforts invested in the total cost or sacrifice received in the whole consumption experience (Sánchez-Fernández and Iniesta-Bonillo, 2009). Market choices have traditionally been understood by marketers to mean consumer preference, which drives utilitarian value (Chiu *et al.*, 2005). This is functional in nature, thus price and product quality affect consumer decisions. This view is recognised as the uni-dimensional approach (Sánchez-Fernández and Iniesta-Bonillo, 2009). The uni-dimensional approach, although simplistic and grounded in pricing theory, focuses on quality-price perceptions as key antecedents to perceived value (Hong *et al.*, 2017). Other scholars have called for the need to use a multi-dimensional approach that truly reflects the complexity of consumers’ perceptions of value, which takes account of the intrinsic, intangible and emotional factors of the consumers’ purchase experience. For instance, Holbrook's (1999) typology provides a comprehensive multi-dimensional approach of the perceived value construct.

The concept of consumer behaviour has always been of interest to marketers (Gallarza and Saura, 2006; Benson *et al.*, 2018). In any service encounter, consumers’ perceived value is broadly seen as the total assessment of a service or product’s utility, which is based on a product’s advantages in the form of benefits compared with its relative costs (Hernandez-Ortega *et al.*, 2017; Zeithaml, 1988; Yang and Lin, 2014). According to the theory, key components of the perceived value construct include altruistic, social, hedonic and economic factors (Holbrook, 1999). These customer value constructs are, however, based on three dichotomies – (i) *Extrinsic versus intrinsic value* (a product is priced primarily due to its ‘means-end’, which is based on its banal instrumental utility, utilitarian or functional accomplishments as opposed to the value and satisfaction received from the ‘end’ itself of the consumption experience); (ii) *Self-oriented versus other-oriented* (value and satisfaction associated with ‘myself’, thus the personal benefits people derive from products as opposed to the ‘other-oriented’ value, which focuses on the consumption experience of other people; specifically, how they react to products and how the products have affected them); and (iii) *Active versus reactive value* (value and satisfaction associated with physical and mental entanglement with the object as opposed to the reverse where the results stem from admiring or apprehending or responding to some object) (Holbrook, 1999).

Previous studies, however, have focused on two main dimensions of perceived value, namely economic and hedonic factors (Chiu *et al.*, 2005; Overby and Lee, 2006). Studies in this domain evolved from the axiology of value theory, to consumption-values theory and now to Holbrook's typology of value (Sánchez-Fernández and Iniesta-Bonillo, 2007).

The perceived value theory has been extensively used in extant literature to understand consumer behavior in terms of consumer satisfaction, consumer loyalty, technology adoption, and consumer engagement in different contexts. Although this has been applied in different contexts, studies have also investigated the theory in varying forms since it is multidimensional. Studies such as Yu *et al.* (2017), Hsu and Lin (2016) and Hernandez-Ortega *et al.* (2017) focused on mobile apps and devices. Specifically, Yu *et al.* (2017) examined the role of perceived value in the user acceptance of media tablets: the study conceptualized perceived value as the overall user experience. Hsu and Lin (2016), in their study, examined the effect of perceived value and social influences on mobile app stickiness and in-app purchase intention. Perceived value was measured using both the hedonic value and utilitarian value; and utilitarian value was found to form the basis for user satisfaction. Likewise, Hernandez-Ortega *et al.* (2017) analysed the role of perceived value on the post-acceptance behavior for users of advanced mobile messaging services with respect to user satisfaction and loyalty in Spain and Greece. The study also took into cognizance the mediating effect of culture on the relationship. Perceived value in this study was measured in terms of hedonic value, social value, cost-benefit value and quality-performance value; and all these were found to significantly affect user satisfaction in the two countries except for the fact that the influence of consumer perceived value was found to be higher in Greece than it was in Spain.

More so, El-Adly (2019) modeled the relationship between hotel perceived value, customer satisfaction and customer loyalty by measuring perceived value in terms of self-gratification, aesthetic pleasure, prestige, transaction, price, quality, and hedonic values. Self-gratification, transaction, price, quality, and hedonic values were all found to significantly, directly and positively influence customer satisfaction and/or customer loyalty while aesthetic pleasure and prestige did not. Similarly, Itani *et al.* (2019) examined the relationship between perceived value, relationship quality, customer engagement, and value consciousness in restaurants. The study found that consumer perceived value influences satisfaction. In the agric sector, Jayashankar *et al.* (2018) examined the mediating role of perceived value and risk in the relationship between trust and Internet of Things (IoT) adoption by farmers. Perceived value in this case was measured as economic value, green value and epistemic value. In the banking sector, Rahi *et al.* (2017) investigated the influence of e-customer services and perceived value on brand loyalty of banks and internet banking adoption. Perceived value was defined as the complete life cycle of consumer experience. They also found perceived value to significantly influence internet banking adoption and brand loyalty.

