Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 3, 2021, Pages. 4582 - 4590
Received 16 February 2021; Accepted 08 March 2021.

The Preliminary Study on the Adoption of the Child Restraint System (CRS) among the E-Hailing Driver.

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Abstract
Although e-hailing services are excluded from the implementation of the CRS policy in Malaysia. There is no guarantee that the child passenger is safe while using the e-hailing services. Until a suitable mechanism or policy established, the child passengers are still exposed to the risk of injury that could be resulting in death in the event of an accident. Therefore, this study was conducted to investigate the readiness of e-hailing service drivers on the CRS implementation. A total of 365 questionnaires were collected and analyzed using structural equation modeling (SEM) to test four (4) proposed hypotheses. The results confirmed a positive direct relationship between i) demographics and readiness, ii) demographic and knowledge, iii) knowledge and readiness of the E-Hailing drivers towards the implementation of the CRS. The result also revealed a mediate effect of knowledge to the relationship between demographic and readiness of the e-hailing driver. This study provides an early input for future more research to explore the influence of driver individual factors and socioeconomic factors on the implementation of CRS in e-hailing service.

Keywords: Logistics Management, Public Transportation, E-Hailing Services.

INTRODUCTION

In many cases of motorcar accidents, children are more likely to suffer severe injuries than adults (RoszalinaRamli et. al. 2020). As such, many parents use Child Restraint System (CRS) as a preventive measure which has proven to be significant to protect children from road crashes (Zaza, 2001) and increase the chance of a child's survival by 71% (Starnes & Eigen, 2002). In response to the issue, the Ministry of Transport has plans to make CRS compulsory in all private vehicles in Malaysia. The announcement has drawn a mixed-response not only from the guardian and parent but also from the e-hailing service provider. Although this policy does not apply to e-hailing services, the government has encouraged the e-hailing drivers to apply a Child Restraint Seat (CRS) for the safety of child passengers until a new mechanism is established and becomes mandatory. This is due to the increasing trend of using e-hailing services among the community which exposes the child passengers to the risk of injuries related to death in the event of an accident while traveling with e-hailing

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services. Thus, this study is conducted to illustrate the primary findings of e-hailing driver readiness to adopt the implementation of the Child Restraint System (CRS) policy for e-hailing services.

LITERATURE REVIEW

2.1 The E-hailing introduction in Malaysia.

The e-hailing service, which is based on the ride-sharing concept was introduced in Malaysia to bring a new dimension to online taxi booking and indirectly revolutionized the private transport industry. Through continuous support from the Malaysian government e-hailing services have since grown and taken over the domination of taxi services by reducing the transportation costs and waiting time which directly benefiting the user (Santos and Xavier, 2015).

2.1 E-Hailing as an Emerging Mode of Transportation

Many studieshavedescribedthe term of emerging transportation mode toincludes ride-sourcing, ride-hailing, TNC's, e-hailing, and app-based on-demand service. While the literature on the benefits and effectiveness of ride-hailing services includes low waiting times(Rayle et al, 2016) and reduced commute-related stress (Yan Zhang et. al,2016), cost-effectiveness over other modes(Wan Mohamad et. al.,2016;Ruangkanjanases&Techapoolphol, 2018; Zhong et al., 2018), and congestion mitigation, particularly for the shared-ride options (Jane Lin, 2017).

2.2 Child Restraint System (CRS) scenario in Malaysia.

The study on the CRS adoption in Malaysia has reported a lack of awareness among the Malaysia parent of the importance of CRS usage during travel (Oxley J. et al, 2018; Ariffin M.Q.M. et.al, 2014; Kulanthayan S. et.al, 2010; Paiman N.F. et.al, 2018). Although these researches concluded the importance of using the seating facility, still almost all child safety seats not being used or installed properly which indicates a lot of effort is still requires in complying with the CRS law (RoszalinaRamli et.al, 2020). Hence, it is important to ensure the CRS is implementing as mandatory for all private vehicles and regularly monitored by the road safety authority in this country.

