ISSN NO: 2583-7842 (Online)
Gateway International Journal of Innovative Research
Volume 2, Issue 4, December, 2023, pp 74-102

Perceived Impact of Government Incentives on Adoption of E-Vehicles in India: A Perspective of Students of Lovely Professional University

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ABSTRACT

The transition towards electric vehicles (EVs) has gained significant attention worldwide due to its potential to mitigate environmental challenges caused by conventional internal combustion engine vehicles. In India, the government has implemented various incentives to promote the adoption of EVs as a means to reduce carbon emissions, enhance energy security, and foster sustainable transportation. However, the effectiveness of these incentives in driving the adoption of EVs remains a subject of debate. This research paper aims to explore the perceived impact of government incentives on the adoption of electric vehicles in India, specifically from the perspective of students at Lovely Professional University (LPU). By examining the perceptions, attitudes, and experiences of LPU students, this study will provide valuable insights into the effectiveness of government incentives and shed light on the factors influencing the widespread adoption of EVs in India.

Keywords: *E-vehicle, Financial Incentives, Government policies.*

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1. INTRODUCTION

In recent years, the global community has been grappling with the adverse effects of climate change and the pressing need to reduce greenhouse gas emissions. The transportation sector, particularly the reliance on fossil fuel-powered vehicles, has emerged as a significant contributor to carbon emissions. To address this challenge, governments have sought to promote sustainable transportation alternatives, with electric vehicles being a promising

solution. Electric vehicles are powered by electricity stored in batteries, emitting zero tailpipe emissions, thereby reducing air pollution and dependence on fossil fuels.

India, the country with the largest population in the world, confronts significant costs and a considerable danger of future pollution deterioration. It ranks third in the world for greenhouse gas emissions. Road transport accounts for 92% of the transport sector's CO_2 equivalent emissions in India (Megha et. all 2022). India, being one of the largest automotive markets of the world and facing severe air pollution challenges, has recognized the potential of electric vehicles to transform its transportation landscape. Over the previous 10 years, the deployment of electric automobiles has accelerated, with the worldwide stock of electric passenger cars surpassing 10 million in 2022, increasing by 55% from the year 2021 (EV-Volumes, 2023). Despite this, India only accounts for less than 1.3% of all four-wheel electric vehicles worldwide. Therefore, considerably more development in the EV sector is needed to address pollution. The need for a change in the country's transport system from internal combustion engines to electricity-powered vehicles has been recognised by the central government as well as various state administrations. The Government of India has implemented various policy measures and incentives to accelerate the adoption of electric vehicles across the country. These initiatives include financial subsidies, tax benefits, charging infrastructure development, and research and development support (Mehta, 2021).

India has set goals on electrifying its extensive transport network in an effort to combat air pollution and move towards a sustainable future. Acknowledging the promise of electric cars (EVs), the government has initiated a multifaceted strategy to promote EV adoption, including financial incentives, infrastructure development, and regulatory reforms. The government is implementing lower road taxes, scrapping and refit incentives, as well as purchasing discounts across several vehicle types, to support the goal of attaining 30 percent EVs by 2030. India's recent steps to quicken the shift to e-mobility are motivated by the expense of oil imports, growing pollution, and its global obligations to battle climate change. Some of the incentives implemented by the Government of India for the promotion of electric vehicles are explained hereafter. In an attempt to lessen air pollution and the country's reliance on fossil fuels, the Indian government introduced the Faster Adoption and Manufacturing of Electric Vehicles (FAME) programme, which promotes the production and usage of electric and hybrid cars. The programme was first introduced in 2015. FAME has been implemented in several stages, each

of which has improved the incentives and support systems while concentrating on a distinct facet of electric and hybrid mobility. The policy's objective is to stimulate consumer adoption of electric and hybrid cars and open up a market for them. FAME offers financial incentives to producers of hybrid and electric cars as well as to customers. The initial costs for customers are lowered by these incentives, which take the shape of grants, subsidies, and incentives for the purchase of electric cars. In order to alleviate the "range anxiety" that comes with electric vehicles, the strategy attempts to expand the availability of charging infrastructure across the nation. To cut emissions in highly populated metropolitan areas, FAME advocates for the use of electric buses and two-wheelers in public transportation. The Indian government's efforts to switch to a more ecologically friendly and sustainable transport system are heavily reliant on the FAME programme. It seeks to support local production of electric and hybrid cars and their components, lower the cost of ownership and increase customer access to these vehicles, and help India achieve its long-term objectives of lowering carbon emissions and advancing clean and sustainable modes of transportation.

