



KPMG's 17th consecutive

Global Automotive Executive Survey 2016

From a product-centric world
to a service-driven digital universe



Acknowledgements

In its 17th 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, 800 senior executives from the world's leading automotive companies were interviewed, including automakers, suppliers, dealers, financial services providers, rental companies, mobility services providers and, for the first time, companies from the information and communication technology (ICT) sector.

As customer-focus and service-orientation will become ever more important for the automotive business in the age of digitalization, we have, also for the first time, additionally interviewed more than 2,100 consumers from around the world to give us their valuable perspective and compare their opinion against the opinion 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 Moritz Pawelke, Global Executive for Automotive, KPMG International, for his commitment to lead this study and the entire KPMG automotive sector team in Germany for their efforts.



To view the interactive version of this year's survey please visit

FIND OUT MORE

kpmg.com/GAES2016

Foreword

Dear readers,

"The road to success is always under construction." This simple sentence, from actor Lily Tomlin, captures the current state of the automotive industry.

Looking at this year's survey results we recognize that executives now see definite disruption ahead. We have structured this survey into three chapters:

- what kind of disruption we are talking about,
- how to cope with the disruption and
- who's best prepared.

Market growth in emerging markets, especially in China, has long been the number one answer of executives asked about key trends for the next ten years. This year digitalization and connectivity has finally become number one on the executives' strategic agenda until 2025, sky rocketing from #9 and #10 in the last two years.

With disruption arising from a new digitalized and connected world, it seems the center of gravity of the customer relationship in a connected car is rapidly moving towards tech giants from Silicon Valley. Auto executives are far less optimistic that they can stay in the center of the customer relationship than before.

Why? As customers increasingly aim to be always connected, relationships are shifting to a much more service-oriented and new data driven business model for which the traditional automotive industry is rather unprepared compared to other industries, like companies from the information and communication technology sector (ICT). To be successful, data generated by the car, the driver and other passengers in the car has to be informationally engineered: if this is not done by automotive companies, someone else will. Even more importantly, the results show that almost across all regions the customers will become

more and more aware about the value of their data. They will look for someone to trust and that offers the most interesting benefits in return for their data. The companies that will be able to convince the customer that they are a trusted data hub will be the ones that succeed.

Does this new world have the same clockspeed as the world in which the existing business model of auto companies is ticking? Definitely not. The industry has to recognize different clockspeed reflected in different product development cycles in the future. The results of our survey do not yet show it as clearly as I expected, but I personally believe the era of one product development cycle for everything in the car is over.

Beside all these sky rocketing new trends for the next years, executives have also recognized that regulation is still playing a major role, putting even more pressure on technological developments to achieve emission rules set. Therefore, as last year's survey stated, regulator and customer centricity will be still the two scales which have to be balanced in the future.

I do believe in the positive aspects of change. Challenging but exciting times are ahead for the automotive industry. I hope you enjoy reading the study in paper or online. Please make use of the interactive version of this survey and create your own report.

Enjoy the read!



Dieter Becker
Global Head of Automotive
KPMG International

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Executive summary



Connectivity and digitalization is sky rocketing

1

The auto executives' mindset has shifted year-on-year. Connectivity and digitalization has finally outpaced growth in emerging markets and alternative drivetrain technologies as the key trend dominating the executives' strategic agenda until 2025.



The countdown for disruption has already started

2

A major business model disruption is anticipated to be extremely likely for almost 10 times more survey respondents than last year. More than 80% are convinced that connectivity and digitalization will strongly disrupt the auto industry by the end of this decade.



The center of gravity of the customer relationship will shift

3

This year, respondents are far less confident that traditional auto companies will be able to dominate the customer relationship in the connected car. Last year, two-thirds still believed auto companies would see off competition in this area from ICT sector third parties.



Business models will be circling in different orbits

4

Connectivity will pave the way for an entirely new data and service driven business model for those traditional auto companies able to retain a direct customer relationship. But by no means all survey respondents are convinced of this: already every fifth respondent believes that vehicle manufacturers could also turn in to mere contract manufacturers for ICT companies.



Data is the fuel that informational engineering ignites

5

Although strong informational engineering capabilities and a data driven mindset will be a decisive factor to compete with new entrants at the customer interface, most respondents said the usage of data in all corporate functions is currently at a very early state, at best.



The race to the planet of data has not been decided

6

Most respondents believe nobody except the driver owns the data generated in or by a car. While some executives still think that data is at their companies' free disposal, customers think differently. They will choose the party they trust the most and that offers the best benefits in return instead of just giving their valuable data away for free.



Does using the auto-pilot mean losing sight?

7

The majority of survey respondents see self-driving features as an absolute purchasing criteria or at least expect it to become more important by 2030. Survey results suggest that in a world of autonomous driving classical differentiating factors will diminish in favor of total cost of ownership (TCO) questioning the sustainability of the traditional automotive business model.



The auto industry is in a clockspeed dilemma

8

The era of the one car product development cycle is over. To defend their position against third parties and respond to real-time customer needs, auto companies will need to manage different clockspeeds for innovation, development processes and corporate culture all at once.



The industry is not living in a vacuum

9

More than 80% of respondents see regulation as having a high or very high impact on the auto industry. The recent 'dieselgate' scandal shows that the technological challenges putting pressure on the auto sector regarding more eco-friendly alternative drivetrains have not become any smaller.



Conquering new spheres remains a focus

10

The presence in emerging markets is more than ever fundamental to the success of global auto companies. China has not only become the most important market volume-wise; for the majority of respondents, China is now also the number one place to pilot new innovations and to launch new products.