Importantly, in the context of ride-hailing apps, a few recent studies were examined. These include Xi (2018), Gitau (2018), Malik and Rao (2019), Lan *et al.* (2019) and Ubaidillah *et al.* (2019). Some of these studies analysed the role of perceived value while others did not. For instance, Gitau (2018) examined the effect of competitive advantage on customer attraction to ride hailing apps in United States International University-Africa (USIU-Africa). The study concluded that cost leadership, differentiation and focus strategies significantly influence customer attraction to ride hailing apps; and the joint influence of the three factors yields in a higher competitive edge. Significantly, the study found that cost leadership strategy influenced customer attraction to ride-hailing apps than differentiation and focus strategies. Lan *et al.* (2019) analysed the online car-hailing system performance based on Bayesian Network. The

study found that service, price, safety, and traveling time significantly influence the online car-hailing system performance.

Notably, Xi (2018) investigated the role of perceived value towards influencing the continuance intention of the on-demand ridesharing services. Perceived value was found to positively affect satisfaction and, invariably, continuance intention. Trust was found to moderate the relationship between customer satisfaction and continuance intention. Malik and Rao (2019) extended the expectation-confirmation model with self efficacy and perceived value to understand the continued usage of ride hailing apps by riders. Perceived value in this study was measured as functional and emotional value; and they found that perceived value in all its forms contributes significantly to the continued usage of app-based services. Ubaidillah *et al.* (2019) examined the determinants of Generation Z's intention to use the Grab e-hailing services; and found that customer satisfaction, social media marketing influence, price and reliability significantly determine the intention to use the e-hailing service.

To date, many researchers have investigated hedonic and utilitarian value in diverse settings such as in brick-and-mortar businesses, electronic commerce, social media networks, mobile technology apps, and in the hospitality and tourism industry (Bardhi and Eckhardt, 2012; Finkenauer *et al.*, 2007; Overby and Lee, 2006). Unfortunately, in the context of the sharing economy, the relevance of these two types of value to satisfaction and continuance use has been inconclusive – a potential gap that requires attention by researchers. For example, Kim *et al.*, 2018 found that hedonic rather than utilitarian value had a greater effect on satisfaction and also hedonic value had a positive and significant effect on loyalty. However, the effect of utilitarian value on loyalty was insignificant (Kim *et al.* 2018). In advanced economies, consumers' car sharing experiences are largely based on self-interest and hedonic value (Kim *et al.* 2018). However, this outcome contrasts with the results of another study by Shin *et al.* (2019), which shows that hedonic value is at the heart of such sharing experiences. This clearly indicates a lack of consensus in the perceived value literature with respect to the sharing economy. As reiterated by Zeithaml (1988), the basic assumption of the consumer's overall evaluation of a service is based on perceptions of what is received and what is given. This trade-off is underpinned by economic value or hedonic value to the extent that, various contexts define consumer's perception of value. The literature on perceived value theory as applied in the sharing economy is inconclusive on the true effect of both hedonic and economic factors on continuance use. The existing gap could be explained from the customer perception of value with respect to externalities. Unlike in other countries where taxi fares (regardless of how you pay for them) are based on distance and charged per mile or kilometer, Ghanaian taxis have no such system. The fare is still based on distance, but arbitrarily decided on between the driver and the customer, based on what each can bargain for. Since the introduction of internet based ride hailing apps, ride hailing users now enjoy higher bargaining power when using the traditional taxi's because they are always able to check fare before they bargain and embark on a trip. Second, users who would have incurred higher out-of-pocket costs on conventional taxis hailed on the street are now able to use internet-based riding-hailing services that cost less in most instances and provides private, on-demand and convenient mobility (Ransford *et al.* 2020). Third, conventional taxis have been notoriously unsafe. With the advent of internet based hailing apps, the issue of security has been heightened. These externalities, together with the inconclusive nature of the literature on perceived value in the sharing economy, justifies the research in this domain.

In this study, with reference to the literature above, and considering the typology of perceived value theory, we use a framework that incorporates both hedonic value and economic value in

an attempt to address the lack of concensus in the effect of hedonic value and economic value on customer satisfaction and continuance use in the sharing economy literature.

