

KPMG's 19th consecutive

Global Automotive Executive Survey 2018

**There is a next in every industry –
a next generation of products,
services and content.**

See it sooner with KPMG.

More than 2,000,000 different views



The new look

This year, the concept of the Global Automotive Executive Survey received a completely new look with an interactive online platform. There you can not only dive deep into topics but also customize analyses to create your own perspectives and views – maybe you are even able to answer questions we haven't thought of yet.

There simply is not "one" global answer!

Multiple filter possibilities enable you to try correlations and to find out more about differences between e.g. regional perspectives or differing stakeholder views! Executives 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!

This printed version is an extract of the millions of different possible views in the Global Automotive Executive Survey 2018.

The best of

The early release of the online platform made it possible to analyze user behavior and to identify those issues that receive most clicks and catch peoples greatest interest. With the hardcopy you are now provided the survey's most important elements and this year's hottest topics around the future ecosystem of the auto business.

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DIETER BECKER

Global and EMA
Head Automotive Practice

Dear Readers,

As the mobility ecosystem matures, we are only limited by what we are not open to seeing and accepting. Change and more change are imminent; it is already challenging our product-driven mindset and it will increasingly question the way we measure success, how we work together and envision the future of our still largely asset-based industry.

It has been incredible to follow the evolution and innovative power of the auto business over the last decades. In my mind, one thing is for sure: Today's disruption, which leaves us all puzzled and wondering in disbelief, will be tomorrow's "traditional" way of doing business.

Looking far beyond the obvious has always been at the core of our annual Global Automotive Executive Survey for the last 19 years. Throughout this time, it has always been our aspiration to leave our readers a little puzzled or even wondering in disbelief at the very moment in time when we published our thought-provoking ideas. Tracing back to the statements we've made in recent years, I am very proud to say that all of these provocative ideas have transformed into today's common knowledge.

I am therefore – as always – very delighted to invite you to explore this future ecosystem and what's next together with us; because nothing propels the world forward faster than embracing new ideas together.

Enjoy the read and stay tuned!

2011

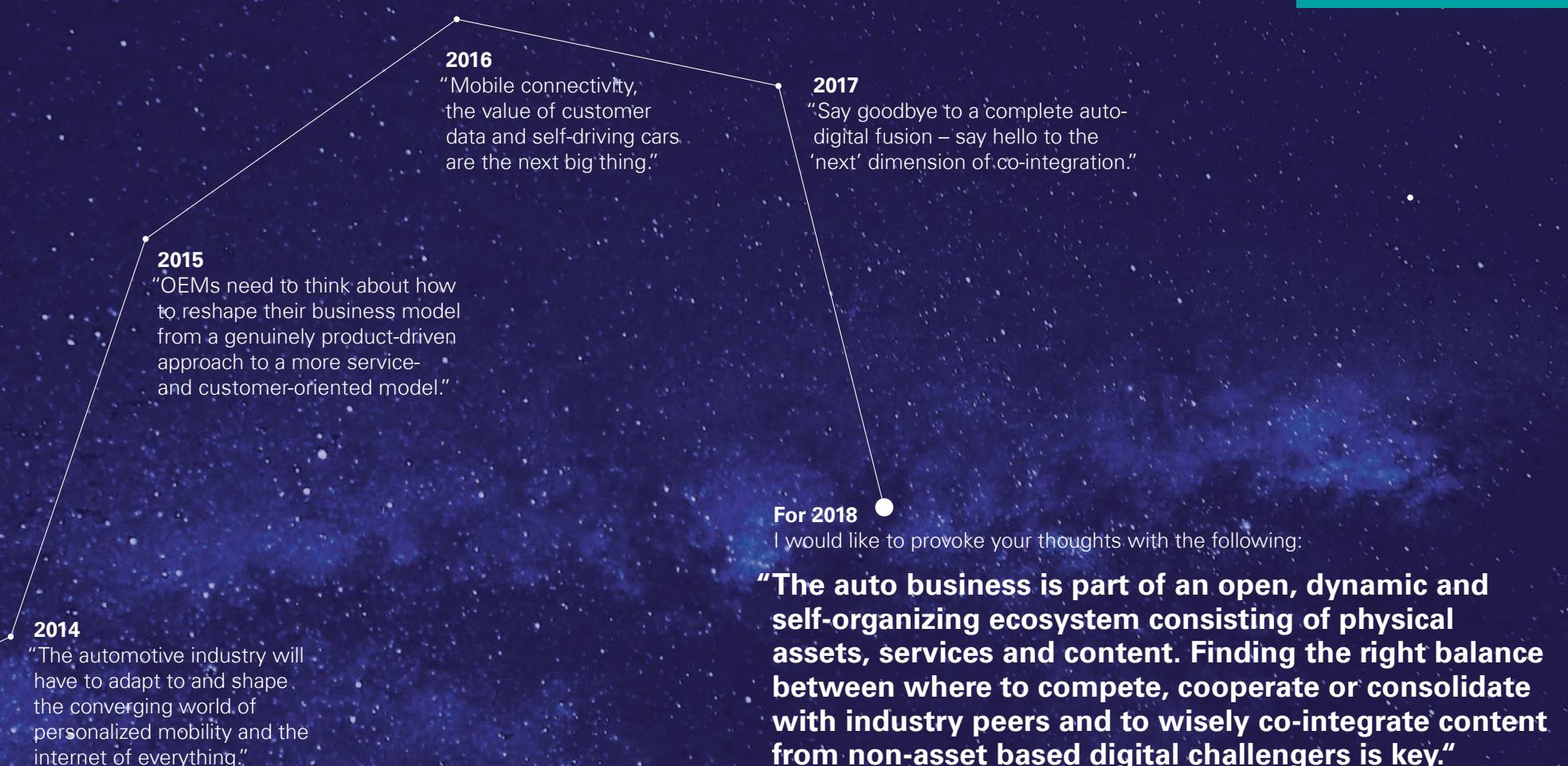
"Within the next decade the internet will revolutionize private transport. Web providers and car manufacturers will be vying for supremacy."

2012

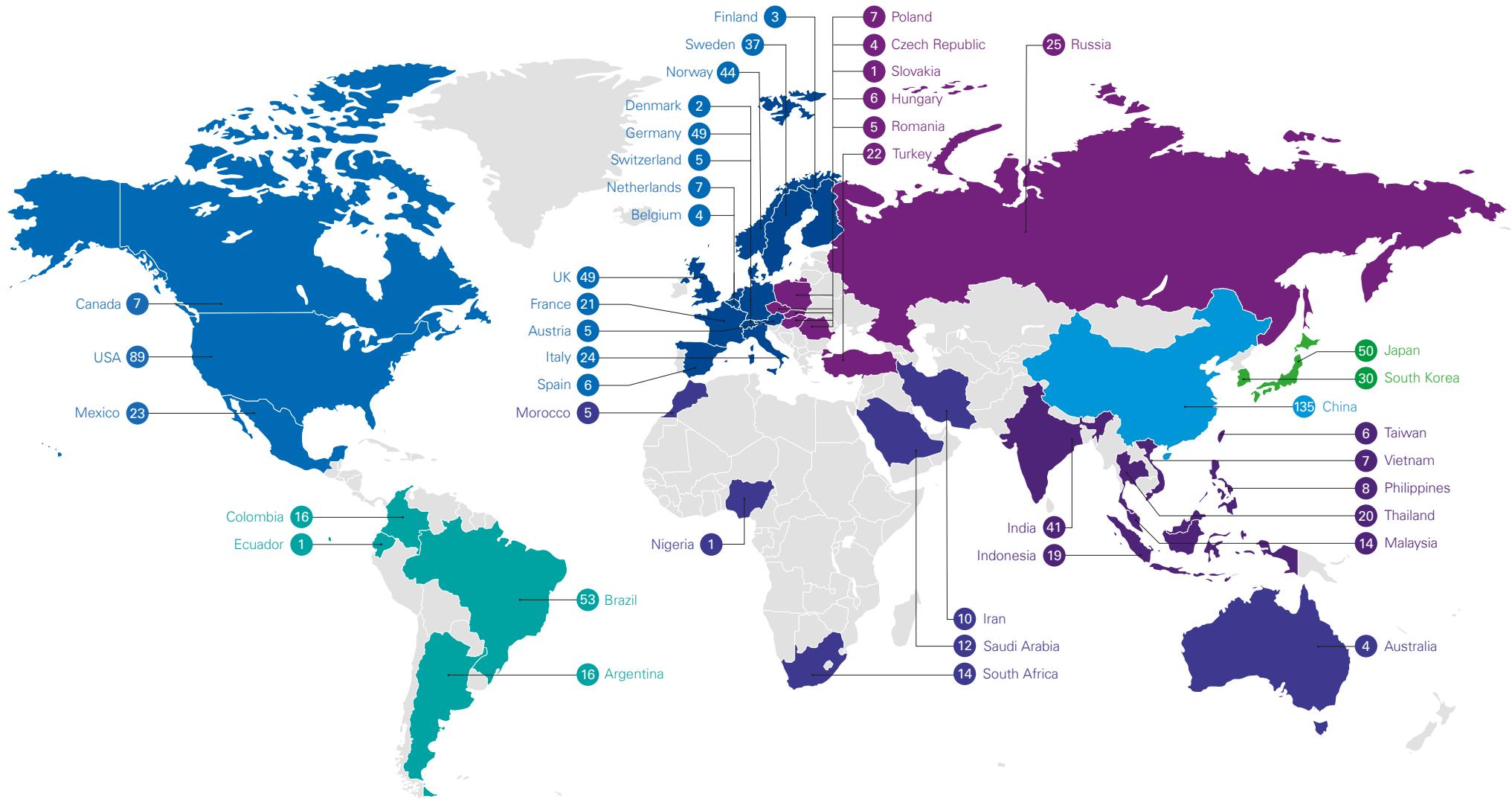
"New non-asset based players will increase in significance in the automotive value chain until 2025."

2013

"Get ready for the post powertrain ecosystem. Acceleration is not all that matters in self-driving cars."



About the executive survey

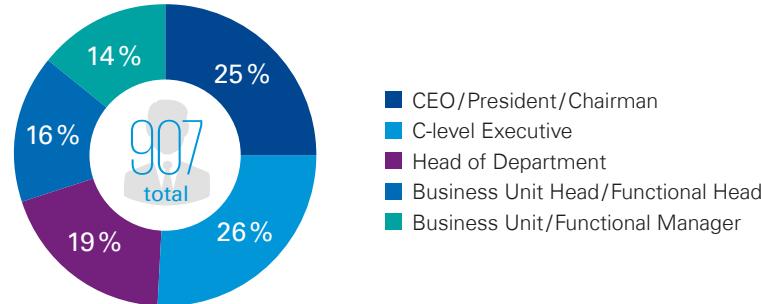


■ North America (n = 119) ■ South America (n = 86) ■ Western Europe (n = 256) ■ Eastern Europe (n = 70) ■ Mature Asia (n = 80) ■ China (n = 135) ■ India and ASEAN (n = 115) ■ Rest of World (n = 46)

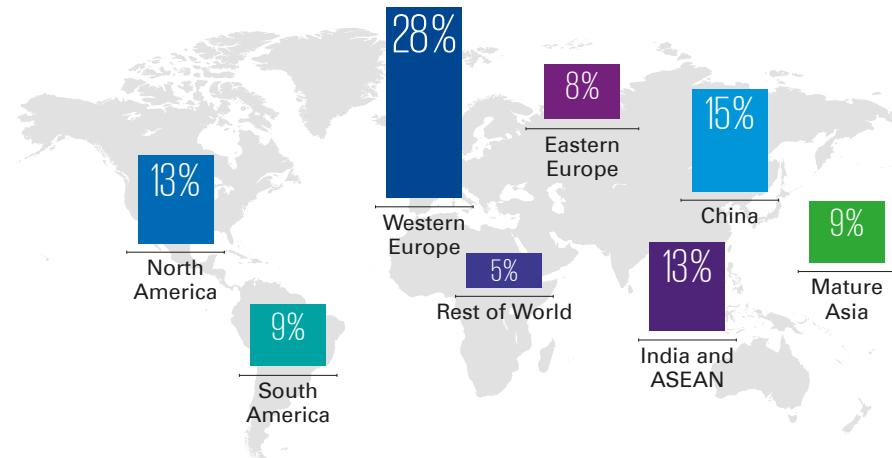
Note: Executives (n = 907); map shows number of respondents from each country

FOR THE 2018 SURVEY WE GATHERED THE OPINIONS OF 907 EXECUTIVES FROM 43 COUNTRIES.

