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A Study to Investigate What Tempts Consumers to Adopt Electric Vehicles

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Abstract: Pollution has become a major source of concern for the majority of people at present. Pollution is primarily caused by automobiles. Everybody wants to live in a pollution-free society. Nevertheless, India's automobile registrations are growing at a rapid pace. Increased automobile usage will have a negative effect on the environment. As a result, our modes of transportation must be sustainable and environmentally friendly. The solution to this dilemma is electric vehicles. However, electric vehicle adoption is not occurring at a rate that is desirable in India, although it is anticipated to grow in the coming years. Numerous automobile manufacturers are ramping up production of electric automobiles. The purpose of this study is to ascertain the primary factors that influence the adoption of electric vehicles. This study includes five independent variables: financial incentives, charging infrastructure, social reinforcement, environmental concern, and price, and one dependent variable, electrical vehicle adoption. The data for the present study was collected from 366 randomly selected respondents across India. Structural Equation Modeling (SEM) and Confirmatory Factor Analysis (CFA) were used to analyze the data. The study's findings demonstrate that pricing has a substantial impact on the adoption of electric vehicles.

Keywords: price; adoption; social reinforcement; financial incentives

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1. Introduction

Environmental concerns are compelling both the government and consumers to consider alternative fuel sources for automobiles. The environment has been harmed significantly by the use of gasoline-powered automobiles, and the continued use of gasoline-powered automobiles could make matters worse in the future. The Indian government offers various financial and non-financial incentives to manufacturers and consumers. Manufacturers are rewarded financially for increasing their investment in the production of electric vehicles. Indian automakers such as Maruti Suzuki, Bajaj Auto, Tata Motors, and Mahindra and Mahindra are planning to launch a variety of electric vehicle models to meet future demand. Similarly, in line with industry, the potential of electrical vehicles and their mobility has been recognized and investigated by academia with varying perspectives. Numerous researchers confirmed several aspects of electric mobility, including technical, economic, logistical and environmental [1–3].

Additionally, adoption of electric vehicles is expected to accelerate significantly in the coming years. The major determinants of electric vehicles are found to be the government emission norms, financial and non-financial incentives, government policy, the price of electric vehicles, and charging infrastructure [4,5]. The Indian government has directed all automobile manufacturers to develop and manufacture electric vehicles in India in order to reduce oil imports and their environmental impact. India is a significant importer of crude oil with an annual valuation of USD 125 billion. This figure is expected to increase substantially in the future. This may be even more detrimental to the environment. Electric vehicles are a significant solution for reducing crude oil imports and their negative environmental impact as vehicles are the primary source of environmental pollution.

The current Indian government has envisioned a pollution-free commercial and private transportation system in the country. Government of India has launched two major policy initiatives: Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME-I) and Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME-I). The main objective of FAME-I and FAME-II is to promote adoption of electric vehicles. However, favorable government policies are the focal point in making a decision about electric vehicle adoption. There are other factors that play an important role in adoption of electric vehicles. The current study is set to find out the answer to the question "what exactly tempts the Indian customer to adopt an electric vehicle?". Therefore, the purpose of this study is to categorize and list the factors that influence electric vehicle adoption. The study has two objectives: (i) to identify the factors influencing the adoption of electric vehicles in India. (ii) to investigate the demographic factors influencing electric vehicle adoption. The study's findings will add to the body of knowledge about electric vehicles, allowing manufacturers to concentrate on the most compelling factors. Additionally, it will pave the way for the formulation of government policies to address the gap identified in this study. Additionally, the study's sample will become aware of and more knowledgeable about the vistas associated with electric vehicle adoption.

The paper is structured in such a way that the following section will examine existing literature for potential factors influencing EV adoption. The subsequent section discusses the methodology used in the study. The later section discusses the findings. Finally, the final section discusses the policy implications of EV adoption and possible future courses of action.

2. Literature Review

2.1. Electric Vehicle Adoption

Customers are realizing the importance of electric vehicles in their personal life. Electric vehicles are more environmentally friendly and save the environment. The main reason behind Government efforts to adopt electric vehicles is to save the environment. Furthermore, air quality is also deteriorating day by day. Adoption of electric vehicles can help us to improve the air quality. Key determinants behind the adoption of electric vehicles are government financial incentives, industry development, and pattern of demand in the market [6]. Motivating people to purchase electric vehicles by providing financial and non-financial incentives is highly effective and successful. The government needs to formulate market and customer friendly policies such as a flexible regulatory framework, tax advantages and other financial incentives to encourage rapid adoption among potential customers [7]. All manufacturers are launching electric vehicles. This will provide more choice to the customers, and they will be more motivated to adopt electric vehicles in future also. Electric vehicle manufacturers can achieve economies of scale which will boost companies profit and reduce prices for the customers. Major cost component for an electric vehicle is its battery. Technological advancement has helped to reduce the cost of the battery which will help to reduce the overall cost of electric vehicles. Therefore, Electric vehicles will be more affordable, and customers will adopt electric vehicles rapidly [8].

