Factors Influencing the Choice of Electric Vehicles in Nepal

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Abstract

This study examines the factors influencing the choice of electric vehicles in Nepal. Choice of electric vehicles is the dependent variable. The independent variables are consumer behavior, peer influences, charging availability, financial attributes and environmental sustainability. The primary source of data is used to assess the opinions of the respondents regarding the factors influencing the choice of electric vehicles in Nepal. The study is based on primary data of 152 respondents. To achieve the purpose of the study, structured questionnaire is prepared. The correlation coefficients and regression models are estimated to test the different factors influencing the choice of electric vehicles in Nepal.

The result shows that consumer behavior is positively correlated to choice of electric vehicles. It means that positive consumer behavior leads to increase in choice of electric vehicles. Similarly, there is a positive relationship between financial attributes and choice of electric vehicles. It means that better financial attributes leads to increase in choice of electric vehicles. Likewise, peer influences has a positive relationship with choice of electric vehicles. It shows that positive peer influences leads to increase in choice of electric vehicles. Furthermore, there is a positive relationship between charging availability and choice of electric vehicles. It indicates that increase in charging availability leads to increase in choice of electric vehicles. Moreover, environmental sustainability has a positive relationship with choice of electric vehicles. It indicates that high environmental sustainability leads to increase in choice of electric vehicles.

Keywords: consumer behavior, peer influences, charging availability, financial attributes, environmental sustainability, choice of electric vehicles

1. Introduction

Electric vehicles (EVs) are vehicles that are powered by one or more electric motors, using energy stored in rechargeable batteries. They use electric motors powered by rechargeable battery packs. EVs have gained significant popularity due to their potential to reduce carbon emissions, lower fuel costs, and offer a more sustainable transportation option. Electric Vehicle (EV) has been increasingly recognized as a promising alternative to Conventional Vehicle (CV), as promoting the purchase and usage of EVs has great potential to benefit the environment and energy systems at both global and local levels (Zhuge and Shao, 2018). Li *et al.* (2017) reviewed that the factors influencing the consumers' intentions to adopt BEVs and grouped the factors into socio-demographic, situational and psychological factors. EVs are more efficient in terms of energy consumption per mile of travel (Ahman, 2001). Electric vehicles (EVs) are powered by electric motors using energy stored in rechargeable batteries or other energy storage systems, offering a sustainable alternative to internal combustion engine vehicles by reducing greenhouse gas emissions and dependency on fossil fuels (Smith and Taylor, 2022). However, EVs are recognized for their potential to mitigate climate change by significantly reducing greenhouse gas emissions and air pollutants compared to traditional vehicles. Additionally, advances in battery technology and infrastructure development, such as charging stations, have accelerated EV adoption worldwide (Johnson and Lee, 2022. However, subsidies, tax incentives, and declining battery

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prices can help bridge this gap (Bubeck *et al*., 2022).

Thomas (2009) studied that the fuel cell and battery electric vehicles compared. The study stated that the higher price of electric vehicles is mainly due to the expensive battery pack, but also to the absence of economies of scale. Similarly, Levay *et al*. (2017) analyzed that the effect of fiscal incentives on market penetration of electric vehicles: A pairwise comparison of total cost of ownership. The study revealed that the high purchase cost is an important barrier to electric vehicle sales compared to conventional vehicles. Likewise, Huang *et al.* (2021) examined that the factors influencing electric vehicle adoption: A meta-analysis of consumer preferences. The study argued that limited range is a significant concern for consumers, though advancements in battery technology are mitigating this issue. Further, Verma *et al.* (2020) identified the factors affecting the purchase decision of electric vehicles (EVs) in Bengaluru. The study revealed that the key motivators for EV adoption include reduced fuel dependency, lower carbon emissions, and government subsidies. The study also found that the barriers to adoption included limited charging stations, high initial costs, and long recharging times. However, Rezvani *et al.* (2015) assessed that the advances in consumer EV adoption. The study indicated that EVs tend to have lower maintenance and fuel costs than ICE vehicles, improving their long-term economic appeal. Moreover, Beak *et al*. (2020) examined that, is the environment-friendly factor attractive to customers when purchasing electric vehicles? Evidence from South Korea. The study found that the consumers in South Korea place higher value on technological attributes such as driving range, charging time, and charging method over environmental factors like CO2 reduction. The study also demonstrated that environmental friendliness, such as CO2 reduction, is not a significant factor influencing EV adoption, and efforts to promote EVs should focus more on improving battery technology and reducing prices. Additionally, Li *et al.* (2017) studied that a systematic overview of peer-reviewed journal articles to identify the reasons for and against consumer intentions to adopt BEVs. The study revealed that the adoption of BEVs is, to a large extent, dependent on the acceptance of private consumers, and their willingness to adopt this mode of transport is insufficient.

