

PROMOTING GREEN ENVIRONMENT BY PREDICTING GREEN PUBLIC TRANSPORTATION USAGE

PUVANESVARAN AYER SAMY¹, SARINA ISMAIL*¹ AND THURASAMY RAMAYAH²

¹Faculty of Business and Social Environment, Universiti Malaysia Terengganu, 21030 Kuala Nerus, Terengganu, Malaysia.

²School of Management, Universiti Sains Malaysia, 11800, Pulau Pinang, Malaysia.

*Corresponding author: maratree.p@msu.ac.th

Submitted final draft: 23 June 2020

Accepted: 4 August 2020

<http://doi.org/10.46754/jssm.2021.06.015>

Abstract: This study utilises the Theory of Reasoned Action (TRA) to examine the relationship between intention to use green public transportation, attitude, subjective norm, price and service quality. Quantitative research using an intercept survey approach was employed, involving a total of 193 respondents in this study. Analysis of Partial Least Square (PLS) was used to examine the suggested relationship. The result, however, indicates that there is no relationship between attitude and intention. Meanwhile, subjective norms, price, and service quality were significant predictors of green public transportation usage intention. This study contributes not only to green consumer behaviour but also to the management insights regarding green transportation and environment.

Keywords: Green public transportation usage intention, attitude, subjective norm, price, service quality.

Introduction

In the last decade, environmental issues such as global warming, air and water pollution have been significant issues affecting the quality of life that has led to increased awareness of the environment. (Akehurst *et al.*, 2012; Han & Kim, 2010; Min, Hong *et al.*, 2012). The global CO₂ emission rose to 37.1bn tonnes in 2018, and one of the main contributors came from transportation (The Guardian, 2018; The NST, 2017). Moreover, transportation is an essential requirement for an individual; hence, the demand for transport services have increased in this modern era (Balachandran & Hamzah, 2017; Mehdizadeh *et al.* 2019). In Malaysia, the main contributors to pollution are public and private transportation, which account for 17% of the overall CO₂ emission (The NST, 2017). On the issue of climate change, the transportation sector often ignores the import of sustainability (Balachandran & Hamzah, 2017; Sharaf *et al.* 2015). Therefore, we need to minimise the environmental problem and increase sustainable and green consumption patterns to allow changes in consumer behaviour and cultural practices (Khan *et al.* 2015). In Malaysia, studies relating to public transportation mainly focused on safety and customer satisfaction (Tan *et al.* 2019;

Wang *et al.* 2016), quality (Ahmad *et al.* 2014), acceptance (Rezai *et al.* 2013) environment consent (Borhan *et al.*, 2014), electronic vehicle adoption (Hardman *et al.* 2016) and eco-friendly fuel vehicles (Halder *et al.* 2016; Todorovic & Simic, 2019), sustainable transportation (Anfinsen *et al.* 2019; Sultana *et al.* 2017; Wu *et al.* 2019) energy consumption (Tseng & Hung, 2013; Varela-Candamio *et al.* 2018; Zhili *et al.* 2019), air pollution and emissions from greenhouse gases (López *et al.* 2019; Rupp *et al.* 2019; Zahedi *et al.* 2019). Meanwhile, studies on green consumer behaviour is linked to green buying (Sharaf *et al.* 2015; Sharma *et al.* 2019; Vazifehdoust *et al.* 2013), green consumption (Paul *et al.* 2016; Ritter *et al.* 2015; Sun *et al.* 2019; Vita *et al.*, 2018; Zhao *et al.* 2014) green advertisement (Fuiyeng & Yazdanifard, 2015; Kanchanapibul, Lacka, Wang, & Chan, 2014; Kumar, 2017; Vazifehdoust *et al.*, 2013, and green practices (Choshaly, 2018; DiPietro *et al.* 2013; Rezai *et al.* 2013b; Yadav *et al.* 2017).

Based on present understanding, there seems to be a lack of study on green public transportation. As we can see green consumer behaviour can be defined as consumer attitudes, perception or believes that they are using green products or service, and they are more

dependant on environmentally friendly products which are free from pollution (Khan *et al.*, 2015). Green consumers will contribute and expose green behaviour to society. They will play three essential roles as a green consumer such as buyer, payer, and user. As a customer, they choose and purchase green products or services and are ready to pay a fair price for said products or services if they are of high quality and have little or no adverse environmental impact (Chekima *et al.*, 2015). Therefore, it is essential to understand more about the factors that influence customer use of green public transportation, especially in Malaysia which can contribute to environmental-friendly behaviour and the sustainability of the city (Mehdizadeh *et al.*, 2019).

Research Model and Hypotheses

Green Public Transportation Usage Intention and Theories

Theory of reasoned action (TRA) is among the most fundamental and influential theories applied in explaining behaviours that focus on their attitudes and beliefs (Halder *et al.*, 2016). Because of their effectiveness in explaining different human behaviours, these socio-psychological theories were widely used and applied in a variety of contexts (Ajzen, 1991; Ajzen & Fishbein, 2005). This model is used to consider the behaviour, intention driven by attitude and subjective norms of green product users (Venkatesh *et al.*, 2003). Studies of customer intent on consumer behaviour are well-known and play an essential part in the decision-making process, and many research papers have identified the best determinants to customer usage intention (Chekima *et al.*, 2015). Customer usage intention is defined by Ajzen and Fishbein (2005) as a customer's readiness and willingness to utilise product or services. Studies have also identified green usage intentions as an individual's willingness to consider and prefer to use green products and services rather than conventional products and services upon applying the decision-making process (Aman *et al.*, 2012).

Customers who are concerned about the environment will often be willing to use green public transport (Tan *et al.*, 2019; Wang *et al.*, 2016). The intention of the customer is the individual's eagerness and willingness to perform the behaviour (Ismail, 2012). The previous studies have found that the higher its intention to engage in a specific behaviour, the more likely its real performance would be (Alversia *et al.*, 2015; Jafarzadeh, 2012; Menozzi *et al.*, 2015). A consumer's intention to go green depends on his perception of green movements and campaigns, as well as the benefits of green living (Rezai *et al.*, 2013a). The intention to use relates to the intention of the individual to buy a specific brand, which they select after making an individual evaluation (Sharaf *et al.*, 2015). Therefore a customer's intentions are crucial when predicting green purchases (Choi *et al.*, 2019).

