

## The Quality of e-Ridesharing: Are the e-Ridesharing Passengers Satisfied?

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### ABSTRACT

The rise of ridesharing e-booking applications in Malaysia with their interesting features and characteristics seems to give a huge impact on the transportation industry. However, there are several issues pertaining to security, safety, legality, and regulations. Three primary service quality dimensions of e-ridesharing, which are considered fit and suitable in the context of the current study, are identified, including app quality, interaction quality, and physical environment quality. 487 questionnaires were used for data analyses. The subdimensions were verified using an exploratory factor, and regression analysis was conducted further. The result indicates that e-ridesharing service quality dimensions, which include app quality, interaction quality, and physical environment quality, are able to improve passengers' satisfaction and re-ride intention. The findings are expected to help increase the quality of services offered by the service providers and contribute to the body of knowledge which can be replicated in the various service industries.

### KEYWORDS

e-Ridesharing service quality  
Passengers' satisfaction  
Re-ride intention

## INTRODUCTION

Various modes of transportation available in Malaysia, especially for passengers in Kuala Lumpur or Klang Valley, include buses, rail, and taxis. Besides, e-ridesharing, such as Grab, MyCar, and MyRide, is also public vehicle transportation. Grabcar Sdn. Bhd. (Grab) started in Malaysia as a taxi-booking application, known as *MyTeksi* (Chia, 2016). Passengers perceive taxis and e-ridesharing as convenient modes of transportation for transferring people from place to place. However, e-ridesharing passengers have a perfect perception of it compared to a taxi; thus, there is a chance for ridesharing facilities to survive because people will move towards these services if they have started using them (Nielsen, 2015).

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The e-ridesharing industry is well-developed. The e-ridesharing facilities benefit drivers as a platform to earn money through the sharing economy (Hall & Krueger, 2015; Tan, 2016). Grab treats individual car owners and drivers as partners rather than employees (Chia, 2016). Driver-partner is a ridesharing driver registered legally under GrabCar Corporation to use an e-ridesharing app (medium) in order to gain income while simultaneously partnering with the company. Thus, a driver-partner is not employed directly by the company due to the flexibility given to the driver to be a partner when they have free time (Hall & Krueger, 2015; Kushal, 2016).

Nielsen (2015) reported that the taxi service satisfaction score is the lowest among public transportation; passengers are unsatisfied with the service offered, including expensive fares and inaccurate prices, and public transport is slow and not on time. Malaysian taxi drivers have been ranked among the world's worst in the survey and are notorious for poor customer service (Choo, 2016, 22 August). Regarding the drivers' honesty, SPAD took legal action against 153 drivers who charged extra fares to the passengers. This unethical action affects the passengers' trust and harms the Malaysian transportation industry. If there is no prevention, more problems will occur. Therefore, the former Malaysian government authorized the SPAD to regulate e-ridesharing to improve taxi services and images of the Malaysian tourism industry. Along with time, e-Ridesharing has improved the standard of existing public transport services in Malaysia in terms of convenient, fast, reliable, and cheap service with the assistance of technology connected 24 hours via smartphones (Free Malaysia Today, 2017; Mustafa, 2017; New Straits Times, 2016; www.grabuber.com, 2016).

The e-ridesharing companies develop e-ridesharing facilities through a smartphone app with exciting features as a medium to facilitate the service provider and to connect the driver-partner and passenger (Golson, 2017; Provost & Mizuno, 2014). The service benefits service providers, drivers, and passengers. e-Ridesharing app is convenient and easy to use. The app allows passengers to easily order a ride from drivers who offer the service. The fee will be automatically charged to passengers' credit or debit card accounts based on the distance between pick-up and drop-off locations (New Straits Times, 2016).

In any business, including the transportation industry, service providers need to ensure that their services stay competitive in the market by maintaining quality in order to satisfy customers or, in this case, passengers. The rise of technology has changed the industry's market trends, allowing new ideas to develop creatively. Transportation service companies should improve their services to sustain their business and maintain their passengers' loyalty. The former SPAD Chairman encouraged Malaysian to move with technology (Choo, 2016, 22 August). With the assistance of technology, e-ridesharing might be an opportunity for service providers since people demand cheap, convenient, fast, and reliable service to move from origin to destination. Cheaper fares are the leading factor for passengers switching to e-ridesharing instead of a taxi. Besides Malaysian, tourists' will no longer fear taxi charges when coming to this country (Free Malaysia Today, 2017). This study will be beneficial for service providers to determine which e-ridesharing service quality dimensions need to be improved in order to enhance the critical success of passengers' satisfaction that leads to positive re-ride intention.

Two objectives are formulated in this study: (RO1) to examine the influence of e-ridesharing service quality dimensions on passengers' satisfaction and re-ride intentions in Malaysia and (RO2) to examine the influence of passengers' satisfaction as a mediator between e-ridesharing service quality dimensions and re-ride intentions in Malaysia.

## LITERATURE REVIEW

Service quality theories have focused on finding the most appropriate scale in service marketing literature. Measuring service quality is a better way to know whether the services are good or bad and whether the customers or passengers are satisfied with the service offered. The SERVQUAL scale has been tested in many studies and in various service settings.

A number of studies have failed to replicate the five dimensions of SERVQUAL. Although it has been seriously criticized by scholars regarding the service quality model, the instrument has been widespread because of its capability to predict service quality in various industries. The SERVQUAL model has been adopted to determine the level of service quality from the passengers' perspective. Meghna et al. (2013) adopted the SERVQUAL model to investigate Urban Bus Transport services in Bangalore, India. The finding suggests that five generic dimensions do not meet the expectations of most of the users. Govender's (2014) study measured the commuters' perception of public transport service, focusing on bus and minibus services in Johannesburg, South Africa, using the RECSA model (Reliability, the Extent of the Service, Comfort, Safety, and Affordability). Govender (2014) claimed that the RECSA model is more appropriate for measuring transport service quality. However, the findings identified four dimensions (friendliness, skills, rules of the road, safety, comfort, and extent of the service; choosing the public transport; service availability; and affordability and the rate of accidents). Yao and Ding (2011) adopted the SERVQUAL model of Parasuraman et al. (1988) and the SERVPERF model of Cronin and Taylor (1992) to evaluate the taxi service quality in China. Five dimensions of SRVQUAL were found, and the results are significantly correlated with satisfaction. Siagian (2019) adopted the SERVQUAL five dimensions to investigate the Uber service quality for Indonesian students who lived in Taiwan and experienced Uber riding in Taiwan. Siagian (2019) suggested that the reliability and assurance dimensions still need improvements. Ziyad et al. (2020) modified SERVQUAL and focused on users of the ridesharing services in Lahore, Pakistan. The study found that all five dimensions of SERVQUAL positively impact passenger satisfaction. The above explanation indicates that the research findings vary; however, many studies in various disciplines have similar findings that doubt adopting the SERVQUAL measurement and the five dimensions as generic measuring service quality across all service industries.

Previous studies strongly claim that service quality is multi-dimensional. Service quality in the public transport industry has remained elusive, and research needs to focus more on this area. Evaluating and measuring transport service quality remains challenging and meaningful since it comprises abstract and intangible constructs (comfort and safety) (Beirão & Sarsfield, 2007; Eboli & Mazulla, 2007). Mouwen and Rietveld (2013) suggested two dimensions to measure service quality for public transport: an objective dimension (using performance indicators such as frequency and speed) and a subjective dimension (using consumer judgments).

In the transportation field, more studies are needed to replicate the service quality as it might draw different results and outputs. Ridesharing facilities in Malaysia are growing; however, limited studies regarding passenger satisfaction toward e-ridesharing concerning service quality that leads to positive re-ride intention in the Malaysian transportation industry have been done.

### Passengers' Satisfaction

Satisfaction is feelings of happiness or pleasure resulting from comparing a product or service's perceived performance and individual expectations (Kotler, 2000). Customers always aim to get maximum satisfaction from the products or services they buy. In the context of this study, several

factors can influence passengers' satisfaction, such as friendly, knowledgeable, courteous, and helpful employees, billing timeliness, competitive pricing, billing clarity, billing service quality, good value, and fast service (Hokanson, 1995). Passengers who are satisfied with the product or service will repeat purchases and give their loyalty, and this leads to passenger retention (Zairi, 2000).