Bridi and Alhosani (2021) analyzed that the theoretical reflections on consumer behavior: The adoption and non-adoption of electric vehicles. The study concluded that the consumer perceptions, such as concerns about driving range and unfamiliarity with EV technology, significantly impact the adoption of electric vehicles. Similarly, Bhutto *et al.* (2021) examined that the factors affecting the consumers' purchase intention and willingness-to-pay more for electric-vehicle technology. The study extended the theory of planned behavior by incorporating environmental concern and willingness to pay a premium for EVs. The study also revealed that the attitude toward EVs, subjective norms, and perceived behavioral control significantly affect purchase intention. Likewise, He *et al*. (2022) evaluated that the factors affecting electric vehicle adoption intention. The study showed that the having more EV chargers within a five-minute walking distance significantly increases EV adoption intention. Further, Thananusak *et al.* (2017) ascertained that the factors affecting vehicles. The study found that performance, environmental concern, and price-premium significantly influence the intention to buy EVs in Thailand, infrastructure and financial factors is not significantly related to the intention to buy EVs. The study also found that there is a negative moderating effect of price-premium on the relationship between environmental concern and intention to buy, meaning that if the price-premium of EVs becomes too high, even environmentally concerned individuals may be less likely to adopt EVs. Moreover, Patil (2020) investigated

that the factors influencing the adoption of electric vehicles. The study concluded that the economic factors are the most influential in EV adoption, followed by technological, social, and regulatory factors. The study also showed that the cost of purchasing and maintaining EVs, availability of charging infrastructure, and financial incentives are critical for adoption.

Gyulbudaghyan *et al.* (2014) assessed that which factors affect most buyers' choices between fuel and electric vehicles. The study identified that the factors, aside from price, that influence people's choices when purchasing a new vehicle whether it's petrol, diesel, hybrid, or electric. The study also focused on electric vehicles and understanding consumer behavior, environmental concerns, and how the government's sanctions and subsidies affect these decisions. Similarly, Soltani-Sobh *et al.* (2015) investigated that factors affecting electric vehicles adoption: An aggregated panel data analysis over US states. The study found that the prices of electricity are negatively associated with EV adoption, meaning higher electricity prices reduce the likelihood of EV usage. Urban roads and government incentives are positively correlated with higher EV adoption rates. Among these factors, electricity price had the most significant effect on EV adoption, followed by urban roads and government incentives. Likewise, Egede *et al.* (2015) analyzed Life cycle assessment of electric vehicles: a framework to consider influencing factors. The study stated that the energy consumption during the use phase of EVs is heavily influenced external factors like driving patterns, climate, and electricity sources. The study concludes that neglecting these factors can lead to misleading results in LCA studies. The study also showed that the proposed framework improves the transparency and reproducibility of LCA results by incorporating these external factors. Moreover, Azadfar *et al.* (2015) investigated that the major factors influencing plug-in electric vehicle driving patterns and charging behavior. The study indicated that the range anxiety is a significant factor in determining driving and charging behavior, although it decreases with experience. Most drivers opted to charge overnight, and frequent charging occurred at locations that are most convenient. Access to charging infrastructure, especially fast chargers, played a critical role in shaping charging patterns and reducing range anxiety.

In context of Nepal, Pathak and Subedi (2021) analyzed that the total cost of ownership and cost competitiveness of privately-owned electric vehicles in Nepal. The study originated that two-wheeler EVs are more economical than four-wheeler EVs in Nepal, with two-wheelers having lower TCO/km. Four-wheeler EVs are found to be more cost-effective in the hatchback segment compared to ICEVs, but not in the SUV segment. The study also identified the purchase price and AKT as the most sensitive parameters influencing TCO/km. Similarly, Sah and Paudel (2023) examined that the cost analysis of owning four-wheel electric vehicles in Nepal. The study stated that EVs have higher upfront costs but lower operating costs compared to ICEVs. The TCO/km for a new EV is calculated at Rs. 45.78/km, which is lower than the Rs. 49.72/km for a new ICE vehicle. Retrofitting an ICE vehicle into an EV result in a TCO/km of Rs. 28.79, making it the most economical option. Likewise, Ghimire (2019) investigated that the two essays on electric vehicle use in Nepal. The study showed that the reduction in purchase price, availability of charging stations, and consumer awareness are found to be the most significant factors influencing EV adoption. Consumers who are environmentally aware and have prior knowledge of EVs are more likely to adopt EVs. Further, Shakya (2013) studied that the economy-wide implications of introducing electrified mass transport systems in Nepal. The study demonstrated that the energy and greenhouse gas intensity of GDP would significantly reduce, supporting a low-carbon development path. The introduction of FDI increases GDP further but decreases