Attitude

Attitude is the primary factor in influencing a consumer's usage intention (Choi *et al.*, 2019). It can be determined by the behaviour that a customer shows when they plan to acquire a product or service to satisfy their requirements. Attitude relates to the negative or positive assessment of a specific behaviour by an individual. (Halder *et al.*, 2016; Hong *et al.*, 2016; Safa & Von Solms, 2016; Wang *et al.*, 2016). Moreover, attitude also described as the consequence of a consumer's evaluation of specific behaviours (Ajzen, 1991). Attitudes are also defined as persistent favourable or unfavourable feelings about individuals, objects or problems (Mohd Noor *et al.*, 2012). Additionally, an attitude is defined as a psychological feeling of consumers' through evaluations (Aman *et al.*, 2012). Research has also found that environmental concerns of customers are directly related to their attitudes. (Kai *et al.*, 2016; Paul *et al.*, 2016; Yadav *et al.*, 2016), and that behaviour is the most reliable predictors of the intention to buy green products (Maichum *et al.*, 2016; Paul *et al.*, 2016; Yadav *et al.*, 2016).

Meanwhile, consumers attitude on environmental awareness, environmental ethics, and beliefs have the most substantial positive impact on their intention to use green products (Lai *et al.*, 2016). Furthermore, attitude is an individual behavioural experience that assesses whether one's behaviour towards green usage is advantageous or disadvantageous (Chen *et al.*, 2016). Therefore, it can be postulated that the attitude of passengers positively influences their intention to use green public transport.

H1 A positive attitude will influence consumer green public transportation usage intention positively.

Subjective Norm

Subjective norm represents the impact of other people views (family, friends, peers) on individual behaviour (Gottschalk *et al.*, 2013) and a level of social pressure that an individual feels to participate in or abstain from certain behaviours. (Aertsens *et al.*, 2009; Nguyen *et al.*, 2018). Past research found that subjective norms are perceived views or perceptions of others that can affect individual decision making (Maichum *et al.*, 2016) information on the consumers' purchase intention towards green products in developing countries, such as Thailand, is lacking. This study aims to investigate Thai consumers who are aged over 18 years, and whose base education is high school, on purchase intention for green products by using an extended framework of the theory of planned behavior (TPB). Furthermore, the individual not only decides for themselves but also on behalf of others or under the influence of others (Ham *et al.*, 2015). Previous research papers have discovered that a subjective norm is a powerful predictor that is linked positively to behavioural intentions (Choshaly, 2018; Leong, 2015; Mohammed Alqasa *et al.*, 2014; Ogotu *et al.*, 2014).

Consumers who are concerned about environmental issues and whose others values, beliefs and norms are positively aligned with environmental causes are more likely to engage

in green behaviours (Goh *et al.*, 2015; Joshi *et al.*, 2015; Khan *et al.*, 2015). It can also be discovered that individual environmental concerns also influence the behaviour of others through peer group or family pressure, acting as vital others who adopt or reject green buying behaviour. (Paul *et al.*, 2016) a critical variable in green marketing literature, intending to achieve triple bottom line (TBL). The impact of the subjective norm, such as environmental groups, green community and green movements, is also an essential factor in determining the intention of the passenger to go green (Golnaz *et al.*, 2013). Therefore, it proposes the usage of green public transportation intention is positively related to the subjective norm.

H2 Subjective norms will influence consumer green public transportation usage intentions positively.

Price

Price is essential in determining the intention of using green public transportation. With the high expenses of fuel cell and battery systems being major obstacles for hybrid buses (Hardman *et al.*, 2016; Rupp *et al.*, 2019) the replacement of internal combustion engine vehicles (ICEVs). A few studies found that higher prices have an adverse effect on the selection of green products by consumers (Gan *et al.*, 2008; Huang *et al.*, 2004).

Furthermore, when many consumers start using green public transportation, it will help to reduce the operating costs and help reduce the effects of global warming (Halder *et al.*, 2016; King *et al.*, 2019; Lin *et al.*, 2015). The price sensitivity has a strong relationship on the buying intentions of consumers that want to go green (Hsu *et al.*, 2017). Thus consumers will make a choice based on location and price when selecting the best transportation mode (Biswas *et al.*, 2016; Padel *et al.*, 2015). Available literature shows that researchers have recognised that prices could reduce the most critical transport problems, such as traffic, accidents, air pollution and noise (Doğan *et al.*, 2018).

On top of that, the pricing strategy plays an important element towards the efficient and sustainable transport system (Han, *et al.*, 2019). Pricing strategy not only affects the customer but also the government agencies due to the highly maintained and operating cost for public transportation services (Shivakumar, 2018). Therefore, the price has a negative effect on passengers’ intention to use green public transportation.

H3 Higher prices will influence consumer’s willingness to green public transportation negatively.

Service Quality

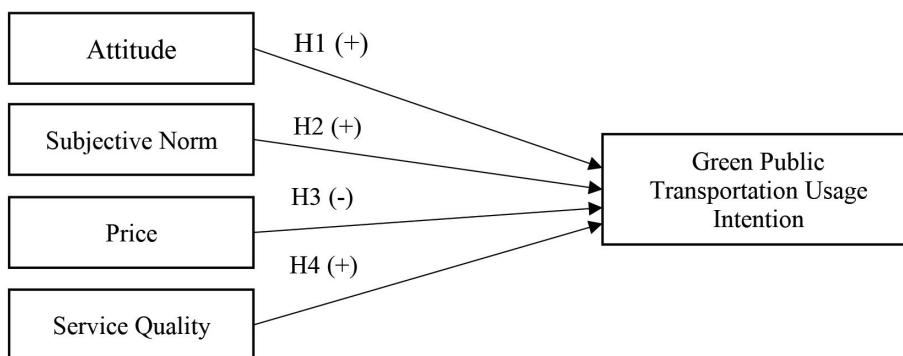
The service quality has the most substantial potential to increase a passengers attitude to use public transportation and also attract new bus passengers. Service quality, including passenger safety, bus schedule, and customer service, will directly affect the usage intention (Gordon *et al.*, 2000; Murti *et al.*, 2013). Providing excellent service quality of public transportation will indirectly increase a passengers attitude toward the usage intention, while poor quality of service will increase the negative attitude towards the usage of public transport. Thus, the quality of service can influence the public's willingness to use public transportation through attitude (Standing *et al.*, 2019).

