
KPMG
KPMG's 18th consecutive
Global Automotive Executive Survey 2017
In every industry there is a 'next' –
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Executive summary

Success of BEVs depends on infrastructure and application
Coordinated actions for infrastructure set-up, and a clear distinction of reasonable application areas (e.g. urban, long-distance) needs to be established.

62% believe BEVs will fail due to infrastructure. *[p.14]*

78% believe fuel cells to be the real breakthrough. *[p.14]*

Execs are hesitant regarding cooperation and unsolved infrastructure challenges
The reason for execs to believe in fuel cells may be their strong attachment to the existing infrastructure and traditional vehicle applications.

Efficient use of resources is key in a connected world
The future is about better utilization. Although there will be less cars on the road, personal miles travelled will increase significantly.

59% of executives agree that half of today's car owners do not want to own a car anymore in 2025. *[p.25]*

85% agree that the digital ecosystem will generate higher revenues than the hardware of the car itself. *[p.22]*

83% anticipate a major business model disruption over the next 5 years. *[p.24]*

Measuring success

71% agree that measuring market shares based on unit sales is outdated. *[p.23]*

Measuring success based on unit sales is outdated
Management according to product profitability is over – customer value will become the core focus.

Business model

35% agree that OEMs will become the Grid Master. *[p. 32]*

15% agree that OEMs will become contract manufacturers. *[p.32]*

OEMs have to decide
whether they want to be a contract manufacturer or a customer-centric service provider (Grid Master).

Investment dilemma

76% believe ICEs will remain important. *[p.12]*

53% believe diesel is dead. *[p.13]*

Execs are torn in between
Traditional combustion engines will be technologically relevant, but socially inacceptable.

Revolutionary powertrains

Evolutionary powertrains

Roles throughout the value chain are not yet decided
The unfinished concepts and ambiguous visions of ICT companies cause them to loose ground against OEMs. It is still unclear how the future value chain setup and business models will look like.

Digital ecosystem

Battery electric vehicles (BEVs) are this year's #1 key trend
The traditional product- and technology-centric business model has caught up again – powertrain technologies higher on the agenda than connectivity and digitalization. *[p.9]*

Key trends

Dilemma: Investment – CO_2 – Clockspeed

Lost in translation

Autonomous driving | **Clash of cultures: digital vs. auto – Digital ecosystem** | **Zero-error**

From offline

There is a status of "Co-ompetition"
Strategic alliances and cooperations with players from converging industries will be the fundamental driving force.

Autonomous driving

Clash of cultures

55% agree that OEMs will rather compete with players from Silicon Valley. *[p.28]*

82% agree that a Silicon Valley company will launch a car in the next 4 years. *[p.27]*

Zero-error tolerance vs. releasability

Zero-error ability alone will not pave the road to success
Neither zero-error ability of offline companies nor releasability of online companies alone will be sufficient for a successful future business model.

Lost in translation
The auto industry is lost in translation between evolutionary, revolutionary and disruptive key trends that all need to be managed at the same time.

Driving out of focus
Autonomous driving will redefine the utility of vehicles and is the enabler for service- and data-driven business models.

68% agree traditional purchasing criteria will become irrelevant. *[p.19]*

89% agree vehicle independent features will become key purchasing criteria. *[p.20]*

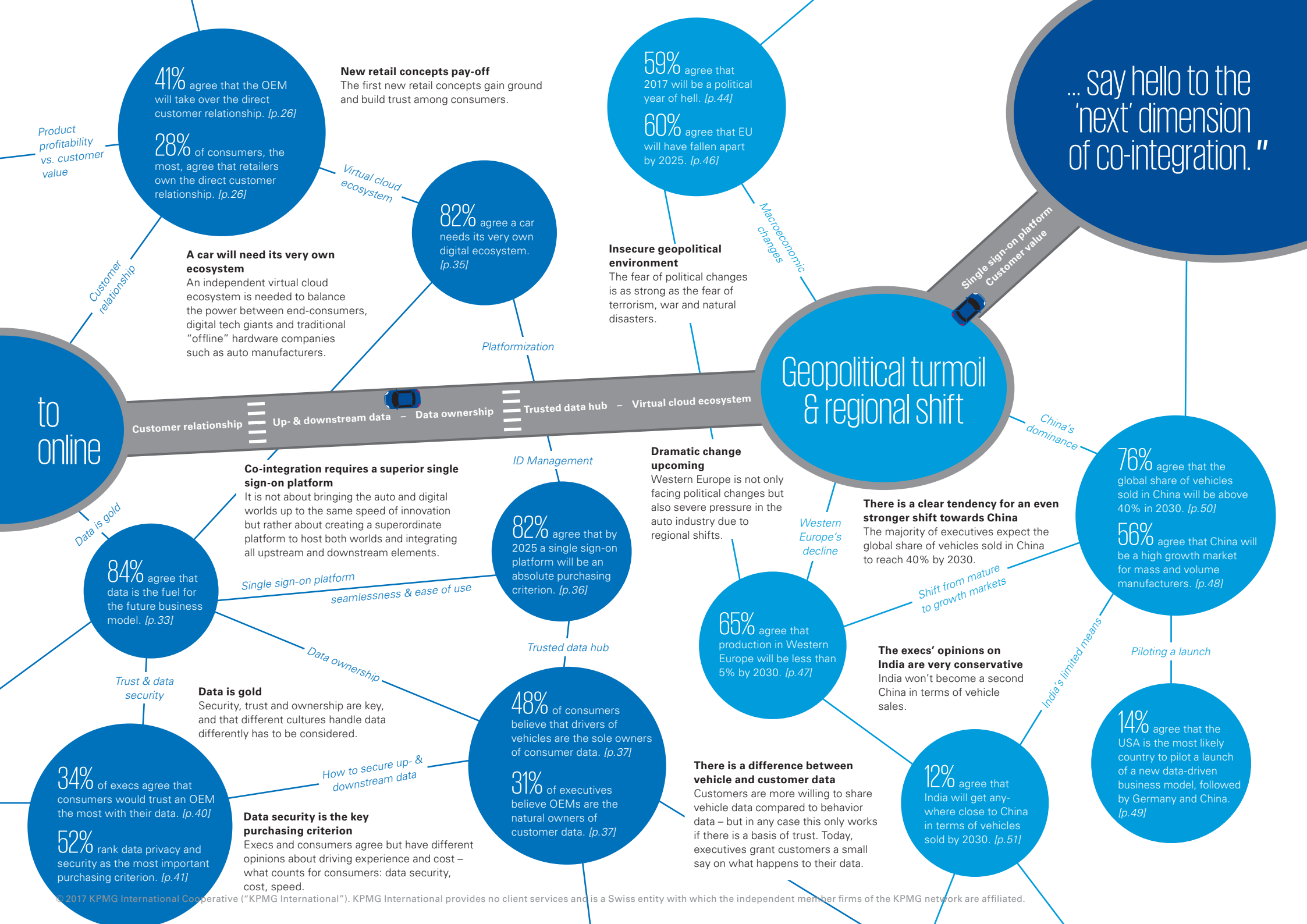
Auto vs. digital system

Miles are gold and swarm intelligence is essential
The full potential of technologies enabling autonomous driving can only be realized with the support of standards and full power of swarm intelligence. Neither the auto, nor the digital system will succeed on its own.

49% agree that premium OEMs are most trustworthy with zero-error tolerance. *[p.29]*

Only 25% of consumers agree that newcomers from Silicon Valley are most trustworthy. *[p.29]*

"Say goodbye to a complete auto-digital fusion ...



Acknowledgements

In its 18th consecutive year, the Global Automotive Executive Survey is KPMG International's annual assessment of the current state and future prospects of the worldwide automotive industry.

In this year's survey, almost 1,000 senior executives from the world's leading automotive companies were interviewed, including automakers, suppliers, dealers, financial services providers, rental companies, mobility services providers and companies from the information and communication technology (ICT) sector.

Additionally, we have asked more than 2,400 consumers from around the world to give us their valuable perspective and have compared their opinions against the opinions of the world's leading auto executives.

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

Special thanks to the whole automotive sector team in Germany under the lead of Moritz Pawelke, Global Executive for Automotive.

Look out for our new features in this year's survey

Design your own survey

Our **interactive online survey** enables you to discover our results in a totally new way. Focus on what you are interested in: What do Chinese vehicle manufacturers think? Where are the differences between the replies from 2013 and 2017? When do executives and consumers have opposing opinions?

Visit **www.kpmg.com/GAES2017** or directly follow the link at the bottom of each page.
There is no registration required!

See the auto world from a different angle

You will find **Recommended views** on several pages throughout the survey. We have pre-analysed the survey findings to make it easier for you to dig into the results and spot interesting findings (e.g. analyses across regional clusters, stakeholder groups or job titles).

The **Viewpoints** provide you with the perspectives of a particular group of respondents.
You can easily access these perspectives and many more analyses in our interactive online survey.

Feel the temperature

With our **Taking the temperature on …** we go directly into hot topics and seek the executives' and consumers' moods regarding the most discussed topics. We thereby get instant feedback on whether our executives and consumers agree or disagree on certain statements.

See how NextGen Analytics works @ KPMG

Compared to the standard approach, NextGen Analytics allows us to combine many different data sources in an interactive and more flexible way. With the use of **state of the art visualization tools,** analyses across various dimensions can be carried out on the spot. The graphs printed in the study you hold in your hands can only give you some few insights on how we draw our conclusions – **go online to find out more.**

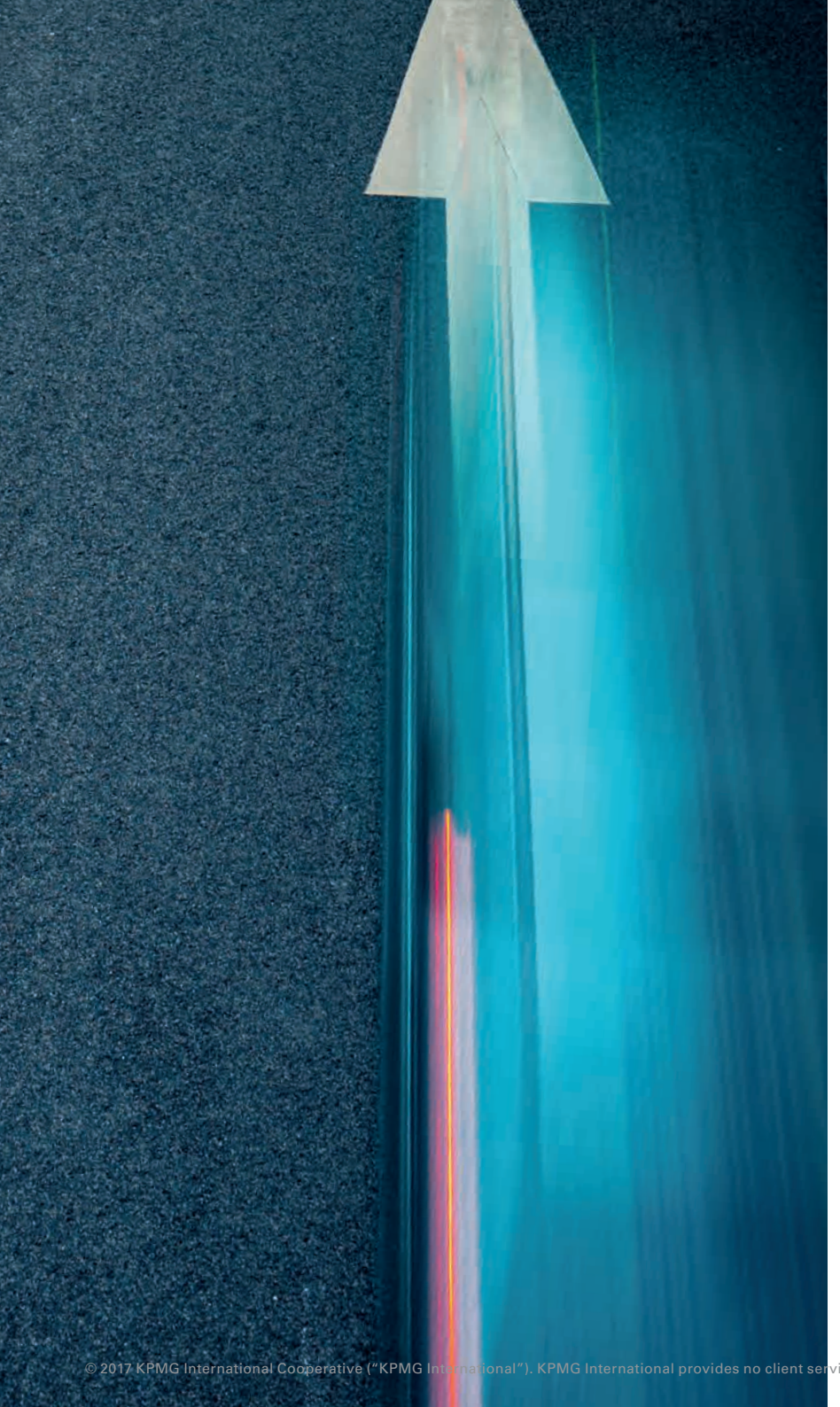
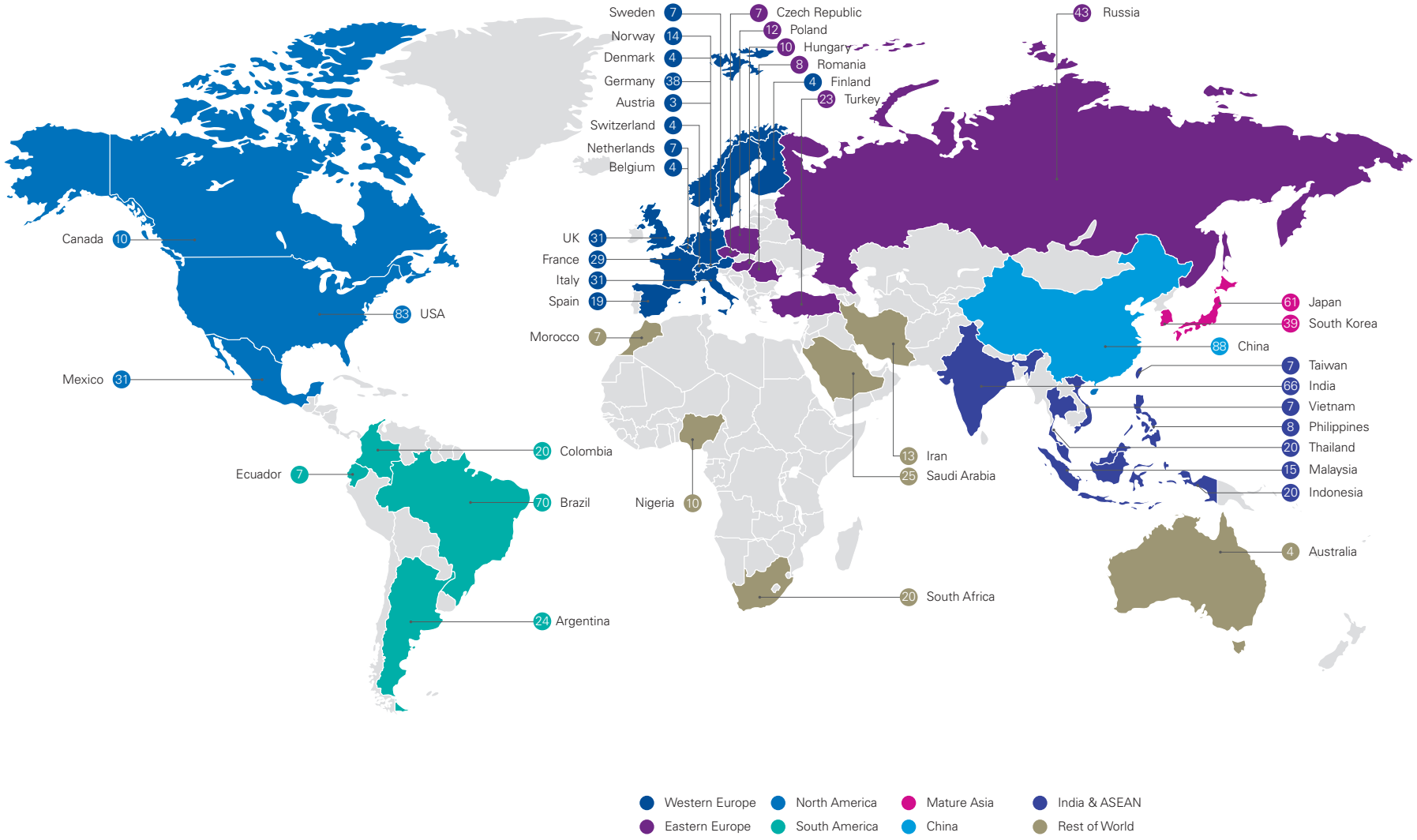


Table of contents

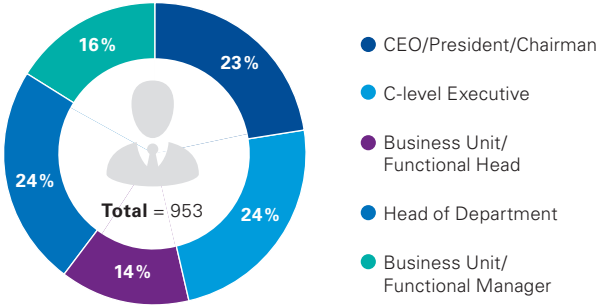
About the executive survey



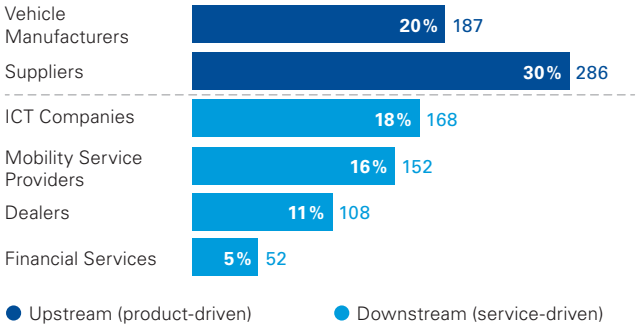
Note: Map shows number of respondents from each country | **Source:** KPMG's Global Automotive Executive Survey 2017

For the 2017 survey we gathered the opinions of almost 1,000 executives from 42 countries.

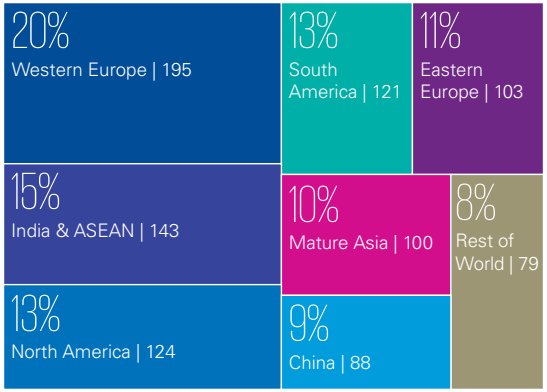
Respondents by job title



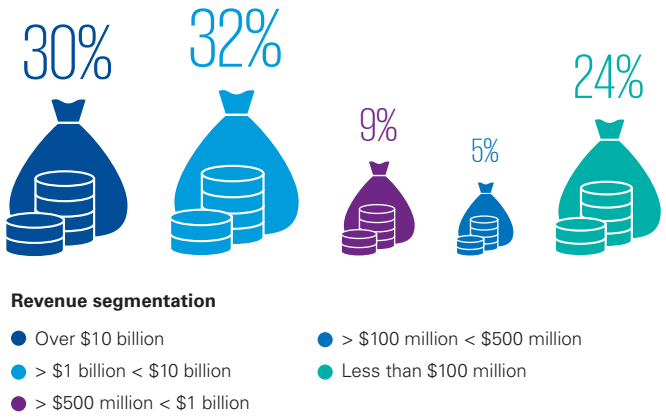
Respondents by company type



Respondents by regional cluster



Respondents by company revenue



Note: Percentages may not add up to 100 % due to rounding, ICT = Information, Communication and Technology
Source: KPMG's Global Automotive Executive Survey 2017

For this year's survey, we asked more executives and covered a wider range of countries than at any time in the past. Half of our 953 respondents are CEOs, Presidents, Chairmen or C-level Executives, providing us with even more reliable results about the opinions in the core of the automotive industry. Our sample is split evenly between the upstream (product-driven) and the downstream (service-driven) market, with a stronger focus on ICT companies than in the previous years. We thereby account for the latest developments in the market and keep track of the new players who challenge the industry.

Around one third of the executives are based in Western and Eastern Europe, 13% each come from North and South America and 15% originate from India and ASEAN. 9% of the executives come from China, 10% from the Mature Asia region of Japan and South Korea. Almost two thirds of our respondents are active in companies with revenues greater than US$1 billion, half of whom even have revenues of more than US$10 billion.

The survey was conducted online and took place between September and October 2016.

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Dieter Becker
Global Chair of Automotive

“Say goodbye to the complete auto-digital fusion and say hello to a new dimension of co-integration.”

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In every industry there is a ‘next’ …

… see it sooner with KPMG.

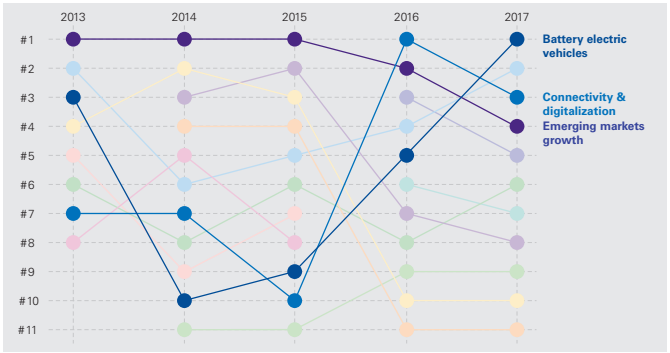
A very diverse powertrain technology landscape, ever stricter regulations, changing customer behavior and the increasing demand for connectivity and digitalization: these are taking today’s auto companies into a “lost in translation” dilemma between the automotive and the digital world. These two fundamentally different worlds are heading towards each other at ever increasing speed and so it may seem that they will converge completely one day. However, to us the clash of cultures between the offline and the online world is insurmountable and we believe that they will never become fully congruent. **This means that we need to let go of the vision of a complete auto-digital fusion.** We instead believe in an additional, overarching layer, a layer so to speak of the ‘next’ dimension in which both worlds are to some extent represented, a dimension characterized by co-integration in which the roles in the value chain have not yet been decided. For traditional auto companies, the key question will therefore be which role to strive for and how to tap new future revenue streams when traditional streams break away.

This year’s results demonstrate more than ever that the car itself will certainly be an essential part of revenue but not the only major source – of all the links in the value chain, it is the auto companies that will have to develop new service- and data-driven business models together in one digital ecosystem, placing the customer at the center. At a glance, our stakeholder view on key trends below reveals that two fundamentally different mindsets and stakeholder groups are fighting for supremacy. For the upstream players, the traditional automotive suppliers and OEMs, the product- and technology-centric business model has again caught up – powertrain technologies are higher on the agenda than connectivity and digitalization. For downstream players, on the other hand, last year’s #1 trend around connectivity and digitalization has been confirmed. This shows that executives seem to be torn between managing technological innovations around evolutionary and revolutionary powertrain technologies while jumping onto the bandwagon of grasping the next step in connectivity and digitalization – an extremely disruptive key trend.

