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Factors Influencing Health & Environmental Intentions to Adopt Electric Vehicles, from the Perspective of Business School Students

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Abstract

The objective of this work is to analyse the different element that impact the health and likelihood of business student drivers to purchase and use electric vehicles. A sum of 245 valid responses were obtained through two rounds of data collection. This sample size is considered sufficient and adequately representative. The data obtained from the study were stored in a secure and well-organized Microsoft Excel spreadsheet (.xlsx) using the SmartPLS 4 software. The importance of sustainable travel solutions is emphasised, as well as the positive correlation between environmental concerns and the willingness to embrace electric vehicles. The study highlights the significance of students' reward expectations and peer pressure in influencing their decision-making processes. The study's findings are intended to give useful insights for lawmakers, academics, and industry heads, empower them to expedite the transition towards a transport system that is both environmentally friendly and sustainable.

Keywords: EV, Behavioral intention, Business School Students, PLS.

INTRODUCTION

Finding long-term solutions to environmental concerns is more pressing than ever as a result of technology's rapid advancement and its far-reaching effects on many sectors of society. Electric vehicles (EVs) have attracted a lot of interest as a possible alternative. Electric vehicles (EVs) are a realistic and promising substitute for traditional automobiles. One of their primary advantages in the war against climate change is their ability to significantly cut emissions of greenhouse gases. In addition, EVs offer the potential to reduce reliance on fossil fuels, which are both limited and environmentally damaging. India's rapidly expanding economy and urbanisation have brought about several problems, including increased air pollution and insufficient energy resources. As an outcome, there is a rising push to encourage the widespread use of electric vehicles (EVs) as a potential solution to these problems. Several elements influence people's readiness to accept this technology, and the present level of EV adoption in India is still in its infancy. Policymakers, researchers, and industry stakeholders all have a vested interest in understanding what motivates people to purchase and use electric cars (EVs). To effectively support the mass adoption of EVs, it is crucial to have this knowledge. The goal of this study is to identify and evaluate the most critical factors influencing Indian customers' inclinations to buy EVs. The research will be quantitative in nature, with data being obtained from an online survey filled out by a statistically significant sample of Indian users. The data collected will be analysed using statistical approaches including regression analysis and structural equation modelling. These methods will help us learn what aspects most affect Indian consumers' decision to buy EVs and how. The outcomes of this research will contribute to a better understanding of the elements that promote EV adoption. This would be beneficial to policymakers and industry stakeholders since it will give data for the development of specific initiatives and strategies. The following is the outline of the study: a brief introduction, followed by a detailed analysis of the research done on the topic of EV adoption and the various factors that help in influence consumers' decisions to purchase one. In the third section of the paper, the methods used will be discussed and analysed. We will talk about how we choose our sample, how the survey is set up, and how we collected our data. In the fourth section, we'll

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discuss the results of our statistical study. The concluding section of the study report will include a summary of the main results, discuss the implications of those findings for policy and practise, and make recommendations for future research. The aim of this study is to deconstruct the myriad of factors that Indian buyers consider before settling on an EV. By identifying and studying key aspects and their respective effects, this study hopes to contribute to the creation of successful strategies to encourage the widespread adoption of electric cars (EVs) in India. The findings of this study will aid policymakers, academics, and entrepreneurs in their pursuit of a transportation system that is both environmentally benign and sustainable.

THEORETICAL FRAMEWORK

In recent years, there has been a lot of discussion about the adoption and acceptability of electric cars (EVs). This is mostly due to their ability to minimise greenhouse gas emissions and dependency on fossil fuels. To successfully promote the general acceptance of electric vehicles (EVs), it is critical to understand the different aspects that influence customers' behavioural intention to use them. There are several factors that can influence an individual's behavioural intention to embrace electric vehicles (EVs).

PERCEIVED BENEFITS

According to research, the way consumers perceive the benefits of electric vehicles (EVs) is a crucial factor in determining their willingness to adopt them (Wang et al., 2024). The benefits mentioned encompass various aspects such as the positive impact on the environment, health, cost savings in operations, incentives provided by the government, and enhanced energy efficiency (Zhang et al., 2018). Research has indicated that consumers' positive attitudes towards electric vehicles (EVs) and their willingness to adopt them are greatly influenced by the perceived benefits associated with these vehicles (Forsythe et al., 2006).