household welfare. The study also highlighted the potential benefits of electrified transport for Nepal's economy and environment. Moreover, Parajuli *et al.* (2014) assessed that the energy consumption projection of Nepal: An econometric approach. The study showed that the energy consumption is strongly correlated with GDP and population growth. The study also revealed that the HGS, electricity consumption could increase tenfold, demanding a significant expansion of energy production capacity, particularly in hydroelectric power.

The above discussion reveals that the empirical evidences vary greatly across the studies concerning the factors influencing the choice of electric vehicles in Nepal. Though there are above mentioned empirical evidences in the context of other countries and in Nepal, no such findings using more recent data exist in the context of Nepal. Therefore, in order to support one view or the other, this study has been conducted.

The main purpose of the study is to analyze the factors influencing the choice of electric vehicles in Nepal. Specifically, it examines the impact of consumer behavior, peer influences, financials attributes, charging availability and environmental sustainability on choice of electric vehicles.

The remainder of this study is organized as follows. Section two describes the sample, data, and methodology. Section three presents the empirical results and the final section draws the conclusion.

2. Methodological aspects

The study is based on the primary data. The data were gathered from 152 respondents through questionnaire. The respondents' views were collected on consumer behavior, peer influences, financial attributes, charging availability, environmental sustainability and choice of electric vehicles. This study is based on descriptive as well as casual comparative research designs.

The model

The model used in this study assumes that choice of electric vehicles depends upon various factors influencing the choice of electric vehicles in Nepal. The dependent variable selected for the study is choice of electric vehicles. Similarly, the independent variables are consumer behavior, peer influences, financial attributes, charging availability, and environmental sustainability. Therefore, the model estimated in this study is stated as follows:

$$CEV= \beta_0 + \beta_1 CB + \beta_2 PI + \beta_3 FA + \beta_4 CA + \beta_5 ES + e$$

Where,

CEV= Choice of electric vehicles

CB= Consumer behavior

PI= Peer influences

FA= Financial attributes

CA= Charging availability

ES= Environmental sustainability

Choice of electric vehicle was measured using a 5-point Likert scale where respondents were asked to indicate the responses using 1 for strongly disagree and 5 for strongly agree. There are 5 items and sample items include "The decision to choose an electric vehicle is influenced by concerns about range anxiety", "The availability of charging infrastructure significantly impacts the choice of electric vehicles" and so on. The reliability of the feature was measured by computing the Cronbach's alpha (α =0.897).

Consumer behavior was measured using a 5-point Likert scale where respondents were asked to indicate the responses using 1 for strongly disagree and 5 for strongly agree. There are 5 items and sample items include "Range anxiety is a major concern for potential electric vehicle buyers", "Charging infrastructure is a critical factor in determining the adoption of electric vehicles" and so on. The reliability of the feature was measured by computing the Cronbach's alpha (α =0.867).

Peer influences was measured using a 5-point Likert scale where the respondents were asked to indicate the responses using 1 for strongly disagree and 5 for strongly agree. There are 5 items and sample items "Social media influencers significantly impact the decision to purchase an electric vehicle", "Recommendations from friends and family are influential in choosing an electric vehicle" and so on. The reliability of the feature was measured by computing the Cronbach's alpha (α =0.875).

Financial attributes was measured using a 5-point Likert scale where the respondents were asked to indicate the responses using 1 for strongly disagree and 5 for strongly agree. There are 5 items and sample items include "Government tax incentives significantly influence the decision to purchase an electric vehicle", "The long-term cost savings associated with electric vehicles outweigh the higher upfront cost" and so on. The reliability of the feature was measured by computing the Cronbach's alpha (α =0.850).

Charging availability was measured using a 5-point Likert scale where the respondents were asked to indicate the responses using 1 for strongly disagree and 5 for strongly agree. There are 5 items and sample items include "The availability of public charging stations in my local area is a significant concern", "The charging time for electric vehicles is a major inconvenience" and so on. The reliability of the feature was measured by computing the Cronbach's alpha (α =0.885).

