KPMG’s 20th consecutive
Global Automotive Executive Survey 2019

Seamless Vehicle2Grid transition is a treasure of islands – see them sooner with KPMG.

automotive-institute.kpmg.de
Fuel cell electric mobility
2017 (n = 953)
2018 (n = 907)
2019 (n = 981)
Percentage of executives rating a trend as extremely important
Connectivity & digitalization
Battery electric mobility
Fuel cell electric mobility
Percentage of executives rating a trend as extremely important

Share between ICE, PHEV, BEV and FCEV in 2040
"Multiple drivetrain technologies will co-exist alongside each other – global execs believe in a fairly even split of BEVs (30%), Hybrids (25%), FCEVs (23%) and ICEs (23%) by 2040.

Challenges for battery electric vehicles
"The main reasons for consumers to stay away from an electric car are price, charging experience and range concerns.

West European car production in 2019
"Western Europe continues on a downward spiral – 2 out of 3 (67%) execs still believe that by 2030 less than 5% of global car production will originate in Western Europe (~15% today).
Dear Readers,

As the mobility ecosystem matures, we often wonder what developments can be expected and which route to take. Over decades, this question could be answered easily in a global context, because our offer was driven by the market. Steered mostly by technology developments for customers and markets, we determined which developments would be introduced to which markets. Previously, there were not many alternative forms of personalized transportation – to my mind, one thing is certain when envisioning the future: there will be no global answer and we shall differentiate between product-, customer- and ecosystem value on the roadmap as we explore the route towards treasure island.

For 20 years now, looking far beyond the obvious has always been at the core of our annual Global Automotive Executive Survey. Throughout this time, we have always aspired to leave our readers a little puzzled by or even questioning the thought-provoking ideas that we have published. Looking back on the statements we’ve made in recent years, I am very proud to say that all of these provocative ideas have transformed into what can be considered common knowledge today.

“Seamless Vehicle2Grid transition is a treasure of islands waiting to be explored like a treasure island.”

In order to support our readers on this exploration roadmap, this year we have created the “Automotive Institute” dimension in addition to the executive and consumer perspective, which provides our readers with a comprehensive tool for looking beyond the obvious.

I am therefore – as always – very delighted to invite you to join us in exploring this future ecosystem and what’s next; because nothing drives progress faster than embracing new ideas together.

Enjoy the read and stay tuned!

DIETER BECKER
Global and EMA Head Automotive Practice
FOR THE 2019 SURVEY WE GATHERED THE OPINIONS OF 981 EXECUTIVES FROM 41 COUNTRIES.

Respondents by job title

- CEO/President/Chairman: 25%
- C-level Executive: 18%
- Head of Department: 16%
- Business Unit Head/Functional Head: 9%
- Business Unit/Functional Manager: 5%

Respondents by regional cluster

- North America: 26%
- Western Europe: 11%
- Eastern Europe: 11%
- Mature Asia: 9%
- North America: 14%
- Western Europe: 10%
- Eastern Europe: 9%
- Mature Asia: 6%

Respondents by company revenue

- Over $10 billion: 26%
- $5 billion to $10 billion: 25%
- $1 billion to $5 billion: 12%
- Less than $1 billion: 15%
- Less than $100 million: 9%
- Between $100 million and $500 million: 12%
- Between $500 million and $1 billion: 5%
- Less than $100 million: 5%

Note: (n=981) map shows number of respondents from each country.

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Be inspired by the key headlines

The electric vehicle: mobility’s key trend

Companies are actively looking into a repositioning phase.

The electric era: more reality than fiction.

China is the future e-mobility market – more than ever before, execs agree.

Underestimated driving forces

That China will leapfrog the market with its battery electric vehicles.

Impact of e-mobility in the world

3/4 execs agree that raw materials will drive a country’s preferred powertrain.

What about separate lanes for autonomous & electric vehicles, which the global race will be won by the entity with the best strategy.

Separation instead of integration in islands of autonomy – agreement.

For vehicle data there is growing evidence for OEMs being the winner.

Future of combustion

Multiple internal combustion technologies will co-exist alongside each other – global executive leaders believe 34% to 36% of vehicles will be hybrids, 34% to 38% will be electric, 22% to 28% will be battery electric.

Auto mobility

Execs agree with the development priority: proven power seas.

The demand for combustion engines is falling globally.

Electric readiness

2/3 of execs believe that less than 5% of vehicles will be produced in Western Europe by 2040.

Fuel cells have the least investment priority among execs

For consumers, the most significant entry barrier is the electric vehicle’s limited range.

Battery electric

25% of execs believe that less than 5% of cars will be produced in Western Europe by 2040.

Multiple drivetrain technologies will co-exist alongside each other – global executive leaders believe 34% to 36% of vehicles will be hybrids, 34% to 38% will be electric, 22% to 28% will be battery electric.

TCO

A significant increase in debt levels of OEMs

The increasing attractiveness of on-road mobility.

Customer centricity

Execs strongly agree that the only viable option for physical retail outlets is service factories, used car hubs or retail outlets will be transforming to service factories, used car hubs or retail outlets will be transforming to service factories, used car hubs or retail outlets will be transforming.

Investment area

Customer relationship

Co-operation

The product will be the driving force behind retail strategy – focusing more on value-added services.

Funding

Data ownership & trust

Exploring the future ecosystem
The perfect storm: megatrends beyond the obvious as breakwaters for the automotive industry

After two years in second place, connectivity and digitalization is now back as the number one key trend. It is not surprising that 59% of the respondents rank connectivity and digitalization as the most important automotive key trend up to 2030. This helped return it to the top-ranking trend after 2016, since a new future mobility ecosystem is evolving, which is based on the pillars seamlessness, individualized, safe and on-demand. The megatrend beyond the obvious “underestimated driving forces” indicates that in this new ecosystem various drivetrain technologies will very likely exist side by side.