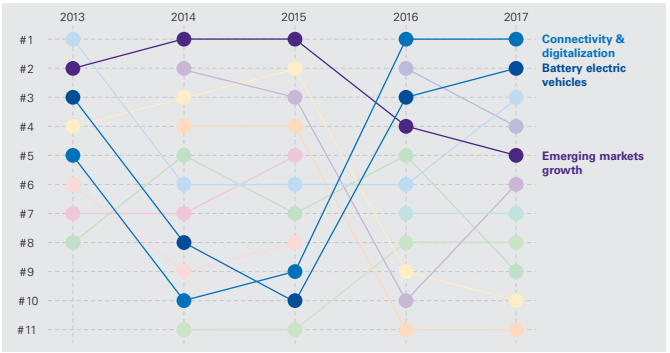
Last but not least, there are tremendous challenges ahead in terms of geopolitical turmoil and regional shifts. Recent political and economic disruptions have shown that we cannot take for granted that the world map will look the same even in just a few years’ time. Everything seems to be about speed in today’s world: but how about slowing down, taking time to breath, re-thinking business models, discovering new core competencies that enable tapping into spheres which are way beyond the home turf, to think of efficient use of resources, to question measuring market sales in units vs. measuring overall customer profitability, and eventually deciding for a future roadmap that enables capturing of the opportunities the ‘next’ dimension is bringing with it.

Keep your eyes open and stay tuned!
Dieter Becker

Stakeholder view on key trends | Upstream Players

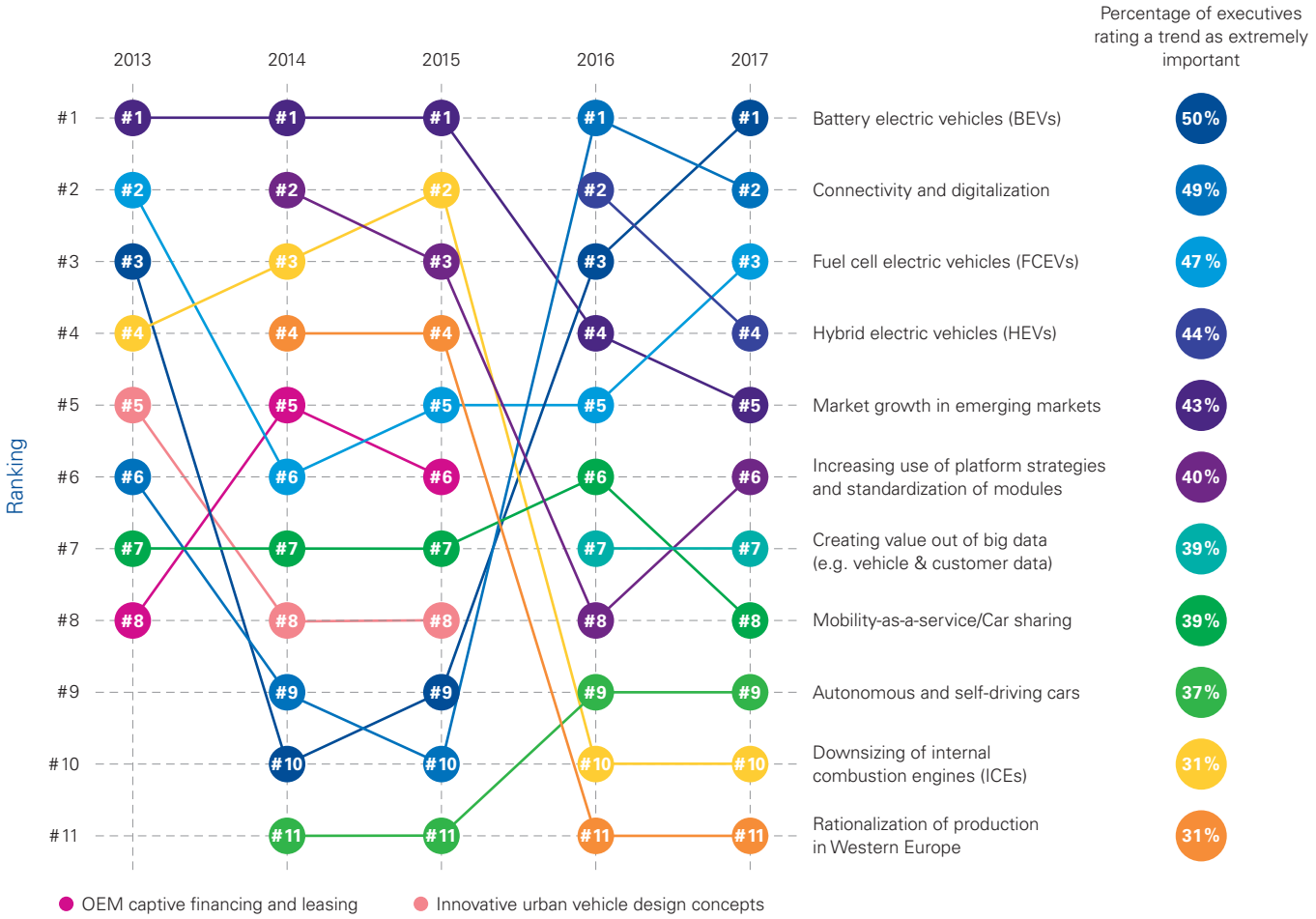


Stakeholder view on key trends | Downstream Players



What are the key trends until 2025?

Regulatory pressure pushes awareness for electrification: Battery electric vehicles are this year's #1 key trend.



50% of executives believe **battery electric vehicles** to be the #1 key trend, followed by connectivity and digitalization.

Battery electric vehicles dethrone connectivity and digitalization as number one key trend in the industry.

Within only 2 years, battery electric mobility has made significant leaps forward: BEVs jumped from rank 9 in 2015, when the consequences of e-mobility on OEMs business models were underestimated, to become the #1 key trend in 2017. Connectivity and digitalization have thereby even been overtaken. Strong regulatory restrictions have increased the pressure to react and therefore make e-mobility the top key trend among executives.

However, it is not only regulatory pressure that has influenced the executives' agenda, but also the fact that a trend that's closer to the current reality of auto execs is easier to grasp than last year's #1 trend of connectivity and digitalization, which requires completely new competencies.

Recommended view

When looking at responses given only from customer-oriented downstream players or even those executives coming from China, connectivity and digitalization is interestingly still ranked as the #1 key trend in 2017.

Source: KPMG's Global Automotive Executive Survey 2017

Lost in translation

Lost in translation: The auto industry is lost in translation between evolutionary, revolutionary and disruptive key trends that all need to be managed at the same time.

Execs are torn in between: Traditional combustion engines will be technologically relevant, but socially inacceptable.

Success of BEVs depends on infrastructure and application: Coordinated actions for infrastructure set-up, and a clear distinction of reasonable application areas (e.g. urban, long-distance) needs to be established.

Execs are hesitant regarding cooperation and unsolved infrastructure challenges: The reason for execs to believe in fuel cells may be their strong attachment to the existing infrastructure and traditional vehicle applications.

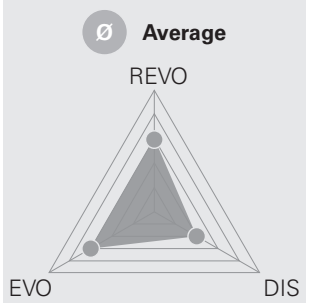
Driving out of focus: Autonomous driving will redefine the utility of vehicles and is the enabler for service- and data-driven business models.

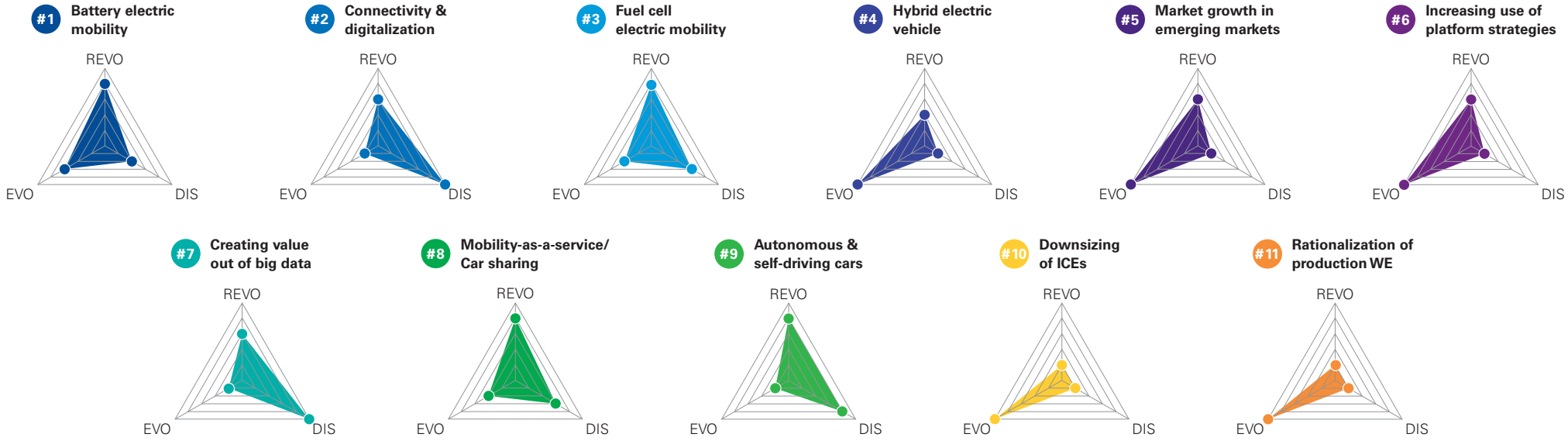
Miles are gold and swarm intelligence is essential: The full potential of technologies enabling autonomous driving can only be realized with the support of standards and full power of swarm intelligence. Neither the auto, nor the digital system will succeed on its own.

Lost in translation

The auto industry is lost in translation between evolutionary, revolutionary and disruptive key trends that all need to be managed at the same time.

Being "lost in translation" raises the importance of structuring thoughts and defining activities that enable the regaining of visions and the provision of clarity. We therefore believe that over the next couple of decades different paths need equal consideration in order to tackle the gap between the automotive and the digital worlds. There will be different routes – evolutionary, revolutionary and disruptive paths – all need to be managed simultaneously with none being neglected. All key trends have an evolutionary, revolutionary and disruptive trait to some degree, although the level of impact varies between them: the shorter the innovation cycle, the more disruptive the trend from today's perspective, which means that trends close to the current business models of auto companies are more evolutionary than disruptive. Calculations of the average and similar impacts of all three paths again emphasize the importance of managing all at the same time – neglecting just one could risk losing sight of the potential 'next' dimension.





Source: KPMG's Global Automotive Executive Survey 2017

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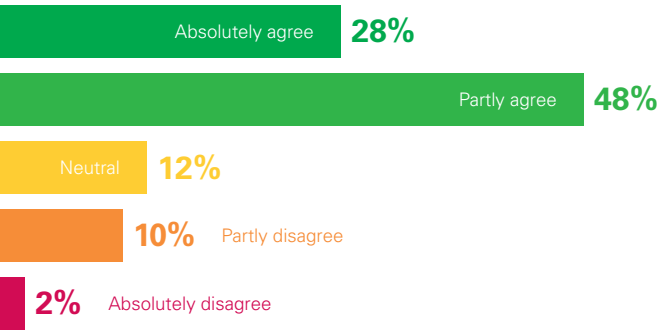
Taking the temperature on fossil drivetrain technologies

76% of the executives see **ICEs** as still more important than electric drivetrains for a very long time.

Executive opinion



Laurent des Places
Automotive Leader France

"Execs are torn in between: Traditional combustion engines will be technologically relevant, but socially inacceptable."

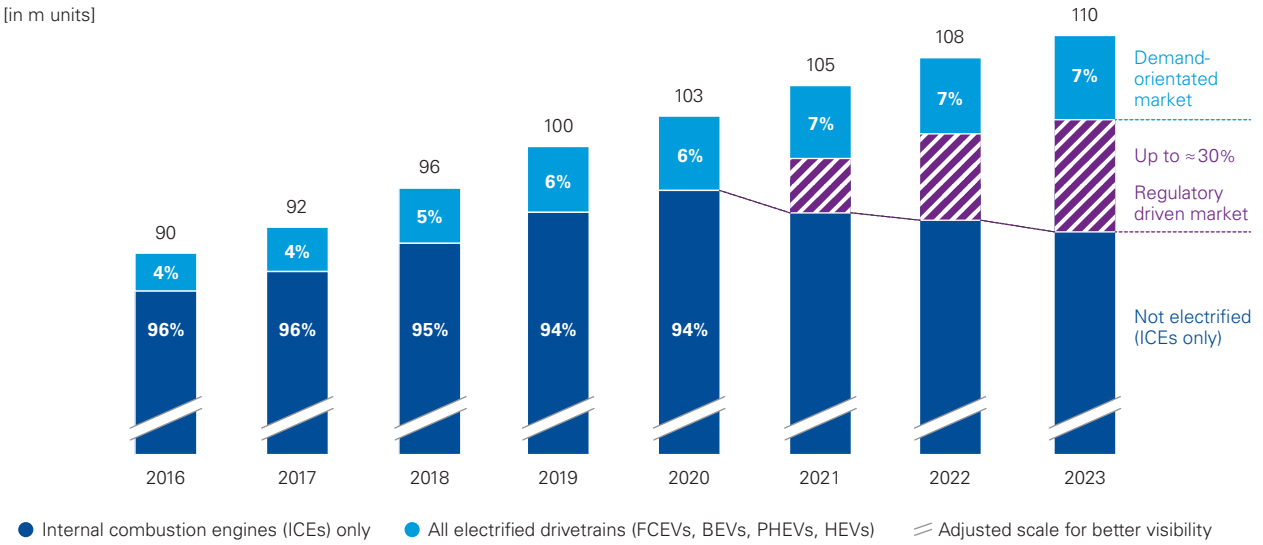
Internal combustion engines (ICEs) will still be important for a long time.

Executives are torn between evolutionary and revolutionary drivetrain technologies.

Ranking tenth on executives' key trend agenda, downsizing the internal combustion engine is by far no longer a crucial key trend compared to the highly rated electrification trends. OEMs see the importance in continuously managing the mainly evolutionary powertrain technology ICE, agreeing that revolutionary electric drivetrains still need time for implementation and cannot be easily integrated into existing platform concepts.

This leads to the question of how the market forecasts for drivetrain technologies will look like by 2023. Considering a demand oriented development, the share of alternative powertrains would increase from 4% in 2016 to only 7% in 2023. However, with the signalized strong influence on the market by regulation fulfilling the set CO_2 goals, we believe developments are much more revolutionary and very likely to convert to a regulatory driven market with an e-mobility share of up to 30% of global automotive production by 2023. In this case it would be the first time in history that the absolute number of produced ICEs would significantly decrease.

NextGen Analytics: Global automotive light vehicle production (< 6t) by drive technology (ICE vs. electrified)



Note: Percentages may not add up to 100% due to rounding
Source: KPMG's Global Automotive Executive Survey 2017 | **Source NextGen Analytics Graphic:** KPMG Automotive Institute 2017, LMC Automotive

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Diesel is meant to be dead, at least socially inacceptable.

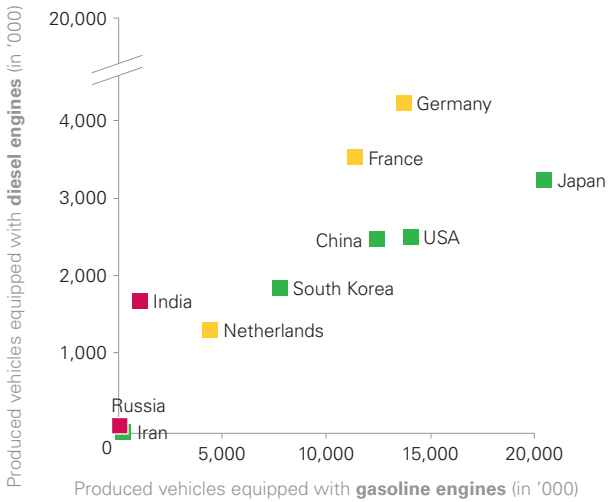
From a regulatory perspective, the most discussed topic over the last year has been diesel technology.

More than every second executive believes that diesel will be the first traditional powertrain technology to vanish from manufacturers' portfolios. This is quite alarming for several manufacturers and regions considering their expected diesel penetration rates for 2023, such as Indian manufacturers with an overall diesel share of more than 60%.

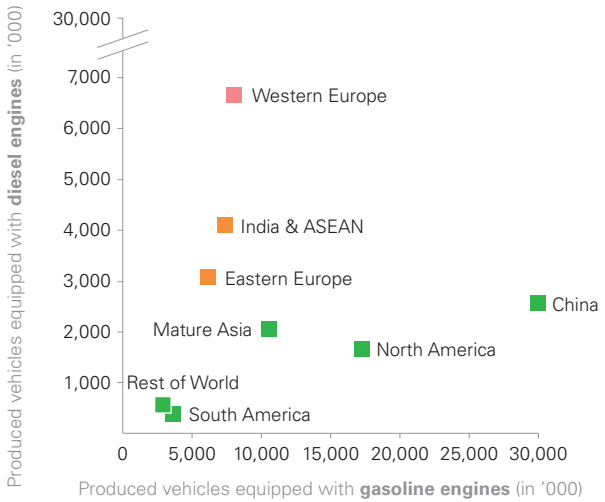
From a pure mindset perspective, there are certainly hard times to come. But diesel is not easy to erase from the market due to typical applications such as long distance heavy truck engines. Diesel will still be a viable option in many application scenarios and markets bearing in mind long distances, rural areas and fewer emerging countries. Besides, for applications like medium and heavy trucks, there might not be any short term alternative.

NextGen Analytics: Global automotive light vehicle production (< 6t) by engine technology in 2023 (Diesel vs. Gasoline)

Diesel penetration rates by OEM headquarter country in 2023



Diesel penetration rates by regional cluster of production plants in 2023

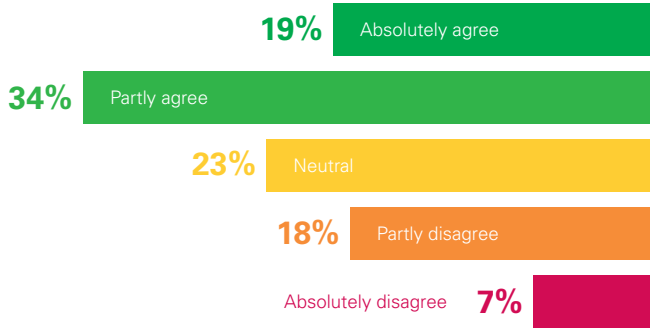


< 20% | 20–30% | 30–40% | 40–60% | > 60% | Adjusted scale for better visibility

Note: Percentages may not add up to 100 % due to rounding
Source: KPMG's Global Automotive Executive Survey 2017 | **Source NextGen Analytics Graphic:** KPMG Automotive Institute 2017, LMC Automotive

More than every second executive believes **diesel** to be dead.

Executive opinion



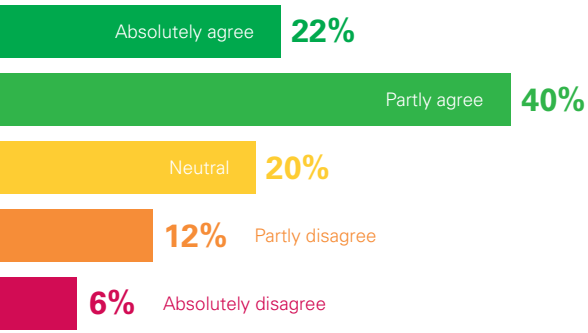
Recommended view

If you would like to peek into the diesel share of individual countries or even OEMs, visit the interactive online dashboard to derive your individualized analyses.

Taking the temperature on e-technologies

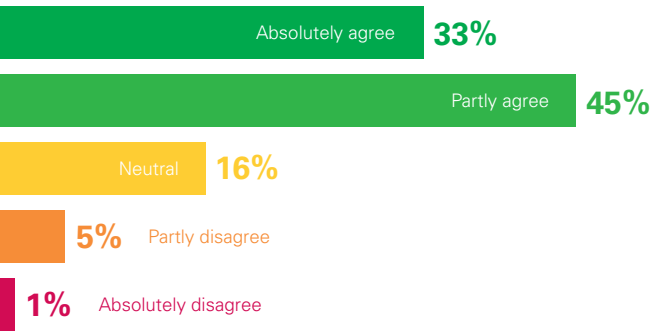
62% of executives absolutely or partly agree that **BEVs** will fail due to infrastructure challenges.

Executive opinion



78% of executives absolutely or partly agree that **FCEVs** will be the real breakthrough for electric mobility.

Executive opinion



Battery electric vehicles (BEVs) will fail due to infrastructure challenges while fuel cell electric vehicles (FCEVs) are seen as the real breakthrough for electric mobility.

Even though battery electric mobility is ranked as the most significant (#1) key trend, the key issue with pure battery electric vehicles seems to be setting up a user-friendly charging infrastructure leading the majority (62%) of executives to believe that BEVs will fail.

In contrast, a significant amount of 78% of executives believe fuel cell electric vehicles will be the golden bullet of electric mobility while also ranking it under the top 3 key trends. The faith in FCEVs can be explained by the hope that FCEVs will solve the recharging and infrastructure issue BEVs face today. The refueling process can be done quickly at a traditional gas station, making recharging times of 25–45 minutes for BEVs seem unreasonable. However, this technology is far from market maturity and will bring new unsolved challenges like the cooling of hydrogen or the safe storage in a car.

The regulatory pressure in key markets and the publicity generated by Tesla Motors are certainly reasons why pure battery electric vehicles have entered consumers' mindsets. Traditional players are trying to keep up and are heavily working on similar solutions. For the first time, they need to think far beyond the vehicle and its delivery, dealing with charging infrastructure and power supply.

The majority of consumers do not yet embrace the concept of electric vehicles because the most essential requirements for electric vehicles are not met yet. High investments into a dense and user-friendly charging infrastructure are crucial for creating demand. Therefore, the recently announced cooperation to build a new network of superfast charging stations among German premium OEMs shows firstly that pressure is necessary to bring players together and secondly that more standards have to be set. However, the development and installation of a completely new infrastructure will take its time and progress will vary from region to region resulting in fragmented infrastructures. Moreover, the industry is still struggling in making batteries more efficient and cheaper and are developing elaborate second life programs for batteries. The most elemental challenge with batteries is that recharging times are significantly longer than refilling a conventional fuel tank and will prove to be an insuperable obstacle to mass acceptance of electric mobility.