2.2. Financial Incentives

Government policy has a significant impact on the adoption of electric vehicles. By formulating customer-friendly policies and providing the financial incentives on production and consumption government stimulates the usage of products [9,10]. India's government has accelerated the adoption and manufacturing of hybrid and electric vehicles (FAME) in the country. To increase the adoption of electric vehicles in India, the government has introduced both financial and non-financial incentives. Financial incentives are a critical factor in determining the adoption of electric vehicles. Financial incentives come in a wide variety of forms [11]. Customers are motivated to purchase an electric vehicle due to the availability of financial incentives. Numerous research studies have confirmed that electric vehicle adoption occurred as a result of government financial incentives.

Government financial incentives have been extremely beneficial and successful in countries such as Sweden, France, Germany, and the United States of America [10,12–14] Financial incentives reduce the cost of the product. However there are studies such as those by [15–17] who found no statistically significant impact of government incentives on electric vehicle adoption. Additionally, electric vehicles are environmentally friendly and contribute to environmental protection. As a result, the government provides financial incentives to encourage the rapid adoption of electric vehicles in order to conserve resources and protect the environment [10]. Therefore, it is assumed that financial incentives being an indirect force play a vital role in EV adoption. The following hypothesis can be stated.

Hypothesis 1 (H1). *There is a significant association between financial incentive and electric vehicle adoption.*

2.3. Charging Infrastructure

Charging infrastructure is critical for owners of electric vehicles. Customers gain confidence in purchasing an electric vehicle due to the availability of charging infrastructure [18–20]. Each customer does not have the ability to install a charging infrastructure at their home. Therefore, it is critical to improve the public charging infrastructure for electric vehicles. This is especially true in metropolitan cities such as Delhi, Mumbai, Bangalore, and Hyderabad. These cities have a high cost of land, and their populations are larger. As a result, these cities require a robust charging infrastructure. The government must make significant investments in the development of charging infrastructure. Governments can incentivize private sector investment in charging infrastructure. When customers consider purchasing an electric vehicle, they will consider the charging infrastructure, the interoperability of charge points, and the availability of charging stations [21]. Customers prefer charging stations outside their homes, outside their offices, and in public places [22,23]. Charging infrastructure has embarked on a positive relationship with electric vehicle adoption [24,25]. Therefore, a good charging infrastructure has a great role in electric vehicle adoption by consumers. The following hypothesis can be stated.

Hypothesis 2 (H2). *There is a significant association between charging infrastructure and electric vehicle adoption.*

2.4. Social Reinforcement

The term "social reinforcement" refers to the influence of friends, family, and neighbors on the purchasing decisions of customers. Before purchasing a product, every customer wishes to obtain consent from their friends and family members. Customers used to make purchases based on the opinions, preferences, and dislikes of family and friends [26,27]. Customers prefer to purchase products that are socially acceptable and are praised by their friends and relatives. As a result, customers decide whether or not to purchase a product [28]. Other people's behavior has an effect on the purchasing decisions of customers. This social reinforcement is a significant factor in determining whether or not to purchase an electric vehicle [29]. Social reinforcement has an effect on the purchasing behavior and intentions of customers [30]. As a result, social reinforcement is critical for consumer adoption of electric vehicles. The following hypothesis is admissible.

Hypothesis 3 (H3). *There is a significant association between social reinforcement and electric vehicle adoption.*

2.5. Environmental Concern

Environmental concern is a term that refers to a person's awareness of environmental issues and concerns. Concern for the environment also reflects an individual's desire to help solve environmental problems. Environmental issues are a top priority for governments, customers, and international organizations today. Numerous studies established that

environmental concerns influence a customer's decision to purchase an electric vehicle. Customers are willing to adopt electric vehicles as environmental concerns continue to grow at an alarming rate [31]. Customers who are environmentally conscious and want to save money on fuel are more likely to purchase an electric vehicle. Customers who care about the environment express a relative preference for electric vehicles [32]. Numerous customer surveys conducted throughout the world confirm that environmental concerns are a significant factor in determining whether or not to purchase an electric vehicle [14]. The adoption of electric vehicles will address a variety of environmental issues and result in significant energy savings [33]. Electric vehicles are environmentally friendly and help to mitigate environmental risks [34]. Manufacturers of electric vehicles should prioritize not only energy conservation but also environmental concerns.

