

A DESCRIPTIVE PILOT STUDY ON SAFETY PERCEPTION AMONG RIDE-HAILING CAR PASSENGERS IN MALAYSIA

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Abstract

Recently, major ride-hailing car (RHC)-related road safety issues have become more prevalent in Malaysia. Due to distracted driving, speeding, irregular working schedules, and exposure to various unsafe road environment circumstances, road traffic accidents are extremely likely to happen to RHC drivers. Consequently, this study is carried out to examine safety perception among RHC passengers in Malaysia. The questionnaire has six sections comprising the respondent's background, travel behavior and pattern, safety perception, driving behavior, vehicle safety, and road environment factors. Convenient sampling was used, and the sample comprised 30 random RHC passengers. Descriptive statistical analysis revealed a high disagreement and neutral level of respondents for the questions, especially for driving behavior and vehicle safety factors. Nevertheless, the responses were generally neutral and highly agreed on the road environment factors. Based on the results, the findings of the study were also discussed.

Keywords: Ride-hailing car, driver behavior factors, vehicle safety factors, road environment factors, safety perception

Abstrak

Baru-baru ini, isu keselamatan jalan raya yang berkaitan dengan kereta ride-hailing (RHC) menjadi lebih berleluasa di Malaysia. Disebabkan oleh pemanduan yang terganggu, memandu laju, jadual kerja yang tidak teratur dan pendedahan kepada pelbagai keadaan persekitaran jalan raya yang tidak selamat, kemalangan jalan raya berkemungkinan besar berlaku kepada pemandu RHC. Sehubungan itu, kajian ini dijalankan untuk mengkaji persepsi keselamatan dalam kalangan penumpang RHC di Malaysia. Terdapat enam bahagian dalam soal selidik yang terdiri daripada latar belakang responden, tingkah laku dan corak perjalanan, persepsi keselamatan, faktor tingkah laku pemanduan, faktor keselamatan kenderaan dan faktor persekitaran jalan raya. Persampelan mudah digunakan dan sampel terdiri daripada 30 penumpang

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RHC rawak. Analisis statistik deskriptif menunjukkan tahap ketidaksetujuan yang tinggi dan neutral responden terhadap soalan yang dikemukakan terutamanya bagi faktor tingkah laku pemanduan dan faktor keselamatan kenderaan. Namun begitu, maklum balas secara amnya adalah sekitar neutral dan persetujuan tinggi untuk faktor persekitaran jalan raya. Berdasarkan keputusan tersebut, dapatan kajian turut dibincangkan.

Kata kunci: *Kereta ride-hailing, faktor tingkah laku pemandu, faktor keselamatan kenderaan, faktor persekitaran jalan raya, persepsi keselamatan*

Introduction

Public transportation (PT) has grown to be one of Malaysia's most crucial components in assuring the long-term viability of a metropolitan center's expansion. PT services in this region have developed into a crucial transportation system due to phenomenal socioeconomic expansion in the Klang Valley (Dahalan et al., 2015). The public transportation system (PT) includes several options: taxi, bus, and rail. A big part of the PT system in Malaysia is played by the taxi sector, which includes both conventional taxis (CT) and ride-hailing cars (RHC) services. This is because a large number of Malaysians use it as a form of transportation that can travel through any part of a journey (SPAD, 2015). In terms of offering passengers convenience and comfort, this service offers greater flexibility, saves time, and is regarded as the most cost-effective and accessible transportation (Aarhaug, 2014). This has considerably raised both the reputation and demand for this service. The RHC system concept was established due to recently developed technology, which has considerably impacted the CT sector in recent years. The system has undergone structural changes that allow customers to order a RHC from any location using their smartphone with improved taxi waiting and journey lead times. This benefits passengers by replacing the need to wave down or hail a taxi on the roadways. Approximately 150,000 ride-hailing drivers are employed by 33 ride-hailing providers that have been granted operating licenses by the Land Public Transport Agency (APAD) to date (Bernama, 2021; APAD, 2021). This resulted in a direct rival for CT, gave customers an alternative, and ultimately raised service standards while fostering healthy competition among taxi drivers. Even though there is considerable growth in demand for RHC services, several problems affect the safety of the passengers. Due to distracted driving, driver tiredness, and driver drowsiness, RHCs are at an extremely high risk of automobile accidents.