The service attributes such as passenger safety, reliable driver, bus cleanliness can contribute to higher factor of service quality (Chaudhry *et al.*, 2018). Basically, in order to increase public transportation usage, public transportation companies should accommodate excellent service quality in order to attract more passenger (Belz *et al.*, 2016). The public transport company must provide reliable services consistently to increase better service quality (Mantovani, 2012). Ultimately by providing better service quality in the public transportation system, it can hope to attract more passengers and also solve urban pollution and traffic problems in most of the cities (Cai *et al.*, 2019). Therefore, services quality will have a positive influence on passenger green public transportation usage intention.

H4 Service quality will influence consumer green public transportation usage intention positively.

Research Model

Figure 1 demonstrates the framework for this study by utilising the Theory of Reasoned Action (TRA) to identify the relationship between attitude, subjective norm, price, service quality, and intention, to explain on green public transportation usage intention.



Research Methodology

This research used G*Power software to determine the optimum sample size; the effect size was set at 0.15 (medium), the strength at 0.80 and the sample size was 85 (Faul *et al.*, 2007). In order to overcome the non-response bias, the study increases the sample size to 400 respondents (Sekaran, 2003). Using the intercept method, 354 responses were collected from the passengers of public transportation in Melaka using structure questions. Some 208 questionnaires were excluded due to the incomplete information, and only 192 were counted as useable, which worked out to a 48% valid response rate. Sekaran (2003) suggested that a total of 30% are enough, and it also supported by G*Power analysis indicate that

85 respondents for four predictors is enough to represent a proper sample size (Fual *et al.*, 2007). Hence, the total of 192 respondent is enough as the minimum requirement for social science, which is above 0.80 (Hair *et al.*, 2019).

In order to access Common Method Variance, this study utilises Harman's single factor statistical procedure to test Common Method Variance in the questionnaire. The factor analysis shows 59.43 percent of the variance, which is explained by the first factor that 15.37 percent is much smaller than the majority, so the method bias is not a serious problem with this study.

Table 1 indicates the respondent profile, which the majority of the respondent were

Table 1: Profile of respondent

Item	Frequency	Percentage %
Gender		
Male	67	34.7
Female	126	65.3
Age		
20-30	171	88.6
31-40	18	9.3
41-50	4	2.1
Ethnic		
Malay	102	52.8
Indian	67	34.7
Chinese	17	8.8
Others	7	3.6
Education		
High School	8	4.1
College Graduate	1	0.5
Bachelor Degree	153	79.3
Postgraduate Degree	31	16.1
Occupation		
Government Sector	24	12.4
Private Sector	139	72.0
Self-employment	8	4.1
Others	22	11.4
Income		
RM500-RM1000	11	5.7
RM1001-RM2000	144	74.6
RM2001-RM3000	31	16.1
RM3001-RM4000	7	3.6
Environmental Activities		
Yes	30	15.5
No	163	84.5

female, which is 65.3%, and 34.7% are male. 88.6% respondents were between 20 and 30 years of age, followed by those between the ages of 31 and 40 years that represent 9.3% and 4% are between the ages of 41 and 50 years.

The higher portion of the ethnic group is Malay 52.8%, followed by Indian 34.7%. In term of education levels, 79.3% of them have a bachelor degree, and 16.1% are postgraduate degree. 72% respondent is working in the private sector, followed by 12.4% from the government sector: the highest income, 74.6% from income group RM1001 - RM2000. Approximately 15.5% respondent take part in the environmental activity and the remaining 84.5% of which 163 respondents did not have any environment activity.

Result

This study used the Partial Least Square (PLS) analysis on the SmartPLS 3.2.8 software to evaluate the research model (Ringle *et al.*, 2015).

The evaluation was based on two-stage analytical procedures by Anderson and Gerbing (1988), this study analysed the validity and reliability of the measurement model and checked the structural model to test the significance of path coefficients between exogenous and endogenous construct using a bootstrapping procedure (Hair *et al.*, 2019).

Measurement Model Evaluation

In the first stage analysis, this study used the factor loadings, composite reliability (CR) and average variance extracted (AVE) to measure convergence validity of the measurement model (Hair *et al.*, 2014). According to Hair *et al.* (2017) in order to archive the convergent validity, the factor loadings and composite reliability must be 0.70 or higher and average variance extracted (AVE) should be more than 0.50. As shown in Table 2, the result of the measurement model shows that all the loading are more than 0.70, and the AVE values are more than 0.50. Meanwhile, CR value is higher than 0.70, which

Table 2: Result of the Measurement Model

Construct	Item	Loadings	AVE	CR
Intention	Int1	0.817	0.541	0.775
	Int3	0.560		
	Int3	0.800		
Attitude	A1	0.755	0.525	0.768
	A2	0.679		
	A3	0.738		
Subjective Norm	SN2	0.711	0.620	0.764
	SN5	0.858		
Price	P1	0.876	0.621	0.890
	P2	0.824		
	P3	0.851		
	P4	0.702		
	P5	0.664		
Quality	Q4	0.826	0.604	0.752
	Q5	0.725		

Note: AVE=average variance extracted, CR=composite reliability. SN 1,3,5 and Q1,2,5 were deleted due to low loading

indicates good reliability (Hair et al., 2019). Lastly, we identified that there was no problem with multicollinearity as all of the VIF value were less than 5 (Hair et al., 2019). Therefore this result indicated that the instrument is valid and reliable.

In the second stage, this study evaluated the discriminant validity following (Henseler et al., 2014) Heterotrait-Monotrait (HTMT) discriminant validity test. In order to archived discriminant validity, this study follows the HTMT limit at 0.85 and 0.90 suggested by a previous study (Kline, 2011).

The result of HTMT in Table 3 indicates an acceptable discriminant validity. Therefore, the measurement model in this study suggests sufficient convergent validity and discriminant validity.

Structural Model Evaluation

In the second stage, by running a bootstrapping procedure with a resample of 5000, we tested the hypotheses to evaluate the structural model, Hair et al. (2017) suggested looking at R², beta and the corresponding t-values. The results of hypotheses presented in Table 4 indicated that

the R² for green usage intention is 0.29, which shows that all the modelled constructs explained 29% of the variance in green usage intention, which indicates a moderate model (Cohen, 1988).

The result of hypothesis in Table 4 showed that three out of four hypotheses are supported. The H1 path concerning the relation between attitude and intention show the coefficient of $\beta = 0.043$, LL = -0.070, UL = 0.211 and not significant.