Recommended view

As to be expected, the hypothesis that BEVs will fail reveals regional differences among executives. While most of Western European executives (70%) see the concept of BEVs to be unsuccessful because of infrastructure challenges, more than one third of all Chinese executives (34% and therefore the most of all regional clusters) disagree.

Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

Range is everything

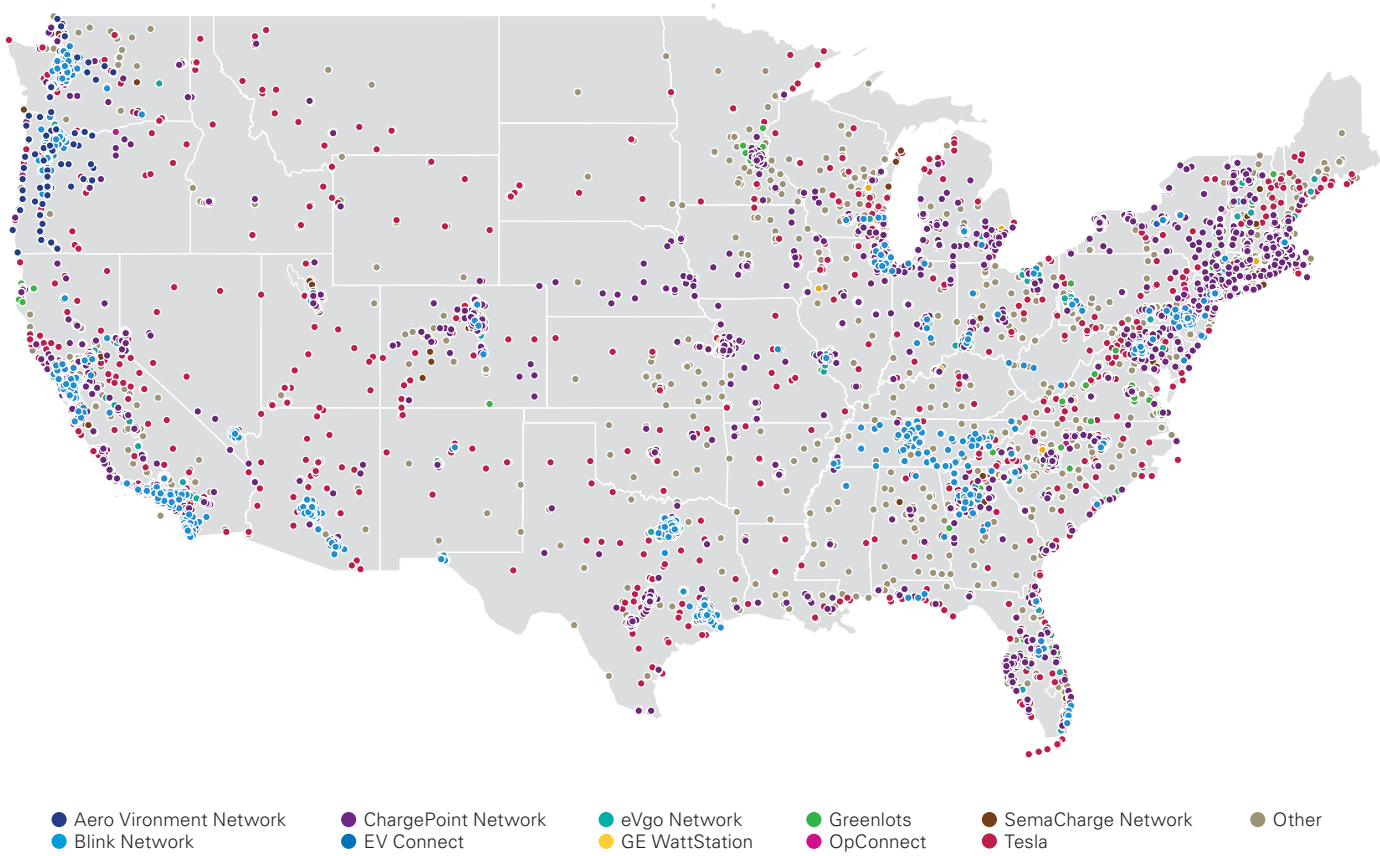
Overcoming the range and charging anxiety through a comprehensive charging network will create substantial momentum for battery electric mobility.

With an own long-distance infrastructure of superchargers, Tesla made its products independent and revolutionized the auto industry as a successful first mover. In 2016, the grid consisted of 734 supercharger stations of which 340 are located in North America. Additionally destination charging locations as well as workplace and home chargers of Tesla owners complete the network to create a dense infrastructure. The charging infrastructure analysis on the right perfectly shows that Tesla has made significant efforts and upfront investments. While competitors strongly focus on urban areas only, Tesla has built up a nationwide coverage of fast-charging stations throughout the USA. This demonstrates that an e-mobility strategy does not stop with delivering the vehicle to the customer but also includes servicing the customer over the whole lifecycle.

Moritz Pawelke
Global Executive for Automotive

"Success of BEVs depends on infrastructure and application. Coordinated actions for infrastructure set-up, and a clear distinction of reasonable application areas (e.g. urban, long-distance) needs to be established."

NextGen Analytics: Charge point operator infrastructure in the USA



Source: KPMG Automotive Institute 2017, US Department of Energy

kpmg.com/GAES2017

What powertrain technology to invest in and when to make the shift?

High investments

are planned for **all powertrain technologies.**

More than **every third** consumer would buy a **full hybrid** as their next car.

Recommended view

Results strongly differ by region. Filtering the results for North American OEMs, we can find 77% of the manufacturers with high investment plans for ICE technology and with 37% most American consumers going to buy an ICE. In contrast, almost every second Chinese consumer would buy a full hybrid, while 72% of the Chinese OEMs highly invest in BEVs.

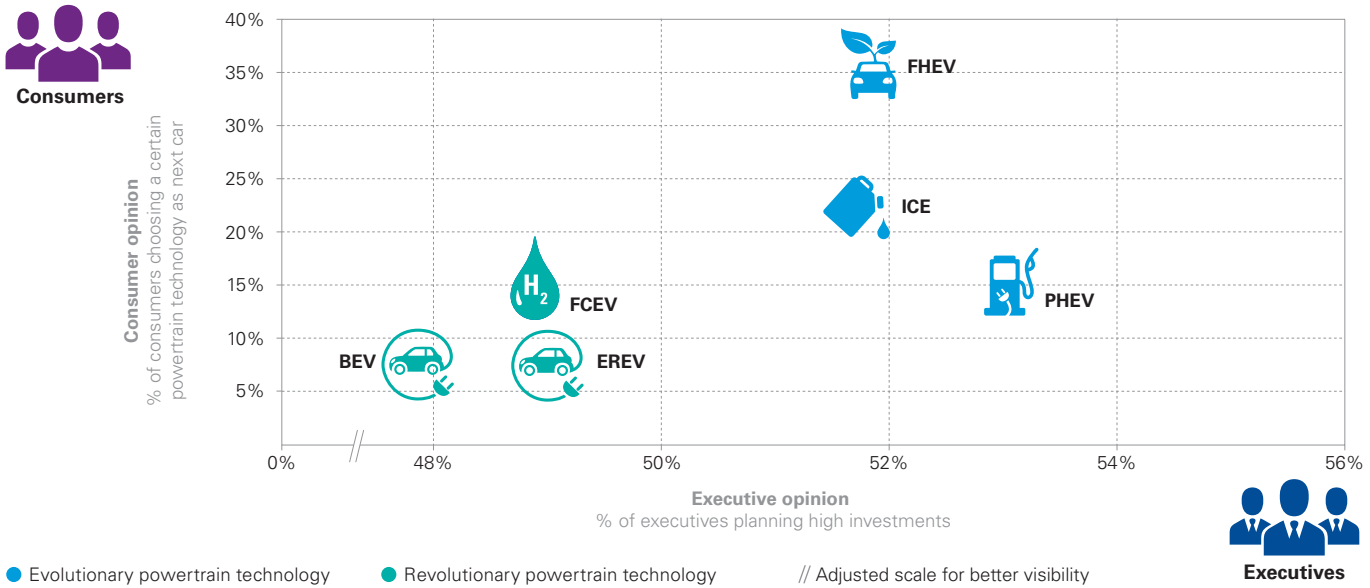
John Leech
Automotive Leader UK

"Execs are hesitant regarding cooperation and unsolved infrastructure challenges. The reason for execs to believe in fuel cells may be their strong attachment to the existing infrastructures and traditional vehicle applications."

No powertrain technology clearly stands out as a preferred investment goal for executives, whereas consumers do show a clear preference.

Both executives and consumers cling to traditional evolutionary powertrain technologies.

As everybody is looking for the smoothest transition from one technology level to the next, executives are still torn between the different technological options. This becomes particularly obvious when looking at the investment priorities. Over the next 5 years, 53% of executives are planning to highly invest in plug-in hybrids and 52% in ICEs and full hybrids. However, looking at all powertrain solutions, there is only a 5% difference in distribution for high investment. With 36%, full hybrid electric vehicles are the consumers' clear preference as their next car, while 21% of consumers would still buy a car with an internal combustion engine. Comparing consumer results with last year, the distribution does not significantly differ. It is predicted that this picture will change quickly as soon as BEV charging infrastructures are implemented in high density and high income cities and BEV portfolios will be extended to various segments, bodystyles and reasonable application areas.



Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

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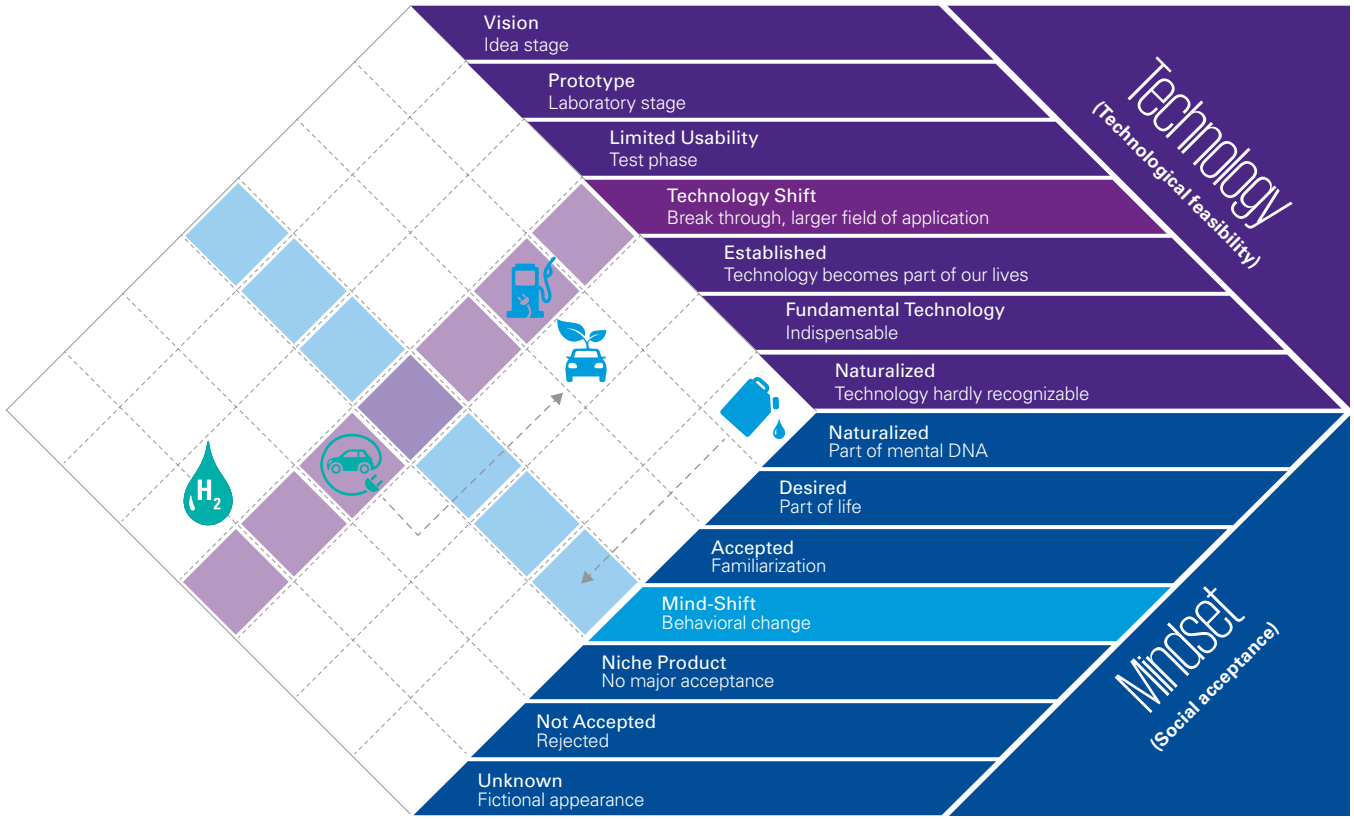
The industry is in a technology-mind-shift dilemma

The investment dilemma is created by the discrepancy between technological feasibility and social acceptance.



Surveying executives on key trends, investment strategies and their opinions on developments of ICEs, diesel, BEVs and FCEVs creates a general impression that automotive executives are torn between new but immature trends and traditional technological solutions.

Executives seem unconfident in their investment strategy as they are investing in evolutionary technologies while at the same time preparing for revolutionary powertrains. This state of uncertainty is being strongly triggered by regulation and the recent discussions around the acceptance of fossil fuel technologies, in particular diesel.

Successful innovation always needs a technology and a mind-shift.

To illustrate this, we have classified the diverse powertrain landscape into the technology mindshift matrix on the left. Today, ICEs have become completely naturalized whereas BEVs just reached the tech-shift but not the mind-shift and due to unsolved issues are therefore not yet accepted by the mainstream. With the increased awareness for alternative powertrains, automakers will have to make sure that their technological developments keep pace with the consumers mindsets.

Source: KPMG Automotive Institute 2017, Gottlieb Duttweiler Institute (GDI), Cisco

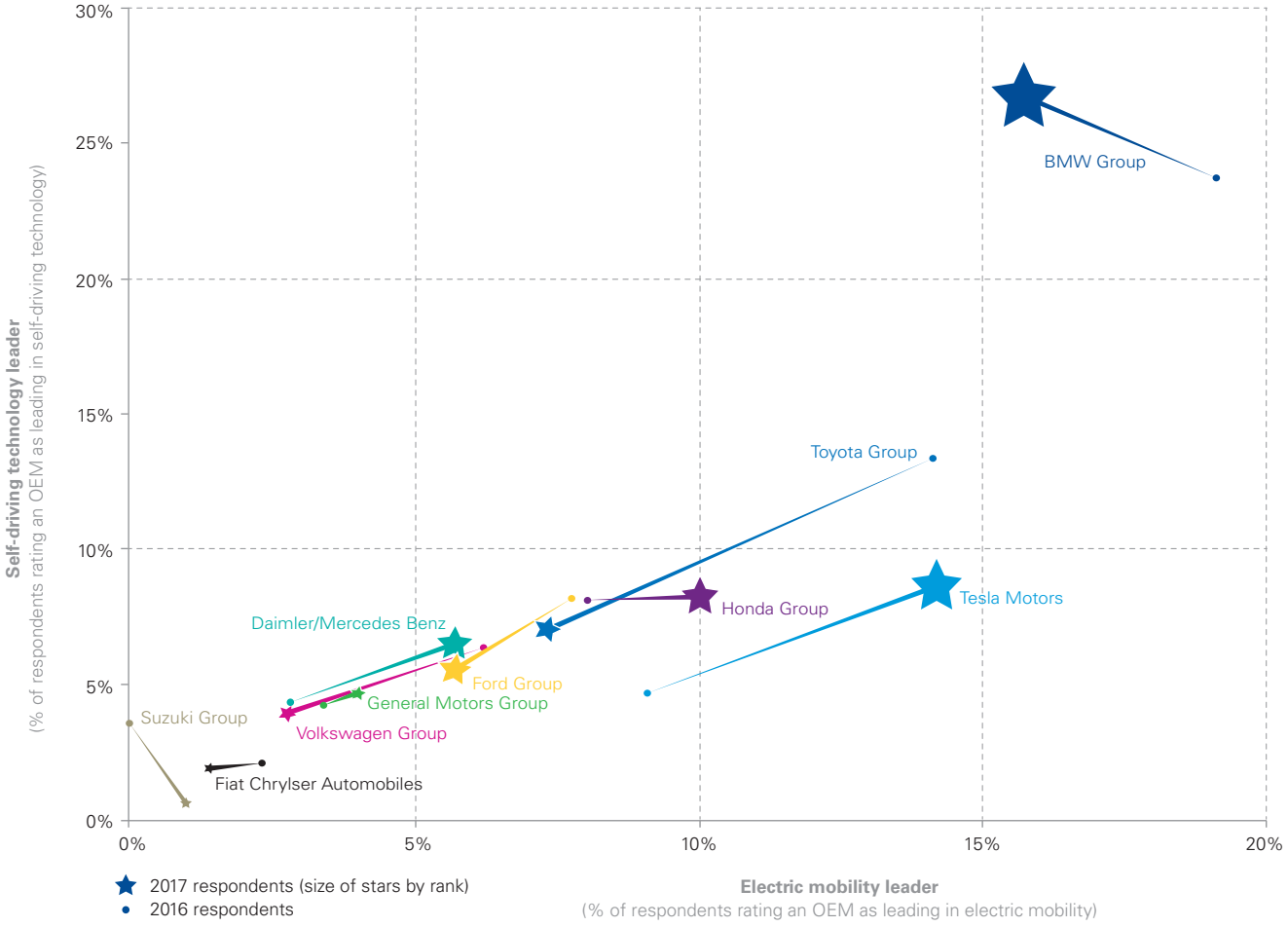
Who is seen as leading in electric mobility and autonomous driving?

27% of executives vote **BMW** as the top leader in self-driving technology and 16% as electric mobility leader.

With 16%, BMW is still seen as **electric mobility leader,** but Tesla has made a big leap forward, moving up to second place, outpacing last year's #3 Toyota and challenging BMW's first place with only a 2% difference. Interestingly, executives' opinions about Toyota's leadership in electrification has changed severely, decreasing from 14% in 2016 to only 7% in 2017. Executives this year may not have seen the recent cooperation in regards to electric vehicles with Toyota Industries Corporation, Aisin Seiki Co. and Denso Corporation, but may become more aware of this in the future.

But technological readiness is not just about the power-train. Looking at the technological roadmap the next tech- and mind-shift challenge is **autonomous driving.** More than every fourth executive (27%) sees BMW here as unrivalled leader followed by Tesla with 9% and Honda with 9%. Surprisingly, the executive opinion does not correspond to the currently offered product range of the mentioned manufacturers. Looking at the 5 levels of autonomous driving by SAE International, Tesla has already marketed EVs operating with conditional automation on the third level of automated driving whereas BMW vehicles are only partially automated and the driver is responsible for monitoring the driving environment. Does this really reflect a competitive advantage for Tesla or is a traditional manufacturer like BMW just less agressive due to the still major unsolved issues of autonomous driving regarding zero-error ability?

BMW remains #1 technology leader for executive respondents, but in electric mobility Tesla is hard on BMW's heels.



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Source: KPMG's Global Automotive Executive Survey 2017

Taking the temperature on autonomous driving

With the emergence of self-driving cars, the purchasing criteria of the past will become irrelevant.

Autonomous driving will revolutionize the way we will use cars and make the purchasing criteria of the past obsolete.

The next technology to essentially change the auto industry is going to be automated driving. 68% of executives already feel that the traditional purchasing criteria will not determine the purchase of a car anymore. Even now, 60% of consumers absolutely or partly agree that other factors will become more essential when cars do the driving and they can use their time more effectively while travelling. It is not surprising that especially ICT companies (73%) have strong opinions about this statement because they target customers who are not 'distracted' by driving.

If it will be less about performance and speed anymore, what are going to be the future purchasing criteria, which enables the OEM to stand out?

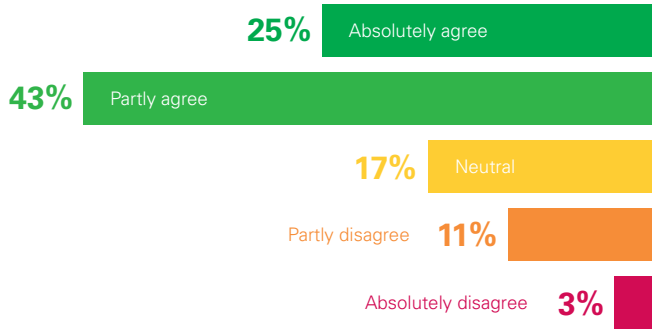
Envisioning drive modes today vs. future

Seung Hoon Wi
Asia Pacific Head of Automotive

"Driving out of focus: Autonomous driving will redefine the utility of vehicles and is the enabler for service- and data-driven business models."

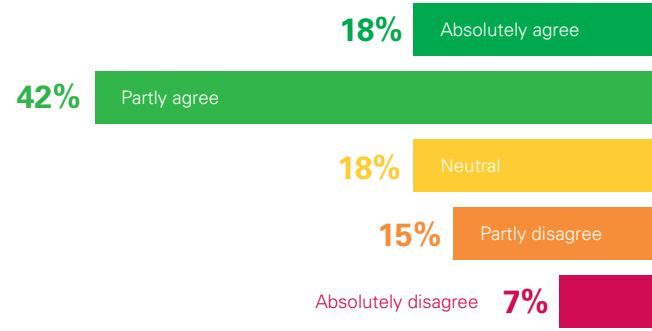
2 out of 3 executives absolutely or partly agree that **traditional purchasing criteria** will become irrelevant with the emergence of self-driving cars.

Executive opinion



60% of consumers absolutely or partly agree when buying a self-driving car that they will only be interested in what they can do with their **time in the car.**

Consumer opinion



Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

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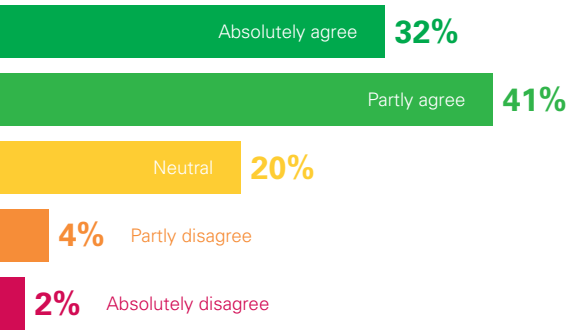
Taking the temperature on vehicle-independent purchasing criteria

89% of executives absolutely or partly agree that in future, consumers will base their vehicle/mobility purchase on **vehicle independent products and services.**

Executive opinion

73% of consumers will most likely decide to buy a car or use a mobility service based on **vehicle independent products and services.**

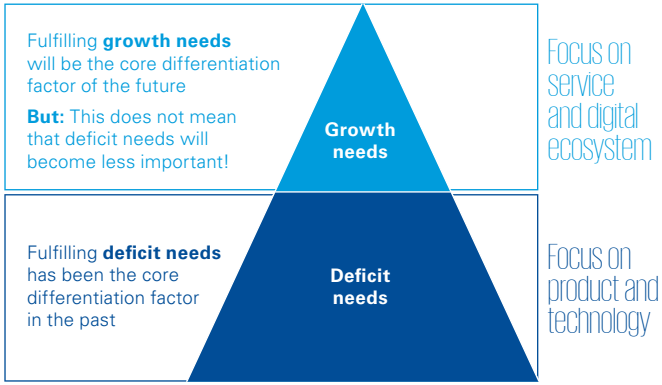
Consumer opinion



As long as the unrivalled desire to be mobile remains, the main purchase criteria of the future are likely to be vehicle independent products and services.