Hypothesis 4 (H4). *There is significant association between environmental concern and electric vehicle adoption.*

2.6. Price

Price is a critical factor in a customer's purchasing decision. Customers are constrained by a limited budget with which to purchase a product [35]. Customers are more attracted to products that are affordable and help them save money. Customers want to compare the price they paid for a product with the benefits they received. When the benefits received outweigh the costs incurred, customers are more likely to purchase a product. This is especially true when electric vehicles are more expensive than conventional vehicles [36]. Customers may not prefer to purchase an electric vehicle if their budget is limited and they cannot afford the high cost of such vehicles. Electric vehicles are expensive due to the batteries and a lack of economies of scale [37]. Manufacturers can easily achieve economies of scale if their manufacturing operations are extremely large. Demand for traditional products is enormous and sustainable. This resulted in manufacturers lowering their prices, but demand for electric vehicles remains low and unsustainable. When it comes to purchasing an electric vehicle, price is a critical factor [38]. Additionally, the upfront purchase price is a significant consideration when purchasing an electric vehicle [39]. When customers make the decision to purchase an electric vehicle, financial considerations are always paramount [40].

Hypothesis 5 (H5). *There is a significant association between price and electric vehicle adoption.*

2.7. Hypotheses Development and Research Model

Based on the discussion in the preceding section, it has been concluded that there are multiple factors influencing the adoption of electric vehicles. The factors discussed in the preceding section that appear to contribute to EV can be summarized in Figure 1 in the form of a proposed research model. Additionally, the following hypothesis can be derived for the purpose of testing in the study.

1. There is a significant association between financial incentive and electric vehicle adoption.
2. There is a significant association between charging infrastructure and electric vehicle adoption.
3. There is a significant association between social reinforcement and electric vehicle adoption.
4. There is significant association between environmental concern and electric vehicle adoption.
5. There is a significant association between price and electric vehicle adoption.

The subsequent section discusses the research methodology used in the study and the study's findings.

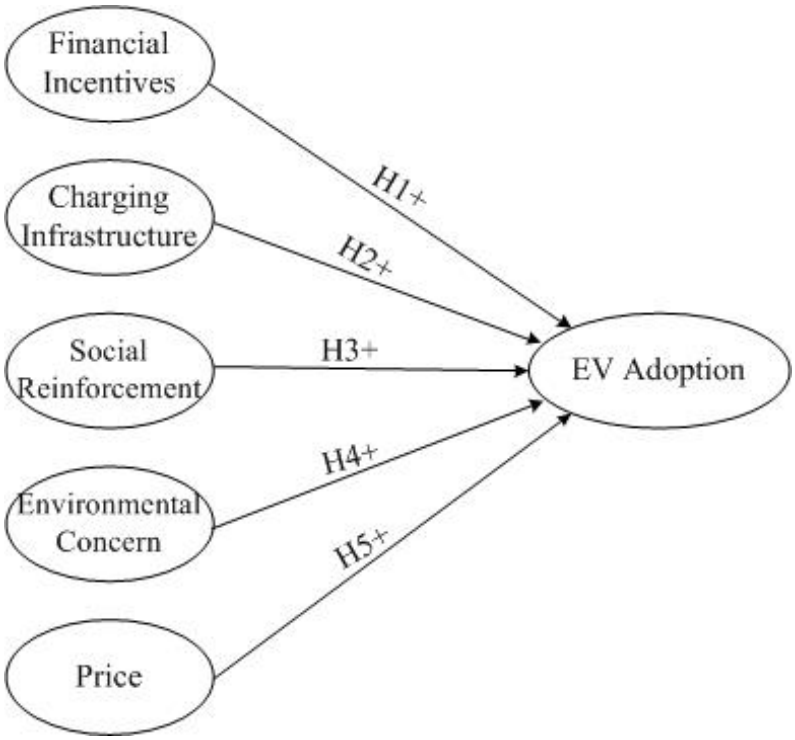

Figure 1. Proposed Research Model.

3. Research Methodology

Electric vehicle demand is expected to grow significantly in India. Automobile manufacturers are heavily investing in manufacturing capacity for electric vehicles. The purpose of this research is to examine critical factors influencing the purchase intention of electric vehicles. The study collected data from January to April 2021. Delhi and the National Capital Region are the most appropriate locations for data collection for this study because they have the highest number of electric vehicle customers. Respondents are readily accessible throughout the National Capital Region (NCR), and their feedback is based on personal experience. The respondents are existing car owners in Delhi and the National Capital Region. Respondents must have a cumulative experience of more than 18 years. A structured questionnaire was used to collect data. The questionnaire collects data on the factors chosen for the current study. The questionnaire is comprised of two sections. The first section of the questionnaire focuses on the respondents' demographic characteristics, such as gender, age, marital status, income, education, and work experience. The second section of the questionnaire includes questions about the study's constructs, including financial incentives, charging infrastructure, social reinforcement, environmental concern, price, and purchase intention. Six constructs are present; five are independent and one is dependent. The questionnaire contains 21 items that assess respondents' intent to purchase electric vehicles. The questionnaire used in the study is presented in Appendix A. To collect data, a lengthy survey was sent to potential respondents. This will provide pertinent information for the current study. This survey was conducted exclusively among existing car owners in Delhi and the National Capital Region. The purpose of such a large survey is to obtain the maximum number of sample sizes possible [41]. The respondents for this study were enlisted using a convenient sampling technique. A total of 500 questionnaires were initially distributed to the targeted respondents. Due to the fact that some questionnaires were not properly completed, they were excluded from the study. Finally, 366 respondents were chosen to participate in the study. As a result, the sample size is set at 366. Numerous statistical techniques were used to analyze the data, including correlation, exploratory factor analysis, and confirmatory factor analysis. The data were analyzed using IBM SPSS 23 and IBM AMOS 23.