H1: Perceived Benefits has a positive influence on intention to use EV.

Social Influence

Social influence is the phenomenon where the thoughts, feelings, and behaviours of an individual are influenced by others. The study examines multiple factors, including conformity, obedience, and persuasion (Thean Boon Khaw et al., 2023). The examination of social influence, including subjective norms and word-of-mouth recommendations, on consumers' behavioural intention to adopt electric vehicles (EVs) holds considerable importance (Manca et al., 2022). According to a study conducted by Jonn Aksen et al. (2013), individuals are more likely to adopt new technologies if they perceive support and endorsement from their social circle, which includes friends, family, and influential individuals. As a result, it is possible to conclude that social influence has a significant impact on customers' attitudes and health intentions regarding the adoption of electric vehicles.

H2: Social Influence has a positive influence on intention to use EV.

Environmental Concerns

Environmental issues are serious and merit serious thought and investigation (He et al., 2021). The environmental situation and its effects on different ecosystems and species are very important. Concern for the environment is seen as a major element in consumers' propensity to purchase EVs (Ju & Seong Hun Kim, 2022). Electric vehicles (EVs) are seen as a viable alternative to conventional automobiles by those who place a high value on environmental protection, according to studies (Qiao & Dowell, 2022). Consumers' propensity to embrace EVs is positively influenced by their opinion that EVs contribute to reducing carbon emissions and tackling climate change.

H3: Environmental Concerns have a positive influence on intention towards use EV.

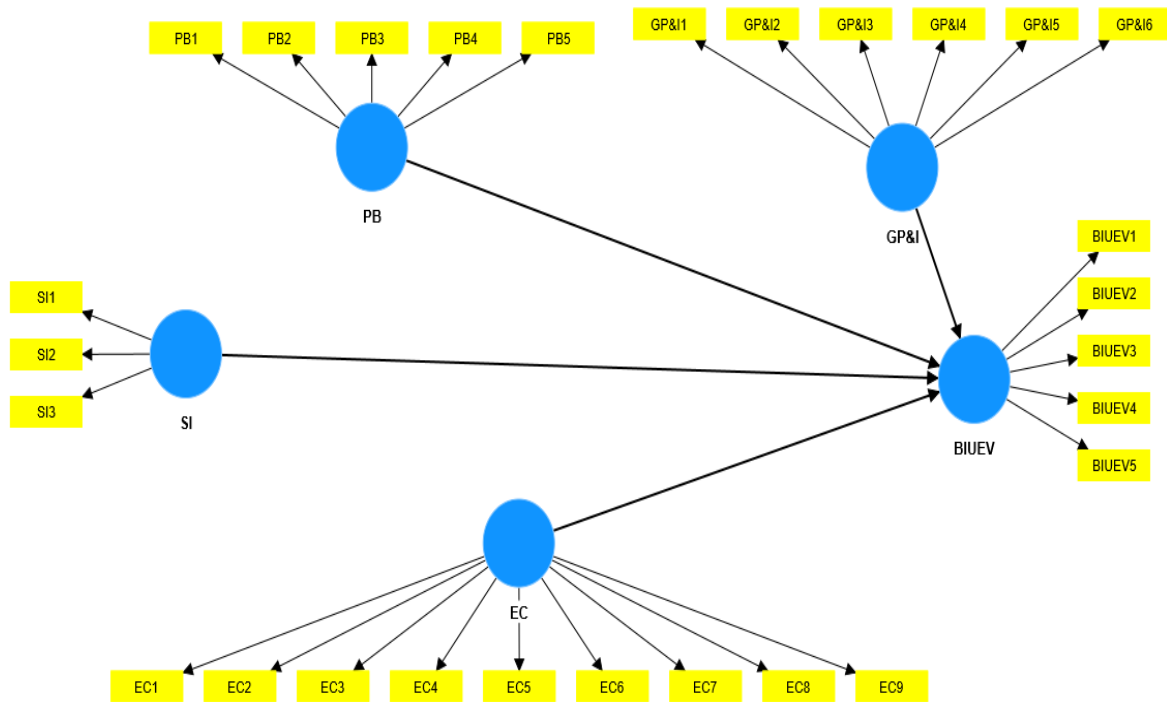
Government Policies and Incentives

Various facets of society and the economy are shaped, in part, by government policies and incentives (van et al., 2015). These regulations are crafted to solve particular problems and accomplish particular goals. Governments can encourage certain behaviours, boost specific industries, and solve problems by enacting

regulations and providing incentives (S. Paul Sathiyam et al., 2022). Government Taxes and incentives play an important role in encouraging the widespread adoption of electric vehicles. The government of India has implemented many initiatives to facilitate the transition to EVs. Investment in charging infrastructure and the provision of tax incentives are among these (Singh et al., 2021). According to studies (Patyal et al., 2021), customers' propensity to embrace EVs is significantly influenced by the availability of government aid.