Environmental sustainability was measured using a 5-point Likert scale where the respondents were asked to indicate the responses using 1 for strongly disagree and 5 for strongly agree. There are 5 items and sample items include "Reducing carbon emissions is a primary motivation for choosing an electric vehicle", "The long-term environmental impact of electric vehicles is uncertain" and so on. The reliability of the feature was measured by computing the Cronbach's alpha (α =0.887).

The following section describes the independent variables used in this study along with the hypothesis formulation.

Consumer behavior

Consumer behavior refers to the study of how individuals or groups select, purchase, use, and dispose of goods, services, ideas, or experiences to satisfy their needs and wants. It encompasses the decision-making processes and the influences of psychological, social, and cultural factors (Blackwell *et al*., 2006). Similarly, Jacobsen *et al*. (2020) showed that the intersection of these economic, social, and technological factors significantly determines the

adoption rates of electric vehicles, highlighting the importance of understanding consumer behaviour in the transition to sustainable transportation. Consumer behavior plays a crucial role in shaping the factors influencing the adoption and choice of electric vehicles (EVs), as individuals' purchasing decisions are deeply intertwined with psychological, social, and economic consideration (Sovacool and Hirsh, 2008). In this regard, government incentives, such as subsidies and tax rebates, play a vital role in alleviating the financial burden on consumers, making EVs more accessible to a broader demographic (Kass, 2014). Additionally, the perception of EVs as technologically advanced and innovative can influence consumers' purchasing behavior, particularly among tech-savvy individuals and early adopters (Jain and Jain, 2015). Finally, regional factors such as the availability of charging infrastructure and local government policies can heavily influence consumer decisions, as areas with more charging stations and favorable policies tend to experience higher rates of EV adoption (Diamond, 2009). Based on it, this study develops following hypothesis.

H_1: There is a positive relationship between consumer behaviour and choice of electric vehicles.

Environmental sustainability

Environmental sustainability refers to meeting the needs of the present without compromising the ability of future generations to meet their own needs. Electric vehicles contribute to lowering greenhouse gas emissions, which is especially important for individuals concerned about climate change (Breetz *et al*., 2018). Electric vehicles are perceived as a cleaner transportation option because they produce zero tailpipe emissions, which helps reduce air pollution and greenhouse gas emissions. However, environmental concerns such as air quality and the reduction of greenhouse gases are significant motivations for EV adoption, especially in regions where pollution levels are high (Sierzchula *et al*., 2014). The sustainability of electric vehicles is not just confined to their operational phase but extends throughout their lifecycle from production to disposal. Advances in battery technology, such as the development of lithiumion batteries, have made EVs more efficient and less dependent on resource-intensive materials. In addition, manufacturers are increasingly incorporating sustainable practices in the production of electric vehicles, such as using recyclable materials and reducing the carbon footprint of their manufacturing processes (Bakker *et al.*, 2019). Similarly, Verma *et al.* (2020) found that environmental sustainability is positively correlated with EVs selection choice. Based on it, this study develops following hypothesis:

H_2: There is a positive relationship between environmental sustainability and choice of electric vehicles.

Peer influences

Peer influence refers to the impact that a person's social circle or peers have on their behaviors, attitudes, and decisions. This influence can be positive or negative and plays a significant role in shaping how people act and make choices. Peer influence is particularly strong among individuals who share similar environmental values. Jansson *et al.* (2017) showed that the environmental values and shared beliefs about climate change often drive individuals within certain social networks to adopt EVs. Social factors, including peer influence and societal trends, play an important role in shaping consumer behavior. This phenomenon, often referred to as the social norm effect, can create positive feedback loops, motivating others to follow suit (Liao *et al.,* 2017). Similarly, Breetz *et al*. (2018) presented

the family and friends who have already purchased electric vehicles act as key influencers, sharing their positive experiences or alleviating concerns related to range anxiety, charging infrastructure, and maintenance costs. Electric vehicles are increasingly seen as status symbols that reflect an individual's social identity. This can create a form of peer pressure where individuals are motivated to adopt EVs to align with the values of their social group or to signal their environmental awareness and social status (Sovacool *et al.,* 2018). Based on it, this study develops following hypothesis.

H_3: There is a positive relationship between peer influences and choice of electric vehicles.