Hedonic value

Hedonic value is said to be the “consumer’s enjoyment of the shopping experience itself” (Anderson *et al.*, 2014, p.774). Lee and Kim (2017) postulate that such value is driven by the desire to be submerged in the world of the brand or activity, such that pleasure is derived from the entire process of associating with the brand. It encapsulates the uniqueness of a product or service and the emotional connection that it evokes in the consumer (Overby and Lee, 2006). Usually, hedonic impact of a consumption experience occurs during pre-purchase and post-purchase (Finkenauer *et al.*, 2007). There has not been any conclusion as to the importance of hedonic value to customers’ experience in the context of the ride-hailing app, which is a facet of the sharing economy. In examining the determinants of customer satisfaction and loyalty, Deng *et al.* (2010) confirmed that perceived customer value, which includes emotional value, contributes to generating customer satisfaction with a mobile instant messaging app. A study by Chiu *et al.* (2014) showed that hedonic value is a significant indicator of consumer continuance intention. Eroglu *et al.* (2005) also found that hedonic value more strongly predicts satisfaction than economic value. Furthermore, a study conducted by Yan *et al.* (2019) suggests that hedonic factors appear to be the greatest pull factor that attracts consumers into the sharing economy. This study proposes that:

H1: Hedonic value has a significant effect on satisfaction with the ride-hailing app

H2: Hedonic value has a significant effect on continuance intention towards the ride-hailing app

Economic value

According to Lee and Kim (2018), literature describes economic value as merely functional, attained from consumer attitude and behavior. This phenomenon is associated with the utilitarian value (Lamberton and Rose, 2012). Hirschman and Holbrook (1982) assert that the perception of the utilitarian has been used to explain behavior for several years but has not been able to comprehensively explain consumption patterns. Meanwhile, Overby and Lee (2006) claim that the concept of economic value is related to the effective, task-specific, and economic aspects of the product or service. In the hospitality industry, for example, it has been noted that perceptions of accommodation quality, service quality, and convenience are useful indicators for measuring economic value in that context (Overby and Lee, 2006). Other authors note that economic value involves an informational emphasis and highlights the consumption process itself (e.g., Henry *et al.*, 2004). Like the hedonic value, researchers have not concluded on the importance of economic value to customers’ experience in the sharing economy. Both the studies of Babin *et al.* (1994) and Ryu *et al.* (2010) showed that economic value more strongly results in satisfaction than hedonic value. A study by Nisar *et al.* (2019) suggests that personal income groups are usually price-sensitive, which invariably affects purchase intentions.

Similarly, Deng *et al.* (2010)’s examination of the determinants of customer satisfaction and loyalty in the mobile instant message context theorised that monetary value, which is conceptually similar to economic value, positively affects customer satisfaction; although the authors did not empirically confirm it in their study. Meanwhile, the result of the study by Ryu

et al. (2010) showed that economic value is a more significant indicator of consumer continuance intention than hedonic value. We therefore propose that:

H3: Economic value has a significant effect on satisfaction with the ride-hailing app

H4: Economic value has a significant effect on continuance intention towards the ride-hailing app

Satisfaction and post-adoption behaviour

Satisfaction derived from product value is a major determinant of consumer behavior, which includes behavioral intentions of loyalty towards a service provider (Akman and Mishra, 2017). McDougall and Levesque (2000) found a direct link between customer satisfaction and future intention. Charles *et al.* (2015) investigated factors that affect online and offline service quality with regards to a sharing economy driven car-hailing commerce. The study confirmed the relationships between service quality, satisfaction, and loyalty. Cronin *et al.* (2000), Zhao *et al.* (2012), and Mirkovski *et al.* (2018) linked satisfaction to the continuance intention of a product or service as consumers are mostly to return to a product or service only if they are certain that it provides the value they seek for and if the value exceeds the sacrifices they made for it. Moreover, Mensah *et al.* (2019) reported in the context of social networking sites that satisfaction significantly predicts continuance intention. Liu *et al.* (2018) in the context of mobile games, however found satisfaction not to be a significant predictor of continuance intention. It is worthy to note that, in the case of ride-hailing apps, it is not clear until now whether such claims hold; this study, nevertheless, proposes that:

H5: Satisfaction has a significant effect on continuance intention towards the ride-hailing app

For presentation purposes, the research model guiding this work has been displayed in Figure 1.

