ADOPTION INTENTION FOR ELECTRIC TWO-WHEELERS IN BANGALORE: THE ROLE OF SUBSIDY REDUCTIONS, ENVIRONMENTAL CONCERN, AND INNOVATION PREFERENCE

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ABSTRACT

Incentive driven adoption models dominate electric vehicle (EV) policy discourse, yet little is known about how consumers respond when such incentives are withdrawn. This impact of withdrawal is need of the hour in developing economies and price-sensitive vehicle segments. This study investigates electric two-wheeler adoption intention in Bangalore following a government subsidy reduction. Drawing on the Theory of Planned Behavior and Diffusion of Innovation frameworks, and using survey of 103 potential adopters, we test relative influence of psychological (environmental concern, novelty seeking) and policy (subsidy, non-financial incentives) factors. Results from regression analysis reveal that environmental concern ($\beta = 0.30$, $p < 0.01$) and novelty seeking ($\beta = 0.27$, $p < 0.05$) are significant predictors of adoption intention, while subsidy withdrawal and non-financial incentives are not. These findings challenge conventional assumptions about financial dependency in EV markets and suggest that behavioral and attitudinal levers may play a more durable role than price-based interventions. The study contributes to EV policy design by highlighting the need to move beyond subsidy- centric models toward strategies grounded in behavioral sustainability and consumer innovation orientation.

Keywords: Electric Vehicles, Adoption Intention, Subsidy Deduction, Novelty-seeking behavior, Consumer Psychology.

INTRODUCTION

Transportation accounts for approximately 25% of global CO_2 emissions, positioning the sector as a primary target for decarbonization through electric vehicle (EV) adoption (International Energy Agency [IEA], 2023). Given highest priority for decarbonize them, electric vehicles (EVs) are an environmentally friendly substitute for traditional internal combustion engine (ICE) vehicles with improved energy efficiency and significantly reduced emissions (Lutsey et al., 2023).

The take-up of EVs has been largely spurred by government actions, most notably through economic incentives, investments in infrastructure, and regulation. In the last ten years, nations like China, Norway, and the United States have witnessed high EV penetration growth, backed by

policy actions to counter the challenge of high upfront costs related to electric driving (Wang et al., 2022).

Long-distance transport contributes about 25% of the whole carbon dioxide (CO_2) emissions, and this is mainly attributed to the use of internal combustion engine (ICE) vehicles (International Energy Agency, 2023). Electric vehicles (EVs) are seen as a suitable substitute for these emissions, and they provide great environmental advantages and greater energy efficiency (Lutsey et al., 2023). Yet consumer adoption is highly sensitive to monetary incentives, especially in new markets, where transactional cost is a high barrier to entry (Li et al., 2023). Thus, whereas there is much literature on subsidies determining four-wheeler EV adoption, there is a resultant knowledge deficit in the response of two-wheeler consumers to monetary and non- monetary incentives. Since two-wheelers account for nearly 75% of India's entire vehicle count (NITI Aayog, 2023), the two-wheeler category has a catalytic potential for electrification. Yet if two-wheeler buyers are as price-sensitive as four-wheeler buyers or if there is more room for behavioral and psychological drivers in influencing adoption remains doubtful.

The research exemplifies the importance of monetary incentives are in to encourage the use of electric vehicles (EVs), with research in recognized markets proving that subsidy reductions have the impact of triggering immediate declines in consumer demand. In China, for instance, research illustrate how the phasing out of subsidies resulted in a 42% reduction in EV market share, and underline the role played by government incentives in shaping consumption behaviors (Yuan et al., 2023).

Also, empirical data in Canada and Norway have found that financial support remains a dominant factor in the uptake of EVs through tax rebates and purchasing incentives (Reisz et al., 2023). But though such studies provide informative data on the role of financial incentives in EV adoption, they are primarily concerned with four-wheeler markets and leave little scope for a very crucial lacuna regarding the consumption patterns of electric two-wheelers in developing economies like India. The current body of evidence basically overlooks the distinct behavioral, economic, and infrastructure drivers of two-wheeler consumers, especially under the context of subsidy cuts.

