MANAGEMENT STUDENTS' ELECTRIC CAR PURCHASE INTENTIONS: AN EXPLORATORY STUDY

Veena K. Pailwar, IMT, Nagpur
Maheswaran Srinivasan, IMT Nagpur

ABSTRACT

This paper investigates, for the first time, the dimensionalities of electric car (e-car) purchase intentions among postgraduate management students in India. On the basis of identified dimensionalities, the study also assesses whether the average scores of the identified factors are significantly different for the different categories of demographic characteristics of the respondents. On the basis of the results, the paper draws managerial and policy implications. To carry out the study, a well-structured questionnaire to measure purchase intentions along with several demographic variables is administered. With 273 valid responses, an exploratory factor analysis is used to extract the factors to identify the dimensionalities. The factor analysis resulted in seven factors and these factors are named as Driving Convenience, Technological Attributes, Government Policy, Environmental Concern, Charging Convenience, Economic Benefits and Symbiotic Attributes. Of all the demographic attributes considered in this study, average scores of economic benefits differ significantly across gender, educational background and work experience. Prior experience with electric cars has significant impact only on the average scores of Government Policy. The findings of this study suggest that the manufacturers of e-cars can get competitive advantage by focusing on issues related to Driving Convenience and Technical Attributes.

JEL Codes*:* C12, Q53, Q56, M31.

Keywords: Electric Cars, Exploratory Factor Analysis, Purchase Intention, India, Management Students.

INTRODUCTION

The Government of India has taken several initiatives to control vehicular pollution in the country during the last few years. These measures include notification of mass emission norms at the manufacturing as well as the end user stage, adopting global benchmarks for testing methods for emissions from passenger cars, fuel quality specifications, lubricants quality, introduction of alternative fuels, phasing out of highly polluting vehicles, adopting traffic management system and encouraging the use of shared mobility, such as public transport system. In its endeavor to control air pollution, the government is also incentivizing the manufacturing and adoption of electric vehicles (EVs) through various Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles (FAME) schemes. Despite implementation of FAME schemes since March 2015, the adoption of EVs in general and e-cars in particular, is not very encouraging. As the actual number of consumers using e-cars is limited, it is difficult to ascertain consumers' purchase behaviour from the limited set of actual consumer population. Therefore, rather than identifying the factors that affect purchase behavior, an attempt is made in this paper

to identify the purchase intentions. It has been well documented in the literature that purchase intentions are an indicator of purchase behavior (Fishbein & Ajzen, 1975; Davis, 1986).

In the global context, several empirical studies are available in the literature that explore factors that affect consumer purchase intentions (Liao, et al., 2017; Li et al., 2017; Rezvani et al., 2015). However, most of these studies are carried out in the context of developed countries. There is a dearth of such studies in the context of developing countries, and specifically in the context of India. India widely differs from the developed countries in terms of socio-economic and cultural factors. As socio-cultural issues impinge on consumers' sustainable behavior, the dimensionalities of purchase intentions that have been identified in the context of the developed countries may not be relevant in the Indian context. Therefore, this study examines the dimensionalities of purchase intentions in the Indian context, identifies the factors that are of relevance from the perspective of purchase intentions, draws policy implications and suggest promotional strategies. This paper is structured as follows: Section 2 reviews the empirical research on e-vehicles/ e-cars purchase intentions and purchase behavior. Section 3 presents the objectives of the study and section 4 discusses the research methodology adopted for the study. Section 5 contains the results and discussion of the study, while section 6 concludes the paper by summarizing the study, indicating managerial and policy implications, and presenting the limitations of the study along with further research directions.

LITERATURE REVIEW

Various approaches ranging from cognitive to normative to valued based to social aspects are applied to understand the consumer purchase intentions and behavior towards environment sustainable products and processes. The main theories explaining such a behavior include Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), Technology Acceptance Model (TAM), Norm Activation Theory (NAT), Diffusion of Innovations (DOI), Value Belief Theory (VBT) and Unified Theory of Acceptance and Use of Technology (UTAUT).