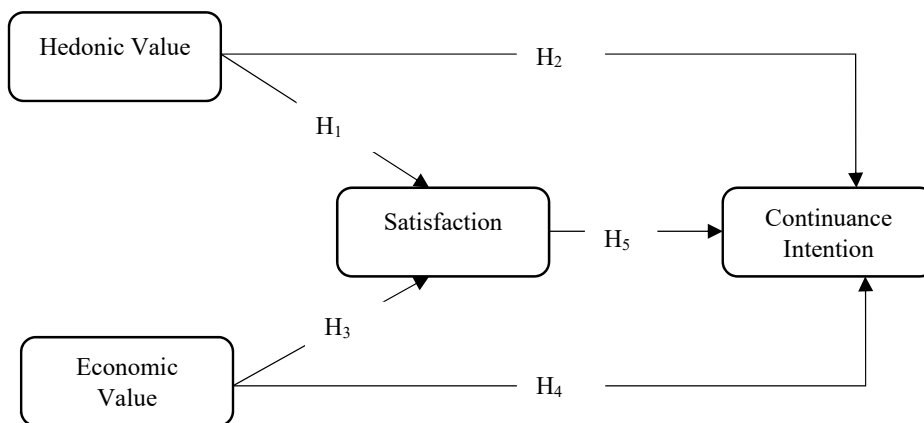


Figure 1. Hypothesised model

Methodology

Measurement instrument

As suggested by Straub *et al.* (2004), items for this study were adopted from previous research in order to improve content validity. The items were then reworded to reflect the context of the current study. The resulting survey instrument was then given to a panel of experts to pre-test in a focus group. The final instrument was revised based on the comments of the panelists in the focus group. Hedonic value was measured with four items adopted from Lin and Lu (2015), while economic value was measured with items derived from Zhang *et al.* (2019). Satisfaction was measured with six items derived from Liang *et al.* (2018), and continuance intention was measured with three items adopted from Bhattacharjee (2001). Thus, a total of seventeen items were used to measure the latent variables. For each item, the five-point Likert scale was used with anchors from 1 (strongly disagree) to 5 (strongly agree).

Sample and data collection

The mall-intercept technique (Bush and Hair, 1985) was used to collect data over a two-week period in December 2018 at three of the biggest shopping malls in Accra, Ghana, namely Accra mall, West Hills mall, and the Junction mall. Teams of research assistants were sent to the three malls with 250 copies each of the paper-based questionnaire. Based on recommendations by Hornik and Ellis (1988), shoppers exiting the selected malls were conveniently selected and asked of their willingness to participate in the survey. Those who answered in the affirmative were given the questionnaire to fill out on the spot. To qualify to participate in the study, respondents first needed to have had any of the ride-hailing apps installed on their smart phone for at least two months and should have taken at least four rides in the past two months. This constraint was used to ensure that respondents have had sufficient experience with ride-hailing app services. In all, 594 respondents took part in the survey. Out of this number, 27 responses were unusable because most sections of the questionnaire were not filled. This resulted in a total of 567 responses being used for our analysis. This number is far in excess of the minimum sample size requirement recommended by Hair *et al.* (2011). Of the valid responses, 51.85 percent were females and 48.15 percent were males. Detailed demographics of the respondents are provided in Table 1.

Table 1. Background Information

Variables	Frequency	Percent
Gender		
Male	273	48.15
Female	294	51.85
Age group		
18-29 Years	289	50.97
30-39 Years	176	31.04
40-49 Years	48	8.47
50-59 Years	39	6.88
>60	15	2.64
Educational level		
University degree	327	56.67
Postgraduate	178	31.40
Other	62	10.93
Do you own a car		
Yes	213	37.57
No	354	62.43
What is your favourite ride-hailing App		
Uber	342	60.32
Bolt (Taxify)	225	39.68
In the past two months often did you use your favourite ride-hailing app?		
At least one ride a day	245	43.21
4-6 rides a week	111	19.58
1-3 rides a week	156	27.51
At least 1 ride two weeks	55	9.70

Results and analysis

The current study adopts a hypothetico-deductive research design. This design allows the authors to formulate *a priori* hypotheses which are transformed into mathematical relationships (Holden & Lynch, 2004; Ponterotto, 2005). This approach is well suited for studying social phenomena or economic phenomena that can be easily converted into numerical data (Broadbent & Unerman, 2011; Holden & Lynch, 2004). This is quite the case of the current research, a Likert scale was used to collect numerical data on the phenomenon under study. In testing the proposed hypothesis, the data collected was analysed with the partial least squares (PLS) approach to structural equation modelling (SEM) on SmartPLS 3 software. Following the two-step approach for evaluating structural equation models recommended by Chin (1998), we first examined the measurement model to evaluate the reliability and validity of the survey instrument. We then went on to analyse the structural model by testing the research hypotheses proposed in this study. PLS-SEM parameters were estimated using the bootstrapping resampling approach, since the PLS-SEM approach lacks the classical parametric inferential framework (Wold, 1982). The PLS-SEM technique was chosen partly because it is less restrictive on residual distribution assumptions (multivariate normality assumptions) than other analysis models (Chin *et al.*, 2003) and partly because of the in-sample prediction-focus of our analysis, which notable methods researchers such as Hair *et al.* (2014) deemed to be highly appropriate for analyses like this.

Measurement model assessment

In accordance with literature, the adequacy of the measurement model was assessed based on reliability, convergent validity and discriminant validity. To assess reliability, we used Cronbach's alpha, Composite Reliability and ρ_A . It can be seen from Table 2 that values for

Cronbach's alpha, Composite Reliability and ρ_A for all constructs are greater than the 0.7 threshold (Henseler *et al.*, 2016). Convergent validity was also assessed using the Average Variance Extracted (AVE). According to Hair *et al.* (2014), evidence of convergent validity is provided once outer loading of each item is greater than 0.7, and the AVE for each construct is greater than 0.5. From Table 2, it can be seen that outer loadings for each item is greater than 0.7, and AVE values for all constructs are greater than 0.5.