The choice of confirmatory factor analysis (CFA) and structural equation modeling (SEM) is due to its versatility and incremental usage. SEM can be thought of as a subset of factor analysis and multiple regressions. As per Hair et al. (2011) SEM is an effective technique for testing theories involving multiple equations, their relationships, and the interdependence of the study variables [42]. The versatility of SEM in such studies is incremental due to the high reliability index and validity of the results. In the current study we intend to draw the impact of multiple explanatory variables on explained variable. Therefore the usage of SEM and CFA seems to be appropriate in the current scenario.

4. Results of Data Analysis

IBM SPSS and IBM AMOS were used to analyze the data. Numerous statistical techniques, such as correlation analysis, exploratory factor analysis, and structural equation modeling, were employed. Later the validation of factor analysis results was made by use of a structural equation modeling tool. Structural equation modeling (SEM) is a two-step validation tool. The first step uses confirmatory factor analysis to validate the measurement model. In addition, the second step is to validate the structural model using SEM. The data analysis process begins with a demographic analysis of respondents using SPSS. Table 1 exhibits the respondent's profile based on demographic data.

Table 1. Demographic Profile.

	Frequency	Percent
Gender		
Male	238	65.0
Female	128	35.0
Age		
18–30	138	37.7
31–40	118	32.2
41–50	86	23.5
51–60	24	6.6
Marital Status		
Single	229	62.6
Married	137	37.4
Income		
Less than 3 Lakh	205	56.0
3–5 Lakh	86	23.5
5–10 Lakh	32	8.7
More than 10 Lakh	43	11.7
Qualification		
Under Graduate	16	4.4
Graduate	93	25.4
Post Graduate	205	56.0
Any other	52	14.2
Experience		
Less than 5 Years	147	40.2
5–10 Years	106	29.0
10–15 Years	78	21.3
15–20 Years	35	9.6

Table 1 shows that 65% of the respondents are male and 35% of the respondents are female. This demonstrates that males are more likely to purchase electric vehicles than females. Of respondents, 37.7 percent are between the ages of 18 and 30, 32.2 percent are between the ages of 31 and 40, 23.5 percent are between the ages of 41 and 50, and 6.6 percent are between the ages of 51 and 60. This demonstrates that younger respondents are more receptive to and interested in electric vehicles. Additionally, 4.4% of respondents are undergraduates, 25.4% are graduates, and 56% are postgraduates. Respondents with a higher level of education are more interested in purchasing electric vehicles.

4.1. Exploratory Factor Analysis

EFA is a technique for condensing large datasets and identifying the underlying variables. It aids in the identification of the most pertinent factors for the study. The EFA was used with Principal Axis Factoring in the current study, and Non-Orthogonal Promax rotation with Kaiser Normalization (Eigenvalues 1) was performed. KMO and Bartlett's test values are listed in Table 2. KMO and Bartlett's tests assess the data's suitability for analysis. According to Table 2, the value of KMO is 0.681, which is a good and acceptable value. Additionally, the Bartlett's test of sphericity returns a value of 0.000, which is significant and indicates that the data are sufficient for further analysis.

Table 2. KMO and Bartlett's Test.

Data Sphericity Tests	Parameters	Values
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.681
Bartlett's Test of Sphericity	Approx. Chi-Square	2486.17
	df	231
	Sig.	0.000

Initially, the questionnaire contains 24 items under six constructs. Based on the exploratory factor analysis, three items were deleted because their factor loading was poor. Therefore, only 21 items were considered for the further analysis.

4.2. Construct Reliability and Validity

Reliability and validity are indicators of the instrument's quality. The term "reliability" refers to a research questionnaire's ability to produce consistent results. Reliability is a term that refers to the internal consistency of the scale used to collect data. Cronbach's alpha is a measure of a research instrument's reliability. Validity refers to a scale's ability to produce an accurate result. The Average Variance Extracted (AVE) is used to validate the scale used to measure the constructs in this study. A score of 0.5 or greater for Average Variance Extracted (AVE) indicates adequate convergence and validity.