## Development of Research Hypotheses

### *Hypotheses Related to RO1*

McDougall and Levesque (2000) explored the relationships among service quality constructs, perceived value, customers' satisfaction, and future intentions across four services and found that the core service quality and perceived value are the most imperative drivers of satisfaction with relational service quality. The study also found a relationship between passengers' satisfaction and future intentions. See the illustration of the research framework in Figure 1.

Based on the extensive literature, three primary dimensions (app quality, interaction quality, and physical environment quality) of e-ridesharing service quality are able to predict the passengers' satisfaction and re-ride intention. The following paragraphs discuss the formulation of the hypotheses. App quality dimensions comprise three subdimensions, i.e., convenience, information, and security, which are predicted to be critical dimensions that influence passengers' satisfaction. Thus, the following hypothesis was formulated:

H1: App quality primary dimensions significantly influence passengers' satisfaction with e-ridesharing.

Nielsen's (2015) study on public transport in Malaysia found that passengers have a better perception of e-ridesharing facilities compared to conventional taxi services in terms of convenience to book, convenience to travel with, and ability to get the car fast; these influence passengers' satisfaction. Nista and Regidor (2016) discovered that shorter waiting times are evident in passengers booking Uber rides. Most of them select a waiting time of 10 minutes or less when waiting for their Uber ride while some select a waiting time of 11-30 minutes. Meanwhile, they need 30 minutes or more to wait for a taxi to arrive. Cavana et al. (2007) claimed that service convenience, frequency, responsiveness, and reliability are service quality dimensions that are essential to influence passengers' satisfaction. Thus, the following hypothesis was proposed:

H<sub>1a</sub>: Convenience significantly influences passengers' satisfaction with e-ridesharing.

For information quality dimensions, Swaid and Wigand (2007) identified the key dimensions of e-commerce service quality and their relationship with satisfaction and loyalty. In their research, it was found that the website's design, usability, and information quality significantly influence customer satisfaction. The information essentially relates to the quality of text and revolves around providing customer-centric, credible content and services in a timely fashion (Trocchia & Janda, 2003). Companies that operate within the online environment must be able to provide customers with concise and easy-to-understand information as any poor content could result in a customer leaving the website and thus causing an opportunity spurned (Cai & Jun, 2003). Eppler and Muenzenmayer (2002) proposed two dimensions in their framework: content quality (concerned about the quality of the information presented on the apps or web and suggested that comprehensive, accurate, clear, and applicable information needs to be identified) and media quality

(sound, video, and media info on the web should be concise, consistent, correct and up to date). In the context of online facilities, Brinck et al. (2001) mentioned that the links between pages in a website should be appropriately organized, and text labels or image icons of the links should correctly indicate where the links will connect. This makes users easy to navigate wherever they want to explore. To enhance the user interface, a mobile app or website should display a visually appealing design by consistently using proper color, graphics, images, font, style, and animations (Kim et al., 2002). Thus, the following hypothesis was proposed:

H<sub>1b</sub>: Information significantly influences passengers' satisfaction with e-ridesharing.

The most critical factor in the transfer service is the safety and security of passengers, drivers, and transportation itself (L&F Mine Transfers, 2015). Munjanath's (2015) study regarding brand awareness and customer satisfaction toward e-ridesharing service in Bengaluru, India, found that quick and safe attributes have influenced passenger satisfaction, and the average mean value indicates that passengers have been satisfied with the service. Nielsen (2015) included a good level of security and safety as attributes. He discovered that passengers of e-ridesharing have a good perception and are satisfied with the service offered and intent to re-ride after consuming the service. In an online purchasing setting, online users are still concerned about security issues despite the technological advancements in internet security, such as cryptography, digital signatures, and certificates (Ranganathan & Ganapathy, 2002). Zeithaml et al. (2000) found that security concerns are the primary obstacle to online purchasing. Lee and Lin (2005) claimed that perceived assurance influences the intention to purchase online. Swaid and Wigand's (2007) study included the assurance dimension, defined as the extent to which the website conveys trust and confidence. Thus, the following hypothesis was proposed:

H<sub>1c</sub>: Security significantly influences passengers' satisfaction with e-ridesharing.

Three dimensions can be tested: driver behavior, attitude, and professionalism for interaction quality. Nista and Regidor (2016) conducted a comparative study of uber and regular taxi drivers' service characteristics. These included attributes such as the driver obeying traffic rules, the driver driving carefully, the driver concentrating while driving, and the driver looking presentable. For all aspects, the mean rating given by passengers who tried Uber is higher than that given by users who did not have any experience with the service. The aspect with the largest decline in mean ratings is driver-related as the result shows that interaction quality can influence passenger satisfaction. Regarding the perception of taxis compared to e-ridesharing, it was found that users of e-ridesharing have perfect perceptions of good driver attitude and honesty (Nielsen (2015)). Thus, the following hypothesis was proposed:

H<sub>2</sub>: Interaction quality primary dimensions significantly influence passengers' satisfaction with e-ridesharing.

Vogel and Pettinari (2002) argued that service providers must ensure that consumers feel safe while patronizing services as it will increase trust and confidence among passengers toward employees and service providers. e-Ridesharing services are based on trust due to the particular characteristics of combining digital and social relationships among strangers (Vaclavik et al., 2020). Driver behavior is vital to ensure the passenger feels safe during the service. Nielsen (2015) integrated a good security and safety level as one of their attributes in comparing taxi and e-

ridesharing. In the context of safety, drivers' compliance with traffic rules, drivers driving carefully, and drivers' concentration are found significant in Nista and Regidor's (2016) study. Thus, the following hypothesis was proposed:

H<sub>2a</sub>: Driver behavior significantly influences passengers' satisfaction with e-ridesharing.

In the context of driver attitude, Yao and Ding (2011) stated that drivers' characteristics, including not demanding tips, being honest and righteous, and having a good attitude while driving, are some essential factors considered by passengers. Meghna et al. (2013) included not lengthy routes as their item under responsiveness dimensions identified by Parasuraman et al. (1988). Latiff and Imm (2015) included time arrival after taxi bookings as one of their measuring items under service punctuality dimensions. Thus, the following hypothesis was proposed:

H<sub>2b</sub>: Driver attitude significantly influences passengers' satisfaction with e-ridesharing.

Yao and Ding (2011) claimed that taxi drivers' patience, response towards bookings and complaints, and route arrangements once the destination is assigned are important indicators, supporting Parasuraman et al. (1988). Yao and Ding (2011) also included the communication language as one of the elements in assurance dimensions, in addition to knowledge of routes, availability of security facilities, small changes, and receipts. Moreover, Andreassen (1995) affirmed that empathy is needed to understand consumers' needs and wants and to offer as well as deliver services with individual attention. Yao and Ding (2011) suggested that empathy captures drivers' knowledge of tourist spots, warm service, and honesty. Thus, the following hypothesis is proposed:

H<sub>2c</sub>: Driver professionalism significantly influences passengers' satisfaction with e-ridesharing.

In the context of this study, physical environment quality dimensions can be described as a condition of the overall exterior and interior of the vehicle. There are two dimensions identified; comfort and ambiance. For comfort, Nista and Regidor (2016) found that the cleanliness of the exterior and interior of a vehicle gives a significant impact on the passenger perception of the service. For ambiance, Nielsen (2015) included attributes such as the nice condition to be measured as a comparison between taxi and e-ridesharing services. Passengers who experienced e-ridesharing claimed that they had an excellent perception of e-ridesharing compared to a taxi. Nista and Regidor (2016) also discovered a significant influence of air conditioning as one of the attributes under ambiance dimensions. The quality of vehicles, covering exterior appearance, cleanliness, interior layout, seating, displays, and audio, can significantly affect the quality of a passenger's experience (Kwon et al., n.d.). Thus, the following hypothesis was proposed:

H<sub>3</sub>: Physical environment quality dimensions significantly influence passengers' satisfaction with e-ridesharing.