As soon as the car can do the driving, it will no longer matter if customers are sitting in a pure battery electric or fuel cell electric vehicle. More important will be how consumers use their time and how new revenue streams can be generated. Vehicle independent products and services can be benefits or rewards, usability of apps and cooperation agreements. Already the vast majority of executives and consumers agree that these will decisively influence future purchase decisions.

However, this does not mean that traditional purchasing criteria will become obsolete, they can be defined as deficit needs that have been the core differentiation factor of traditional cars. But with autonomous driving the differentiation factors can be found in vehicle independent purchasing criteria (growth needs), making deficit needs not negligible but commoditized requirement.



Aline Dodd
EMA Executive for Automotive

"Miles are gold and swarm intelligence is essential: The full potential of technologies enabling autonomous driving can only be realized with the support of standards and the full power of swarm intelligence. Neither the auto, nor the digital system will succeed on its own."

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Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

From offline to online

There is a status of "Co-ompetition": Strategic alliances and cooperations with players from converging industries will be the fundamental driving force.

Roles throughout the value chain are not yet decided: The unfinished concepts and ambiguous visions of ICT companies cause them to loose ground against OEMs. It is still unclear how the future value chain setup and business models will look like.

Measuring success based on unit sales is outdated: Management according to product profitability is over – customer value will become the core focus.

Zero-error ability alone will not pave the road to success: Neither zero-error ability of offline companies nor releasability of online companies alone will be sufficient for a successful future business model.

OEMs have to decide: whether they want to be a contract manufacturer or a customer-centric service provider (Grid Master).

Data is gold: Security, trust and ownership are key, and that different cultures handle data differently has to be considered.

Data security is the key purchasing criterion: Execs and consumers agree but have different opinions about driving experience and cost – what counts for consumers: data security, cost, speed.

There is a difference between vehicle and customer data: Customers are more willing to share vehicle data compared to behavior data – but in any case this only works if there is a basis of trust. Today, executives grant customers a small say on what happens to their data.

Co-integration requires a superior single sign-on platform: It is not about bringing the auto and digital worlds up to the same speed of innovation but rather about creating a superordinate platform to host both worlds and integrating all upstream and downstream elements.

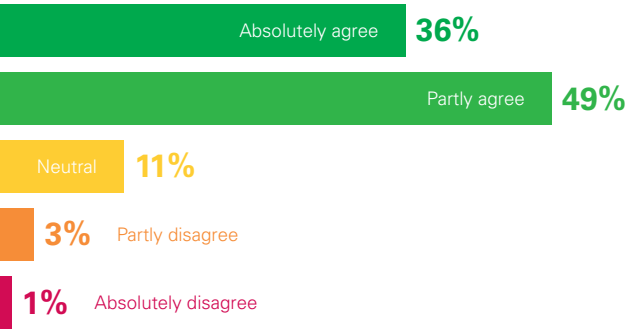
A car will need its very own ecosystem: An independent virtual cloud ecosystem is needed to balance the power between end-consumers, digital tech giants and traditional "offline" hardware companies such as auto manufacturers.

New retail concepts pay-off: The first new retail concepts gain ground and build trust among consumers.

Taking the temperature on the digital ecosystem

85% of executives absolutely or partly agree that the **digital ecosystem will generate higher revenues** than the hardware of the car.

Executive opinion



Fabrizio Ricci
Automotive Leader Italy

"Roles throughout the value chain are not yet decided. The unfinished concepts and ambiguous visions of ICT companies cause them to lose ground against OEMs. It is still unclear how the future value chain setup and business models will look like."

In the future, the digital ecosystem will generate higher revenues in the automotive value chain than the hardware of the car itself – but who is tapping these revenues?

Digital ecosystem will be the main source for revenue and not the car itself.

With significant upcoming changes in powertrain technologies and their effects on increasing investments, the profits of today's OEMs will decrease. The digital ecosystem can counter strike these developments and generate higher revenues in the automotive value chain than the hardware of the car itself reflecting both data streams, the one generated within the car (upstream) and the one customers bring into the car (downstream).

Looking at the development of new business models outside of the automotive industry, this development seems very likely to become true. When the main source of revenue in the automotive industry shifts away from the car itself, current value drivers have to be reevaluated or respectively new value drivers will have to be identified and integrated into a new business strategy. Data is the foundation of digitalization and therefore the automotive industry must see it as a core element. A key challenge will be to make the business model profitable. In order to do so, new capabilities and competencies must be developed. When looking at executives by job group, this year's survey results show that CEOs agree the most about the digital ecosystem being the main revenue source for the automotive industry. This underlines the importance of the results, because CEOs are committed more than other job groups to foreseeing upcoming trends and anticipating their influences on business development.

Executive viewpoint by job title
CEOs agree the most

Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

Taking the temperature on measuring success

Measuring market share simply based on unit sales is outdated. Connected vehicles will generate higher revenue streams based on endless digital upselling potentials over the entire lifecycle.

The connected car will not only revolutionize the consumer experience – but also the way we measure success.

The results suggest success and market shares based on mere unit sales is outdated. To attain a more accurate measure of success in the future digital ecosystem, the question should be less about revenue or profitability per unit and more about customer value over the whole lifecycle.

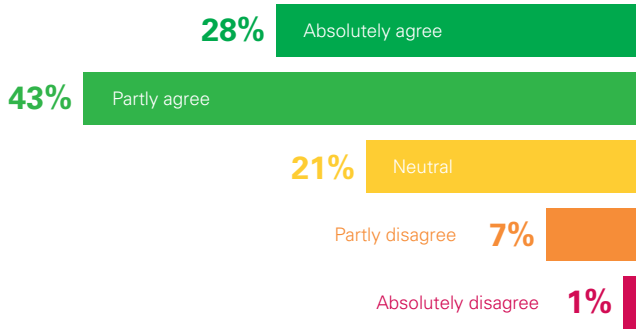
The executives have also been asked for their opinion about the upscale potential of connectivity in the automotive sector. More than 3 out of 4 executives believe that one connected car can generate higher revenues over the entire lifecycle than 10 non-connected cars. This again emphasizes that measuring market shares based only on sold units will be consigned to history in the near future.

Dieter Becker
Global Chair of Automotive

"Measuring success based on unit sales is outdated. Management according to product profitability is over – customer value will become the core focus."

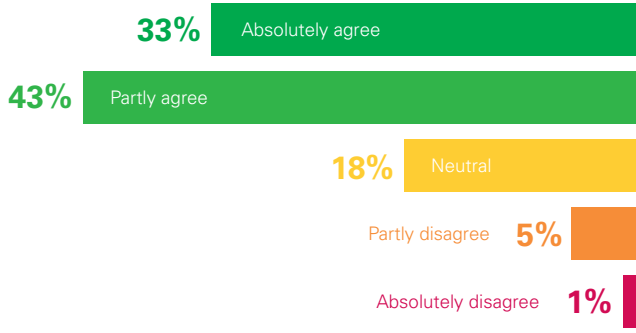
71% of executives absolutely or partly agree that measuring **market shares** based on unit sales is outdated.

Executive opinion



76% absolutely or partly agree that one **connected vehicle generates higher revenue** streams than 10 vehicles which are not connected.

Executive opinion



Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

How likely do you consider a major business model disruption?

83% of executives think it is extremely or somewhat likely that there will be a **major business model disruption** in the automotive industry.

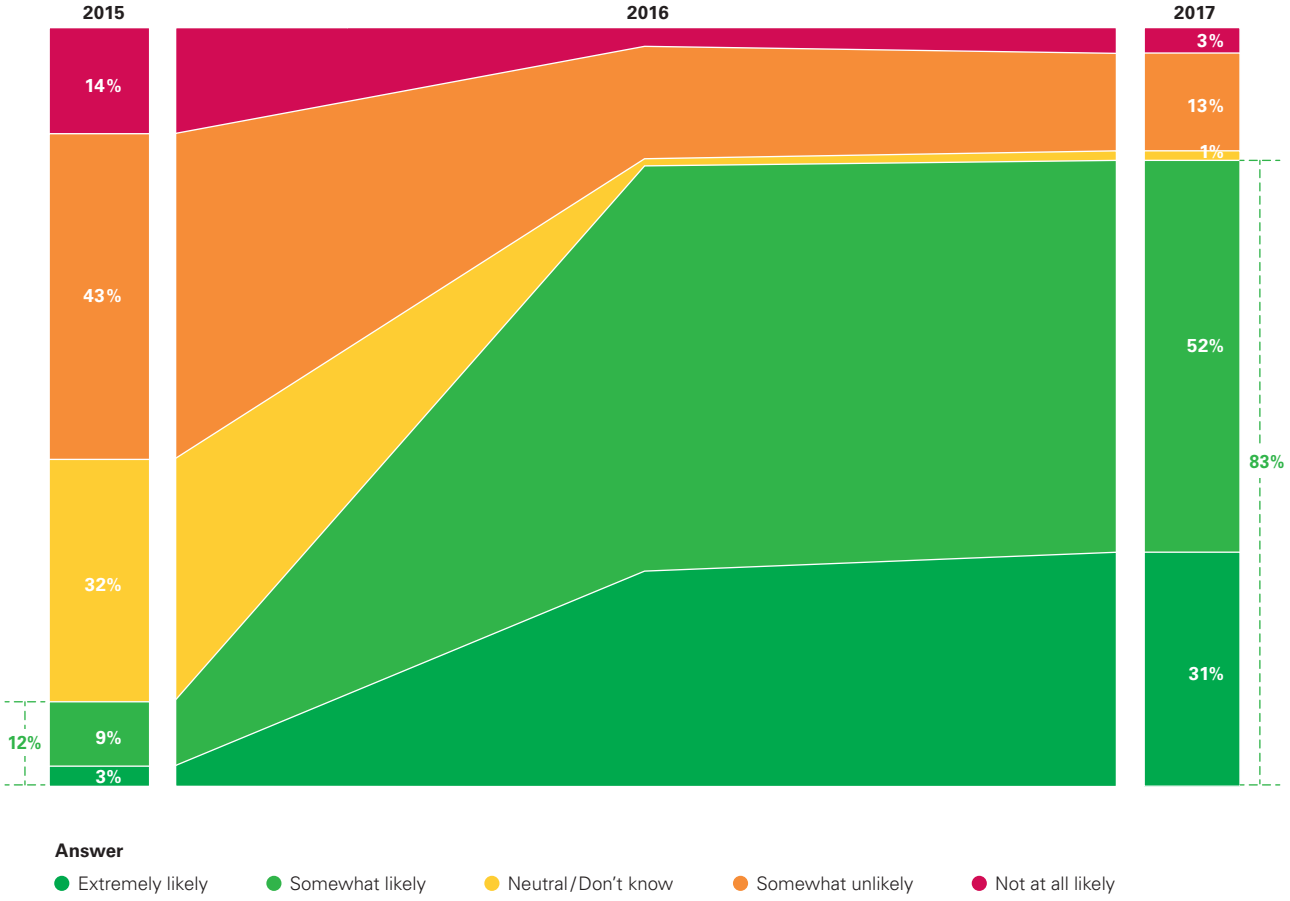
Last year, executives raised strong awareness for a possible business model disruption in the automotive industry, which has increased even further this year. This year's survey results emphasize that the automotive industry is in the middle of a change process.

This change process is that disruptive that an efficient digital ecosystem circling around mobility and all other areas of life will not only improve economic efficiency but also strongly impact the ecological footprint of future mobility. Benefits will include better resource allocation, increased personal miles travelled but more efficient usage and therefore also fewer personally owned vehicles produced and sold.

Recommended view

The opinion varies among regional clusters. Executives in the Americas consider the likelihood of a business model disruption the highest. In contrast, a smaller share of executives from Europe, Mature Asia and the Rest of the World consider a business model disruption as extremely likely.

A business model disruption is more likely than ever and American executives see the highest likelihood for such a disruption.



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Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

Taking the temperature on car ownership

By 2025, more than half of all car owners today will no longer want to own a car. Consumers will decide according to seamlessness and ease of use.

Tendency towards less car ownership makes disruption even more likely but the bigger the necessary mind-shift, the slower the shift towards mobility-as-a-service (MaaS) will be.

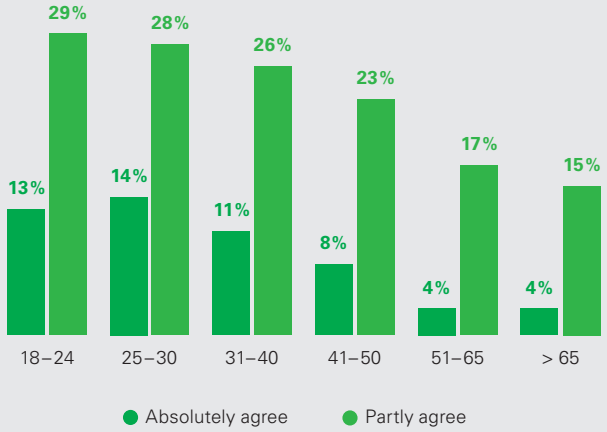
The main business model of the automotive industry today relies on car ownership. However, if 50% of today's car owners no longer want to own a car anymore by 2025, it would entail a drastic revenue drop for today's automotive industry, and the business model disruption would be even more dramatic.

The tendency among consumers is not that strong yet but is recognizable. Every third consumer absolutely or partly agrees with the hypothesis. This might show that the customer cannot yet let go of car ownership and will only tend towards shared economy mobility concepts (MaaS) when the cost and discomfort of a self-owned vehicle (discomfort of finding parking, traffic congestion, etc.) becomes significantly higher than the utility of car ownership.

Dieter Becker
Global Chair of Automotive

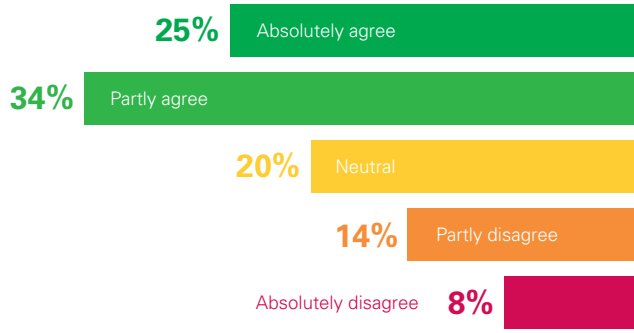
"Efficient use of resources is key in a connected world: The future is about better utilization. Although there will be less cars on the road, personal miles travelled will increase significantly."

Consumer viewpoint by age
Younger consumers agree the most



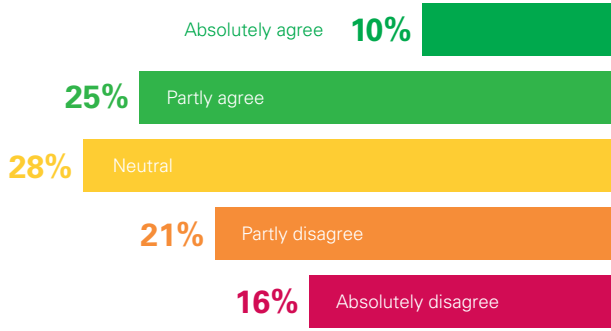
59% of executives absolutely or partly agree that half of today's **car owners will no longer want to own a car** in 2025.

Executive opinion



More than every third consumer absolutely or partly agrees that 50% of today's **car owners will no longer want to own their own car** by 2025.

Consumer opinion



Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

Who will take over the direct customer relationship?

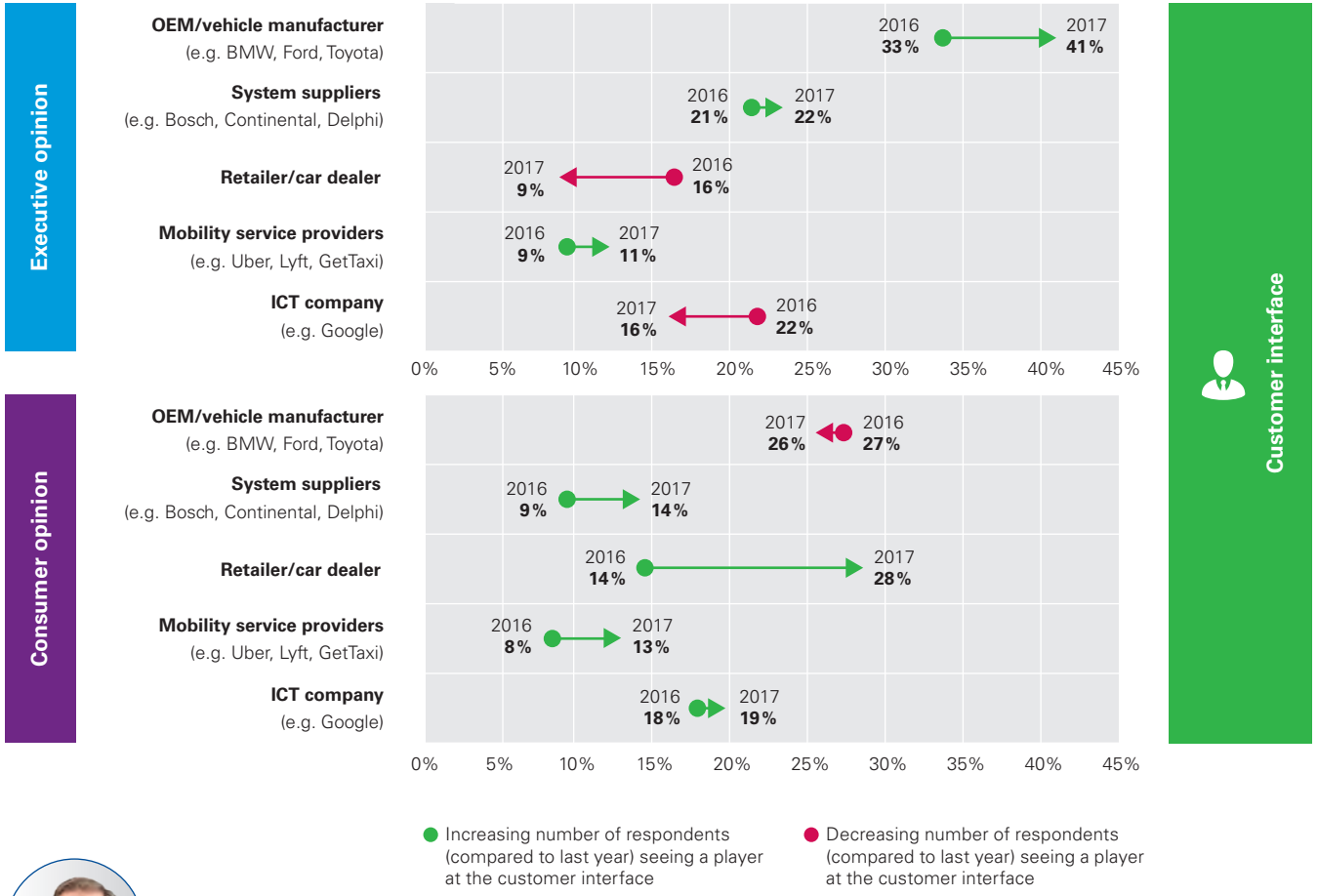
More than 40% of executives believe that **OEMs will take over the direct customer relationship.**

At 28%, **retailers/car dealers** are the favored option for consumers.

Executives gain more confidence that auto companies can defend the customer interface against new entrants from Silicon Valley.

Looking at the executives, responses to this question over the past three years shows interesting developments mirroring the current opinion among industry representatives. In 2015, two thirds of all executives were sure that OEMs themselves will be able to establish/retain a direct customer relationship quite easily. As the graph shows, in 2016 the tide turned almost completely and with only 33% executives believing in the OEM, the confidence level for such a scenario became lower. In particular because over one fifth of the executives were stating that ICT companies like Google might get between the OEM and future car owners/mobility users at the customer interface. Based on this year's results the executives' confidence level in OEMs has risen again to 41% while number of respondents seeing ICT companies taking over the direct customer relationship for has dropped slightly to 16%. Interestingly, car retailers have gained significant importance in the opinion of the consumers.

Direct customer relationship is material to the future business model.



Andreas Feege
Global Automotive Audit Leader

"New retail concepts pay-off: The first new retail concepts gain ground and build trust among consumers."

Source: KPMG's Global Automotive Executive Survey 2017

Taking the temperature on new market entrants

It is still unclear whether Silicon Valley companies such as Google are expected to launch a car to the market by 2020.

Silicon Valley players are seen as ready to compete and take their stake in mobility market. A car launch could be newly interpreted by the supplement: "powered by …"

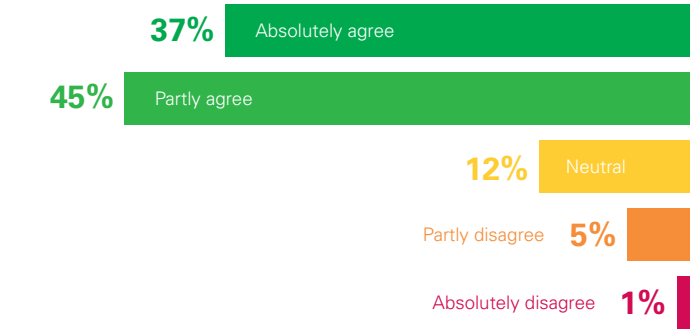
Silicon Valley player have long identified the potential in the automotive industry. The big question is in how far Silicon Valley players are going to define their position as their latest activities certainly show that they have a significant interest in the mobility market. Whether ICT companies will want to offer a complete package (car, digital ecosystem, customer interface, mobility-service solution etc.) has not been decided yet.

Nevertheless, the vast majority agrees that they will launch a car in the next four years. CEOs are the job group which has the highest absolutely agree rate with 44% showing that they take ICTs very seriously.

A car launch may be direct competition to traditional OEMs. If they will launch a car, the specifics of this car will most likely include revolutionary elements and components. Silicon Valley players have their core competence in connecting people – therefore mobility service providers are also facing new competition.

82% of executives absolutely or partly agree that a Silicon Valley company will **launch a car** in the next four years.

Executive opinion



Executive viewpoint by job title
CEOs agree the most

Gary Silberg
The Americas Head of Automotive

"There is a status of Co-ompetition. Strategic alliances and cooperations with players from converging industries will be the fundamental driving force."

Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

kpmg.com/GAES2017

What are future strategies for success?

Current status can be described best as ‘Co-ompetition’.