The review of existing theoretical literature on consumer behavior and innovation diffusion indicates that the purchase intentions and consumer behavior cannot be explained simply in terms of cognitive aspects. Consumers' purchase intentions are an outcome of complex interplay of cognitive, normative, affective and social aspects. Therefore, to understand the consumers' purchase intentions and behavior, it is important to understand how these various aspects relate to each other and form clusters. Using these various models and their variants, several empirical studies have explored dimensionality of the factors that can be used for explaining consumer purchase intentions.

Empirical studies that have explored the dimensions of consumers' EV purchase intentions and/or behavior are mostly carried out in US, UK and other European countries (Liao, Molin & Wee 2017; Li et al., 2017; Rezvani et al., 2015). The actual purchases of EVs in developing countries are very limited though some studies are available in the context of purchase intentions (He, et al., 2018; Habich-Sobiegalla et al., 2018; Nie et al., 2018). The factors that have emerged from the review of empirical research on EV purchase intentions or behaviours are: Economic Benefits, Environmental Concerns, Government Policies, Technical Features, Infrastructure Support, and Symbiotic attributes.

Apart from the above factors, many researchers have studied the influence of demographic characteristics, such as gender, age, income and education level on the dimensionalities of factors affecting consumer purchase intentions and behavior. However, impact of these variables on purchase intentions and consumer behavior is divergent and hence inconclusive (Liao et al.,

2017). Kim et al., (2014) find the impact of gender to be positive on EV purchases, whereas Jensen et al. (2013) find the impact to be negative. Junquera et al. (2016) find age as a significant factor affecting purchase intentions. A qualitative analysis by Ozaki and Sevastyanova (2011) suggests that prior experience with green vehicles and experiences of others affect the consumer behavior.

From the literature survey on EVs, we can see that different attributes and factors can have different impact on the purchase intentions and the adoption behavior of EV consumers in different countries. India being a developing country and very different from the developed world, in terms of socio-cultural and economic factors, the findings of the studies based on the consumer behavior in developed countries may not be applicable in the Indian context. Even the developing countries differ in their socio-cultural settings and significant differences have been found in factors affecting purchase intentions in these countries. Therefore, the findings of developing countries, such as China, Brazil and Russia, for which some studies are available (Habich-Sobiegalla et al., 2018), may not be applicable in the Indian context.

OBJECTIVES OF THE STUDY

As there is a dearth of exploratory studies in the Indian context, this study is conducted with the following objectives.

First, this study is aimed at investigating the dimensionalities of postgraduate management students' intentions to purchase an e-car in India and ascertaining the factors that contribute the most to the purchase intentions.

Second, on the basis of identified dimensionalities, we also aim at assessing whether the average scores of the identified factors are significantly different across different categories of demographic characteristics.

Third, on the basis of the study results, we intend to draw managerial and policy implications.

METHODOLOGY

To ascertain the factors affecting purchase intentions, the postgraduate management students from a premier national level management institute located in the central part of India are randomly selected. They are considered as sample in this study as most of them are likely to fall in early majority adopter or influencer category (Rogers, 2003; Tucker ,2011) for the following reasons. First, they are young adults and hence less averse to risk (Steinberg, 2010; Albert & Duffy, 2012). Second, within a year or two, these students with an average salary package of approximately INR 0.8 million (USD 11,000) per annum through campus placements are likely to be part of adult consumer segment that usually prefers cars as their mode of transport. Third, most of these students are going to be the first time car buyers and are without the baggage of conventional cars. They are with clean mindset to adopt a new technology.

Based on the literature survey, a questionnaire was designed, with two parts: the first part had questions related to the demographic profile of the respondents, while the second part had 33 items that measure the purchase intentions on five point Likert scale (strongly disagree-1 to strongly agree-5). In order to validate the questionnaire, a pilot study was carried out by administering the questionnaire to 106 students randomly selected from the batch of 720. Using this data, the reliability of the instrument was measured through Cronbach's Alpha. The estimated Cronbach Alpha was 0.840, which indicated high internal consistency among the

items. Also, using this data, an exploratory factor analysis (EFA) was carried out to understand the structure among the items. The EFA resulted in 12 factors with sampling adequacy measure, Keizer Mayer Olkin, of 0.620. Of these 12 factors, five factors had only one item loaded in each. Since these five items were loaded independently in five different factors, the questionnaire was revised by eliminating these items, resulting in 28 items for the main study.

