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A SEM–Neural Network Approach to Predict Customers Intention to Purchase Battery Electric Vehicles in the Bangalore

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Noor Firdoos Jahan & Shivshankar Kamble

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Abstract

BEVs play a key role in making mobility sustainable in India, especially in fast urban cities such as Bangalore. In spite of FAME II and state initiatives, people have not adopted electric vehicles in large numbers because they are uncertain about the benefits and the costs involved. Here, the study assesses Bangalore consumers' decision to buy BEVs by using the techniques of PLS-SEM and NN analysis. Using responses from 246 participants, the study looks at how the "Theory of Planned Behavior's" concepts of personal evaluation of the behavior, Social expectations, and perception of behavioral feasibility interact with environmental performance, costs, and government incentives. The PLS-SEM study found that monetary incentives, personal evaluation of the behavior, Social expectations, and perception of behavioral feasibility interact control all affect consumers' purchasing decisions, with perception of behavioral feasibility control being the most crucial. Price value, the impact of non-monetary considerations, and environmental performances were all determined to be non-significant. This conclusion was corroborated by neural network analysis, which revealed that the two main variables influencing consumer behavior prediction were perceived behavioral control and financial incentives. This two-step process makes the model's forecasts more accurate and gives policymakers and industry participants valuable information. When it comes to motivating customers to purchase electric automobiles, trust and money are more important than price or location. The conclusions guide the planning and policies needed to push the use of BEVs in Indian cities.

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Author information

Authors and Affiliations

RV Institute of Management, Bangalore, India
Noor Firdoos Jahan & Shivshankar Kamble

Corresponding author

Correspondence to Shivshankar Kamble.

Editor information

Editors and Affiliations

JLN Marg, Malaviya National Institute of Technology Jaipur, Jaipur, Rajasthan, India
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