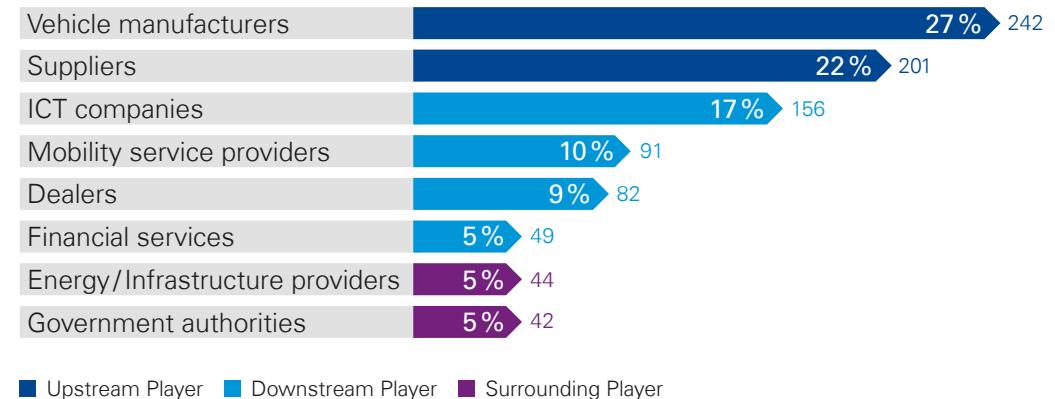
Respondents by job title



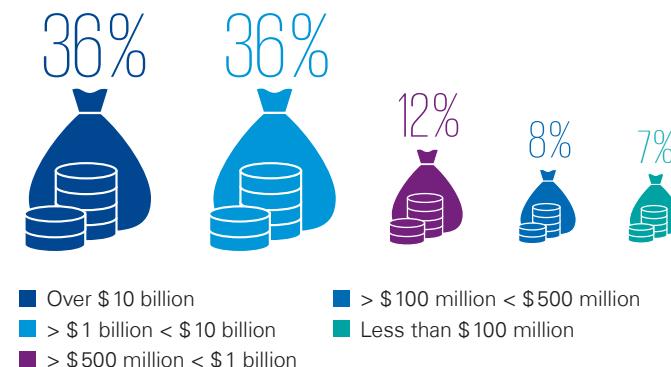
Respondents by regional cluster



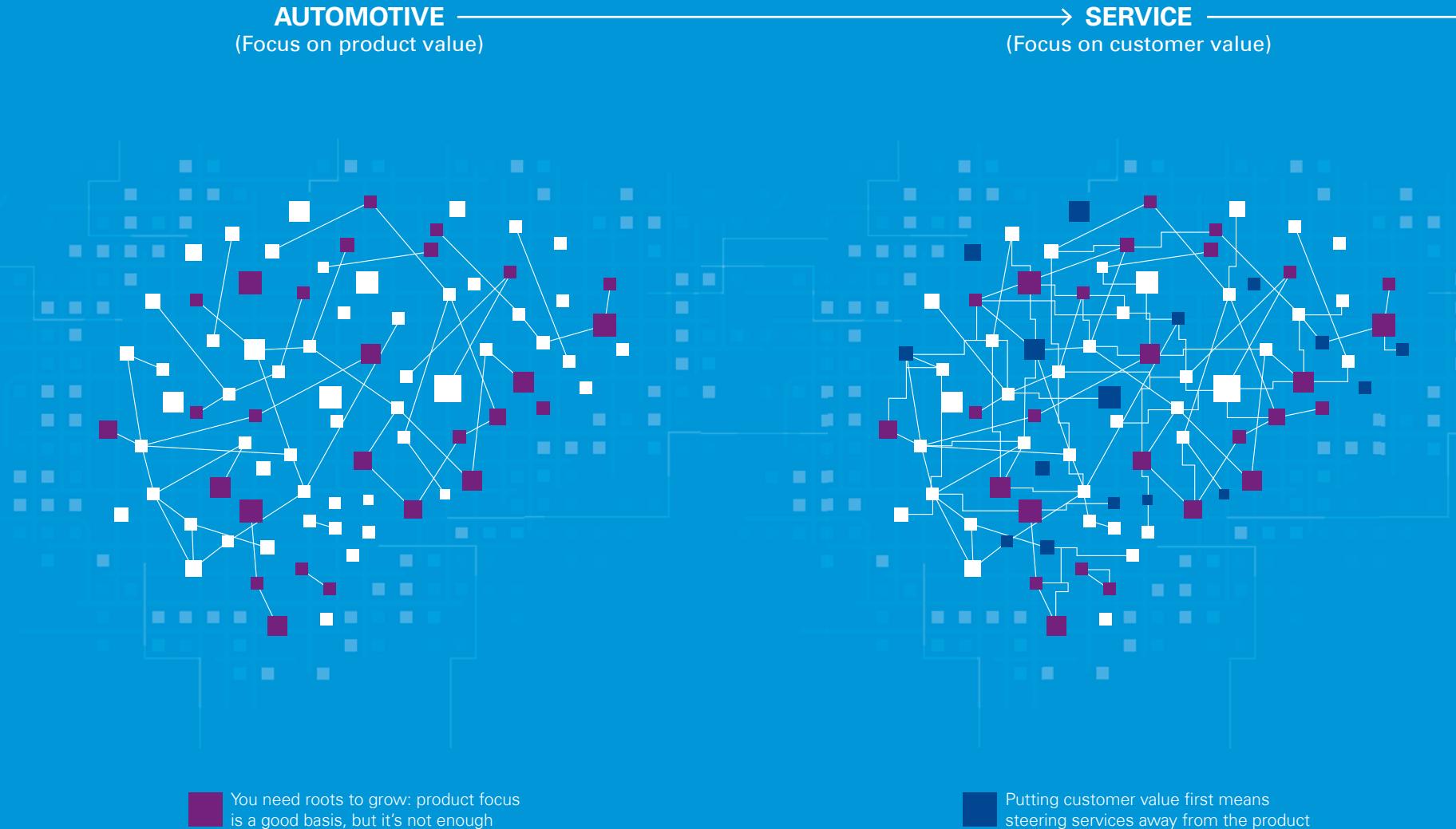
Respondents by company type



Respondents by company revenue

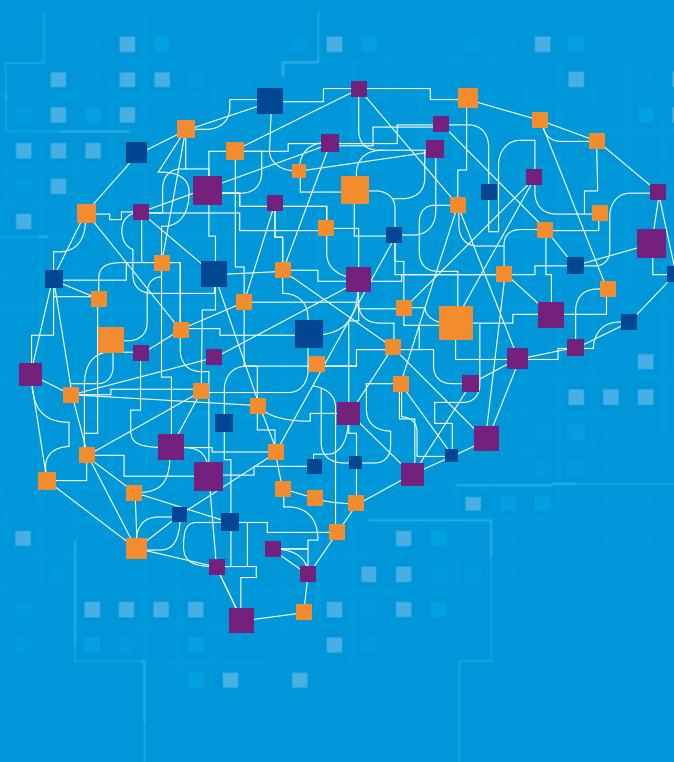


The auto business is part of an open, dynamic & self-organizing ecosystem

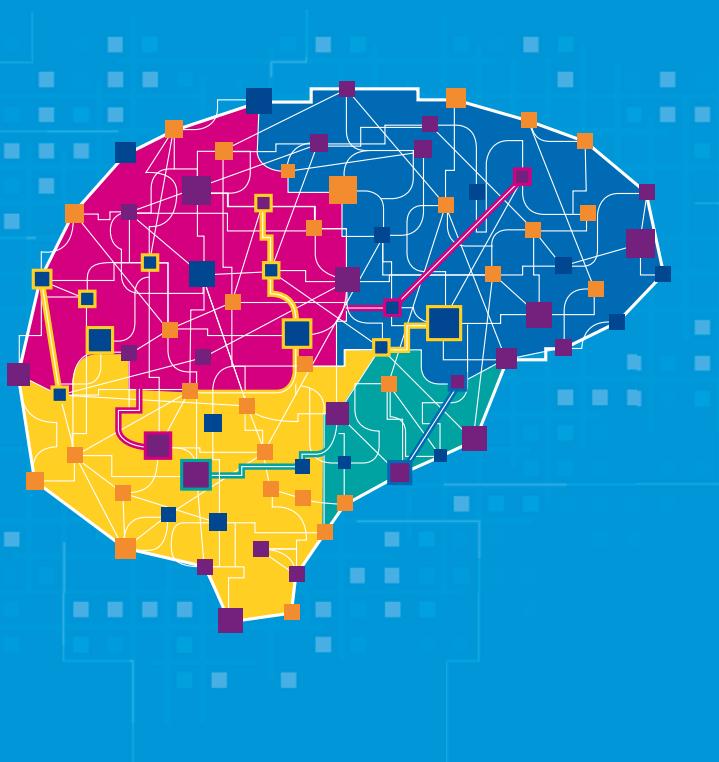


→ **CONTENT**
(Focus on ecosystem value)

→ **PLATFORM BUSINESS**
(Focus on co-integration)



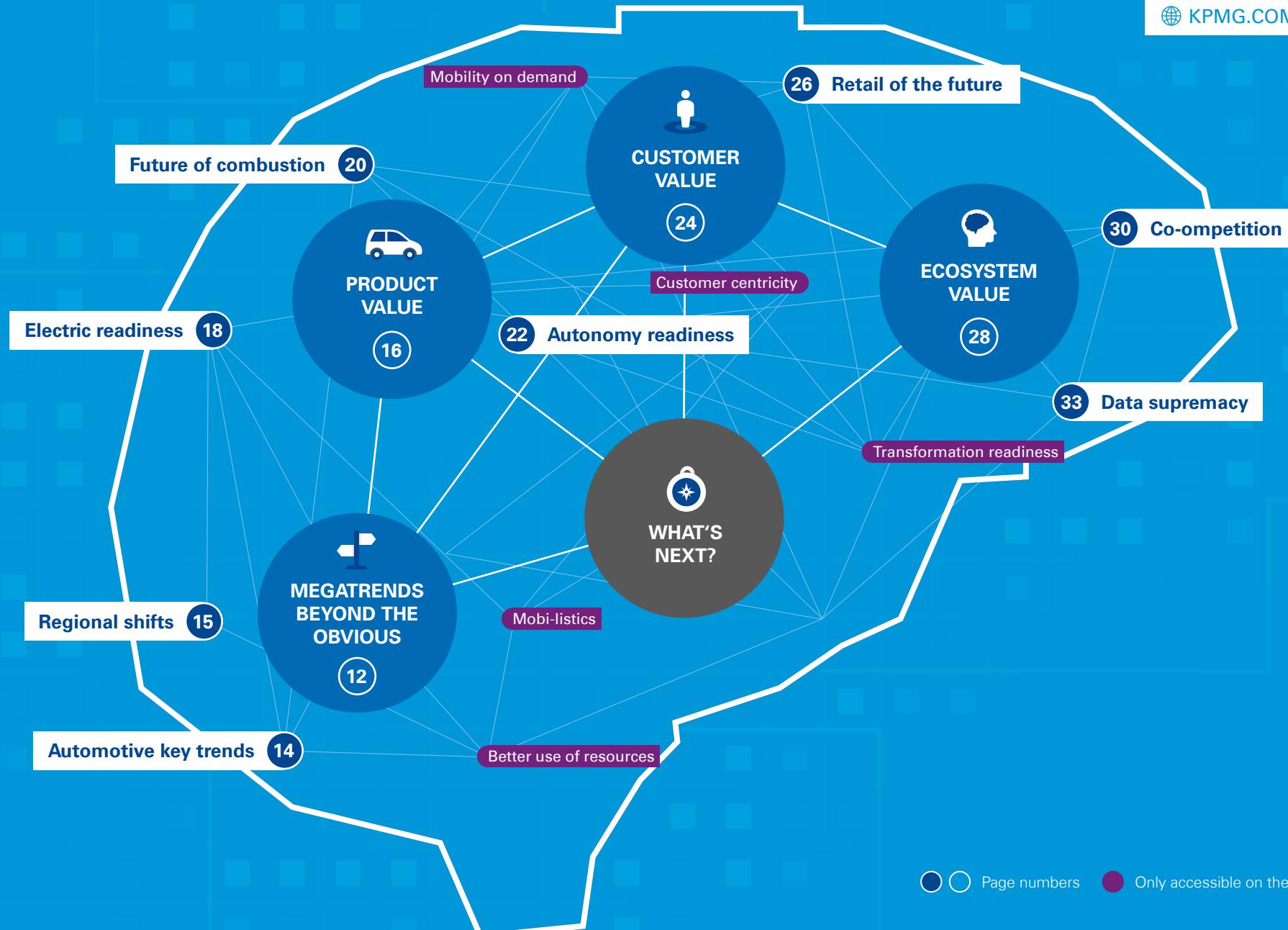
 The downstream is already claimed –
recognize the value of the upstream



 Don't touch the whole ecosystem, make your choice
with whom, where and how to play very wisely!

Our Global Automotive Executive Survey 2018 structure



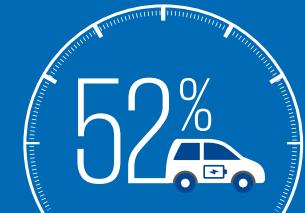


KEY TAKEAWAYS

MEGATRENDS BEYOND THE OBVIOUS

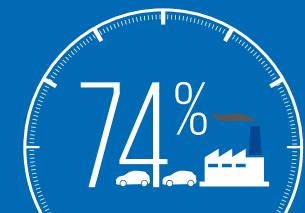
Automotive key trends

“Fuel cell electric vehicles have replaced battery electric vehicles as this year’s #1 key trend until 2025.”
52 % of respondents rank fuel cell electric vehicles as the most important automotive key trend up to 2025.



Regional shifts

“The flip side of regional shifts: 74 % of executives believe that production in Western Europe will be less than 5 % by 2030 [2017: 65 %].”



Better use of resources

“Learning from the aviation industry – almost 90 % of the executives fully agree that remanufacturing is a feasible concept for the automotive industry to ensure the best use of resources.”

3 out of 4 execs (77 %) believe that making the most efficient use of resources will be one of the biggest drivers in the industry.



Mobi-listics

“57 % of all executives say that in the future we will no longer differentiate between the business models for transporting humans and goods.”

73 % of executives are convinced that traditional public transport solutions could be replaced by on-demand autonomous capsules in 10 years’ time.





MEGATRENDS BEYOND THE OBVIOUS

Better use of resources and "mobi-listics" are megatrends beyond the obvious

One thing is for sure: Although today's disruption leaves us all puzzled and wondering in disbelief, it will be tomorrow's "traditional" way of doing business. As the mobility ecosystem matures, we are only limited by what we don't open ourselves to see and accept. Beyond the obvious automotive key trends, many executives of this year's survey believe that embracing the megatrends around "better use of resources" and the merging of mobility and logistics into "mobi-listics" will be absolutely crucial.