In order to ensure national fuel security, the government developed the National Electric Mobility Mission Plan (NEMMP) in 2013. It serves as a road map for the country's rapid adoption of electric cars and the production of those vehicles domestically. It is estimated that the initiative will save 9500 million litres of crude oil, or INR 62,000 crores. Enhancing national fuel security, addressing environmental issues, and empowering the Indian automotive sector to become a worldwide leader in xEV manufacture were its three key objectives. Even though the 2020 plan is officially over, many of its efforts and goals still serve as a roadmap for India's transition to electric vehicles. The Indian government introduced the Production Linked Incentive (PLI) initiative for the Automobile and Auto Component Industry in September 2021. The project has a financial allocation of Rs. 25,938 crore, which is divided over five years (2022–2023 to 2026–2027). Its goal is to draw capital and increase local production of Advanced Automotive Technology (AAT) goods, the most important of which are electric cars (EVs). Up to 18% of the qualifying sales value of the AAT cars that EV manufacturers create in India is granted in incentives. The achievement of predetermined minimum investment criteria and sales value objectives is the basis for this incentive. The programme gives priority to hydrogen fuel cell vehicles (FCVs) and battery electric vehicles (BEVs) in an effort to spur research and use of these emission-free technologies. Each year, the program's investment and sales value objectives vary, with the level of strictness steadily rising to incentivize enterprises to increase output and realise economies of scale. By encouraging

manufacturers to add more domestic value to their EVs, the programme helps to build a strong local EV ecosystem.

Understanding the perceived impact of government incentives is essential in evaluating the success of these policies and identifying potential areas for improvement. Therefore, this research paper seeks to investigate the perceived impact of government incentives on the adoption of EVs in India, focusing on the perspectives of students at Lovely Professional University (LPU).

This study's significance lies in its potential to contribute to the existing literature on the adoption of electric vehicles in India. By focusing on the perspectives of LPU students, the research aims to provide insights into the effectiveness of government incentives and the factors influencing the adoption of EVs among the younger generation. The findings of this study can aid policymakers, researchers, and industry players in formulating strategies to incentivize EV adoption effectively. Furthermore, the study's results can contribute to the overall understanding of EV adoption patterns in India and provide valuable insights for future research in the field of sustainable transportation.

2. LITERATURE REVIEW

The adoption of electric vehicles in India has been quite slow. As per the latest data there were 1,26,947 electric vehicles registered in August 2023. The following month showed just a meagre increase of 0.67% in the number of electric vehicles registered (Vahaan data 2023). Hence, it becomes essential to know what could be the factors that can affect the adoption of electric vehicles.

2.1 Government Financial Incentives

There are several programmes, rules, and incentives offered by the nation's various states that stimulate the market's acceptance of electric cars. The National Electric Mobility Mission Plan 2020, which the Indian government launched in 2013, intends to enhance hybrid and electric car manufacturing in the nation by 2020 with a target of producing seven million electric vehicles. The Government aims to reach a target of 30% e-mobility till 2030. This endeavour has been boosted in India through the government's Faster Adoption & Manufacturing of Hybrid and Electric Vehicles plan, which offers demand-side incentives. Private automakers have responded to the occasion, expanding their e-vehicle production facilities and investing

in R&D (Krishnan & Sharma, 2022). Shetty et al. (2020) analysis of consumer knowledge of electric vehicle buying decisions and the impact of government policies and regulations in this area. It was observed that customer buying intention were influenced by government policy, consumer awareness, and consumer understanding. Government programmes, laws, and incentives play a significant role in fostering an environment that will effectively support the adoption of electric cars in the nation. The effectiveness of the programmes, policies, and incentives developed by the relevant governmental bodies heavily influences the country's adoption of electric cars. The government's role in raising public knowledge of various programmes, regulations, and incentives is crucial in encouraging customers to purchase electric cars. Governmental initiatives and legislation aimed at setting up a sufficient number of public charging stations would undoubtedly improve the country's consumer adoption of electric vehicles. Wang et al. (2017) conducted an analysis of the policies and incentives put out by the government to encourage the use of electric vehicles. It was discovered that the government's policies and incentives had a big influence on people's decision to buy electric cars. The elements that may influence India's adoption of electric cars were investigated. According to research (Verma et al. 2020), the perceived environmental advantages and the financial incentives had a substantial influence on customers' intentions to purchase electric vehicles.

Sierzchula et al. (2014) investigated the influence of financial incentives and socio-economic factors on electric vehicle adoption. Their research provided insights into the role of financial incentives in promoting EV adoption. One of the strongest strategies that a government may use to promote EV adoption is financial incentives. Consumers are more likely to buy EVs if there is a tax advantage (Zhang et al. 2011). Using the Technology Acceptance Model, Shanmugavel and Micheal (2022) investigate the influence of marketing incentives and individual inventiveness on purchase intentions for electric automobiles. Their research explored how consumer attitudes and perceived behaviour affect the uptake of electric vehicles. In their 2020 study, Khurana et al. examined how common electric car usage is in India, emphasising the role that mindset plays as a mediator. Comprehending the intermediary elements between incentives and electric vehicle adoption is crucial, particularly in a nation such as India with a heterogeneous market. Shanmugavel & Micheal studied the factors that influence consumers' purchase intention of electric vehicles (EVs) in India and it was found

that the perceived incentives provided by the government, played a significant role in the purchase intention of electric vehicles (EVs).