The ambiance is related to physical appearance, which has a correlation with tangibility in the SERVQUAL model. Santos (2002) proposed tangibility that covers the exterior and interior physical features, tools, equipment, human resources, communication materials, and other physical features used by service providers to offer and deliver services. Meanwhile, Yao and Ding (2011) identified tangibility that includes exterior and interior facilities, equipment in taxis, and the appearance of taxi drivers. Williams et al.'s (2011) study found that service quality has a significant positive effect on customer satisfaction. This is similar to the finding of Yao and Ding (2011) that the visual exterior of

taxi probably captures tourists on whether to hop in the taxi. Thus, the following hypothesis was proposed:

H<sub>3a</sub>: Ambiance significantly influences passengers' satisfaction with e-ridesharing.

McKnight et al. (1986) identified reliability, comfort, the extent of service, safety, and affordability as important attributes that passengers frequently mention in their choice of a mode of transportation. Simona (2010) claimed that service monitoring, availability, travel times, transport capacity, safety, security, and cleanliness of the vehicle must be included when measuring public transportation. Wu and Cheng (2013) identified cleanliness, comfort, tangibles, and safety and security dimensions for measuring physical environment quality in airline services. A study conducted in Kenya in 2010 showed regulations, improved comfort levels, and safety of passengers as important service attributes, which lead to more attractive public transport (British Youth Council, 2012). Regarding Uber and regular taxi service characteristics, it was found that the cleanliness of the interior and exterior of the vehicle and air-conditioning are important aspects when the passengers experience Uber but have lower service ratings in taxicabs (Nista & Regidor, 2016). Meghna et al.'s (2013) study examined the tangible dimension of physical facilities and equipment of the urban bus transport service in India. Their study found that the cleanliness and well-maintained vehicles, buses, and bus stops lead to the comfort of bus commuters. Thus, the following hypothesis was proposed:

H<sub>3b</sub>: Comfort significantly influences passengers' satisfaction with e-ridesharing.

Satisfied consumers will be loyal to the product, and these loyal consumers will repurchase, spread positive information, and recommend the product to their family and friends (Zeithaml, 2000). Taking care of current passengers is beneficial because getting a new passenger will cost roughly five times more expensive in terms of time, money, and resources (Westbrook & Reilly, 1983). Seven important elements influence passenger repurchase intentions: service quality, equity, value, passengers' satisfaction, past loyalty, expected switching cost, and brand preference (Hellier et al., 2003). Petrick et al. (2001) suggested that consumer intention to repurchase is influenced by satisfaction, past behavior, and perceived value. Díaz and Ruíz (2002) claimed that passenger satisfaction is the primary antecedent of repeat purchase behavior. Satisfaction may influence word-of-mouth advertising in the community and intention to repurchase, and service providers need to be well aware of satisfaction for their businesses (Clemes et al., 2018; Suhartanto et al., 2018). Siagian (2019) studied Uber service quality for Indonesian students living in Taiwan and found that customers are satisfied enough with Taiwan Uber's service. A satisfied passenger will have a higher tendency to inform others, share experiences regarding the services, and recommend the service to others without additional expenses from service providers. Thus, the following hypothesis was proposed:

H<sub>4</sub>: Passenger satisfaction significantly influences passenger re-ride intentions with e-ridesharing.

### *Hypotheses Related to RO2*

The quality of service affects passengers' positive future intentions. Cronin and Taylor (1992), for example, discovered a positive connection between service quality and purchase intention. Taylor and Baker (1994) observed the relationship between service quality and purchase intention and

found that customer quality is a moderator between purchase intention and customer satisfaction. Lam et al. (2004) confirmed that passenger satisfaction mediates the relationship between passenger value and positive behavioral intentions. Several studies (Babakus & Boller, 1992; Cronin & Taylor, 1992; Gonzalez et al., 2007) showed that service quality is the antecedent of customer satisfaction. Passenger satisfaction is the result of product consumption evaluation to assess and compare passangers' expectations with the performance of a product or service (Jannang et al., 2014). Thus, the following hypothesis was proposed:

H<sub>5</sub>: Passenger satisfaction mediates the relationship between e-ridesharing service quality dimensions and re-rides intentions with e-ridesharing.

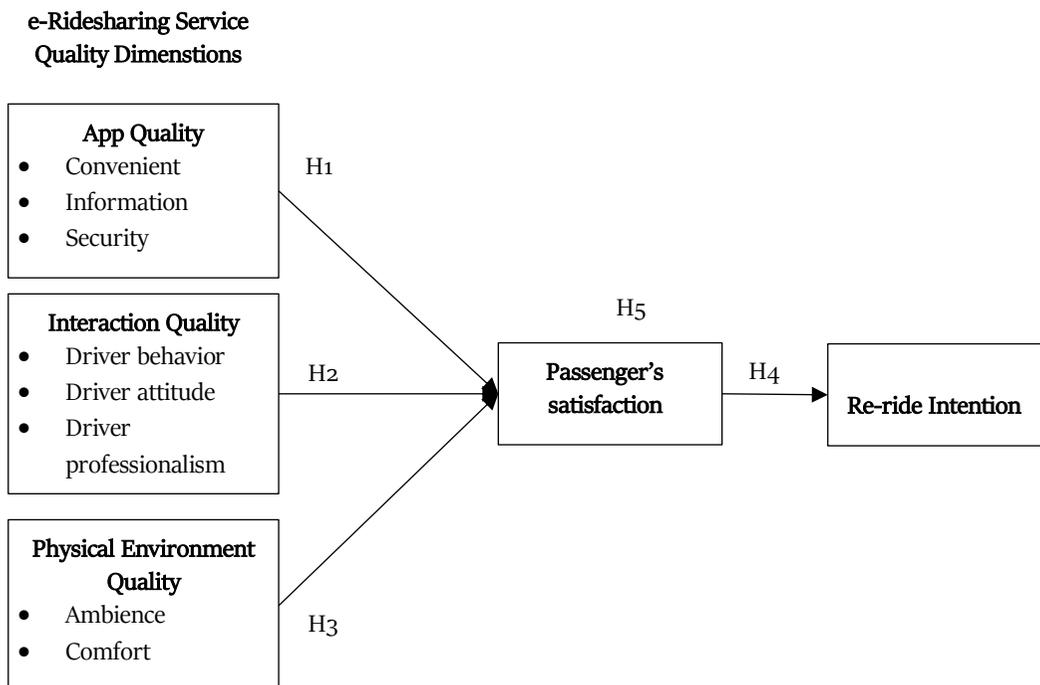


Figure 1. Proposed research framework

## RESEARCH METHOD

This study is cross-sectional. The data was collected during the movement control order from September to November 2020. Due to the COVID-19 restriction, the self-administered and close-ended questionnaire was created in Google Forms. The links were shared through several online medium communications and social media platforms (UiTM email addresses, WhatsApp, Telegrams, Facebook, and Twitter) to reach the potential respondents (i.e., passengers of e-ridesharing who are above 18 years old).

The decision on sample size was determined by the statistical instrument to be utilized and by exploring three sampling methodologies. The first sampling methodology explored is based on the number of items in the questionnaire, as suggested by Pallant (2013) and Hair et al. (2010). The minimum sample size for the exploratory factor analysis (EFA) is at least a 1:5 ratio; the minimum

sample size is 280 (56 items x five respondents). The second sampling methodology is based on Krejcie and Morgan's (1970) sample size table. However, there are no published statistics on the number of e-ridesharing passengers. Therefore, using the Krejcie and Morgan (1970) table is difficult. The third sampling methodology is based on an unknown population since there are no published statistics on the number of e-ridesharing passengers. Based on the unknown population, a minimum of 384 respondents are required (ProjectRegards Admin, 2019). Based on the three sampling methodologies, in conclusion, the minimum sample of data in this study was 384 respondents.