Cronbach's alpha must be greater than 0.6 (Hair et al., 1988) when assessing scale reliability. Except for electric vehicle adoption, all constructs in Table 3 are greater than 0.6. This demonstrates the scale's high degree of reliability. Additionally, all constructs in this study have an AVE value greater than 0.5, which indicates the scale's validity. The loadings of all items are greater than 0.5, confirming the scale's validity once more.

4.3. Discriminant Validity

Discriminant validity measures that how different are the constructs from each other. It is because each construct must measure a different dimension [43,44]. Discriminant validity is measured by comparing AVE's square root with the correlation of latent variables [45]. The AVE's value must be greater than correlation value [43]. Table 4 exhibits that AVE's square root values are greater than correlation value. This indicates that thumb rule for discriminant validity is met [43,45].

Table 3. Construct Reliability and Validity.

Constructs	Item Code	Loading	AVE	CR
Financial Incentive	FI1	0.628	0.54	0.748
	FI2	0.818		
	FI3	0.770		
	FI4	0.706		
Charging Infrastructure	CI1	0.846	0.52	0.668
	CI2	0.741		
	CI3	0.552		
Social Reinforcement	SR1	0.813	0.59	0.737
	SR2	0.839		
	SR3	0.647		
	SR4	0.748		
Environmental Concern	EC1	0.828	0.63	0.806
	EC2	0.845		
	EC3	0.722		
	EC4	0.772		
Price	PR1	0.748	0.66	0.766
	PR2	0.800		
	PR3	0.887		
Electric Vehicle Adoption	EVA1	0.681	0.53	0.593
	EVA2	0.767		
	EVA3	0.732		

Table 4. Discriminant Validity.

	FI	CI	SR	EC	PR	EVA
Financial Incentive (FI)	0.29					
Charging Infrastructure (CI)	1.000 **	0.27				
Social Reinforcement (SR)	0.019	0.019	0.35			
Environmental Concern (EC)	0.067	0.067	−0.092	0.4		
Price (PR)	0.010	0.010	0.073	−0.006	0.44	
Electric Vehicle Adoption (EVA)	0.042	0.042	0.050	−0.059	0.272 **	0.28

4.4. Model Fit

Model fit indices quantify the model's overall fitness. The model fit indices are reported in Table 5. Confirmatory Factor Analysis (CFA) establishes the degree to which indicators accurately represent constructs. The research model's fitness is evaluated using a variety of parameters, including the Goodness of Fit Index (GFI), the Adjusted Goodness of Fit Index (AGFI), the Root Mean Square Error of Approximation (RMSEA), the Normed Fit Index (NFI), the Comparative Fit Index (CFI), the Incremental Fit Index (IFI), and the Tucker-Lewis Index (TLI). Six fitness indices were used in this study: CMIN/df, Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), and Parsimonious Normal Fit Index (PNFI) (PNFI). All CFA values are in accordance with the recommended ranges. The CFA analysis makes no recommendations for altering the overall research model.

Table 5. Model Fit Indices (Confirmatory Factor Analysis).

Fit Indices	Recommended Values	Observed Values	Result
CMIN/df	Less than 5	2.631	Acceptable
CFI (Comparative Fit Index)	0.8–0.9	0.874	Acceptable
GFI (Goodness of Fit Index)	≥0.9	0.9	Acceptable
AGFI (Adjusted Goodness of Fit Index)	≥0.80	0.866	Acceptable
PNFI (Parsimonious Normal Fit)	>0.5	0.663	Acceptable
RMSEA (Root Mean Square Error of Approximation)	Less than 0.08	0.067	Acceptable

4.5. Structural Model

Structural equation modeling was used to test all hypotheses. Figure 2 depicts the structural model adopted for the study, while Figure 3 shows the final structural model for the current study. The primary benefit of structural equation modeling is that it enables the estimation of even more complex research models. SEM is a technique that can be used with a small sample size [46,47]. SEM is extremely beneficial when the research model is complex and there are multiple dependent variables. As illustrated in Table 6, price has a significant effect on purchase intention (p = 0.5). As a result, price has an effect on customers' adoption of electric vehicles.