Table 2. Results of reliability and convergent validity and PLS-Predict

Items	Loading	α	CR	ρ_A	AVE	PLS Predict RMSE	PLS $Q^2_{predict}$	LM RMSE	LM $Q^2_{predict}$
Continuance Intention (Bhattacharjee, 2001)									
CI1	0.858					0.726	0.258	0.727	0.257
CI2	0.896	0.847	0.908	0.85	0.766	0.734	0.293	0.738	0.286
CI3	0.871					0.714	0.231	0.717	0.223
Satisfaction (Liang et al., 2018)									
SAT1	0.802								
SAT2	0.863								
SAT3	0.714	0.886	0.913	0.887	0.638				
SAT4	0.765								
SAT5	0.806								
SAT6	0.835								
Economic Value (Zhang et al., 2019)									
EV1	0.896								
EV2	0.881	0.883	0.92	0.884	0.741				
EV3	0.866								
EV4	0.797								
Hedonic Value (Hwang and Griffiths, 2017)									
HV1	0.806								
HV2	0.869	0.861	0.906	0.864	0.706				
HV3	0.84								
HV4	0.844								
α –Cronbach's Alpha, CR–Composite Reliability, AVE–Average Variance Extracted, RMSE–Root Means Square Error									

Discriminant validity was assessed based on the heterotrait-monotrait ratio of correlations (HTMT) (Henseler *et al.*, 2015). Table 3 provides evidence for discriminant validity as HTMT_{0.85} values are seen to be less than the 0.85 threshold recommended by Hair *et al.* (2019). Based on these results, we conclude that the psychometric properties of the measures used in the study are adequate.

Table 3. Testing discriminant validity using the HTMT ratio of correlations

CI	EV	HV	SAT
0.590			
0.636	0.698		
0.522	0.588	0.540	

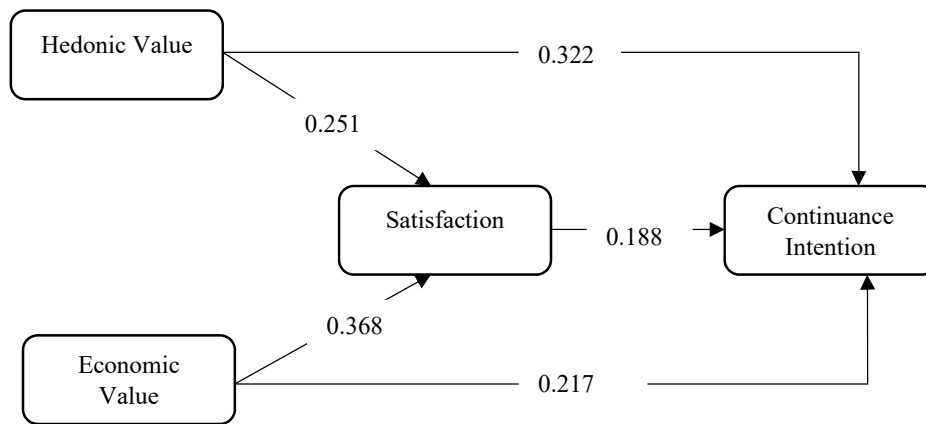
Structural model assessment

Having verified the adequacy of the measurement model, we proceeded to test the structural model. SmartPLS 3.2.8 was used to test the structural model. The bootstrapping resampling procedure (with 5000 sub-samples drawn with replacements from the initial sample of 567) was employed to determine the statistical significance of the path coefficients. Results for the assessment of the structural model are presented in Figure 2 and Tables 4 and 5.

As expected, Hedonic value was found to have a significant effect on satisfaction (path coefficient = 0.251, $p = 0.000$), thereby providing support for H_1 . Again, in support of H_2 , Hedonic value was found to have a significant effect on continuance intention (path coefficient = 0.322, $p = 0.000$). Economic value was found to have the most significant effect on satisfaction (path coefficient = 0.368, $p = 0.000$). As hypothesised, economic value was found to have a significant effect on continuance intention (path coefficient = 0.217, $p = 0.000$). Finally, in support of H_5 , satisfaction was found to have a significant effect on continuance intention (path coefficient = 0.188, $p = 0.000$). Generally, our entire structural model supports all the hypotheses and accounts for 31.1 percent of the variance in satisfaction and 37.2 percent of the variance in continuance intention. In addition, the overall fitness of the model was assessed using the Standardised Root Mean Square Residual (SRMR). The SRMR value for the model was 0.057. This is below the 0.08 threshold recommended by Hu and Bentler (1999). This result indicates that the proposed model presents a good model fit. Additionally, we used the PLS-Predict procedure to assess the out-of-sample predictive capabilities of our model. The PLS-Predict procedure assesses whether the measurement items of a construct can predict a given outcome construct. We performed the PLS-Predict procedure with 10 folds and 10 replications and compared PLS-SEM RMSE values with those from a naive linear benchmark. As a rule of thumb, Shmueli *et al.* (2019) suggest that a model has high predictive power when the RMSE (prediction errors) values for all PLS-SEM measurement indicators are lower than the RMSE values for the naive linear benchmark. From Table 2, it can be seen that all RMSE values for PLS-SEM are less than those for the naive linear benchmark, thus providing support for our model's high predictive power.