Next, the second hypothesis (H2), which dealt with the relationship between subjective norm and intention indicate coefficient of $\beta = 0.290$, LL=0.134, UL=0.412, and significant at $p < 0.01$ and follow by H3 the relationship between price and intention indicate coefficient of $\beta = -0.296$, LL= -0.433, UL= -0.159, and significant at $p < 0.01$. The last hypothesis concerning the relationship between quality and intention indicated a coefficient of $\beta = 0.175$, LL=0.041, UL=0.291, and significant at $p < 0.01$.

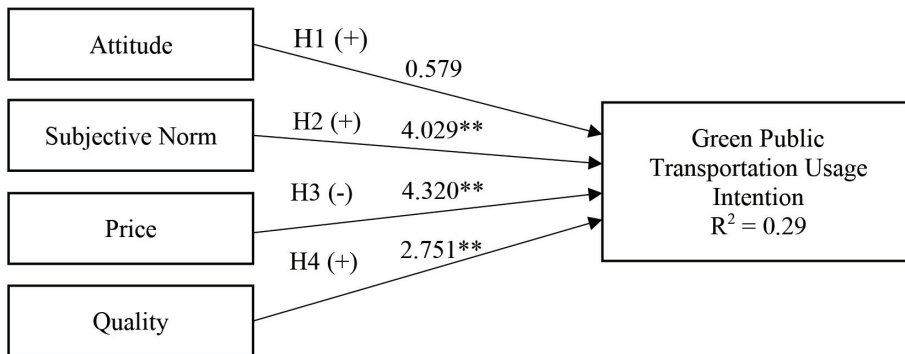
Based on the predictors examined, this study found that price had a stronger effect on the green usage intention, and the following strong effect is quality. Lastly, three of the effect

Table 3: The result of Heterotrait-Monotrait (HTMT) Test

	Attitude	Usage	Price	Quality	Subjective Norm
Attitude					
Intention	0.496				
Price	0.360	0.492			
Quality	0.618	0.540	0.388		
Subjective Norm	0.804	0.722	0.303	0.330	

Table 4: Result of Hypothesis

Hypothesis	Relationship	Beta	SE	T Values	P Values	LL	UL	Supported	R ²	f ²
H1	Att → Int	0.043	0.074	0.579	0.563	-0.070	0.211	No	0.288	0.002
H2	SN → Int	0.290	0.072	4.029	0.000	0.134	0.412	Yes		0.039
H3	Price → Int	-0.296	0.069	4.320	0.000	-0.433	-0.159	Yes		0.111
H4	Quality → Int	0.175	0.064	2.751	0.006	0.041	0.291	Yes		0.101



**p<0.01

Figure 2: Hypotheses Testing

sizes (f^2) for this study achieved a small effect size of 0.02 and moderated 0.15 (Cohen, 1988). Furthermore, we also evaluated the predictive relevance of the model using the blindfolding procedure, and the Q^2 value is 0.131 larger than 0. Therefore, this model has predictive relevance (Hair *et al.*, 2014).

Conclusion

The finding from this study indicated that there is a no relationship between attitude and the intention to use green public transportation, this show that passenger have a negative perception related to the environment and believe that their action will not bring benefit toward protecting the environment. As mention in the study of Mishra (2014), individual attitudes and beliefs about the environment are often inconsistent with behaviour.

According to the results of the current research there is a satisfactory connection between subjective norms and the intention to use green transportation. This finding proves that subjective norms affect passengers’ desire to use green public transportation because they listen to their family, friends and public opinion before making a decision.

This research also found that the younger generation will seek the opinions of others on online platforms such as social media to get additional information and feedback on the

services sought before making a decision, influences their thinking, preferences, and behaviours (Lin *et al.* 2015).

Prices were discovered to be negatively associated with the consumers’ intentions to use green products or services, which suggests that price has an essential effect on a passenger’s assessment process and on their final selection decision. The passenger is more conscious of the price that they need to pay when using green public transportation and this factor has significantly influenced passengers to make price sensitive judgments when using green services (Hsu *et al.*, 2017). According to Chekima (2016), the price has always been the main concern in adopting green behaviour, and only a few individuals are prepared to pay more for environmental services. One of the reasons for this is lack of consciousness and accountability for the environmental factors and those who are price-sensitive consider the cost of green public transport as expensive.

Murti *et al.* (2013) found that there are two dimensions of service quality, the first being the outcome expectations of the services, and the second being the process expected from the services such as customer and employees relationship (Gordon *et al.*, 2000). For this reason, services quality are found to be relevant to green public transportation usage intention. In context with this study, bus passengers believe they are satisfied with the services provided by

green public transportation such as excellent customer service, travel schedules, waiting time and cleanliness. Green public transport service providers can therefore use these service quality markers to increase bus passenger numbers, which in turn should lower operating costs and prices concurrently (Tirachini *et al.*, 2019).

Implications

The current research provides both a theoretical and a practical contribution in explaining the determinants of green public transportation behaviour, and the finding involves necessary implications that are helpful to customers, academics and also the public transportation industry. In terms of theoretical implication, this study adds support to previous research, which show that the passengers have a negative attitude toward using green transportation, and show that passengers lack of environmental awareness on the importance of reducing air pollution and global warming.

In practical terms, these findings provide essential insights to the public transportation industry to promote environmental awareness among passengers of public transportation as part as their social responsibility, Kim *et al.* (2005) the present study identifies key antecedents of green purchase behavior and develops a model for explaining their influence on ecological consumption. Using structural equation modeling, the effects of collectivism, environmental concern and Perceived Consumer Effectiveness (PCE proposed that customers with severe environmental concerns may be interested in green behaviour. It can also help policymakers to develop a sustainable marketing strategy for a specific group by understanding attitude and intention to use it. Meanwhile, subjective norm, price and service quality have an essential effect on the intention to use green transportation as well as providing data to the transportation industry in order to create a long-term green marketing plan for efficient promotion to encourage green travel and also enhance the public transportation system.

Limitation and Suggestions for Future study

There should be several constraints of this study, which calls for future studies. Firstly, this study only focuses on the passenger who live in Melaka; future study is suggested to explore other distinct geographic to get different opinions. Secondly, future research can use an online survey to achieve a more substantial amount of participants. This study is limited to four variables, future study is suggested to extend the model, looking into attitude and behaviour gap and how another variables such as green advertising able to influence the relationship.

Acknowledgements

This manuscript has been presented in I-OCEANS 2019 UMT on the 7 August 2019, paper ID 118-105, under the title of Promoting Green Environment By Predicting Green Public Transportation Usage.