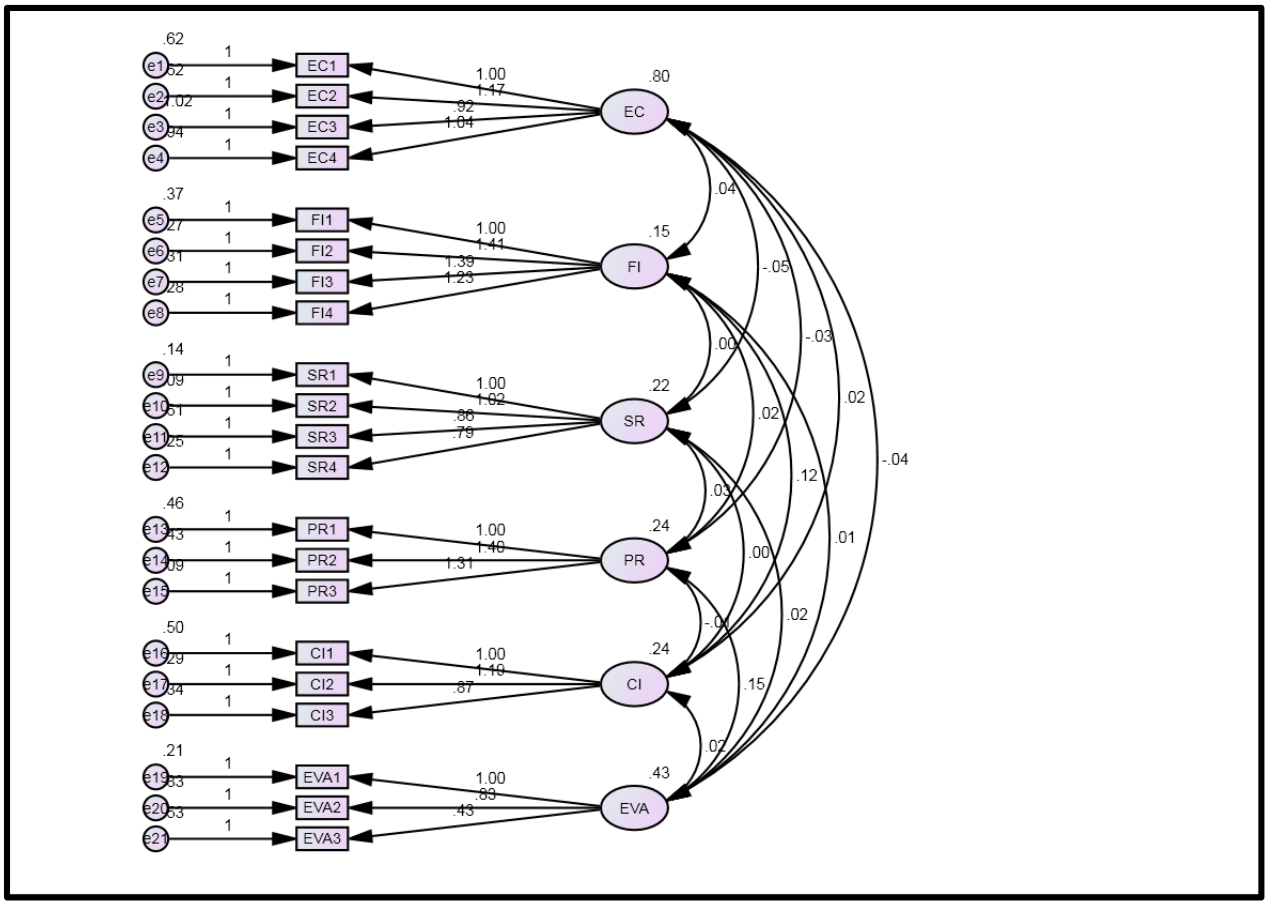

Figure 2. Model Fit.