Additionally, while monetary rewards are widely debated to be the key drivers for EV uptake, non-monetary factors such as environmental concern, novelty appeal, and sense of control over behavior also play an important role in consumer decision (Xiang et al., 2023). Some other research has noted that high EC consumers adopt green mobility solutions even if there are no financial rewards (Zhang et al., 2023). To this, add the reality that novelty-seeking behavior (NS) is now also a key psychological driver, and studies show that prospective early takers of technology innovations like EVs are driven by an endogenous quest for novel experiences and not by economics (Li et al., 2023). But exactly how these behavioral pressures cross-subsidize in response to subsidy reductions is yet to be studied, especially for two-wheeler markets in emerging markets. This research fills this literature gap through an analysis of the relative impact of financial and non-financial variables on electric two-wheeler adoption intention in Bangalore, India.

Bangalore was selected as the case study because of its unique position as an EV adoption and policy experimentation center. The city has seen robust growth in sales of two-wheelers being electric, spurred on by initial government incentives and an increasing consumer class that highly values sustainability (Joshi et al. 2024). Additionally, Bangalore has a relatively advanced charging infrastructure among Indian cities such that researchers can study consumer take-up in a context where limitations in infrastructure have been relaxed. Watching consumers' behavior in Bangalore can potentially offer insights transferable to other cities in India.

Past studies of the literature on the financial incentives literature have shown that phasing out subsidies led to lower adoption rates of electric vehicles (EVs) in countries like China, Norway, and Canada (Wang et al., 2022; Yuan et al., 2023). In China, whose government subsidy incentives were halved during the 2018-2019 period, consumer demand dropped immediately by 42%, which reveals the significance of price support in influencing EV take-up (Yuan et al., 2023). Similar evidence from Norway and Canada further demonstrates that economic subsidies are a significant driver of EV market growth (Reisz et al., 2023). These findings primarily concern the four-wheeler electric vehicle (EV) market. There is still sparse evidence for two- wheeler EVs, especially in emerging markets like India, where price sensitivity, scarce infrastructure, and the nature of consumers' attitudes differ from developed economies. The present study seeks to bridge this gap in knowledge by examining how two-wheeler EV consumers in Bangalore respond to a subsidy reduction and whether the effect of other drivers, i.e., environmental concern and novelty-seeking tendency, is more pronounced.

Through investigating consumer reaction to the reduction in the subsidy, this study adds positively to greater understanding of EV uptake beyond the conventional economic framework (Langbroek et al., 2016; Rezvani et al., 2015). Compared to existing studies examining money as the sole incentive, this study brings together behavioral, infrastructural, and policy-driven factors to reveal an integrated view into consumer choice within the two-wheeler market (Liao et al., 2017; Sovacool et al., 2018). The implication of this research to industry players and policymakers is vast since they enlighten us on how the other methods, including environmental consciousness campaigns, technological innovations, and non-financial incentives, can maintain EV uptake despite decreasing government subsidies (Sierzchula et al., 2014; Hardman et al., 2017).

The rest of this paper follows. The second section discusses the literature review for EV adoption, financial incentives, and behavioral factors as well as policy trends around the world (Coffman et al., 2017; Helveston et al., 2015). The next step is the description of the research methodology that outlines the steps involved in the data collection, sampling, and statistical techniques used throughout the study (Axsen et al., 2018; Habich-Sobiegalla et al., 2018). This section reports empirical results, examining the major predictors of adoption intention for electric two-wheelers in Bangalore (Kumar & Alok, 2020; Sang & Bekhet, 2015). The analysis situates these results within the wider theoretical context, referencing them to international trends and drawing practical implications (Adnan et al., 2017; Egbue & Long, 2012). Lastly, the conclusion provides an overview of the main findings and offers recommendations to policymakers, manufacturers, and future scholars based on electric vehicles (Biresselioglu et al., 2018; Tran et al., 2013).