H4: Government Policies and initiatives have a positive influence on intention towards use EV.

Figure 1 Conceptual Framework



Source: Smart PLS 4

METHODOLOGY

For this level, a probability-based sampling technique called straightforward random sampling has been selected. The chosen method aimed to ensure fair and equal opportunities for all students at Amity Business School in Gwalior to participate in our study. The questionnaire was administered to business school students using Google Forms between June 14th and August 15th, 2023. During the first phase of data collection process, a notable quantity of responses, specifically 127, were gathered. To increase the sample size, a further round of data gathering took place between August 25 and September 14, 2023. In the time of second phase, a significant number of 118 responses were collected.

ANALYSIS & DISCUSSION

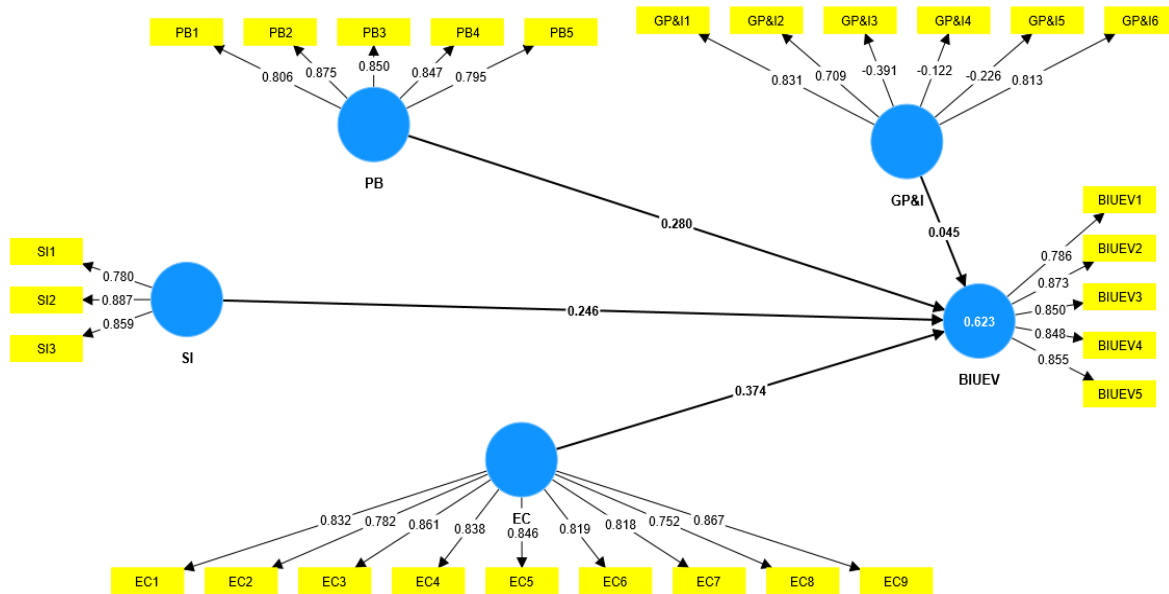


Figure 2 Model (Before Items Deleted)

Source: Smart PLS4

Table 1 Reliability & AVE Value (Before Items Deleted)

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
BIUEV	0.898	0.900	0.925	0.711
EC	0.941	0.945	0.950	0.680
GP&I	0.553	0.724	0.398	0.345
PB	0.892	0.903	0.920	0.698
SI	0.795	0.797	0.880	0.711