Then, the revised questionnaire was administered to the batch of 720 students excluding the 106 students who were part of the pilot study. Of these, 314 students responded, resulting in the response rate of 51%. While checking the data for further analysis, it was discovered that 41 respondents had given straight-lined responses (i.e., several consecutive identical answers on the Likert scale or with inconsistent responses (Habich-Sobiegalla et al., 2018). These cases were treated as invalid, resulting in 273 as the final sample size. Using these 273 valid responses, Cronbach's Alpha was estimated to measure the reliability of the revised instrument. The estimated Cronbach Alpha of 0.802 was well above the acceptable level of 0.6 (Hair et al., 2010), indicating a high level of internal consistency among the items.

RESULTS AND DISCUSSION

Out of the 273 respondents, majority were males (70.3%). The respondents varied in their educational background at the graduation level, with 52% with graduation in Engineering/Technology followed by 35.2 % with graduation in commerce and the remaining with gradation in Arts and Science. As far as the age is concerned, the average age of the respondents was 24 with standard deviation of 1.64 years, and minimum and maximum age of 21 and 29 respectively. Most of the respondents (47.6%) had the family income of around INR 0.5-1 million (USD 7,000-14,000) per annum, 20.9% had less than INR 0.5 million (USD 7000) and therest (31.5%) had more than one million (USD 14,000) per annum. Most of the respondents (55.7%) had no work experience, while 32.2% had a work experience of one to five years. Regarding car ownership, 83.2% of the respondents owned a car and 29.3% of the respondents had commuted by an e-car. Though close to 30% of the respondents had commuted by an e-car, very low percentage had owned either an e-bike or an e-car.

To identify the factors leading to the purchase intention EFA was carried out. The Principal component method was used for factor extraction and the number of factors was determined by using the latent root criterion. The EFA resulted in seven factors, which explained 56.9% of the total variance Table 1.

Table 1 EXTRACTED FACTORS WITH EXPLAINED VARIANCE			
Factor	Eigenvalue	% of Variance	Cumulative % of Variance
1	3.672	13.115	13.115
2	2.604	9.3	22.415
3	2.522	9.006	31.421
4	2.299	8.212	39.633
5	1.698	6.064	45.697
6	1.613	5.762	51.459
7	1.519	5.425	56.884

The extracted factors are named considering the relevance of the items loaded. Factor 1 represents *Driving Convenience* as the items loaded in this factor are students' perception towards pick-up of e-cars, availability of sufficient charging points and service centers, etc. Factor 2 describes perceived *Technological Attributes* with items representing technological superiority, durability, sleekness, etc. Factor 3 refers to *Government Policy* with items representing perceptions regarding government incentives, subsidies, investment in research and development, etc. The items loaded in Factor 4, such as air and noise pollution, energy conservation, etc. represent *Environmental Concern*. The items loaded in Factor 5, such as convenience of charging batteries both at residence and work place, are indicating towards *Charging Convenience.* Factor 6 is perceived as *Economic Benefits* as the items loaded in it are better fuel efficiency, maintenance cost, etc. Finally, Factor 7 refers to *Symbiotic Attributes with* items representing perception of the society towards the owners of e- cars. Table 2 gives the details of the factors along with their items loaded and the %age of variance explained by them.

Table 2 FACTOR COMPOSITION		
Factor	**Item**	**Variance Explained**
DRIVING CONVENIENCE (DC)	I think sufficient battery charging points are available on highways	13.115
	I think adequate service centers are available for e-cars	
	I think the range (the distance travelled in a single charge) of e-cars is adequate for me	
	I think charging speed of e-cars is adequate	
TECHNICAL ATTRIBUTES (TA)	I think e-cars are sleek	9.3
	I think e-cars are durable	
	I think e-cars are available in different size, colors and designs	
	I think e-cars are aesthetically appealing	
	I think e-cars are technologically superior	
	I think e-cars give comfortable ride	
GOVERNMENT POLICY (GP)	I think that the government is providing incentives for the purchase of e-cars	9.006
	I think that the government is providing subsidies to the manufacturers	
	I think the government is incentivizing research and development in Evs vehicle technologies	
	I think the government is investing on the establishment of Evs charging points	
	I think the government is planning to introduce EVs policy	
ENVIRONMENTAL CONCERN (EC)	I prefer to purchase ecologically safe products	8.212
	Conventional vehicles are contributing to increasing level of air pollution in the country	
	I care about energy conservation	
	I think e-cars make less noise	