Fuel cell electric vehicles have replaced battery electric vehicles as this year's #1 key trend until 2025

Although fully electric drivetrains like BEV and FCEV dominate the ranking again this year, trends indicate that the future technology roadmap is likely to see various drivetrain technologies co-existing with high dependency on specific application areas, local regulation and customer preferences. Furthermore, there will be no value-adding services and new content without digitalization as its key enabler: Connectivity and digitalization remain number 2 priority as an exception of otherwise still lower-ranked content and service-related topics.

The trend of regional shifts goes far beyond volume growth

China is no longer just a hub merely focused on volume growth in the automotive world. According to this year's survey respondents, China is also outstripping mature markets in regard to new business model innovation launches. An increasing number of executives rank China among the first-mover countries to launch new mobility services and execute new data-driven business models. The flip side of this regional shift: 74 % of executives believe that production in Western Europe will be less than 5 % by 2030.

Better use of resources is the overarching trend that will impact every aspect of our daily lives

Although the world is unique, precious and inspiring, its resources are limited. The future is undefined and ready for exploration, but demands more responsible and sustainable use of resources than is the case today. That's the opinion of three out of four executives. They are convinced that making the most efficient use of resources will be one of the biggest drivers in the industry and will evolve as the overarching key trend.

Mobi-listics: If it's from A to B, it's mobility – if it's from B to A, it's logistics!

The majority of all executives say that in the future we will no longer differentiate between the business models for transporting humans and goods. Autonomy, sharing and platform-based delivery services will revolutionize mobility patterns and lead to "mobi-listics", the merging of mobility and logistics. One of the most interesting results: 73 % of executives are convinced that in 10 year's time traditional public transport solutions could be replaced by on-demand autonomous capsules.



EXECUTIVE

Global Automotive Executive Key Trends until 2025



Note: Executives (n=907); figures and deviations from the previous year 2017 (n=953) in percent

Fuel cell electric vehicles have replaced battery electric vehicles as this year's #1 key trend until 2025

Although fully electric drivetrains dominate the ranking again this year, trends indicate that the future technology roadmap is likely to see various drivetrain technologies co-existing with high dependency on specific application areas, local regulations and customer preferences.

Fuel cell electric mobility is this year's #1 key trend, having grown in importance from its #5 ranking in 2016. Overall electric mobility is ranked extremely high, holding three of the top four ranks. This demonstrates how traditionally product-oriented trends still dominate executives' agenda.

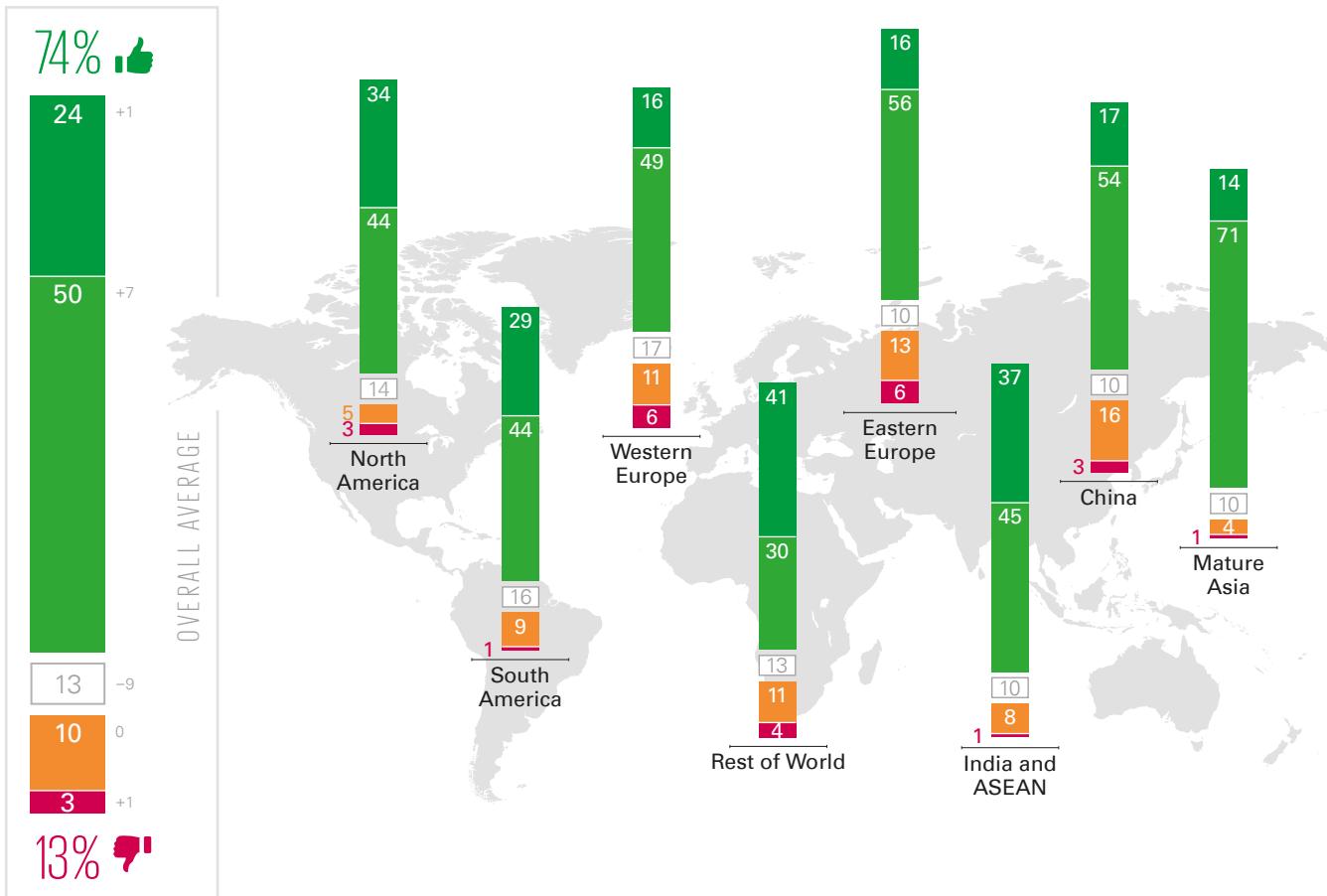
There will be no value add services and new content without digitalization as its key enabler: Connectivity and digitalization remaining number 2 priority is the only high ranked service- and content related topic. Connectivity is clearly the single most important prerequisite for the provision of additional services and content provided in the car and emphasizes the need for an easy-to-use and seamless human-machine interface inside the vehicle.

This year's results vary significantly between stakeholders, regions or even countries: Downstream players rank battery electric vehicles to be the #1 trend and Chinese executives see "connectivity and digitalization" and "creating value out of big data" as trends #1 and #2.



EXECUTIVE

By 2030 less than 5 % of the global car production will originate from Western Europe (2017: ~15 %).



Absolutely agree ■ Agree □ Neutral □ Disagree □ Strongly disagree ■

Note: Executives (n=907); percentages may not add up to 100 % due to rounding; figures and deviations from the previous year 2017 (n=953) in percent

Western Europe's ugly truth and how to secure competitiveness in a highly dynamic market environment

Based on the execs opinion, Western Europe finds itself nose-diving in regard to production volume: In comparison to last year, even more executives (74 %) believe Western Europe's car production will account for less than 5 %, which would only equal 6.1 million units of the global production by 2030 based on current market forecasts. Executives have realized that sustainable growth can only be generated in Asia and European OEMs have to react now.

13% Current projection 2030* VS. 5% Shift scenario 2030**

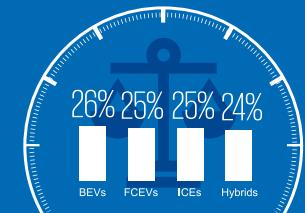
*LMC Automotive **Executive opinion in GAES 2018

Profitability in Western Europe can only survive if European OEMs make use of their technological advancement and make automation around industry 4.0 and digital labor to their advantage. Machine learning and automated intelligence technologies could enable Europe to secure the remaining 5 % of production, but they should also not underestimate the importance and role of the brand. The less individualized the market becomes, the less brands count and the more we find ourselves in a mass market environment. On the other hand, European OEMs could take this opportunity to differentiate themselves by design, product or service and make use of their high brand value.

KEY TAKEAWAYS

Future of combustion

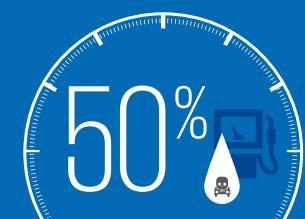
"There will not be a single solitary drivetrain technology: Executives project an even distribution by 2040 for BEVs (26 %), FCEVs (25 %), ICEs (25 %) and hybrids (24 %)."



"It is still undecided whether diesel is dead or not: 50 % of executives still believe that diesel is a technologically viable option [2017: 47 %]."

Electric readiness

"Infrastructure first, e-mobility second: Of the executives surveyed, 55 % still believe that pure battery electric vehicles will fail due to the challenge of setting up the required infrastructure."

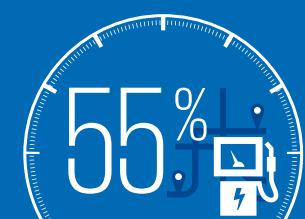


"Executives see BMW as the #1 e-mobility leader."

Autonomy readiness

"Of the executives, 74 % believe that mixing autonomous and non-autonomous traffic will lead to severe safety issues."

94 % of executives believe that a fully working and effective driving policy and regulations for autonomous vehicles will be set up no later than 2040.





PRODUCT VALUE

Going from managing a set of different products to managing the ecosystem

Mobility has always relied and will always rely on an asset-based product, but we will see a change of perspective: While in the past the product itself was the focus of OEMs internally and toward the customer, in the future it will be incorporated into the ecosystem, where the customer does not want to differentiate between product, service and content.

Future of combustion

Even as electric drivetrain concepts advance, executives are highly convinced that ICEs will remain important for a very long time. A balancing mix of alternative drivetrain technologies and ICEs will drive the roads alongside each other in the future. But how and where can combustion engines compete considering the constantly increasing ecological demands? Will diesel vanish from OEMs' portfolios? This trend dominates in the press, but executives have increasing doubts. While socially unacceptable, diesel is highly valued as a technology and could be balanced by bio-fuels and synthetic fuels. But how would the global diesel market evolve if mature markets imposed regional diesel bans?

Electric readiness

E-mobility is dominating execs key trend agenda, but its roll-out is progressing rather slowly. In the eyes of executives and consumers, the challenges for e-mobility are versatile. Costs are the biggest obstacle on first sight, but a successful infrastructure set-up seems to be the true showstopper for e-mobility. But what defines a successful infrastructure and who should be in charge? 80 % of consumers expect OEMs to manage it and executives agree. This means that vehicle manufacturers will have to enter new territories – expanding into a service-driven business by providing

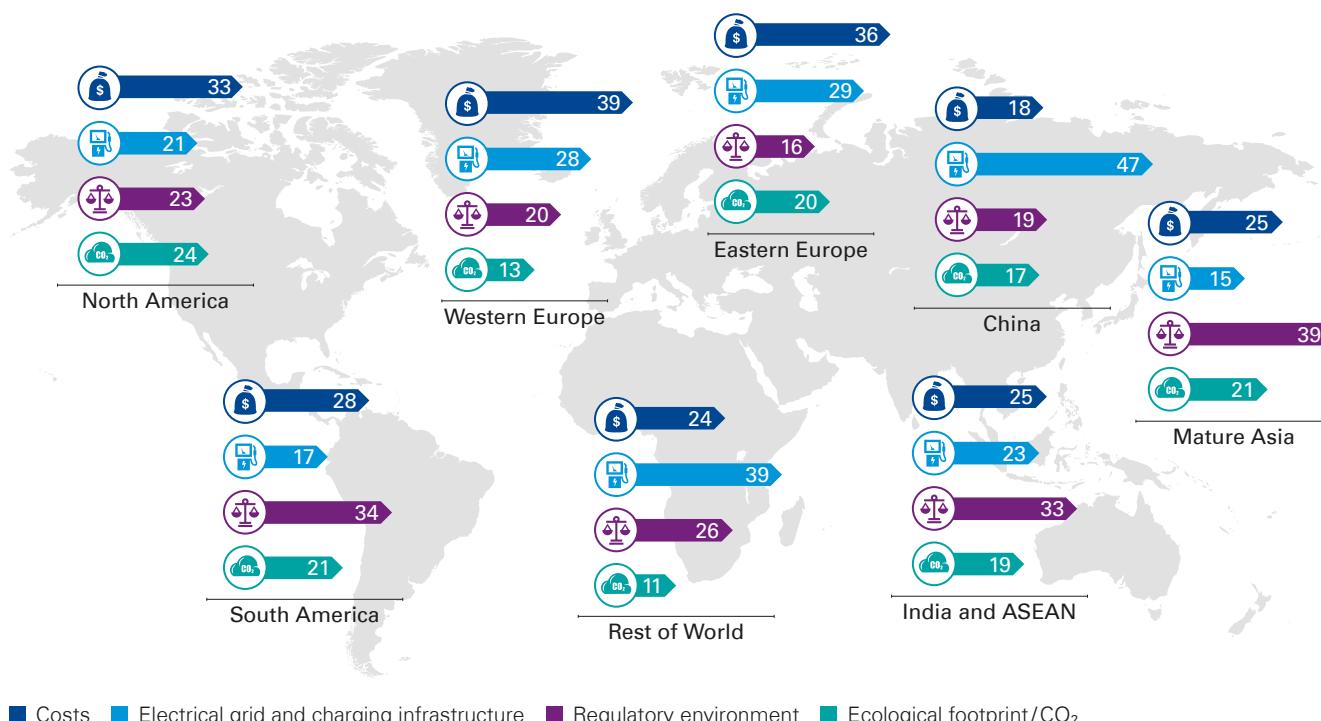
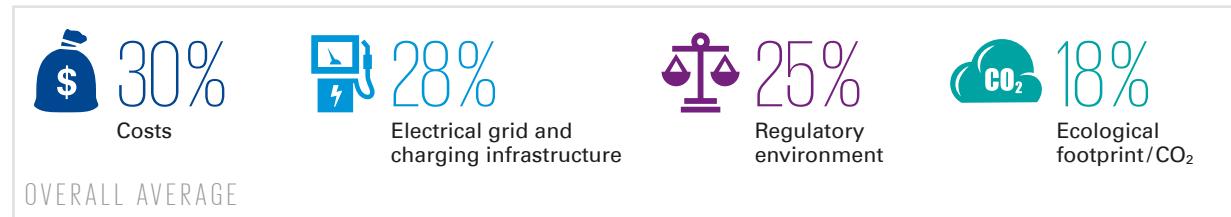
a positive charging experience throughout the entire customer lifecycle. At the same time, OEMs should further strengthen their asset base and continue to develop e-mobility products, such as FCEVs. Executives strongly believe that FCEVs will be the real breakthrough for e-mobility. What are the reasons for this and is that perspective too narrow? Some questions about e-mobility still remain unanswered and many challenges are yet to be overcome.