Engagement with a smartphone application is required for a ride-hailing service to operate, which is a known factor that is associated with an increased risk of accident (Klauer et al., 2014; Dingus et al., 2016; Guo et al., 2017; Truong and Nguyen, 2019). When engaging in any mobile phone-based application, whether hands-free or not, the likelihood of distracted driving will likely increase. Using a mobile phone app to

reach out to potential passengers while driving is unquestionably distracted driving. Such distraction puts passengers, along with pedestrians and other vehicles, in danger and increases the likelihood of an accident (Dills and Mulholland, 2018). Because they use their mobile phones more frequently than other drivers, RHC drivers are at a higher risk. In addition, RHC are more likely to be involved in an automobile accident because of significantly higher road exposure (Mao et al., 2020). RHC drivers frequently travel at high speeds to save time and earn more money (Sui et al., 2019).

Moreover, the high vehicle density and the fact that a driver's salary was based on the number of passengers further contributed to the unsafe driving practises common on urban roadways (Zhao et al., 2014). Some RHC drivers could choose to do longer shifts through traffic jams when there is high demand during rush hour. As driving in traffic jams is connected with a higher crash risk, the risk of a crash is larger while operating during rush hour. Furthermore, the extended hours that many RHC drivers put in and stressful or physically challenging tasks can cause significant tiredness and sleepiness (Stern et al., 2019; Peng et al., 2022; Robbins et al., 2022). Consequently, road traffic accidents involving RHC become more common (Tseng, 2013; Chung & Chang, 2015). In light of these, this study examined safety perception among RHC passengers in Malaysia.

Literature Review

The ride-hailing sector has experienced rapid growth in recent years worldwide. The expansion has been extraordinary, and Uber, the biggest ride-hailing company in the world, has reportedly provided more than 2 billion rides worldwide since its founding in 2010 (Morrison et al., 2018). In Malaysia, approximately 150,000 e-hailing drivers work for 33 ride-hailing providers (Bernama, 2021; APAD, 2021). Although there has been a considerable growth in the demand for ride-hailing services recently, a study by Meltwater (2017) indicated that driver behavior is a big issue for many customers. In particular, the analysis revealed that Malaysians submitted 82% of RHC drivers' complaints and grouses. "Unsafe", "rude," and "dangerous" are phrases regularly used to describe driver behavior throughout the region. This issue has received much media attention due to the recent intense discussion in Malaysia on RHC-related safety. Therefore, the risk domains, as well as risk indicators that contribute to road traffic accidents (RTA), must be identified in order to carry out interventions and potentially lower the risks associated with RTA. A risk domain is an element that increases the possibility of an accident (Elvik & Vaa, 2004). The risk of an accident and the degree of injuries have been found to be significantly influenced by the domains of driver, vehicle, and road environment factors in prior studies (Boufous et al., 2008; Thompson et al., 2013; (Zhang et al., 2013 Kadilar, 2014).

According to the literature, driving behavior is the most frequent factor influencing road safety (Allahyari et al., 2008; Dingus, 2016; Weber et al., 2018). Additionally, both the vehicle and the road environment factors have the potential to cause a driver to make a mistake, which then becomes the primary significant contributor to the accident (Babić et al., 2020). Several past studies indicated that there are several driving behavior-related risk indicators that are significantly linked to RTA, including exceeding the speed limit, running red lights, lane deviation, improper seatbelt use, tailgating, street racing, middle-lane hogging, passing on the left, failing to check the rear-view mirror, failing to use turn signals, crossing the center line, failing to stop at intersections, using a hand-held phone, and secondary task distraction. In addition, vehicle conditions are a key contributing factor to RTA (Cuerden et al., 2011; Jones, 2016; Montero-Salgado et al., 2022). Several vehicle safety risk indicators are connected to RTA, including bald tires, unexpected mechanical failures while driving, broken rear seatbelts, the absence of side airbags, the absence of a fire extinguisher, the absence of a rear-view camera, and older vehicles. Furthermore, the road environment elements affected the performance of the vehicle and the driver during driving (Zulhaidi et al., 2009; Batrakova & Gredasova et al., 2016; Kim et al., 2016; Wu et al., 2021). Moreover, this element might promote and support the development of safe driving behaviors. Night time driving, streetlights, traffic lights, severe rain, crosswinds, sun glare, fog, poor road markings and traffic signs, road pavement failure, roadside hazards, and traffic jams are significant risk indicators for road environment factors.