Table 4. Hypotheses Testing

Hypotheses	Path	Path Coefficient	T Statistics	P Values	Result
H1	HV → SAT	0.251	4.374	0.000	Supported
H2	HV → CI	0.322	6.557	0.000	Supported
H3	EV → SAT	0.368	6.975	0.000	Supported
H4	EV → CI	0.217	3.791	0.000	Supported
H5	SAT → CI	0.188	3.623	0.000	Supported
Model Fit				R-Squared	
SRMR		0.057	Satisfaction		0.311
			Continuance Intention		0.372

**Figure 2.** PLS results for structural model***Additional analysis: Evidence of mediation***

Using the approach suggested by Preacher and Hayes (2008), we tested the mediating effect of satisfaction in our model. The indirect effect between the predictor variable and the target variable through the mediator was tested using the bootstrapping procedure. Evidence for the mediation analysis is provided in Table 5. The indirect effect of economic value on continuance intention through satisfaction as well as the direct effect between economic value and continuance intention were found to be significant. Satisfaction, therefore, partially mediates the path between economic value and continuance intention. Hedonic value was found to have a significant indirect effect on continuance intention through satisfaction; and satisfaction was found to partially mediate the path between hedonic value and continuance intention.

Table 5 Mediating Effects of Satisfaction

	Indirect effect	Total Effects	T Statistics	P Values	Mediation Results
EV → SAT → CI	0.069**		3.042	0.002	Partial Mediation
HV → SAT → CI	0.047**		2.768	0.006	Partial Mediation
EV → CI		0.286***	5.748	0.000	
HV → CI		0.370***	7.280	0.000	

Note: ** Significant at $\alpha=0.01$, *** Significant at $\alpha=0.001$

Discussion and theoretical implications

This study has empirically investigated continuance adoption of ride-hailing apps from a customer value perspective and it is one of the few attempts to have investigated post-adoption behaviour of sharing economy services. In particular, this study has established that customer perceived value, namely hedonic and economic value, play a dominant role in customers' post-adoption behavioural outcomes primarily customer satisfaction and continuance usage of ride-hailing apps as evidenced from other study contexts (Cronin *et al.*, 2000; Mensah *et al.*, 2018; Zhao *et al.*, 2012). Furthermore, the research evidence has reinforced the persistent thought in marketing and information systems literature regarding the role of customer satisfaction in fostering longer-term relational outcomes such as continuance use intentions. On top of this, supplementary evidence emerging from this study has shown that, hedonic and economic value are not only directly related to both customer satisfaction and continuance intentions but also indirectly contribute to continuance intentions through customer satisfaction. This further implies that customer satisfaction is both a mediator and direct antecedent of continuance intentions towards ride-hailing apps. The findings, though new within the study context, lend themselves to previous examinations in other contexts (Chiu *et al.*, 2014; Deng, 2010; Ryu *et al.*, 2010).

We found that while economic value had a stronger effect on satisfaction than hedonic value (as was the case in Ryu *et al.* (2010)), the total effect of the latter on continuance intention was greater. This implies that the economic benefits derived from using the ride hailing apps such as reduced fares influence users' satisfaction with the service more than the hedonic benefits derived. However, hedonic value derived from using the ride-hailing app is more likely to influence users to continue using the app. A number of authors have confirmed that the effect of hedonic value on behavioral intention is greater than that of economic/utilitarian value in the context of the sharing economy (eg. Lee and Kim, 2018; Tsou *et al.*, 2019; Zhang *et al.*, 2019). Unsurprisingly, other studies such as Shin *et al.* (2019) confirm that, hedonic, rather than utilitarian value influences consumers' intention to visit food trucks as a dining option. Additionally, the evidence that economic value has a statistically significant impact on customer satisfaction is in contrast to the study that was undertaken in the instant messaging context that found a non-significant relationship between satisfaction and economic value. which the authors originally referred to as monetary value (Deng *et al.*, 2010). However, our confirmation of the relationship between hedonic value and satisfaction was also established by Deng *et al.* (2010), who conceptualised hedonic benefits as emotional value.