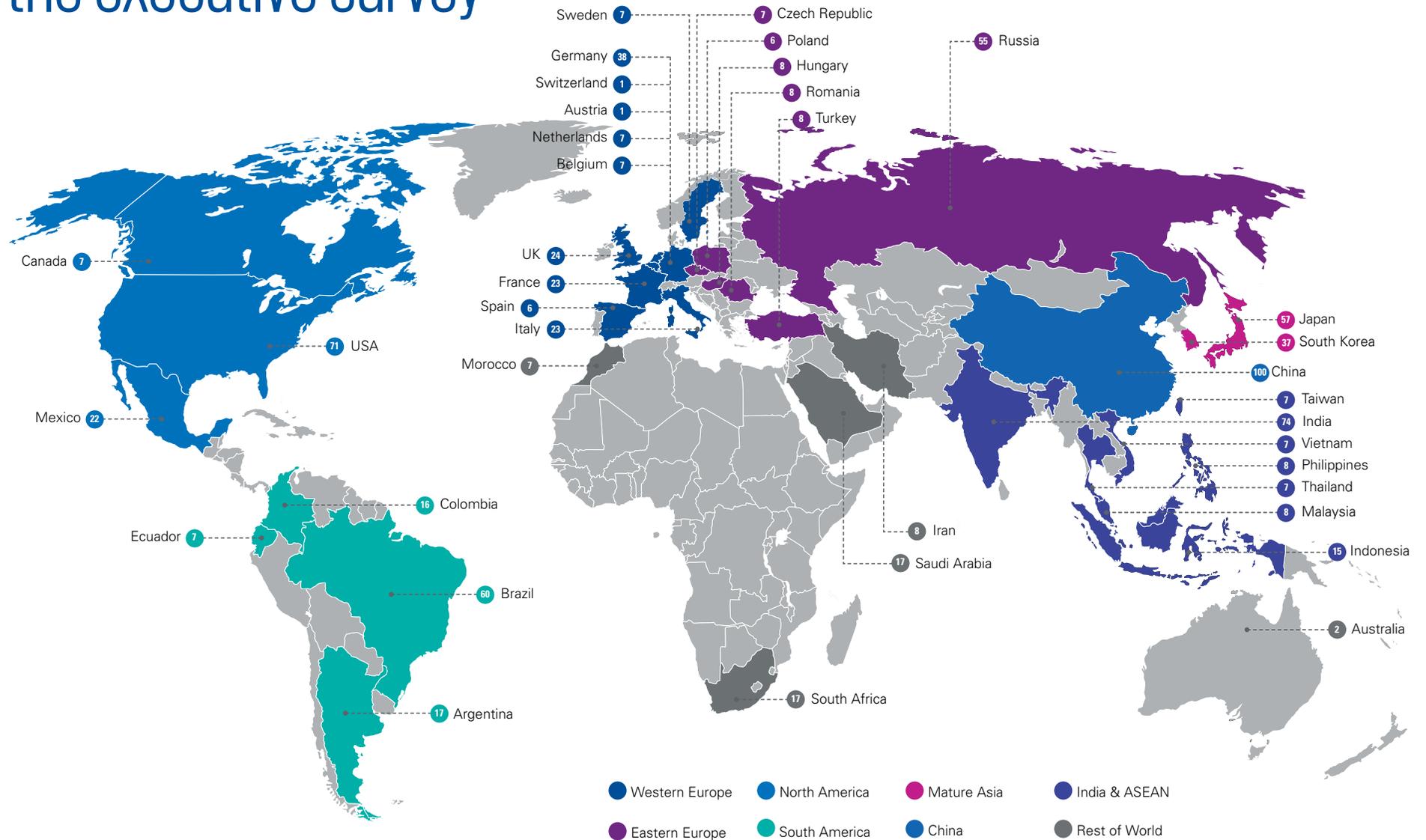


Supremacy of auto companies is not set in stone

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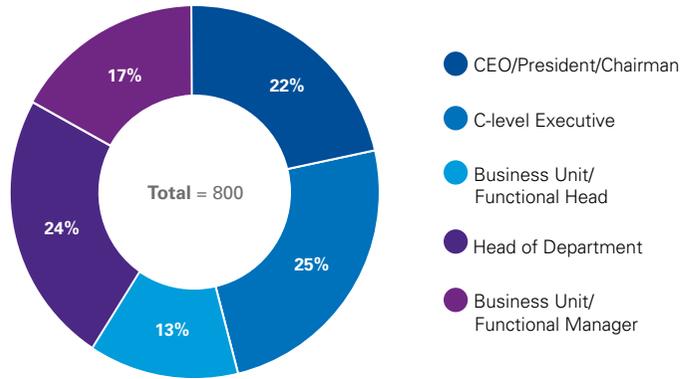
With BMW and Toyota, the surveyed executives see two traditional auto companies leading the way in technological advancements and market success. But survey results also show that they cannot rest on their laurels, with a third of respondents believing ICT companies will bring groundbreaking innovations to the sector.

About the executive survey

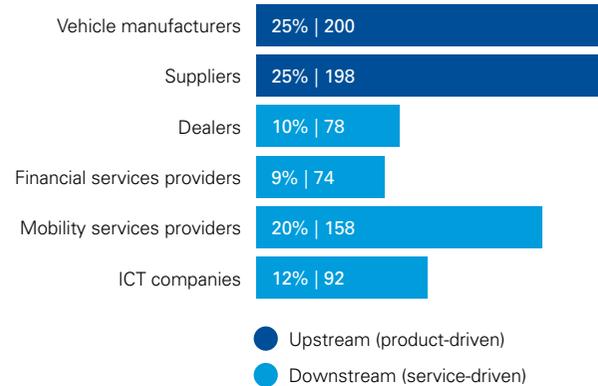


Note: Map shows number of respondents from each country
Source: KPMG's Global Automotive Executive Survey 2016

Respondents by job title



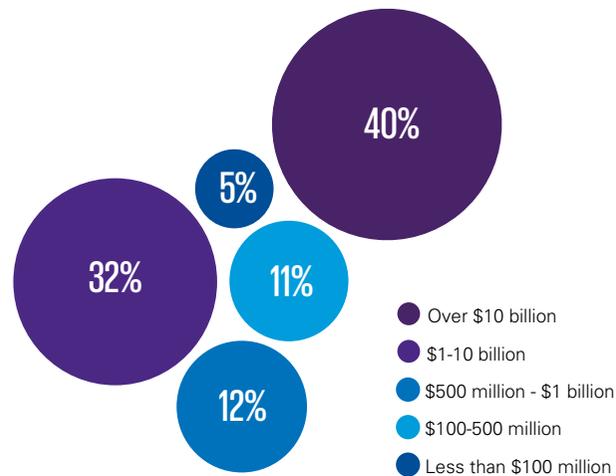
Respondents by company type



Respondents by regional cluster



Respondents by company revenue



For the 2016 survey we have asked 800 executives from 38 countries

For this year's survey we have asked four times more executives than in the previous years to increase the relevance and informative value of regional aspects in our analyses. Therefore, this year 800 executives, from all parts of the world, answered our questions, of whom around 50 percent are C-level executives or CEOs, Presidents or Chairmen. Around one-third of the respondents are based in Western and Eastern Europe, while 13 percent come from China and also each 13 percent from North and South America. 16 percent of the executives are located in India & ASEAN and 12 percent in matured Asian countries of Japan and South Korea.

The respondents represent companies of all parts of the automotive value chain including vehicle manufacturers, Tier 1, 2 and 3 suppliers, dealers, financial services providers, mobility service providers and for the first time also companies from the information, communication & technology sector (ICT) that increasingly claim a stake in future revenue streams around mobility.

In the survey, 72 percent of all participants act in companies with annual revenues greater than US\$1 billion, of whom 40 percent even have revenues of more than US\$10 billion.

The survey was conducted online and took place between July and November 2015.

Note: Percentages may not add up to 100% due to rounding
Source: KPMG's Global Automotive Executive Survey 2016

Disruption ahead?

Connectivity and digitalization is sky rocketing

Staying connected has become a basic part of everyday life. This year's survey finally shows that auto executives have fully embraced connectivity and digitalization and ranked it as the overarching key trend disrupting the auto industry until 2025.

Ranked #10 in our 2015 survey, executives have moved connectivity up to #1 this year, with half of them rating it as extremely important.

For the last three years, the top concern was growth in emerging markets, which has now dropped to #4. Alternative powertrain technologies are high on the list of trends in 2016, with hybrid electric vehicles at #2, battery electric vehicles up from #9 to #3 and fuel cell electric mobility staying fairly constant at #5.

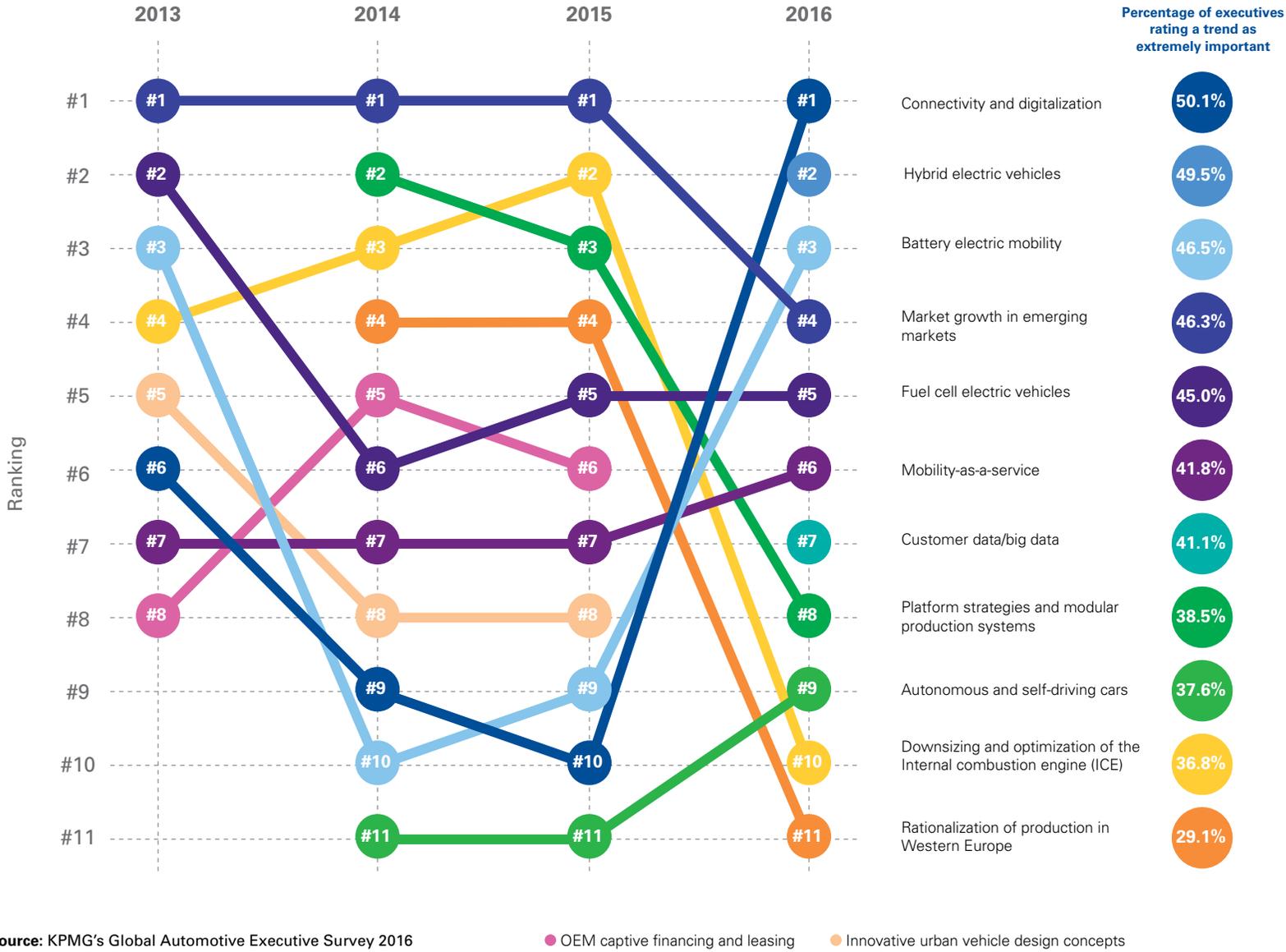
The aftermath of the 'diesalgate' scandal of unreliable emission test results from autumn 2015, alongside the increased importance of alternative drivetrains,