LITERATURE REVIEW

The shift towards electric vehicles (EVs) has been debated widely in intellectual and policy communities mainly in the context of environmental sustainability, state regulation, and consumption trends. The literature relies heavily on the center stage that has been assigned to the role of financial incentives in fostering EV take-off but has little focus on how consumers react when these incentives are cut or eliminated, focusing particularly on emerging markets' two-wheeler market segment. This chapter critically analyzes the empirics and theory of EV uptake, and emphasizes the role of monetary and non-monetary incentives, consumer behavior and global policy patterns.

Green Marketing and Consumer Sustainability Awareness

Amplified environmental issues connected to transport emissions have determined the shift towards green marketing campaigns, where governments and firms encourage environmentally friendly mobility solutions as integral elements of global climate action plans (Kumar et al., 2023). Green marketing has been uncovered to shape customer attitudes towards electric vehicles (EVs) considerably when combined with air pollution, energy security, and long-term cost savings awareness campaigns (Sharma & Jain, 2023).Though, despite the fact that green marketing efforts have been very successful in high-income nations that have well- established regulatory bodies, their performance is still not level in less developed economies like India where economic consideration have a tendency to overshadow environmental values (Sharma & Jain, 2023).).Empirical research has confirmed that environmental awareness (EC) is a key determinant of the adoption of EVs. Individuals possessing high environmental awareness are bound to embrace electric mobility both when economic incentives are available and when they are not available (Wang et al., 2023). Yet, in countries where affordability is a primary issue, green marketing alone will not be enough to induce mass-scale adoption of electric vehicles (EVs). This brings up the right question of the extent to which messaging for sustainability can shape consumer behavior without financially contributing towards the brand directly.

The Role of Financial and Non-Financial Incentives in EV Adoption

Financial incentives have ever been among the most powerful motivators of the decision to purchase electric vehicles (EVs). Empirical evidence from the various market demonstrating that subsidies, tax rebates, and subsidized lending all combine to make EVs appealing, especially in the initial stages of market growth (Li et al., 2023). In China, the gradual withdrawal of EV subsidies led to 42% decline in market share, underscoring the sensitivity of EV adoption to financial incentives (Yuan et al., 2023). Experiments in China, where the state itself promoted EVs by subsidization, revealed that, when the subsidy was removed, market share fell by 42%, a gauge of consumers' sensitivity to subsidization (Yuan et al., 2023). Even in Norway and Canada, purchase incentive has been the most powerful driver of EV penetration into the market (Reisz.et.al, 2023).

The financial incentive impacts differ across vehicles. Although take-up of four-wheeler EVs has been significantly influenced by subsidies, recent studies suggest that buyers of two-wheelers are less dependent on direct financial incentives due to reduced initial costs and short payback durations (Xiang et al., 2023). What becomes clear here is that buyers of two-wheelers might be more concerned with availability of infrastructure, company reputation, and technological traction than financial incentives. On the other hand, non-monetary incentives like access to special EV lanes, special parking, and waiver of registration costs have delivered mixed performance in adoption (Higuera-Castillo et al., 2023). While these incentives work best in developed economies that enjoy favorable infrastructure and urbanization, their delivery in markets where there is no basic infrastructure is limited. A recent analysis of India's e-vehicle market discovered that consumers prefer to treat non-monetary incentives as secondary to prices, which can help explain their poor records of accomplishment in influencing the take-up of two-wheelers (Joshi et al., 2023).

Behavioral Drivers of EV Adoption

Apart from economic advantages, novelty-seeking behavior (NS), perceived behavioral control (PBC), and subjective norms (SN) play important roles in the adoption of electric vehicles

(EVs) as well. Those consumers who exhibit a novelty-seeking behavior, with an inclination towards technological advancements and the adoption of new products in advance, have been recognized as an important target segment for EV makers (Zhang et al. 2023). It has been found through research that such consumers are less price conscious and are more driven by factors like smart connectivity, battery replacement, and high-spec performance (Wang et al. 2023). This implies that marketing campaigns for early adopters should focus more on innovation rather than price.