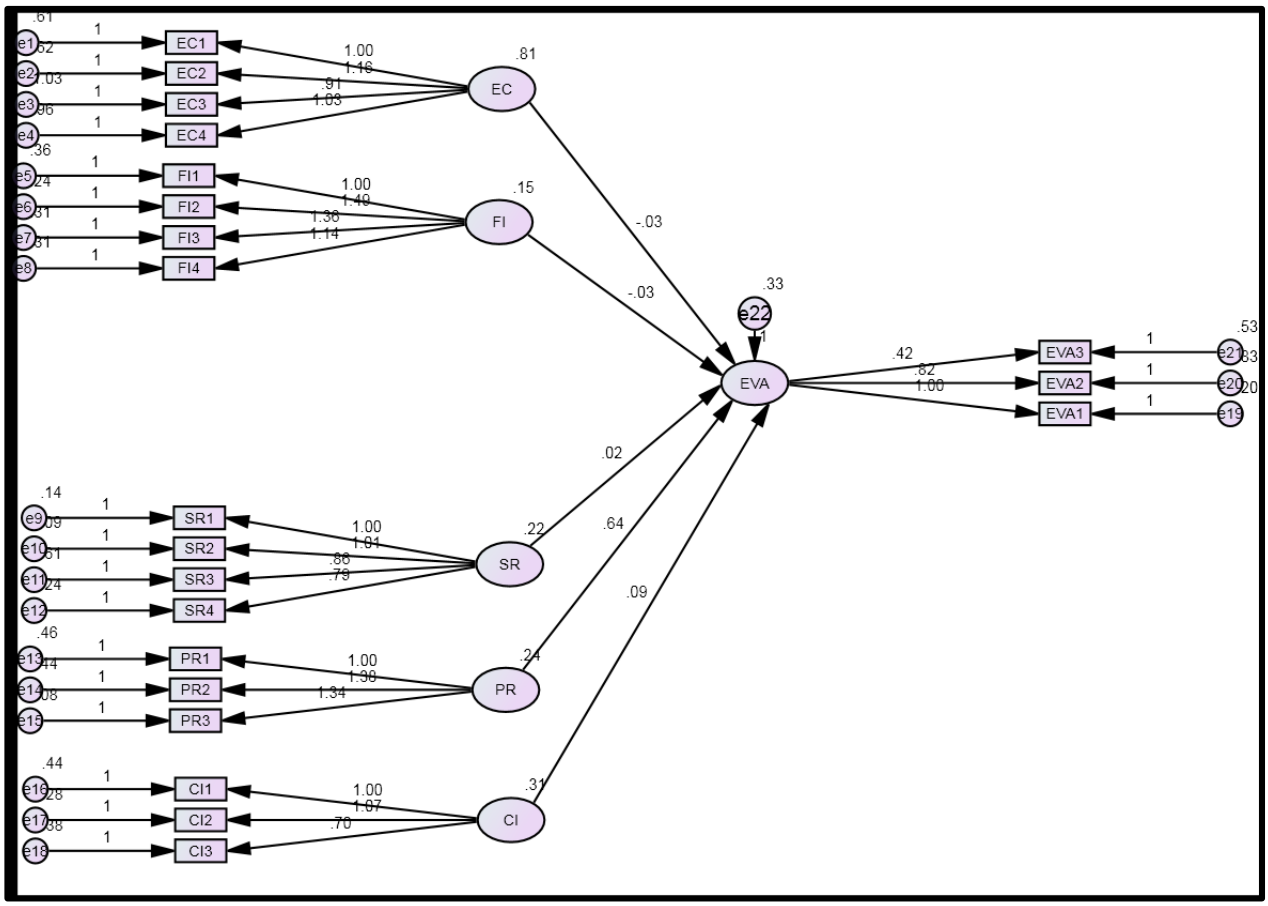

Figure 3. Structural Model.

Table 6. Hypotheses Conclusion.

Hypotheses		Path		Estimate	S. E.	C. R.	*p*	Status
H1	EVA	←	EC	−0.034	0.046	−0.746	0.456	Rejected
H2	EVA	←	SR	0.017	0.087	0.191	0.848	Rejected
H3	EVA	←	FI	−0.029	0.109	−0.268	0.788	Rejected
H4	EVA	←	CI	0.089	0.081	1.105	0.269	Rejected
H5	EVA	←	Price	0.64	0.097	6.572	***	Accepted

5. Discussion

The primary goal of this research is to ascertain the factors that influence the adoption of electric vehicles. Moreover, the two-fold objectives are summed up as (i) to identify the factors influencing the adoption of electric vehicles in India. (ii) to investigate the demographic factors influencing electric vehicle adoption. The current study is significant because electric vehicles (EVs) are dubbed "future vehicles." Electric mobility is the way of the future. Thus, understanding what motivates people to purchase eclectic vehicles will aid companies and governments in shaping the automobile industry's future.

The current study was set up with five independent variables, namely financial incentives, charging infrastructure, social reinforcement, environmental concern, and price. In the light of these independent variables, five hypotheses were set for testing. The model for the study was found to be significant on various statistical parameters. However, the results of the hypothesis are mixed, which indicates that price is the most significant factor for customers while making the decision to buy an electric vehicle. which corroborates with the findings of [38,40,48] etc. Because Indian consumers have lower purchasing power

