IBM Institute for Business Value

The shift to electric vehicles

Putting consumers in the driver's seat

Overview

The world seems poised for an electric vehicle (EV) rebirth as issues ranging from environmental concerns to fluctuating oil prices continue to push consumers toward alternatives to combustion engines. Today's EV, however, is beyond anything nineteenth century drivers could imagine. From intelligent driving to proactive service and remote vehicle access, EVs can offer the safety and convenience today's consumers crave. To push drivers toward "plugging in," however, automakers must better educate them, as well as offer a uniquely "connected" driving experience. Equally important, they must embrace innovative business models and partnerships.

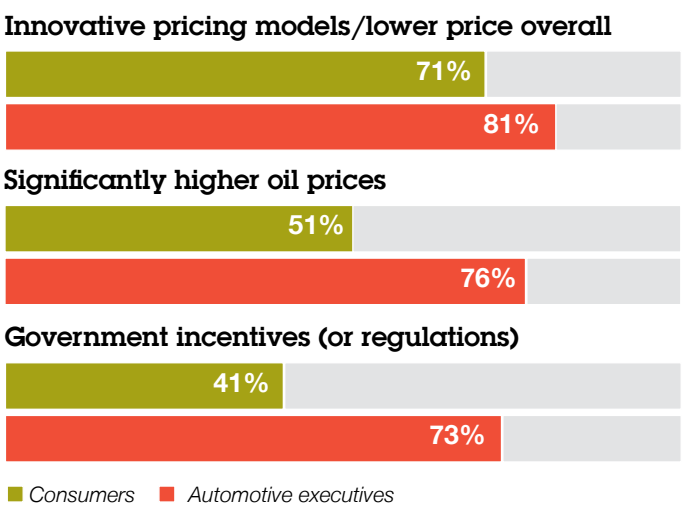
To further understand the hurdles to EV adoption, as well as consumer and industry attitudes about EVs, we consulted both drivers and industry executives.

Spreading the news

The simple facts: Our study revealed that many consumers don't know enough about electric vehicles, with 45 percent believing they have little to no understanding. The good news is that almost 20 percent of consumers are likely or very likely to consider purchasing an EV. And consumers who consider themselves knowledgeable are more than two and a half times more likely to consider an EV than those who believe they know "nothing" about EVs.

We also discovered that the average number of miles driven per day for consumers surveyed is under 40. However, when asked how many total miles per battery charge a car would need for them to consider switching to an EV, 50 percent selected more than 200 miles – this despite an average of less than 40 miles driven per day.

Green versus $green$: We asked both consumers and auto executives how different aspects of price might affect consumers' buying decisions (see Figure 1). Auto execs predicted consumers would be more or less equally compelled to transition to EVs by all three price-related drivers. However, consumers are far more inclined to respond to innovation in pricing and packaging than attaining a lower price through a government subsidy.



Sources: IBM Institute for Business Value Electric Vehicle Consumer Survey. 2011; IBM Institute for Business Value Advancing Mobility Study. 2011.

Figure 1: **For consumers, vehicle price is the greatest driver for transitioning to EVs.**

Another element to consider is the "green" or environmental pitch typically associated with EVs. Although average consumers seem to appreciate the sustainability benefits of driving an electric vehicle, they aren't particularly interested in paying a higher premium to purchase one.

As such, we suggest the industry educate consumers on the benefits of EV ownership, emphasizing the potential long-term cost savings rather than "green" messages, and explore new pricing models to lure those who might shy away from the higher up-front purchase price.

Connected driving: A win-win proposition

By capitalizing on the extensive connectivity inherent in EVs, automakers can offer consumers a unique "connected driving" experience.

A connected experience: Connected solutions can offer emergency assistance features, road warnings, driver status updates, automated drive features, advanced navigation, traffic prediction and green routing capabilities, and multimodal optimization options. Digital solutions can also help drivers choose alternate routes based on accident rates, climate conditions and road construction, as well as provide live updates.

What you need when you need it: Automakers can tackle the issue of battery range by employing a business model based on flexible vehicle access. In this scenario, consumers who purchase an EV also receive access to a variety of other vehicles on an as-needed basis. By enabling their product portfolio for portability of vehicle parameters and content, automakers could allow drivers to take their settings and preferences with them from vehicle to vehicle.

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At your service: Remote electronic diagnostics provide the ability for OEMs to monitor vehicle condition and performance, allowing drivers to receive instant diagnostic vehicle alerts. In addition, because EVs have fewer components than ICE vehicles, they tend to have lower maintenance costs.[1]

Winning across an ecosystem

To successfully build the battery charging infrastructure, as well as address EV pricing challenges, automotive companies need to expand their ecosystem to include new partners.

Charging infrastructure: Obviously, the auto industry must partner with electric utilities. They might also partner with home improvement retailers to potentially reduce the costs associated with establishing a home charging station. To build an adequate infrastructure outside of home charging, we suggest first concentrating on places of employment and then targeting other locations, such as malls and other retailers. To help finance the high costs of establishing charging stations, the stations could be used as media and advertising platforms.

Innovative purchasing plans: Automakers should also collaborate with their captive finance companies to determine ways to make purchasing electric vehicles more compelling. Perhaps batteries could be financed separately from the car over a longer period of time or buyers could pay only for the estimated percentage of battery power they will use.

Conclusion

For the masses to "plug in," they first need more information on the advantages of EV ownership. In addition, auto manufacturers should utilize the connected aspects of the electric vehicle to deliver an enhanced driving experience. Finally, industry leaders must partner outside their existing ecosystem to facilitate wide-spread EV adoption. If auto industry leaders meet these challenges head on, we may very well see an EV rebirth in which connected drivers embrace a more enhanced, safe and environmentally friendly experience.

How can IBM help?

- **Strategy and change:** Evaluate and deploy strategies for solution design, analysis and business model development.
- **Connectivity and telematics solutions:** Develop solutions to address innovation in vehicle telematics, V2X infrastructure, digital security and data management.
- **Vehicle development:** Develop strategy and process solutions for product lifecycle and supply chain management.

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Produced in the United States of America
November 2011

References

1 Chambers, Nick. "9 Things You Need to Know Before Buying an Electric Car." Thedailygreen.com. January 21, 2011. http://www.thedailygreen.com/environmental-news/latest/electric-car-buying-tips

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