Source: Smart PLS 4

The research model was established based on the study conducted by Hasan et al. in 2023. The hypotheses were examined through a quantitative research methodology, employing the PLS-SEM method and the Smart PLS 4 software. The consequence of the examination suggest that a single component can explain 46.5% of the overall variation, hence excluding the potential presence of Common Method variation (CMV) in the dataset. In order to employ the PLS-SEM method, it is necessary to assess the dependability of both the outer and inner models (Hair et al., 2014). All of the remaining item loadings are more than 0.7, suggesting that items with low external loading values were excluded by the GP&I construct. Table 2 presents the connecting logic and reliability assessments of the thoughtful set up. The table provides the exterior loadings, Cronbach's alpha, and extracted average variance (AVE), as well as information on the items used to evaluate each construct. Outer loadings ranging from 0.766 to 0.925 indicate a strong relationship between the study subjects and the theoretical frameworks they were designed to judge. The constructs in the study exhibit a notable level of internal consistency, as evidenced by the alpha values (ranging from 0.800 to 0.947) associated with each construct. The AVE values (0.677–0.778) show a significant level of shared variance between each construct and its corresponding measurements. If the values of the composite reliability criteria exceed 0.7, it is probable that the overall reliability of the entity in question is high. The findings of this probe show that measuring constructs exhibit good levels of reliability and convergent validity.

After Item Removed

Table 2: Reliability, AVE & CR (After Item Removed)

Variables Name	AVE	Cronbach's alpha	CR
BIUEV	0.711	0.898	.860
EC	0.680	0.941	.823
PB	0.698	0.892	.882
SI	0.711	0.795	.870

Source: MS Word & Excel

Table 3: Model Fit Summary

Fit summary of Pattern		
	Saturated pattern	Estimated pattern
SRMR	0.072	0.072
d_ULS	1.303	1.303
d_G	0.519	0.519
Chi-square	743.415	743.415
NFI	0.826	0.826

Source: MS Excel & Word

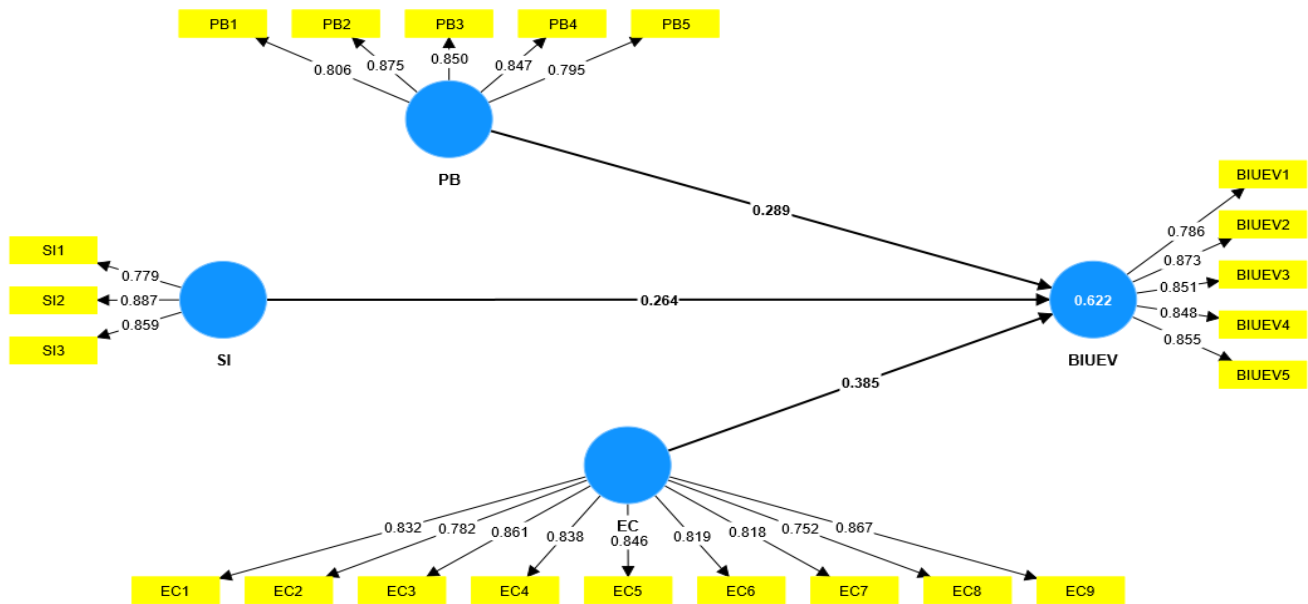


Figure 2: Model

Source: Smart PLS 4

Table 4 Table of R- Square Test

R-Square		
	R-square	R-square adjusted
BIUEV	0.622	0.617

Table 5 Hypotheses Testing with internal fit

	Hypothesis	β	Sample Mean	SD	T Statistics	Value of GoF	Value of Q2	P Value
EC->BIUEV	H3	0.385	0.385	0.050	7.646	0.698	0.646	0.000
PB->BIUEV	H1	0.289	0.289	0.062	4.662			0.000