CHARGINING CONVENIENCE (CC)	I think batteries can be charged at home	6.064
	I think batteries can be charged at my college/ workplace	
	I think E-car batteries can be charged at lower rates at off-peak hours	
ECONOMIC BENEFITS (EB)	I think e-cars have better fuel efficiency	5.762
	I think e-cars have lesser maintenance cost	
	I think e-cars have lesser mechanical complexity	
SYMBIOTIC ATTRIBUTES (SA)	The society perceives that the persons with e-vehicles are more concerned for the environment	5.425
	The society perceives that the persons with e-vehicles are more concerned for the societal health	

The factors emerged in this study, in the Indian context, are more or less similar to the factors that are in the literature discussed above. However, there are few differences. Rather than infrastructure support as one single factor we find two factors *Driving Convenience* and *Charging Convenience,* which have many items similar to that found in infrastructure support. Driving Convenience is loaded with the items that represent infrastructure that facilitates comfortable driving on the roads, such as sufficient density of charging infrastructure on the highways and availability of sufficient service stations. Besides, this factor is also loaded with items representing the range of the battery and charging speed. On the contrary, *Charging Convenience* is the factor that exclusively represents the charging facilities at home or at work place rather than driving on the road.

After extracting factors through EFA, we have calculated factor scores by adding the scores of the items loaded in the respective factors. Based on these factor scores, the following hypothesis were formulated and their significance are assessed using t-test.

> H_1:   *Gender has a significant impact on the average scores of a given factor.*

It can be observed from Table 3 that except for the factor *Economic Benefits,* gender does not have statistically significant impact. But, as is evident from the table, the average scores of Economic Benefits for the male respondents is slightly more than the female respondents, implying that the males value fuel efficiency and associated benefits more than the females.

Table 3					
FACTOR SCORES HYPOTHESIS RESULTS					
VARIABLES	**FACTOR**	**CATEGORY**	**MEAN**	**SD**	**P-VALUE**
Gender	DC	M	13.260	3.465	
		F	13.478	2.739	0.688
	TA	M	20.308	3.671	0.408
		F	20.391	2.753	
	GP	M	18.229	3.045	0.671
		F	17.739	3.179	
	EC	M	16.560	2.543	0.010
		F	16.500	2.019	
	CC	M	9.947	2.269	0.533
		F	9.261	1.679	

	EB	M	9.996	2.096	**0.000***
		F	9.761	2.292	
	SA	M	7.119	1.609	0.932
		F	7.000	1.282	
Own A Car	DC	YES	13.260	3.465	0.688
		NO	13.478	2.738	
	TA	YES	20.308	3.671	0.885
		NO	20.391	2.753	
	GP	YES	18.229	3.045	0.324
		NO	17.739	3.179	
	EC	YES	16.560	2.543	0.881
		NO	16.500	2.019	
	CC	YES	9.947	2.269	0.053
		NO	9.261	1.679	
	EB	YES	9.996	2.096	0.496
		NO	9.761	2.292	
	SA	YES	7.119	1.609	0.638
		NO	7.000	1.282	
Commuted by e-car	DC	YES	13.435	3.272	0.289
		NO	12.963	3.531	
	TA	YES	20.557	3.389	0.084
		NO	19.750	3.807	
	GP	YES	17.881	3.026	**0.026***
		NO	18.788	3.092	
	EC	YES	16.501	2.365	0.626
		NO	16.663	2.686	
	CC	YES	9.845	2.150	0.879
		NO	9.800	2.308	
	EB	YES	9.933	2.097	0.778
		NO	10.013	2.213	
	SA	YES	7.109	1.515	0.871
		NO	7.075	1.667	

[*]indicates P<0.05

H₂: *Ownership of car has a significant impact on the average scores of a given factor.*

It is evident from Table 3 that ownership of car has no significant impact on the average scores of any factor, implying that the car ownership status is not likely to have any significant impact on the purchase intention.

