

Managing the Change to e-Mobility

New Capgemini research offers recommendations to help the automotive industry prepare for the technological change that e-mobility will drive.

Executive Summary

With the emergence of e-mobility, the automotive industry is encountering fundamental changes unlike those seen for decades. Plug-in-hybrids, semi-hybrids, full-electric vehicles, battery technologies and mobility concepts that impact consumer usage are only a few of the many developments resulting from the emergence of the electric engine.

During the course of this evolution the automotive industry will face new technologies, new market participants in a new ecosystem, an uncertain future and the challenge to adapt to new conditions. Looking back, we know that similar change of this significance and complexity has resulted in strong economic growth, but at the same time has led to the disappearance of formerly successful companies.

To better understand the changes taking place today and those to come, Capgemini conducted research that examined former and current technological changes in selected industries to identify common patterns of failure for leading companies that either struggled or collapsed during the change. The research enabled us to develop initial recommendations to help automotive companies manage the technological change that e-mobility will drive. The study included an online survey of automotive industry executives as well as research using secondary sources.



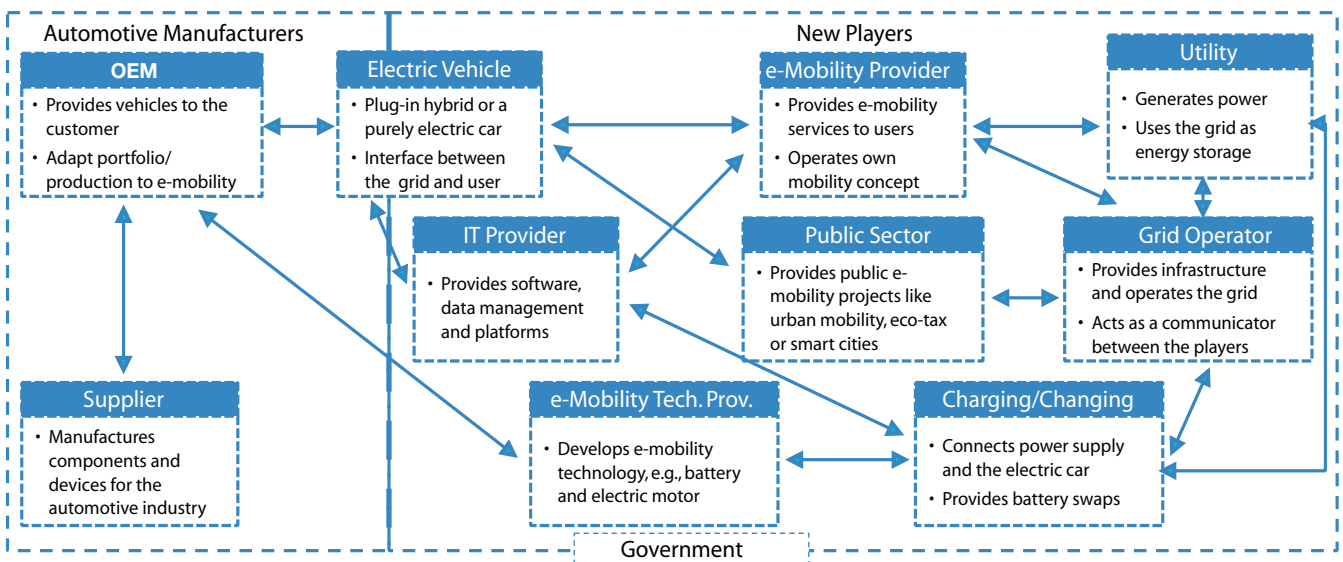
What We Mean by e-Mobility – and Why It Matters

E-mobility primarily involves the use of electric vehicles for different transportation needs and mobility concepts. In the broader sense the term is associated with the shift to a new network. This network consists of established players from the automotive industry and new players (such as e-mobility and IT providers, and battery charging/changing services) that are, in conjunction, shaping the industry with their different products and services (Figure 1).

The research makes it clear that e-mobility represents a fundamental technological change for the automotive industry. More than 80% of survey respondents agreed that the future of their industry lies in e-mobility, with the change expected to occur over the coming five to 20 years. This wide time span appears realistic as many technological and market-related questions remain unanswered today.

