

Business Models for Commercial EVs with Battery Life Uncertainty: Linking Customer Effort, Profitability, and Sustainability

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Abstract

The adoption of light commercial electric vehicles (EVs) in many developing countries, such as India, has surpassed that of personal EVs. However, the battery life remains a key concern, especially in commercial operations where sustained performance is critical. We analyse the automaker's business models in two-period set-ups. Our analysis suggests that unless the intrinsic battery life and the marginal production cost are too high, an automaker should lease EVs rather than sell. In leasing, the automaker may try to improve the longevity by two strategies: reward-based leasing or maintenance-based leasing. We characterize optimal pricing, incentives, and maintenance levels, and evaluate outcomes in terms of profit and environmental footprint. At equilibrium, a reward-based or maintenance-based leasing always produces a lesser number of vehicles compared to the base case. However, the profitability depends on the cost parameters and the inherent battery life.

Track: Business-To-Business Marketing & Supply Chain Management