2.3 Research on driver behavior

Research on driver behavior typically focused only on demographic factors and rarely explores a more comprehensive examination. Typical factors that have been researched include age, income, gender, education, race/ethnicity, driver attitude, and behavior. Literature indicates that demographic factors may allow models to better capture residual changes in crash trends over time (R. B. Noland and L. Oh, 2002; Khan and Qureshi 2020). The relationships between age, gender, income, and education and their connection to driving behavior may vary based on behavior and demographic background (D. Shinar et. Al, 2001). The effect of age on fatal crashes, particularly with elderly drivers has also been explored.

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Older drivers are typically considered to be at greater risk for crashes because they are more vulnerable, but some researchers have found that there is a declining trend in older driver fatal crashes, despite the increased aging of the driving population (I. Cheung et. al, 2011; J. B. Cicchino et. al, 2014).

The knowledge of the driver also one of the important areas in the study of driver behavior. As suggested by Shinar et al (2001), the higher knowledge of the driver in terms of education, the more they are willing to use the seatbelt. This finding was consistent with those studies conducted by (Begg& Langley, 2000) who suggested that drivers who did not use seatbelts tended to have lower academic qualifications.

RESEARCH MODEL AND HYPOTHESIS

A conceptual framework has been developed as shown in figure 1, to facilitate an understanding of a network of ideas and explore the probable relationship among the variables that have been reviewed from the previous study. The conceptual framework in this study was built based on three main variables which are known as demographic, knowledge, and readiness. For the e-hailing driver, it will touch on the aspect of readiness meanwhile the demographic factor will touch on the whole aspect like age, gender, educational level, and income. While knowledge on the education of the safety requirements for the child traveling in the private vehicle.

To facilitate the investigation, four (4) hypothesis linked to the Child Restraint System (CRS) implementation policy such as e-hailing driver readiness, and e-hailing driver demographic factors like age, gender, income level, and knowledge such as educational level were applied explained in the following;

H1 – Is there a positive relationship between driver demographic and driver knowledge.

H2 – Is there a positive relationship between driver demographic and driver readiness to adopt CRS.

H3 – Is there a positive relationship between the driver's knowledge and the driver's readiness to adopt the CRS.

H4 - Is there a positive relationship between the driver demographic and driver readiness via driver knowledge to adopt CRS.

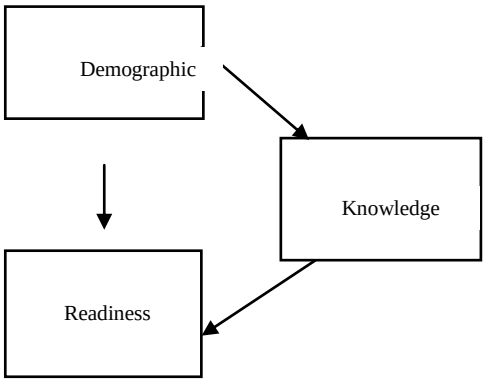

Figure 1. Conceptual Framework

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METHODOLOGY

3.1 Survey instrument

A total of 12 observed variables was developed to constitute the measurement of the exogenous and endogenous variables. The exogenous variable of driver knowledge consists of 4 items, and driver demographics consists of 4 items. Meanwhile, the endogenous of driver readiness consists of 4 items. This study also adopted a measuring scale of 5-point Likert scale measuring the respondent perception towards the developed variables. The demographics variables questioned the demographics factor such as age, gender, education, and income. While the knowledge variable questioned the education of the driver and the readiness variable questioned the willingness of the driver to adopt the CRS.

3.2 Sample

A total of 382 e-hailing drivers were approached randomly to complete a questionnaire within Johor Bahru, Malaysia through a blasting email and on the spot approach using a simple random sampling technique. From the 382 distributed questionnaires, only 365 questionnaires (95.5%) were returned, which was deemed sufficient to proceed with the SEM analysis. The collected data were then checked using the Mahalanobis distance to identify the multivariate outliers, which were deleted permanently, leaving 348 datasets to be used for further analysis.

3.3 Data analysis

In the application method of the Structural Equation Modelling (SEM), a few steps must and suitable to be included in ensuring all the data gathered are strong enough to support the theory given. Therefore, the researcher is using all the steps written below to acquire the results.