References

- Aertsens, J., Verbeke, W., Mondelaers, K., & Huylenbroeck, G. Van. (2009). Personal determinants of organic food consumption: A review. *British Food Journal*, *111*(10), 1140-1167. <https://doi.org/10.1108/00070700910992961>
- Ajzen, I. (1991). The theory of planned behavior. *Organisation Behaviour and Human Decision Process*, *50*, 179-211. https://doi.org/10.1922/CDH_2120VandenBroucke08
- Ajzen, I., & Fishbein, M. (2005). The influence of attitudes on behavior. *Handbook of Attitudes and Attitude Change: Basic Principles*, 173-221. <https://doi.org/10.1080/00224545.1956.9921907>
- Akehurst, G., Afonso, C., & Gonçalves, H. M. (2012). Re-examining green purchase behaviour and the green consumer profile: New evidences. *Journal of Consumer Marketing Marketing Intelligence & Planning Iss Journal of Consumer*

- Marketing*, 18(4), 503-520. <https://doi.org/10.1108/00251741211227726>
- Alversia, Y., Michaelidou, N., & Moraes, C. (2015). Online consumer engagement behaviour: The consumer-based antecedents. *Looking Forward, Looking Back: Drawing on the Past to Shape the Future of Marketing*, 849-852.
- Aman, A. H. L., Harun, A., Hussein, Z., & Author, C. (2012). The influence of environmental knowledge and concern on green purchase intention the role of attitude as a mediating variable. *British Journal of Arts and Social Sciences*, 7(II), 2046-9578. <https://doi.org/10.1108/07363769910297506>
- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411-423. <https://doi.org/10.1037/0033-2909.103.3.411>
- Anfinsen, M., Lagesen, V. A., & Ryghaug, M. (2019). Green and gendered? Cultural perspectives on the road towards electric vehicles in Norway. *Transportation Research Part D: Transport and Environment*, 71(June 2018), 37-46. <https://doi.org/10.1016/j.trd.2018.12.003>
- Balachandran, I., & Hamzah, I. B. (2017). The influence of customer satisfaction on ride-sharing services in Malaysia. *International Journal of Accounting & Business Management*, 5(2), 184-196. <https://doi.org/10.1098/rstb.2013.0388>
- Belz, A., Healey, E., & Hudgins, K. (2016). 2016 Car sharing: A feasibility study in Hong Kong. *Wpi*, 44-CXP-C16. https://web.wpi.edu/Pubs/E-project/Available/E-project-030716-041007/unrestricted/Car_Sharing-_A_Feasibility_Study_in_Hong_Kong.pdf
- Biswas, A., & Roy, M. (2016). A Study of consumers' willingness to pay for green products. *Journal of Advanced Management Science*, 4(3), 211-215. <https://doi.org/10.12720/joams.4.3.211-215>
- Borhan, M. N., Syamsunur, D., Mohd Akhir, N., Mat Yazid, M. R., Ismail, A., & Rahmat, R. A. (2014). Predicting the use of public transportation: A case study from Putrajaya, Malaysia. *Scientific World Journal*, 2014. <https://doi.org/10.1155/2014/784145>
- Cai, H., Wang, X., Adriaens, P., & Xu, M. (2019). Environmental benefits of taxi ride sharing in Beijing. *Energy*, 174, 503-508. <https://doi.org/10.1016/j.energy.2019.02.166>
- Chaudhry, B., Yasar, A. U. H., El-Amine, S., & Shakshuki, E. (2018). Passenger safety in ride-sharing services. *Procedia Computer Science*, 130, 1044-1050. <https://doi.org/10.1016/j.procs.2018.04.146>
- Chekima, B. C., Syed Khalid Wafa, S. A. W., Igau, O. A., Chekima, S., & Sondoh, S. L. (2016). Examining green consumerism motivational drivers: Does premium price and demographics matter to green purchasing? *Journal of Cleaner Production*, 112, 3436-3450. <https://doi.org/10.1016/j.jclepro.2015.09.102>
- Chekima, B., Khalid Wafa, S. A. W. S., Igau, O. A., & Chekima, S. (2015). Determinant factors of consumers??? Green purchase intention: The moderating role of environmental advertising. *Asian Social Science*, 11(10), 318-329. <https://doi.org/10.5539/ass.v11n10p318>
- Chen, S. C., & Hung, C. W. (2016). Elucidating the factors influencing the acceptance of green products: An extension of theory of planned behavior. *Technological Forecasting and Social Change*, 112, 155-163. <https://doi.org/10.1016/j.techfore.2016.08.022>
- Choi, D., & Johnson, K. K. P. (2019). Influences of environmental and hedonic motivations on intention to purchase green products: An extension of the theory of planned behavior. *Sustainable Production and Consumption*, 18, 145-155. <https://doi.org/10.1016/j.spc.2019.02.001>
- Choshaly, S. H. (2016). Antecedents of Malaysian consumer's green practices.

- The Open Access Journal of Resistive Economics*, 11(74), 2345-4954.
- Cohen, J. (1988). Statistical power analysis for the behavioral sciences. *Statistical Power Analysis for the Behavioral Sciences*. <https://doi.org/10.1234/12345678>
- DiPietro, R. B., Cao, Y., & Partlow, C. (2013). Green practices in upscale foodservice operations Customer perceptions and purchase intentions. *International Journal of Contemporary Hospitality Management*, 25(5), 779-796. <https://doi.org/10.1108/IJCHM-May-2012-0082>
- Doğan, I., Gültekin, A. B., & Tanrıvermiş, H. (2018). *Sustainable transportation. Lecture Notes in Civil Engineering* (Vol. 6). Elsevier Inc. https://doi.org/10.1007/978-3-319-63709-9_19
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175-191. <https://doi.org/10.3758/BF03193146>
- Fuiyeng, W., & Yazdanifard, R. (2015). Green marketing: A study of consumers' buying behavior in relation to green products. *Global Journal of Management and Business Research: E Marketing*, 15(5 Version 1), 1-8.
- Gan, C., Han, Y. W., Ozanne, L., & Koa, T.-H. (2008). Consumers' purchasing behavior towards green products in New Zealand. *Innovative Marketing*, 4(1), 93-102.
- Goh, Y. N., & Wahid, N. A. (2015). A review on green purchase behaviour trend of Malaysian consumers. *Asian Social Science*, 11(2), 103-110. <https://doi.org/10.5539/ass.v11n2p103>
- Golnaz, R., Kit Teng, P., Zainalabidin, M., & Mad Nasir, S. (2013). Going green: Survey of perceptions and intentions among Malaysian consumers. *International Business and Management*, 6(1), 104-112. <https://doi.org/10.3968/j.ibm.1923842820130601.1125>
- Gordon H. G. McDougall, & Terrence Levesque. (2000). Customer satisfaction with services: Putting perceived value into the equation. *Journal of Services Marketing*, 14. <https://doi.org/10.1108/08876040010340937>
- Gottschalk, I., & Leistner, T. (2013). Consumer reactions to the availability of organic food in discount supermarkets. *International Journal of Consumer Studies*, 37(2), 136-142. <https://doi.org/10.1111/j.1470-6431.2012.01101.x>
- Hair, J. F. J., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial Least Squares Structural Equation Modeling (PLS-SEM). *European Business Review*, 26. <https://doi.org/10.1108/EBR-10-2013-0128>
- Hair, Joe F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2-24. <https://doi.org/10.1108/eb-11-2018-0203>
- Hair, Joseph F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (2nd ed.). Thousand Oaks, California: SAGE Publications Inc.
- Hair Jr, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM). *European Business Review*, 26(2), 106-121. <https://doi.org/10.1108/EBR-10-2013-0128>
- Halder, P., Pietarinen, J., Havu-Nuutinen, S., Pöllänen, S., & Pelkonen, P. (2016). The theory of planned behavior model and students' intentions to use bioenergy: A cross-cultural perspective. *Renewable Energy*, 89, 627-635. <https://doi.org/10.1016/j.renene.2015.12.023>
- Ham, M., Jeger, M., & Ivkovic, A. F. (2015). The role of subjective norms in forming the intention to purchase green food. *Economic*