Autonomy readiness

Autonomous driving will disrupt mobility patterns, social aspects and fundamentally change the paradigm about mobility as we know it today. The first forerunners of autonomous cars can already be spotted on the roads, but before we have entire car fleets with no steering wheels many challenges must be overcome. Executives are optimistic: 94 % think that by 2040 the latest, a fully working and effective driving policy and regulations for autonomous driving will be set up. But what about infrastructure challenges? It certainly goes far beyond cameras, radars and smart algorithms and will require significant investments. How can human-driven cars and autonomous vehicles co-exist in a transition period and which implications will autonomous driving have on consumer preferences, brand loyalty, or even the aspects of asset ownership?



What is the most important challenge for the e-mobility ecosystem?



Note: Executives (n=907); percentages may not add up to 100 % due to rounding; figures in percent

A successful infrastructure is defined by two components: Charge point coverage and a positive charging experience

Charging is part of both product and customer experience. Failing to provide a sufficient charging infrastructure imposes the biggest threat to the successful roll-out of e-mobility.

Costs, infrastructure and charging experience are the biggest challenges for e-mobility

Three of the top four automotive executive key trends are product-related e-mobility topics, which clearly indicates executives' ambition in this field.

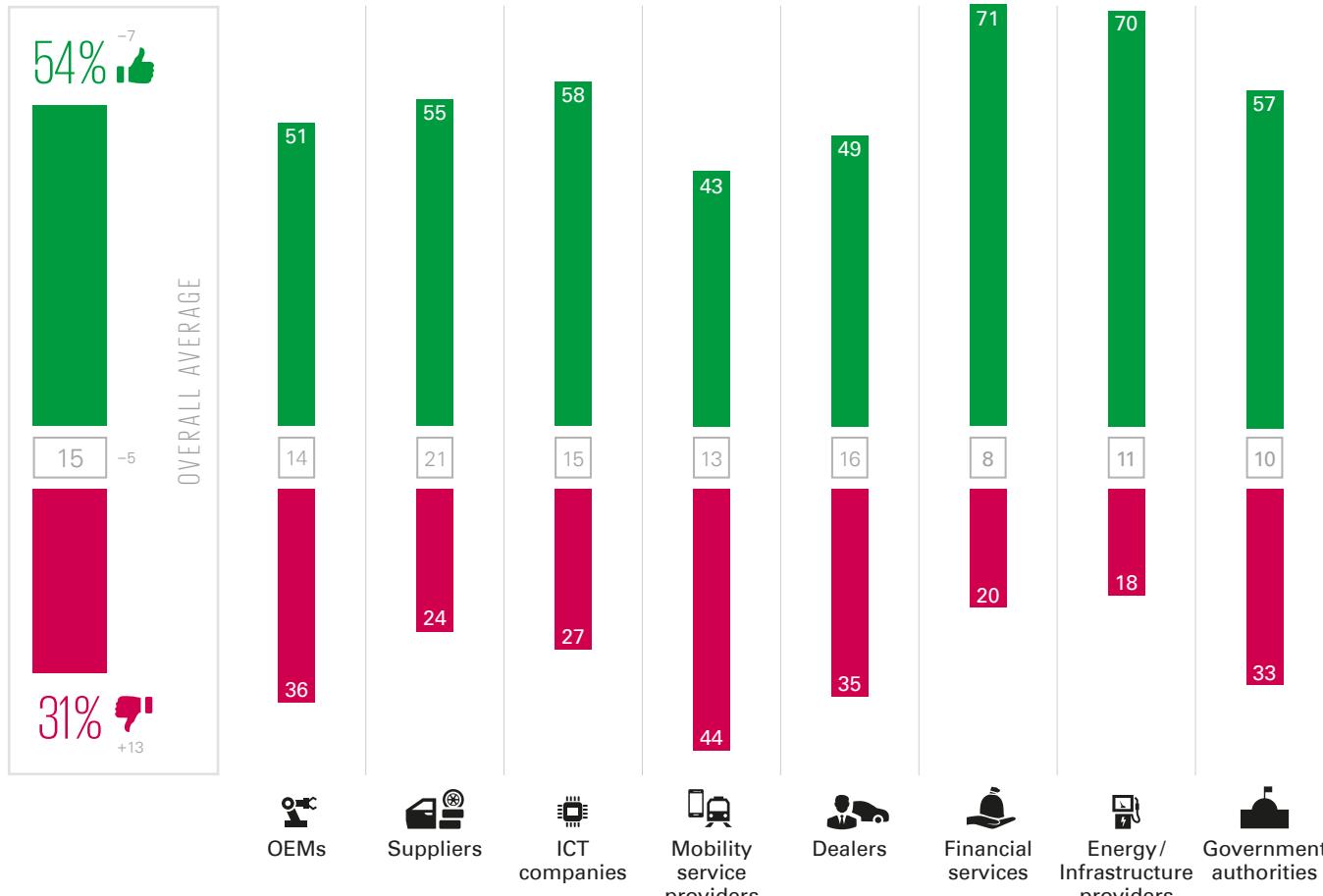
Findings show that for executives, costs (30 %) and infrastructure (28 %) are the most important key challenges for e-mobility, followed by regulatory environment (25 %). The ecological footprint (18 %) is considered least important, yet a complete lifecycle perspective will become more relevant. While BEVs emit no direct CO₂ emissions when driving, the production of energy and batteries certainly do. Depending on the parameters, BEVs must run a few hundred thousand kilometers that the environmental outcomes of e-mobility prove positive and compatible.

In the complex ecosystem, companies first have to decide which role they want to take and then penetrate the market with solutions. It becomes evident that a single e-mobility solution, with a linear relationship between challenges and solutions, is a far too simple concept. Instead, a variety of solutions and key success factors are necessary to create efficient interaction among all different players in the ecosystem and the alignment of their respective responsibilities.



EXECUTIVE

Pure battery electric vehicles (BEV) will fail due to the challenges related to setting up the required infrastructure.



Note: Executives (n=907); percentages may not add up to 100 % due to rounding; figures and deviations from the previous year 2017 (n=953) in percent

Infrastructure first, e-mobility second

Of the executives surveyed, 54 % still believe that pure battery electric vehicles will fail due to the challenge of setting up the required infrastructure. Norway, a leading e-mobility market, has suffered first drawbacks in their ambitions of a complete e-mobility roll-out. In September last year, Norwegian officials recommended refraining from buying new electric cars, due to a shortage of public charge points. An imposed growth of e-mobility subsidized by tax benefits, or imposed by bans of ICEs will fail if the foundation of a reliable charging infrastructure is not put in place first.

Furthermore, public discussion often neglects the fact that a sufficient charging infrastructure goes beyond the number of charge points. A more detailed look into this year's results shows that the stakeholder groups of energy & infrastructure providers are among the most pessimistic. Their doubts are based on their profound knowledge regarding the requirements of the charging infrastructure backbone. Power grid overloads, caused by many simultaneous charging processes, could lead to severe shortages of general power supply or failure of the entire electricity supply.

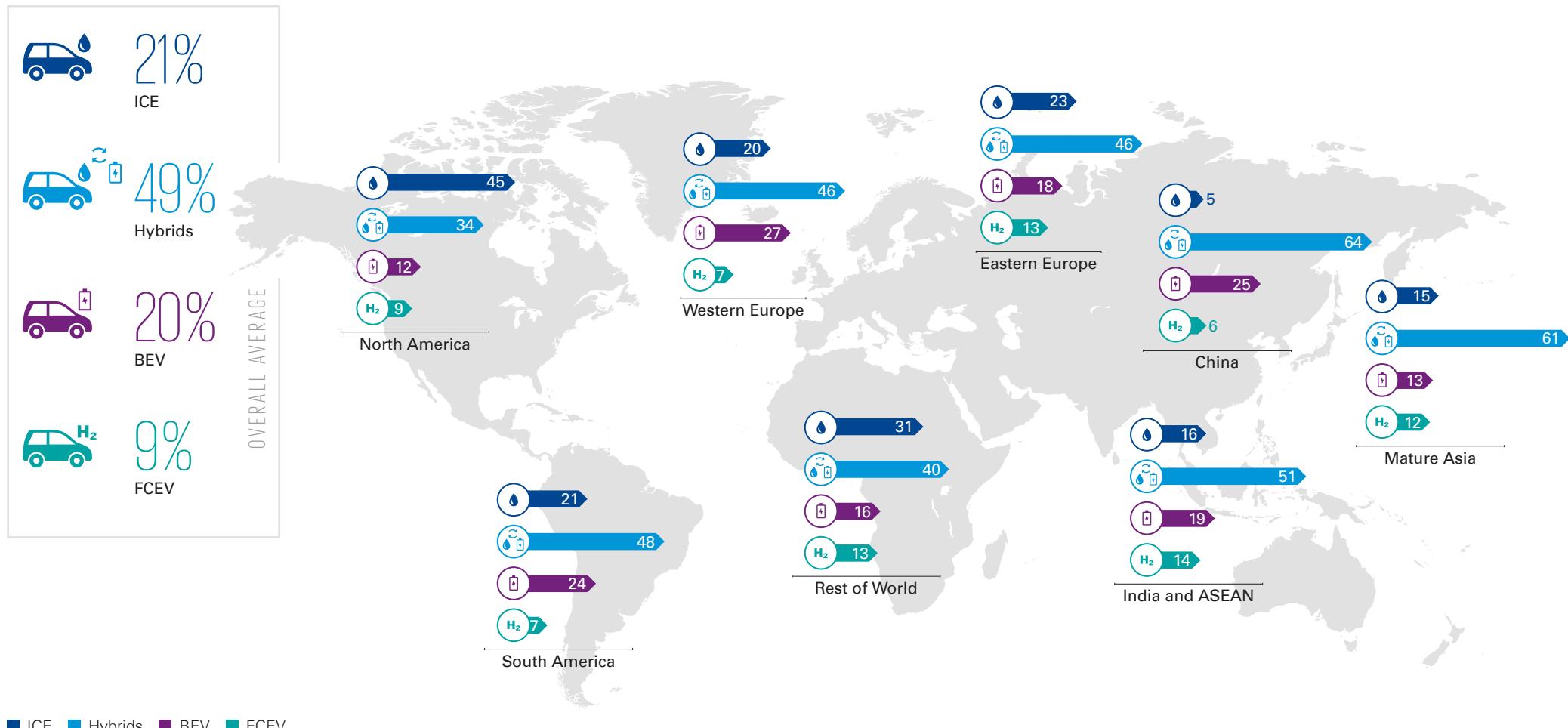
We project three necessary developments regarding e-charging infrastructure in the near future:

1. High degree of centralization and consolidation of CPOs
2. New charging options alongside today's charge points will be offered
3. Battery swap programs creating an almost seamless charging experience to the customer will gain importance



CONSUMER

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

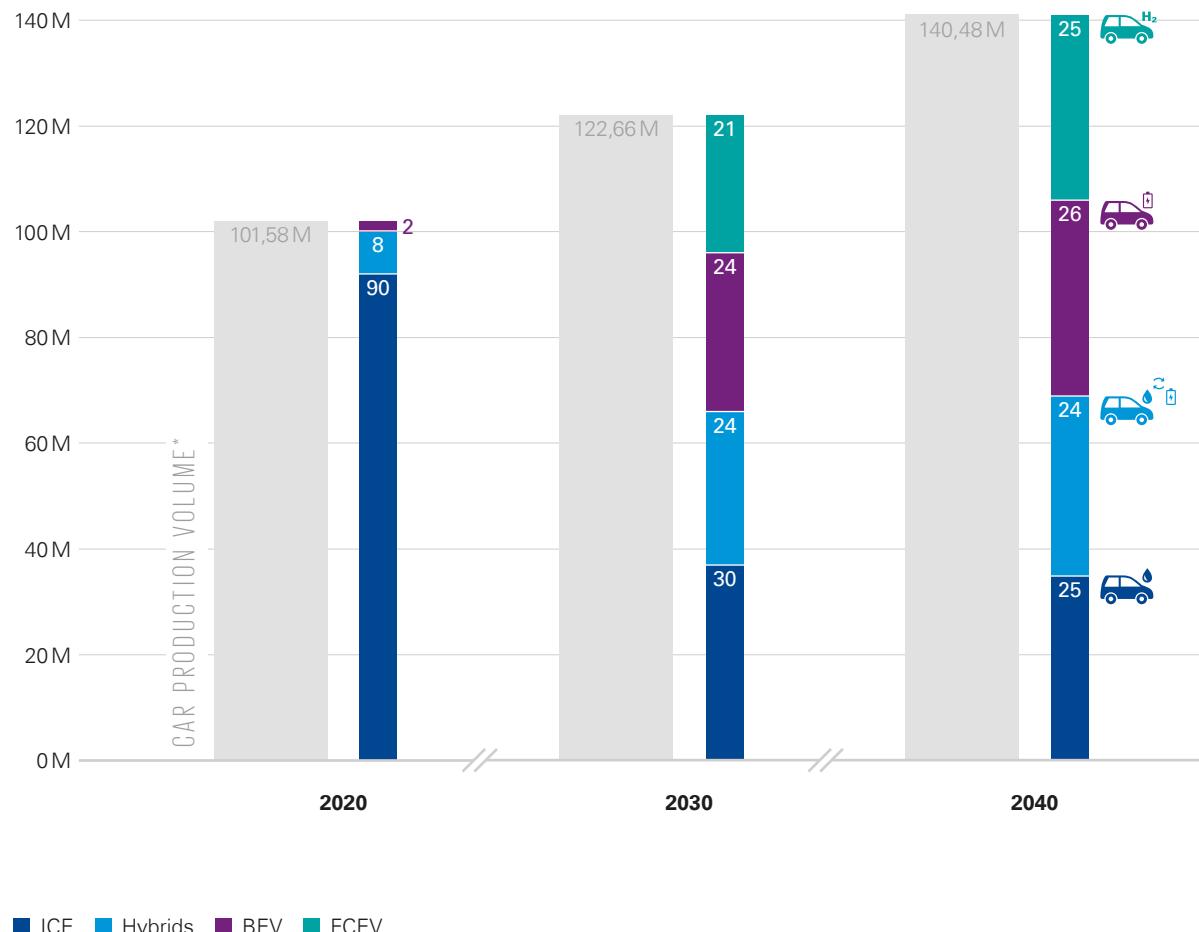


Note: Consumer (n=2,154); percentages may not add up to 100 % due to rounding; figures in percent



EXECUTIVE

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



Note: Executives (n=907); 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 2027–2032; *LMC Automotive

Combustion engines will co-exist alongside alternative drivetrain technologies

Although in recent years the technology radar has been quite unclear, now it seems to cluster its market again. In the future, as in the past, there will be multiple drivetrain technologies. Differences in market maturity, economic wealth and national interest lead to different regional distributions of ICEs, Hybrids, BEVs and FCEVs, driven by CO₂ and NO_x emission agendas.