H1: Financial incentives offered by the government have a positive impact on adoption intention.

2.2 Attitude

Consumer attitude is another factor influencing adoption of electric vehicle. According to Eagly and Chaiken (2007), attitude is the psychological route that defines a person's favouritism or disfavoritism towards a certain thing. According to the theory of planned behaviour, an individual is more likely to engage in a certain behaviour if they have a favourable attitude towards it (Ajzen, 1991). The idea that attitude and purchase intentions are positively correlated has been backed by a number of empirical research in the past (Bredahl, 2001; Chen, 2007; Michaelidou and Hassan, 2010; Lane and Potter, 2007; Sheppard et al., 1988; Tang and Medhekar, 2010). Paul et al. (2016) revealed that a favorable attitude toward green products, a positive impression of social acceptance for buying green items, and a strong sense of control over purchasing decisions were all substantially related with greater intentions to consume green products. When predicting the demand for electric cars, Glerum et al. (2014) stressed on how crucial it is to take attitude and perception into account. Their method aided in our comprehension of how these psychological elements might affect the buyers' attitude towards electric vehicle. The main forces behind Korea's adoption of electric cars are examined by Kim and Heo (2019). This study offered insights into preferences that have been made clear, which can be helpful in understanding customer preferences and its affect on the adoption of EVs.

In their investigation of customers' intents to buy electric cars, Lashari et al. (2021) paid particular attention to the impact of user attitude and perception. Their study broadens our understanding of the variables influencing the adoption of electric vehicles (EVs), which can influence governmental regulations in a market driven by consumers. The Korean market is the particular focus of Jung et al.'s (2021) investigation of the variables influencing customer choices for electric automobiles. Comprehending the disparities in EV adoption across different regions is crucial, as it underscores the necessity of customised government policies and incentives. Degirmenci and Breitner (2017) investigated the customer attitude to buy electric cars and the relative weight of environmental considerations in relation to factors like cost and

range. Our understanding of the trade-offs customers make when switching to EVs is improved by this study.

Through the use of Theory of Planned Behaviour (TPB) constructs, Sreen et al. (2018) investigates the influence of individual behaviour on green purchasing intention. The attitude towards a green product has the most positive influence on the intention to make a green purchase out of all the TPB prediction constructs. The link between attitude and adoption intention was examined by Ansab & Kumar (2022). Customers' attitudes act as a mediator in the interaction between perception and the desire to switch to electric vehicles. Customers' attitudes towards electric vehicles were found to be positively correlated. It was discovered that the best indicator of intention towards electric automobiles was attitude towards them. The intentions of emerging nation's business students to buy environmentally friendly automobiles were also shown to be positively and significantly influenced by their attitude, suggesting that they place a high value on eco-friendly consumption while taking the environment into consideration (Mohiuddin et al. 2018).

H2: Attitude has a positive impact on adoption intention.

2.3 Perceived Behavioural Control

People's perception of how simple or difficult it is in carrying out the behaviour of interest is referred to as PBC. Higher control individuals are more likely to intend to carry out a certain activity. PBC is a person's assessment of whether they have all the tools and chances necessary to carry out a specific activity. Prior research on the context of green behaviour has shown that PBC plays a significant role in determining people's behavioural intentions. PBC is defined as the "perceived ease or difficulty of performing a behaviour" by Ajzen (1991). PBC has also been separated into external and internal categories. According to Armstrong and Conner (1999), a person with a high internal PBC believes that they have more control over the internal human resources, such as the abilities, planning, confidence, and skills needed to carry out a certain behaviour. According to Kidwell and Jewell (2003), external PBC explains how people perceive their capacity to overcome external constraints like time and money needed to carry out a specific behaviour. Both internal and external PBC may serve as a gauge to determine whether to see a certain behaviour favourably or unfavourably. According to Mohiuddin et al. (2018), PBC and intention to purchase green automobiles are positively correlated. When consumers are making decisions on electric vehicle purchases, government incentives have

been proven to positively impact the PBC (Zhang et al., 2018b). Similar to this, financial incentives from the government would favourably affect young consumers' intention for buying electric vehicle (Zheng et al., 2019). Same kind of findings were revealed by Shalender and Sharma (2021) also wherein it was shown that PBC impacts adoption intention towards electric vehicles. Ansab and Kumar (2022) also analysed the relationship between PBC and adoption incentives. It was discovered that PBC had a favourable impact towards the adoption of electric vehicles. In the study by Mohiuddin et al. (2018) PBC was taken into account as a strong predictor of intention towards e-automobiles. The study was conducted on the business students in emerging countries. It was found that the students studying business in emerging nations have favourable and noteworthy attitudes about green automobiles when they perceive that they have behavioural control. Since university business students exhibit self-confidence and believe that the necessary resources are available for adopting green cars, perceived behavioural control is also proven to have a favourable and substantial impact on the students' intents towards green vehicles.

