

Standards Battle: Which Automotive Technology Will Win?

IN THE ENVISIONED FUTURE Transition away from gasoline-powered cars, Nissan CEO Carlos Ghosn firmly believes the next technological paradigm will be electric motors. Ghosn calls hybrids a “halfway technology” and suggests they will be a temporary phenomenon at best. A number of start-up companies, including Tesla Motors in the United States and BYD Auto in China, share Ghosn’s belief in this particular future scenario.

One of the biggest impediments to large-scale adoption of electric vehicles, however, remains the lack of appropriate infrastructure: There are few stations where drivers can recharge their car’s battery when necessary. With the range of electric vehicles currently limited to some 200 miles, many consider a lack of recharging stations a serious problem (so called “range anxiety”). Tesla Motors and others, however, are working hard to develop a network of charging stations. By the summer of 2015, Tesla had built a network of some 500 supercharger stations throughout the United States.

Nissan’s Ghosn believes electric cars will account for 10 percent of global auto sales over the next decade. In contrast, Toyota is convinced gasoline-electric hybrids will become the next dominant technology. These different predictions have significant influence on how much money Nissan and Toyota invest in technology and where. Nissan builds one of its fully electric vehicles, the Leaf (an acronym for *Leading, Environmentally friendly, Affordable, Family car*) at a plant in Smyrna, Tennessee. Toyota is expanding its R&D investments in hybrid technology. Nissan put its money where its mouth is and has spent millions developing its electric-car program since the late 1990s. Since it was introduced in December 2010, the Nissan Leaf has become the best-selling electric vehicle, with more than 180,000 units sold. Toyota, on the other hand, has already sold some 8 million of its popular Prius cars since they were

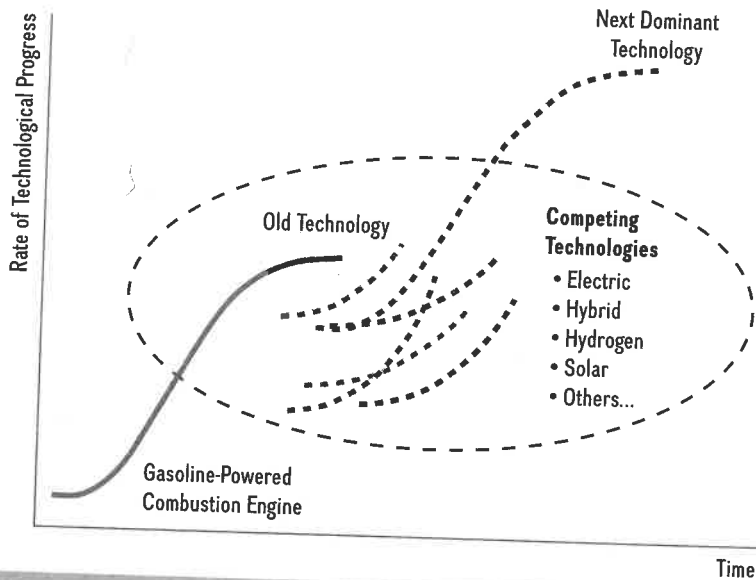


The Nissan Leaf, the world’s best-selling electric vehicle
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introduced in 1997. By 2020, Toyota plans to offer hybrid technology in all its vehicles. Eventually, the investments made by Nissan and Toyota will yield different returns, depending on which predictions prove more accurate.

An alternative outcome is that neither hybrids nor electric cars will become the next paradigm. To add even more uncertainty to the mix, Honda and BMW are betting on cars powered by hydrogen fuel cells. In sum, many alternative technologies are competing to become the winner in setting a new standard for propelling cars. This situation is depicted in Exhibit MC18.1, where the new technologies represent a swarm of new entries vying for dominance. Only time will tell which technology will win this standard battle.

EXHIBIT MC18.1 / Several Technologies Competing for Dominance



DISCUSSION QUESTIONS

1. Do you believe that the internal combustion engine will lose its dominant position in the future? Why or why not? What time horizon are you looking at?
2. Which factors do you think will be most critical in setting the next industry standard for technology in car propulsion?
3. Which companies do you think are currently best positioned to influence the next industry standard in car-propulsion technology?

4. What would you recommend different competitors (e.g., GM, Toyota, Nissan, and Tesla Motors) do to influence the emerging industry standard?

Sources: This MiniCase is based on: "Propulsion systems: The great powertrain race," *The Economist*, April 20, 2013; "Tesla recharges the battery-car market," *The Economist*, May 10, 2013; www.teslamotors.com/supercharger; "Renault-Nissan alliance sells its 250,000th electric vehicle," www.media.blog.alliance-renault-nissan.com/news/24-juin-10-am/#sthash.lwx1fRYG.dpuf; "Bright sparks," *The Economist*, January 15, 2009; "The electric-fuel-trade acid test," *The Economist*, September 3, 2009; "At Tokyo auto show, hybrids and electrics dominate," *The New York Times*, October 21, 2009; and "Risky business at Nissan," *BusinessWeek*, November 2, 2009.