This study adopted the convenience sampling form because it collects data from the population who are conveniently available to answer (Hair et al., 2020). In this study context, the data was collected online; therefore, river sampling was adopted. Based on Hair et al. (2020, p. 192), "river sampling and web scraping are two forms of convenience sampling that have emerged with the growth of the web and social media. River sampling is a web-based opt-in procedure that recruits participants by placing survey invitations on a website and often uses attention-catching approaches. Web scraping is a social media research method that harvests user-generated data from sites where social media-engaged individuals have placed their opinions or stimulated dialogues. The harvested data is then processed using natural language software capable of categorizing text." Lastly, snowball sampling was also adapted because this method allows the respondents to recruit other potential respondents for this study (Sekaran & Bougie, 2013).

The structured questionnaire consisted of seven sections; a screening question, which sought the eligibility of respondents invited to complete the survey, followed by a demographic profile section. Sections A, B, and C focused on e-ridesharing service quality dimensions consisting of three primary dimensions. Section D measured passengers' experiences, and Section E measured passengers' re-ride intention. The items were adapted from various disciplines and tailored to the e-ridesharing setting (see Appendix 1). The questionnaire used seven-Point Likert-type scales ranging from 1 (strongly disagree) to 7 (strongly agree). The questionnaire draft had thorough validity and reliability test before being distributed online. Ten persons (five e-ridesharing users, two drivers, and three lecturers from the Faculty of Hotel and Tourism Management) were selected to gain a fresh set of eyes that can provide views and insight; some items were refined based on the comments and suggestions. Next, the pilot test was conducted in one week among 30 passengers who had experienced renting e-ridesharing around Shah Alam City, Selangor, Malaysia. The Cronbach's alpha values range from 0.877 to 0.930, indicating that the items used have great reliability. It can conclude that the measurements were acceptable and reliable.

Two analysis procedures for this study were conducted; 1) EFA and 2) multiple linear regressions. EFA aims to identify the relevant dimensions proposed in the research framework. Multiple linear regressions address RO 1 and 2 and test  $H_1$  to  $H_5$ . These analyses can be used to identify the relationship between dependent variables, mediating variables, and independent variables (Hair et al., 2010; Pallant, 2013).

## RESULTS

As many as 419 survey questionnaires were collected; 32 were excluded because they were unsuitable for further analyses. Four hundred eighty-seven questionnaires were higher than the minimum of 384 sample size mentioned in the research method section; thus, the size of the data was acceptable. The demographic profiles of the respondents are summarised in Table 1. Next, see Appendix 1.

Appendix 1 summarizes the descriptive analysis and itemizes the source of the measuring items adapted in the questionnaire.

Table 1. Demographics profiles of the respondents (N = 487)

| Items                           | Frequency | Percent | Items            | Frequency | Percent |
|---------------------------------|-----------|---------|------------------|-----------|---------|
| Gender:                         |           |         | States of origin |           |         |
| Female                          | 328       | 67.4    | Kuala Lumpur     | 85        | 17.4    |
| Male                            | 159       | 32.6    | Terengganu       | 11        | 2.3     |
|                                 |           |         | Perlis           | 6         | 1.2     |
| Age:                            |           |         | Perak            | 14        | 2.9     |
| 18-27                           | 322       | 66.1    | Sabah            | 7         | 1.4     |
| 28-37                           | 134       | 27.5    | Sarawak          | 5         | 1.0     |
| 38-47                           | 28        | 5.7     | Putrajaya        | 16        | 3.3     |
| 48 and above                    | 3         | 0.6     | Selangor         | 232       | 47.6    |
|                                 |           |         | Johor            | 32        | 6.6     |
| Purpose of using e-ridesharing: |           |         | Negeri Sembilan  | 14        | 2.9     |
| Business                        | 180       | 37      | Melaka           | 18        | 3.7     |
| Leisure                         | 292       | 60      |                  |           |         |
| Both                            | 15        | 3       |                  |           |         |

#### Data Analyses Procedures to Address RO1

##### *Exploratory Factor Analysis App Quality Dimensions*

The Kaiser-Meyer-Olkin (KMO) value is 0.933 (near 1), regarded as the meritorious value that implies the appropriateness of applying factor analysis (Kaiser & Rice, 1974). For app quality dimensions, the significant value is  $p=0.000$  ( $p<0.05$ ). All factors with an eigenvalue greater than 1 are considered significant and can be kept for further examination in EFA. The six factors were suitable for the analysis, with a total variation of 70.347%; 60% of the total variance is considered acceptable for social science research (Pallant, 2013). The factors are summarized in Table 2. Eighteen items were loaded on two factors; most items did not load precisely on the three sub-dimensions. The factor loading value ranged from 0.612 to 0.823; items above 0.60 were retained. Each factor was renamed according to the leading themes that described the entire items (Hair et al., 2010; Pallant, 2013) and re-labeled with new sub-hypotheses. The items were subjected to a reliability test; the scores were higher than the general criterion of 0.60, indicating the internal consistency of the variables (Churchill, 1979).

Table 2. EFA results for app quality dimensions

| Item Codes | Factor 1  | Factor 2                               |
|------------|---|--|
|            | Information security represents H <sub>1a</sub> | Convenience represents H <sub>1b</sub> |
| A12        | 0.823   |  |
| A13        | 0.818   |  |
| A15        | 0.815   |  |
| A11        | 0.764   |  |
| A14        | 0.715   |  |

Table 2. EFA results for app quality dimensions (continued)

| Item Codes     | Factor 1  | Factor 2                               |
|----------------|---|--|
|                | Information security represents H <sub>1a</sub> | Convenience represents H <sub>1b</sub> |
| A16            | 0.698   |  |
| A18            | 0.682   |  |
| A17            | 0.680   |  |
| A1             |   | 0.760                                  |
| A2             |   | 0.752                                  |
| A8             |   | 0.733                                  |
| A5             |   | 0.720                                  |
| A3             |   | 0.717                                  |
| A6             |   | 0.704                                  |
| A10            |   | 0.669                                  |
| A4             |   | 0.659                                  |
| A7             |   | 0.653                                  |
| A9             |   | 0.612                                  |
| Cronbach alpha | $\alpha = 0.944$                                | $\alpha = 0.943$                       |

### Testing Hypothesis 1

The app quality dimensions can explain 63.7% ( $R^2 = 0.637$ ,  $F = 302.053$ ,  $p < 0.05$ ) of the relationship with passengers' satisfaction. Table 3 demonstrates that these two dimensions significantly influence e-ridesharing passengers' satisfaction. The result shows that information security ( $\beta = 0.500$ ,  $p < 0.01$ ) is the most significant predictor of e-ridesharing passengers' satisfaction in Malaysia, followed by convenience ( $\beta = 0.276$ ,  $p < 0.01$ ). This result addresses RO<sub>1</sub> and supports H<sub>1</sub>.

Table 3. Result of hypothesis 1

| Predictors                                   | Model 1               | Sig   | Assessments               |
|--|-----------------------|-------|---------------------------|
| Dependent Variable: Passengers' Satisfaction |                       |       |                           |
| a) APP_Information Security                  | $\beta = 0.500^{***}$ | 0.000 | H <sub>1a</sub> supported |
| b) APP_Convenience                           | $\beta = 0.276^{***}$ | 0.000 | H <sub>1b</sub> supported |

Note. \*\*\*Significant at 1% level; \*\*Significant at 5% level; \*Significant at 10% level

### Exploratory Factor Analysis of Interaction Quality Dimensions

KMO value is 0.960 and near 1. Bartlett's Test statistically significant value is  $p < 0.05$ . The total variation in the data set for the interaction quality dimensions is 79.6%. Table 4 summarizes the EFA result for Interaction Quality Dimensions and the Cronbach alpha scores. The results report that the 20 items are loaded on two separate factors and do not load precisely on the three sub-dimensions as initially planned.