H3: Perceived behavioural control havs a positive impact on adoption intention.

2.4 Adoption Intention

According to the various causal relationships that have been reported, this study conceptualises attitudes, financial incentives, and perceived behavioural controls as significant predictors of business students' intentions towards green vehicles. It also seeks to further investigate the strength of those relationships. The study reveals a link between reported behaviours and intentions towards electric vehicles at the same time. The study by Mohiuddin et al. (2018) on intention of business students depicts that university business students' intentions towards green cars also showed a favourable and substantial influence on how they were perceived to behave. Not only do they want to drive environmentally friendly cars, they have already adopted and are making use of them. The associations between attitudes towards the environment and perceived behavioural controls (PBC) with perceived behaviour (PBE) among university students were shown to be statistically significant when it came to the mediating effects of intention towards green cars. This suggests that among university business students, the association between attitude towards the environment and perceived behavioural control (PBC) and perceived behaviour (PBE) is partially explained by the intention towards electric automobiles. Furthermore, it was shown that attitudes towards green cars, perceptions

of behavioural controls, and intention to buy green cars were significantly correlated. Egnér and Trosvik (2018) investigated the uptake of electric vehicles in Sweden, emphasising the influence of regional policy tools. This study highlights how regional regulations affect the uptake of electric vehicles and may provide useful information for comparable research conducted in India. Chen et al. (2021) evaluated how the US's adoption of electric vehicles has been impacted by the financial factors. This study emphasises the wider effects of EV adoption as well as the possible advantages of government incentives. Kim et al. (2018) investigated how adoption intention in the Republic of Korea was impacted by government support. It was found that there were considerable impacts of perceived value as a predictor of consumer intentions to adopt EVs using survey data gathered from 285 EV drivers in Korea. Additionally, the study also found that perceived value on adoption intention considerably get enhanced by financial incentives.

3. METHODOLOGY

3.1 Target population

The participants in our study were students who were currently enrolled in Lovely Professional University, Punjab. The students included in the survey were within the age range of 18 to 30 years. We included university students because highly educated people are better able to comprehend the issue at hand and contribute reliable data than those with less education, as is demonstrated by the environmental literature (Hedlund, 2011; Han et al. 2010; Han and Kim, 2010; Alwitt and Pitts, 1996). As a result, we gathered information from the well-educated customer sample. Another reason was that within the specified age range, university students would be inclined to choose eco-friendly cars. Using random sampling, the participants were chosen. The questionnaire was prepared and was send to the respondents by sharing the link with them. The respondents filled the questionnaire online.

3.2 Sample size and composition

As advised by Krumpal (2013), data were gathered anonymously, and respondents were guaranteed confidentially to minimise the social desirability bias. For each estimated free parameter, ten participants are a commonly accepted value (Kline, 2015). The measuring scales for the constructions had 27 items, and the total number of answers required to exceed the 270 minimum threshold (i.e., 27*10). 927 people received survey questions in order to gather data.

ISSN NO: 2583-7842 (Online)
Gateway International Journal of Innovative Research
Volume 2, Issue 4, December, 2023, pp 74-102

To lessen non-response bias, participants received many reminders encouraging them to finish the questionnaire (Van Mol, 2017). A total of 420 individuals provided response, which were screened to exclude incomplete responses. As a result, 361 responses in total were taken into consideration for analysis, meeting the sample size criteria for this particular study.

As per descriptive statistics, Table 1 summarizes the demographic information about the respondents. Out of the total 400 respondents, 236 were males and 124 were females. According to educational qualifications, 180 were bachelor students, 133 were master students and 48 were doctoral scholars. 115 respondents belonged to the monthly household income range of up to 50,00,00. 99 had the monthly household income from 50,001 to 1,00,001, 70 students were within the income range of 100,001 to 150,000 and remaining 77 in range of 150,001 and above. The respondents belonged to rural as well as urban area, having around 76.7% respondents from urban and 23.3% from rural area. We gathered responses from students hailing from all regions of India as well as from abroad. Out of 361 responses, 151 belonged to Northern region, 56 from west, 56 from South, 42 from East, 36 from central and 20 were foreign students.

Table 1. Sample Characteristics

Variable	Categories	Frequency	Percentage
Gender	Male	236	34.3
	Female	124	65.4
Current education level	Bachelors	180	49.9
	Masters	133	36.8
	Doctoral scholar	48	13.3
Monthly household income (Rs.)	150,001 and above	77	21.3
	From 100,001 to 150,000	70	19.4
	From 50,001 to 1,00,001	99	27.4
	Up to 50,00,00	115	31.9
Residential Area	Rural	84	23.3

	Urban	277	76.7
Region	Central	36	10.0
	East	42	11.6
	Foreigner	20	5.5
	North	151	41.8
	South	56	15.5
	West	56	15.5

3.3 Measures

Measurement scales that have been proven reliable in past research were employed in this investigation. The attitude about the purchasing of electric vehicles was measured using an operationalized 6-item, 5-point Likert type scale. We used a 5-point Likert scale with seven items to quantify government financial incentives. Perceived behavioural control was measured using a 5-point Likert type scale including 7 items. A 5-point Likert-type scale with seven items was used to evaluate adoption intention. Multi-item measures were taken from earlier research and modified to meet the needs of the current investigation (Table 2).