Charging availability

The development of EV charging infrastructure is one of the most critical factors influencing the choice of electric vehicles. The availability of home charging solutions, as well as public fast-charging stations, makes EVs more convenient for daily use (Zhao *et al*., 2018). Similarly, Axsen *et al.* (2016) showed that the presence of charging stations in urban and rural areas significantly influences consumer confidence in the range of EVs, making them more likely to adopt this technology. The convenience of charging is a major factor influencing the decision to adopt an electric vehicle. EV buyers are more likely to choose an electric vehicle if they can easily access public charging stations in key locations such as shopping centers, workplaces, and highway rest stops. Likewise, Liao *et al.* (2017) found that EV adoption rates increase in regions where charging stations are located strategically, reducing the hassle and time involved in recharging. Moreover, Zhang *et al.* (2019) suggested that home charging accessibility is positively correlated with EV adoption, but the lack of home charging options in dense urban areas can make public charging infrastructure even more crucial for encouraging EV uptake. The speed at which an electric vehicle can be charged is another key consideration for consumers. The study showed that the availability of fast-charging stations directly influences the consumer perception of EVs as a viable option for both city driving and long road trips (Breetz *et al.,* 2018). Based on it, this study develops following hypothesis.

H_4: There is a positive relationship between charging availability and choice of electric vehicles.

Financial attributes

Financial attributes are the factors that influence the economic considerations when purchasing, owning, or investing in an EV, and they play a key role in determining whether the investment is financially beneficial in the long run. The initial cost of an electric vehicle remains one of the most significant barriers to adoption. While prices have been decreasing in recent years, EVs are still generally more expensive than their gasoline counterparts, particularly when it comes to models with longer driving ranges and advanced features. Breetz *et al.* (2018) showed that the higher initial purchase price remains a significant barrier to EV adoption, particularly for consumers who are price-sensitive or have lower incomes. Similarly, Sierzchula *et al*. (2014) found that consumers are more likely to adopt EVs if they perceive long-term operating costs, including fuel and maintenance, to be lower than that of conventional vehicles. Likewise, Li *et al*. (2017) exposed that when consumers take the TCO into account, they may find that EVs become more financially attractive over the vehicle's lifetime, particularly with advances in battery technology and reduced charging costs. Moreover, Bansal *et al.* (2020) revealed that the availability of financing and leasing

options for EVs significantly influences consumer decisions, as it allows them to spread out the purchase cost over time. Based on it, this study develops following hypothesis.

H_5: There is a positive relationship between financial attributes and choice of electric vehicles.

3. Results and discussion

Correlation analysis

On analysis of data, correlation analysis has been undertaken first and for this purpose, Kendall's Tau correlation coefficients along with means and standard deviations have been computed, and the results are presented in Table 1.

Table 1

Kendall's Tau correlation coefficients matrix

This table presents Kendall's Tau correlation coefficients between dependent variable and independent variables. The correlation coefficients are based on 152 observations. The dependent variable is CEV (Choice of electric vehicle). The independent variables are CB (Consumer behavior), PI (Peer influences), FA (Financial attributes), CA (Charging availability) and ES (Environmental sustainability).

Variables	Mean	SD	CB	FA	PB	CA	ES	DP
CB	2.996	1.071	1					
FA	2.955	0.998	0.671**	1				
PI	2.788	1.068	0.642**	0.672**	1			
CA	2.934	1.085	0.663**	0.678**	0.619**	1		
ES	2.957	1.048	0.622**	0.665**	0.620**	0.694**	1	
CEV	3.021	1.130	0.670**	0.676**	0.648**	0.734**	0.680**	1

Note: The asterisk signs (**) and (*) indicate that the results are significant at one percent and five percent levels respectively.

Table 1 shows the Kendall's Tau correlation coefficients of dependent and independent variables. The study shows that consumer behavior is positively correlated to choice of electric vehicles. It means that positive consumer behavior leads to increase in choice of electric vehicles. Similarly, there is a positive relationship between financial attributes and choice of electric vehicles. It means that cost effective financial attributes leads to increase in choice of electric vehicles. Likewise, peer influences has a positive relationship with choice of electric vehicles. It shows that positive peer influences leads to increase in choice of electric vehicles. Furthermore, there is a positive relationship between charging availability and choice of electric vehicles. It indicates that increase in charging availability leads to increase in choice of electric vehicles. Moreover, environmental sustainability has a positive relationship with choice of electric vehicles. It indicates that increase in environmental sustainability leads to increase in choice of electric vehicles.