Perceived behavior control (PBC), or ease or difficulty of adoption of a new technology, has also been shown to be a useful predictor of EV take-up (Li et al., 2023). Poor charging infrastructure, range anxiety, and insufficient adequate service networks are all detractors from EV take-up, especially in emerging markets. Customers who perceive that they have better control over charging and maintaining EV are more apt to adopt electric mobility, even in the absence of government incentives.

Subjective norms (SN), or the impact of social approval and peer-group opinion, have been explored in numerous studies but are still inconclusive. While some show the influence of peer pressure as the prime factor determining EV adoption across collectivistic cultures (Xiang et al., 2023), there are others which even point to economic considerations usually having the dominance over social influence in low-income populations (Sharma & Jain, 2023). This calls for greater study of how the interplay between social norms and financial incentive can influence EV-adoption decisions.

Policy and Global Trends in EV Market Disruption

Government intervention has facilitated the growth of electric vehicles (EVs) in nearly every nation. China, the United States, and Norway have been following very aggressive subsidization policies promoting market penetration (IEA, 2023). India transitioned from direct subsidization during FAME I to infrastructure building under FAME II (Government of India, 2023). While overall trends predict that reduction in subsidies will slow down market expansion, long-term sustainable take-up is argued to rely on complementarities like investment in infrastructure, battery technology, and education of consumers (Smith et al., 2022).Among the most important of the challenges confronting developing economies is the lack of a coordinating policy framework that combines financial incentives with long-term structural reforms. Empirical evidence shows that short-term subsidies can be employed to accelerate short-term adoption rates but long-term success hinges on concurrent investment in charging infrastructure and supply chain building (Gupta & Patel, 2023). In India, wherever the charging infrastructure is weakly developed, success of the subsidy reductions hinges on the acceleration of support policies, including energy grid building out and battery-swapping networks (Joshi et al., 2022).

It is the use of a consumer environment, technological change, and competition within the market that also determines the destiny of EV adoption schemes (Chang et al., 2021). Research has discovered that there are several factors that lead to a sharp rise in the adoption rate by individuals towards EVs (Brown & Johnson, 2023). Here, apart from information campaigns and demonstration, progress in battery technology, especially range and rapid charging, lies at the heart of surmounting consumers' resistance and launching mass adoption (Lee et al., 2022).

With the growing world EV market, governments must adapt their policies to fit into emerging challenges. This will involve the development of long-term sustainable financing mechanisms for infrastructure development, promotion of battery life and technology improvements, and more public-private partnership (Anderson & Taylor, 2023). By embracing a

whole-of-government approach combined with economic stimulus, infrastructure investment, and supportive regulations, governments can establish an enabling environment for the large- scale switch to EVs and towards greater sustainability ambitions (Zhang et al., 2022).

Identifying the Research Gap

Though current literature provides some interesting information regarding how EV adoption is changing, there are some important gaps to be addressed. One, the majority of the research based on financial incentives is focused mainly on four-wheelers (Hardman et al., 2017; Jenn et al., 2018), and there is one major knowledge gap about how the reduction in subsidies affects the two-wheeler segment. Since two-wheelers are the dominant vehicle sales in India (Dhar et al., 2017), understanding their adoption trends is important for developing evidence- based policy interventions.

Secondly, few empirical studies have investigated the interaction between financial and non-financial determinants of adoption intentions for consumers (Rezvani et al., 2015). While determinants of environmental awareness and novelty-seeking behavior have been studied in larger EV studies (Noppers et al., 2014; Barbarossa et al., 2017), how they impact the two- wheeler segment remains unexplored. This article fills these gaps by using an empirical examination of consumption adoption intentions in Bangalore, India, in the aftermath of subsidy removal with the use of financial, behavioral, and policy-related parameters. This integration of the Theory of Planned Behavior (TPB) and Diffusion of Innovation (DOI) frameworks enables the study to capture both attitudinal intention and early-adopter innovation traits—offering a more holistic view of two-wheeler EV uptake.