Table 2. Measures used and the reference papers

Measures	**Research paper used**
Perceived behavioural control (7 items)	Paul and et (2016)
Attitude (6 items)	Sreen et al. (2018)
Adoption Intention (7 items)	Mohiuddin et al. (2018) Nisa, Syeedun (2021) Wang S., Li J., & Zhao D. (2017)
Financial incentives (7 items)	Kim et al. (2018) Wang S., Li J., & Zhao D. (2017) Nisa, Syeedun (2021)

3.4 Research tool

Tools should be selected with validity, reliability, and ethics in mind for the particular study setting. Empirical research provides the inputs that are utilised to frame the model for electric vehicles buying intention. The model for electric vehicles buying intention has been established using structural and analytical modelling approaches. The research project has made explicit use of the following instruments.

1. Confirmatory factor analysis (CFA)- is used to assess how well the measured variables capture the number of components. It is employed to determine whether a construct's measurements agree with the researcher's interpretation of the construct's (or factor's) nature. Therefore, the goal of confirmatory component analysis is to determine if the data conform to a proposed measurement model.

2. Structured equation modelling (SEM)- The second-generation multivariate model, or structural equation modelling, or SEM, was the statistical approach practice employed for the empirical inquiry (Fornell, 1982). Nevertheless, the advantage of this SEM analysis is that it examines the latent variable's explanation within the context of a collection of instrumental possessions, allowing SEM to be used in tandem with the structural and measurement models in a single, thorough, and methodical process.

4. DATA ANALYSIS AND RESULTS

Data analysis is done using a SEM. SEM validates information in two steps. Confirmatory factor analysis (CFA) is used in the first phase to evaluate the measurement model, and structural model validation is done in the second step using SEM. The validity and reliability of the tool employed to measure the underlining construct may be accessed via the measurement model.

The maximal likelihood estimate ("MLE") approach was used in each step (Byrne, 2001). Several indicators were used to assess goodness-of-fit (or "GOF"), including chi-square ($\chi 2$), chi-square to degree of freedom ratio ($\chi 2$ /df), comparative fit index (CFI), Tucker-Lewis index (TLI), and root mean square error of approximation (RMSEA). A satisfactory model fit is indicated by indices >0.90, $\chi 2$ /df between 2 and 5, and RMSEAs r0.08, according to Browne and Cudek (1993) and Hair et al. (1998).

To confirm the observations and evaluate the hypotheses, the study used the Structural Equation Modelling (SEM) approach with Amos.

Reinartz et al. (2009) state that SEM is the better choice for studies that concentrate on theory formation and prediction. Because the current study is predictive in nature, SEM was used. The research employed a two-phase analytical methodology that entailed evaluating both the measurement and structural models (Anderson and Gerbing, 1988).

4.1 Measurement Model

There may be an issue known as common method bias since the data for both the dependent and predictor variables were obtained from the same respondent using the same instrument/questionnaire and the same technique (online survey) (Heppener et al., 2008). The quality evaluation instruments for the instrument evaluating the hypothetical model's concept are validity and reliability. The scale's capacity to yield consistent findings is referred to as reliability. Composite reliability is used in this study to assess internal consistency between the construct's items. The scale's validity lies in its capacity to yield precise findings. The validity of the scales assessing the hypothetical model's constructs is confirmed by Average Variance Extracted (AVE). A convergence and validity score of 0.5 or above on the AVE generally indicates appropriate results.

In order to evaluate the measurement model, maximum likelihood estimation, or "MLE," was used in CFA. The GOF statistics ($\chi2$=1127.920, df=318, $\chi2$/df=3.547, SRMR=0.069; CFI=0.891, RMSEA=0.084) were all quite near to the allowable limit. We discovered that all items had factor loading values (λ>0.5) and were statistically significant in accordance with Jöreskog & Sörbom's (1993) recommendations.

Table 3. Model fit measures

Measure	Estimate	Threshold	Interpretation
CMIN	1127.920	-	-
DF	318	-	-
CMIN/DF	3.547	Between 1 and 3	Acceptable
CFI	0.891	>0.95	Need more DF
SRMR	0.069	<0.08	Excellent
RMSEA	0.084	<0.10	Acceptable

ISSN NO: 2583-7842 (Online)
Gateway International Journal of Innovative Research
Volume 2, Issue 4, December, 2023, pp 74-102

Using CFI (recommended > 0.9; Kline, 1998) and standardised root mean square residual (SRMR<0.08; Hu and Bentler, 1998), we determined the unidimensionality of all constructs. Every construct had only one dimension (CFI = 0.891; SRMR = 0.069). Moreover, discriminant validity and convergent validity were established in order to attain concept validity (Hair et al., 1998). Two methods were used to achieve convergent validity: (a) all factor loadings were significant and greater than 0.5 (Bagozzi et al., 1991); and (b) all Average Variance Extracted ("AVE") values were greater than 0.5 (Ruvio and Shogam, 2008; Fornell and Larcker, 1981), and composite reliabilities were greater than 0.7 (Hair et al., 1998). Strong convergent validity was demonstrated by these statistics (Table 3).