The automotive industry is heading into a restructuring phase in which it becomes steadily more important to build on the core competencies and expertise developed over the last decades, while at the same time defining the role in the new ecosystem to secure future revenue streams.

From architect to executor: underestimated driving forces lead to change in the technological agenda
Executives are convinced that while OEMs have declared themselves responsible for setting the technological agenda in past decades, the regulator will primarily drive the agenda for OEMs in the future – not to forget finally being driven by industry policies. One of the most interesting results in this context: 3 out of 4 execs believe indigenous raw materials to be the actual driver for a country’s preferred powertrain technology.

Are we heading towards a mobility and logistics ecosystem?
The majority of all executives (60%) believe that personal mobility and logistics can no longer be considered separately in the future. The marginal utility of consumers and the extent of cooperations between the various players determine the different regional landscapes of the ecosystem. A staggering number of executives (73%) is convinced that traditional public transport solutions will be replaced by on-demand capsules 10 years from now.
Global Automotive Executive Key Trends until 2030

After two years in second place, connectivity and digitalization is now back as the number one key trend.

It is not surprising that 59% of the surveyed executives rank connectivity and digitalization as the most important automotive key trend up to 2030. This trend has returned to the top ranking after 2018, since a new future mobility ecosystem is evolving, which is based on the pillars seamless/individual, safe and on-demand.

This year, for the first time, we surveyed executives on key trends for 2025, but for 2030. The results show that the trends connectivity and digitalization, battery electric vehicles and fuel cell electric vehicles are the overarching key trends across all regional clusters and stakeholders in 2030. Downstream players rated the key trends in the same order as the executives as a whole. Among the upstream players, the trends also occupy the top three positions, but with battery electric vehicles, a product-driven trend is still at the top. The product-driven trend is particularly evident among OEMs, who do not share the same consensus. As it turns out, OEMs up their confidence in electric mobility, as FCEVs, BEVs and HEVs are the top trends this year.

All in all, it is not surprising that connectivity and digitalization has returned to first place again. After all, connectivity is clearly the single most important prerequisite for the provision of additional services and content provided in the car and emphasizes the need for an easy-to-use and seamless human-machine interface, which will become increasingly important as a new ecosystem evolves.

Global Automotive Executive Survey 2019

Note: Executive (n=841); figures and deviations from the previous year (n=907) in percent.

- Connectivitiy & digitalization
- Battery electric mobility
- Fuel cell electric mobility
- Hybrid electric mobility (since 2018)
- Value growth in all regions
- Understanding the mobility ecosystem (since 2019)
- Creating value out of big data (since 2018)
- Autonomous and self-driving vehicles
- Mobility-as-a-service
- Platform strategies and standardization of modules
- Decentralization of internal combustion engine (ICE)
- Regionalization of production in Western Europe

Percentage of executives rating a trend as extremely important

By 2030 less than 5% of the global car production will originate from Western Europe (15%)

Western Europe is still a dominant player.

According to this year’s results, 2 out of 3 (67.4%) executives believe that by 2025 less than 5% of global car production will originate in Western Europe. This would only equal 6.1 million of global production by 2030, based on current market forecasts. Interestingly, regional results show that respondents from India & ASEAN (82%), North America (80%) and China (77%) agree most. The results indicate a dramatic development in Western Europe, where we see moving into a strong restructuring phase, which means that the entire market will have to think much further than just about a huge value chain shift.

Many new cooperation models will be necessary in the short term, otherwise the loss of some very big suppliers and the step down of some mass manufacturers will lead to significant restructuring. In the long run, the future, we will also see a stronger distribution of roles and specialization among the different players. There will be players whose sole focus will be on remanufacturing and others that will focus on creating what will be OEMs that are just contract manufacturers, while at the same time tier one suppliers and the step down of some mass manufacturers will lead to significant restructuring.

Creating seamless connectivity is a real opportunity for Western Europe to secure profitability. It is necessary for European OEMs to invest heavily in automation around Industry 4.0 and digital labor in order to further utilize and expand their technological advancement and to create assets, which are best equipped for easy and seamless connectivity with the customer’s life.
India as proof that thinking in isolated islands is not a sustainable success model

With the upswing in China, a new demand developed. This demand has now become a dependency of car manufacturers as China accounts for a huge part of the global production. As the upswing in China gradually slows down and China’s industrial policy aims at dominating the local market in particular, the search for new markets with additional demand is intensifying again. At this point, many think of the locally supplied market of India and draw parallels to the upswing of China. However, the Indian and Chinese markets differ enormously in two respects: macroeconomic situation and industrial policies. Starting with the history of India’s origin, after which contemporary India has emerged from a multitude of independent provinces and is still divided into 29 federal states, India still has to tackle strong insular thinking. This is particularly evident in heterogeneous industrial policies, standards and norms and the still underdeveloped infrastructure e.g. roads and electricity grid. The situation is quite different in China. There, the infrastructure is determined by uniform industrial policy.

In addition, the two regions differ in terms of their macroeconomic situation. While the middle and upper class in China is still growing and there is a continuously growing personal disposable income per capita, despite India’s growth, personal disposable income development is still far below that of China. Thus India remains a market that is still characterized by island thinking and is designed for products that appeal to a less unified market with an underdeveloped infrastructure. One opportunity for growth that still exists is supplying automotive markets with parts.

China is the e-mobility market of the future!

The cobalt analysis presented here is an excerpt from our detailed raw material analysis, which shows the geographical and temporal development of more than 40 raw materials. Cobalt is ideally suited to illustrate the Chinese path to the e-mobility market of the future as an example of a country strategy within the regional shifts topic. The largest producer of cobalt, which is an essential component of batteries for electric cars, is Congo. Although China itself is the second largest producer in the world, China is pursuing an aggressive strategy of buying cobalt mines in Congo to reduce its dependence on other countries and make other countries even more dependent on China.