Table 4. EFA Results for interaction quality dimension

| Items Code | Factor 1  | Factor 2                                   |
|------------|---|--|
|            | Driver Professionalism represents H <sub>2a</sub> | Driver Attitude represents H <sub>2b</sub> |
| B20        | 0.857   |  |
| B19        | 0.828   |  |
| B12        | 0.825   |  |

Table 4. EFA Results for Interaction Quality Dimension (continued)

| Items Code     | Factor 1  | Factor 2                                   |
|----------------|---|--|
|                | Driver Professionalism represents H <sub>2a</sub> | Driver Attitude represents H <sub>2b</sub> |
| B11            | 0.818   |  |
| B16            | 0.786   |  |
| B7             | 0.771   |  |
| B3             | 0.760   |  |
| B18            | 0.758   |  |
| B13            | 0.743   |  |
| B15            | 0.732   |  |
| B17            | 0.710   |  |
| B2             | 0.701   |  |
| B4             | 0.700   |  |
| B14            | 0.698   |  |
| B8             | 0.660   |  |
| B6             |   | 0.893                                      |
| B5             |   | 0.875                                      |
| B9             |   | 0.784                                      |
| B10            |   | 0.760                                      |
| B1             |   | 0.619                                      |
| Cronbach Alpha | $\alpha = 0.979$                                  | $\alpha = 0.943$                           |

### Testing Hypothesis 2

Table 5 summarizes the result testing of H<sub>2</sub>. The interaction quality dimensions can explain 78.6% ( $R^2 = 0.786$ ,  $F = 630.670$ ,  $p < 0.05$ ) of the relationship with passengers' satisfaction. Drivers' professionalism ( $\beta = 0.492$ ,  $p < 0.001$ ) significantly influences e-ridesharing passengers' satisfaction in Malaysia. Drivers' attitude is also insignificant. It can be confirmed that the interaction quality dimensions have contributed to the passengers' satisfaction. This result addresses RO<sub>1</sub> and partially supports H<sub>2</sub>.

Table 5. Result of hypothesis 2

| Predictors                                   | Model 1               | Sig   | Assessments               |
|--|-----------------------|-------|---------------------------|
| Dependent Variable: Passengers' Satisfaction |                       |       |                           |
| a) INT_Driver Professionalism                | $\beta = 0.492^{***}$ | 0.000 | H <sub>2a</sub> supported |
| b) INT_Driver Attitude                       | $\beta = 0.029$       | 0.739 | H <sub>2b</sub> rejected  |

Note: \*\*\*Significant at 1% level; \*\*Significant at 5% level; \*Significant at 10% level

### Exploratory Factor Analysis of Physical Environment Quality Dimensions

KMO value is 0.963 and near 1. Bartlett's Test statistically significant value is  $p < 0.05$ . The variance value for physical environment quality dimensions explains 75.68% of the total variation in the dataset. Table 6 summarizes the EFA result for Physical Environment Quality Dimensions and the Cronbach alpha scores.

Table 6. Structured component for items in physical environment quality dimensions

| Item No.       | Factor 1                           | Factor 2                            |
|----------------|------------------------------------|-------------------------------------|
|                | Comfort represents H <sub>3a</sub> | Ambiance represents H <sub>3b</sub> |
| C1             | 0.872                              |                                     |
| C4             | 0.854                              |                                     |
| C3             | 0.826                              |                                     |
| C2             | 0.826                              |                                     |
| C12            | 0.806                              |                                     |
| C15            | 0.763                              |                                     |
| C11            | 0.750                              |                                     |
| C10            | 0.743                              |                                     |
| C13            | 0.731                              |                                     |
| C9             | 0.704                              |                                     |
| C17            | 0.690                              |                                     |
| C7             | 0.665                              |                                     |
| C18            | 0.650                              |                                     |
| C5             |                                    | 0.750                               |
| C8             |                                    | 0.719                               |
| C16            |                                    | 0.696                               |
| C6             |                                    | 0.696                               |
| C14            |                                    | 0.618                               |
| Cronbach alpha | $\alpha = 0.944$                   | $\alpha = 0.945$                    |

### Testing Hypothesis 3

The physical environment quality dimensions can explain 78.4% ( $R^2 = 0.784$ ,  $F = 625.520$ ,  $p < 0.05$ ) of the relationship with e-ridesharing passengers' satisfaction. Table 7 shows that two dimensions: comfort ( $\beta = 0.476$ ,  $p < 0.001$ ) and ambience ( $\beta = 0.355$ ,  $p < 0.05$ ) significantly influence e-ridesharing passengers' satisfaction in Malaysia. The result addresses RO<sub>1</sub> and satisfies H<sub>3</sub>.

Table 7. Result of hypothesis 3

| Predictors                                   | Model 1               | Sig   | Assessments               |
|--|-----------------------|-------|---------------------------|
| Dependent Variable: Passengers' Satisfaction |                       |       |                           |
| a) PHY_Comfort                               | $\beta = 0.476^{***}$ | 0.000 | H <sub>3a</sub> supported |
| b) PHY_Ambiance                              | $\beta = 0.355^{**}$  | 0.011 | H <sub>3b</sub> supported |

Note. \*\*\*Significant at 1% level; \*\*Significant at 5% level; \*Significant at 10% level

### Testing Hypothesis 4

The model of passengers' satisfaction accounts for 72.0% of the variance in the re-ride intentions ( $R^2 = 0.720$ ,  $F = 888.504$ ,  $p < 0.01$ ). From the analysis shown in Table 8, it can be concluded that passenger satisfaction ( $\beta = 0.487$ ,  $p < 0.01$ ) significantly influences re-ride intentions. Thus, the result satisfies RO<sub>1</sub> and supports H<sub>4</sub>.

Table 8. Result of hypothesis 4

| Predictors                             | Model 1               | Sig   | Assessment   |
|--|-----------------------|-------|--------------|
| Dependent Variable: Re-ride Intentions |                       |       |              |
| a) Passengers' Satisfaction            | $\beta = 0.487^{***}$ | 0.000 | H4 supported |

Note: *\*\*\*Significant at 1% level; \*\*Significant at 5% level; \*Significant at 10% level*

### Data Analyses Procedures to Address RO2

In order to analyze the mediation effect of passenger satisfaction on the relationship between e-ridesharing service quality dimensions and re-ride intentions, a regression analysis has been conducted between the independent variables (app quality dimensions, interaction quality dimensions, and physical environment quality dimensions) and the dependent variable (re-ride intentions). The mediation effect results are shown in Tables 9 to 14, testing  $H_5$ .

Table 9 summarizes the regression analysis between app quality dimensions and re-ride intentions. App quality dimension can explain 56.5% ( $R^2 = 0.565$ ,  $F = 223.051$ ,  $p < 0.01$ ) of the relationship with re-ride intentions. It can be concluded that there is a significant relationship between the app quality dimensions and re-ride intentions. Convenience is the most significant predictor of re-ride intentions ( $\beta = 0.258$ ,  $p < 0.01$ ), followed by information security ( $\beta = 0.135$ ,  $p < 0.001$ ).

Table 9. Results between app quality dimensions and re-ride intentions

| Predictors                            | Model 1               | Sig   | Assessments |
|---------------------------------------|-----------------------|-------|-------------|
| Dependent Variable: Re-Ride Intention |                       |       |             |
| a) APP_ Information Security          | $\beta = 0.135^{***}$ | 0.001 | Supported   |
| b) APP_ Convenience                   | $\beta = 0.258^{***}$ | 0.000 | Supported   |

Note: *\*\*\*Significant at 1% level; \*\*Significant at 5% level; \*Significant at 10% level*

Interaction quality dimensions can explain 69.1% ( $R^2 = 0.691$ ,  $F = 385.415$ ,  $p < 0.05$ ) of the relationship with re-ride intention. Table 10 demonstrates that driver professionalism is the most significant predictor of re-ride intentions ( $\beta = 0.233$ ,  $p < 0.01$ ), followed by driver attitude ( $\beta = 0.128$ ,  $p < 0.05$ ). It can be concluded that interaction quality dimensions have contributed to re-ride intentions.

Table 10. Results between interaction quality dimensions and re-ride intentions

| Predictors                            | Model 1               | Sig   | Assessments |
|---------------------------------------|-----------------------|-------|-------------|
| Dependent Variable: Re-Ride Intention |                       |       |             |
| a) INT_ Driver Professionalism        | $\beta = 0.233^{***}$ | 0.000 | Supported   |
| b) INT_ Driver Attitude               | $\beta = 0.128^{**}$  | 0.034 | Supported   |

Note: *\*\*\*Significant at 1% level; \*\*Significant at 5% level; \*Significant at 10% level*

Table 11 shows the results between physical environment quality dimensions and behavioral intentions, which can explain 65.7% ( $R^2 = 0.657$ ,  $F = 329,631$ ,  $p < 0.05$ ) of the relationship with re-ride intentions. Comfort is the most significant predictor of re-ride intentions ( $\beta = 0.368$ ,  $p < 0.01$ ).