Fornell and Larcker's (1981) approach is used to verify discriminant validity. By comparing each construct's square root of Average Variance Explained (AVE) to the shared variance between them, the researcher can establish discriminant validity between the constructs if the square root of AVE is larger than the shared variance. In order to prove discriminant validity, we compared the squared correlations between constructs and the average variance for each construct using Fornell and Larcker's (1981) technique. As seen by Table 4, under root AVE is greater than the squared correlations indicating discriminant validity.

Table 4 Model Validity Measures

	CR	AVE	MSV	MaxR(H)	FI	AI	A	PB
FI	0.944	0.710	0.147	0.955	0.842			
AI	0.925	0.640	0.147	0.932	0.384***	0.800		
A	0.922	0.662	0.123	0.923	0.199***	0.351***	0.814	
PB	0.889	0.538	0.056	0.899	0.147*	0.238***	0.147*	0.733

AMOS plugin (Gaskin, J. & Lim, J. (2016), Master validity tool) has been used for these results. Thresholds have been taken from Hu & Bentler (1999), “Cutoff criteria for Fit indexes in Covariance structure analysis: Conventional criteria versus New alternatives” SEM vol. 6(1), pp. 1-55

How accurately indicators represent the latent components is confirmed by CFA. It uses IBM Amos version 21 to validate the measurement model that follows. The measurement model that was being examined contained indices that were within the acceptable fit range for CMIN, $\chi 2$/df, CFI, SRMR, and RMSEA. The RMSEA fit indices were just slightly off. The model fit was satisfactory. The indices for $\chi 2$/df, CFI, SRMR, and RMSEA are displayed in Table 3. The

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Gateway International Journal of Innovative Research
Volume 2, Issue 4, December, 2023, pp 74-102

fit indices CMIN/df, CFI, SRMR, and RMESA indicate that the sample data and the theoretical model match each other well enough. There was no need to alter the items included in the corresponding constructs, according to the measurement model analysis. The structural model was therefore examined.

4.2 Structural Model

All three of the stated hypotheses in the proposed model were put to the test by the structural model's analysis. All six hypotheses—H1, H2, and H3 are accepted by the structural model's results at the $p < 0.05$ significance level. P-values for the various constructions are displayed in Table 5.

Table 5. Regression Weights

			Estimate	P
AI	<---	PB	.162	.002
AI	<---	A	.279	***
AI	<---	FI	.319	***

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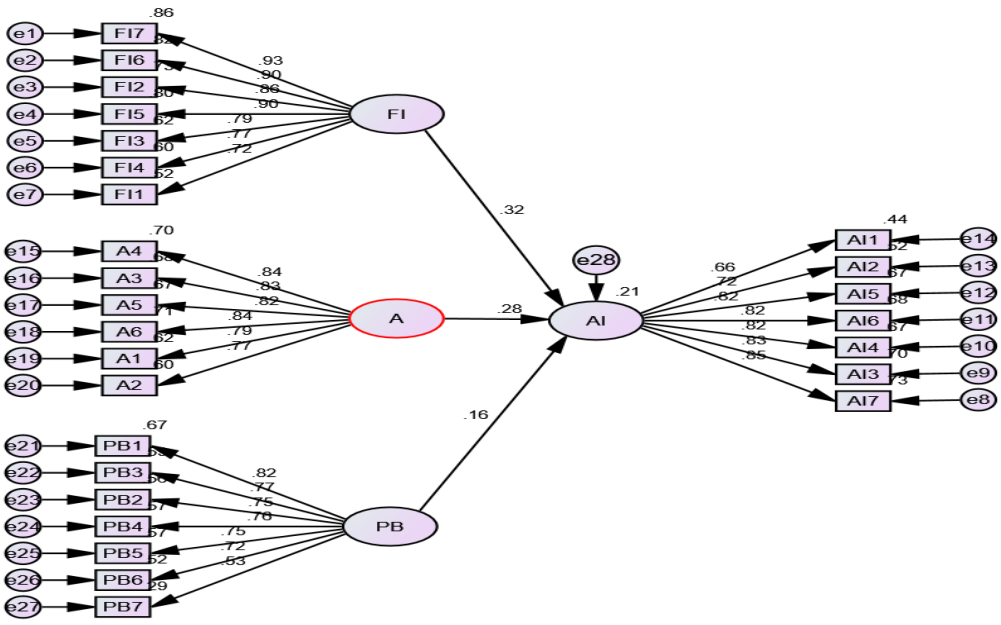
The purpose of the regression table above was to determine if the variables—such as financial incentives, attitude and perceived behaviour has a relationship with adoption intention or not. Perceived behaviour significantly determine EV adoption intension as its p value is 0.002, which is below the acceptable limit of 0.05. Similarly, financial incentives and attitude also significantly determine the adoption intention for electric vehicle since their p value is also less than 0.05. The hypothesis is approved since the p value of all the variables is less than 0.05. This holds true for any combination of financial incentives, attitude and perceived behaviour. Consequently, it may be said that each of these variables affects adoption intention. Analysing