- Research-Ekonomiska Istrazivanja*, 28(1), 738-748. <https://doi.org/10.1080/1331677X.2015.1083875>
- Han, H., & Kim, Y. (2010). An investigation of green hotel customers' decision formation: Developing an extended model of the theory of planned behavior. *International Journal of Hospitality Management*, 29(4), 659-668. <https://doi.org/10.1016/j.ijhm.2010.01.001>
- Han, H., Lee, M. J., Chua, B. L., & Kim, W. (2019). Triggers of traveler willingness to use and recommend eco-friendly airplanes. *Journal of Hospitality and Tourism Management*, 38(January), 91-101. <https://doi.org/10.1016/j.jhtm.2019.01.001>
- Hardman, S., Shiu, E., & Steinberger-Wilckens, R. (2016). Comparing high-end and low-end early adopters of battery electric vehicles. *Transportation Research Part A: Policy and Practice*, 88, 40-57. <https://doi.org/10.1016/j.tra.2016.03.010>
- Haroon, M., Fakar Zaman, H. M., & Rehman, W. (2012). The relationship between Islamic. *International Journal of Contemporary Business Studies*, 3, 1-73.
- Henseler, J., Dijkstra, T. K., Sarstedt, M., Ringle, C. M., Diamantopoulos, A., Straub, D. W., ... Calantone, R. J. (2014). Common beliefs and reality about Partial Least Squares: Comments on Rönkkö & Evermann (2013), *Organizational Research Methods*, 17(2), in print. <https://doi.org/10.1177/1094428114526928>
- Hong, S. J., Lee, K. S., Seol, E. S., & Young, S. (2016). Safety perceptions of training pilots based on training institution and experience. *Journal of Air Transport Management*. <https://doi.org/10.1016/j.jairtraman.2016.05.010>
- Hsu, C. L., Chang, C. Y., & Yansritakul, C. (2017). Exploring purchase intention of green skincare products using the theory of planned behavior: Testing the moderating effects of country of origin and price sensitivity. *Journal of Retailing and Consumer Services*, 34(October 2016), 145-152. <https://doi.org/10.1016/j.jretconser.2016.10.006>
- Huang, J.-H., Lee, B. C. Y., & Ho, S. H. (2004). Consumer attitude toward gray market goods. *International Marketing Review*, 21(6), 598-614. <https://doi.org/10.1108/02651330410568033>
- Ismail, M. (2012). Factors influencing consumers' acceptance of mobile marketing services. <https://doi.org/10.1007/s13398-014-0173-7.2>
- Jafarzadeh, H. (2012). What forms the decision by businesses what to use search engine advertising, 323.
- Joshi, Y., & Rahman, Z. (2015). Factors affecting green purchase behaviour and future research directions. *International Strategic Management Review*, 3. Holy Spirit University of Kaslik. <https://doi.org/10.1016/j.ism.2015.04.001>
- Kai, C., & Haokai, L. (2016). Factors affecting consumers' green commuting. *Eurasia Journal of Mathematics, Science and Technology Education*, 12(3), 527-538. <https://doi.org/10.12973/iser.2016.2001a>
- Kanchanapibul, M., Lacka, E., Wang, X., & Chan, H. K. (2014). An empirical investigation of green purchase behaviour among the young generation. *Journal of Cleaner Production*, 66, 528-536. <https://doi.org/10.1016/j.jclepro.2013.10.062>
- Khan, M. R. T., Chamhuri, S., & Farah, H. S. (2015). Green food consumption in Malaysia: A review of consumers' buying motives. *International Food Research Journal*, 22(1), 131-138.
- Kim, Y., & Choi, S. M. (2005). Antecedents of green purchase behaviour: An examination of collectivism, environmental concern, and PCEE. *Advances in Consumer Research*, 32(1), 592-599. <https://doi.org/10.1177/004057368303900411>
- King, N., Burgess, M., & Harris, M. (2019). Electric vehicle drivers use better strategies