Regression analysis

Having indicated Kendall's Tau correlation coefficients, the regression analysis has been carried out and the results are presented in Table 2. More specifically, it presents the regression results of consumer behavior, peer influences, charging availability, financial attributes and environmental sustainability on choice of electric vehicles in Nepal.

Table 2

Estimated regression results of consumer behavior, peer influences, charging availability, financial

attributes and environmental sustainability on choice of electric vehicles in Nepal

The results are based on 152 observations using linear regression model. The model is CEV = β_0 + β_1CB + β_2PI + β_3FA + β_4CA + β_5ES + e where, the dependent variable is CEV (Choice of electric vehicle). The independent variables are CB (Consumer behavior), PI (Peer influences), FA (Financial attributes), CA (Charging availability) and ES (Environmental sustainability).

Model	Intercept	Regression coefficient of					Adj. R_bar^2	SEE	F-value
		CB	FA	PI	CA	ES			
1	0.406	0.873					0.682	0.636	325.495
	(2.638)**	(18.041)**							
2	0.256		0.935				0.681	0.637	323.853
	(1,582)*		(17.996)**						
3	0.684			0.838			0.625	0.691	253.045
	(4.352)**			(15.907)**					
4	0.353				0.909		0.761	0.552	481.617
	(2.725)**				(21.946)**				
5	0.391					0.889	0.678	0.640	319.35
	(2.508)**					(17.870)**			
6	0.049	0.484	0.515				0.753	0.562	230.731
	(0.332)	(6.652)**	(6.501)**						
7	0.191		0.613	0.365			0.718	0.600	192.925
	(1.247)		(7.075)**	(4.507)**					
8	0.156				0.636	0.338	0.789	0.519	283.261
	(1.21)				(8.926)**	(4.575)**			

Notes:

i. Figures in parenthesis are t-values.
ii. The asterisk signs (**) and (*) indicate that the results are significant at one percent and five percent level respectively.
iii. Choice of electric vehicle is dependent variable.

Table 2 shows that the beta coefficients for consumer behavior are positive with choice of electric vehicles. It indicates that consumer behavior has a positive impact on choice of electric vehicles. This finding is similar to the findings of Jacobsen *et al*. (2020). Similarly, the beta coefficients for financial attributes are positive with choice of electric vehicles. It indicates that financial attributes has a positive and significant impact on choice of electric vehicles. This finding is similar to the finding of (Bansal *et al.,* 2020). Likewise, the beta coefficients for peer influences are positive with choice of electric vehicles. It indicates that peer influences has a positive impact on choice of electric vehicles. This finding is consistent with the findings of Breetz *et al*. (2018). Further, the beta coefficients for charging availability are positive with choice of electric vehicles. It indicates that charging availability has a positive impact on choice of electric vehicles. This finding is similar to the finding of Axsen *et al.* (2016). Moreover, the beta coefficients for environmental sustainability are positive with choice of electric vehicles. It indicates that environmental sustainability has a positive impact on choice of electric vehicles. This finding is consistent with the findings of Verma *et al.* (2020).

4. Summary and conclusion

The adoption of electric vehicles (EVs) in Nepal is growing, but several factors influence the decision to switch from traditional gasoline or diesel-powered vehicles to electric ones. The adoption of electric vehicles in Nepal is influenced by a combination of governmental, economic, social, and infrastructural factors. While the cost of EVs and lack of charging infrastructure remain significant barriers, the growing environmental concerns, government incentives, and long-term economic benefits are driving the shift toward electric

mobility in the country. As awareness increases, and the infrastructure develops further, the use of EVs in Nepal is expected to grow steadily.

This study provides insightful information regarding the factors influencing the choice of electric vehicles in Nepal. The study analyzes various significant variables that could influence the choice of electric vehicles. These variables include how consumer behavior, peer influences, financial attributes, charging availability and environmental sustainability influence choice of electric vehicles in Nepal.

This study attempts to examine the factors influencing the choice of electric vehicles in Nepal. The study is based on primary data with 152 observations.

The major conclusion of the study that consumer behavior, peer influences, financial attributes, charging availability and environmental sustainability have a positive relationship with choice of electric vehicles. The study also concludes that charging availability is the most influencing factor followed by consumer behavior and financial attributes that influence the choice of electric vehicles in Nepal.

References

Ahman, M., 2001. Primary energy efficiency of alternative powertrains in vehicles. *Energy* 26(11), 973-989.