Table 11. Results between physical environment quality dimensions and re-ride intentions

| Predictors                            | Model 1               | Sig   | Assessments |
|---------------------------------------|-----------------------|-------|-------------|
| Dependent Variable: Re-Ride Intention |                       |       |             |
| a) PHY_Comfort                        | $\beta = 0.368^{***}$ | 0.000 | Supported   |
| b) PHY_Ambiance                       | $\beta = -0.111$      | 0.267 | Rejected    |

Note: *\*\*\*Significant at 1% level; \*\*Significant at 5% level; \*Significant at 10% level*

For app quality dimensions, the two subdimensions are significant and fulfill the tested H<sub>5</sub>. As shown in Table 12, Model 1 indicates that app quality dimensions: information security ( $\beta=0.135$ ,  $p<0.001$ ) and convenience ( $\beta=0.258$ ,  $p<0.001$ ) affect re-ride intentions and can explain 56.5% ( $R^2 = 0.565$ ,  $F = 223.051$ ,  $p<0.01$ ) of re-ride intentions.

Table 12. Result of hypothesis 5a

| Predictors                    | Model 1: Std. $\beta$ | Model 2: Std. $\beta$ | Sig   | Assessments |
|-------------------------------|-----------------------|-----------------------|-------|-------------|
| Step 1: DV: Re-Ride Intention |                       |                       |       |             |
| a. APP_ Information Security  | $\beta=0.135^{***}$   |                       | 0.000 | Supported   |
| b. APP_ Convenience           | $\beta=0.258^{***}$   |                       | 0.000 | Supported   |
| Step 2: DV: Re-Ride Intention |                       |                       |       |             |
| a. APP_ Information Security  |                       | $\beta = -0.068^*$    | 0.047 | Supported   |
| b. APP_ Convenience           |                       | $\beta=0.146^{***}$   | 0.000 | Supported   |
| c. Passengers' Satisfaction   |                       | $\beta = 0.405^{***}$ | 0.000 | Supported   |

Note: *\*\*\*Significant at 1% level; \*\*Significant at 5% level; \*Significant at 10% level*

Model 2 indicates that app quality dimensions (information security ( $\beta=-0.068$ ,  $p<0.10$ ) and convenience ( $\beta=0.146$ ,  $p<0.001$ ) and re-ride intentions become significant in passengers' satisfaction ( $\beta=0.405$ ,  $p<0.001$ ). The level of passengers' satisfaction is explained, with 74.6% ( $R^2 = 0.746$ ,  $F = 245.031$ ,  $p<0.001$ ), as a mediator between app quality dimensions and re-ride intentions. It can be concluded that passengers' satisfaction as mediating variable between app quality dimensions and re-ride intentions is partial mediation which supports H<sub>5a</sub>.

Only one subdimension is significant for interaction quality dimensions, supporting H<sub>5</sub>. As shown in Table 13, Model 1 indicates that interaction quality dimensions, i.e., driver professionalism ( $\beta=0.268$ ,  $p<0.001$ ), affect re-ride intentions and can explain 68.7% ( $R^2 = 0.687$ ,  $F = 758.603$ ,  $p<0.001$ ) of re-ride intentions. Model 2 indicates that interaction quality dimensions, i.e., driver professionalism ( $\beta=0.116$ ,  $p<0.001$ ) and re-ride intentions, significantly improve passengers' satisfaction ( $\beta=0.305$ ,  $p<0.001$ ). The level of passenger satisfaction is explained, with 74.8% ( $R^2 = 0.748$ ,  $F = 82.469$ ,  $p<0.001$ ), as the mediator between app quality dimensions and re-ride intentions. It can be concluded that passengers' satisfaction as mediating variable between interaction quality dimensions and re-ride intentions is known as partial mediation, which supports H<sub>5b</sub>.

Table 13. Results of hypothesis 5b

| Predictors                     | Model 1: Std. $\beta$ | Model 2: Std. $\beta$ | Sig   | Assessments |
|--------------------------------|-----------------------|-----------------------|-------|-------------|
| Step 1: DV: Re-Ride Intention  |                       |                       |       |             |
| a. INT_ Driver Professionalism | $\beta = 0.268^{***}$ |                       | 0.000 | Supported   |
| Step 2: DV: Re-Ride Intention  |                       |                       |       |             |
| a. INT_ Driver Professionalism |                       | $\beta = 0.116^{***}$ | 0.000 | Supported   |
| b. Passengers' Satisfaction    |                       | $\beta = 0.305^{***}$ | 0.000 | Supported   |

Note: *\*\*\*Significant at 1% level; \*\*Significant at 5% level; \*Significant at 10% level*

Only one subdimension is significant for physical environment quality dimensions, supporting H<sub>5</sub>. As shown in Table 14, Model 1 indicates that the physical environment quality dimensions of comfort ( $\beta=0.324$ ,  $p<0.01$ ) affect re-ride intentions and can explain 65.6% ( $R^2 = 0.656$ ,  $F = 657.574$ ,  $p<0.001$ ) of re-ride intentions. Model 2 indicates that the physical environment quality dimensions of comfort ( $\beta=0.110$ ,  $p<0.01$ ) and re-ride intentions become significant in passengers' satisfaction ( $\beta=0.348$ ,  $p<0.01$ ). The level of passenger satisfaction is explained with 73.7% ( $R^2 = 0.737$ ,  $F = 105.759$ ,  $p<0.01$ ) as the mediator between app quality dimensions and re-ride intentions. It can be concluded that passenger satisfaction as a mediating variable between physical environment quality dimensions and re-ride intentions is partial mediation, thus supporting H<sub>5c</sub>.

Table 14. Results of hypothesis 5c

| Predictors                    | Model 1: Std. $\beta$ | Model 2: Std. $\beta$ | Sig   | Assessments |
|-------------------------------|-----------------------|-----------------------|-------|-------------|
| Step 1: DV: Re-Ride Intention |                       |                       |       |             |
| a. PHY_ Comfort               | $\beta=0.324^{***}$   |                       | 0.000 | Supported   |
| Step 2: DV: Re-Ride Intention |                       |                       |       |             |
| a. PHY_ Comfort               |                       | $\beta=0.110^{***}$   | 0.000 | Supported   |
| b. Passengers' Satisfaction   |                       | $\beta=0.348^{***}$   | 0.000 | Supported   |

Note: *\*\*\*Significant at 1% level; \*\*Significant at 5% level; \*Significant at 10% level*

## DISCUSSION

This study has extensive literature from various disciplines, including transportation, hospitality, and information technology, to better understand the research area. Hence, a modification of the existing model by captivating consideration of current empirical information and knowledge was conducted to get proper insight and create a model suited to the current setting. Based on the findings, it can be concluded that e-ridesharing service quality dimensions significantly influence passengers' satisfaction. It also has been proven that passengers' satisfaction influences re-ride intention. Each primary dimension has its role in determining the passengers' satisfaction, including the app's quality, the drivers' quality, and the vehicle's quality.

Due to e-ridesharing services comprising technology and transportation in one area, the dimensionalities of app quality (information security and convenience) are comparable with other studies (Eboli & Mazulla, 2007; li & Suomi, 2009; Meghna et al., 2013; Munjanath, 2015; Nielsen, 2015; Saha & Grover, 2011; Stiakakis & Georgiadis, 2011; Swaid & Wigand, 2007), which explain passengers' satisfied actions through the primary dimension of e-ridesharing service. Consequently, it is proven that information and security on the app, such as user data or passenger detail, are vital to the service because it strongly relates to personal privacy, which can influence the passengers' experience, satisfaction, and re-ride intentions. It is also important for e-ridesharing services to provide access to the app regarding driver details and company details to enhance the confidence of passengers to use or re-ride. Security has the significant and greatest influence on passengers' satisfaction. This factor comprises the driver details, company details on the app, the security policy provided on the app, and the privacy policy of passengers. Secondly, convenience can be improved by facilitating passengers with easy-to-use applications and navigation and delivering the service with reasonable route arrangements at a reasonable price. Overall, it can be presumed that the service providers should provide unique content, create an attractive design, and improve the graphic representation of the app from time to time to avoid passengers from getting bored of the same user interface and long time waiting for features updates.