Theoretical implication

Our analyses contribute to the sharing economy literature and in particular emerging studies on post-adoption behaviour with respect to ride-hailing apps in more than two ways. First, the study contributes to the understanding of the role of customer perceived value as captured by hedonic and economic values in customer satisfaction with ride-hailing apps usage. By demonstrating that both hedonic and economic value are significant predictors of customer satisfaction regarding ride-hailing apps, this study contributes to the growing body of evidence

on IT post-adoption behaviour (e.g., Bhattacharjee, 2001; Chiu *et al.*, 2014; Hsia and Chang, 2014; Jang and Liu, 2019; Zhao *et al.*, 2012).

However, within the post-adoption behaviour context of sharing economy services, this research represents one of the few attempts to document that customer perceived value – hedonic and economic value – significantly enhances customer satisfaction. This evidence reinforces the claim by Lee and Kim (2018) that utilitarian value and hedonic value, are positively related to customer satisfaction. Relatedly, this research reaffirms the fact that economic value is an additional typology of customer value that should be taken into account when researching the link between customer value and satisfaction in the sharing economy.

Meanwhile, the emerging picture from the analyses (i.e. on the basis of the relative magnitude of path coefficient) suggests that economic value - rather than hedonic value - is a relatively stronger predictor of customer satisfaction, which could be potentially explained by the economic realities most consumers in the study context face. Within the study context, it can be inferred that direct economic benefits to the consumer such as discounted rates in comparison to regular taxi services can trump other hedonic motivations such as self-worth, environmental consciousness, satisfaction and relationship benefits. Overall, this study has identified customer value as an important antecedent of customer satisfaction, thus adding to the debate about the predictors of customer satisfaction regarding ride-hailing apps and, by extension, the sharing economy.

Another contribution of this study comes from the findings that both customer perceived value and satisfaction are determinants of continuance intention, which is an indicator for customer loyalty. Although the research findings lend validity to several of the prior claims in the marketing and information systems literature (Chiu *et al.*, 2014; Cronin *et al.*, 2000; Deng, 2010; Hsia and Chang, 2014; Ryu *et al.*, 2010), the findings are nevertheless relatively novel in the context of sharing economy services. Regarding the path coefficients weights, surprisingly, we find that both hedonic value and economic value are strong predictors of continuance intention than customer satisfaction (Table 4).

To the best of our knowledge this study is the first in the sharing economy literature to confirm that hedonic value, economic value and customer satisfaction are antecedents to continuance intention with respect to ride-hailing apps. It is important to note that related research has previously viewed hedonic value and customer satisfaction as important determinants of customer loyalty (Lee and Kim, 2018) and thus the current study supports the view expressed by these authors. This study also identifies economic value as an additional antecedent to customer satisfaction proxied by continuance intention. Additionally, from a post-adoption consumer behaviour perspective, this study is one of the few to report on the indirect influence of customer perceived value on continuance intention through customer satisfaction (for similarity, refer to Hsiao and Chang, 2014).

Finally, through the results emerging from this study, we have been able to gain a better understanding of customer satisfaction and continuance intention towards ride-hailing apps from a customer perceived value perspective. Moreover, the evidence emerging from this study implicates the sharing economy literature and particularly with respect to post-adoption

behaviour based on the demonstration that customer perceived value primarily hedonic and economic value, customer satisfaction, and continuance intention are intrinsically linked.

Practical implications

Beside the theoretical merits, insights emerging from the study provide valuable guidance to managers of ride-hailing platforms regarding their apps usage by their existing customers. More specifically, our study offers guidance to managers of these platforms on the specific role of hedonic and economic value in enhancing customer satisfaction and, consequently, continuance usage of ride-hailing apps.

For managers of these platforms in developing economies like Ghana, our research suggests that economic incentives such as reasonably priced fares, as compared to the hedonic features of the apps, play a more dominant role in customer satisfaction. Hence, in the developing world context, ride-hailing platform providers (e.g. Uber) should pay attention to advertising strategies targeted at drawing the consumer's attention to the monetary incentives or gains in using ride-hailing apps, rather than traditional taxi services. The commercial business landscape in Ghana is largely characterised by physical cash transactions, however in recent years there have been an upsurge in electronic payment systems use in most developing economics, such as Ghana. It is, therefore, of vital importance from the manager's perspective, to offer other forms of payment such as peer-to-peer mobile payments or electronic payments to meet up with the growing demand from bustling middle-income earners. Considering our research results and the recent reactions in the ride sharing industry, such as security and privacy concerns, it would be wise for ride-hailing app managers to emphasize the company's economic value to maintain a competitive edge over traditional taxi services. Alternatively, the app service must consider creating effective loyalty programs to build long-term customer relationships, which will translate into continued use of the service. Taken together, managers must pay serious attention to marketing campaigns targeted at promoting the economic incentives of using the apps, while equally promoting the hedonic features of the apps, as this is critical to enhancing customer satisfaction.