is shown in the results: the formerly high-ranked trend of downsizing internal combustion engines has dropped from #2 in 2015 to #10 in 2016.

The surveyed executives also give more importance to autonomous and self-driving vehicles than one or two years before. Beyond that, the results reflect that executives recognize that vehicle or customer related data will be a crucial success factor for the coming years in the automotive industry. More than 40 percent estimate big data/user data as a very important key trend.

Generally, the ranking of this year's key trends reflects that the auto industry is moving its focus increasingly towards the customer needs, rather than traditionally product and technology-led internal concerns, as the trend of rationalization of production in Western Europe dropped from #4 in 2015 to #11 in this year's survey.

What are the key trends until 2025?



Source: KPMG's Global Automotive Executive Survey 2016

KPMG Viewpoint

Surprisingly, if looking at stakeholder results, the surveyed vehicle manufacturers rank connectivity only #4, while market growth in emerging markets followed by hybrid and fuel cell electric vehicles are still the key trends on their strategic agenda.

This reflects that most OEMs are still focusing on challenges caused by their traditional business model (building cars) instead of fully concentrating on new challenges ahead. However, there is one interesting regional difference. Executives from OEMs in China are the only ones agreeing with the overall opinion, also ranking connectivity as #1 key trend. A possible explanation for this could be the fact that Chinese OEMs are certainly less entrenched in traditional process and might therefore be able to adapt change quicker.

"Connectivity and digitalization has finally arrived on top of the executives' agenda"

Countdown for disruption has already started

Connectivity and digitalization will undoubtedly have a strong impact, not only influencing the existing business model of auto companies, but eventually leading to a major business model disruption.

This year's survey results indicate that the automotive business will face an unprecedented disruption over the next five years. The value chain itself, product development cycles, sales and aftersales processes, the customer relationship, the overall business model, as well as the associated products, technologies and services, will have to transform significantly in order to keep up with the pace of digital innovations.

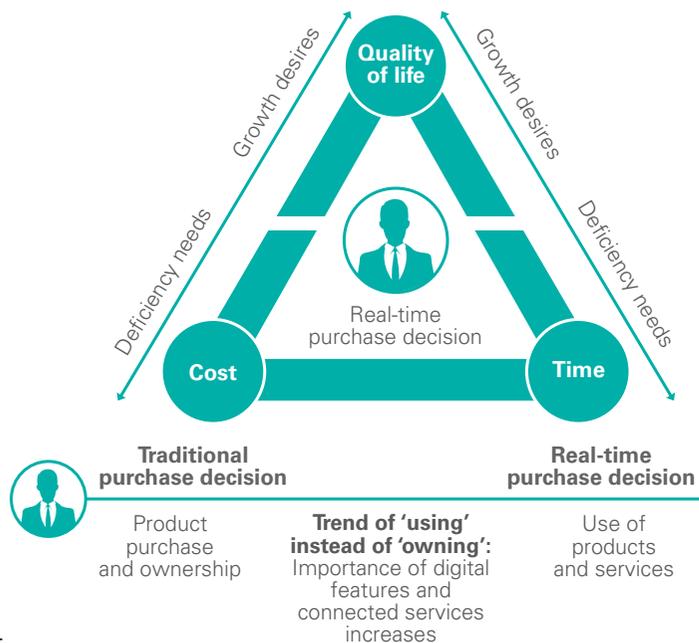
Ubiquitous connectivity will pave the way for new service- and data driven business models around mobility and will, beyond that, enable third party players from converging industries to intervene in the customer relationship at the point of sale (PoS) as well as during the whole lifecycle of the car.

In our recent publication Metalsmith or Grid Master, we look at how business models need to change to develop their customer relationship.

An OEM's future business model will have to far more accurately reflect the lives of their customers, who are looking to optimize their time, cost and quality of life in real-time and depending on situation and application-specific needs.

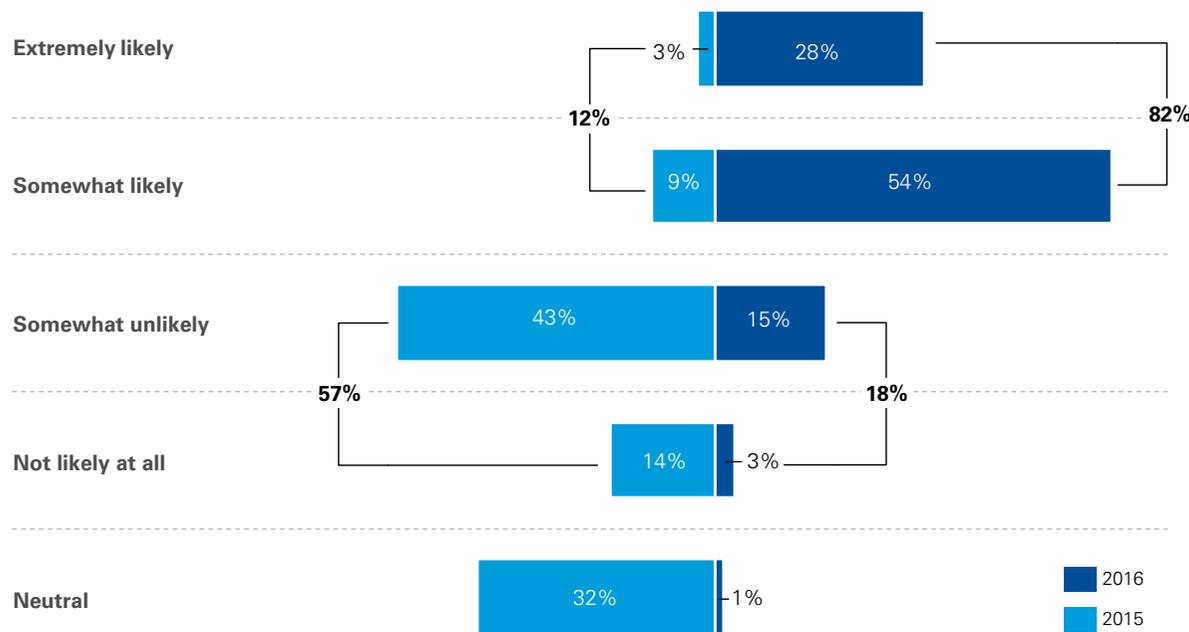
You will find interesting survey results on the future customer relationship on page 14 that show that the countdown for disruption has started and auto companies must react quickly in order not to lose the valuable customer interface in a connected car to competitors from outside the industry.