H₃: *Respondents status as commuted by e- car has a significant impact on the average scores of a given factor.*

The results of hypothesis H3 indicate that except for the factor *Government Policy* all other are statistically not significant. The average scores of *Government Policy* is significant may be due to the fact that students' who have commuted by e-cars might have interacted with the

drivers and therefore may be aware of the government policy. And those who have not commuted by e-cars may not have sensed the need for the government policy to promote e-cars compared to conventional cars.

Also using the factor scores, the following hypothesis were tested using ANOVA Table 4.

Table 4 FACTOR SCORES ANOVA RESULTS														
	DC		TA		GP		EC		CC		EB		SA	
VARIABLE														
Income (INR)	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D
< 5 Lakhs	13.105	3.063	20.719	3.239	18.211	3.321	16.807	1.959	9.596	1.954	9.842	2.128	7.088	1.327
5-10 Lakhs	13.815	3.567	20.169	3.702	18.331	2.932	16.515	2.592	10.038	2.218	9.877	2.038	7.138	1.660
>10 Lakhs	12.640	3.090	20.291	3.464	17.826	3.107	16.430	2.565	9.674	2.298	10.151	2.268	7.047	1.556
P value	0.036*		0.617		0.490		0.655		0.325		0.588		0.913	
Education														
Science	14.750	3.851	20.350	3.911	18.750	3.892	16.150	2.110	10.000	2.575	10.300	1.895	7.500	1.539
Arts	14.800	2.280	21.600	2.302	18.200	0.447	16.000	1.000	8.800	2.168	9.600	1.517	7.800	1.095
Commerce	13.479	3.331	20.729	3.285	17.469	2.945	16.375	2.442	9.875	2.074	9.771	1.944	6.896	1.670
Engg/Tech	12.930	3.259	20.169	3.480	18.514	2.977	16.859	2.494	9.845	2.184	10.176	2.229	7.176	1.460
Others	13.100	3.695	17.900	5.343	18.200	3.765	14.900	2.685	9.400	2.875	8.100	2.283	6.800	1.932
P value	0.147		0.140		0.111		0.090		0.801		0.031*		0.322	
Work Exp														
0 year	13.559	3.143	20.329	3.602	18.092	2.832	16.362	2.360	9.836	2.206	9.803	2.056	6.947	1.594
< 1 year	13.606	3.307	21.182	3.206	18.636	3.080	16.970	2.789	11.152	2.108	10.818	1.878	7.424	1.582
1 to 5 years	12.727	3.666	19.989	3.499	18.057	3.452	16.716	2.496	9.330	2.010	9.898	2.280	7.239	1.470
P value	0.153		0.254		0.619		0.326		0.000*		0.043*		0.167	
Region														
East	13.838	2.750	20.514	3.142	17.865	2.598	16.297	2.025	9.838	2.190	10.014	1.847	6.838	1.375
West	12.840	3.743	20.309	3.573	18.370	3.448	16.864	2.568	10.062	2.331	9.877	2.405	6.988	1.553
North	13.325	3.332	20.458	3.693	18.133	3.031	16.771	2.510	9.590	2.187	10.000	1.881	7.301	1.709
South	13.143	3.557	19.629	3.858	18.257	3.221	15.829	2.802	9.857	1.896	9.914	2.594	7.429	1.501
P value	0.320		0.641		0.778		0.122		0.595		0.975		0.141	

*indicates P<0.05

H$_4$:   *Level of income has a significant impact on the average scores of a given factor.*

This study indicates that except the factor *Driving Convenience* all other factors are not significant at different levels of income. *Driving Convenience* is significant may be due to the fact that those students' whose annual family income is more than INR 1 million (US$ 14,000) are expected to commute more. They may not be convinced with the number of battery charging points and service centers, range, speed and pick up of e-cars. Therefore, their average factor scores of *Driving Convenience* is relatively low compared to other income level respondents who either travel less or not in a position to afford a car. Bonferroni's multiple comparisons test reveals that among the different categories of income level, there is a significant difference between INR 0.5-1 million (US$ 7,000 to US$14,000) and above INR 1 million (US$14,000) categories of respondents. As discussed above, this significance may be due to the same fact that the respondents above INR 1 million income category might have travelled quite extensively before and are expected to travel widely further in the future compared to those who are in income level of INR 0.5-1 million. This middle income level of respondents might be purchasing their first car and might not have travelled that much by car so far. Previous studies in Europe and the US also have shown that the purchase intentions for EVs correlate with household income (Diamond, 2009; Erdem et al., 2010).