Source: © KPMG Automotive Institute; EIU Database (2018)
The richness of mineral resources of a country decides on which powertrain technology will dominate: countries with a high degree of raw materials such as oil and gas will go for combustion engines and fuel cell technology (e.g. China) – countries with high electrical energy capacity will rather go for the electric powertrain (e.g. China).

The technological agenda is determined by external factors. Locally based on the motto “surprise your customer”, for decades now the automotive industry has set the technological agenda along with its target of delivering a growing number of technological and innovative products to the market. The majority of executives agree that this freedom of design will no longer be available to OEMs in the future. For 71% of the surveyed executives it is clear that the future technological agenda will be influenced considerably more by regulators.

In the past OEMs could dominantly set the technological agenda for the market. Do you believe that in the future the technological agenda of OEMs will become much more driven by regulators than in the past?

Regulators make their decisions based on prevailing national automotive industrial policy, which is driven by external factors due to environmental issues, available raw materials, infrastructure or changing customer behavior.

On the question of which powertrain technology will dominate, the opinion of the surveyed executives regarding the influence of raw materials reflects how much influence the available raw materials of a country have on technological decisions. 77% of executives agree that countries that are rich in raw materials, such as oil and gas, will strive for combustion engines and fuel cell technology (e.g. USA) whereas countries with high electric capacity will tend to target the electric powertrain (e.g. China).
In the past, product offerings have mainly been set by the OEM technological agenda, but in the future we see a change of perspective: raw material access and energy production sources affect industrial policies and therefore determine the OEM product portfolio. In addition, markets will have to be redefined and stronger segregated by demographic, available infrastructure and economic factors along with customer needs, to form islands of mobility.

A balanced mix of alternative drivetrain technologies and ICEs will be the product portfolio of the future. Executives set a clearer investment strategy in drivetrain technologies this year, with strong regional differences, signaling a clear dependency between industrial policies, raw material access and OEM product portfolios. A balanced mix of alternative drivetrain technologies and ICEs will be the product portfolio of the future. Each technology will have a right to exist depending on country, region and application.

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E-readiness is far away from being hassle-free and seamless. E-mobility is on the top of the executive key trend agenda, but its roll-out is progressing rather slowly. Industrial policies, raw material access and sources of energy production are simultaneously main drivers and hurdles for e-mobility, depending on the country/region. Cost is the biggest obstacle for consumers at first sight, but we argue that the increasing TCO paradigm across the entire lifecycle will be beneficial for e-mobility. A hassle-free infrastructure set-up and lack of a seamless charging experience seem to be the true showstoppers for e-mobility. To successfully tackle these challenges, vehicle manufacturers must enter new territories – expanding into a service-driven business by providing a positive charging experience throughout the entire customer lifecycle.

Autonomous driving will present individual service and product features in islands of autonomy. Islands of autonomy – 71% of execs still believe that autonomous and non-autonomous vehicles will result in severe safety if not separated on the road. Autonomous driving will be a game-changer, but when do execs and consumers expect fully autonomous vehicles on the road? One of our firm beliefs is that our focus is far too great on isolated technologies and not great enough on ecosystems. If we would concentrate on application e.g. city and then one solution, which includes urban, and infrastructure, it would be much easier to develop business cases and solutions. Let’s leave technically isolated solutions and migrate toward ecosystem solutions, which could more accurately describe environment, necessary infrastructure and technology built-in vehicle solutions. The companies who will be first to combine application thinking (city, rural, countryside) with ecosystem-driven technology set-ups (electric/connected/shared/autonomous) and infrastructure joint ventures (connectivity (5G), electricity grid and traffic infrastructure) will be the future leaders in mobility and transportation offerings.

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Consumers still prefer hybrids and ICEs over fully electric vehicles

Interestingly, consumers have a clear favorite drivetrain technology for their next car: hybrids. This distinctly shows that most consumers have significant doubts about the market maturity of complete new alternative technologies such as BEVs and FCEVs, a point which is further strengthened by the fact that ICEs even remain second choice for consumers. Looking at consumer choices more closely, we discover a clear preference pattern based on living circumstances. Consumers from more rural areas clearly prefer ICEs over all other technologies. Of course, every new powertrain will only be successful if the corresponding supply chain does not generate any burden for customers and this, to a large extent, on the area of application.

Multiple drivetrain technologies will co-exist alongside each other

It's completely understandable that we will have a mix of different drivetrain technologies. FCEVs, BEVs, hybrids and ICEs will co-exist and complement each other, varying in their respective areas of application, car size, also factoring in industrial policies and dependency on raw materials. As described in the chapter “Underestimated driving forces”, there is a regulator view on raw material access. Therefore, the request for new powertrain solutions is coming less from the consumer and is more a matter of industrial policy by country and region, which is driving the product offering.

Product value | Future of combustion

Which powertrain technology would you choose if you were to buy a car over the next 5 years?

<table>
<thead>
<tr>
<th>Powertrain Technology</th>
<th>North America</th>
<th>South America</th>
<th>Western Europe</th>
<th>Rest of World</th>
<th>Mature Asia</th>
<th>India and ASEAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICE</td>
<td>19%</td>
<td>16%</td>
<td>22%</td>
<td>14%</td>
<td>25%</td>
<td>19%</td>
</tr>
<tr>
<td>BEV</td>
<td>9%</td>
<td>12%</td>
<td>14%</td>
<td>35%</td>
<td>6%</td>
<td>11%</td>
</tr>
<tr>
<td>PHEV</td>
<td>12%</td>
<td>7%</td>
<td>22%</td>
<td>13%</td>
<td>4%</td>
<td>9%</td>
</tr>
<tr>
<td>FCEV</td>
<td>7%</td>
<td>10%</td>
<td>8%</td>
<td>8%</td>
<td>25%</td>
<td>9%</td>
</tr>
</tbody>
</table>

Note: Consumer (n = 2,028); percentages may not add up to 100% due to rounding; figures in percent

Product value | Future of combustion

What is your opinion on the share between ICE, PHEV, BEV and FCEV in 2020, 2030 and 2040?