Influencing factors of a real-time purchase decision



Source: Metalsmith or Grid Master, KPMG 2015

How likely is a major business model disruption?



Note: Percentages may not add up to 100% due to rounding

Source: KPMG's Global Automotive Executive Survey 2016

KPMG Viewpoint

Just as in the ranking of key trends, it is executives from the OEMs who have a conservative view and were most likely to respond that major business model disruption is not likely at all or somewhat unlikely. They still appear to be underestimating the impending changes predicted in the business model caused by the key trend connectivity. OEMs clearly want to keep their traditional role as key player in the value chain,

and might not want to move out of the product- and technology-led comfort zone they have been in for the past century. These different opinions from different value chain players show the tension currently in the automotive value chain. Nevertheless, there are huge differences between OEMs. As the following pages show, some are already on the right track regarding how to cope with future challenges through innovation.

The executives' mindset has changed significantly year-over-year

A major business model disruption is extremely likely for almost 10 times more of the executives surveyed compared to last year. An overwhelming 82% of the executives estimate a business model disruption in the next five years to be extremely likely or somewhat likely.

Looking into the regional results in the interactive version of this survey, there is a distinct difference of opinion between automotive executives in different territories. Those in the emerging markets of China, India & ASEAN (Association of South East Asian Nations) and South America expect a business model disruption to be more likely. Meanwhile, executives from the Triad of Japan, Western Europe and North America are much more conservative, most often answering that a business model disruption is rather unlikely.

BMW and Toyota are expected to be on the fast track of innovation

Ubiquitous connectivity will pave the way for new service and data driven business models around mobility

According to the surveyed executives, BMW and Toyota will be the leaders in the fields of e-mobility and autonomous driving, and are also expected to generally be the groundbreaking innovators in the next five years.

Although BMW and Toyota are expected to be the most innovative players until 2025, other OEMs like Honda, Ford and Tesla are following in their wake.

Interestingly, these two traditional players are even seen as leading in electromobility ahead of Tesla Motors. The results are not without merit, as BMW has established a strong e-mobility sub-brand with its i8 and i3 models. Toyota is currently building up a new future-oriented and innovative image with the fuel cell model Mirai.

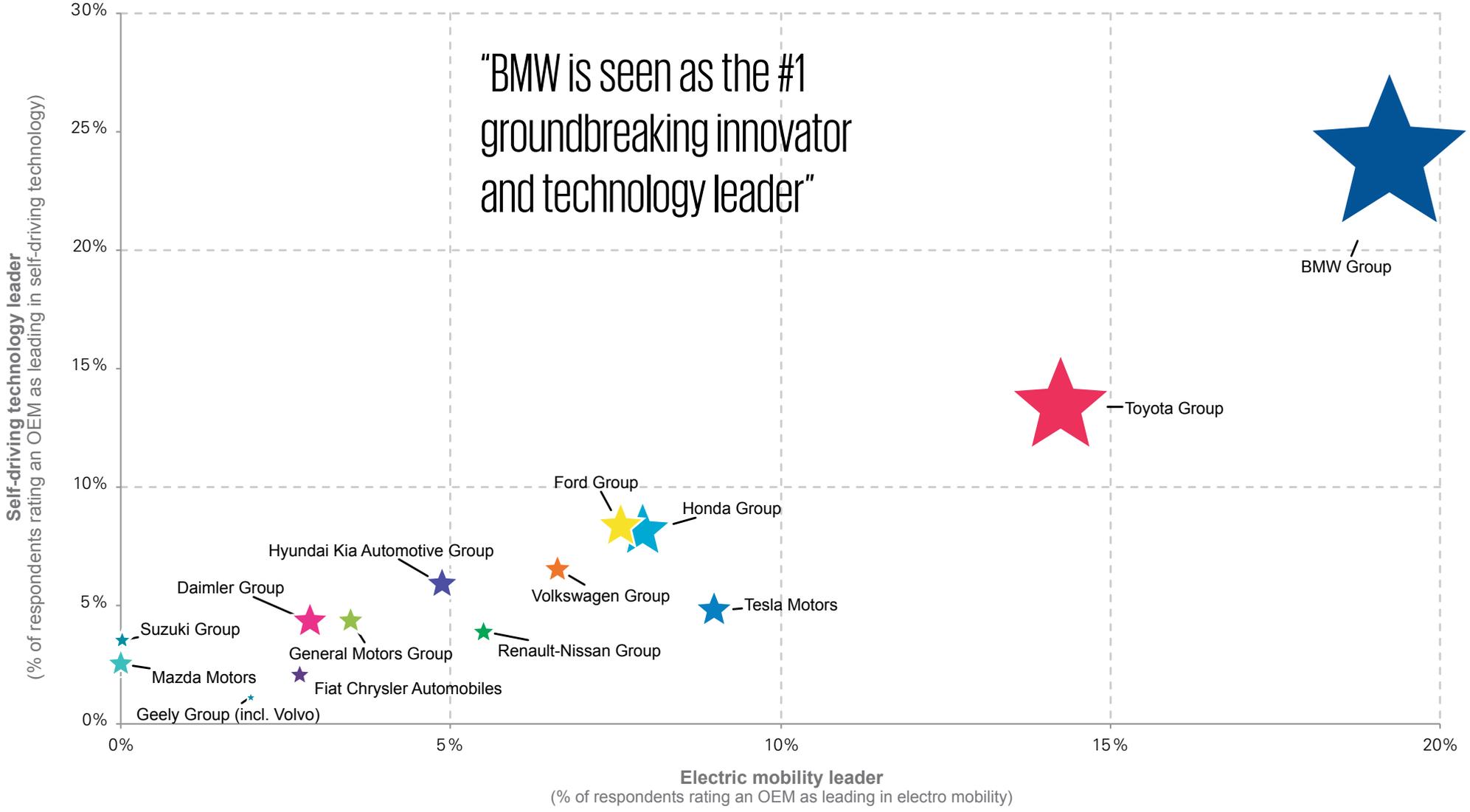
Consequently, the survey respondents

fundamentally link both players to the development of future technologies.

On the other side, Daimler, former second leader of self-driving cars, has lost ground in autonomous driving in the eyes of the executives and is not any more positioned among the frontrunners. However, the executives credit Daimler's efforts in innovation, placing them at #6; mature Asian respondents from Japan and South Korea even see them at #3.