The roll-out and implementation of electric drivetrains will be a long-term process that will evolve at different speeds globally, depending on market maturity, economic wealth, regulations and also government and lobbyist interests. This makes continuous investment in downsizing ICEs a necessary success strategy. Yet, with the growing public discussions and increasing ecological awareness, OEMs will need to rethink and adjust the downsizing ICE intentions of the past. The technology agenda will change – while in the past it concentrated on consumption, in the future it will focus on the CO₂ emission footprint.

Executives believe that by 2040 we will see a convergence of different powertrain technologies, leading to an almost equal distribution of ICEs, PHEVs, BEVs and FCEVs. The message of the executives becomes clear: multiple drivetrain technologies will co-exist. Compared to executives, consumers have a more pessimistic view of the future of ICEs. The vast majority (79 %) is already considering buying their next car with an alternative powertrain technology or some type of hybrid.



EXECUTIVE

Mixed traffic between autonomous and non-autonomous vehicles will lead to severe safety issues and liability claims.



Note: Executives (n=907); percentages may not add up to 100 % due to rounding; figures in percent

To drive or not to drive: Convenience is key when traveling from A to B. Benefits from advanced assistance systems let the car handle traffic jams or increased hassle on the road.

Separation instead of integration: Fully autonomous vehicles and human drivers are unlikely to use the same roads and will require new infrastructure concepts and regulatory environment. If we want autonomous driving to develop and establish fast, regulators could oil the wheels with a step-by-step approach and start very soon by separating areas to avoid mixed traffic.

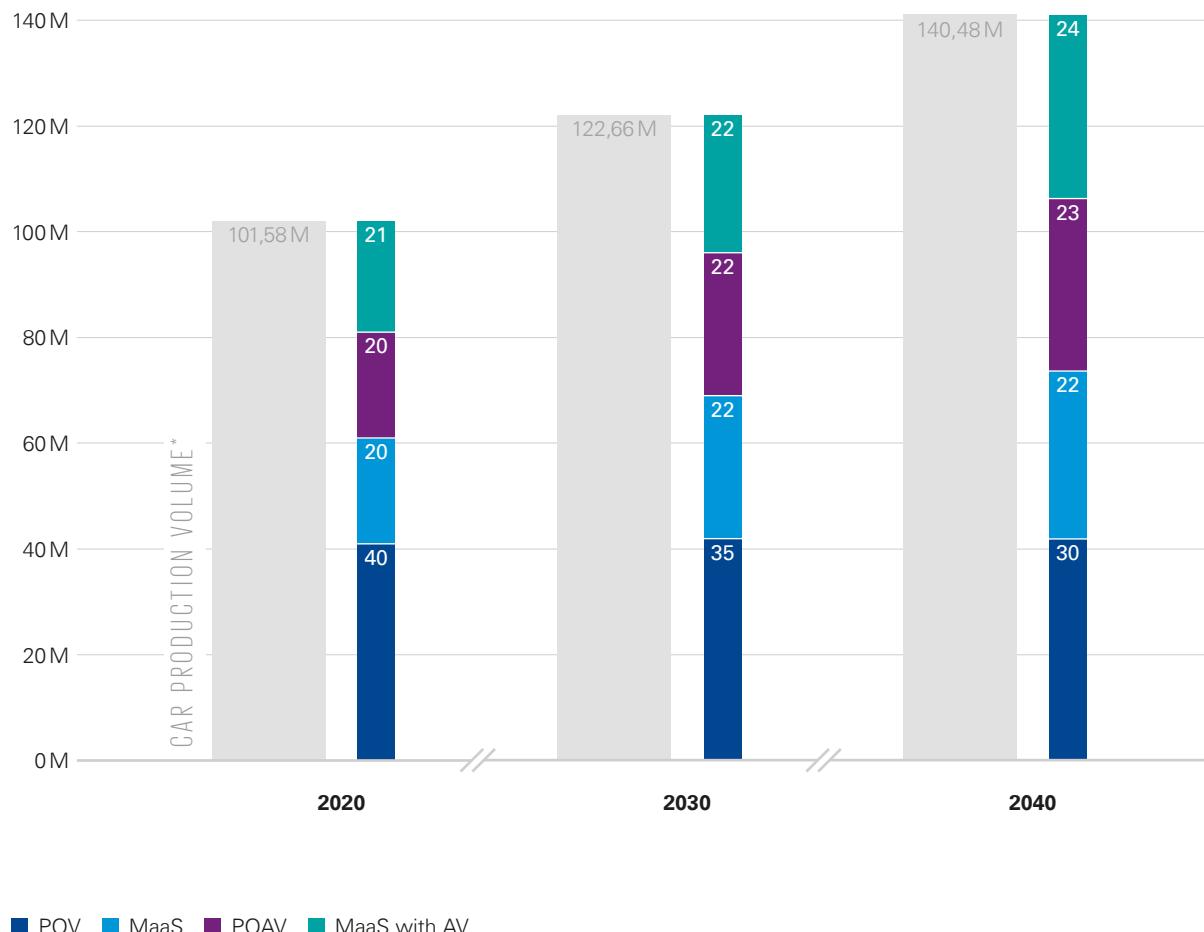
Autonomous driving will be more than merely providing advanced technology within a vehicle and extending related services; the fast breakthrough of autonomous driving is dependent on how different players in the ecosystem interact and how a legislative framework and respective infrastructure will be set up.

One main challenge remains mixed traffic of vehicles equipped with different levels of autonomous technology. Of the executives, 74 % believe that mixing autonomous and non-autonomous traffic will lead to severe safety issues.

“Secured spaces” for an interim time might be a solution to disconnect autonomous vehicles from the complexity of today’s car environment, where it is nearly impossible to include every eventuality into an algorithm. Starting by establishing exclusive car lanes for autonomous vehicles that are separated from the environment, those eventualities will be limited – if it works for trains why shouldn’t it work for cars?



What is your opinion on the share in 2020, 2030 and 2040 between POV (personally owned vehicles), POAV (personally owned autonomous vehicles), MaaS (Mobility as a service) and MaaS with AV (autonomous vehicles)?



■ POV ■ MaaS ■ POAV ■ MaaS with AV

Note: Executives (n=907); percentages may not add up to 100 % due to rounding; figures in percent; 2040 volumes are estimated on CAGR 2027–2032; *LMC Automotive

Mobility usage shares will evolve by the degrees of asset ownership and autonomy

Viewing mobility not only in terms of autonomous driving but also of asset ownership, sets a framework for a stepwise evolution of today's mobility concepts from driver-assisted shared mobility to autonomous mobility and to shared autonomy.

Opportunities to actually enjoy self-driving as an experience are decreasing from year to year and OEMs and suppliers need to shift their focus away from the last decade's business model of optimizing driving experience in terms of quality, safety, performance and comfort. People who want to get from A to B instead of actually wanting to drive will lead to a continuous replacement of today's concept of privately owned and conservatively driven vehicles. By 2040 execs expect a nearly even distribution of privately or shared vehicles driven conservatively or autonomously.

Whereas the transition from asset ownership to shared economy is pushed by the trend of making better use of resources, the implementation of autonomous driving is – in addition to technological advancement – highly dependent on global differences in market maturity, infrastructure and regulation.

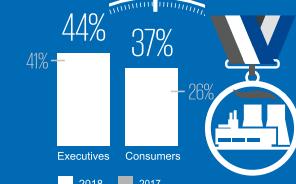
Trying to determine a concrete point in time for an overall "autonomy readiness" will fail due to the fact that there will always be an installed base of vehicles equipped with different levels of autonomous driving technology. Apart from the problem with mixed traffic, we still face difficulties in integrating autonomous driving technology into existing vehicles and will have to solve the challenge of remanufacturing the installed vehicle base.

KEY TAKEAWAYS

Customer centricity

"This year's results reveal that finding one single player who owns all customer relationships and manages the entire ecosystem alone is rather unlikely."

44 % of executives and 37 % of consumers believe OEMs to be the big winners in the battle for the direct customer relationship [Executives: 2017: 41 %; Consumers: 2017: 26 %].

**Retail of the future**

"Over half of all execs (56 %) are highly confident that the number of physical retail outlets as we know them today will be reduced by 30–50 % already by 2025."

Almost 80 % of execs strongly agree that the only viable option for physical retail outlets will be business transformation into service factories or used car hubs.

**Mobility on demand**

"Almost half (43 %) of the surveyed respondents show confidence that half of the car owners they know today will no longer want to own a personal vehicle by 2025."

Brand above all – this year 41 % of execs believe a trustful brand to be the key success factor for a sharing economy, followed by communities sharing the same values (24 %).





CUSTOMER VALUE

There is not any player who can get around without defining its role within the ecosystem

Agile customer touchpoint management, single sign-on platforms, digital standard equipment, changing retail landscapes, demand for car-sharing and innovative mobility solutions are all services and activities that do not belong to the home turf of traditional OEMs – the time has come for them to define their role within a designated part of the ecosystem and prepare for a service- and customer-oriented mobility environment. But let's be realistic – in a mature market such as Germany, less than 0.04 % of the complete car park is used for car-sharing today.

Customer centricity

A customer-centric concept is the heart of every business model, in a world that is moving from product profitability towards customer/asset-based value across the entire lifecycle. In the past the pathway to the customer was clearly defined – just like the technology roadmap. But today two decisions must be made: The technology roadmap as well as the business model aspect – which was previously unnecessary in the past. Today, the majority of execs and consumers claim that OEMs are the owners of the direct customer relationship, but shouldn't we really be asking which activities OEMs need to take in order to secure this position? What do customer journeys look like, what is agile touchpoint management, where connectivity is the enabler for managing customer touchpoints out of the “homebase asset”? Which are the non-asset based functions that customers request, but which do not belong to the home turf of a traditional player and require partnerships and cooperations with converging players?

Retail of the Future

The pressure is on – more than half of all execs are confident that the number of physical retail outlets as we know them today will be reduced by 30–50 % already by 2025. The retail landscape finds itself in the middle of a transformation phase. The challenge will

be to manage evolutionary, revolutionary and disruptive models in parallel without neglecting any of them. Execs are confident that the only viable option for physical retail outlets will be the transformation into service factories or used car hubs. With the rise of car-sharing and mobility on demand, traditional manufacturers will in future not be solely acting in a B2C environment but will rather need to prepare themselves for a B2B environment in which they are selling complete fleets to innovative mobility solution providers.

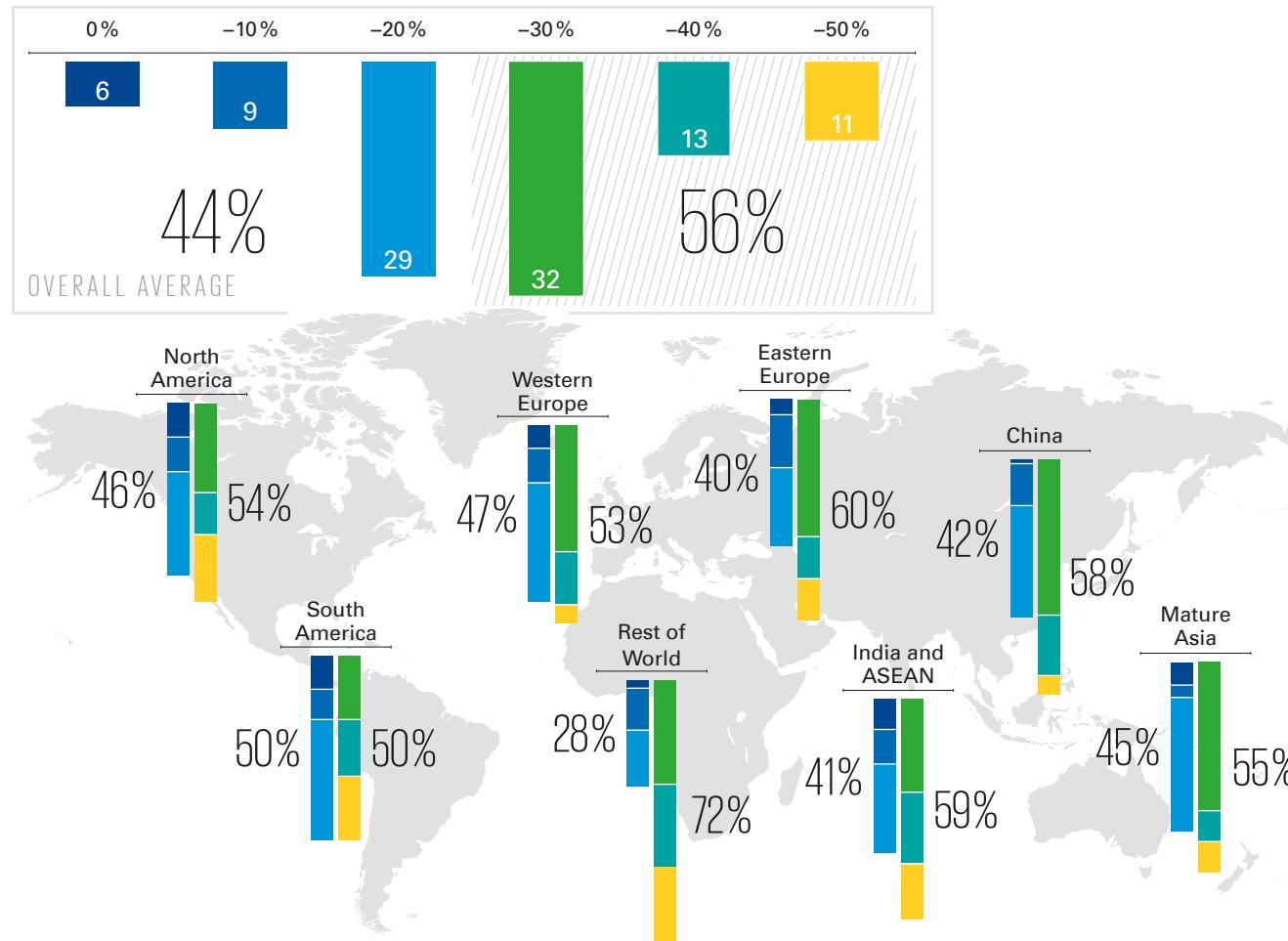
Mobility on demand

Year by year, fewer execs and consumers have faith in car ownership, which finds itself on a downwards spiral and is creating space for intelligent mobility solutions. Customers have a clear opinion and all they want is a seamless and easy to use mobility solution to travel from A to B. Even though car-sharing concepts are on the rise in urban areas, there are several relevant points to be aware of. Although execs undoubtedly believe that a trusted brand is a leading success factor, creating communities of people who share the same values may be a better way to serve the same customer archetypes.