Methodology

This study's main methodology was a descriptive research design with a questionnaire survey. Several questions in the driver behavior questionnaire (DBQ), choosing safer vehicle questionnaire (CSVQ), and road safety perception questionnaire (RSPQ) were chosen based on risk indicators by their measurability and relevance to the analyzed phenomenon. These questions were then adapted to suit the objective of this study. In this study, there were six sections in the questionnaire. The purpose of the questionnaire's Section A was to collect data on the respondents' demographics, while the Section B contains information about travel behavior and patterns. 14 questions in Section C connect the domain of the driving behaviour factors. Regarding the vehicle safety factors, there are 7 questions in Section D. Meanwhile, there are 11 questions in Section E related to the factors that affect the road environment. Section C, D, and E used a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) to evaluate these questions. Last but not least, the section on RHC safety views includes numerous questions about respondents' perceptions of RHC's safety in Malaysia. The questionnaire was finally used for the pilot test, and the convenience sampling strategy, in particular, was utilized to gather data for this study because it enables the researcher to select participants who are readily available or accessible. Additionally, the questionnaire

was distributed to the respondents who were English-speaking passengers with prior RHC travel experience. The present pilot survey was conducted with 30 random RHC passengers whose sample served as the study's responders. Finally, all the collected data were analyzed using IBM SPSS Statistics Version 20.

Results

Demographic Profile

Most respondents were males (60%) while the rest were females (40%). Besides that, 66.7% of the respondents were Malay, 23.3% of the respondents were Chinese, and 10% of the respondents were Indian. In addition, the survey revealed that 80% of the respondents were never married and the rest were married (20%). From the perspective of education level, the majority of the respondents were bachelor's degree holders (63.3%) whereas other respondents were master's degree holders (37.7%). Furthermore, 51.4% of the respondents did had a car, while 48.6% of the respondents did not have a car. In terms of RHC usage, the highest percentage of the respondents used RHC because of they did not have a vehicle at the time (53.3%), followed by both faster mode of travel and cannot drive (13.3%), not being familiar with the road network (10%), difficulties with parking (6.7%) and less expensive mode of transportation (3.3%). Regarding average journey time, a greater number of respondents travel between 15 minutes to 29 minutes (40%) followed by less than 15 minutes (33.3%), between 30 to 44 minutes (20%), between 45 to 59 minutes, and more than 60 minutes (3.3%). Generally, most respondents preferred to travel in the morning (33.3%), afternoon (26.7%), evening (23.3%), and night (16.7%). More specifically, more than half of the respondents preferred weekdays to travel (53.3%), followed by weekends (43.3%) and public holiday (3.3%). On the other hand, 70% of the respondents preferred to travel with a companion, while 30% preferred to travel alone. Regarding RHC driver preference, most of the respondents feel indifferent regardless the gender of the RHC driver (50%), followed by male RHC driver (30%), and the least choice was female RHC driver (20%). Compared with CT, more than half of the respondents agreed that RHC was safer than CT (63.4%), 30% of the respondents have a neutral opinion while others disagreed (6.6%).

Questionnaire Results

From Table 1, it was likely to conclude that respondents disagree with statements that most of the ride-hailing car drivers were often cross a junction when the traffic lights have already turned red, difficult in maintaining lane position, improper wearing a seatbelt, failing to remain in the proper lane, fail to check rear-view mirror, overtake someone without signalling, fail to stop at a junction and having another in-vehicle (internal) distractions. Respondents were also highly disagreed that most of the ride-hailing car drivers were often get involved with unofficial "races". Nevertheless,

respondents were neutral that most of the ride-hailing car drivers disregard the speed limits, drive close to the car in front and use mobile phones while driving.