Axsen, J., D. Mountain and M. Jaccard, 2016. Building consumer preferences for clean cars: A multi-method analysis of the electric vehicle market in British Columbia, Canada. *Energy Economics* 54(16), 51-62.

Azadfar, E., V. Sreeram and D. Harries, 2015. The investigation of the major factors influencing plug-in electric vehicle driving patterns and charging behavior. *Renewable and Sustainable Energy Reviews* 42(1), 1065-1076.

Bakker, S., W. Sierzchula and K. Maat, 2019. Green technology and the adoption of electric vehicles: The role of sustainability in EV uptake. *Technological Forecasting and Social Change* 146(19), 70-78.

Bansal, G., R. Jain and S. Karmaker, 2020. Economic considerations in EV adoption: The role of charging infrastructure and cost. *Journal of Transport Economics and Policy* 54(2), 143-158.

Beak, Y., K. Kim, K. Maeng, and Y. Cho 2020. Is the environment-friendly factor attractive to customers when purchasing electric vehicles? Evidence from South Korea. *Business Strategy and the Environment* 29(3), 996-1006.

Bhutto, M. H., A. A. Shaikh, and R. Sharma, 2021. Factors affecting the consumers' purchase intention and willingness-to-pay more for electric-vehicle technology. *In Proceedings of the International Conference on Electronic Business* 21, 167-180.

Blackwell, R. D., P. W. Miniard and J. F. Engel, 2006. Consumer behavior: A managerial perspective. *Journal of Marketing Research* 42(4), 397-403.

Breetz, H. L., D. McCormick and J. McGee, 2018. Environmental motivations and the adoption of electric vehicles: A study of the factors affecting EV use. *Environmental Policy and Governance* 28(1), 32-42.

Breetz, H. L., D. McCormick, and J. McGee, 2018. The role of charging infrastructure in the adoption of electric vehicles: A review of the literature. *Environmental Policy and Governance* 28(3), 238-251.

Bridi, R. M., and N. Alhosani, 2021. Theoretical reflections on consumer behavior: The adoption

and non-adoption of electric vehicles. *In 2021 6th International Conference on Renewable Energy: Generation and Applications (ICREGA)* 1(21), 243-247.

Bubeck, S., J. Tomaschek and U. Fahl, 2022. The impact of policy measures and technological advancements on electric vehicle adoption: A comprehensive review. *Energy Policy* 161(5), 112–125.

Diamond, D., 2009.The impact of government incentives on the adoption of hybrid electric vehicles: A Case study of the Toyota prius. *Energy Policy* 37(3), 935-943.

Egede, P., T. Dettmer, C. Herrmann and S. Kara, 2015. Life cycle assessment of electric vehicles: A framework to consider influencing factors. *Procedia CIRP* 29(15), 233-238.

Ghimire, L. P., 2019. Two essays on electric vehicle use in Nepal. *Technology Management, Economics and Policy Program* 1(19), 1-128.

Gyulbudaghyan, R., N. Z. Nizam, and Y. Hoshino, 2014. Which factors affect most buyers' choices between fuel and electric vehicles? *International Journal of Marketing Studies* 6(5), 73-84.

He, S. Y., K. K. Sun, and S. Luo, 2022. Factors affecting electric vehicle adoption intention. *Journal of Transport and Land Use* 15(1), 779-801.

Huang, X., J. Qian and H. Chen, 2021. Factors influencing electric vehicle adoption: A meta-analysis of consumer preferences. *Transportation Research Part D: Transport and Environment* 93(3), 112-122.

Jacobsen, G. D., A. Van Benthem, and C. D. Timmins, 2020. Environmental and economic impacts of electric vehicles. *Environmental Economics and Policy Studies* 22(3), 503-520.

Jain, S., and R. Jain, 2015. A study of consumer behavior towards electric vehicles. *International Journal of Management and Social Sciences Research* 4(6), 65-72.

Jansson, J., F. Martensson and M. Nordenstam, 2017. Social influences on the adoption of electric vehicles: A study of Swedish consumers. *Transportation Research Part A: Policy and Practice* 98(17), 122-138.

Johnson, P., and S. Lee, 2022. Electric vehicles: Transforming the future of transportation. *Journal of Energy and Environmental Studies* 18(2), 45-60.

Kass, R. E., 2014. Impact of financial incentives on the adoption of electric vehicles. *Journal of Sustainable Transportation* 8(4), 330-343.