H₅: *Education background has a significant impact on the average scores of a given factor.*

The study also indicates that except *Economic Benefits* all other factors are not significant for different categories of education background. This is consistent with the previous studies in Europe and the US which has shown that purchase intentions for EVs correlate with education levels (Moons & De Pelsmacker, 2012; Carley et al., 2013). The factor *Economic Benefits* is significant may be due to the fact that the students with science and Engineering/Technology graduation background will be able to understand better about the mechanical complexity, fuel efficiency and maintenance cost and therefore, their average factor scores are relatively high compared to the students from other education backgrounds. Bonferroni's multiple comparisons test revealed that among the different categories of education background, there is a significant difference between Engineering/Technology and 'others' category of respondents.

H₆: *Number of years of work experience has a significant impact on the average scores of a given factor.*

The study also finds that except *Charging Convenience* and *Economic Benefits,* all other factors are not significant for different years of work experience. Bonferroni's multiple comparisons test revealed that there is a significant difference in factor average scores of *Charging Convenience* between zero year and less than one year categories and less than one year and 1-5 years of categories. Also, Bonferroni's multiple comparisons test shows that there is a significant difference in the factor average score of *Economic Benefits between zero year and less than one year categories.*

H₇: *Respondents' region has a significant impact on the average scores of a given factor.*

The study results indicate that there is no significant impact of the respondents' region on the average scores of any factor. As discussed earlier, the respondents are from the premier national level B-School. Though there are a lot of cultural and socio-economic differences in the regions, perceptions of these students are more or less the same because they are ready to work

in any part of the country in different business houses. This is broadly consistent with the study carried out by Habich-Sobiegalla et al., 2018 for China, Brazil and Russia.

CONCLUSION

The study explores the dimensionalities of EV purchase intentions among postgraduate management students in India and to assess whether the average scores of the identified factors is significantly different for different categories of demographic characteristics of the respondents with the perspective of drawing managerial and policy implications. The EFA, used in this study resulted in seven factors, namely, *Driving Convenience, Technological Attributes, Government Policy, Environmental Concern, Charging Convenience, Economic Benefits* and *Symbiotic Attributes*. These factors together explain approximately 57% of the total variance in purchase intentions. Having identified and suitably named the factors, several hypotheses were formulated and tested to examine whether there is significant difference in the average scores of the factors with respect to gender, ownership of car, etc. The results indicate that only *Economic Benefits* is statistically significant factor with respect to gender. Similarly, only the respondents with status as commuted by e-cars had significant impact on *Government Policy*.

Further, ANOVA was carried out to test the hypotheses whether there is a significant difference in the average scores of factors with regard to income levels, education backgrounds and number of years of work experience. The results indicated that *Driving Convenience* is significant with respect to different levels of income, whereas *Economic Benefits* is significant with respect to different educational backgrounds and number of years of work experience. Also, the results indicated that the number of years of work experience has a significant impact on *Charging Convenience.* The availability of an EV charging infrastructure is a particularly common and significant variable in explaining willingness to purchase EVs. (Land & Potter, 2007; Bunce et al., 2014).

MANAGERIAL AND POLICY IMPLICATIONS

The results of this study indicate that the largest portion of variation in the purchase intentions of the management students is explained by *Driving Convenience*. *Driving convenience* is influenced by variables such as availability of sufficient charging points on highways, the speed of charging, and availability of adequate service centres and the range of e-cars. The e-car manufacturers can survive and gain competitive edge by addressing these issues. They need to spend heavily on R&D that can improve the range of e-cars and improve the speed with which the batteries can be charged. Besides, it is important to address the issues related to supporting infrastructure by creating charging points on highways and setting up the service centres at the various parts of the country. Another important factor that has emerged from the study is *Technical Attributes.* The management students seem to prefer *Technical Attributes* such as appearance, durability, comfort and other technical features. By addressing these features, the companies in e-car segment can attract the young mind and enhance their sales. The students' community seems to perceive e-cars as environmental friendly. E-car sales can get a further boost if charging at home, college and workplace is possible. *Economic Benefits* seems to be of a lesser importance as the students perceive that the government is incentivizing the purchase of e-cars and trying to reduce the cost by providing subsidies to the manufacturers and incentivizing the R&D in EV technologies.