Cooperation with players from converging industries has become the most favored strategy for future success. Year-on-year, the tendency towards cross-sector cooperation has clearly increased compared to the traditional auto industry strategy of organic growth.

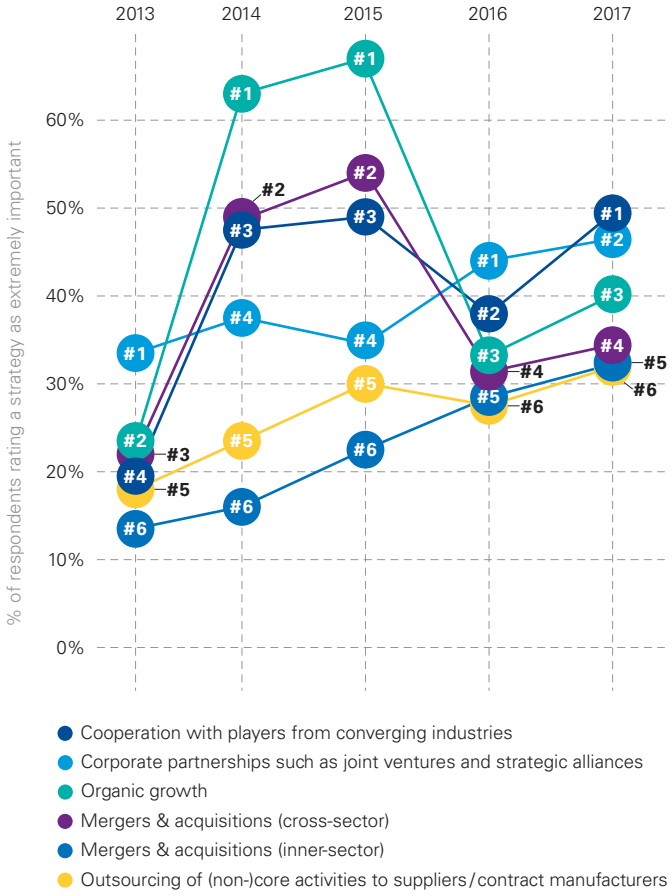
In the automotive industry online companies are moving into the offline world. Business model and core competencies will blend.

This shows that there is no clear opinion on whether OEMs and ICT companies will compete or cooperate yet but that this will rather be a matter of specific application. E.g. for urban city transport, there will certainly be fierce competition between OEMs and ICTs while this might look a bit different for long distance travel or wherever standards are essential such as fast charging or autonomous driving.

Possible cooperation or competition will also depend on the individual players and the role they can and want to play in the future. ICTs lack the experience and competence in the “hardware” car production. They may therefore cooperate with a traditional OEM to create a car and compete with those OEMs that apply digitalization without a big Silicon Valley player.

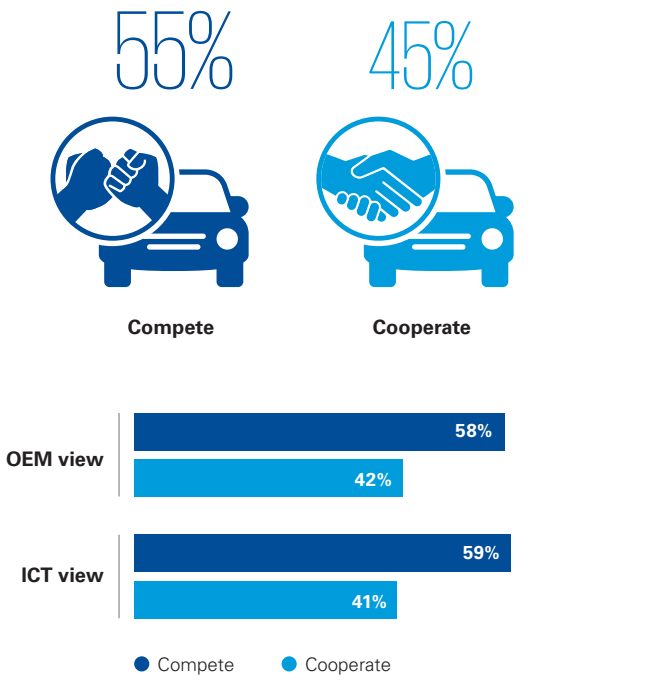
Almost **every second** executive considers **cooperation with players from converging industries** as extremely important.

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



55% of executives believe that OEMs and ICT companies will **rather compete than cooperate.**

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



Note left: Percentage of respondents rating a strategy to be extremely important | **Source:** KPMG’s Global Automotive Executive Survey 2017

Whom would you most likely trust when sitting in an autonomous vehicle?

Zero-error ability is a key element of future mobility and premium OEMs seem to have a clear advantage in the executives' opinion.

Almost **every second** executive believes that premium **OEMs are the most trustworthy with zero-error tolerance.** There is no clear trend among consumers.

Both the "online-players" (e.g. Google) as well as the "offline-players" (OEMs) are currently heavily investing in the marketability of fully autonomous vehicles.

An astonishing 86% of executives are still very hesitant to believe that newcomers from the Silicon Valley will be trustworthy regarding the zero-error ability of their autonomous vehicles. However, consumers are less hesitant to trust newcomers in that matter.

Nonetheless, latest examples show that new players seem to have a "honeymoon period". Shortcomings in quality and even fatal errors are more readily forgiven by their customers. The acceptance for such shortcomings will remain high as long as the vehicle technology of those newcomers remains far advanced. However, premium OEMs in particular should build on this trust advantage and position themselves in the market to be competitive in the future. With Tesla, a new player is already very actively testing autonomous driving technology and has raised a lot of positive but also negative media attention around fatal errors regarding self-driving features. This shows how important zero-error ability is in the context of driving, and that Silicon Valley players have to carefully evaluate their bold moves into this industry.

	Executives	Consumers
The premium manufacturers (e.g. BMW, Mercedes-Benz)	49%	38%
The volume manufacturers (e.g. VW, Toyota, Nissan)	37%	37%
The newcomers from Silicon Valley (e.g. Google, Tesla)	14%	25%

Megumu Komikado
Automotive Leader Japan

"Zero-error ability alone will not pave the road to success. Neither zero-error ability of offline companies nor releasability of online companies alone will be sufficient for a successful future business model."

Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

kpmg.com/GAES2017

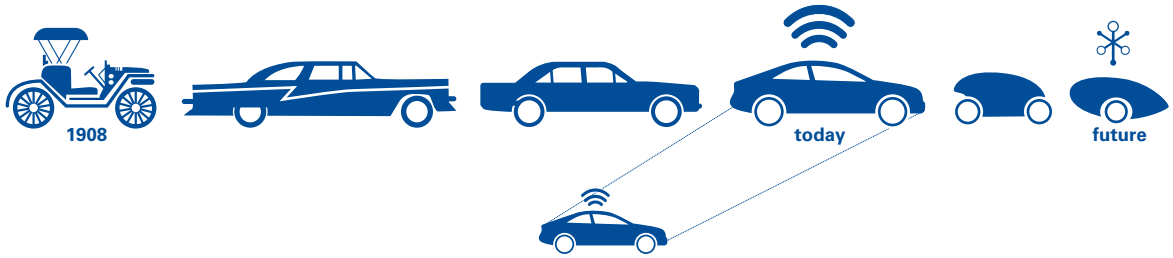
Ensuring zero-error ability is the overarching goal

Customer expectations about error proneness differ significantly between today's digital ecosystem and cars or other mobility hardware products. The automotive industry has a long and traditional history in which it has constantly developed and improved its products. Diminishing breakdowns and failures is not a unique selling point anymore in the automotive sector but rather a prerequisite to compete in the market. In contrast, customers accept temporary system and function failures in their digital ecosystem (smartphone, internet provider, tablets etc.) today. Different customer behavior regarding error proneness is caused by the different degrees of negative impact which failures have on customer utility. On the one hand, car breakdowns often imply costly and time consuming consequences or may even risk the health of customers. On the other hand, digital ecosystem failures are mostly fixed by customers themselves by quickly rebooting the systems.

The question is how customers will perceive the situation where both concepts are united in one single product – a fully connected car.

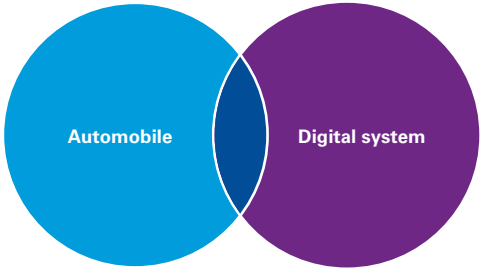
These two worlds will never merge completely – the more core features like safety are touched, the more difficult it will be.

Mobility trends



Industry characteristics

- Difference between the pre-series/series
- Long development & test cycles
- Long freeze periods
- Hardware-driven



- Shorter product development & test cycles
- BETA version culture
- Releasability
- Software-driven

Perception of errors

Concepts in the "old" model

- Consumers do not accept any errors concerning vehicle safety and reliability
- OEMs cannot afford any safety risks

Perception within the market: zero error = commodity

Concepts in the digital system

- Example: Frozen screen, no/bad connection, incomplete information – "the software always has a problem"
- We have a higher error tolerance with software problems because the consequences are manageable

Paradox: Would consumers accept errors in their own vehicle caused by the digital system and are they able to differentiate between the two worlds?

Implications

Observation: Software problems in a vehicle may have significant implications for the hardware and thus for the entire vehicle safety.

Issue: Does digitalization lead to new and different concepts in the automotive industry in the future?

Challenge: How can OEMs guarantee the concepts of zero error in digital software-driven products and services in future?

Source: KPMG Automotive Institute 2017

Taking the temperature on the distribution of roles

A car being marketed by one of the Silicon Valley players will be assembled by one of the traditional OEMs.

ICT companies will not go into the manufacturing business.

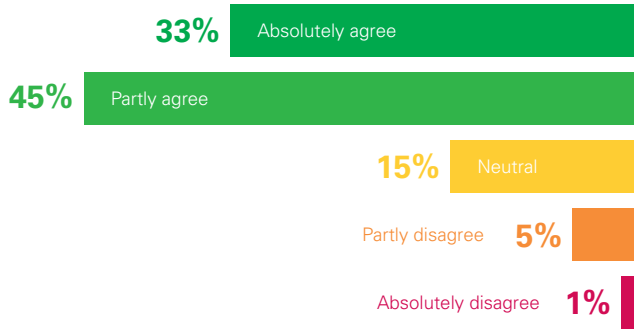
Results show that if ICTs launch a car onto the market, the vast majority of executives expect that they will have a traditional OEM as a contract manufacturer who will supply the "hardware" of the car. This shows that executives have doubts about the capabilities of ICT players to launch a self-built car to the market because ICTs lack the core competencies for car manufacturing and the core competencies of the offline world.

Executives from mobility service providers are most optimistic about a cooperation between ICTs and OEMs on this matter. This is not surprising because they are already using digital interface solutions to establish their business model and therefore highly trust and see a greater necessity for ICTs as key players.

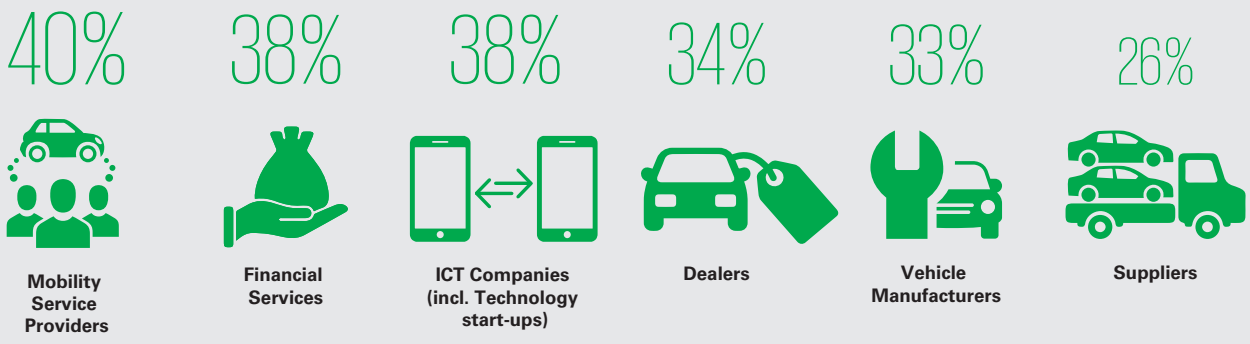
The question of cooperation or competition depends on the individual OEM and the business strategy/role in the market.

78% of executives absolutely or partly agree that a car from a Silicon Valley player **will be assembled by one of the traditional OEMs.**

Executive opinion



Executive viewpoint by stakeholder group
Mobility service providers agree the most



Sam Fogleman
Automotive Advisory Lead Partner

"OEMs have to decide whether they want to be a contract manufacturer or a customer-centric service provider (Grid Master)."

Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

kpmg.com/GAES2017

What will the business model of an OEM look like in 2025?

35% of executives believe that **OEMs will become the "Grid Master"** – making it the most favored business model.

This year for the first, time executives see the production and sale of an automobile and the operation of a digital platform to manage direct customer relationships offering vehicle dependent and independent services over the whole customer lifecycle (Grid Master) as the favored business model for OEMs.

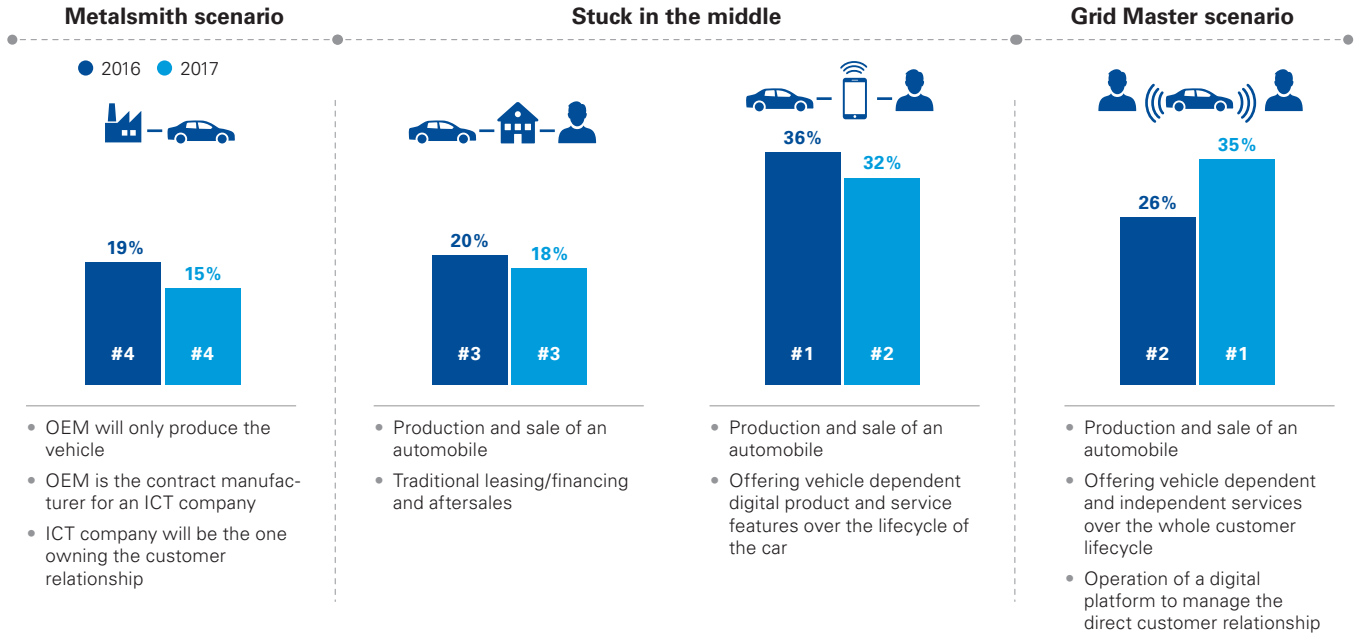
Yet, we see, especially among OEMs, that differences in the opinion share between the different business models is rather low. Almost one out of four OEM executives can imagine that OEMs will become the contract manufacturer for ICT companies. This can be a promising strategy and will especially suit OEMs in the low cost and volume segments with low potential of differentiating at managing customer relationships.

Compared to last year's results, OEMs do realize that being stuck in the middle is not a real option.

Recommended view

CEOs are less advanced in their disruptive awareness regarding business model effects. They still favor production and sale of an automobile and traditional leasing/financing and aftersales.

OEMs understand that they have to decide on whether they want to become Metalsmiths or Grid Masters.



Executive viewpoint by Vehicle Manufacturers

OEM respondents increasingly see that being stuck in the middle is not an option

Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

Taking the temperature on data

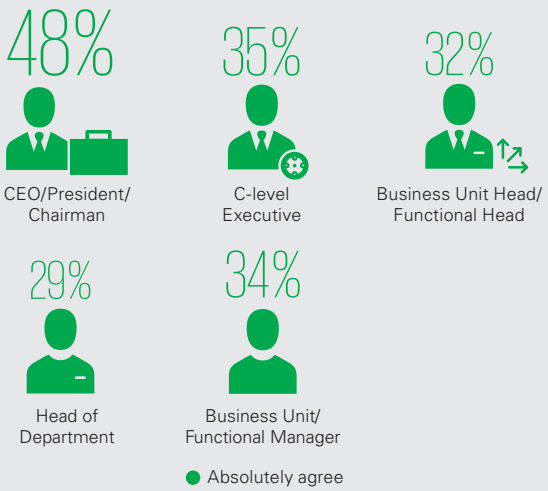
Data is the fuel for the future business model of automotive companies but there are apparently controversial opinions by regions.

Executives recognize that data is the fuel of the new business model and the clear focus is on creating value out of upstream and downstream data.

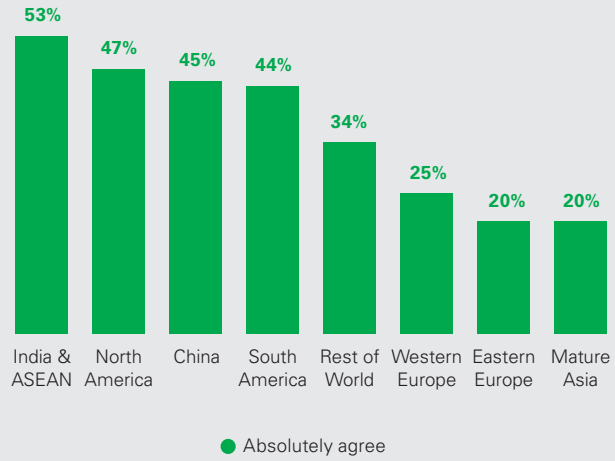
In future, OEMs will not exclusively make money with the hardware of the car itself but even more with the digital ecosystem, enabling OEMs to generate significant revenue streams by also selling vehicle independent products and services throughout the entire customer lifecycle, not necessarily linked to mobility.

CEOs are the job group that mostly agrees with the statement, recognizing the value of data. There is also a difference in opinion in different regional clusters. Compared to other regions, a significant smaller portion of executives from Western Europe, Eastern Europe and Mature Asia absolutely agree with this statement – executives in these regions seem to be less convinced of a revolutionary and data-driven business model.

Executive viewpoint by job title
CEOs agree the most

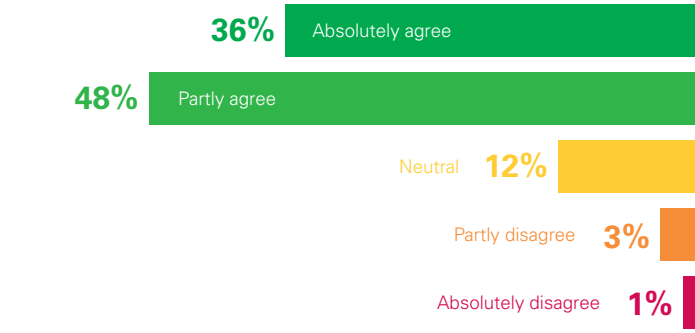


Executive viewpoint by regional cluster
Executives from India and ASEAN agree the most



84% of executives absolutely or partly agree that **data is the fuel** for the future business model of auto companies.

Executive opinion



Daniel Chan
Industrial Manufacturing Leader China

"Data is gold. Security, trust and ownership are key and that different cultures handle data differently has to be considered."

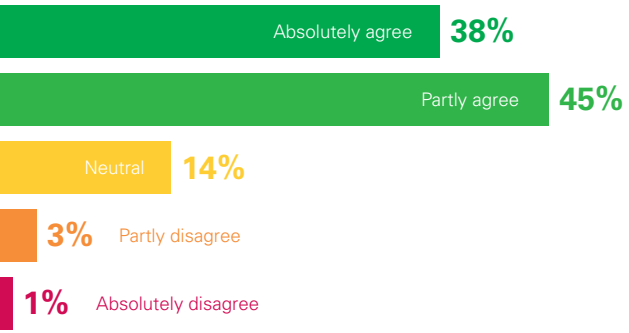
Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

kpmg.com/GAES2017

Taking the temperature on the data literacy of auto companies

83% of executives absolutely or partly agree that OEMs will be able to **make money with data.**

Executive opinion



Ulrich Bergmann
Global Automotive Financial Services Leader

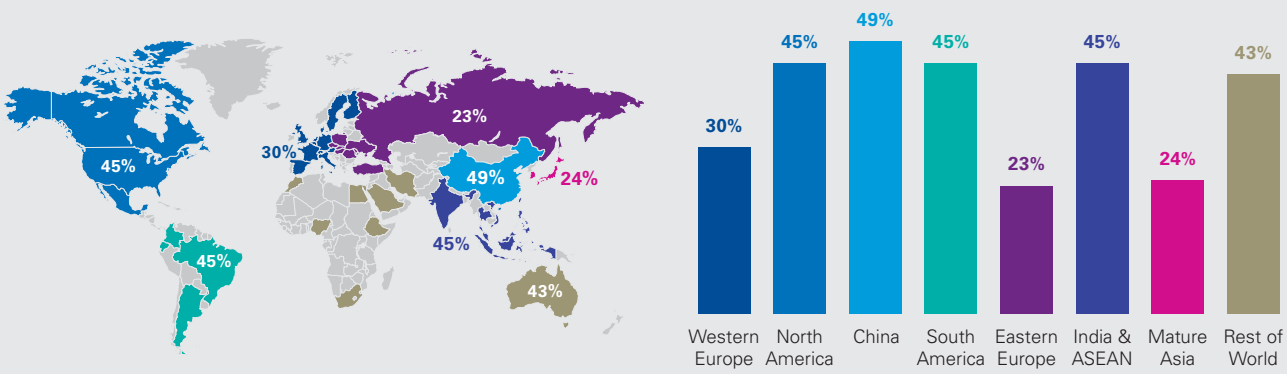
"There is a difference between vehicle and customer data. Customers are more willing to share vehicle data compared to behavior data – but in any case this only works if there is a basis of trust. Today, executives grant customers a small say on what happens to their data."

By 2025, OEMs will manage to generate revenues based on the business models that monetize upstream and downstream data*.