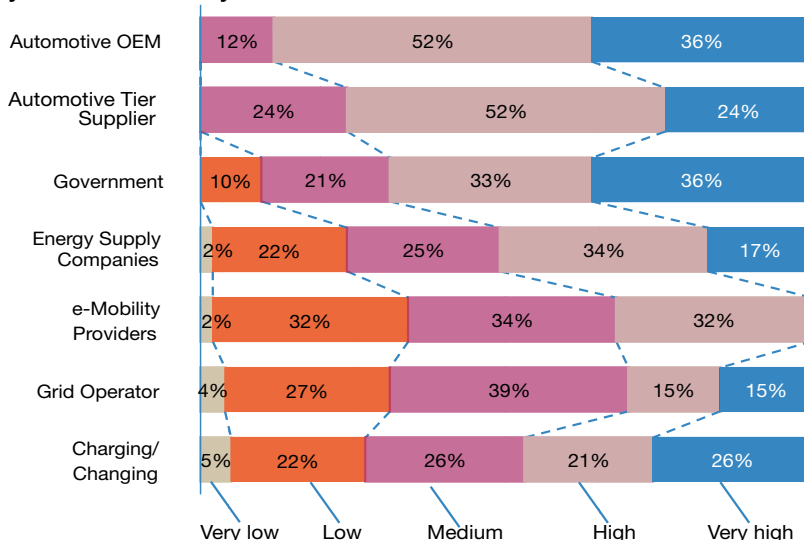
The automotive industry was identified as the most influential driver in the e-mobility network, with 88% of survey respondents indicating that the influence of automotive OEMs would be high or very high, and 76% expecting the influence of automotive Tier 1 suppliers to be high/very high (Figure 2). As a result, recommendations tailored to this industry will be essential to the successful development of e-mobility.

Figure 1: One View of the New e-Mobility Ecosystem



Source: Capgemini

Figure 2: Automotive Industry Will Drive e-Mobility – The influence of different players in the e-mobility network



Source: Capgemini

Past Patterns of Failure Reveal Keys to Future Success

An important aspect of the research was the analysis of four industries that underwent significant technological change, which led to the failure of many leading companies. The objective was to identify similar potential obstacles to the success of e-mobility. The industries analyzed were horse-drawn carriages (and the rise of cars), steam locomotives (leading to diesel-electric locomotives), typewriters (and the advent of personal computers) and mobile phones (leading to the emergence of smartphones).

Across these industries stable technologies offered a strong and

growing market that formed an excellent platform for financial success. Many players became successful companies. However, each industry faced a fundamental disruptive technological change that revolutionized the business. The technological breakthrough was not accomplished by companies of the old technology. Companies that remained with the old technology struggled to keep up with new innovations and lost market share to new entrants, and most disappeared over time.

A closer examination of these events identified a number of common factors contributing to the failure of established companies. These factors fall into five categories: innovation capability, substitution, competition, business partners and customers. For each of these categories we identified key patterns of failure.

Innovation capability: The extent of the technological change was underestimated, while at the same time the established companies' innovation capability was overestimated.

Substitution: Initially, new technologies emerged in niche markets but established companies noticed too late due to their focus on the old technology.

Competition: Driven by the technology change, the product itself was replaced as well as the whole system connected to it. The established companies failed to look for competitors in those new networks and therefore missed new threats and developments.

Business partners: A lack of collaboration resulted in the failure of partnerships and led to the loss of knowledge and market access.

Customers: Established companies failed to identify the real customer benefit of the new technology, leading to less customer acceptance.

Recommendations to Manage the e-Mobility Change

The following recommendations are intended to be a first step towards managing the e-mobility changes and to help companies avoid repeating these past patterns of failure.

Innovation capability increases by encouraging an ongoing innovation process and moving away from established structure.

Among survey respondents, 83% agreed that in order to master a technology change companies must implement new structures; and 79% said innovation capability and flexibility are key characteristics for a leader in e-mobility (Figure 3). Companies must internalize the idea that every technology is replaceable and encourage product and internal innovation.