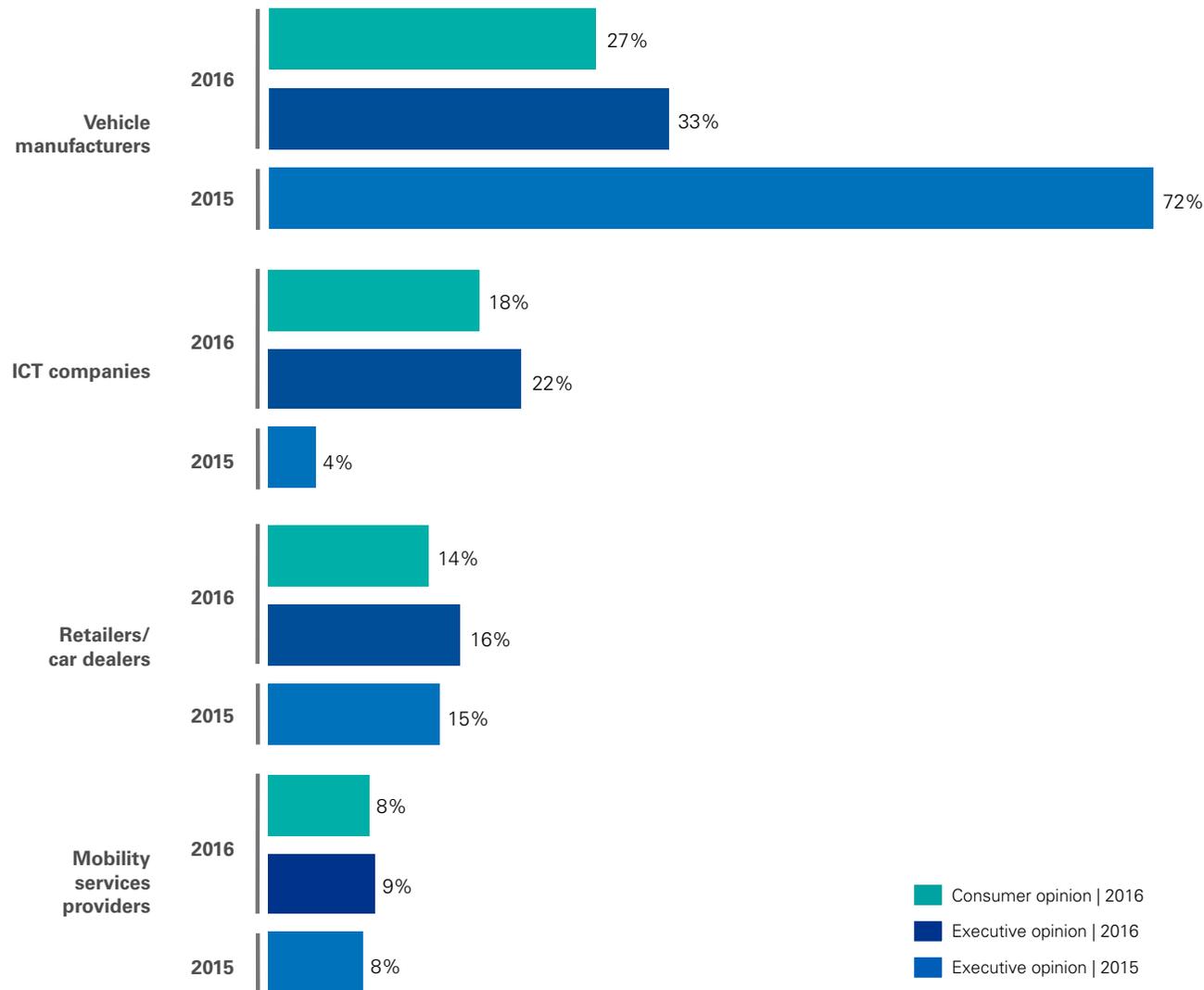
Being innovative is not only a necessity to improve the image of a brand and its reputation. Recent developments around the 'dieselgate' scandal show that a clear strategy, especially regarding electromobility, will clearly influence a company's future position among its competitors.

Who is seen as a groundbreaking innovator and technology leader?



Note: Size of stars is based on the number of respondents ranking a company as ‘groundbreaking innovator’ | Only the top 14 OEMs rated are shown in the graph above
Source: KPMG’s Global Automotive Executive Survey 2016

Who will retain the customer relationship?



Note: Percentage of respondents rating a company type as the one taking over the customer relationship

Source: KPMG's Global Automotive Executive Survey 2016

The center of gravity of customer relationship will shift until 2025

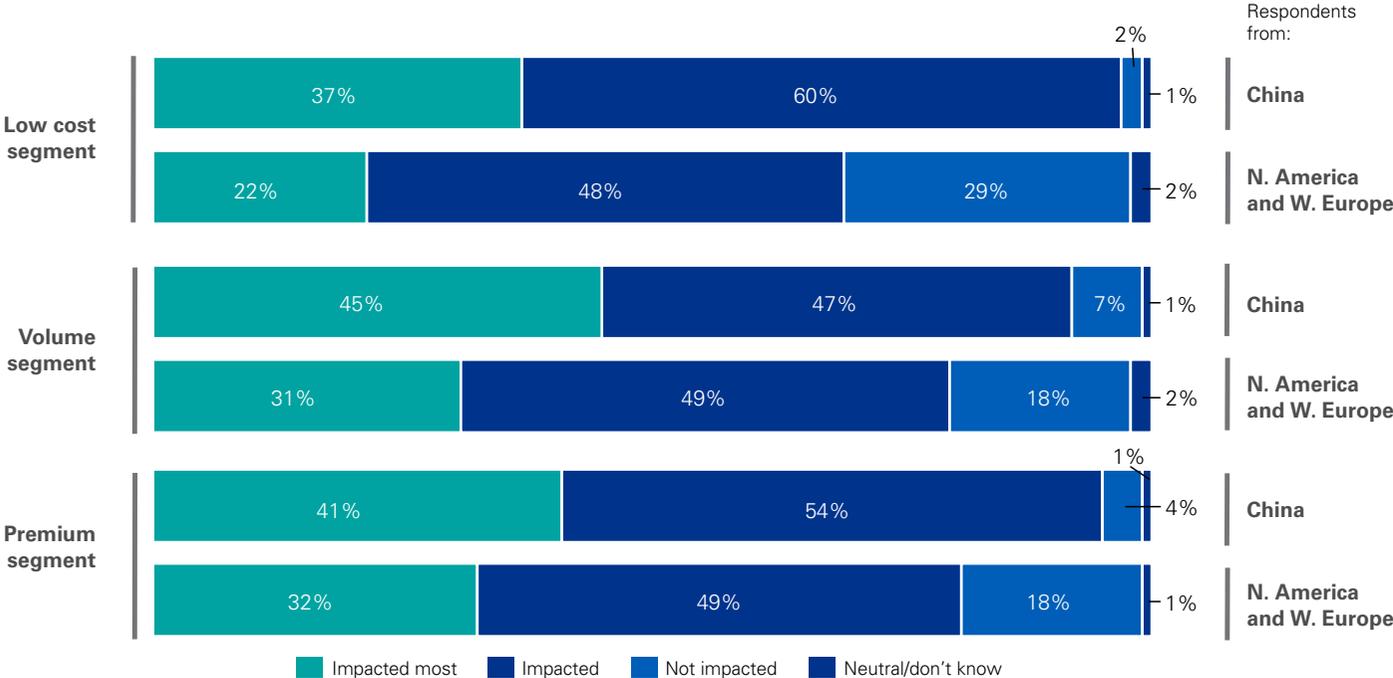
OEMs and ICT companies will increasingly fight for the valuable customer interface. The survey results show that the executives are not as sure as they were in the past that the OEM will still dominate the customer relationship. According to one-fifth of all respondents, tech companies, especially from the Silicon Valley, could gradually take over the customer interface in the connected car.

We've seen that connectivity is becoming a key trend, so it's not surprising that 22% of executives now see the relationship prospectively in the hands of ICT companies, compared to only 4% in 2015. That leaves only 33% of executives believing ownership of the customer relationship lies with OEMs – while in 2015 almost two-thirds were still confident that OEMs will be able to defend the customer interface against third parties. Looking into the regional differences in our interactive version of the survey reveals that consumers and executives in India & ASEAN, China and South America believe most strongly that the customer relationship will shift to ICT companies.

Surprisingly, retailers and mobility services providers are the two value chain players that are seen less as the owner of the customer relationship in future – which is surprising as they are actually the ones owning the customer interface today and whose current business model is completely built around the customer.

“Only 33% of executives believe OEMs to own the customer relationship”

Which segment will be affected most by disruption?



KPMG Viewpoint

It is clear that not all today's automakers will develop into customer and service driven mobility services providers (grid masters'). Many will retain a focus on a production and technology-led business model, not being able to cope with the demands of their connected customers.

The ones impacted the least by the disruption will be low-cost manufacturers, as their business model will most likely stay unchanged. The main business of low cost manufacturers is in less mature markets which still offer a huge potential for the traditional auto business model as we know it today.

Volume and mass market manufacturers will be impacted the most as they are stuck in the middle between a cost-competitive manufacturing and an entirely new and challenging service-driven business model. Based on their brand heritage, those manufacturers cannot rely on the high trust customers have in their brands and high margins at the PoS. They are prone to lose the customer relationship to new entrants from converging industries like the ICT sector.