Executives are confident that OEMs theoretically have the ability to generate money with data – the practical execution still needs a final polish.

When owning the customer relationship, managing customers over their entire lifecycle and when making the car independent from other operating systems, an OEM will then be able to make money with data – a scenario which the majority of executives agree to. However, data collection is only the first step, and, more importantly, OEMs have to make up their minds on how to best create real value out of their data by consolidating various established data lakes and setting up digital laboratories starting with upstream data and exploring their position in the world of downstream data.

Executive viewpoint by regional cluster
Executives from Western Europe, Eastern Europe and Mature Asia have more doubts that OEMs will be able to generate revenues with data. In comparison, China's executives are most confident



% = Respondents absolutely agreeing per regional cluster

***Definition:** upstream data = vehicle data; downstream data = customer data
Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

A car needs its very own digital ecosystem.

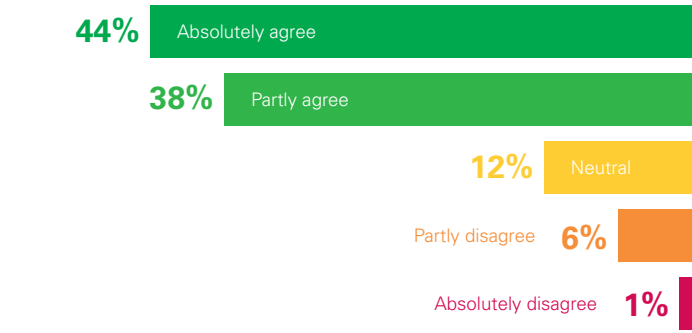
A car will need its very own ecosystem integrating all relevant user information but executives may have different interpretations about an "own ecosystem".

In order to create value and consequently monetize data, 82% of the executives agree that a car needs its very own ecosystem/operating system (OS) because otherwise the valuable consumer and/or vehicle data will be most likely routed through third parties. In this case many valuable revenue streams would be lost.

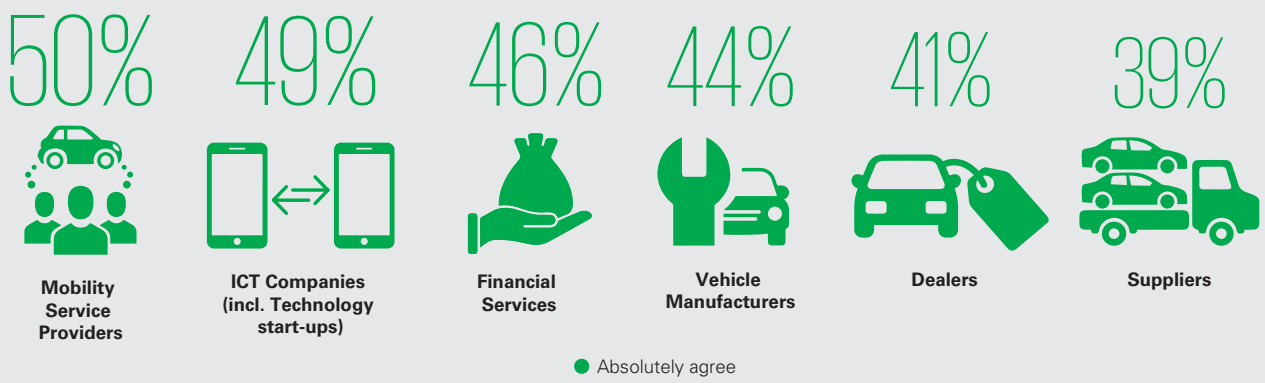
Except for Eastern Europe, we can see that the share of executives who agree to the statement is fairly evenly distributed around the world. The agreement rate is especially high in China.

82% of executives absolutely or partly agree that a car needs its very own **operating system.**

Executive opinion



Executive viewpoint by stakeholder group
Mobility service providers agree the most



Moritz Pawelke
Global Executive for Automotive

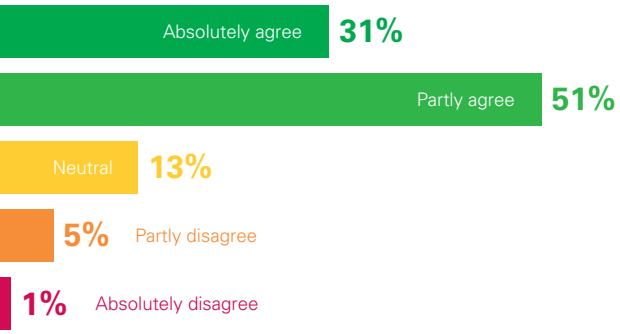
"A car will need its very own ecosystem. An independent virtual cloud ecosystem is needed to balance the power between end-consumers, digital tech giants and traditional 'offline' hardware companies like auto manufacturers."

Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

Taking the temperature on "digitail" platformization

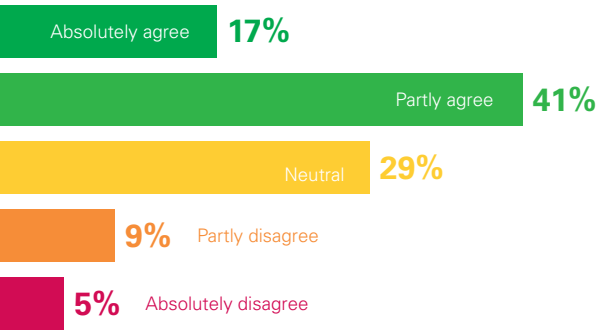
82% of executives absolutely or partly agree that a **single sign-on platform** will be an absolute purchasing criterion.

Executive opinion



58% of consumers absolutely or partly agree that a **single-sign on platform** will be an absolute purchasing criterion.

Consumer opinion



By 2025, a single sign-on on a digital platform with a personal ID will be an absolute purchasing criterion for mobility customers.

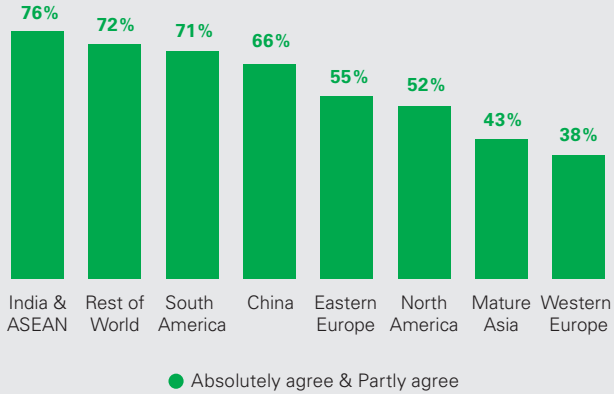
A single-sign on platform to which customers can log on with their individual ID enables a better customer relationship management.

Our results show that executives are more confident that a single sign-on platform will be an absolute purchasing criterion to consumers because they may already see future advantages for themselves. A single sign-on platform not only makes a consumer's life easier but at the same time entails a big advantage for the Grid Master to actually manage the platform. For those automotive companies striving to be the Grid Master, the target should be to become the manager of such a platform in order not to give away valuable customer data to aggressive competitors or third-party players.

Rajeev Singh
Automotive Leader India

"Co-integration requires a superior single sign-on platform. It is not about bringing the auto and digital worlds up to the same speed of innovation but rather about creating a superordinate platform to host both worlds and integrating all upstream and downstream elements."

Consumer viewpoint by regional cluster
Consumers from Western Europe believe least in a digital platform



kpmg.com/GAES2017

Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

Who do you think should be the owner of the consumer/vehicle data?

In terms of data ownership opinions diverge – whereas the majority of executives believe OEMs to be the owner of the valuable data, consumer insights show that the reality looks different.

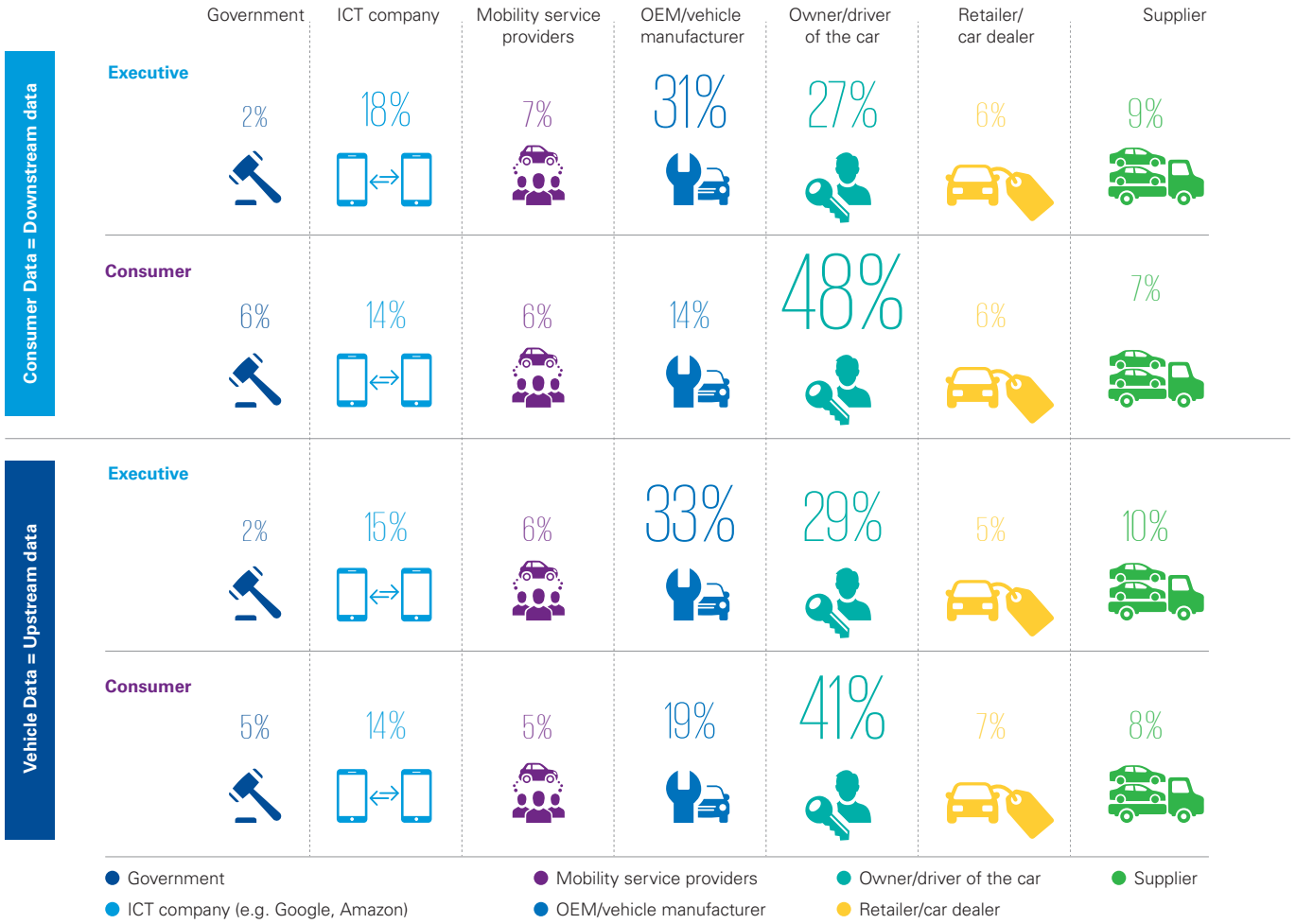
To establish a sustainable service and data-driven business model the key question that needs to be answered is who owns the up- and downstream data generated in a vehicle. Today, automotive and tech companies take for granted that consumers will be willing to give their data away in return for comparably low benefits and rewards. However, most consumers have the opinion that they themselves own the data, whereby they make no distinction between upstream and downstream data.

Recommended view

Especially among consumers there is a diverse regional mindset. In China most consumers (31%) believe ICT companies should be the owner of the consumer data. In Western Europe (57%) and North America (66%) consumers are reluctant to give away ownership.

Over 30% of executives believe that **OEMs are the owner** of consumer/vehicle data.

Over 41% of consumers believe that the **owners/drivers of the vehicle are the sole owner** of the vehicle/consumer data.



Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

kpmg.com/GAES2017

How likely do you think consumers will be willing to share their data?

81% of **executives** believe that consumers are likely to share their consumption behavior data.

In comparison, only 58% of **consumers** are willing to share their consumption behavior data.

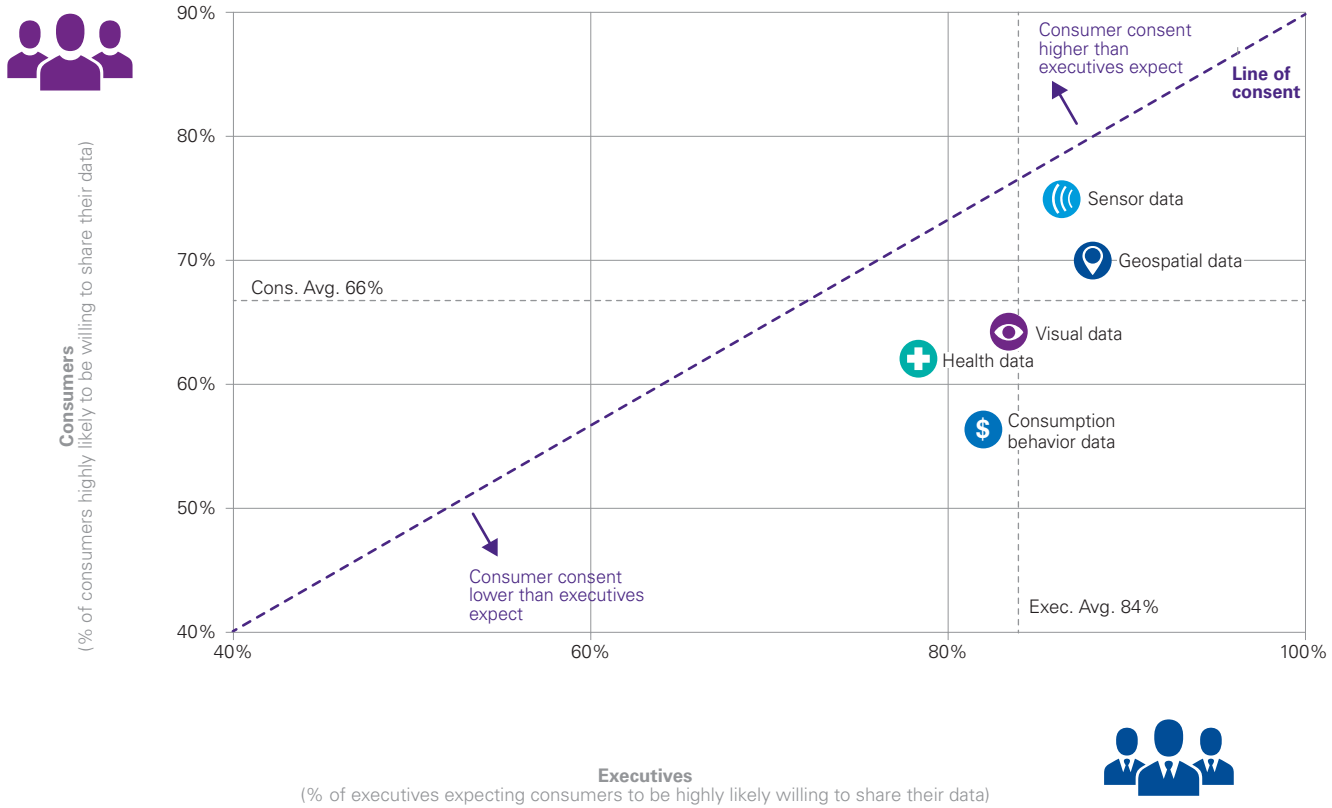
Compared to consumers, executives believe that consumers are more likely to share or give away vehicle or consumer data.

However, results show a different reality: on average consumers are almost 20% less likely to share their data compared to executives' beliefs, which implies that executives need to think of attractive incentive schemes and reward systems in order to offer benefits in exchange for data.

Recommended view

Executive and consumer opinions demonstrating willingness to share data significantly differ by regional cluster: opinions in Western Europe and North America particularly diverge strongly and, interestingly, consumers from Mature Asia are the least willing to share their consumption behavior data.

Consumers are least willing to share consumer oriented downstream data – giving away vehicle oriented upstream data seems more likely.



Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

What do customers want in return for their data?

Consumers expect compensation in exchange for their data – almost every second executive is unaware of this today.

Future business models will have to have an answer to the consumers' desire of receiving attractive benefits in exchange for their data.

When comparing the results from the last two years, there is a significant trend for consumers being less accepting of not receiving benefits in exchange for their data (30% in 2016 vs. 20% in 2017). This year, even more customers are asking for direct monetary benefits in exchange for their data, which could be put into practice with a reduction in the total cost of ownership (TCO) or an increase in the total cost of usage (TCU). Results also reflect an increase in the consumers' thirst to be provided with an individual customer experience over the whole customer lifecycle.

Recommended view

Opinions differ significantly by regional cluster – of Chinese executives, only 14% believe that it is extremely interesting to offer no benefits in exchange. Does this indicate Chinese executives to be frontrunners in knowing how to best attain data?

45% of executives still believe that they need not **offer anything to consumers in exchange** for their data.

84% of consumers want direct **monetary benefits** in exchange for their data.

	Executive		Consumer	
	2016	2017	2016	2017
Direct monetary benefits	82%	89%	82%	84%
Consumer incentive schemes	88%	90%	75%	74%
Individualized service & customer experience over the whole customer lifecycle	88%	89%	71%	74%
No benefits offered	43%	45%	30%	20%

Note: Percentage of respondents rating a certain benefit to be "extremely and somewhat interesting" | **Source:** KPMG's Global Automotive Executive Survey 2017

Whom do you think a consumer would trust most with their data?

Today OEMs are still considered most trustworthy. However, executives believe that consumers have less to say about their data.

Are ICT companies on the way to emerging as the trusted data hub for consumers?

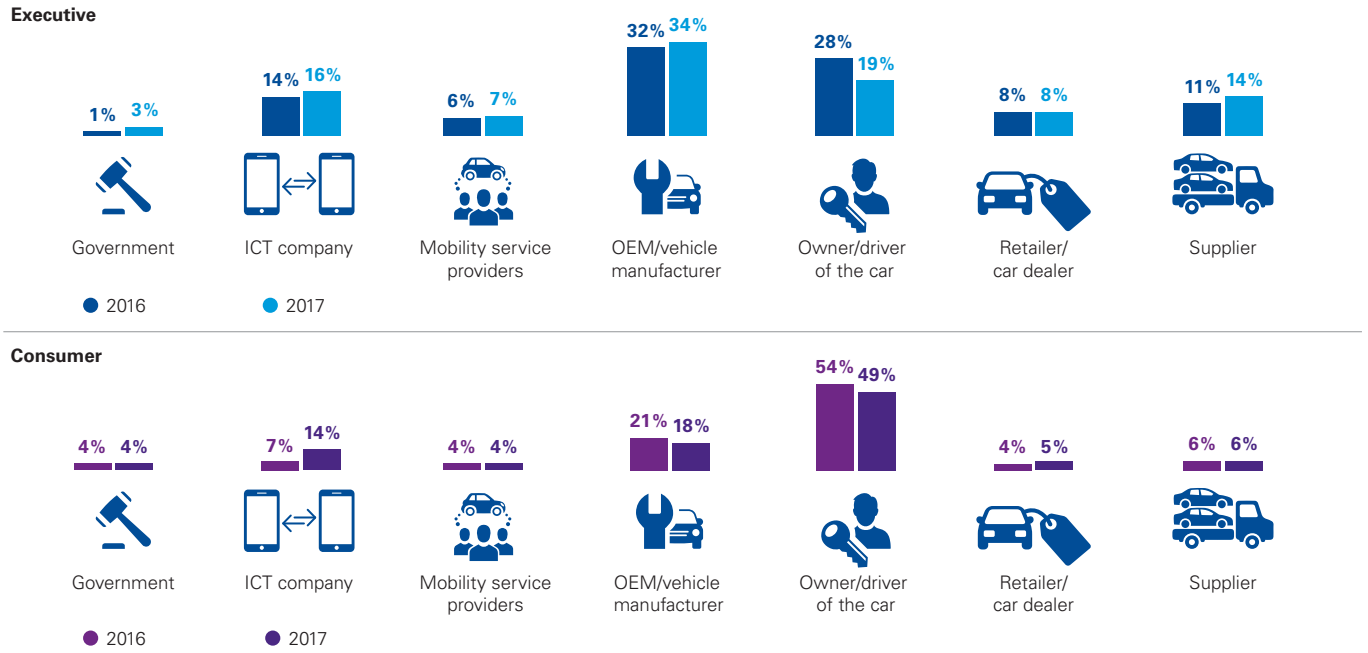
Based on the assumption that consumers will not give away their data without any reward or incentive, the most important question is whom consumers would rather trust managing or even owning their data. ICT companies have made a significant leap forward – today, 14% of consumers see ICTs to be the trusted data hub. For OEMs this means having to increasingly focus on customers' loyalty and the trust function of their brand in order to have a significant competitive advantage over third parties such as Google from the technology sector.

Recommended view

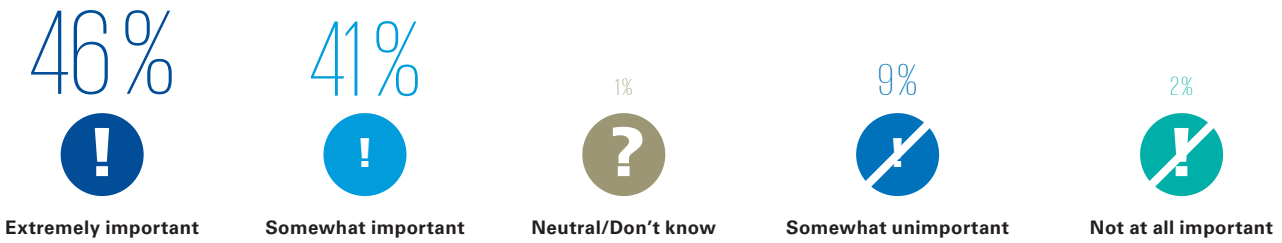
There exists a different regional mindset regarding data, which seems to be influenced by cultural differences. While Western Europe and North America in many factors do not have similar answers in this survey, the two regions together distinguish themselves from others regarding trustworthiness of data.

34% of executives believe that consumers would most **trust their data to an OEM.**

49% of consumers believe **themselves to be the sole owner** of their data generated in a vehicle.



How important will an auto company's brand be in the future?