2020

North America

South America

Western Europe

Rest of World

Mature Asia

India and ASEAN

Global

What is your opinion on the share between ICE, PHEV, BEV and FCEV in 2020, 2030 and 2040?

2030

North America

South America

Western Europe

Rest of World

Mature Asia

India and ASEAN

Global

2040

North America

South America

Western Europe

Rest of World

Mature Asia

India and ASEAN

Global

Note: Executives (n = 981); percentages may not add up to 100% due to rounding; figures in percent; shares for 2020 are based on global production forecast for 2020; 2040 volumes are estimated on CAGR 2028-2033; *LMC Automotive

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KPMG’s Global Automotive Executive Survey 2019
Please rate the degree to which your company plans to invest in the following powertrain technologies over the next 5 years or which technology you believe to be the one receiving the highest investments?

**Product value**

**Electric readiness**

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**Investment strategies focus on hybrids, followed by BEVs.** Product-driven drivetrain technologies continue to dominate the executive key trends this year – placing BEVs, FCEVs and hybrids on positions 2–4 on their agenda, while downsizing ICEs is found almost on the bottom of the key trends ranking. However, in previous years our surveyed execs have voiced strong support for the hypothesis that ICEs will continue to be more important than electric drivetrains for a very long time. This year we therefore again asked executives about their investment strategy in different drivetrain technologies.

**Execs have a clearer investment focus with strong regional differences.** The results show that the investment willingness of executives in drivetrain technologies is decreasing on average from 87% in 2017 to 70% in 2018 and 67% in 2019. What is more obvious, is that execs seem to have a more focused investment strategy in contrast to previous years.

Hybrids (71%) and BEVs (71%) are the clear investment focus of global execs. Surprisingly, FCEVs (80%) and ICEs (85%) have the least investment priority on a global level, and regionally the results are significantly different:

- **Execs from North America, South America, and India & ASEAN** prioritize hybrids and BEVs clearly, while Chinese and Western European execs focus primarily on the purchasing price of a car, but neglect the TCO advantages e-mobility offers due to the currently cheaper variable cost (which could also increase by higher demand in the future).

**Executives continue to clearly consider the unsolved infrastructure problem as the main obstacle for the success of BEVs.** The majority of execs believe that BEVs will fail due to challenges related to setting up the required infrastructure. These doubts are especially strong among energy service providers, as they are most likely aware that a sufficient infrastructure goes beyond policy considerations and has to consist of investing in the necessary backbone to avoid power grid overloads or shortages of general power supply.

**BEV will fail due to the challenges related to setting up the required infrastructure.** Challenges for battery electric vehicles (BEV) are slowly but steadily gaining importance in the product portfolio of OEMs. As analyzed in the “Future of combustion” section, executives believe that BEV will account for the largest share (38%) of vehicles on the road by 2040. Looking at today’s share of electric vehicles on the road, this seems challenging and ambitious for many reasons as BEVs still have to overcome existing obstacles. The main reasons for consumers to stay away from an electric car are price (35%), charging experience (34%) and range concerns (18%). Consumers still seem to focus primarily on the purchasing price of a car, but neglect the TCO advantages e-mobility offers due to the currently cheaper variable cost (which could also increase by higher demand in the future).

**Product driven drivetrain technologies continue to be more important than electric drivetrains for a very long time.** This year we therefore again asked executives about their investment strategy in different drivetrain technologies.
Mixed traffic between autonomous and non-autonomous vehicles will lead to severe safety issues and liability claims.

Autonomy roll-out
The majority of global automotive executives (73%) believe in an operational roll-out in mature markets by 2030 the latest.

By when do you expect fully self-driving cars to be operational on the road in mature markets?

<table>
<thead>
<tr>
<th>Year</th>
<th>Agree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>27</td>
<td>13</td>
</tr>
<tr>
<td>2025</td>
<td>37</td>
<td>11</td>
</tr>
<tr>
<td>2030</td>
<td>49</td>
<td>6</td>
</tr>
<tr>
<td>2040</td>
<td>53</td>
<td>5</td>
</tr>
</tbody>
</table>

In our opinion this is a very ambitious, probably excessively ambitious goal, because full autonomous driving will have to overcome significant obstacles and challenges such as infrastructure setup, zero-error tolerance technology, regulatory boundaries, understanding mobility patterns and consumer mind shift.

Mixed traffic as risk
Separation instead of integration in selected islands of autonomy – human drivers and autonomous vehicles don’t mix. 71% of executives still believe that autonomous and non-autonomous vehicles will result in severe safety issues if not separated on the road. They prefer to see autonomous vehicles driving in separate zones and avoiding mixed traffic situations, to ensure road safety.

Autonomy is a question of application – not entire countries will have autonomous vehicles but rather will we see certain islands of autonomy by city, region, etc.

Geographical markets have traditionally been set by countries and most OEMs today still cluster their markets in the same "old-fashioned" way. As described in other chapters, product and service differentiation will have to be more closely aligned to customer needs in order for companies to be competitive in the future. This implies that markets which have existed for decades will no longer be recognizable.

This has especially high relevance for autonomous driving. 84% of executives and 73% of consumers agree with the hypothesis that autonomy is a question of application, which means that autonomous driving will not be rolled out in entire countries, but rather there will be individual and spatially limited solutions.

In KPMG’s 2018 survey “Islands of autonomy”, we already assessed that the markets of the future will be clustered in cities, but not exclusively. These clusters will be located in regions/metroplan areas across the globe that fit certain demographic, infrastructural and economic factors.