METHODOLOGY

This study used a quantitative cross-sectional study design to examine the intention to adopt electric two-wheelers in Bangalore, India. An online (Google Forms) and offline (EV showrooms, commuter public places) structured questionnaire was developed based on standardized scales adapted from previous research (Zhang et al., 2023).This research utilizes a deductive method, utilizing the TPB's core constructs and DOI theory to examine the determinants of adoption in terms of economics and psychology(Zhangetal.,2023). Non-probability convenience sampling method was applied to enable quick data capture from appropriate participants. The sample comprised of 103 individuals, either currently owning or expressing clear purchase intent for electric two-wheelers, ensuring recent and relevant user perspectives. Convenience sampling restricts generalizability, but in this research, bias was avoided through measures installing controls in place to ensure that all the participants were as per the inclusion requirements. A post-hoc power analysis (G*Power 3.1) also showed that the sample size of N = 103 had 80% statistical power for estimating medium effect sizes in the regression analysis (Cohen's f^2 = 0.15) (Hair et al., 2023).

Before inferential analysis, the data set was verified for outliers, non-normality violation, and multicollinearity. Values of VIF were used to identify whether there was collinearity of predictor variables. Cronbach's alpha reliability scores were also verified for all the constructs in order to determine measurement reliability with all of these being greater than 0.7, the acceptability level (Hair etal.,2023).

Multiple regression analysis was performed to test the predictability of influential variables (EC, NS, SD, and NFI) on adoption intention. For the robustness of results, an additional logistic

model has also been explored where the dependent variable has been a binary variable (yes/no option) for adoption intention. The value of Durbin-Watson statistic (1.684) was tested for identifying autocorrelation of residuals (Zhang et al., 2023).

RESULTS AND ANALYSIS

This section presents the findings based on the survey data in three broad categories: (1) demographic traits, (2) inferential tests of statistical significance, and (3) robustness checks of multiple regression modeling. The findings are interpreted critically with respect to the current literature, and additional analysis is performed to help shed light on the surprising failure of SD to be significant for adoption intention.

Demographic Profile of Respondents

The questionnaire gathered data from 103 participants, who were all active two-wheeler owners or prospective buyers who intended to buy an electric vehicle (EV). The demographic data of the respondents are presented in Tables 1-3.

Table 1 DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS			
Demographic Variable	Categories	Frequency	Percentage (%)
Gender	Male	65	63.1%
	Female	38	36.9%
Age Group	18–27 years	98	95.1%
	28–42 years	5	4.9%
Education Level	Up to Graduation	68	66.0%
	Post-Graduation & Above	35	34.0%
Monthly Income	Below ₹20,000	74	71.8%
	Above ₹20,000	29	28.2%
Vehicle Ownership	Two-Wheeler	78	75.7%
	Two-Wheeler & Car	25	24.3%

Most of the respondents (95.1%) were young consumers between 18 and 27 years of age, which is in accordance with the demographic trend of young people as early adopters of electric vehicle (EV) technology (Xiang et al., 2023). Also, 71.8% of the participants have mentioned that their monthly earnings were less than ₹20,000, reflecting the fact that budgetary constraints might have played a role in their buying behavior. The predominance of male respondents (63.1%) follows industry patterns in two-wheeler ownership patterns in India (Joshi et al., 2024).

Effect of Demographic Factors on Adoption Intention

A Mann-Whitney U test was used to investigate whether demographic variables had a significant impact on adoption intention. The findings are:

• Gender: No statistically significant difference (U = 1050.500, Z = -0.529, p = 0.597).
• Age Group: No difference (U = 89.500, Z = -0.194, p = 0.853).
• Income Level: Greater adoption intention among poorer subjects (mean rank = 63.50 vs. 50.23), although statistically insignificant (U = 72.000, Z = -0.843; p = 0.553).

These results indicate that demographic factors are not very predictive of adoption, once

again supporting the necessity for investigating psychological and extrinsic factors in predicting adoption.

Multiple Regression Analysis

Multiple regression analysis was used to determine how best the most important independent variables are related to adoption intention.

Model Summary

Table 2 MODEL SUMMARY				
R	R²	Adjusted R²	Std. Error	Durbin-Watson
0.818	0.669	0.635	1.65094	1.684

66.9% variance explained ($R^2 = 0.669$) indicates the high predictive power of the model. The Durbin-Watson statistic (1.684) detects no autocorrelation.