Undoubtedly, premium manufacturers will be impacted by the disruption as well, but they will have the best prerequisites to cope with the upcoming changes. Their strong and trusted brands will allow them to fight new entrants trying to take over the customer interface at the PoS and during the whole customer life cycle.

The disruption triggered by connectivity and digitalization will affect automotive companies across all segments

The survey results show a noticeable difference between the regions regarding the impact of disruption on the different segments. Compared to executives in North America and Western Europe, executives in China see a significantly higher impact of disruption for auto companies across all segments.

This goes along with the answers of the previous questions regarding the key trend connectivity, the possibility of a business

model disruption and the position of ICT companies at the PoS. Just as before, executives from China are the ones who are more progressive and see a big change coming. A possible explanation for this could be that China's auto industry and its structures are compared to e.g. countries from the Triad relatively young and therefore much more flexible. Chinese executives are not as bounded in 'old' structures and are not as reluctant to change as their counterparts from more mature countries.

Note: Percentages may not add up to 100% due to rounding | *Metalsmith or Grid Master, KPMG 2015
Source: KPMG's Global Automotive Executive Survey 2016

KPMG Insight

Dieter Becker

Global Head of Automotive | KPMG International



We all know that our clocks are running around the world in the same clockspeed, operating in different time zones, but it does not mean, that everyone has the same speed of operating on his culture, business model or process level. So, you could say we work and deliver in different clockspeeds, creating a clockspeed dilemma. First we have to elaborate the question, where this kind of difference in clockspeed is coming from and second how to tackle that situation in the automotive industry.

Connectivity and digitalization will change the world. For us, there is no surprise this year: executives have changed their opinion. In comparison to 2015, executives now see connectivity and digitalization as the number one key trend until 2025. It is rising at an unimaginably fast pace and fundamentally changes the way we live our lives, interact, consume or travel – with the result that nothing will be the same as it was before. Innovative products and even more services are capturing the market in a much faster speed (clockspeed) than in the past, new players are entering the automotive ecosystem, industries are converging and the future of mobility will face a new era of accelerated innovation.

What does this mean for the automotive industry? The automotive industry is experiencing big pressure from all sides and is facing an unthinkable disruption ahead – a disruption a significant amount of executives are more aware of in this year's survey. The travel mentality is transforming towards mobility-on-demand services, consumer behavior is changing and customers will increasingly demand the car is equipped with service-oriented functionalities that enable efficient use of their driving time so they are online any time and anywhere. And finally, the customer is changing his priority of switching from a product-driven culture to a service and TCO-driven culture, where classical car product features are losing the game against technology features that customers know from other industries.

How does this impact the business model? The business

model of today is outdated and will not enable all traditional OEMs to generate sustainable revenue streams and stay ahead tomorrow. In a ubiquitously connected future, it becomes ever more important for automakers to detach themselves from being merely product and technology-driven, and it means a new premium segment will be defined. To differentiate and generate premium prices, it will be necessary to develop a business model that is service and consumer-oriented and in which data is the fuel. Only then can traditional OEMs become the grid master, meaning that by providing vehicle-dependent and independent products and services, OEMs can manage the mobility grid and dominate the valuable customer relationship along the entire customer lifecycle in and around the car. This way they do not need to leave valuable market share to rising players from the converging ICT industry, who are all striving to break new ground in the auto industry.

What does that mean in practice? Different industries have different clockspeeds. This becomes clear comparing the likes of the ICT industry, start-ups and PE companies with the auto industry. The cultural differences between industries have to be taken into account now as they operate in the same value chain.

Furthermore, different components require different product development processes. For example, this requires decoupled and more flexible product development cycles for vehicle-independent hardware and software features that are faster than the traditional cycle and have the ability to keep up with the speed of innovation. The era of one PDC (product development cycle) is over, it has to be split up into a minimum of three: long term (3-5 years) metalsmith-based, mid term (1-2 years) software/exchangeable components-based, and short term (one month to one year) release on demand-based.

Finally, the automotive industry will need new human resources with different thinking and who have lived in different clockspeeds to succeed in today's fast-paced global and digital environment.



The era of the one product development cycle is over. To defend their position against third parties and respond to customer needs, auto companies will need to manage completely different clockspeeds for innovation, development processes and corporate culture.



How to cope with the disruption?



Establishing a service and data driven business model

Service and data driven business models pave the way towards owning the customer relationship.

In a ubiquitously connected age with the trends connectivity and digitalization sky rocketing, business models throughout numerous industries are swift to change disruptively. Consumers in automotive will increasingly demand digital products and services in and around the vehicle, which creates the need for OEMs to detach themselves from their merely product- and technology-driven past. In order to generate additional revenue streams in future, OEMs need to transform into becoming consumer oriented service providers (Grid master).

The results of this year's survey show that executives have different opinions when it comes to the business model of traditional auto companies in 2025. The core question is if traditional automakers,

or rather players from the converging ICT industry such as Google or Apple, will become the main player at the customer interface. When creating a business model that aims to manage the customer interface, data becomes the fuel. Consumers are, next to themselves, most likely to trust their data or even give data ownership to an OEM rather to an ICT player, if they can build trust to the brand behind it.

Self-driving technology could become one of the biggest challenges for the traditional business model, and OEMs should aim to develop strategies to serve customers of self-driving vehicles. The results of the survey show that consumers are most attracted by a reflection in TCO – an incentive OEMs can offer by offsetting the total cost of ownership driving a car, but ICT companies are surely not in the position to.

How will the business model of an OEM look in 2025?

Business models are swift to change disruptively

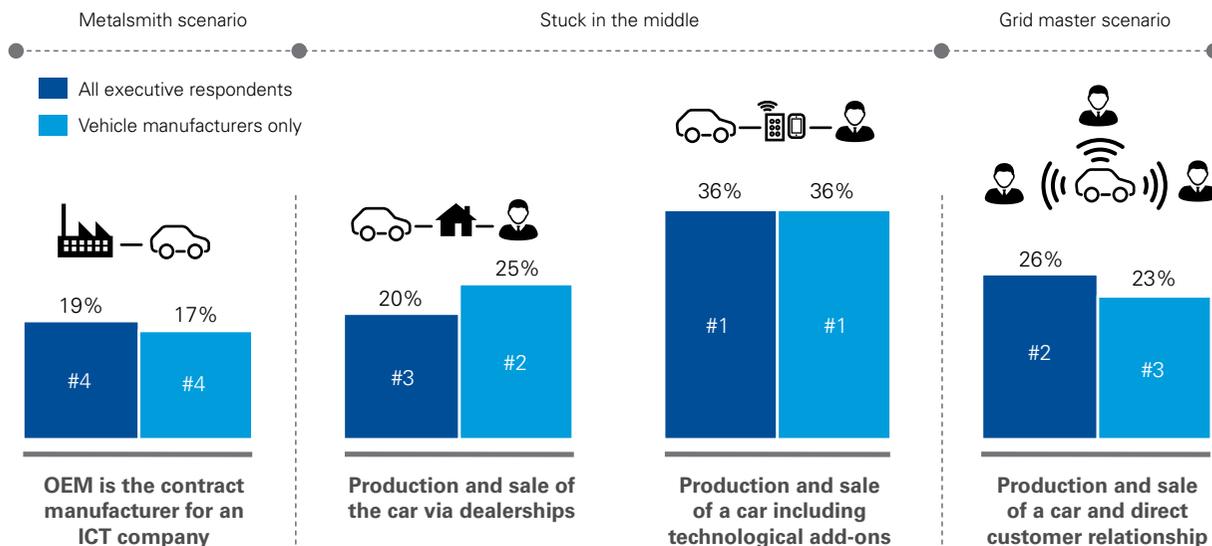
The majority of executives (36%) see the production and sale of an automobile including technological add-ons (e.g. connected multimedia devices) as the most likely business model for traditional automakers in 2025. Ranked second by the executives of OEMs, 25% still see their business model as production and sale of an automobile alone.

This leaves the impression that more executives find themselves at home in the traditional automotive business model. So they simply continue to harness their core product and technological competencies as a competitive advantage by supplying outstanding vehicles to customers and ICT companies such as Google or Apple.