- to counter stereotype threat linked to pro-technology than to pro-environmental identities. *Transportation Research Part F: Traffic Psychology and Behaviour*, 60, 440-452. <https://doi.org/10.1016/j.trf.2018.10.031>
- Kline, R. B. (2011). Principles and practice of structural equation modeling. *Structural Equation Modeling*, 156. <https://doi.org/10.1038/156278a0>
- Kumar, P. (2017). Intents of green advertisements. *Asia Pacific Journal of Marketing and Logistics*, 29(1), 70-79. <https://doi.org/10.1108/APJML-03-2016-0044>
- Lai, C. K. M., & Cheng, E. W. L. (2016). Green purchase behavior of undergraduate students in Hong Kong. *Social Science Journal*, 53(1), 67-76. <https://doi.org/10.1016/j.soscij.2015.11.003>
- Leong, T. P. (2015). Mediating effects of intention on the factors affecting organic food products consumption among Chinese generation Y in Malaysia. *International Journal of Business Research and Management (IJBRM)*, 6(1), 1-19.
- Lin, H.-Y., & Hsu, M.-H. (2015). Using social cognitive theory to investigate green consumer behavior. *Business Strategy and the Environment*, 24(5), 326-343. <https://doi.org/10.1002/bse.1820>
- López, C., Ruíz-Benítez, R., & Vargas-Machuca, C. (2019). On the environmental and social sustainability of technological innovations in Urban bus transport: The EU case. *Sustainability (Switzerland)*, 11(5), 1-22. <https://doi.org/10.3390/su11051413>
- Maichum, K., Parichatnon, S., & Peng, K. C. (2016). Application of the extended theory of planned behavior model to investigate purchase intention of green products among Thai consumers. *Sustainability (Switzerland)*, 8(10), 1-20. <https://doi.org/10.3390/su8101077>
- Mantovani, D. M. N. (2012). Distance education on the stakeholders' perspectives: Student's, instructor's and administrator's perceptions, 273. <https://doi.org/10.1016/j.trd.2018.11.013>
- Mehdizadeh Dastjerdi, A., Kaplan, S., de Abreu e Silva, J., Nielsen, O. A., & Pereira, F. C. (2019). Participating in environmental loyalty program with a real-time multimodal travel app: User needs, environmental and privacy motivators. *Transportation Research Part D*, 67(December 2018), 223-243. <https://doi.org/10.1016/j.trd.2018.11.013>
- Menozzi, D., Halawany-Darson, R., Mora, C., & Giraud, G. (2015). Motives towards traceable food choice: A comparison between French and Italian consumers. *Food Control*, 49, 40-48. <https://doi.org/10.1016/j.foodcont.2013.09.006>
- Min, M., Hong, L., Ai, J., & Wah, P. (2012). Conceptual paper: Factors affecting the demand of smartphone among young adult. *Factors Affecting the Demand of Smartphone among Youth Adult*, 2(2), 44-49.
- Mohammed Alqasa, K., Mohd Isa, F., Othman, S. N., & Saleh Zolait, A. H. (2014). The impact of students' attitude and subjective norm on the behavioural intention to use services of banking system. *International Journal of Business Information Systems*, 15(1), 105. <https://doi.org/10.1504/IJBIS.2014.057967>
- Mohd Noor, N. A., Muhammad, A., Kassim, A., Muhammad Jamil, C. Z., Mat, N., Mat, N., & Salleh, H. S. (2012). Creating green consumers: How environmental knowledge and environmental attitude lead to green purchase behaviour? *International Journal of Arts & Sciences*, 5(1), 55-71.
- Murti, A., Deshpande, A., & Srivastava, N. (2013). Service quality, customer (patient) satisfaction and behavioural intention in health care services: Exploring the Indian perspective. *Journal of Health Management*, 15(1), 29-44. <https://doi.org/10.1177/0972063413486035>

- Nguyen, T. N., Lobo, A., & Nguyen, B. K. (2018). Young consumers' green purchase behaviour in an emerging market. *Journal of Strategic Marketing*, 26(7), 583-600. <https://doi.org/10.1080/0965254X.2017.1318946>
- Noor Hazlina Ahmad, Ramayah, T., Imran Mahmud, Mohammad Musa, & Anika, J. J. (2014). Modelling student entrepreneurship intention in Bangladesh using structural equation modelling.
- Ogotu, R., Ogotu, M., & Njanja, L. (2014). The moderating effect of subjective norms, perceived behavioural control and gender on the relationship between attitude towards internet advertising and purchase intention of university student in Kenya. *European Journal of Business Management*, 2(1), 1-37. [http://ejobm.org/images/Journals/Volume_2/The Moderating Effect Of Subjective Norms Perceived Behavioural Control And Gender On The Relationship Between Attitude Towards Internet Advertising And Purchase Intention Of University Students In Kenya.pdf](http://ejobm.org/images/Journals/Volume_2/The_Moderating_Effect_Of_Subjective_Norms_Perceived_Behavioural_Control_And_Gender_On_The_Relationship_Between_Attitude_Towards_Internet_Advertising_And_Purchase_Intention_Of_University_Students_In_Kenya.pdf)
- Padel, S., & Foster, C. (2015). Exploring the gap between attitudes and behaviour Understanding why consumers buy or do not buy organic food. *British Food Journal Food Journal British Food Journal Journal of Communication Management*, 107(4), 606-625. <https://doi.org/10.1108/00070700510611002>
- Paul, J., Modi, A., & Patel, J. (2016). Predicting green product consumption using theory of planned behavior and reasoned action. *Journal of Retailing and Consumer Services*, 29, 123-134. <https://doi.org/10.1016/j.jretconser.2015.11.006>
- Rezai, G., Teng, P. K., Mohamed, Z., & Shamsudin, M. N. (2013a). Consumer willingness to pay for green food in Malaysia. *Journal of International Food & Agribusiness Marketing*, 25(January), 1-18. <https://doi.org/10.1080/08974438.2013.798754>
- Rezai, G., Teng, P. K., Mohamed, Z., & Shamsudin, M. N. (2013b). Is it easy to go green? Consumer perception and green concept. *American Journal of Applied Sciences*, 10(8), 793-800. <https://doi.org/10.3844/ajassp.2013.793.800>
- Ringle, Christian M., Wende, Sven, & Becker, J.-M. (2015). *SmartPLS 3*. <http://www.smartpls.com>
- Ritter, Á. M., Borchardt, M., Vaccaro, G. L. R., Pereira, G. M., & Almeida, F. (2015). Motivations for promoting the consumption of green products in an emerging country: Exploring attitudes of Brazilian consumers. *Journal of Cleaner Production*, 106, 507-520. <https://doi.org/10.1016/j.jclepro.2014.11.066>
- Rupp, M., Handschuh, N., Rieke, C., & Kuperjans, I. (2019). Contribution of country-specific electricity mix and charging time to environmental impact of battery electric vehicles: A case study of electric buses in Germany. *Applied Energy*, 237(January), 618-634. <https://doi.org/10.1016/j.apenergy.2019.01.059>
- Safa, N. S., & Von Solms, R. (2016). An information security knowledge sharing model in organizations. *Computers in Human Behavior*, 57, 442-451. <https://doi.org/10.1016/j.chb.2015.12.037>
- Sekaran, U. (2003). Research methods for business - A skill building approach. *Journal of Chemical Information and Modeling*, 53. <https://doi.org/10.1017/CBO9781107415324.004>
- Sharaf, M. A., Filzah, M. I., & Al-Qasa, K. (2015). Factors affecting young Malaysians' intention to purchase green products. *Merit Research Journal*, 3(3), 29-33. [http://www.meritresearchjournals.org/bm/content/2015/May/Sharaf et al.pdf](http://www.meritresearchjournals.org/bm/content/2015/May/Sharaf_et_al.pdf)
- Sharaf, M. A., Isa, F. M., & Al-Qasa, K. (2015). Young consumers' intention towards future green purchasing in Malaysia. *Journal of*