Step 1 – Assumption Check
i) Multivariate Normality
ii) Multicollinearity Test
iii) Sampling Size in SEM
Step 2 – Model Specification
i) Exploratory Factor Analysis (EFA).
ii) Reliability Analysis (Pilot Test)
Step 3 – Model Identification Confirmatory Factor Analysis
i) Convergent Validity
ii) Model Fitting
Step 4 – Model Evaluation
Step 5 – Model Modification

RESULTS AND FINDINGS

4.1 Demographic profiles of respondents

The respondent involved in this study shows that most of the e-hailing driver are male (86%) and female (14%) with majority of them are between 22-29 years old (52.7%), followed by the age range between 30-39 years old (20%), and above 40years old (6%).

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Approximately13.5% of the respondent are younger driver which less than 20 years. In this study, most respondents are part-time e-hailing drivers (91%), of which only 9% of the respondent make e-hailing service as a full-time carrier. Most of the respondents earnsless than RM2500 (51%), RM2501-RM4000 (38.5%), RM4001-6000 (5.5%), and more than RM6000 (2%).

4.2 Construct validity, dimensionality, and reliability

All constructs from the AMOS output were analyzed to calculate the average variance extracted (AVE), composite reliability (CR), and Cronbach's Alpha, as shown in Table 1. All constructs achieved a higher Cronbach's Alpha of more than 0.7 which was recommended by Hair et al (2006). AVE and composite reliability (CR) result also shows all the constructs have achieved the minimum requirement for each parameter (Byrne, 2001, 2006; Hair et al., 2010).

Table1: Construct validity, dimensionality, reliability, and item Loadings

Construct	Item	Standaradised loading	CR	AVE	Alpha Cronbach
Knowledge	K1	0.814			
	K2	0.804			
	K3	0.646			
	K4	0.667	0.824	0.543	0.828
Readiness	R1	0.870			
	R2	0.826			
	R3	0.864			
	R4	0.616	0.875	0.641	0.882
Demo	D1	0.808			
	D2	0.804			
	D3	0.646			
	D4	0.667	0.823	0.540	0.839

4.3 Model analysis

This study has developed two distinct models,based onBarron and Kenny's (1986) four-step technique to assess the mediating effect, which consists of:

1) Model 1(direct effect)

i. a direct path from demographic to readiness

ii a direct path from demographics to knowledge

iiia direct path from knowledge to readiness

2) Model 2 (mediated effect)

i. indirect path from demographics to knowledge and then from knowledge to readiness

The first model reported a direct path effect from demographics to readiness, and demographic to knowledge. These paths were significant at the level of $p<0.05$, with the path coefficients of 0.840 and 0.740, respectively. The second model reported a mediating effect of knowledge between the link of demographic and readiness (refer to figure 3).The results shows the change in direct path standardized beta from0.840 to 0.370 after the introduction

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of knowledge as a mediator. The reduction of 0.470 in direct path coefficient represents 56% of the direct effect as resulted of mediator role.

Thetwo models were tested against the fit index that most recommend and suitable to use in the SEM research with the suggested cut-off as shown in table 2.

Table 2: Fit indices for two different models

Fit Index	Cut-off value	Model 1	Model 2
CMIN/DF (Chi-Square/Degrees of Freedom)	≤ 4	1.952	1.978
CFI (Comparative Fit Index)	> 0.9	0.953	0.952
TLI (Tucker-Lewis Index)	> 0.9	0.926	0.924
RMSEA (Root Mean Square of Error Approximation)	<0.9	0.49	0.500

Figure 2. Model 1: direct path coefficient

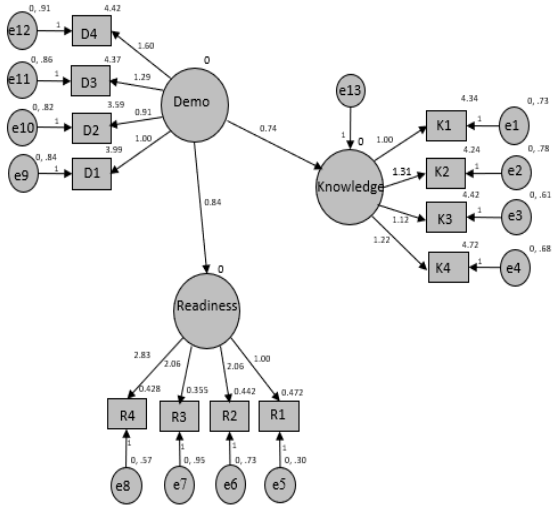
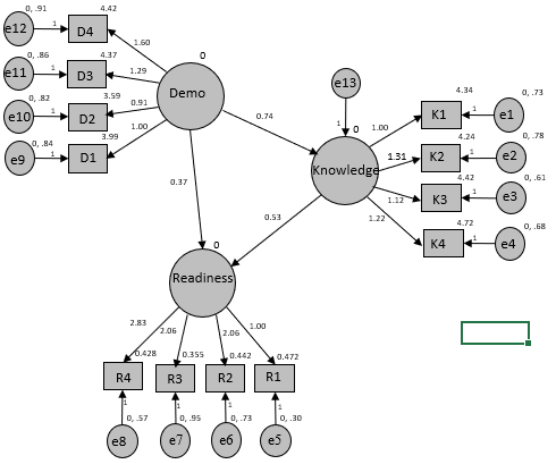