Although this may sound a far-fetched scenario at first, the

results of this survey reflect this observation: almost 20% of all executives, especially those coming from the growth markets China and India & ASEAN, could imagine that by 2025 the OEM will become the contract manufacturer for an ICT company. This could imply them simply becoming the metalsmith, a promising avenue that could especially suit OEMs in the low cost and volume segments with fewer strong brands and lower potential for customer retention.

Overall second and only ranked third by OEMs (23%), executives believe that automakers are developing their business model towards becoming the grid master by producing and selling a vehicle to a customer, and having a direct relationship over the entire lifecycle.



Note: Percentages may not add up to 100% due to rounding

Source: KPMG's Global Automotive Executive Survey 2016

KPMG Viewpoint

If OEMs aim to defend the customer interface and generate freely scalable revenue streams in future, it becomes ever more important to extend their previous product- and technology-focused business model to a much more service-oriented model.

In order to meet the real-time reality of future customer needs in a highly digitalized age, becoming a consumer-oriented service provider is the key. For OEMs, this entails developing a business model that does not only include the mere production and sale of an automobile/mobility service. More important than ever in a new business model is to manage the direct customer relationship with a high degree of service orientation enabled by connectivity (grid master scenario). This is, according to the survey results, something consumers already expect today (35% believe this to be the most possible business model in 2025).

Interestingly, a high number of executives (19%) see the most risky business model for an OEM (becoming the contract manufacturer) as the most likely. We are surprised that OEMs do not show more confidence in their own business model as we believe OEMs, especially those in the premium segment, have the ability of becoming the grid master. Next to providing outstanding vehicles, if OEMs can also provide vehicle-independent product features and services, they have the best chance to extend their business model with a direct customer relationship along the entire customer lifecycle. This means they must develop capabilities that go way beyond the traditional automotive business. It requires automakers to reinvent their business model and develop competencies that are far away from their home turf, relying on their brand strength.

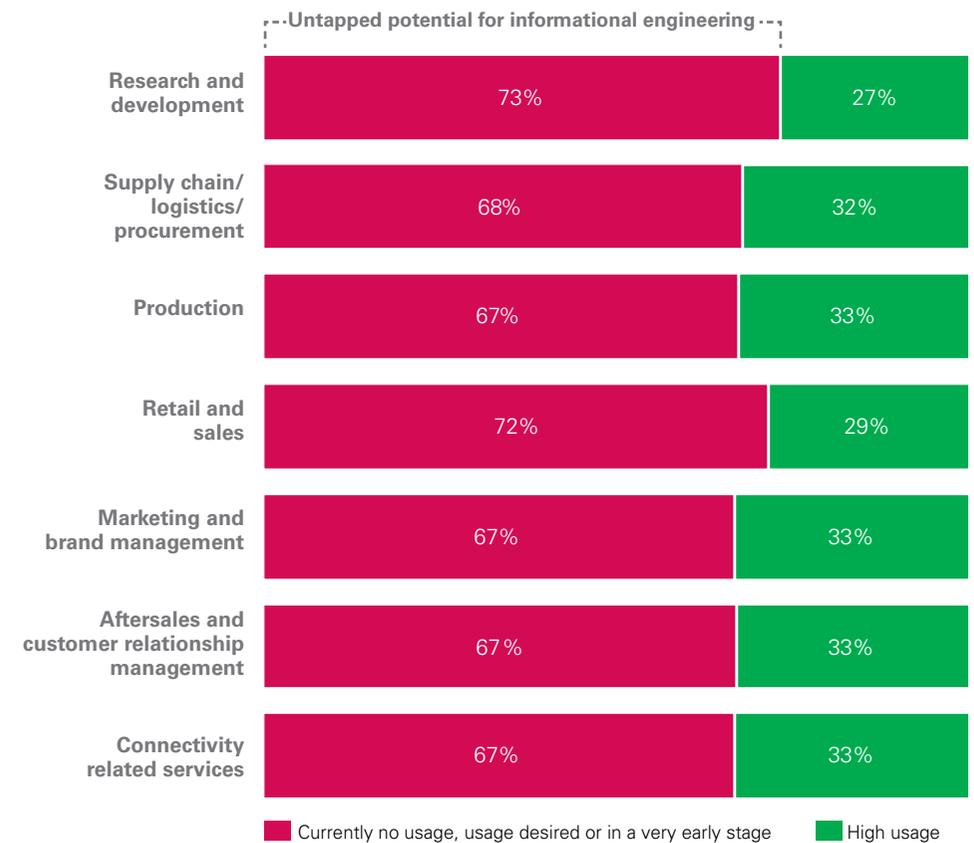
How is data being used already today?

The potential of data has not yet been captured

The majority of executives state that the use of data and the application of informational engineering is still at the very beginning.

Already today, traditional OEMs have access to a tremendous amount of data generated in or by a car, but data ownership as such creates only little additional value. It will rather be the collection and intelligent combination of the vehicle and environment-related data generated by the car itself (upstream data) and the customer-related (downstream data) generated by the driver that build the foundation of a future automotive business model. OEMs have two tasks: firstly, they have to elaborate on the upstream data, as today it is not easily available in one system. Secondly, they have to build on their trusted brand image and customer relationships; otherwise the access to downstream data will not be available as well.

Our survey results reveal that most executives are aware of the importance of data as one-third of executives state that a high use is already executed in all fields of expertise. However, the potential of data has not yet been captured; around 70% of the executives state that across all corporate functions, data use is at an early stage, or even desired, but its realization and application is to be defined. And some go even further, stating that it is not in use at all. If OEMs focus on the collection and intelligent combination of vehicle and consumer data that they already have access to today (meaning to apply informational engineering), they shall defend their strong position by creating a competitive advantage over players from the converging ICT industry.



Note: Percentages may not add up to 100% due to rounding
Source: KPMG's Global Automotive Executive Survey 2016

KPMG Insight



Moritz Pawelke
Global Executive for Automotive
KPMG International

Informational engineering needs to become a core competence for manufacturing companies

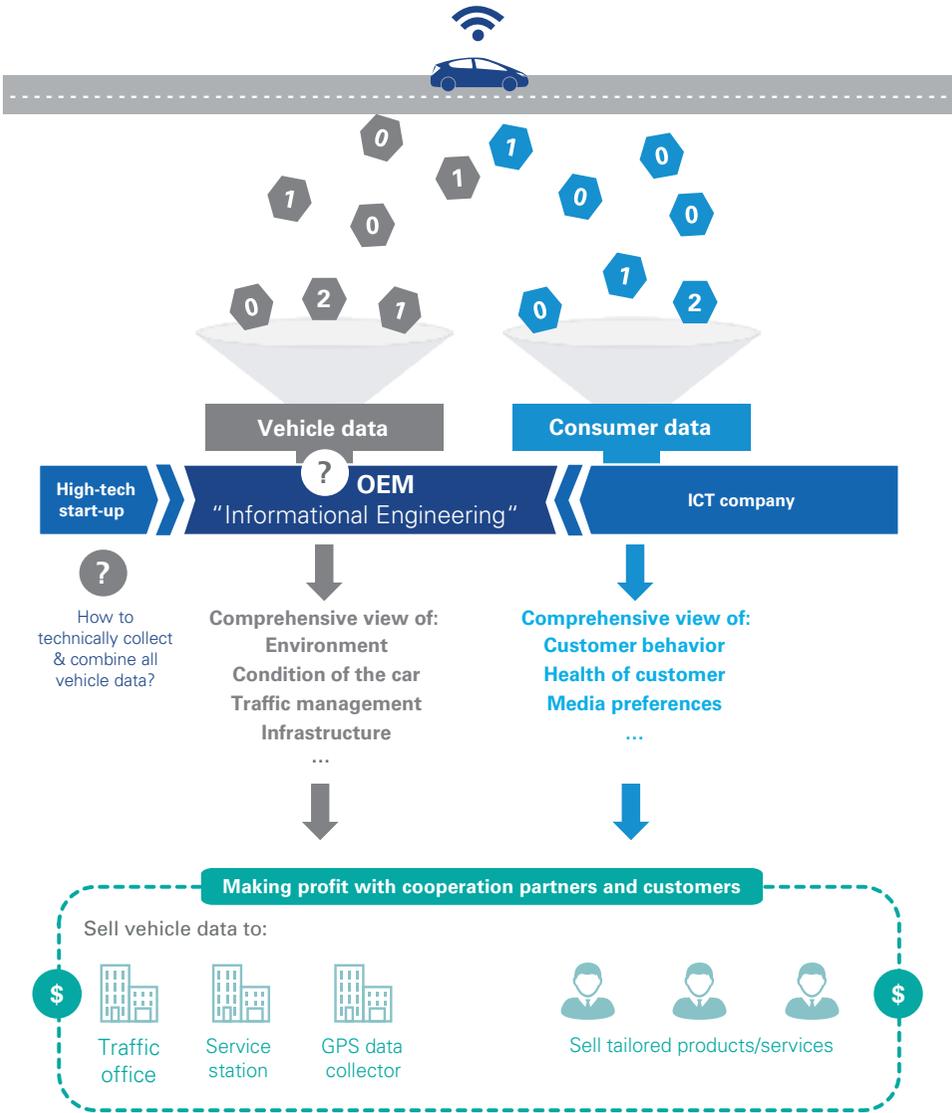
When driving a car in a ubiquitously connected world – be it the own premium vehicle, the mobility service vehicle or even a visionary mobile capsule – without doubt a tremendous amount of data is generated in or by a car. Speaking in simple terms: when driving and interacting with people and the environment, the vehicle is a gigantic data generating engine and will become even more so in the future.