Each of these markets will require its own set of products and services, which OEMs and other mobility stakeholders must be able to provide in order to be competitive in each market. As argued throughout this study, the implication is not solely driven by the development of autonomous technology. Within the full roll-out of autonomous driving, other product (electric mobility) and service-driven (mobility on demand) features will be incorporated within one hassle-free and seamless mobility ecosystem.

Note: Executives (n=84); percentages may not add up to 100% due to rounding; figures in percent
CUSTOMER VALUE

Reinventing, reimagining and eventually rebuilding and reorganizing existing retail structures can only succeed at the core of the customer.

Customer value puts the spotlight on the customer, meaning that understanding who the customer is must be a priority, whereby the emphasis will now be increasingly placed on differentiating between different customer archetypes. These different customer archetypes all have individual needs, preferences and requests at individual touchpoints based on their environment. This makes it necessary to manage numerous customer journeys in parallel, each requiring customized and highly individual attention.

From re-tail to me-tail: understanding the 5 “My ... ” that shape customer purchasing decisions in times of fundamental transformation

The retail landscape is in the middle of a fundamental transformation phase. Almost half of all surveyed executives (48%) are highly confident that the number of physical retail outlets, as we know them today, will be reduced by 30-50% by 2025. This being the case, the question is less about the decrease in the number of retail outlets, but rather about how to reinvent, reimage and eventually rebuild and reorganize existing structures and how to identify new revenue streams for retailers. Retail outlets shall evolve into service factories, used car hubs or emotional customer touchpoints that reflect brand values and their attributes – certainly not an easy task, but if these service centers do not reflect what shapes and defines a customer purchasing decision around the 5 “My ... ” it will be nearly impossible to accompany the customer over the entire lifecycle.

Customer centricity as the first step towards understanding the mobility ecosystem

Over the past three years, there has been continuous growth in the number of executives who believe that OEMs will own the direct customer relationship in the future. The opinion of the execs is also confirmed by the more than 2,000 consumers surveyed this year, who year for year are increasingly taking the side of the OEMs. In summary, this year 49% of executives and 42% of consumers agree that OEMs will win the race for customer relationship by 2025.

Mobility and function on demand: as enabler of new customer experiences and production systems?

Mobility on demand is supported by the trend towards better use of resources. In combination with function on demand, it holds a high potential for change and could lead to a totally changed customer relationship. Executives have a very clear opinion about the success factors for a sharing economy in the mobility sector: consistent with the previous year, a trustful brand was rated at the top, with 41%. In addition, executives and consumers agree that the greatest potential for function-on-demand features lies in navigation systems (27%), adaptive cruise control (22%) and power upgrade (16%), which make it possible to bring individualization into the vehicle during the utilization phase and not, as is already the case today, during production phase.

Are OEMs winners of the customer relationship battle?

49% of executives and 42% of consumers believe OEMs to be the big winners in the battle for the direct customer relationship.

"Mobility and function on demand: as enabler of new customer experiences and production systems?"

Execs and consumers agree that the greatest potential for function-on-demand features lies in navigation systems (27%), adaptive cruise control (22%) and power upgrade (16%).

"Are OEMs winners of the customer relationship battle?"

49% of executives and 42% of consumers believe OEMs to be the big winners in the battle for the direct customer relationship.

"The retail landscape is in the middle of a fundamental transformation phase."

Almost half of all surveyed executives (48%) are highly confident that the number of physical retail outlets, as we know them today, will be reduced by 30-50%.
Retail landscape undergoing dramatic transformation – executives show the need for reinvention

The executives in this year’s survey have a clear opinion: almost half (48%) of all surveyed executives are highly confident that the number of physical retail outlets as we know them today will be reduced by 30–50% already by 2025. Compared with last year’s results, however, it is also clear that the change will not take place as quickly as may be expected. Nevertheless, the question is less about the decrease in the number of physical retail outlets but rather about how to reinvent, reengineer and eventually rebuild and reorganize existing structures.

Keeping pace with what essentially drives the customer is inevitable for all retail activities. When talking about the future of retail organizations, we must consider what shapes and defines today’s and tomorrow’s customer purchasing and experience requirements across 5 key dimensions:

1. My motivation: characteristics that drive consumer behavior and expectations
2. My attention: the way consumers direct their attention
3. My connection: understanding how consumers want to connect to devices, information and each other
4. My attention: the way consumers direct their attention
5. My motivation: characteristics that drive consumer behavior and expectations

If a retail organization is merely driven by old schemes and product-driven profit center thinking and ignores putting the customer at the center of attention, there will be no chance to hold a place in the world of the 5 “My...” and the retail landscape will be outdated over time. Retailers must show the need for reinvention.

Role of physical retail outlets must undergo transformation into service factories, used car hubs or focus on an E-management approach

According to execs, this year the absolute majority (82%) strongly agrees and thereby even exceeds last year’s opinion, that the only viable option for physical retail outlets will be the transformation into service factories, used car hubs or focusing on an E-management approach, where the customer is recognized at every single touchpoint.

In order to better grasp what a customer- and service-oriented retail landscape could look like, we would like to outline how a professional store for mobile devices is set up: there will be product presentations with buttons to press if help is needed, a separate desk where people with dedicated skills will explain products, service stations in front of the customer. So the question is, why isn’t such a structure in place at all customer touchpoints? Why is there no differentiation between customer touchpoints? Why not have software-driven checkpoints, where only the operating system is the focus, plus a lot of different customer touchpoints, where the asset can be physically and virtually presented and staff could explain functionality? Finally, there could also be desks manned with people who solve individual problems and take time to be present for individual solutions.
Considering the business model and consumer behavior changes, who do you think will own/take over the customer relationship until 2025?

Are OEMs winners of the customer relationship battle?