EXECUTIVE

The number of physical retail outlets as we know them today will be dramatically reduced by 2025 ...



Note: Executives (n=907); percentages may not add up to 100 % due to rounding; figures in percent

The pressure is on – OEMs will have to reconsider their retail concept to keep hold of customer touchpoints

There will not be one single retail concept in the future. We need to find a way for evolutionary, revolutionary and disruptive retail concepts to co-exist.

The retail landscape is undergoing a transformation phase that requires re-thinking today's retail concepts

This year, over half of all execs (56 %) are highly confident that the number of physical retail outlets as we know them today will be reduced by 30–50 % already by 2025.

There are two reasons for the reduced number of retail outlets. The obvious fact is that an increasing number of customers can purchase their new private car online, but the second reason seems more striking and fundamental. Mobility patterns are changing and if customers request more and more intelligent mobility solutions instead of owning a private car, we will see a shift from a one-off transaction towards TCO-driven recurring transactions throughout the entire customer lifecycle. These transactions will probably be made on an online platform with multiple mobility solutions for traveling from A to B. In this world, product profitability alone has become outdated and will be transformed to measuring customer value over the lifetime.

There will never be the one single retail model of the future, instead retail will undergo transformation and a variety of retail concepts will co-exist.



The only viable option for physical retail outlets will be the transformation into becoming service factories or used car hubs. New car sales will be processed via other more digital channels.



Agree Disagree

Note: Executives (n=907); percentages may not add up to 100 % due to rounding; figures in percent

The only viable option for physical retail outlets will be business transformation into service factories or used car hubs.

According to execs, this year the absolute majority (79 %) strongly agrees to the statement above and additionally believe that new car sales will be processed via other increasingly digital channels. Most likely, data points for a connected car will need to be collected centrally and will not primarily be made available to independent dealer groups. The differentiation between new cars and the already existing car fleet has to be made here, as it is certain that the current vehicle stock will require management.

Distribution costs do not match retail sales anymore and we believe that for traditional retail outlets to survive, they must secure their role in the ecosystem and ensure efficiency by becoming universal service factories. This entails more efficient steering of capacities and more importantly the industrialization of both the outlet and its service functions, which can only be successful with an approach that focuses on creating more customer touchpoints rather than merely product-oriented touchpoints. Especially for asset-based players, the central aim should be to integrate this concept into the business model and ensure a seamless customer experience around it.

Alternatively, another scenario could be the conversion into used car hubs. The margin potential in the used car business is lost if OEMs do not manage to step into it by restructuring their physical retail outlets, which will invariably become obsolete in the long-run.

KEY TAKEAWAYS

**Co-competition**

"Stuck in a 'co-competition' mind-set: Asked whether they expect ICT companies and automotive companies to compete rather than cooperate, 49 % voted for competition and 51 % for cooperation."

In a different league: Together, the top 50 auto companies had just over 20 % of the market capitalization of the top 15 digital companies in December 2017 (dropping from above 40 % in 2010).

**Data supremacy**

"Auto OEMs are considered to be more trustworthy as data guardian than digital players – but only as long as no data breach happens?"

2 of 3 executives are convinced that product-centric usage of data to improve bottom-line results, performance and safety of the product should be the focus for asset-based auto companies.

Standard equipment of connected cars will need to be redefined: 85 % of all executives and 3 out of 4 consumers are convinced that data & cyber security is the number 1 prerequisite for future purchasing decisions.

**Transformation readiness**

"Number 1 strategy for success is cooperation with non-asset based players from converging industries to fully tap the potential of the future ecosystem that extends beyond the product 'car'."





ECOSYSTEM VALUE

Unlocking ecosystem value is a key success factor for asset-based auto companies

Tapping ecosystem value demands a lot from today's traditional auto companies. It means claiming the right data sets and embracing the idea of improving bottom-line results with upstream data rather than aiming at top-line results with downstream-oriented data-driven business models. To achieve this, auto companies must embrace the idea of co-competition or even consolidation with incumbent industry peers to catch up with digital challengers who are financially and technologically ahead.

Can striking distance to digital players only be achieved by co-competition or consolidation?

The race for ownership of the mobility customer keeps auto and digital companies searching for the right strategy and role in the ecosystem. Tracing back the development of the market capitalization of ecosystem players over the last seven years shows a remarkable imbalance in favor of digital companies, while auto players are still within striking distance in terms of overall liquidity. Nevertheless, recent examples show that neither traditional asset-based auto nor non-asset based digital players can succeed without each other. Surprisingly though, this year's survey results show that they are still very hesitant to really work with each other.

Data is both the greatest opportunity and hardest challenge for asset-based auto companies

Without a doubt, data offers tremendous opportunities for future business models in the mobility ecosystem. Is vehicle data even able to turn the automotive profitability model we know today upside down? While the data literacy around upstream vehicle data at

asset-based manufacturing companies is still in its early stages of development and should be significantly enhanced, the downstream opportunities based on consumer data are already lost to more agile non-asset based digital players.

The auto industry understands the urgency to transform, but still lacks the agility to co-integrate auto & digital

This year for the first time: Number one strategy for success for executives is cooperation with players from converging non-asset based industries in order to be able to fully tap the potential of the future ecosystem beyond the product "car". To achieve this, executives are anxious that asset-based auto companies must catch up first on IT systems to take the next step. Further, they are aware that they must embrace entirely different steering logics, ways to measure their success and re-define agility regarding the integration of new innovative business models.



Total market capitalization in the ecosystem

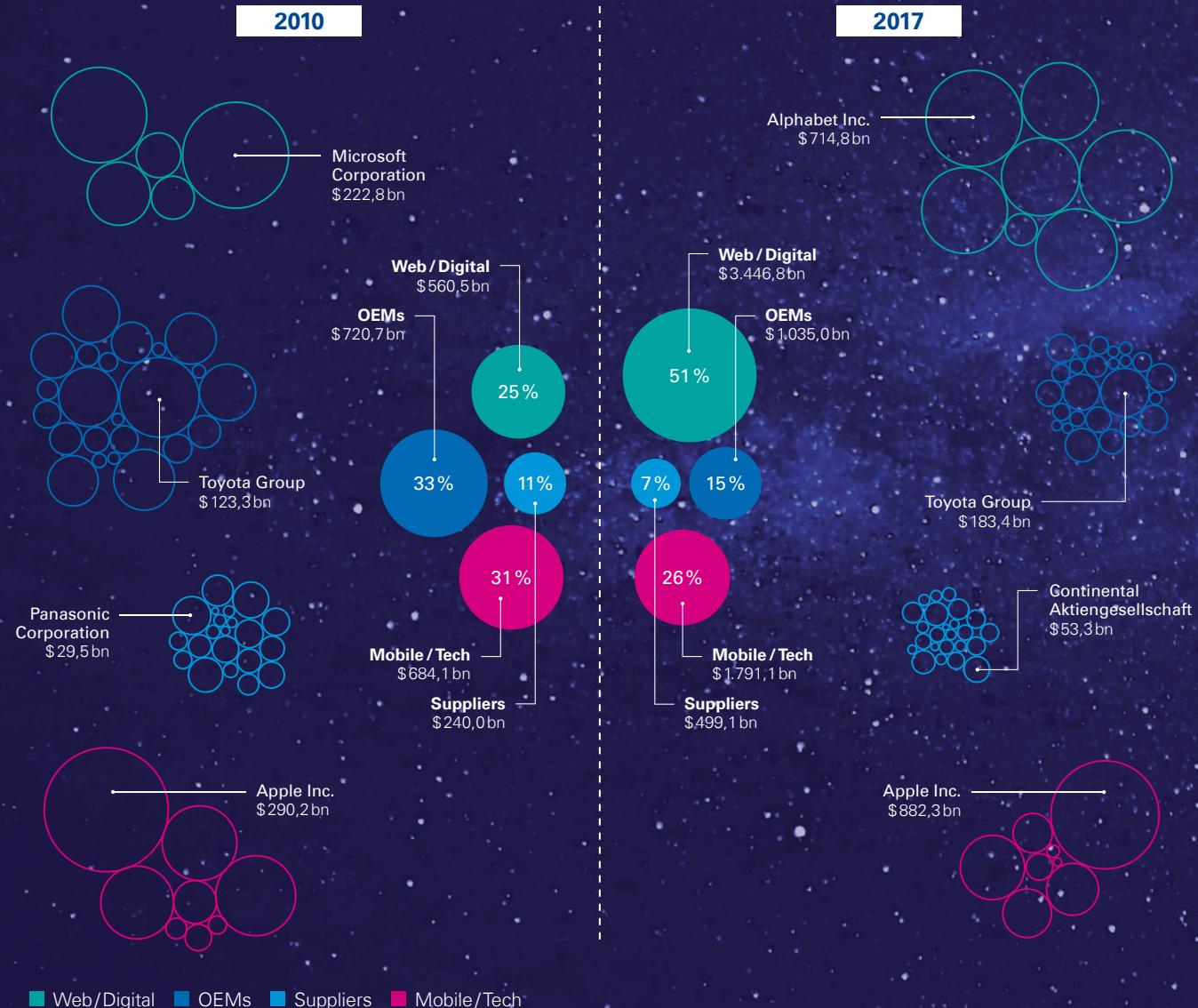
Digital challengers are already playing in a completely different league; auto companies must join forces now to keep pace

Looking at the development of the market capitalization of all major ecosystem players proves that the gravity between the traditional players (vehicle manufacturers and tier suppliers) and new players from the web/digital and mobile/tech sectors has shifted remarkably in favor of the latter between 2010 and 2017. In fact, they are playing in a completely different league: Together, the top 50 auto companies had only a little more than one fifth of the market capitalization of the total companies considered in December 2017 (dropping from above 40 % in 2010).

"In a different league:

Together, the top 25 auto manufacturers had just over 20 % of the market capitalization of the top 15 digital companies in December 2017 (dropping from nearly 60 % in 2010)"

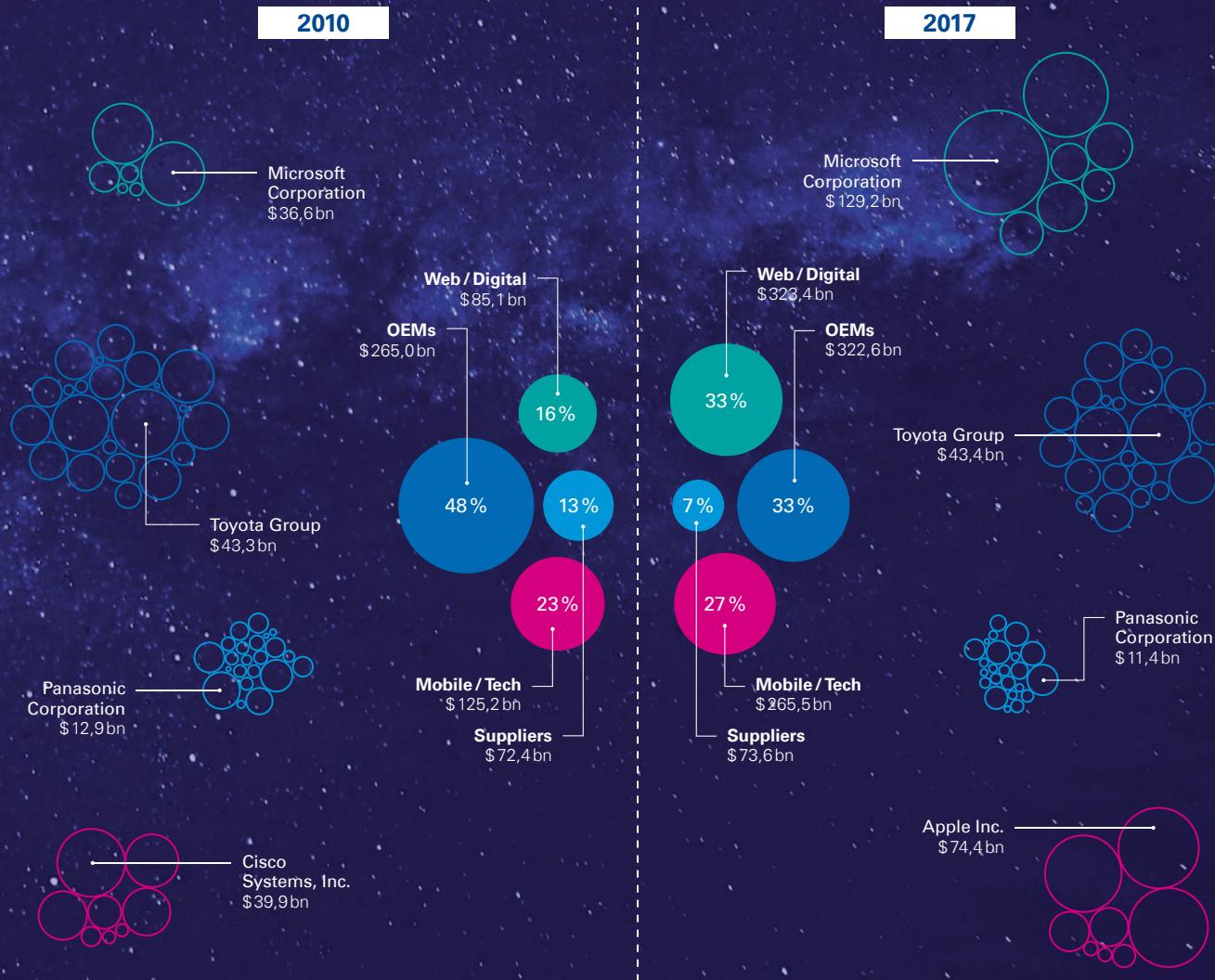
Recalling how dramatically the power has shifted in favor of digital companies over the past 7 years should serve as a wake-up call. Auto companies should be aware that they need to act now and team up, because it is very likely that the gravity will further shift towards their digital challengers over coming years.