With regard to the specific factors related to continuance intention and, by implication, long-term loyalty to the platform service provider, our research has highlighted that even though customer satisfaction plays a dual role – in terms of direct antecedent and mediator – the two dimensions of customer value play a relatively greater role in the propensity to continue using the apps. Meanwhile, while it is imperative that platform providers such as Uber continue to pay attention to their customer satisfaction with the app/service, enhancing both hedonic value and economic value of the apps should be top priority. Managers should henceforth diversify their strategies by incorporating some of these values in their various decisions, as this is necessary for both customer satisfaction and continuance use of the apps.

Finally, this paper informs managerial guidance on consumers' willingness to continue using ride-hailing apps and consequently customer repeated patronage of sharing platforms like Uber through our empirical demonstration.

Limitations and suggestions for future research

Even though the study found some interesting results that confirm previous studies, a few limitations must be considered when interpreting the results. First, the study was based on cross-sectional data, but since user behaviour changes over time, in future studies it would be interesting to use longitudinal data to explore how the relationships examined would change over time. Second, data for the study which was collected at three of the biggest malls in Accra may represent only a class of individuals and not represent all users of ride-hailing apps, suggesting that further studies should consider a much more representative survey. The low R^2 for the endogenous variables is an indication that there may be other variables that could be considered as predictors in the model. Furthermore, current developments in the ridesharing space calls for the inclusion of other variables such as trust, security, privacy concerns and perceived risk in future studies. Similarly, factors such as industry, regulation, competition, service quality, long-time and lifetime value measures and visibility to choose or stay with the ride-hailing app should be explored. Nonetheless, our paper has contributed to scholarship through the explanation of the relationships among customer perceived value, particularly hedonic and economic value, customer satisfaction and continued use intentions in the research context.

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Appendix

1. **Gender:** Male [] Female []
2. **Age:**
 18-29 Years [] 30-39 Years [] 40-49 Years []
 50-59 Years [] >60 []
3. **Education:**
 University degree [] Post Graduate [] Other []
4. **Average monthly income:**
 Below GhC 1,000 [] GhC 1,000 – 5,000 [] GhC 6,000 – 10,000 []
 GhC 10,000 – 16,000 [] Above GhC 16,000 []
5. **Which of the following is your most preferred taxi hailing application?**
 Uber [] Bolt (Taxify) []
6. **How long have you been using your most preferred taxi-hailing application?**
 0 – 3 months [] 4 – 6 months [] 6 – 12 months [] Beyond 12 months []
7. **In the past two months often did you use your favourite ride-hailing app?**
 At least one ride a day [] 4-6 rides a week [] 1-3 rides a week []
 Once every two weeks []
8. **How much do you spend per ride per week?**
 Below GhC 10.00 [] GhC 11 – 40.00 [] GhC 41 – 60.00 [] Above 60.00 []
9. **Do you own a car?** Yes, I do [] No, I don't []

Please, state the extent to which you agree or disagree with each of the following statements:

1 – Strongly disagree, 2 – Disagree, 3 – Neutral, 4 – Agree, 5 – Strongly agree

Hedonic Value (Hwang and Griffiths, 2017)					
HV1: To me, the service of this ride-hailing app is one that I enjoy	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
HV2: Using the services of this ride-hailing app makes me feel good	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
HV3: Using the services of this ride-hailing app is enjoyable because of various types of cars available to my experience	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
HV4: Using the services of this ride-hailing app is pleasurable					
Economic Value (Zhang et al., 2019)					
EV1: Using this ride-hailing app gives me good value for the price I pay.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

EV2: I can find good deals when I use this ride hailing app.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
EV3: The service provided by this ride-hailing app is an economical alternative to traditional Taxis.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
EV4: The services of this ride-hailing app is reasonably priced.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
Satisfaction (Liang et al., 2018)					
SAT1: I was satisfied with the recent transaction process with this ride-hailing app.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
SAT2: I am contented with the information provided by this ride hailing app.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
SAT3: I am satisfied with the mechanism of this ride hailing app	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
SAT4: I am pleased with my experience of using the ride-hailing application.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
SAT5: My experience with this ride hailing app is pleasurable.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
SAT6: My choice to use this ride-haling application was a wise one	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
Continuance Intention (Bhattacharjee, 2001)					
CI1: I intend to continue using this ride hailing app in the future and would keep using it as regularly as I do now.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
CI2: Even when new types of mobile apps emerge, I will continue to select this ride-hailing	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
CI3: I will strongly recommend others to use this ride-hailing	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>