Driver professionalism and driver attitude are identified as the interaction quality primary dimensions. These predictors are comparable to the study, indicating that interaction quality aspects could be categorized into driver attitude, behavior, and professionalism. Within interaction quality, comparably, the dimension shares similar indications in driver professionalism, such as drivers' warm service, driver response to complaints, and driver patience (Nista & Regidor, 2016; Yao & Ding, 2011). For driver attitude, Yao and Ding (2011) included drivers' compliance with traffic rules, drivers driving carefully, and drivers' concentration while driving to the attributes of drivers' attitude. However, the result from EFA in the current study indicates that driver attitude is measured by avoiding smoking, eating, littering while driving, and not demanding a tip from the passengers. Driver professionalism significantly influences passenger satisfaction. It can be presumed that a professional driver might influence passengers to be more satisfied and help increase their satisfaction. In Malaysia, passengers demand a driver when experiencing the service. Thus, the driver should maintain and improve their professional character to satisfy the passenger. Besides, it will be good if service providers provide training to grove their drivers to be competent and provide them with the kit to assist their skills. Service punctuality is also one of the critical elements due to passenger demand for on-time pick-up and drop-off. Alternatively, drivers' attitude insignificantly influences the passengers' satisfaction. A plausible reason is that the driver's attitude might influence passengers' satisfaction, but it is not substantial because drivers are driving their vehicles; passengers expect to have the right to do anything if the driver complies with other quality dimensions. However, the driver must comply with traffic rules and practice a good attitude, such as avoiding smoking, eating, and littering while driving to reflect human manners that may affect other drivers, road users, and passengers.

Lastly, the physical environment quality primary dimensions consisting of two sub-dimensions, i.e., comfort and ambiance, significantly influence passengers' satisfaction. This study also discovers the similarity in terms of the measuring items (Andreassen, 1995; Eboli & Mazulla, 2007; Nielsen, 2015; Yao & Ding, 2011). It can be assumed that passengers will satisfy if they feel and experience a high level of comfort while receiving the service, for example, comfortable seats with suitable temperatures might influence the comfort level of the passengers. Besides, vehicle cleanliness is also one of the crucial factors that drivers need to consider because passengers would like to feel they hire a private car to travel. Thus, drivers should take care of cleanliness to give a memorable experience to boost satisfaction. Finally, the level of passenger satisfaction will be highly influenced if the good ambiance is high. It can be presumed that the pleasant music played at an appropriate volume and the smell of a fresh and pleasant car can make passengers happy to ride. Also, the cleanliness of the exterior of the vehicles may result in satisfaction and a good experience along the journey, which can make passengers feel confident and proud to hire a clean exterior. Thus, drivers should be aware of giving a good environment by creating an ambiance that can enhance passengers' experience.

### **Academic Perspective**

There are many arguments on the limitations of the SERVQUAL model, and many scholars have stressed that service quality is multi-dimensional. They have also highlighted the need to develop industry-and-cultural-specific models when investigating the dimensional structures of service quality. Furthermore, there is no specific agreement on the number of service quality dimensions and the content of the dimensions. From an academic perspective, this study attempts to add several constructs and dimensions to be tested regarding transportation service quality. Hence, this study combines information and literature from the hospitality, tourism industry, and information technology to produce dimensions that suit the current study setting. The result and discussion prove

that all the dimensions and subdimensions suggested are related to passengers' satisfaction and re-ride intentions. Regarding e-ridesharing services, although not new in the transportation industry, there are limited published empirical studies on passengers' satisfaction and re-ride intentions by using service quality dimensions as a predictor. App quality in the study focuses on the dimensions of convenience, information quality, and representational interface of the app itself, which prove their influence on passengers' satisfaction through the app. Interaction quality comprises driver attitude, professionalism, and behavior, which can be categorized as the quality of drivers during service delivery.

It is also proven that the interaction quality dimensions significantly correlate with passengers' satisfaction and re-ride intentions. In contrast, physical environment quality is related to the condition and environment of the vehicle used. Good ambiance and comfortability of the vehicle play important roles in giving a good experience to passengers during the ride. According to the study, it can be concluded that all dimensions suggested can influence the satisfaction of passengers, and indirectly, it can be a blueprint for service providers to ensure all aspects of their service will always be in good condition. Some other studies in the transportation area might emphasize specific dimensions such as comfort, safety, and security which suit and fit according to each study's objectives and study purposes.

### **Practitioner Perspective**

This study is expected to contribute meaningful information to the transportation industry. Service providers should know what is vital to fulfilling the needs and wants of passengers in order to satisfy them. This study result shows that the dimensions of e-ridesharing are the key to fulfilling passengers' satisfaction and re-ride intentions. Thus, an e-ridesharing company should understand what makes passengers choose to ride and consume the service by ensuring the sustainability of the app, quality during service delivery, and car condition.

The company should scrutinize the drivers before they can be the driver-partner to avoid future problems. Passengers' safety is one of the main vital elements to be aware of by both service providers and drivers. Various issues concerning driver violence are documented with assault, rape, kidnapping, and even death (Thompson et al., 2018). Hence, it will be good if the service companies can cooperate with the local authority to implement regulations that can act as guides to be applied in e-transportation or e-ridesharing because it can have either a positive or negative impact on the transportation industry. Aligned with the safety of women passengers and women drivers, Riding Pink was launched in 2016. Besides Riding Pink, Ladies Only Riders and Drivers (LORD) and Spedy Lady offer e-ridesharing for women passengers (Ishak, 2018, Oktober 29).

This study also provides the e-ridesharing companies with the knowledge to outline training plans to enhance passengers' satisfaction and re-ride intention, which helps improve and satisfy the business. Additionally, this study provides information to the transportation industry on the opportunity to adjust its strategy to remain relevant in the ridesharing economy; therefore, the e-ridesharing services will be sustained.

### **LIMITATIONS AND RECOMMENDATIONS FOR FUTURE STUDY**

This study has some limitations. First, the results are too specific to enable their generalization. The research framework might be improved by including additional dimensions and constructs to refine the present framework and increase its reliability. Only three primary dimensions were included in

this study: app quality, interaction quality, and physical environment quality. For future study, it is suggested to add the outcome quality as the primary dimension with subdimensions such as app design (items such as efficiency during installation/submission/downloading/uploading and friendlier use), booking and canceling policies, waiting time, and safety (items such as I feel unsafe when my driver uses his phone). Constructs such as perceived value or image can be tested concerning the quality of service.

Another limitation is that this study focuses on the quality of e-ridesharing as transportation or mobility for the local community only. Future studies can be suggested to relate this service with other services, such as the hospitality and travel industries. For example, some hotels have applied and cooperated with e-ridesharing drivers to transfer their guests from the airport to the hotel and vice versa. Thus, future researchers can take this opportunity to identify the impact of e-ridesharing in the lodging industry.

There are some practical difficulties, such as the sample size. It can be improved by expanding through longitudinal studies with a big sample size to increase the accuracy of the result. For future studies, it is beneficial if the study can be conducted on behalf of drivers regarding the problem during the service delivery, which may come from the passenger attitude and behavior, such as cancellation and no-show after confirming the booking. It would also be helpful if the qualitative approach can be conducted from drivers' perspective. As a driver-partner, there might be some perspectives or difficulties that they have experienced during the service delivery and need to be listened in order to improve and sustain the business.

Since the questionnaire and the sample were confined to e-ridesharing passengers, the findings may not be generalized to other industries or services. Future studies may replicate this framework and test the other services offered in the sharing economy, such as food delivery (e.g., Grabfood and Panda) and grocery delivery (e.g., BungkusIt). Therefore, the findings may increase the study's generalizability.

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## Appendix 1.