Figure 3.Model 2:Indirect path coefficient



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4.3 Hypotheses Verification

The positive and strong standardized value between demographic and readiness, demographic and knowledge, knowledge, and readiness, and demographic and readiness via knowledge (0.740, 0.840, 0.530, 0.370 respectively) indicate that the H1, H2, H3, H4, stated in the proposed model are verified.

Table 2: Summary of Hypotheses Testing Results

Hypothesizes relationship		Path Coefficient	p-value	Conclussion
H1	There is a positive relationship between demographic and readiness	0.740	0.00	Supported
H2	There is a positive relationship between demographic and knowledge	0.840	0.00	Supported
H3	There is a positive relationship between knowledge and readiness	0.530	0.00	Supported
H4	There is a positive indirect reltionship between demographics and readiness via knowledge	0.370	0.00	Supported

CONCLUSION

This study provides an insight into the readiness of the e-hailing driver towards the enforcement of the Child Restraint System (CRS) law in Malaysia. Two distinct models were developed to facilitate the investigation of a probable relationship between demographic, knowledge, and readiness. The findings found that demographics pose a positive and significant direct effect on both knowledge and readiness. This is similar to the knowledge that also poses a positive direct effect on readiness. The mediator effect from the knowledge variable was also positive, indicates a significant role of mediator in influencing the driver readiness in the implementation of CRS policy in Malaysia.

The study provides some practical implications that can be adopted by the government in implementing the policy of CRS. The low adoption of CRS in Malaysia (Muammar Quadaffi et al, 2104) is mainly due to no mandatory legalization has taken place.As such, this study is drawn to improve the preparedness of the government in implementing the CRS. As the research revealed, demographics of the e-hailing driver has a significant direct effect on knowledge and readiness of the e-hailing driver, as well as the mediated role by knowledge to influence the readiness. This information is useful for the government particularly, the ministry of transport in planning a holistic approach to encourage the participation of e-hailing drivers in the CRS. The differences in terms of demographic aspects of drivers should be adopted as a basis in the implementation of CRS. First, in terms of driver gender where female drivers are well prepared for CRS as compared to male drivers. Second, in terms of age, younger drivers are more exposed to safety information than older drivers. Third, in terms of education, where drivers with higher education will be easier to accept the implementation of CSR due to high awareness of passenger safety.Third, in terms of income where most drivers are from the B40 group who have a constraint in terms of the ability to provide CRS in their service. Here, the government needs to provide any assistance in terms of subsidies and incentives to drivers involved in this program. Apart from the subsidies and incentives to the driver, the use of CRS is associated with the age and level of education of the guardian (NoorFaradila P. et. Al, 2016) which use the e-hailing service. Therefore, awareness and education on the benefits of CRS are very

important especially for both guardian and the e-hailing driver to ensure the implementation of CRS in e-hailing service will be more successful.

Initiatives to encourage the use of CRS among e-hailing drivers should be led by the government. These include the introduction of compulsory legislation and appropriate enforcement, education in the form of awareness campaigns, roadshows, and costs assistance involved in the CRS installation that needs to be considered before the implementation. It is no doubt that the enforcement of CRS for e-hailing service should not further be delayed, otherwise, these innocent children are always at high risk of death every time they travel in an uncontrolled vehicle.

Acknowledgment:
We would like to extend our sincerest gratitude to all the respondents who took part in this research.

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