Regression Coefficients

Table 3 REGRESSION COEFFICIENTS				
Independent Variable	Beta Coefficient (B)	t-Value	p-Value	Significance
Novelty Seeking (NS)	**0.265**	**2.236**	**0.028**	Significant
Environmental Concern (EC)	**0.303**	**2.476**	**0.015**	Significant
Subsidy Deduction (SD)	0.110	1.064	0.290	Not Significant
Non-Financial Incentives (NFI)	**-0.067**	-0.511	0.611	Negative Impact

Post-Hoc Analysis for Insignificant Subsidy Impact

Since subsidy deductions (SD) were not significant, subgroup analysis was also conducted on the basis of income and existing knowledge regarding electric vehicles (EVs):

Income-Level Interaction: Those with an income level of less than ₹20,000 per month showed greater dependence on subsidies, indicating that even the low-income groups could be impacted despite the overall lack of significance. EV Knowledge Interaction: Current knowledge possessors of EV technology have lower dependence on subsidies, meaning that subsidy incentives will lose their significance for highly educated consumers.

Robustness Checks

For verification of results, another logistic regression model was used with adoption intention as a binomial variable (yes/no choice). Results again verified that EC and NS were significant while SD and NFI remained insignificant.

DISCUSSION

The current study offers fresh evidence of the uptake of electric two-wheelers in Bengaluru, in the setting of decreasing subsidies. Although previous research has identified the decisive function of financial incentives towards electric vehicle adoption (Wang et al., 2022; Yuan et al., 2023), the present study negates such an assumption by demonstrating that subsidy reductions

have no or zero influence on adoption intention within the two-wheeler sector. To their argument, novelty-seeking behavior (NS) and environmental concern (EC) proved to be the strongest predictors of intention to adopt, such that psychological and behavior factors take precedence over monetary concern for the majority of consumers. Secondly, unexpectedly non- financial incentives such as priority parking or reduced road taxes showed a negative relationship with adoption intention (β = -0.067, p = 0.61), possibly due to limited awareness or ineffective implementation.

The Role of Environmental Concern in EV Adoption

The significance of environmental concern (EC) as an adoption intention predictor comes from the enhanced influence of sustainability consciousness on consumer attitudes. It has already been proven that consumers with high ecological awareness are more likely towards the adoption of environmentally friendly technology, especially where there is a high level of pollution (Li et al., 2023; Zhang et al., 2023). The results of this research validate such a pattern, and it appears high levels of pollution and discourse around climate action in Bangalore might have been reasons behind pro-environmental adoption behavior of electric vehicles (EVs). In contrast to developed economies, where EV adoption is largely incentivized by monetary incentives, Bangalore consumers might actually perceive EVs as a way of reducing their individual environmental footprint and not just as a cost-saving measure.

This now comes into action because one of the most polluted cities in India, Bangalore, largely owes its poor air quality to vehicular emissions (World Health Organization, 2023). According to the findings, EV adoption policy is meant to make individuals more conscious of the environmental challenges through campaigns that appeal to sustainability-oriented narratives so as to increase the consumers' interest.

Novelty-Seeking Behavior and the Appeal of Technological Innovation

A revealing statement is that novelty-seeking behavior (NS) is a predictor of adoption intention, and therefore technological progress craving customers and early adopters will purchase an electric two-wheeler in the future. This is supported by the Diffusion of Innovation (DOI) theory that early technology adopters are driven by curiosity, being the first in class to experiment with something new, and the distinctiveness of the brand (Rogers, 2003).

This research suggests that electric vehicle (EV) makers need to sell products to this group in order that is attractive to them through innovation, smart connectivity features, and progressive design elements. The Indian two-wheeler industry has been driven so far by brand reputation and performance features, and hence selling EVs as technology-based, high-feature substitutes for traditional two-wheelers may be more effective than merely touting cost savings (Xiang et al., 2023).