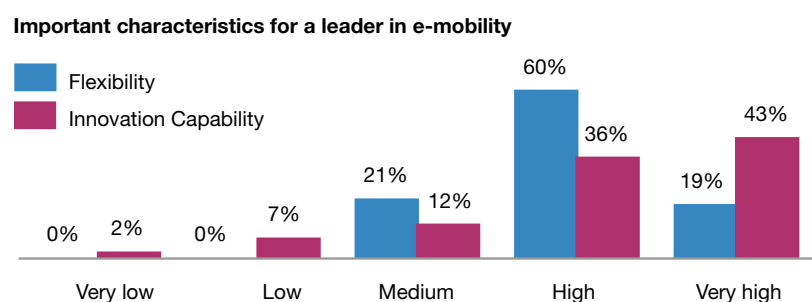
To recognize potential technology substitutes early enough, a view in every direction needs to be facilitated. Almost half of executives said it was somewhat or very likely that substitution and replacement

of current automotive products and systems would happen as a result of e-mobility. Companies need to establish strategy-independent structures and environments that allow them to look and think outside the box. Rather than maintaining current technologies, they must invest in new technologies.

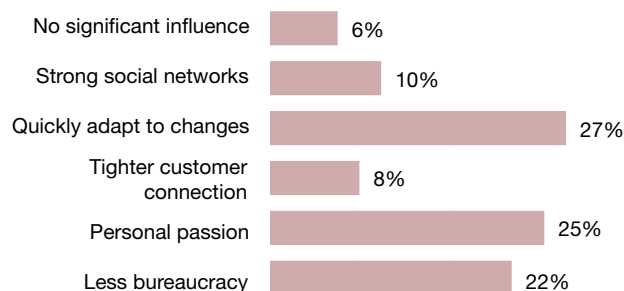
The definition of the core value of a company within a new technology system is essential for competitive positioning.

Survey respondents were split on whether they expect to see the emergence of an entirely new competitive structure (cited by 47%) or a continuation of traditional competition among known organizations (53%). It was not surprising, then, that 65% of executives said it was important to focus both on old competitors and their activities as well as on new technology without regard to competitors. Companies must clearly define the present and future role of their organization together with the core competencies to be transferred into the new e-mobility network.

Figure 3: Keys to e-Mobility Leadership



Reasons new players can significantly influence the development of new technologies



Source: Capgemini

Internal acceptance, easy collaboration and knowledge development are essential factors for a working partnership. Seventy percent of executives expect new partnerships from different industries to be important for e-mobility. Companies should base business partnerships on a distinct role in the network and on mutual knowledge transfer. Missing know-how and knowledge was identified by executives as the primary barrier to the development of new technologies. Companies need to create prerequisites for easy collaboration with partners and ensure that those partnerships are internally accepted.

Companies should identify the real benefit of the new technology for the customer and develop products and business models that support it. More than half of respondents said customer requirements are drivers for the technology change and 52% believe e-mobility is a customer need. Organizations must be prepared to quickly adapt to changing customer demands.

Conclusion: Moving from Electric Vehicles to e-Mobility

E-mobility will be the most important technological development in the automotive industry in recent years. Automotive companies must recognize that e-mobility will change the entire industry in its most basic aspects and that, sooner or later, they will need to give up their current positions, roles and products.

As the technology gradually finds its way into mass production and reaches a state of consumer readiness, automotive companies need to decide which direction they want to pursue and move their company to the e-mobility model. Companies that fail to adapt to the new requirements will lose their dominant market position and will play only a minor role in the e-mobility network.

Most importantly, the current focus on electric vehicles needs to be widened to the entire topic of mobility, requiring automotive companies to step back from the belief that the car will be at the center of the picture in the future. Instead, the customer/individual and his need for mobility will be at the center. The individual will look for different kinds of services to fulfill that need. The new focus will be on outcome and will lead to solutions that will combine different forms of mobility – cars, trains, planes and even full package solutions that may include different cars from different OEMs. To fulfill these new mobility needs, automotive companies must come to terms with the idea of integrating the car and services as part of a bigger system instead of focusing only on vehicle manufacturing.

Research Methodology

Capgemini's automotive e-mobility study is based on an online study conducted with 66 industry executives representing a wide range of primarily global vehicle manufacturers and suppliers, as well as on secondary research. The study also looked at former and current technological changes in selected industries and involved three steps:

1. Determine relevance for the automotive industry: First, e-mobility had to be verified as a true technological change to ensure the same conditions as in the selected industries.
2. Identify patterns of failure: From the primary and secondary research we developed and validated patterns of failure for the selected industries and today's automotive industry.
3. Develop recommendations: These patterns were used to develop recommendations to help automotive companies address the technological change.

For more information about Capgemini's automotive e-mobility research, please contact:

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