Table 15. Descriptive statistics (N = 487)

| Items Code                    | Statements  | Author(s)              | Mean | Std. Deviation |
|-------------------------------|---|------------------------|------|----------------|
| <b>App Quality Dimensions</b> |   |                        |      |                |
| <b>Convenience</b>            |   |                        |      |                |
| A1                            | Availability of service                               | (Eboli & Mazulla,      | 6.08 | 1.280          |
| A2                            | Easy to book  | 2007; Meghna et al.,   | 6.12 | 1.068          |
| A3                            | Ease of payment                                       | 2013; Munjanath,       | 6.10 | 1.086          |
| A4                            | Able to get a car fast                                | 2015; Nielsen, 2015;   | 5.89 | 1.056          |
| A5                            | Availability of small change and receipt              | Yao & Ding, 2011)      | 5.75 | 1.282          |
| A6                            | Reasonable route arrangement                          |                        | 5.91 | 1.069          |
| <b>Information Quality</b>    |   |                        |      |                |
| A7                            | Ease of use (user-friendly)                           |                        | 6.06 | 1.032          |
| A8                            | Completeness of information                           | (li & Suomi, 2009;     | 5.91 | 1.029          |
| A9                            | Multimedia (image and sound)                          | Saha & Grover,         | 5.89 | 1.059          |
| A10                           | Convenience of navigation                             | 2011; Stiakakis &      | 6.04 | .967           |
| A11                           | Uniqueness of content                                 | Georgiadis, 2011;      | 5.83 | 1.059          |
| A12                           | Attractive design of the app                          | Vassilis et al., n.d.) | 5.80 | 1.071          |
| A13                           | Graphic representation                                |                        | 5.83 | 1.054          |
| <b>Security</b>               |   |                        |      |                |
| A14                           | Detail of the driver on the app                       |                        | 5.94 | 1.051          |
| A15                           | The app contains company details                      |                        | 5.68 | 1.163          |
| A16                           | Security policy is accessible                         | (Swaid & Wigand,       | 5.75 | 1.126          |
| A17                           | Details of the passenger are secured (Privacy policy) | 2007)                  | 5.83 | 1.079          |
| A18                           | App company is known for a good reputation            |                        | 5.94 | 1.021          |
| <b>Interaction Quality</b>    |   |                        |      |                |
| <b>Driver Behavior</b>        |   |                        |      |                |
| B1                            | Driver's compliance with traffic rules                |                        | 5.85 | 1.071          |
| B2                            | Driver drives carefully                               | (Eboli & Mazulla,      | 5.88 | 1.021          |
| B3                            | Driver is concentrated                                | 2007; Nista &          | 5.84 | 1.050          |
| B4                            | Driver competence while driving                       | Regidor, 2016; Yao     | 5.90 | 0.985          |
| B5                            | Drivers avoid smoking while driving                   | & Ding, 2011)          | 6.18 | 0.999          |
| B6                            | Drivers avoid eating while driving                    |                        | 6.16 | 0.940          |
| <b>Driver Attitude</b>        |   |                        |      |                |
| B7                            | Drivers can be trusted (trustworthy)                  |                        | 5.78 | 1.116          |
| B8                            | Drivers are punctual while delivering service         | (Munjanath, 2015;      | 5.77 | 1.080          |
| B9                            | Driver not littering                                  | Nielsen, 2015; Nista   | 6.11 | 1.011          |
| B10                           | Driver does not demand the tip (honesty)              | & Regidor, 2016;       | 6.11 | 1.001          |
| B11                           | Driver's response to complaints                       | Yao & Ding, 2011)      | 5.80 | 1.086          |
| B12                           | Driver's patience                                     |                        | 5.84 | 1.062          |
| <b>Driver Professionalism</b> |   |                        |      |                |
| B13                           | Driver looks presentable                              | (Eboli & Mazulla,      | 5.84 | 1.058          |
| B14                           | Drivers' warm service                                 | 2007; Mohd Yusof       | 5.88 | 1.042          |
| B15                           | Understand passenger needs & wants                    | et al., 2021; Nielsen, | 5.88 | 1.021          |
| B16                           | Driver's Knowledge of tourist spot                    | 2015; Nista &          | 5.79 | 1.114          |
| B17                           | Language used to communicate                          | Regidor, 2016; Yao     | 5.97 | 1.005          |
| B18                           | Driver is being friendly                              | & Ding, 2011)          | 6.00 | 0.988          |

| Items Code                    | Statements   | Author(s)            | Mean | Std. Deviation |
|-------------------------------|--|----------------------|------|----------------|
| B19                           | Good level of security while driving                         |                      | 5.93 | 0.974          |
| B20                           | Good level of safety while driving                           |                      | 5.99 | 0.938          |
| Physical Environment Quality  |  |                      |      |                |
| Ambiance                      |  |                      |      |                |
| C1                            | Nice car condition   |                      | 6.15 | 0.861          |
| C2                            | Exterior of vehicles   |                      | 5.99 | 0.932          |
| C3                            | Attractive interior design                                   | (Andreassen, 1995;   | 5.89 | 0.995          |
| C4                            | Vehicle is well air-conditioned                              | Nielsen, 2015; Nista | 6.06 | 0.911          |
| C5                            | Nice music   | & Regidor, 2016;     | 5.79 | 1.060          |
| C6                            | Volume level of music  | Yao & Ding, 2011)    | 5.86 | 0.989          |
| C7                            | Additional decoration  |                      | 5.80 | 1.070          |
| C8                            | Nice odor  |                      | 5.91 | 1.022          |
| Comfort                       |  |                      |      |                |
| C9                            | Size of vehicle  |                      | 6.05 | 0.873          |
| C10                           | Comfortable seats  |                      | 6.03 | 0.897          |
| C11                           | Well maintain vehicle  |                      | 6.01 | 0.887          |
| C12                           | Good temperature   |                      | 6.02 | 0.898          |
| C13                           | Good performing vehicle                                      | (Eboli & Mazulla,    | 6.06 | 0.864          |
| C14                           | Cleanliness of the exterior of the vehicle                   | 2007; Nista &        | 5.98 | 0.922          |
| C15                           | Cleanliness of seats   | Regidor, 2016)       | 6.01 | 0.920          |
| C16                           | Cleanliness of carpet  |                      | 5.96 | 0.946          |
| C17                           | Cleanliness of windows                                       |                      | 5.94 | 0.954          |
| C18                           | Dashboard is clean   |                      | 5.98 | 0.934          |
| Passengers' Experiences       |  |                      |      |                |
| D1                            | Satisfied with the service availability and readiness        |                      | 6.00 | 0.906          |
| D2                            | Satisfied with the user-friendly app                         |                      | 6.03 | 0.941          |
| D3                            | Satisfied with the security of the app                       |                      | 5.94 | 0.952          |
| D4                            | Satisfied with the driver's behavior while driving           | (Andreassen, 1995;   | 5.90 | 0.986          |
| D5                            | Satisfied with the driver's punctuality and reliability      | Mohd Yusof et al.,   | 5.85 | 1.018          |
| D6                            | Satisfied with the driver's warm, hospitable service         | 2021; Nielsen, 2015; | 5.96 | 0.964          |
| D7                            | Satisfied with the overall condition of the vehicles         | Nista & Regidor,     | 5.98 | 0.918          |
| D8                            | Comfortable during every ride                                | 2016; Yao & Ding,    | 5.93 | 0.981          |
| D9                            | Satisfied with the cleanliness of vehicles                   | 2011)                | 6.01 | 0.932          |
| Passengers' Re-Ride Intention |  |                      |      |                |
| E1                            | I intend to re-ride  |                      | 6.06 | 0.991          |
| E2                            | I intend to give a positive word of mouth                    | (Andreassen, 1995;   | 6.06 | 0.953          |
| E3                            | I intend to give a positive e- word of mouth on the internet | Nielsen, 2015; Nista | 6.06 | 0.941          |
| E4                            | I intend to share information with others                    | & Regidor, 2016;     | 6.08 | 0.921          |
| E5                            | I am willing to recommend it to others                       | Yao & Ding, 2011)    | 6.12 | 0.915          |