the structural model (Figure 1) reveals that the AI is reliant on FI, A and PB. The value of FI with AI is 0.32. The value between A and AI is 0.28 and the value between PB and AI is 0.16. All these values fall within the threshold limit of 0.5, hence it shows that each of the measure has a significant correlation on adoption intention.

Figure 1. Structural Equation model

Source: Author's own; result of data collection tabulation.

Note: FI: Financial Incentives; A: Attitude; PB: Perceived behaviour; AI: Adoption Intention

ISSN NO: 2583-7842 (Online)
Gateway International Journal of Innovative Research
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5. DISCUSSION

Examining the significant variables that affect a consumer's choice in relation to the adoption of EVs is the goal of this study. This study concentrated on the relationship between perceived behaviour, attitude, and financial incentives since there is a dearth of research on the moderating effects of these characteristics and outside variables on EV adoption. The aim of this study was to investigate how LPU students' adoption of electric vehicles is influenced by financial incentives, attitudes, and perceived behaviour. For the students in our study, we discovered that EV adoption rates were positively and significantly predicted by financial incentives, attitude, and perceived behaviour. Overall, this research offers a provisional endorsement of financial incentives and other variables to promote the use of electric vehicles.

Here is a summary of the findings: Prior research (Bjerkan et al., 2016; Byun et al., 2018; Lieven, 2015; Mersky et al., 2016; Noori and Tatari, 2016; Sierzchula et al., 2014; Wang et al., 2017) shown that government assistance was a significant facilitator. This study also discovered that government support for financial incentives had a direct and favourable impact on the intention to embrace electric vehicles. The findings indicate that customers may develop a good perception and view of electric automobiles as a result of government financial incentives and assistance (Zhang et al., 2018a). Furthermore, financial incentives may help to clear up any doubts and ambiguities regarding the direction that disruptive technologies are taking. Government assistance, as noted by Shalender and Sharma (2021), reassures customers that the advantages associated with EVs will be provided in an orderly preferred fashion, increasing their PBC towards EVs. As a result, financial incentives provided by the government reassure people that the disruptive inventions, like electric automobiles, are here to stay. This improves people's perceptions of electric cars and their PBC.

The study also raises the important question of whether LPU students' perceived behavioural control and their desire to purchase green products are significantly correlated. In the realm of electric vehicle, answering this issue is crucial since perceived behavioural control has been shown to be a reliable indicator of people's intentions to purchase electric vehicle (Cheng et al., 2006; Baker et al., 2007). Perceived behavioural control favourably impacted intentions, which is in line with other research (Chen and Peng, 2012; Chen and Tung, 2014).

The results show that there is a significant correlation between attitude and the adoption intention for electric vehicles. The attitude of the customers influences their intention to

purchase electric vehicle which is in accordance with a previous study done in China (Ko and Jin, 2017). According to Jansson et al. (2010) and Wu et al. (2010), attitudes towards electric cars have a strong positive effect on intentions to adopt them. PBC has a favourable impact on customers' plans to buy electric vehicles. This is consistent with other research findings (Mohiuddin et al., 2018). Customers may indicate that they have higher intentions when they feel more capable and confident about buying electric vehicles.

With the aid of programmes like Swach Bharat Abhiyan, the Indian government has raised awareness of environmental concerns in the past, but it has not succeeded in presenting a legal strategy for businesses to encourage the production and acquisition of electric products. With initiatives like the National Programme for Organic Production (NPOP), the Energy Efficiency Labelling Scheme in India, and the Indian Eco-mark Scheme, the government has attempted in the past to raise consumer awareness of electric products, but the results have not been particularly encouraging due to the low involvement of industry stakeholders. India is still in the early stages of green consumption, with an increasing number of consumers seeking environmentally electric vehicles. To spread awareness of the advantages of electric vehicles and the labels that designate them, policymakers and marketers must collaborate. Increased accessibility to eco-friendly items might contribute to improved awareness of eco-friendly product identification. As a result, the government ought to establish regulations that motivate businesses to produce more of these goods.

6. LIMITATIONS

According to our model, the adoption intention of electric vehicles (EVs) among the students in our sample were significantly predicted by financial incentives, attitudes, and perceived conduct. It is plausible, although, that the variables may have obscured other significant aspects. Thus, additional research is required to fully understand the significance of these variables in order to ascertain whether or not they are reliable indicators of EV adoption on their own, or if other components are also required but were left out of our model.