Note: Percentages may not add up to 100 % due to rounding, Graph shows percentage of respondents rating a certain player as most trustworthy.
Source: KPMG's Global Automotive Executive Survey 2017

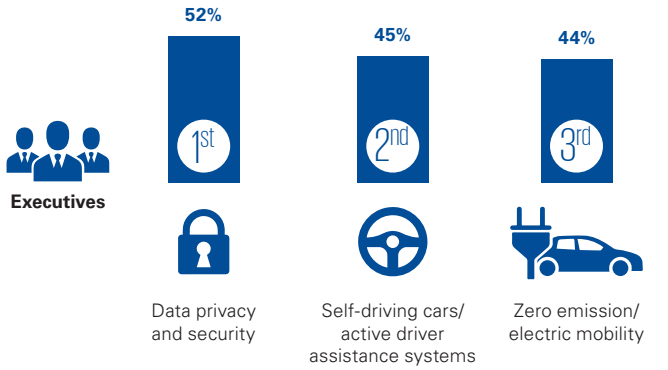
How important do you think the following features will be?

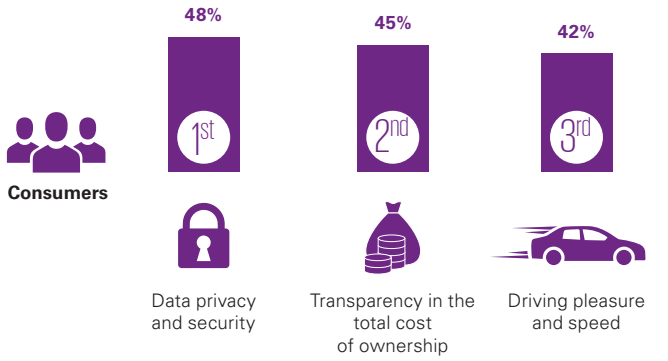
Both executives and consumers believe that data security and privacy is the #1 purchasing criterion.

Traditional purchasing criteria of the past and closely related to the vehicle will lose relevance – both executives and consumers agree that data privacy and security is the #1 purchasing criterion for future customers. With all the data leaks that customers have been confronted with, the rather long-established purchasing criterion of security has to be interpreted in a new way.

The traditional purchasing criteria that we know today such as safety and security or even the drive system will in future represent only deficiency needs (see deficit needs on page 20). When driving in a visionary self-driving vehicle, customers will want to make efficient use of their driving time by profiting from customer-oriented products and services offered to them on a digital platform. All interactions on a digital platform can be monitored and precious customer data can be collected so that data privacy and security suddenly becomes the focus of attention in customer purchasing decisions on mobility.

52% of executives rate **data privacy and security** to be extremely important purchasing criteria for the customer.





48% of consumers rate **data privacy and security** as extremely important features, followed by transparency in the total cost of ownership (TCO) with 45%.

Brigitte Romani
Global Automotive Tax Leader

"Data security is the key purchasing criterion. Execs and consumers agree but have different opinions about driving experience and cost – what counts for consumers: data security, cost, speed."

Note: Percentage of respondents rating a benefit to be "extremely important" | **Source:** KPMG's Global Automotive Executive Survey 2017

Geopolitical turmoil & regional shift

Insecure geopolitical environment: The fear of political changes is as strong as the fear of terrorism, war and natural disasters.

Dramatic change upcoming: Western Europe is not only facing political changes but also severe pressure in the auto industry due to regional shifts.

There is a clear tendency for an even stronger shift towards China: The majority of executives expect the global share of vehicles sold in China to reach 40% by 2030.

The execs' opinions on India are very conservative: India won't become a second China in terms of vehicle sales.

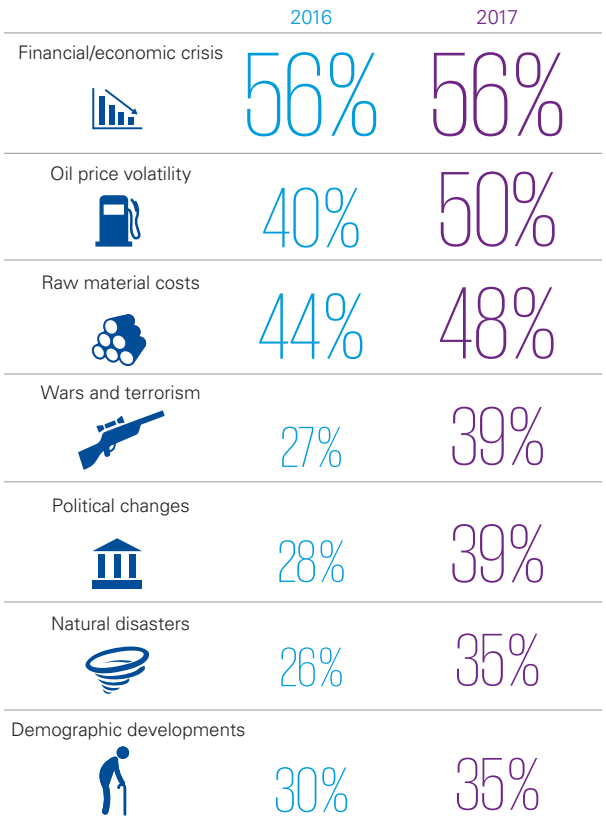
Which macroeconomic changes influence your company the most?

Geopolitical risks and macroeconomic turmoil can have a very disruptive effect on the industry.

Developments since 2007 like the financial crisis, oil price volatility, war and terrorism, Brexit, the outcome of the US election and geopolitical tensions between the east and west are having a severe and shocking influence on the automotive industry. When executives are asked to what extent geopolitical and macroeconomic changes influence their company's strategy, the majority of respondents are still very much driven by more traditional and macro-related topics. Financial and economic crises are rated with 56% as being the most influential factors that can highly affect development and production plans, followed by oil price volatility and instabilities in raw material costs.

Potential threats and uncertainties, such as war and terrorism as well as the political changes that have unquestionably have increased over the past year, still lag behind the above factors. Interestingly, looking at the year-on-year comparison, concerns about war/terrorism and political changes have similarly increased, reflecting the situation that we faced by the end of 2016.

Customer-related changes such as demographic developments are still at the end of the list of factors affecting an auto companie's strategy, with a moderate increase of 5% compared to last year's survey.



More than half

of all executives believe that a **financial crisis** and **oil price volatility** have major impacts on the company strategy.

Axel Thümler
Automotive Audit Lead Partner

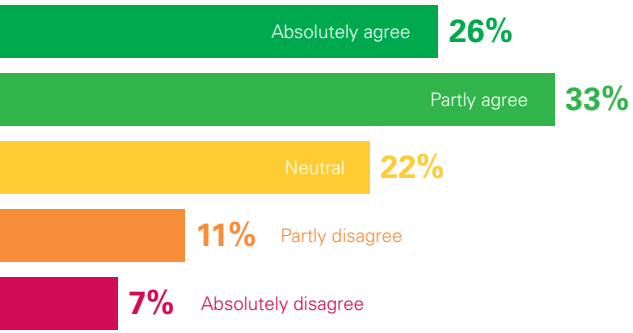
"Insecure geopolitical environment: The fear of political changes has become as strong as the fear of terrorism, war and natural disasters."

Note: Graph shows percentage of respondents rating a certain macroeconomic event having "high influence"
Source: KPMG's Global Automotive Executive Survey 2017

Taking the temperature on political disruption

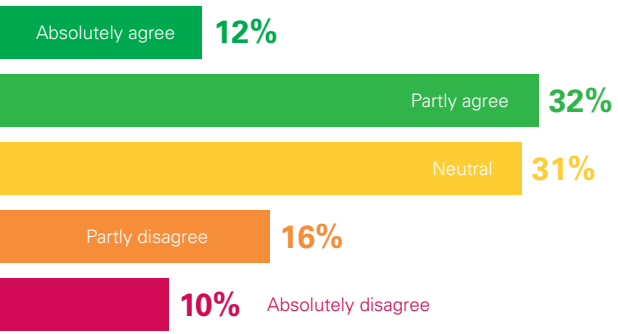
59% of executives agree that 2017 will be a **political year of hell.**

Executive opinion



44% of consumers agree that 2017 will be a **political year of hell.**

Consumer opinion



2017 will be a political year of hell according to many executives and consumers.

In addition to the specific impact that 2017 will have on companies' strategies, executives were also asked whether the year 2017 will be a 'political year of hell' and will lead to massive economic disruption. Uncertainties like unstable political circumstances in the Middle East, political developments in Turkey and the presidential elections in the USA resulted in 59% of executives and 44% of consumers to rating this statement to be most likely or absolutely true.

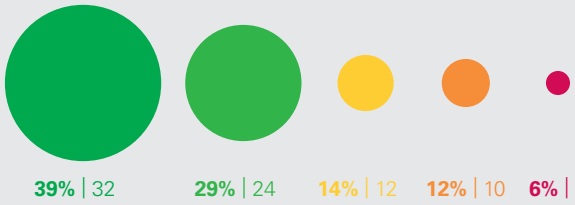
Although the survey took place prior to the presidential elections in the USA, already two thirds of the surveyed executives from the USA anticipated that 2017 would be a year of geopolitical risk and potential economic disruptions. Time will tell whether they are right or not.

Looking at the North American market, changes of free trade agreements, emission regulations or increases in import restrictions could have severe consequences on the production and sales plans of automotive manufacturers and suppliers. As a great number of respondents worry about political developments in 2017, it is worthwhile analysing which countries have the greatest potential of political and economic risk.

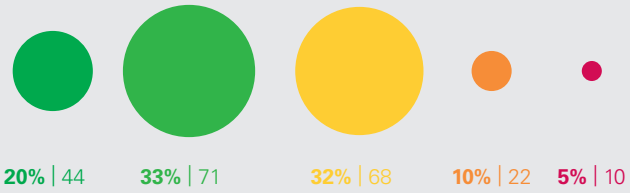
Viewpoint by respondents from the USA

Both executives and consumers from America believe even more that 2017 is to be the political year of hell

Executive opinion



Consumer opinion



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Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

Where is the highest risk for political and economic disruption?

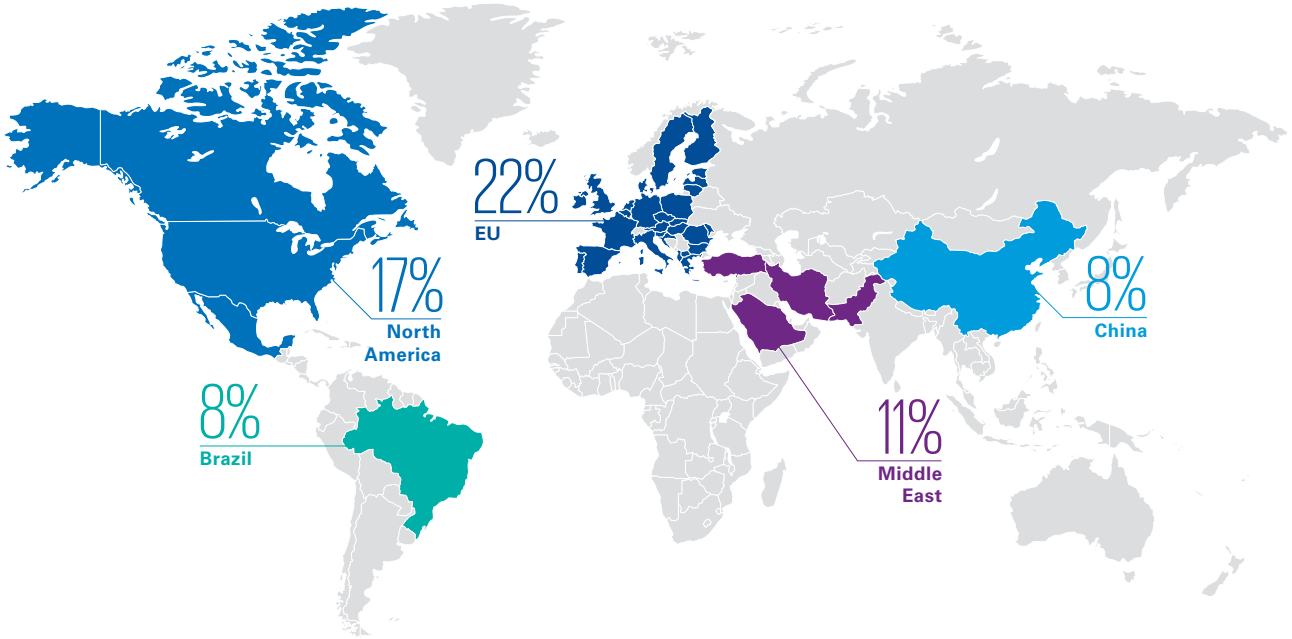
Executives expect political and economic disruption to be most likely in the EU, followed by North America and the Middle East.

As most executives expect 2017 to be disruptive for the automotive industry, the question arises where the risk of a possible political and economic disruption might be the highest.

22% of executives rated member countries of the European Union as having the highest risk for disruption, followed by the regions of North America and the Middle East. This rating reflects a reality check of the disruptive political and economic events of 2016, including Brexit and the US presidential election.

Not surprisingly, respondents are most likely to choose countries in their own regional cluster. For example, most South American respondents selected Brazil because local political and economic changes usually feel more important than foreign ones. A more detailed look into Eastern Europe shows that for the executives, Turkey is emerging as one of the countries with a great risk of future political and economic disruption, presumably due to the recent political unrest happening there.

High risk regions for political and economic disruption



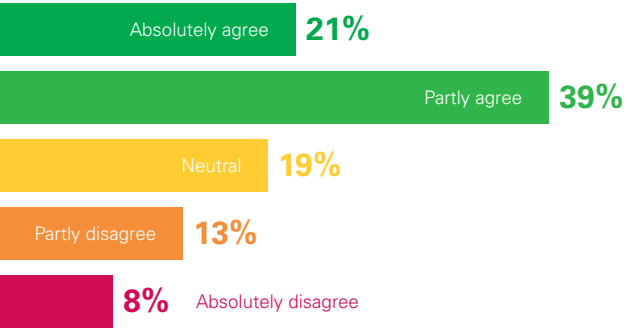
Note: Map shows percentage of respondents rating a region to have the highest risk of a political and economic disruption
Source: KPMG's Global Automotive Executive Survey 2017

kpmg.com/GAES2017

Taking the temperature on European developments

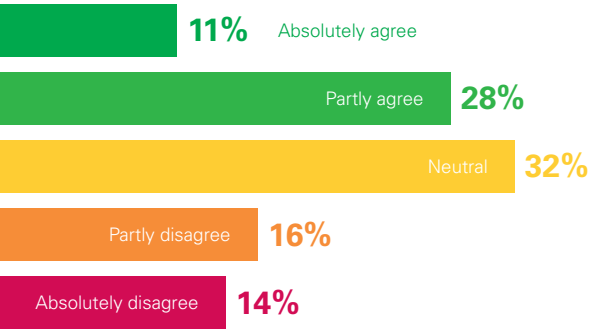
60% of executives believe that the **EU will have fallen apart by 2025.**

Executive opinion



39% of consumers believe that the **EU will have fallen apart by 2025.**

Consumer opinion



According to the respondents, the European Union as it is today will be history in 2025.

Political risks as well as social and economic turmoil are not only a North American phenomenon. Brexit already demonstrated this during the summer of 2016, putting the fundamental principle of the European Union at risk.

Asked whether the European Union will have fallen apart completely by 2025, an astonishing 60% of executives and 39% of consumers absolutely or partly agree. With Brexit representing a step towards the downfall of the EU, more than 80% of executives from the United Kingdom do not see the EU surviving beyond 2025. The collapse of the European Union would not just jeopardize the free trade zone within the EU, it would disruptively affect the whole automotive industry worldwide.

In France and Germany, elections are due in spring and autumn 2017. It remains open whether these two countries at the heart of Europe will experience similar outcomes with a stronger movement towards the right.

When choosing the countries with the highest risk for political and economic turmoil, the surveyed executives have rated the following countries: 1. USA, 2. China, 3. Brazil, 4. UK, 5. Germany, 6. France.

Ulrik Andersen
Automotive Leader Russia

"Dramatic change upcoming: Western Europe is not only facing political changes but also severe pressure in the auto industry due to regional shifts."

Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

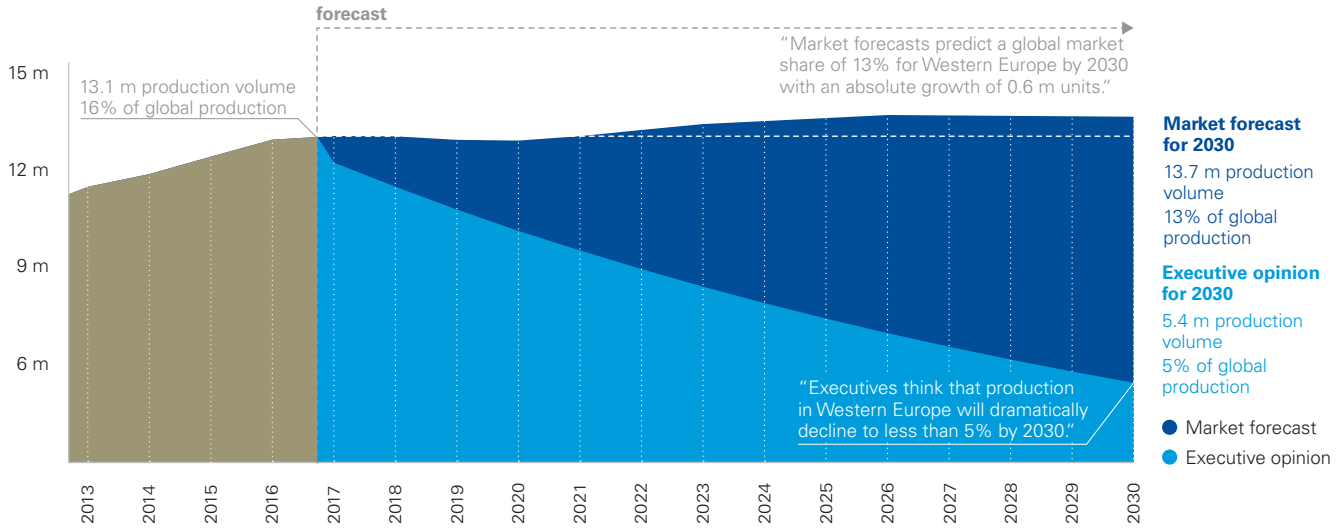
Taking the temperature on production in Western Europe

Shifting production volumes to growth markets is another serious threat to Western Europe.

Not only macroeconomic risks and geopolitical turmoil will have a significant impact on the automotive sector in Western Europe. Globalization and the emergence of China as the most important automotive sales market has led to dramatic dependencies for some auto manufacturers in Western Europe.

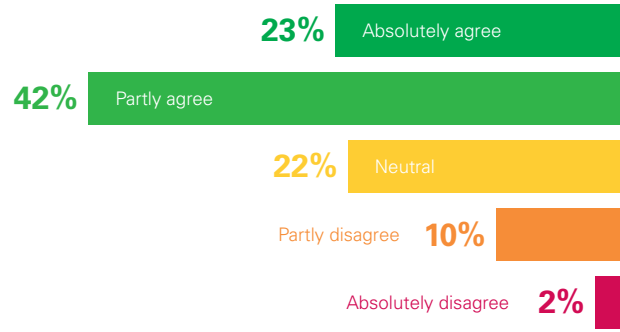
Taking the temperature on whether less than 5% of the global car production will originate from Western Europe by 2030, nearly two out of three executives absolutely or partly agree. In numbers that would mean that car production would drop from 13.1 million today to only 5.4 million in 2030. This would have severe consequences for manufacturers themselves and the whole labor market in Western Europe. However, current forecasts still show that the volume will at least not be lower than today, although global share will drop only slightly to 13%. Past experience suggests that the reality will be in between these two extremes.

NextGen Analytics: Automotive light vehicle production volume (< 6t) for Western Europe 2013–2030



65% of executives believe that by 2030 less than 5% of global **car production will originate from Western Europe.**

Executive opinion



Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017
Source NextGen Analytics Graphic: LMC Automotive, KPMG Automotive Institute 2017

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What is China's role by 2025?

Almost 56% of executives believe that China is a **high growth market for traditional mass and volume** manufacturers.

According to the executives' opinion, Chinese manufacturers are not seen as frontrunners for electric mobility and even less as frontrunners for innovative data-driven business models. Consequently, executives believe, that innovations will still be driven by traditional Western players. However, China is absolutely seen by executives as a high growth market primarily for mass and volume manufacturers as well as for premium manufacturers. This leads to the conclusion that innovations will be developed for China but not necessarily by Chinese players. Interestingly enough, executives from China often see themselves on the opposite side to all other respondents, especially in their position as a frontrunner for innovative data-driven business models.

Chinese companies surprisingly not seen as a threat regarding disruptive innovation from the outside-in perspective.

kpmg.com/GAES2017

Note: Percentages may not add up to 100 % due to rounding, percentage of respondents answering with "Yes" per role of China | **Source:** KPMG's Global Automotive Executive Survey 2017

Where to pilot a launch of an innovation?

Executives strongly favor China, the USA and Germany over all other markets for the launch of a new pilot. Due to increasing urbanization and environmental pollution, most executives believe that especially cars or new products as well as mobility services are most likely to be piloted in China. The USA and Germany, two countries with a long successful history in the automotive sector, are ranked second and third.

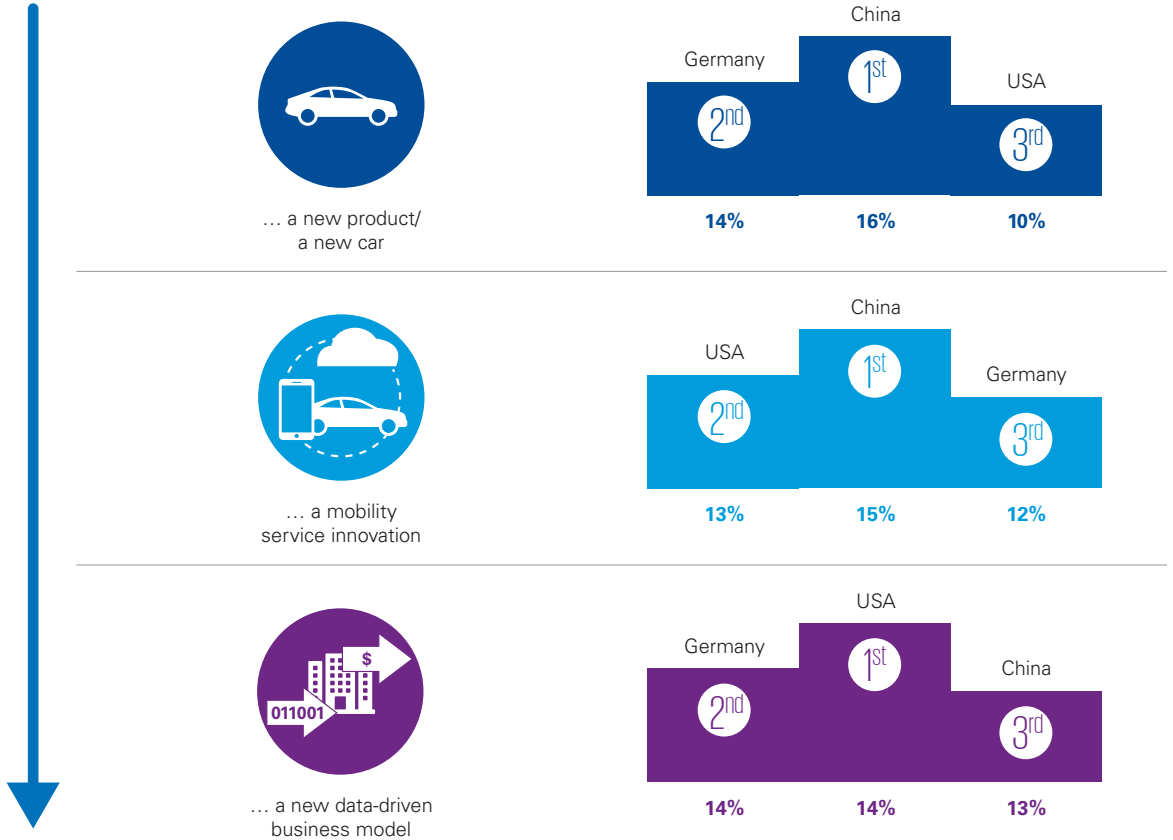
Unexpectedly, executives take a more critical view on China regarding the launch of disruptive data-driven business models, voting China third for such services and customer-oriented innovations. A country like China would however be very suited because consumer adaption for new and disruptive concepts are comparably fast. Executives prefer the USA and Germany over China for such a launch. One of the reasons is definetely linked to the limited and controlled access to data for companies outside of China.