- Management Research*, 7(2), 468. <https://doi.org/10.5296/jmr.v7i2.6998>
- Sharma, A., & Foropon, C. (2019). Green product attributes and green purchase behavior: A theory of planned behavior perspective with implications for circular economy. *Management Decision*, 57(4), 1018-1042. <https://doi.org/10.1108/MD-10-2018-1092>
- Shivakumar, K. (2018). Customer relationship management influencing customer loyalty and satisfaction - Patients' perception in multispecialty Hospitals of Karnataka, 1(January), 45-53.
- Standing, C., Standing, S., & Biermann, S. (2019). The implications of the sharing economy for transport. *Transport Reviews*, 39(2), 226-242. <https://doi.org/10.1080/0141647.2018.1450307>
- Sultana, S., Salon, D., & Kubly, M. (2017). Transportation sustainability in the urban context: A comprehensive review. *Urban Geography*, 00(00), 1-30. <https://doi.org/10.1080/02723638.2017.1395635>
- Sun, Y., Liu, N., & Zhao, M. (2019). Factors and mechanisms affecting green consumption in China: A multilevel analysis. *Journal of Cleaner Production*, 209, 481-493. <https://doi.org/10.1016/j.jclepro.2018.10.241>
- Tan, C. N. L., Ojo, A. O., & Thurasamy, R. (2019). Determinants of green product buying decision among young consumers in Malaysia. *Young Consumers*, YC-12-2018-0898. <https://doi.org/10.1108/YC-12-2018-0898>
- The Guardian. (2018, December 5). "Brutal news": Global carbon emissions jump to all-time high in 2018. *The Guardian*. <https://www.theguardian.com/environment/2018/dec/05/brutal-news-global-carbon-emissions-jump-to-all-time-high-in-2018>
- The NST. (2017, December 13). Carbon dioxide emissions causing global warming. *The New Straits Times*. [https://www.nst.com](https://www.nst.com.my/opinion/columnists/2017/12/313842/carbon-dioxide-emissions-causing-global-warming)
- Tirachini, A., & Gomez-Lobo, A. (2019). Does ride-hailing increase or decrease vehicle kilometers traveled (VKT)? A simulation approach for Santiago de Chile. *International Journal of Sustainable Transportation*, 0(0), 1-18. <https://doi.org/10.1080/15568318.2018.1539146>
- Todorovic, M., & Simic, M. (2019). Feasibility study on green transportation. *Energy Procedia*, 160(2018), 534-541. <https://doi.org/10.1016/j.egypro.2019.02.203>
- Tseng, S. C., & Hung, S. W. (2013). A framework identifying the gaps between customers' expectations and their perceptions in green products. *Journal of Cleaner Production*, 59, 174-184. <https://doi.org/10.1016/j.jclepro.2013.06.050>
- Varela-Candamio, L., Novo-Corti, I., & García-Álvarez, M. T. (2018). The importance of environmental education in the determinants of green behavior: A meta-analysis approach. *Journal of Cleaner Production*, 170, 1565-1578. <https://doi.org/10.1016/j.jclepro.2017.09.214>
- Vazifehdoust, H., Taleghani, M., Esmaeilpour, F., Nazari, K., & Khadang, M. (2013). Purchasing green to become greener: Factors influence consumers' green purchasing behavior. *Management Science Letters*, 3, 2489-2500. <https://doi.org/10.5267/j.msl.2013.08.013>
- Venkatesh, V., Morris, M. G., David, G. B., & David, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478. <https://doi.org/10.1006/mvpre.1994.1019>
- Vita, G., Lundström, J. R., Hertwich, E. G., Quist, J., Ivanova, D., Stadler, K., & Wood, R. (2018). Sustainable lifestyle scenarios to curb European environmental impact: Connecting local visions to global consequences. *Under Review Ecol.*

- Economics.*, 164(March), 106322. <https://doi.org/10.1016/j.ecolecon.2019.05.002>
- Wang, S., Fan, J., Zhao, D., Yang, S., & Fu, Y. (2016). Predicting consumers' intention to adopt hybrid electric vehicles: Using an extended version of the theory of planned behavior model. *Transportation*, 43(1), 123-143. <https://doi.org/10.1007/s11116-014-9567-9>
- Wu, J., Liao, H., Wang, J. W., & Chen, T. (2019). The role of environmental concern in the public acceptance of autonomous electric vehicles: A survey from China. *Transportation Research Part F: Traffic Psychology and Behaviour*, 60, 37-46. <https://doi.org/10.1016/j.trf.2018.09.029>
- Yadav, R., & Pathak, G. S. (2016). Young consumers' intention towards buying green products in a developing nation: Extending the theory of planned behavior. *Journal of Cleaner Production*, 135, 732-739. <https://doi.org/10.1016/j.jclepro.2016.06.120>
- Yadav, R., & Pathak, G. S. (2017). Determinants of consumers' green purchase behavior in a developing nation: Applying and extending the theory of planned behavior. *Ecological Economics*, 134, 114-122. <https://doi.org/10.1016/j.ecolecon.2016.12.019>
- Zahedi, S., Batista-Foguet, J. M., & van Wunnik, L. (2019). Exploring the public's willingness to reduce air pollution and greenhouse gas emissions from private road transport in Catalonia. *Science of the Total Environment*, 646, 850-861. <https://doi.org/10.1016/j.scitotenv.2018.07.361>
- Zhao, H. H., Gao, Q., Wu, Y. P., Wang, Y., & Zhu, X. D. (2014). What affects green consumer behavior in China? A case study from Qingdao. *Journal of Cleaner Production*, 63, 143-151. <https://doi.org/10.1016/j.jclepro.2013.05.021>
- Zhili, D., Boqiang, L., & Chunxu, G. (2019). Development path of electric vehicles in China under environmental and energy security constraints. *Resources, Conservation and Recycling*, 143(June 2018), 17-26. <https://doi.org/10.1016/j.resconrec.2018.12.007>