Secondly, the predominant influence of novelty-seeking behavior on adoption intention further indicates that economic incentives cannot necessarily be the major stimulus for early adopters of innovative technologies. Rather, perceived superiority of technology may instead become the stronger influence, which implies that EV makers need to focus more on product differentiation than on direct cost competition (Kumar et al., 2022; Sharma and Jain, 2021).

The Limited Influence of Financial Incentives

Comparing to earlier studies of the effect of subsidy on electric vehicle (EV) adoption

(Wang et al., 2022; Yuan et al., 2023), the statutory significant effect of subsidy reduction (SD) on adoption intention is not found in this study. The result suggests that two-wheelers EV adopters in Bangalore may be less price-sensitive to the price of government incentives than presumed to be the case. One such reason would be that EV two-wheelers are more cost- effective when it comes to upfront expenses than EV four-wheelers, and therefore subsidies are not as crucial. Other research has revealed that the uptake of four-wheelers EVs remains high on price due to their enormous expenses and longer payback duration (Li et al., 2023). However, two-wheeler EVs are also closer in price to their ICE equivalents, and that would indicate consumers do not treat reductions in subsidies as budgetary constriction. Then there is post hoc subgroup analysis, which reveals that even poorer consumers, or the whole population, are still attracted to subsidies. This would imply that price incentives would be more effective when directed towards specific groups of consumers such as first-time buyers or poor consumers.

The Negative Influence of Non-Financial Incentives

Another surprise is that non-financial incentives (NFI) decrease adoption intention. A comparison with research in Norway and America where non-monetary incentives such as priority electric vehicle (EV) lanes, tax relief, and parking passes increased adoption levels (Reisz et al., 2023). But findings of this study are congruent with prior existing emerging market research verifying price-sensitive consumers would experience tangible economic gains rather than policy-driven benefits that could be cost savings (Gupta & Patel, 2023). Highly likely, most non-financial rewards do not exist or are easily accessible due to poor urban planning and ineffective enforcement practices. For example, policy papers can commit to allocated space for EVs or road tax discount, but in most scenarios, there is no meaningful availability and implementation of these incentives (Smith and Johnson, 2022). Consumers can also possess low perceived value for non-monetary incentives since they lack adequate knowledge about the actual value of such incentives (Brown et al., 2021).

All these connotations mean that policymakers must reshape non-financial incentives as more timely and realistic in their rewards. Instead of indirect rewards, i.e., reductions in road tax, policies must aim consumer-relevant incentives, i.e., charging credits free of charge, lower tariffs on electricity used for home charging, and streamlined processing of EV-related administrative procedures (Lee & Wang, 2023).

Policy and Industry Implications

The findings of this research have enormous policy implications for policymakers and makers of electric vehicles (EVs). Environmental awareness programs are essential and need to be a priority agenda item because they are the primary drivers of the adoption intention of EVs. Policymakers should work closely with producers to roll out targeted programs that highlight the important role EVs can play in mitigation of pollution, improved air quality, and slowing climate change. The programs need to be evidence-based on tangible environmental gains and sustainability over time.

Since novelty-seeking behavior is a key driver of adoption intention, technology-driven marketing would need to be the key priority. EV brands must emphasize futuristic features, improved smart connectivity features, and performance to entice innovation-seeking consumers. These can involve emphasizing autonomous driving features, over-the-air software updates, and integration with smart-home platforms.

Subsidy programs should be redesigned so that they offer more help to low-income buyers than across-the-board incentives to all segments. Instead of across-the-board price discounts, other mechanisms such as low-interest financing, battery leasing contracts, or income- tiered rebates are potentially more effective in getting EVs into the market in larger numbers. Policymakers may want to look at the potential for tiered incentive programs in which lower-income households can receive more generous incentives so that affordability issues are better addressed.

Non-monotional incentives need to be re-packaged for more direct and concrete rewards. Free public charging for the initial year of car ownership, lowering electricity tariffs for home charging, and priority parking in city centers are examples. These incentives have to be carefully calibrated to address the very specific adoption hurdle embedded in different consumer segments.

