The Importance of Selling Electric Vehicles and Their Batteries Separately

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The roads have been cleared for a surge in two- and three-wheeled electric vehicles (EVs). On August 12, the Ministry of Road Transport and Highways (MoRTH) published a notification allowing the sale and registration of EVs without batteries. The move is expected to increase their adoption rates by dropping the vehicles' price. In fact, delinking batteries from EVs reduces the upfront purchase cost by 30-40%, making their price comparable to or lower than conventional internal-combustion-engine vehicles.

Consumers will still end up paying for batteries in some form – but the MoRTH notification allows battery manufacturers and energy service providers to come up with separate customer-friendly business models.

Manufacturers around the world are experimenting with selling EVs without batteries. In China, consumers have to pay a monthly rental to car companies for batteries; in France, battery-renting plans are governed by the kilometres consumers expect to cover every year. With a view to developing the EV battery market, motorcycle makers in Japan are working on a shared swapping mechanism for bikes. Currently, the most popular models worldwide seem to be battery-swapping and battery-renting/leasing.

Swapping and renting

Swapping batteries is similar to going to a filling station to refuel your vehicle. A consumer swaps a discharged battery or partially charged battery with a fully charged one from a swapping station. The Ministry of Power recognised this model through an amendment in the charging infrastructure for EVs. Battery-monitoring apps can also help consumers keep an eye on the charge-level of their batteries and plan for the next swap in advance. Battery-swapping eliminates the need to charge a vehicle's battery too much in advance or setting up a charging station at their residence or in their office space.

That said, the challenge is to set up stations to meet the likely rise in demand for swapping. These services could be set up at existing filling stations to save service providers the land-investment cost. One particular model of note is to pay as you go, as offered by Sun Mobility – a technology-enabled service that allows fleet management and asset monitoring for commercial fleet owners (cabs, bike taxis, etc.). Together with GPS/GSM tracking, drivers can keep track of battery use in EVs, track battery stations and plan for swaps more efficiently.

Radio-frequency identification systems embedded in batteries could also ensure secure payment for the energy consumed, while remote-sensing could help station operators to keep

track of battery packs and interchange stations. In this model, the swapping time is just a couple of minutes for two- and three-wheelers.

This said, battery technology is also evolving so fast as to render renting/leasing a good option as well, more so because of the depreciation cost. With renting, the cost of batteries and replacements is divided over the vehicle's lifetime. This is similar to a pay-per-view subscription: a consumer may pay periodically (weekly, monthly or annually, or per kilometre travelled) for a battery, and renew their subscription when needed.

In this case, the consumer is responsible for charging the battery and paying for the electricity as well – in exchange for not having to worry about maintenance.

Pros and cons

While these new models bring down the EVs' upfront costs, the consumer has to pay for the energy as well as the service provider's profit margin. Moreover, conventional charging technologies offer consumers the convenience of charging at home, whereas battery swapping will demand frequent visits to swapping stations. If consumers choose to rent or lease instead, they may not have the flexibility to switch to advanced technologies as and when, since this model is likely to have a lock-in period or exit fees.

Nonetheless, all of these models together provide consumers with various options, instead of funnelling them into the sole alternative that existed until recently: to purchase vehicles with batteries.

Moreover, battery standardisation is the way forward – and in fact is almost mandatory if we are to ensure a surge in EVs' adoption rates. A higher demand for EVs will lead to bulk production, which in turn could help reduce the cost of vehicles and batteries both.

MoRTH has also said that EV prototypes and batteries (either regular or swappable) should be approved by test agencies specified under Rule 126 of the Central Motor Vehicle Rules 1989. This will go a long way towards addressing different aspects of battery standardisation. At present, the focus is on connectivity – e.g., vehicle battery, battery charger, battery app, etc.

Consumer mobility needs, supporting infrastructure and acceptance will shape the future of EVs. And with things taking a positive turn in the EV market, we are likely to witness more clean vehicles on the road in the days to come.

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