According to this year’s results, the vector in the battle for customer relationship has not yet been finely determined, but OEMs have made giant leaps forward in owning the direct customer relationship. Over the past three years, there has been continuous growth in the number of executives who believe that OEMs will own the direct customer relationship in the future. The opinion of the execs is also confirmed by the more than 3,000 consumers surveyed this year, who, year for year, are increasingly taking the side of the OEMs. In summary, this year 49% of executives and 42% of consumers agree that OEMs will win the race for customer relationship by 2025.

The other winners this year are ICT companies, since both executives and consumers are increasingly taking the opportunities for ICT companies as better than in the previous year. It is also interesting to note a detailed look at the regional differences in the results. The dominance of OEMs is particularly strong in India & ASEAN (83%) and North America (87%). By contrast, the belief in ICT companies in North America (71%) is below the global average (13%). This is astonishing, especially because most of the successful ICT giants are headquartered in the USA, where both executives and consumers assess the relationship battle. In KPMG’s opinion, consumer willingness over the next 5 years, nearly 60% of executives absolutely agree that companies that do not focus on data & cyber security are at extremely high risk of sacrificing their brand reputation and not providing real value in their data usage. In this context, it will be even more important to develop a secure digital environment with seamless connectivity and extra features that build maximum customer trust. This is also emphasized by this year's survey results, as 56% of consumers make data & cyber security an absolute prerequisite for their purchasing decision, followed by TCO to which more than half of all consumers are in agreement.

Seamless connectivity is still outstanding

Execs and consumers agree that the greatest potential function for demand features continuously lies in navigation system, adaptive cruise control and power upgrades. In KPMG’s opinion, consumer willingness to pay for these additional features is still outstanding.

Which function on demand features would you be most willing to pay for?

Note: Executives (n=981); Consumer (n=2,028); figures in percent

Data privacy & cyber security are the most important purchasing criteria

Whether purchasing a vehicle or using a mobility service over the next 5 years, nearly 60% of executives absolutely agree that companies that do not focus on data & cyber security are at extremely high risk of sacrificing their brand reputation and not providing real value in their data usage. In this context, it will be even more important to develop a secure digital environment with seamless connectivity and extra features that build maximum customer trust. This is also emphasized by this year's survey results, as 56% of consumers make data & cyber security an absolute prerequisite for their purchasing decision, followed by TCO to which more than half of all consumers are in agreement.

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**KEY TAKEAWAYS**

- The goal is not to do everything at once, but rather to wisely define who you want to be and choose when to compete or cooperate with other ecosystem players.
- The industry is thereby differentiated by 3 types of players: (1) hardware-oriented players who are flexible, cost-efficient and function simply, (2) those who aim to create a product, which does act as seamlessly as possible by combining hardware and software (not only focusing on vehicles) and eventually (3) those creating a comprehensive product that can be seamlessly integrated into a customer’s daily life.
- Complete mindset change: cooperation of auto companies and ICT players becomes more realistic than ever for executives.
- With tough market conditions and increasing dominance of tech giants, as well as the complexity that new products and especially ever-faster evolving customer-oriented services have brought to the automotive industry, it is no longer possible for traditional auto players to act alone and still cover the entire value chain – cooperation with wisely selected players from the auto industry as well as from converging industries is the secret map to treasure island.
- A data business model is only as good as the benefit it creates and depends on who benefits – company or customer.
- OEMs turn out to be the big winners: in the race for upstream-oriented vehicle data, auto manufacturers have stood their ground – consumer data (downstream data) is finally lost to more agile non-asset based digital players. Auto manufacturers must learn to create real value for both their companies and consumers for different hierarchies of data – always remembering the fact that safety-oriented services around data & cyber security will always be at the core for executives and consumers alike.
- Zeroing in on silent revolutions to be ready for revolutionary change.

**ECOSYSTEM VALUE**

Unlocking ecosystem value by defining your company’s role and readiness to react to silent revolutions.

- Co-competition
  - "Gravity further shifts towards the ICT companies."
  - In 2018, market capitalization of the top 10 mobile tech and web digital companies is almost 5 times as high as that of top 50 traditional auto companies (OEMs & suppliers).

- Data supremacy
  - "Auto OEMs are considered most trustworthy as guardians of product-centric vehicle data."
  - Every third executive states that product-centric upstream data belongs to the OEM – consumers still hope to own it themselves.

- Revolutions always start silently
  - "Importance of financial service entities on the rise in times of increasing debt levels."
  - 81% of surveyed execs show confidence that financial service entities will gain importance as debt levels rise due to mobility service offers & fleet management instead of mere unit sales.

**Ecosystem at risk**

Unlocking ecosystem value by defining your company’s role and readiness to react to silent revolutions.

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Zeroing in on silent revolutions to be ready for revolutionary change.

A change in business model, as the automotive industry is currently experiencing, is a process that is slow and silent, at times even creeping, when suddenly a gamechanger crops up, a scarcity of raw material, changing industrial policies or lack in infrastructure may lead to an even more fundamental revolution – one which some believe they can already see developing today. The future is just around the corner: outdated market share calculations, decreasing profitability of traditional auto manufacturers and the rise of financial service companies to overcome increasing debt levels or open the future into the world of the electric cars. Let us explore our thoughts and prepare yourself for tomorrow.
Before deciding with whom to compete and where to cooperate, defining your company’s role in the future ecosystem is essential. The motto is: decide on who you want to be and who will be your partner. The whole industry (OEMs and suppliers) can thereby be divided into three categories:

1. Hardware-oriented asset-based players: focusing on performance levels, e.g. performance of infrastructures and applications.
2. Software-oriented players: enriching with software features and functionalities as seamless as possible.
3. Software-oriented players providing a release-free daily integration: as easy as possible.

These players will be supplied by the first group and will focus on providing a seamless customer experience and the human machine connection by defining your company’s role in the future ecosystem is essential.
Do you expect ICT companies and automotive manufacturers to compete or cooperate in the future?