Infrastructure upgradation is among the priority areas, with especial emphasis on charging station infrastructure and setting up of battery-swapping centers. Such upgradation must be planned strategically as per dense locations, office complexes, and residential colonies for addressing issues based on range anxiety (RA).

Along with that, grid investment and investment in quick-charging technology need to power electric vehicle (EV) economy expanding at an exponential level. To further optimize that, policymakers and manufacturers will need to come together and implement mass education programs to eliminate myths surrounding EVs such as range limitations and charging time. They need to give demo and hands-on training to make prospective owners comfortable with EV technology and benefits.

Finally, innovation in the EV supply chain is also required. Research and development of battery technology, green material, and recycling need to be promoted by governments. Not only will this prove to be cost-effective, but also improve overall EV lifecycle sustainability to make them competitive environmentally.

Contribution to the Literature

The results of this research have important policy implications for policymakers and electric vehicle (EV) producers. Environmental awareness campaigns should be prioritized due to their manifest influence on adoption intention. Policymakers and producers should cooperate and employ targeted, evidence-based promotions marketing the fundamental contribution EVs will make towards combating pollution, improving air quality, and reducing climate change. The campaign should promote quantifiable environmental gains along with long-term sustainability Since novelty-seeking is such a powerful adoptive motive driver, technology-marketing needs to take the lead. The premium features to be created for EV makers to attract innovation-led buyers are premium features, premium smart connectivity features, and other performance benefits to induce innovation-led buyers. That may involve promotion of autonomous driving features, over-the-air software updates, and smart home compatibility.

Subsidy schemes have to be restructured in a way that they directly benefit low-income buyers rather than provide across-the-board incentives to everyone. Low-interest loans, battery leasing plans, or income-based rebates are maybe more effective ways of reducing EV prices. Steeply graduated rewards for low-income families through incentive schemes can be designed by policymakers as an attempt to better neutralize affordability.

The economic gains have to be re-bundled so there are more concrete and near-contemporary benefits. These can include free public charging for the initial year, off-peak residential rates of charging, to favored rights of parking within urban areas. These incentives

have to be carefully designed so that they overcome adoption challenges in the soloistic way specific to specific consumer groups.

Infrastructure investment remains the top priority, with emphasis on growing the number of charging and battery-swapping stations. The growth has to be planned, from congested spots to office complexes and residential areas, as a bid to alleviate range anxiety. High-speed charging infrastructure roll-out and grid investment need to be achieved in a bid to provide for the growing EV universe.

In order to push the uptake of electric vehicles (EVs), policymakers and automakers also need to collaborate in formulating comprehensive education programs. These need to be ready to debunk common myths about EVs, including that they have poor range and charging time. Demonstration and simulation are best positioned to familiarize prospective buyers with EV technology and with the benefits of the same.

In addition, innovation down the EV supply chain is of critical significance. Governments should offer incentives for research and development of battery technology, green materials and recycling processes. This will lower the costs as well as increase overall sustainability for the EV sector. This, in its turn, makes the value proposition more appealing to the buyers as well as facilitates the accomplishment of long-term green goals.

CONCLUSION AND RECOMMENDATIONS

This study investigates electric two-wheeler adoption of electric two-wheelers in Bangalore amid reduced subsidy availability. Findings reveal that psychological drivers' particularly novelty-seeking and environmental concerns are stronger predictors than financial incentives. Contrary to what might be expected, the results show that a decrease in subsidy has a minimal effect on adoption intention. The strongest predictors were novelty-seeking behavior and environmental values. The most surprising is that non-financial incentives have counterintuitive negative impacts.

This paper brings behavioral theories into the discussion of EV adoption, building on the applications of the Theory of Planned Behavior and the Diffusion of Innovations theory. Recommendations for policy suggest prioritizing awareness campaigns, technological distinction, reconsidering long-term financial incentives, redesign of non-financial incentives, and infrastructure increase.

Follow-up research must overcome the limitation of sample size and self-report biases to urban markets. Qualitative researches and surveys in behavioral economics may be more revealing about consumer behavior.

This research underscores the importance of shifting toward long-term subsidy-free policies that account for the infrastructural and psychological impediments to EV uptake.

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