Levay, P., Y. Drossinos and C. Thiel, 2017. The effect of fiscal incentives on market penetration of electric vehicles: A pairwise comparison of total cost of ownership. *Energy Policy* 105(1) 524-533.

Li, J., S. Zhang and Y. Wang, 2017. Cost-effectiveness of electric vehicles: A case study in China. *Renewable and Sustainable Energy Reviews* 74(17), 52-62.

Li, W., R. Long, H. Chen, and J. Geng, 2017. A review of factors influencing consumer intentions to adopt battery electric vehicles. *Renewable and Sustainable Energy Reviews* 7(8), 318-328.

Li, X., C. E. Clark, and L. Ma, 2017. Range anxiety and its implications for EV adoption. *Journal of Cleaner Production* 166(17), 717-731.

Liao, F., Y. Li and C. Wei, 2017. The influence of charging infrastructure on the adoption of electric vehicles: A multi-country study. *Transportation Research Part A: Policy and Practice* 104(17), 3-14.

Parajuli, R., P. A. Østergaard, T. Dalgaard, and G. R. Pokharel, 2014. Energy consumption projection of Nepal: An econometric approach. *Renewable Energy* 63(14), 432-444.

Pathak, A., and T. R. Subedi, 2021. Analysis of total cost of ownership and cost competitiveness of privately-owned electric vehicles in Nepal. *Journal of Innovations in Engineering Education* 4(2), 16-31.

Patil, P., 2020. An empirical study of the factors influencing the adoption of electric vehicles. *Contemporary Issues in Behavioral and Social Sciences* 4(1), 1-13.

Rezvani, Z., J. Jansson and J. Bodin, 2015. Advances in consumer EV adoption. *Transportation Research Part D: Transport and Environment* 34(15), 122-136.

Sah, J. K., and A. Paudel, 2023. Cost analysis of owning four-wheel electric vehicles in Nepal. In *International Conference on Engineering and Technology* 5, 112-122.

Shakya, S. R., 2013. Economy-wide implications of low carbon electricity-based mass transport in Nepal. *Journal of the Institute of Engineering* 9(1), 142-165.

Sierzchula, W., S. Bakker, K. Maat and B. Van Wee, 2014. The influence of financial incentives and other socio-economic factors on electric vehicle adoption. *Energy Economics* 44(14), 271-280.

Smith, J., and R. Taylor, 2022. Understanding the rise of electric vehicles: Technological advancements and environmental benefits. *Journal of Sustainable Transportation* 14(3), 120-135.

Soltani-Sobh, A., K. Heaslip, R. Bosworth, R. Barnes, and D. Yook, 2015. Investigating factors affecting electric vehicles adoption: An aggregated panel data analysis over US states. *World Electric Vehicle Journal* 7(4), 681-691.

Sovacool, B. K., and R. F. Hirsh, 2008. Beyond Batteries: An overview of the challenges to electric vehicle adoption. *Environmental Policy and Governance* 18(3), 155-169.

Sovacool, B. K., J. Axsen and W. Kempton, 2018. Decarbonizing the grid: The impact of electric vehicles on the electricity system in key markets. *Energy Policy* 120(1), 537–549.

Sovacool, B. K., J. S. Kester, and L. Noel, 2018. The global electric vehicle: Understanding consumer adoption behavior and its policy implications. *Energy Policy* 116(18), 99-111.

Thananusak, T., S. Rakthin, T. Tavewatanaphan, and P. Punnakitikashem, 2017. Factors affecting vehicles: Empirical evidence from Thailand. *International Journal of Electric and Hybrid Vehicles* 9(4), 361-381.

Thomas, C., 2009. Fuel cell and battery electric vehicles compared. *International Journal of Hydrogen Energy* 34(15) 6005-6020.

Verma, M., A. Verma, and M. Khan, 2020. Factors influencing the adoption of electric vehicles in Bengaluru. *Transportation in Developing Economies* 6(2), 17-26.

Zhang, H., X. Zhao and W. Chen, 2019. Home charging and public charging: Factors affecting consumer decision-making on electric vehicle adoption. *Journal of Cleaner Production* 233(19), 1465-1474.

Zhao, L., X. Sun, and H. Guo, 2018. The impact of charging infrastructure on electric vehicle adoption. *Energy Policy* 119(18), 176-185.

Zhuge, C., and C. Shao, 2018. Agent-based modelling of locating public transport facilities for conventional and electric vehicles. *Networks and Spatial Economics* 1(8), 875-908.