Note: Percentages are share of total market capitalization and may not add up to 100 % due to rounding;
the proportions of the companies are only comparable within the sectors and years



Total cash positions in the ecosystem



Auto industry cooperation or even consolidation as proper strategy to rebalance power?

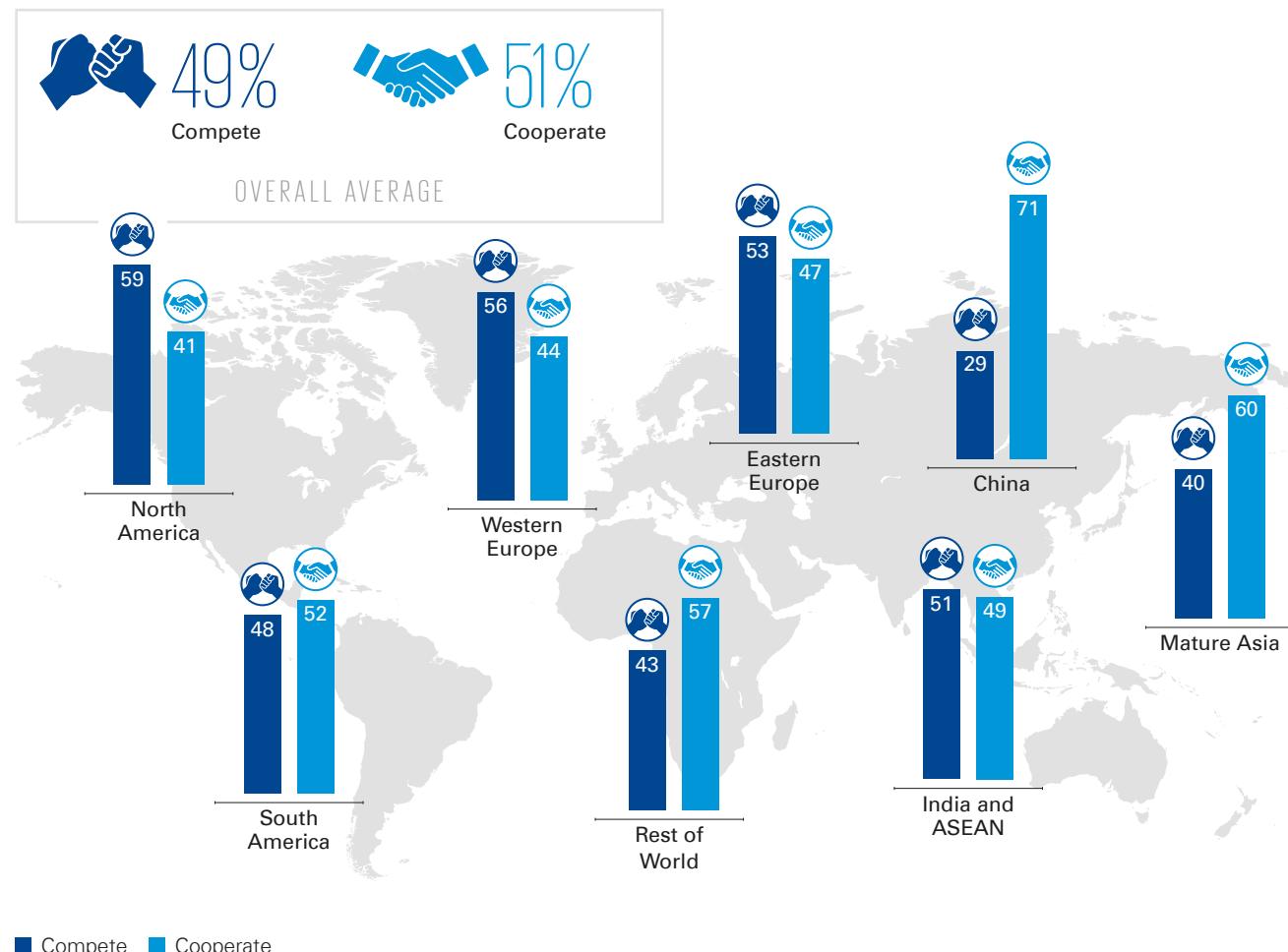
Looking at the development of available liquidity among industry incumbents and digital challengers, single players from the digital space are of course very much out of reach for the traditional asset-based ecosystem players. Although when added up, the available cash positions of the top 50 auto companies still make up roughly 40 %. Auto companies should use their good cash flow situation today very wisely and team up with incumbent industry peers, enabling them to stay in striking distance and jointly compete for interesting pieces of the future mobility value chain. Examples like the joint acquisition of the digital mapping service "Here" by the industry peers Audi, Daimler and BMW is one leading example how closer cooperation in the future ecosystem has been made a reality.

It can be reasonably assumed that we will see much more of these types of moves by industry peers. Looking at past developments in other sectors and the extremely high gravitational force towards the largest players in a sector, it could even be in the realm of possibility that the highly-fragmented landscape of hundreds of automotive OEMs and suppliers worldwide will need to undergo a significant wave of consolidation to stay competitive in the long run.



EXECUTIVE

Do you expect ICT companies and automotive manufacturers to compete or cooperate in the future?



Note: Executives (n=907); figures in percent

Can striking distance to digital players only be achieved by co-competition or even consolidation?

The race for the ownership of the mobility customer keeps auto and digital companies searching for the right strategy and role in the ecosystem. Tracing back the development of the market capitalization of ecosystem players over the last seven years shows a remarkable imbalance in favor of digital companies, while in terms of liquidity in sum the auto players are still in striking distance. Nevertheless, recent examples show neither the traditional asset-based auto nor non-asset based digital players can succeed without one another.

Execs from both sides are stuck in a "co-competition" mindset, but with striking differences at a closer look

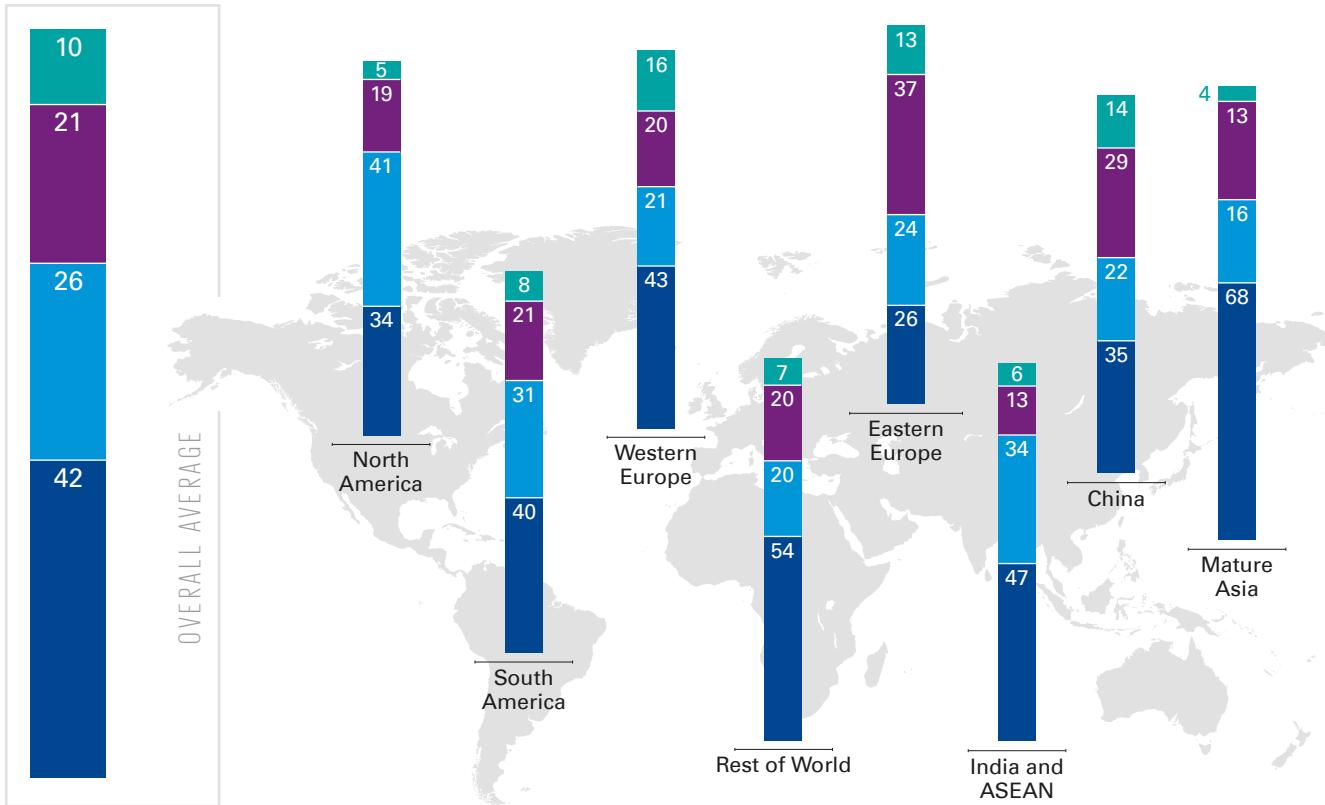
This year's results very accurately demonstrate the current state of mind of all players involved in the ecosystem. Asked whether they expect ICT companies and automotive companies to compete rather than cooperate, 49 % voted for competition and 51 % for cooperation. Of course this is still very much 50:50, but compared to the past, this year is the first time the tendency is more towards the cooperative than the competitive approach – interestingly with striking regional differences.

While respondents from mature markets like North America (59 %) and Western Europe (56 %) still rather tend towards competition, many Chinese executives (71 %) see it almost as a given that a successful way forward can only lie in a strong cooperation between asset-based manufacturing companies and non-asset based digital players.



EXECUTIVE

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



Safety-oriented –
e.g.: guarantee better anti-theft capabilities, car-2-x communication

Performance-oriented –
guarantee better performance of the car (e.g. emissions, maintenance)

Customer-oriented –
community profiling and better touchpoint management

Ecosystem-oriented –
resale of generated data to third parties (e.g. information about insurance, weather, groceries)

Note: Executives (n=907); percentages may not add up to 100 % due to rounding; figures in percent

Data is both the greatest opportunity and hardest challenge for asset-based auto companies

Data offers tremendous opportunities for future business models in the mobility ecosystem but will vehicle data even turn the profitability model we know today upside down? While the data literacy around upstream vehicle data at asset-based manufacturing companies is still in its early stages of development, the downstream opportunities based on consumer data are already lost to more agile non-asset based digital players.

Asked which areas they see as most promising for their companies to monetize data, 2 out of 3 execs are convinced that product-centric usage of upstream vehicle data to improve the performance or safety of their products shall be the main focus. On the contrary, only one third of respondents consider customer- and ecosystem-oriented business models based on downstream data a great opportunity to monetize data, mainly because these data streams are already claimed by non-asset based digital players.

Thinking a few steps ahead, the opportunities emerging around upstream data usage could potentially turn the profitability situation of premium and volume manufacturers upside down. In the logic of data-driven business models, miles are gold for top line and bottom line and more vehicles in a fleet will lead to more miles driven. This will dramatically increase the opportunities to create value out of the vehicle data gathered for volume manufacturers, while premium manufacturers with smaller fleets and consequently less upstream data available may fall behind.