than those in other developed countries, price remains a significant factor in purchasing decisions [48]. Other factors, such as government financial incentives, have been found to have a statically insignificant effect on the population under study's decision-making. This could be because the Indian economy is still an emerging economy and the majority of the population relies on two-wheeler vehicles. The public did not anticipate the government subsidizing four-wheelers and other electric vehicles. The results, however, are consistent with [15–17], and contradict [10,12]. Additionally, based on prior research [10,12–14], it is clear that government-sponsored financial incentives have a significant impact on the purchasing decisions of customers in developed countries such as Sweden, France, Germany, and the United States of America, among others. Government incentives to purchase electric vehicles, on the other hand, did not portrays significant impact on customers buying behavior in developing countries such as India. The next variable for the study is charging infrastructure, which is presumed to significantly impact the buying decisions of customers. However, the current study contradicts previous trends. It is surprisingly insignificant, as people appear to be more concerned with their own resources than with public infrastructure. Customers are allegedly enticed to purchase electric vehicles by the availability of charging infrastructure [18–20,49]. This study contradicts the findings of [24,25] both of which are quite optimistic and appear to rely on public charging infrastructure. This could be for several reasons, including the following: (i) the study's sample is more concerned with other factors than charging infrastructure, and (ii) the population is highly confident in developing their own resources rather than relying on public resources. Social reinforcement is the next variable examined in this study. It is assumed that social pressure from peers, neighbors, and relatives, as well as the perception of automobiles as a status symbol, influence electric vehicle purchasers. However, it is found to be negative in the current study because no statistically significant relationship between social reinforcement and electric vehicle adoption is cited. The results appeared to contradict previous research. These findings imply that high-income groups are more effective at social influence. Customers in the current sample ranged in income from middle to upper middle. The study's next variable is people's environmental concern. The findings suggest that when it comes to purchasing electric vehicles, people are least concerned about the environment. This finding confirms the general nature of people, but contrasts with previous research conducted in a variety of contexts, such as [14,40,49].

Thus, the following managerial implications can be suggested based on the findings and discussion: automobile manufacturers must take proactive measures to increase electric vehicle adoption among current and prospective customers by addressing electric vehicle pricing issues. Additionally, pricing may be linked to both financial and non-financial benefits. Businesses must determine the optimal way to leverage government policies such as the Accelerating the Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME-I) and the Accelerating the Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME-II) (FAME-II). The infrastructure for charging must be upgraded through the addition of new technology. The new technology must be integrated into the charging infrastructure in order to make it more convenient, adaptable, and accessible. As a result, advanced charging infrastructure must facilitate and motivate customers to adopt electric vehicles. Electric vehicle manufacturers must collaborate with financial institutions to ensure that customers can obtain loans easily. Credit at favorable rates and terms encourages customers to purchase vehicles and accelerates the adoption of electric vehicles.

Finally, the study's primary limitation is that it was conducted in an Indian context and the data are not pan-Indian. It is only readily accessible in the National Capital Region (NCR) region. As a result, larger and more comprehensive data sets can be used to replicate the current study and assess its validity. The majority of respondents in the study are from middle and lower middle income groups, and the study's final findings indicate that upper and middle upper income groups are more suitable for such studies.

Electric vehicles (EVs) are necessary to meet future transportation needs. As a result, such studies examining the factors and implications of EV adoption are critical. The

current study's findings can be replicated using more precise demographic information. Additionally, a larger sample size of data in a pervasive field could be used.

6. Conclusions

Key determinants of electric vehicle adoption are financial incentives, charging infrastructure, social reinforcement, environmental concerns, and price. This study confirms that price is the primary determinant of electric vehicle adoption. Other independent variables, on the other hand, such as financial and non-financial incentives, charging infrastructure, social reinforcement, and environmental concerns, have little effect on adoption. Additionally, this study confirms that males have a more favorable attitude toward electric vehicles than females do. Males are more likely to adopt electric vehicles than females. In comparison to older customers, younger customers are more likely to adopt electric vehicles. Customers with a higher level of education are more aware of the benefits of electric vehicles. As a result, the likelihood of rapid adoption of electric vehicles is greater among educated customers than among less educated customers.

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Appendix A. Questionnaire for the Study

SN	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	Financial Incentives					
1	I know a lot about the government policy of electric vehicles.					
2	I am with the financial incentives provided to buy electric vehicles.					
3	The financial incentives of the Indian Government are a positive influence to develop electric vehicles.					
4	I think the government financial incentives of Electric Vehicles are easy to understand.					
5	Government policies make me think that electric vehicles are the trend in the future.					
	Charging Infrastructure					
6	I have the possibility/room to install a charging station at home.					
7	I can charge my car at my workplace.					
8	There are enough charging stations in my neighborhood.					
9	I am satisfied with current situation of public charging-points in India.					
	Social Reinforcement					
10	Other people are positively impressed that I drive electric vehicle.					
11	Driving an electric vehicle improves my image in society.					
12	I feel proud when I am driving an electric vehicle.					
13	I am perceived as a rich person when I am driving an electric vehicle.					
14	I am perceived as fashion person when I am driving an electric vehicle.					

	Environment Concern
15	I think that electric vehicles are helpful for environmental protection.
16	I have strong environmental awareness.
17	I am willing to pay more to buy environmentally friendly products.
18	Driving electric vehicles can reduce current environment pollution.
	Price
19	I can afford an electric vehicle.
20	I think the price of electric vehicles are affordable.
21	The price of electric vehicles are higher than a conventional vehicle.
	Willing to Buy/Adoption
22	I am willing to buy an electric vehicle.
23	I have a plan to buy electric vehicle in the coming years.
24	I prefer to buy an electric vehicle as compared to a conventional vehicle.

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