Recommended view

When just looking at executives outside of China, the USA and Germany, the results for the top three are robust, which shows that the opinion is not influenced by executives favoring their home market.

There are three key markets to pilot a launch of a new car or service: China, Germany and the USA – interestingly, for data-driven business models, the USA and Germany are favored over China.

In which country would executives pilot a launch of …



Source: KPMG's Global Automotive Executive Survey 2017

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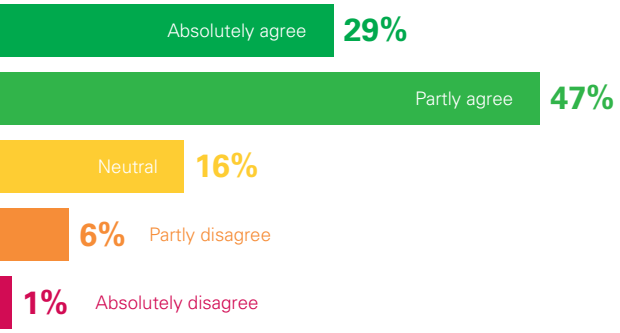
Taking the temperature on the future of China and India

3 out of 4 executives agree that the global share of vehicles sold in **China** will be above 40% by 2030 (2016: 29%).

Executive opinion



Huu-Hoi Tran
Automotive Leader China

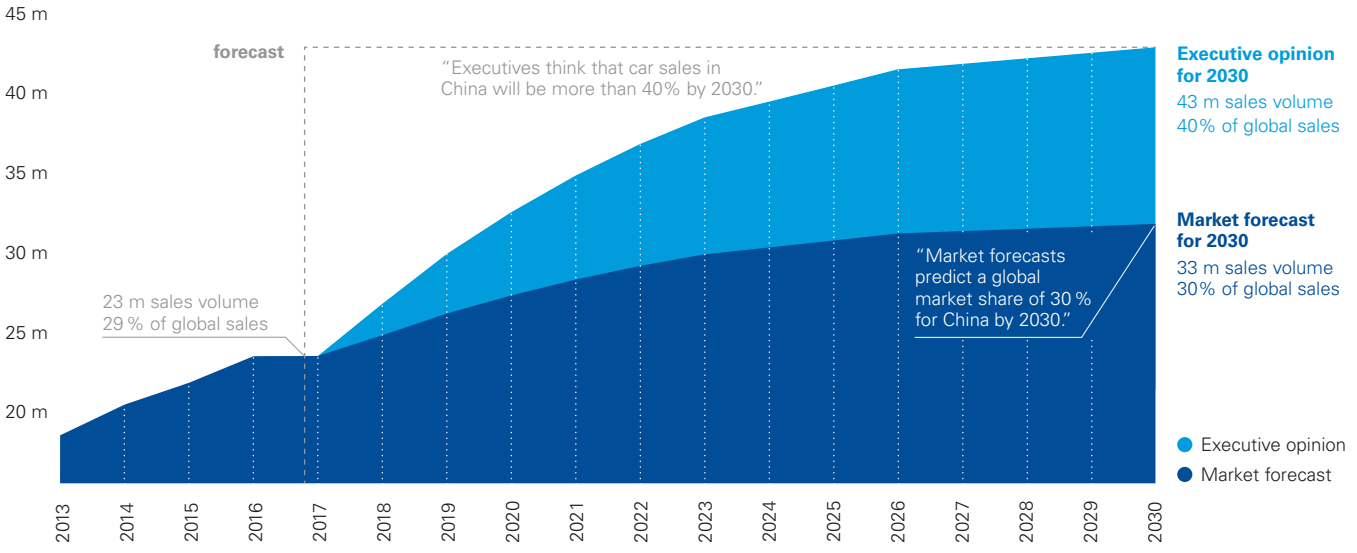
"There is a clear tendency for an even stronger shift towards China. The majority of executives expect the global share of vehicles sold in China to reach 40% by 2030."

Executives believe that China will keep up its pole position as world leader for sales in the automotive industry.

As one of the most important investment targets for automotive players, executives expect a very optimistic development for vehicle sales in China. 76% of all executives think that the global share of vehicles sold in China will reach 40% by 2030. On the other hand, only 7% disagree with this statement.

So how do market forecasts for unit sales describe developments in China by 2030? Even though estimations predict that vehicle sales will increase in volume by 10 million vehicles to a total of 33 million units, the global share will stay stable at around 30%. To reach a global market share of 40% by 2030 – as expected by most of the respondents – a total amount of 43 million vehicles would have to be sold in China. Again the reality will be somewhere within this bandwidth.

NextGen Analytics: Automotive light vehicle sales volume (< 6t) forecast for China 2013–2030 (in units)



Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017
Source NextGen Analytics Graphic: LMC Automotive, KPMG Automotive Institute 2017

kpmg.com/GAES2017

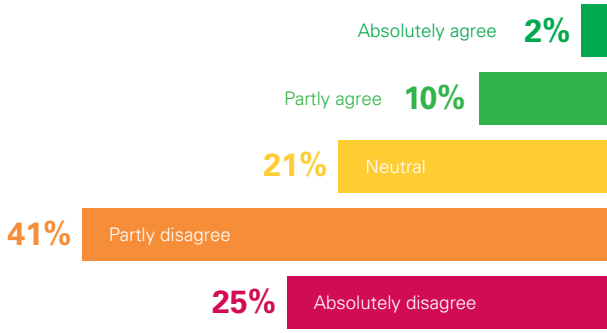
Executives believe that India won't become a second China when it comes to vehicle sales.

India is about to surpass China as the most populated country and given China's success story over the last two decades, it is worth considering India as the next China. However, according to two out of three executives, India will not come anywhere close to China in terms of vehicles sold by 2030. Only a small amount of 12% of executives expect India to reach the around 33 million units of sales that are predicted for China.

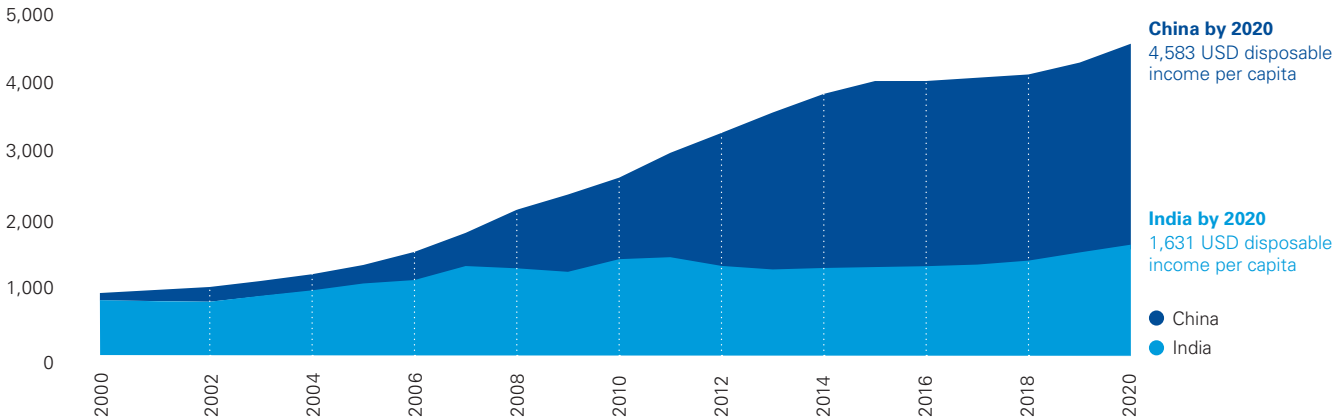
Analysing India on a more detailed level by looking at the development of the decisive consumer market factor of disposable income per capita, the doubting opinion about India is not surprising. China's income development has outdistanced India's GDP since the beginning of this century and growth rates especially do not seem to match. Low income and purchasing power do not make India an attractive sales market because even simple cars are considered a luxury good to the majority of the population.

Only 12% of executives believe that **India** will get anywhere close to China in terms of vehicles sold by 2030.

Executive opinion



NextGen Analytics: Disposable income per capita (USD), China vs. India



Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017
Source NextGen Analytics Graphic: Economist Intelligence Unit (EIU), KPMG Automotive Institute 2017

Who has the best prospects over the next 5 years?

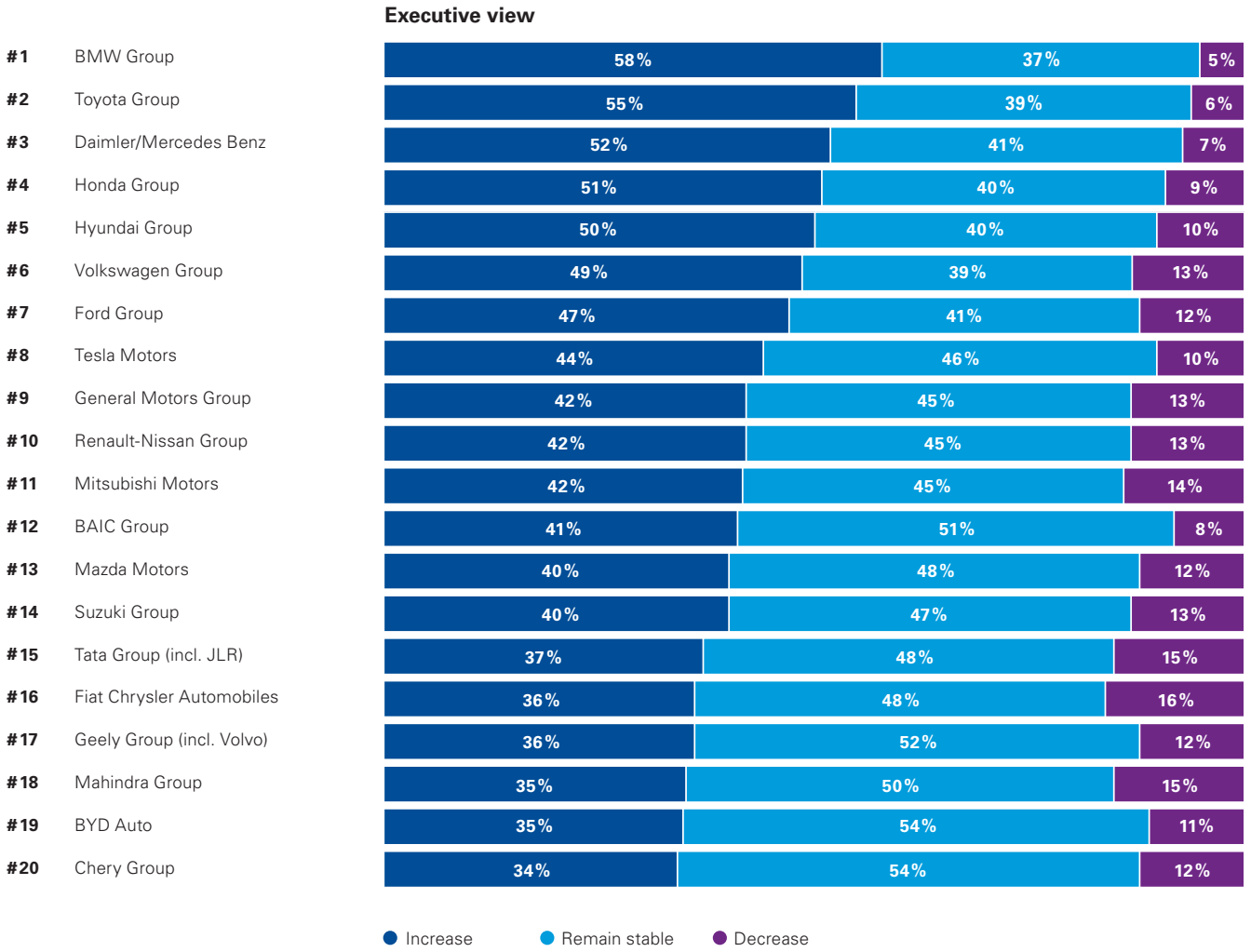
58% of executives believe that **BMW** will increase its market share.

The traditional business model is still evaluated by market share based on sales units – and the executives we asked have a strong opinion on whom they expect to win or lose on the marketplace: BMW has replaced Toyota as #1 with 58% of all executives believing that BMW will increase its market share. Electric pioneer Tesla increased by three ranks in comparison to last year, whereas Volkswagen, tormented by dieselgate, was not able to maintain its position among the top 3. The greatest increase is seen by Daimler jumping from rank 16 (34%) in 2016 to rank 3 with 52% of the executives believing in an increase of global market share. For North America, Daimler ranks first.

Recommended view

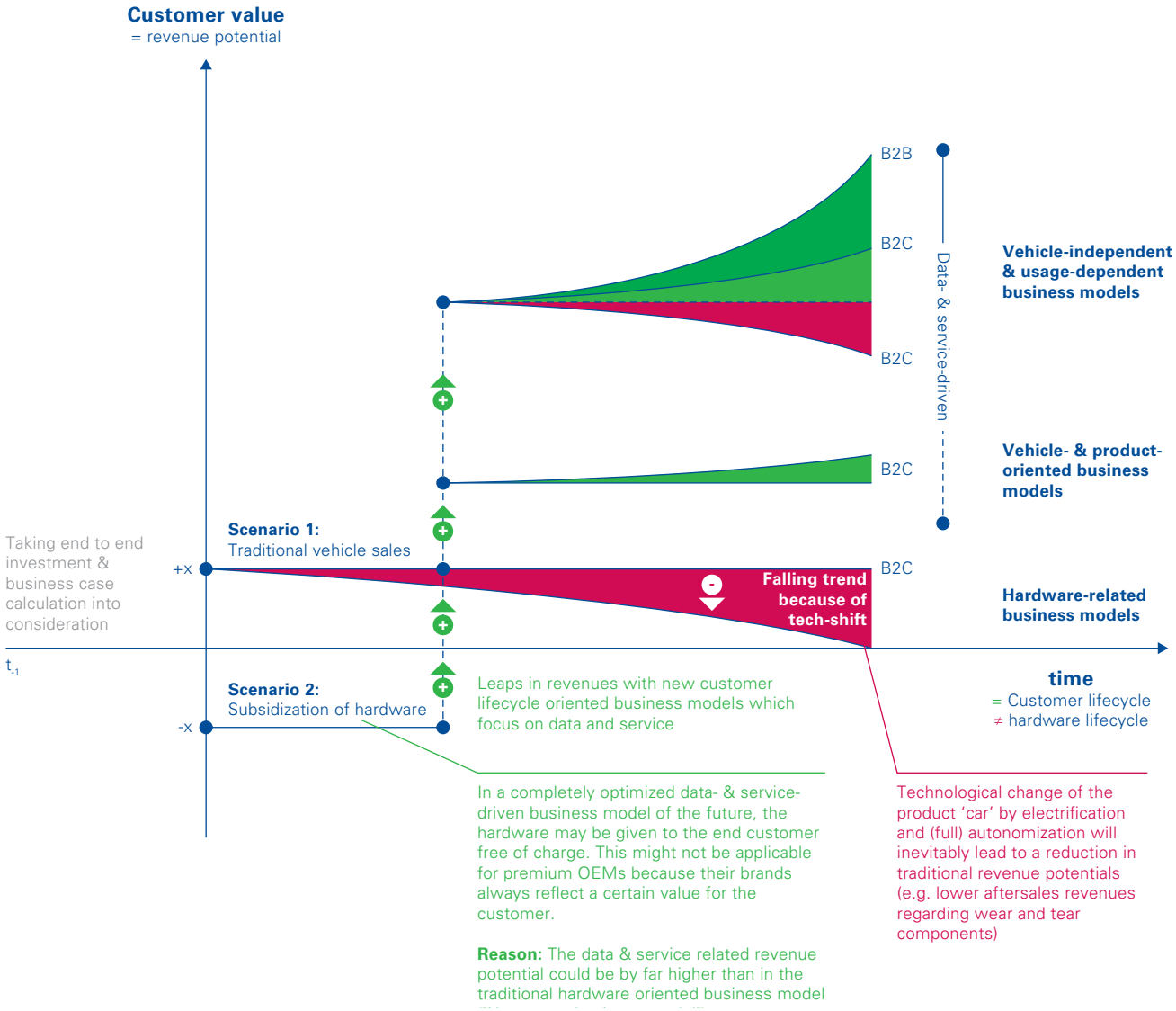
The results on the right show the global perspective of all executives. Looking at the regional or even the country results, ranking can significantly differ. For North America for instance, Daimler/Mercedes Benz is ranked as #1 market-share gainer.

BMW, Toyota and Daimler share the podium.



Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

From product profitability to customer value



Source: KPMG Automotive Institute 2017

KPMG Viewpoint

- The traditional hardware-related business model of the automotive industry will be put under pressure from two sides:
  - **Mind-shift:** major change in customer behavior in the age of digitalization
  - **Tech-shift:** major change of the product 'car' by electrification and (full) autonomization
- The business model and the underlying profitability analysis needs to focus on the customer lifecycle instead of on the product lifecycle
- This basically requires differentiation between two customer groups:
  - **B2C:** When calculating end-customer value, the revenue potential in the form of disposable income will be central. The revenue potential will depend on the relevant living conditions (city/country) and personal customer preferences in allocating disposable income across all expenditure on mobility, insurance, shopping, etc.
  - **B2B:** Customer value and revenue potential of the commercial B2B customer/partner will depend on the end-customer-/data quality and the intelligent linkage of various up- and downstream data (e.g. further sale of data to insurance or transportation companies).

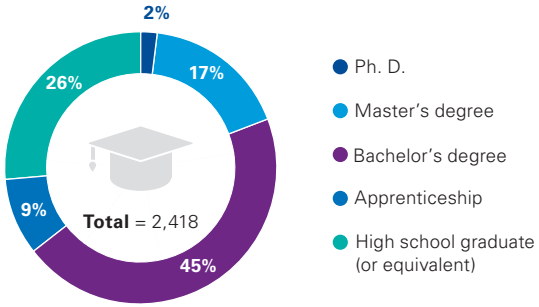
About the consumer survey

Like in the previous year, we have sought the opinions of more than 2,400 consumers from all over the world in order to compare their valuable perspective against the opinion of the world's leading auto executives. For this purpose, we asked ordinary people from 42 countries with various educational backgrounds, throughout all age groups and living circumstances.

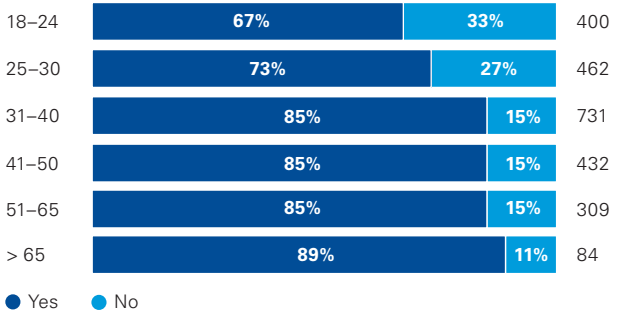
Apart from the well-known demographics, we also asked the consumers whether they own a car, how they assess their income compared to their surroundings, and which type of transport they use for their everyday mileage. The findings reveal some noteworthy relationships.

Primarily, having a car is a matter of money. 42% of all consumers without an own vehicle claim to have a low income, compared to only 13% of car owners. We can therefore see here that car ownership is still closely related to income for many consumers, and to date living without an own car has not been an attractive option.

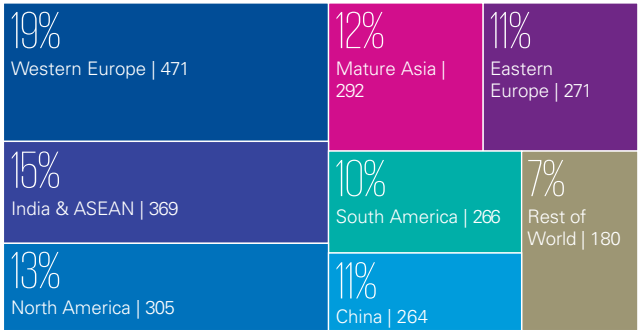
Respondents by education level



Respondents by age and car ownership



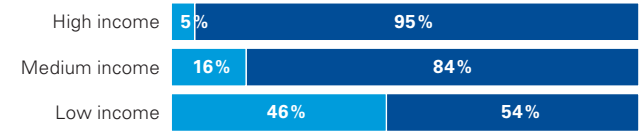
Respondents by regional cluster



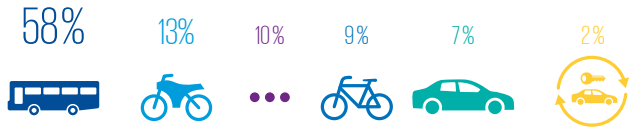
Respondents by living circumstances

- In a city with > 1,000,000 inhabitants
- In a city with 500,000–1,000,000 inhabitants
- In a city with < 500,000 inhabitants
- In a town/village/suburb close to a city
- In a independent town/village
- In the country side

Respondents by income level and car ownership



Preferred type of transport of respondents who do not own a car



Note: Percentages may not add up to 100 % due to rounding | **Source:** KPMG's Global Automotive Executive Survey 2017

Glossary of terms

B2B	Business to business
B2C	Business to consumer
BEV	Battery electric vehicle
Downstream	Service-driven
Downstream data	Customer data
EREV	Extended range electric vehicle
FCEV	Fuel cell electric vehicle
HEV	Hybrid electric vehicle
ICE	Internal combustion engine
ICT	Information and communication technology
m	Million
MaaS	Mobility-as-a-service
OEM	Original equipment manufacturer
OS	Operating system
PHEV	Plugin hybrid electric vehicle
t	Tons
TCO	Total cost of ownership
TCU	Total cost of usage
Upstream	Product-driven
Upstream data	Vehicle data
USD	US Dollars

Your notes

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