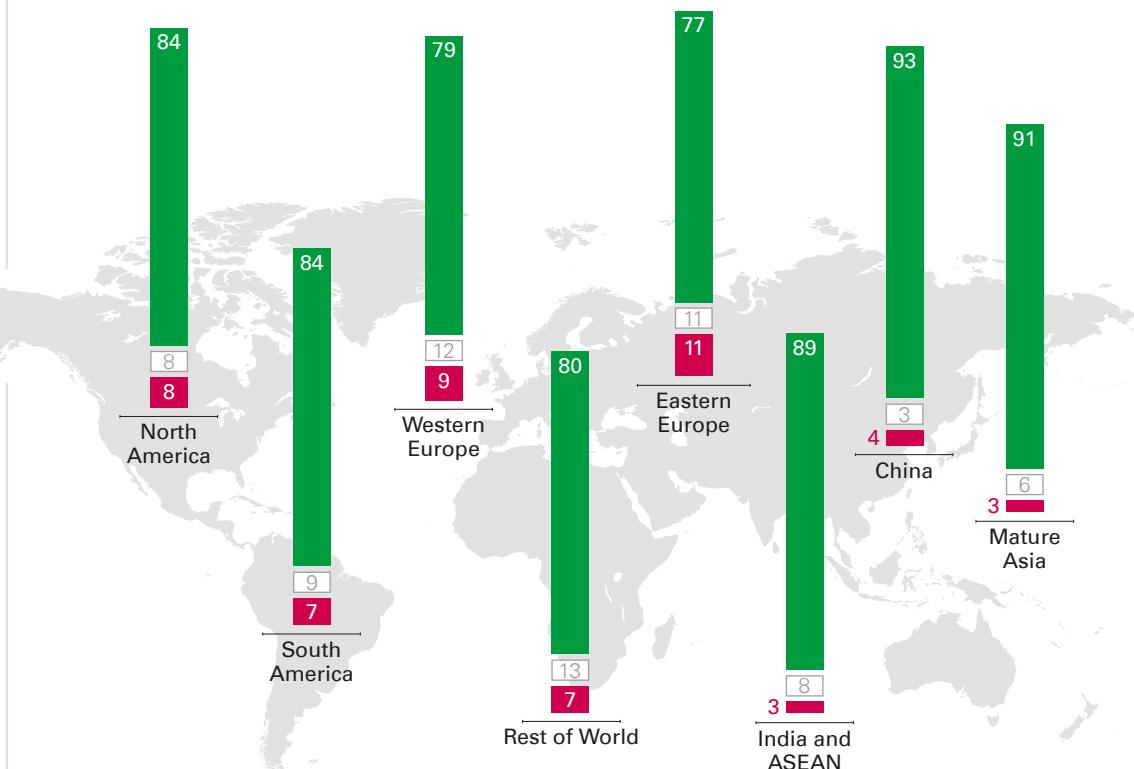
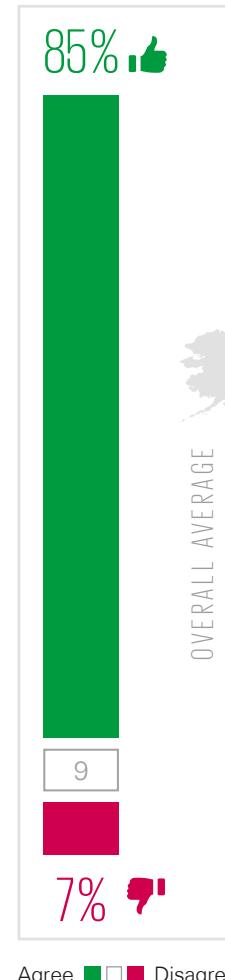
Importance of data & cyber security in a digital business model is undisputed

In the opinion of 85 % of all executives, companies not emphasizing data and cyber security are at extremely high risk of sacrificing their brand reputation. This view is also shared among all regions and stakeholder groups without any exceptions. Providing data security will only be a prerequisite in the future ecosystem, it will not be an USP. Failing to provide it, however, will lead to severe negative consequences. With features like function on demand and an increasing number of fully connected vehicles on the road, the pressure will be on for data and cyber security and will demand intensive efforts, investments and redefinition of standard and extra equipment of future connected cars by auto companies. Looking at today's car configurator options reveals that only a very minor share of the extra equipment options actually refer to digital features and the major chunk still focuses on very traditional product-based equipment.

In this light, it will be extremely important to create a secure digital environment with extra features that build maximum customer trust. This is also emphasized by this year's survey results, as 3 out of 4 make data and cyber security a prerequisite for their purchasing decision.



Companies that will not emphasize on data and cyber security have a high risk to sacrifice their brand reputation and value proposition for zero-error tolerance and releasability.



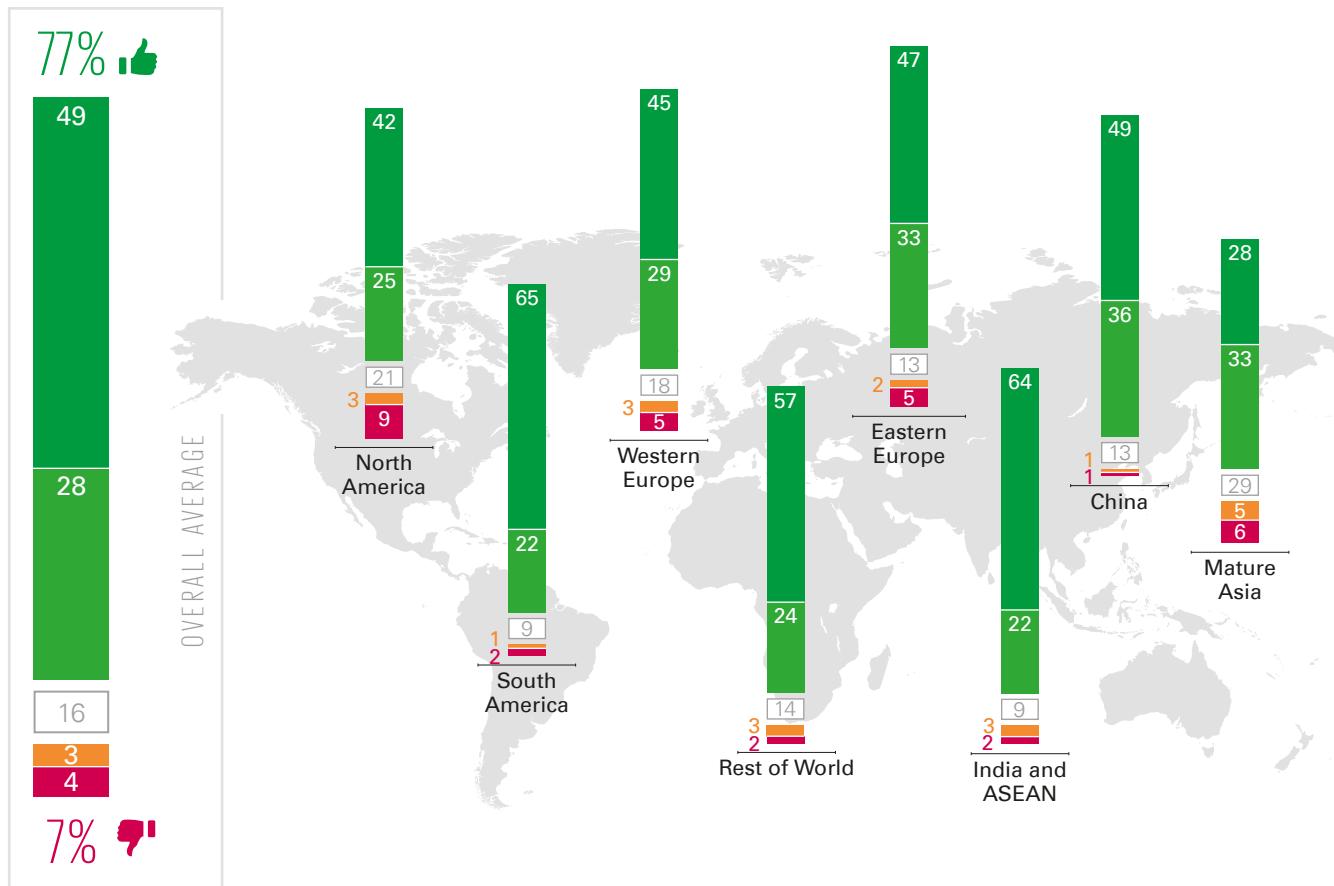
Agree ■ □ ■ Disagree

Note: Executives (n=907); percentages may not add up to 100 % due to rounding; figures and deviations from the previous year 2017 (n=953) in percent



CONSUMER

How important is data privacy and security for you as a purchasing decision of a vehicle / to use of a mobility service over the next 5 years?



Extremely important Not at all important

Note: Consumers (n=2,154); percentages may not add up to 100 % due to rounding; figures and deviations from the previous year 2017 (n=2,418) in percent

Auto OEMs are considered to be more trustworthy as data guardian than digital players – as long as no data breach happens?

A very sensitive issue in all data-driven business models is the question surrounding the actual ownership of the data generated by the vehicles and the consumers while on the go. The answer to this will play an integral role in defining which player can use and consequently monetize the data generated in the ecosystem. Looking at the results, neither the executives nor the consumers seem to actually differentiate between the value and ownership of upstream (vehicle) and downstream (consumer) data yet. In particular, the asset-based players do not yet seem to have realized that the ownership of downstream data without any link to the physical asset "car" are clearly lost to ICTs.

Who do consumers trust most with the data their vehicles generate?



Nevertheless, while consumers predominantly only trust themselves, one out of three executives considers OEMs as the data guardians, while ICTs are only considered to be the right choice for only about every tenth executive this year.

Thought Leadership



JANUARY 2017

Global Automotive Executive Survey 2017

The car itself will not be the main source of profit in the future! This is demonstrated by the results of the latest Global Automotive Executive Survey 2017. But how will traditional automotive manufacturers earn their money in the future? With the customers, their data or with the digital ecosystem? Who would have thought, that already today 85 % of the executives agree that the digital ecosystem will generate higher revenues than the hardware of the car itself?



APRIL 2017

The Connected Car is here to Stay

The connected car has arrived and is here to stay! What will the impact be on the Dutch Automotive market? Fortune and increased safety, or job losses, disruption and privacy issues?



OCTOBER 2017

Global Captive Finance Survey 2017

Automotive captive finance companies have grown considerably in recent years, benefiting from high margins and somewhat manageable risk exposures. However, they face changes in the market environment, technology and regulation: New market entrants are creating a more competitive environment; digitalization and new technology represent both threats and opportunities to existing players; mobility issues need to be properly addressed; recent and prospective regulatory requirements not only impose additional compliance costs but also require firms to take a more strategic view of how they identify, measure and control risks.



SEPTEMBER 2017

The lab coat to shop coat

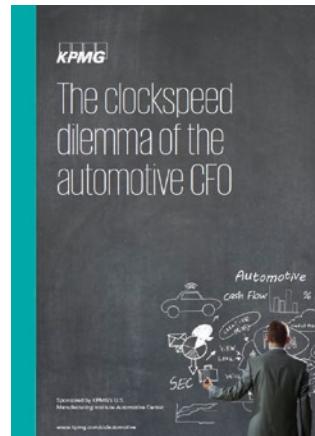
New technologies are disrupting many industries at an increasingly rapid pace, but the small companies that develop many of these technologies are often not prepared to manufacture them reliably and at scale. How can industrial manufacturers judge the manufacturing readiness of small technology companies and, if necessary, enable them?



NOVEMBER 2017

Islands of autonomy

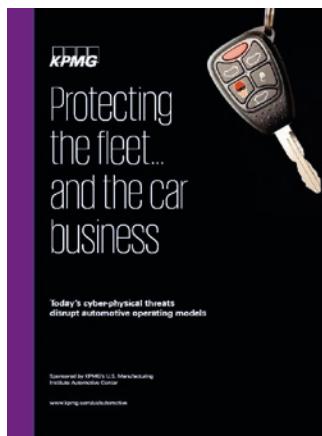
All over the world, a trillion-dollar market is swiftly developing around a new and disruptive transportation mode: driverless vehicles coupled with mobility services. But the embrace – the adoption of this new transportation mode – will not be immediate and everywhere. Instead it will arrive metro market by metro market in what we call “islands of autonomy.” To win in this marketplace of the future requires a new way of thinking. Meeting customer needs will demand complex new analyses of local travel.



NOVEMBER 2017

The clockspeed dilemma of the automotive CFO

Until now, automakers and suppliers have relied heavily on a business model that worked well for making and selling automobiles. But soon revenue will result more from service businesses around those cars, which demand entirely different business models. CFOs in the industry have a critical role to play in overseeing this transformation and ensuring the future of their companies.



NOVEMBER 2017

Protecting the fleet... and the car business

Ready for a car hack ... times one million? Modern vehicles are marvels of innovation. Even today's most popular models are chock full of technology and connectivity. The increasing complexity of this vehicle technology has countless benefits, but at the same time, it creates a real risk of cyber attack – not just to an individual car, but to an entire fleet.

I wish to personally thank our respondents and contributors for their involvement in this year's survey



DIETER BECKER

**Global and EMA
Head Automotive Practice**

In this year's survey, over 900 senior executives from the world's leading automotive companies were interviewed. Participants included automakers, suppliers, dealers, financial services providers, rental companies, mobility services providers and companies from the information and communication technology (ICT) sector. In order to grasp the opinions from all players in the ecosystem also, for the first time, energy and infrastructure providers as well as government authorities were interviewed.

Additionally, more than 2,100 consumers from around the world gave us their valuable perspectives and their opinions were compared with the opinions of the world's leading 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 whole KPMG global automotive sector steering group and community, especially to Moritz Pawelke, Global Executive for Automotive, and Aline Dodd, EMA Executive for Automotive, for their creativity, inspiration and dedication throughout the realization of this thought leadership project.

I would further like to express our appreciation to Tableau Software for supporting this project over the last three years.

The GAES 2018 is a fully interactive online platform

Access the platform under kpmg.com/gaes2018

Explore multiple dashboards within one “story”

For several topics, there will be more than just one analysis! Use the navigation bar 1 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 2 or differing stakeholder views! All results displayed on a dashboard are adjusted according to the selection of applied filters 3. The bottom analysis on a dashboard gives you a detailed split of the upper analysis results. Choose an analytical dimension 4 that best meets your interests and deepens your insight!

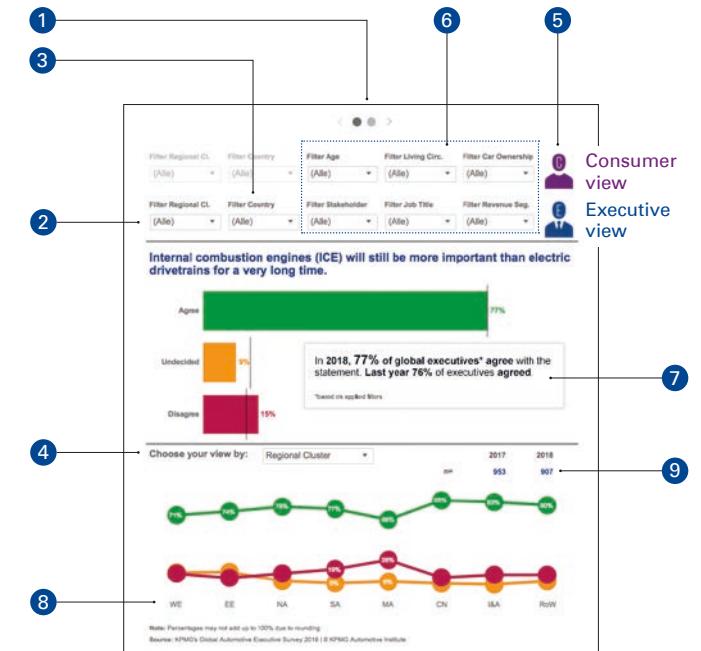
Maybe you are able to answer a question we haven't even thought of ...

Executive perspective vs. consumer view

Executives and consumers were asked many of the same questions 5. 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 6. All data displaying 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 7 for detailed information or if you pick specific areas of interest 8. 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 9 your selection still counts.



There is not one global answer:

OVER 2 MILLION DIFFERENT VIEWS

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