SI->BIUEV	H2	0.264	0.264	0.064	4.128			0.000
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Source: MS excel & Smart PLS 4

DISCUSSION

The presented information regarding the inside model assessment for a structural model examined using the partially least-squares SEM method. Specifically, they mentioned the outputs in Table 5. The table displays four hypotheses (H1, H2, H3) along with their corresponding β values, T statistics, and P values. The Smart PLS 4 outputs indicate that the hypotheses H1, H2, and H3 have been accepted. This is because the p values are less than 0.05, indicating that there is a significant correlation between Environmental Concern, Perceived Benefits, Social Influence, and Environmental Concern. The β values for Environmental Concern, Perceived Benefits, and Social Influence are 0.385, 0.289, and 0.264 respectively, and their corresponding P values are all 0.000. The hypotheses exhibit significant effect sizes, as evidenced by their large f^2 values. The R2 value for Behavioural intentions to use EV (0.617) is correspondingly high, this suggests that the predictor factors account for a significant portion of the variance in the outcome variable. The model's Q² score of 0.645 and GoF value of 0.698 suggest strong predictive relevance and fit.

CONCLUSION

The research paper examines the correlation between environmental concerns, perceived benefits, and social influence on students' attitudes towards electric vehicles (EVs). The results of the research give essential insight into the various aspects that impact how people establish their intentions. The study's findings show a significant and positive association between students' willingness to use electric cars (EVs) and their level of environmental concern. The data indicates an increasing awareness among business school students regarding the significance of sustainability and the urgent need to reduce carbon emissions. The increasing awareness of environmental issues has resulted in a greater tendency for students to choose alternative transportation options, such as electric vehicles (EVs). This preference is primarily driven by the smaller ecological footprint of EVs compared to traditional vehicles. Additionally, the study looked at the perceived advantages of utilising electric vehicles (EVs) along with how they affect students' intentions. The study's findings indicate that numerous factors impact students' tendency to choose electric automobiles. The factors discussed include the potential for cost savings, increased convenience, and a decreased reliance on fossil fuels. The user emphasises the practical factors that influence student motivation towards electric vehicles (EVs), including the potential for saving money, convenient charging options, and the chance to lower their environmental impact and help preserve the environment. The study conducted an analysis on how social factors impact students' intentions to utilise electric vehicles (EVs). The data suggests that social factors such as peer recommendations, societal norms, Family and friends have a big impact on student conduct.

LIMITATIONS

The research findings were substantiated by empirical evidence, which was collected through surveys and subjected to analysis using statistical methods. The researchers used a varied group of students from business schools in their study, which allows for the findings to be applied to a wider range of people. By employing rigorous statistical methods, the academics were able to increase the dependability and uniformity of their results. The ability to identify significant connections between variables and generate meaningful interpretations was facilitated by this capability. Acknowledging the limitations of this study is crucial. The study focused solely on a specific set of business school students; this could hinder the findings' generalizability to other groups. To gain a greater awareness of the numerous elements that impact the desire to use electric vehicles (EVs), it is recommended that future research expand their study sample to include a wider range of participants.

IMPLICATIONS

In addition, it is critical to realise that this study relied heavily on self-reported data, which raises the possibility of response bias. The research mostly examined aspirations rather than actual use of electric vehicles. Future study should include objective utilisation statistics in order to acquire a better understanding of the elements that influence the widespread use of electric vehicles (EVs). By facilitating the connection between intention

and actual behaviour, it will help develop a better understanding of the issue. The major goal of this research paper is to investigate the effect of environmental worries on business school students' desire to embrace electric vehicles. The findings highlight a strong connection between environmental consciousness and the preference for electric vehicles, underscoring the significance of sustainability in making transportation choices. The facilitation of electric vehicle (EV) promotion among students can be achieved through the collaboration of businesses, policymakers, and educators. The mentioned factor has the potential to positively impact the environment and promote long-term sustainability. To attain this goal, it can be advantageous to utilise the perceived advantages and influence of social factors as effective tactics.

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