Table 1. Descriptive Results for Driving Behaviour Factor

Driving Behaviour Factors (2.616)	Mean	Std. Deviation
Disregard the speed limits on a motorway.	3.07	1.202
Cross a junction knowing that the traffic lights have already turned red.	2.77	1.331
Difficult in maintaining lane position.	2.83	1.147
Improper wearing a seatbelt while driving.	2.17	0.986
Drive especially close to the car in front as a signal to go faster or get out of the way.	3.03	1.377
Get involved with unofficial "races" with other drivers.	1.9	0.885
Be sure to remain in the proper lane.	2.53	1.224
Become impatient with a slow driver in the inner lane and overtake on the outer (left) lane.	3	1.339
Fail to check rear-view mirror before changing lanes.	2.3	1.055
Attempt to turn or overtake someone without signaling a left or right turn.	2.5	1.106
Overtake at a double line.	2.5	1.137
Fail to stop at junction.	2.37	1.098
Use mobile phone while driving.	3.23	1.357
Having another in-vehicle (internal) distractions such as smoking, eating and drinking while driving.	2.43	1.382

The results in Table 2 revealed that the respondents disagree with statements that most of the ride-hailing cars have used bald tyre, malfunctioning rear passenger's seatbelts, have no side airbags installation, have no rear view camera and look old. Respondents also highly disagree that most of the ride-hailing car have sudden mechanical failure during operation. On the other hand, respondents were neutral that most of the ride-hailing cars have no fire extinguisher.

Table 2. Descriptive Results for Vehicle Safety Factors

Vehicle Safety Factors (2.351)	Mean	Std. Deviation
Have used bald tyre.	2.1	0.995
Have sudden mechanical failure during operation.	1.97	0.964
Malfunctioning of rear passenger's seatbelts.	2.03	1.033
Have no side airbags installation.	2.07	1.015
Have no fire extinguisher.	3.13	1.456
Have no rear-view camera.	2.83	1.487
Look old.	2.33	1.184

Table 3 demonstrated that the perception of respondent neutral on statements that road traffic accident can easily happen to ride-hailing car when driving at night, existing streetlights is not working properly, existing traffic lights is not working properly, there is crosswind, there is sun glare, there is fog, there are poor road markings and traffic signs, there are street parking or roadside objects and the presence of traffic congestion. However, respondents were agree that road traffic accident can easily happen to ride-hailing car when there is rain and driving over a pothole.

Table 3. Descriptive Results for Road Environment Factors

Road Environment Factors (3.68)	Mean	Std. Deviation
Driving at night.	3.6	1.276
The existing streetlights is not working properly.	3.63	1.159
The existing traffic lights is not working properly.	3.57	1.165
There is rain.	4.37	0.89
There is crosswind.	3.6	1.037
There is sun glare.	3.5	1.253
There is fog.	3.37	1.189
There are poor road markings and traffic signs.	3.73	1.23
Driving over a pothole.	4.07	1.112
There are street parking or roadside objects.	3.47	1.042
There is presence of traffic congestion.	3.57	1.104

Discussions

In Malaysia, serious issues with RHC related to road safety have gotten worse recently. Due to distracted driving, speeding, irregular working schedules and exposure to a various of unsafe road environment circumstances, road traffic accidents are extremely likely to happen to RHC drivers. Therefore, the aim of this study was carried out to examine safety perception among ride-hailing car passengers in Malaysia. A descriptive exploration was performed on demographic information and three risk domains including driving behaviour factors, vehicle safety factors and road environment factors. Based on demographic perspective, majority of the respondents were males, Malay, never married and category bachelor degree holder. In terms of RHC usage, highest percentage of the respondents used RHC because of they did not have a vehicle at the time and regarding average journey time, greater number of respondents travels between 15 minutes to 29 minutes. Generally, most of respondents preferred to travel in the morning and specifically, more than half of the respondents preferred weekdays to travel. In addition, 70% of the respondents preferred to travel with a companion while 30% preferred to travel alone and most of respondents feel indifferent regardless the gender of RHC driver (50%). In comparison with CT, more than half of the respondents have agreed that RHC was safer than CT (63.4%).

According to the risk domains exploration, it can be concluded that the results of descriptive analysis revealed that a high disagreement and neutral level of respondents for the questions asked especially for driving behaviour factors and vehicle safety factors. However, the responses were generally around neutral and high agreement for the road environment factors. Specifically, respondent were neutral on statements that road traffic accident can easily happen to ride-hailing car when driving at night, existing streetlights and traffic lights are not working properly, there is crosswind, sun glare and fog, road markings and traffic signs in poor condition, the presence of street parking or roadside objects as well as traffic congestion. Additionally, respondents were agree that road traffic accident can easily happen to ride-hailing car when there is rain and driving over a pothole.

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