The factor *Government Policy* explains the third largest variation in the e-car purchase intentions. Therefore, the government, representing the welfare of the society, needs to encourage the adoption of e-cars and other vehicles by further incentivizing the purchases and manufacturing of such vehicles and establishing the supporting infrastructure. The firm commitment on behalf of the government, in the form of government policy, can further boost the manufacturing and adoption of e-cars in the country.

REFERENCES

Albert, S.M., & Duffy, J. (2012), Differences in Risk Aversion between Young and Older Adults. *Neurosci Neuroecon*, Jan 15.

Bunce, L., Harris, M., & Burgess, M. (2014), Charge Up then Charge Out? Drivers' Perceptions and Experiences of Electric Vehicles in the UK. Transportation Research Part A: Policy and Practice, 59, 278-287.

Carley, S., Krause, R.M., Lane, B.W., & Graham, J.D. (2013) Intent to purchase a plug-in electric vehicle: a survey of early impressions in large US cites. Transp Res Part D: Transp Environ, 18: 39–45.

Davis, F.D. (1986) Technology Acceptance Mode for Empirically Testing New End-User Information Systems: Theory and Results. MIT Sloan School of Management, Cambridge: MA.

Diamond, D. (2009). The impact of government incentives for hybrid-electric vehicles: evidence from US states. *Energy Pol. 37*(3), 972-983.

Erdem C, Şentürk İ, Şimşek T. (2010) Identifying the factors affecting the willingness to pay for fuel-efficient vehicles in Turkey: a case of hybrids. *Energy Policy 38*(6):3038–43.

Fishbein, M., and Azjen, I. (1975), Belief, attitude, intention and behavior: an introduction to theory and research. Reading, MA, Addison Wesley.

Habich-Sobiegalla, S., Kostka, G., & Anzinger, N. (2018). Electric vehicle purchase intentions of Chinese, Russian and Brazilian citizens: An international comparative study. *Journal of cleaner production*, *205*, 188-200.

Hair, J., Black, W., Babin, B., & Anderson, R. 2010 Multivariate Data Analysis, 7th edition. Prentice-Hall, Upper Saddle River.

Jensen, A.F., Cherchi, E., & Mabit, S.L. (2013). On the stability of preferences and attitudes before and after experiencing an electric vehicle. *Transportation Research Part D: Transport and Environment*, *25*:24–32.

Junquera, B., Moreno, B. & Alvarez, R. (2016). Analyzing consumer attitudes towards electric vehicle purchasing intentions in Spain: Technological limitations and vehicle confidence. *Technological Forecasting and Social Change*, *109*, 6-14

Li W., Long, R., Chen, H., & Geng, J. (2017), A Review of Factors Influencing Consumer Intentions to Adopt Battery Electric Vehicles. *Renewable and Sustainable Energy Reviews*, 78, 318-328.

Liao, F., Molin, E., & Wee, B. (2017), Consumer Preferences for Electric Vehicles: A Literature Review. *Transport Review, 37*(3), 252-275.

Moons, I., & De Pelsmacker, P. (2012) Emotions as determinants of electric car usage intention. *J Mark Manag*; 28(3–4):195–237.

Ozaki, R., & Sevastyanova, K. (2011). Going hybrid: an analysis of consumer purchase motivations. *Energy Policy, 39(5)*, 2217–2227.

Rogers, E.M. (2003) Diffusion of Innovations, 5th ed., New York: Free Press, p 512.

Steinberg, L. (2010). A Dual system model of adolescent risk taking. *Developmental Psychology*, *52*, 216-224.

Tucker, T. (2011). What Influences Young Adults' Decision to Adopt New Technology? *The Elon Journal of Undergraduate Research in Communication, 2*(2).