<table>
<thead>
<tr>
<th>Year</th>
<th>North America</th>
<th>Western Europe</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>65%</td>
<td>56%</td>
<td>29%</td>
</tr>
<tr>
<td>2018</td>
<td>59%</td>
<td>53%</td>
<td>71%</td>
</tr>
<tr>
<td>2019</td>
<td>59%</td>
<td>56%</td>
<td>84%</td>
</tr>
</tbody>
</table>

Please rate the importance of the following strategies for the future success of your company.

- **Cooperation with players from converging industries**
- **Corporate partnerships like joint ventures and strategic alliances**
- **Organic growth**
- **Outsourcing of (non-)core activities to suppliers / contract manufacturers**
- **Mergers & acquisitions (non-asset based)**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>2016 (n=280)</th>
<th>2017 (n=280)</th>
<th>2018 (n=280)</th>
<th>2019 (n=280)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coop.</td>
<td>56%</td>
<td>53%</td>
<td>56%</td>
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<td>Partn.</td>
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<td>47%</td>
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<td>Organic</td>
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<td>Outsourc.</td>
<td>49%</td>
<td>47%</td>
<td>49%</td>
<td>51%</td>
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<tr>
<td>Mergers</td>
<td>34%</td>
<td>32%</td>
<td>34%</td>
<td>35%</td>
</tr>
</tbody>
</table>

Note: Executives (n=1501); figures and deviations from the previous year 2018 (n=1407) in percent
Investment paths provide a good indication of potential upcoming co-competition scenarios and the strength players already currently have in the ecosystem.

Discussing these main investment areas for different types of players, it is interesting to analyze investment paths into start-ups worldwide. It is hereby already possible to detect main investment interests and patterns over years. This provides a closer and more comprehensive picture of why tech, mobile and social media companies have not invested heavily into asset-based business in the past years, since they believe in the business case from non-asset business in the long term. While the main investment areas of Alibaba focus on software, retail, entertainment and connectivity, Amazon also puts the greatest interest in these areas.

In comparison, the investment path of traditional automotive companies shows that the focus is placed in older and traditional topics (manufacturing or energy) and comes from their heritage – investments into connectivity, shared mobility or urban mobility are something that has come up only recently and which has been followed up on by at least some of the premium OEMs.

The analysis of investment paths provides an opportunity to better understand dynamics and interweavings of entire networks, as outlined in the network analysis. This picture clearly shows which companies are already interconnected with each other and which companies prefer to focus on an isolated approach.

Although it is evident that many of these dynamics have increased only in recent years and a great deal of additional investments will most likely follow, one thing remains clear – the investment strategy of a company has to be in line with the type of player a traditional auto company wants to be in the future.

There will be many co-competition scenarios within these groups that the industry is not yet prepared for. The rule will not be who dominates, the rule will be agility and co-working spaces to be able to join forces and secure desired ecosystem positions.

One of the biggest challenges will be to work out concrete co-competition models, to organize different cultures across different regions, to bring best capabilities and capacities together despite existing organizational structures. These so-called agile working structures, where organizational power is not linked to the number of responsible people but rather to the joint results a team creates, become more essential than ever.

Source: © KPMG Automotive Institute; Pitchbook; percentages may not add up to 100% due to rounding; figures in percent

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What is the most likely area where car companies can monetize data?

Auto OEMs are considered most trustworthy as guardians of product-centric vehicle data. In recent years the results regarding data ownership were never as clear as this year: more than one third of executives are convinced that vehicle data belongs solely to the OEM, which obviously puts the OEM in a pole position and opens the door to further opportunities that are waiting to be identified. Consumers as well, of which the majority (47%) still believe they should be the sole owner of data, rank OEMs in second place and turn their back on ICT companies.

Things are different in China: in comparison to traditional auto manufacturers, ICT companies turn out to be the winners of the data race. Big ICT players obviously dominate China, especially the ecosystem is being taken care of. Results indicate that for data-driven business models, specifically regional differences make a global approach not advanced enough. The market demands a completely locally tailored approach, in order to comply with local regulatory standards and customer preferences. This is especially true for executives from China, whose views seem to be far more advanced: according to 38% of the execs, the second area most likely to monetize data is customer profiling and better touchpoint management – something especially Chinese consumers are likely to appreciate or even already request today.

Golden rule for a B2C environment is safety first, then performance. Executives express a clear opinion that car companies can best monetize product-centric upstream data with services that are oriented on safety (48%) and performance (32%), but execs also believe that customer profiling (20%) is important. Customers will not buy-in by sharing and giving away their data if they don’t get anything in return, while particularly safety-oriented services, such as anti-theft capabilities or cyber security, are essential to every customer. Customers want to feel that they are in a safe environment; an environment in which data safety is at the core of system operations: no customer wants to have to worry about cyber security or data hacks and always wants to rest assured that everything in the ecosystem is being taken care of.

Significant regional differences in monetizing data outline the need for locally tailored approaches. Executives express a clear opinion that car companies can best monetize product-centric upstream data with services that are oriented on safety (48%) and performance (32%), but execs also believe that customer profiling (20%) is important. Customers will not buy-in by sharing and giving away their data if they don’t get anything in return, while particularly safety-oriented services, such as anti-theft capabilities or cyber security, are essential to every customer. Customers want to feel that they are in a safe environment; an environment in which data safety is at the core of system operations: no customer wants to have to worry about cyber security or data hacks and always wants to rest assured that everything in the ecosystem is being taken care of.

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Profitability of traditional automotive companies is about to decrease

Executives display very little fear in regard to the imminent decrease in auto company profitability – most concerns are addressed towards suppliers and fleet being affected first. KPMG believes, however, that profitability in the automotive industry is most likely to decrease in upcoming years. OEMs will be confronted with tough market conditions and shrinking global markets, not to mention an economic crisis which will come eventually – and all of this against a background of fundamental changes and challenges involved in achieving sustainable profitability.