One fundamental question concerning attitudes is whether consumers associate electric vehicles (EVs) with environmental preservation. This has to be looked at because environmental arguments and imagery are used in today's marketing tactics for a number of EVs (Higueras-Castillo et al., 2019).

The goals and voluntary adoption are the main topics of the research based on representative samples. As the EV industry grows, it becomes much more practical and significant to focus on customer adoption behaviour when it comes to EVs compared to initial intentions. Furthermore, understanding the difference between intended and actual behaviour is crucial when using the EV framework. In an effort to narrow the attitude-behavior gap (Stern, 2000), this study will look at debates and interferences that may provide more context for understanding consumer intents and behaviour related to EV acceptability.

Another limitation of our study is that only financial incentives were takin into account and non-financial incentives were left out. Non-financial incentives may include assigned parking spots, availability of carpool lanes, and waiver of specific charges. The best plans for encouraging the adoption of EVs will probably combine non-financial and financial incentives. The adoption of electric vehicles by consumers is significantly influenced by both monetary and non-monetary incentives. Policymakers and manufacturers may create more successful strategies for encouraging the shift to a more sustainable transport system by knowing the various incentive kinds and how to combine them.

There are several flaws in the data gathering process, and more research is needed. Usually, survey methods are employed in these researches since measuring the intention to assess is challenging. Some participants in the research never came into touch with EVs, which would limit the validity of their response. Despite the fact that some research participants had brief hands-on training and selected EV users for the study, biases may arise from the limited sample size. Therefore, more vivid and representative investigations are needed in the future.

7. CONCLUSION

This study looked at the main variables affecting customers' adoption intention to buy electric cars (EVs). Our results offer solid proof that customers' intentions to purchase EVs are positively impacted by financial incentives, a favourable attitude towards EVs, and a strong sense of behavioural control over EV adoption.

Our findings support previous studies by showing that tax credits, government subsidies, and other financial incentives significantly reduce the perceived cost barrier attached to electric vehicles (EVs), increasing their attractiveness to a wider spectrum of customers.

We find that people who have a positive attitude on electric vehicles (EVs) and are aware of its advantages in terms of the environment, technology, and driving pleasure are more inclined to think about buying one. This emphasises how crucial it is to dispel any fears and false information regarding EVs through efficient education and awareness initiatives.

These findings may be used by stakeholders in EVs and policymakers to create policies that effectively encourage EV adoption. We can hasten the shift to a more sustainable transportation future by judiciously combining financial incentives with public awareness campaigns, infrastructure development, and activities meant to cultivate favourable attitudes towards EVs.

India is still in the early stages of EV adoption; individuals are hesitant to switch to EVs since they are unfamiliar with them. As technology develops and as awareness, uptake, and incentives rise, preferences for electric vehicles will change. Government of India may take a variety of actions to increase the market share of electric vehicles in India in order to overcome the obstacles to their adoption. An efficient method of informing the public and advocating for the switch to zero-emission cars while also removing socio-technical obstacles would be through social media marketing. Efforts to reduce the use of conventional vehicles should be coordinated with efforts to increase the market share of EVs. In addition to financial incentives, which are crucial driving forces behind increasing the market share of electric vehicles, taxes on the ownership of conventional vehicles have to be raised. This will significantly decrease the need of conventional vehicles. Additionally, one of the main factors promoting interest in EVs will be the development, regulation, and enforcement of environmental legislation.

8. FUTURE SCOPE

Owing to the academic study's low reach, the sample size was small and might not accurately reflect the broader community. Future research can overcome this constraint in addition to looking at other related EV adoption issues. A customer often weighs a variety of factors, including attributes related to each choice, while selecting which one to buy. Future study is therefore needed to determine the criteria that a customer may regard crucial before selecting among several choices in order to access the consumer's complicated decision-making behaviour. A consumer may consider factors including the cost of buying several alternatives, gasoline costs, maintenance costs, financial and non-financial incentives, safety, comfort, environmental conscience, etc. before buying a new car. Consequently, a workable way to

assess constricting criteria when making a purchase choice would be to use multiple-criteria decision-making analysis, or MCDA.

Future studies should focus on ways to persuade consumers to switch to electric vehicles (EVs); this may be done by fostering a culture that supports the implementation of government policies. At the same level, emotions are considered variables in attitudes, and further research is necessary to understand the relationships between them. Future study shouldn't disregard other variables, even though past researchers haven't been as concerned about them. Future research may take these factors into account and adjust them as society changes.

To enhance the findings, more extensive study in developing EV markets may be conducted in the future. The students of Lovely Professional University focused on the attitudes and adoption intention of electric vehicles (EVs) in this study. In order to shed light on how various customer types are seen, this sample's results will be contrasted in future studies with public views and accomplishments in other organisations.

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