In the past, it was fairly easy for traditional OEMs to define a price for a product featuring certain special equipment that followed a zero-based budgeting approach. Function on demand features and increasing share of software in the special equipment make this calculation even more complex and difficult to predict. Will consumers really be willing to pay for the navigation system in future if they have the ability to navigate via their mobile phone and will we still need special equipment at all in a primarily fleet-operated world?

Aside from the increasing complexity in the product itself, supply chains and production networks are most likely to become even more complex. Diversity in the responsibility for different building blocks is increasing which when summed up puts tremendous pressure on auto manufacturers: under these changing conditions, will they still be able to really maintain profitability for the navigation system in future if they have the ability to navigate via their mobile phone and will we still need special equipment at all in a primarily fleet-operated world?

Do you think profitability of traditional auto companies will decrease, increase or remain stable in the upcoming years?

Profitability will increase
Profitability will remain stable
Profitability will decrease

Note: Executives (n = 981) in percent; percentages may not add up to 100% due to rounding; figures in percent

A shift from traditional unit sales towards mobility service offerings and fleet management of OEMs may lead to an increase of the balance sheets debt levels. Do you believe that consequently the importance of financial service entities will increase?

Importance of financial service entities on the rise in times of increasing debt levels

Another在insidious development from a financial service perspective, is that with the shift from traditional unit sales towards mobility-as-a-service offerings and fleet management of OEMs, it is becoming increasingly difficult to delete the assets (cars from a company’s balance sheet, which consequently leads to an increase in debt levels. Cash flow of the operating business, with possibly decreasing unit sales in the future, does not ensure the financing of all vehicles and is the reason for financial service entities gaining importance, a trend that an astonishing 81% of the surveyed executives currently agree with.

For financial service entities to actually be non-asset based would entail specifying their business model as asset-driven – thus becoming the platform provider and thereby financing the asset. Whereas in the past, when technologies were pumped into the market financial service entities only had to engage in simple risk refinancing in specific markets and a respective asset liability match, the ability to assess the influence of the regulator and industrial policy.

In simple terms they need to transform from being a financial service entity used to applying financing to an asset and being steered by supply and demand, to developing new competencies that require the financing of a much more ecosystem-oriented management.
A reality check for today’s C-suite on Industry 4.0 – Compared to other industries, the automotive industry has the greatest advantage in terms of experience as it has been the “fastest” to adopt digital transformation. We have therefore asked executives in the automotive sector about the topics of leadership, culture, organization, processes and technology as part of our global study “Status Quo of Digitalization: Experiences of the Automotive Industry”.

Me, my life, my wallet As consumers, our choices have always been influenced and governed by multiple factors, but in today’s world, this has become even more complex and subject to disruption than ever before. This motivated us to develop a framework designed to help identify what consumers value in an experience, understand which moments matter to them, get smarter about the connections that contextualize their lives, and learn about the trade-offs they make regarding time and money.

Autonomy delivers: An oncoming revolution in the movement of goods In last year’s white paper, Islands of Autonomy, we described how autonomous measures. Consumer mobility, however, is only half the story in regard to what is happening in consumer behavior will lead to an explosive new demand for autonomous delivery vehicles, specialized for different kinds of delivery, as well as new service businesses and new infrastructure.

Global Manufacturing Outlook Digital technologies create tremendous opportunities for growth and transformation at the manufacturer level, but few have taken full advantage of them. In this 8th edition of the Global Manufacturing Outlook report, our findings from a survey of 300 CEOs and interviews with manufacturing industry executives and KPMG partners show there is no time to waste in building a comprehensive digital transformation strategy. Global manufacturing is being disrupted at its foundation and industrial demarcation lines are blurring. The fourth industrial revolution is dramatically changing market entry barriers and is expected to lead to the reshaping of many companies – and even entire industries.
I wish to personally thank our respondents and contributors for their involvement in this year’s survey.

In the 2019 survey, its 20th consecutive year, almost 1,000 senior executives from the world’s leading automotive companies were interviewed. As in previous years, participants included automakers, suppliers, dealers, financial services providers, mobility services providers and companies from the information and communication technology sector. We also interviewed energy and infrastructure providers as well as government authorities – allowing for a comprehensive and yet differentiated view across the entire ecosystem.

Additionally, more than 2,000 consumers from around the world gave us their valuable perspectives, so that we could compare them with the opinions of the leading global auto executives.

The responses were very insightful and I would like to personally thank all those who participated for giving us their valuable time.

Special thanks to my entire KPMG global automotive sector steering group and especially to the whole automotive sector team in Germany under the lead of Aline Dohle, Global & EMEA Executive for Automotive, for their creativity, inspiration and dedication throughout the realisation of this thought leadership project.

Explore multiple dashboards within one “story”
For several topics, there will be more than just one analysis. Use the navigation bar to switch between dashboards and click your way through the story with different analyses!

Customize each dashboard
Apply several filters, try correlations and find out more about differences between e.g. regional perspectives or differing stakeholder views! All results displayed on a dashboard are adjusted according to the selection of applied filters.

The bottom analysis on a dashboard gives you a detailed split of the upper analysis results. Choose an additional dimension that best meets your interests and deepens your insight!

Maybe you are able to answer a question we haven’t even thought of…

Executive perspectives vs. consumer view
Executive and consumers were asked many of the same questions. Compare answers of both respondent groups and also see that they were asked more than just conventional survey questions! Customize results of an executive view by stakeholder type, job title and revenue segmentation of the company. All data displayed capturing customer views can instead be filtered by age, living circumstances and car ownership.

Directly interact with the dashboard
Apart from the filter function, you can also directly interact with the dashboard if you hover over results for further detailed information or if you pick specific areas of interest. Just click on the respective part of an analysis and you will find all displayed results filtered accordingly. The number on the right tells you how many respondents your selection still counts.

The GAES is a fully interactive online platform
Access the platform under automotive-institute.kpmg.de