It is important to differentiate between vehicle upstream and consumer downstream data. The car generates data directly through movement and interaction with other vehicles or the infrastructure, such as location, road conditions and crash information. Meanwhile, the consumers are also generating data, including information from their everyday life, from personal gadgets and apps that are in the vehicle with them. All these data such as media usage, calendar entries or navigation information enable valuable insights about the customer and his/her entire lifecycle.

In this highly digitalized world, a real data explosion is taking place and consumers are increasingly aware of the value of the data they generate. They will be unwilling to share their data with any third party without receiving an attractive benefit in exchange. Consequently, OEMs will need to understand their customers better, sense their individual preferences, their unmet needs and reward them in a more personal and customized way.

For many years, OEMs have focused on technical engineering of outstanding vehicles but the future demands informational engineering, meaning the implementation of information systems and NextGen business analytics tools, as a top priority. Manufacturing companies need to be able to create value from the already existing data and the unimaginable quantity of data generated in future in and around the vehicle in real-time. If OEMs do not take action now, aggressive competitors emerging from the ICT industry will step in and take over as the ones managing their customers' data.

The car is a gigantic data generating engine



Source: KPMG Automotive Institute, 2015

Who is the owner of the valuable vehicle/consumer data?

Consumers want to be the owner of their data

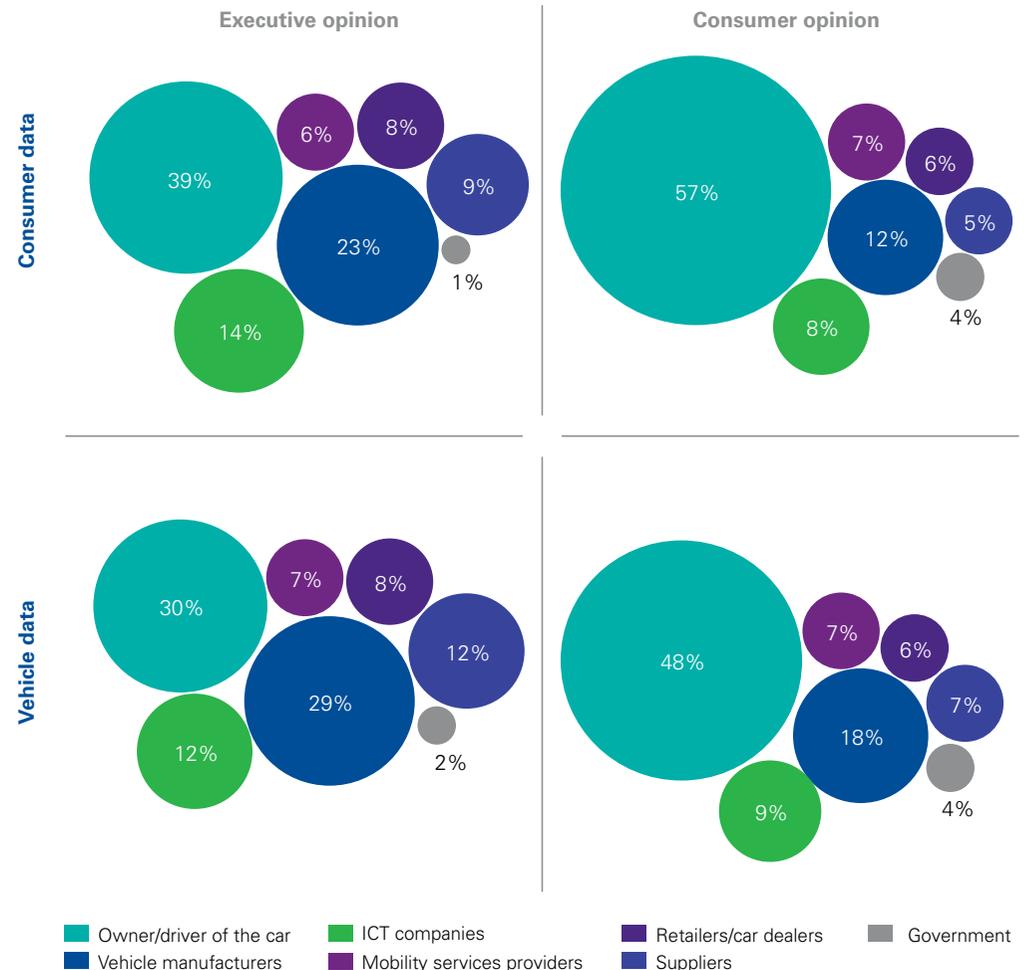
In order to be able to establish a sustainable service and data driven business model the key question is who actually is or even will be the owner of the up- and downstream data generated in and around a vehicle. To date, automotive and tech companies take for granted that consumers will be willing to give their data ownership away in return for comparably low benefits and rewards, but our results give a slight hint into what actually is reality. Although 39% of executives believe the owner/driver of the vehicle to be the sole owner of the generated consumer data, the confidence of OEMs is unexpected high: a significant amount of executives (35% of OEMs) believe themselves to be the owner of consumer data – does this truly reflect reality or is this only wishful thinking?

Although consumers may want to be the exclusive owner of their data and perceive data security, especially in the European countries, as a very sensitive issue, consumers with the target of reducing their total cost of ownership can hardly create value from their own data alone. In comparison, when applying informational engineering, OEMs can create value for both parties, for themselves and for consumers. Therefore it is advisable for OEMs to deal with the flow of data, meaning to sense possibilities of how to best gather vehicle and consumer data. For vehicle data this entails to technically be able to collect

and combine the data generated by the sensors in a car. In terms of consumer data automakers need to develop strategies of how to best gain information about the customer, preferable valuable data Google or Apple do not have access to today.

For OEMs, it therefore becomes an absolute necessity to establish business models that contain incentive schemes that make the whole process attractive for consumers. This means to create a win-win situation for both: the consumers provide their data to an OEM and the OEM in exchange offers attractive incentives, benefits and rewards for the consumers. As the results indicate, OEMs should hereby not forget to consider individual markets and regional differences in the application of their business model.

More importantly, the results also show that this does not allow an OEM to lean back and observe the situation. His position can fade away faster than he expects: already 14% of executives believe that by 2025 ICT companies will become the sole owner of the valuable consumer data. In the – not to be underestimated Chinese market – this figure rises up to nearly 32% and in general the respondents from the BRIC countries have the most promising expectations when it comes to ICT companies owning vehicle and consumer data by 2025.



Note: Percentages may not add up to 100% due to rounding

Source: KPMG's Global Automotive Executive Survey 2016

Who will consumers most likely trust with their data?

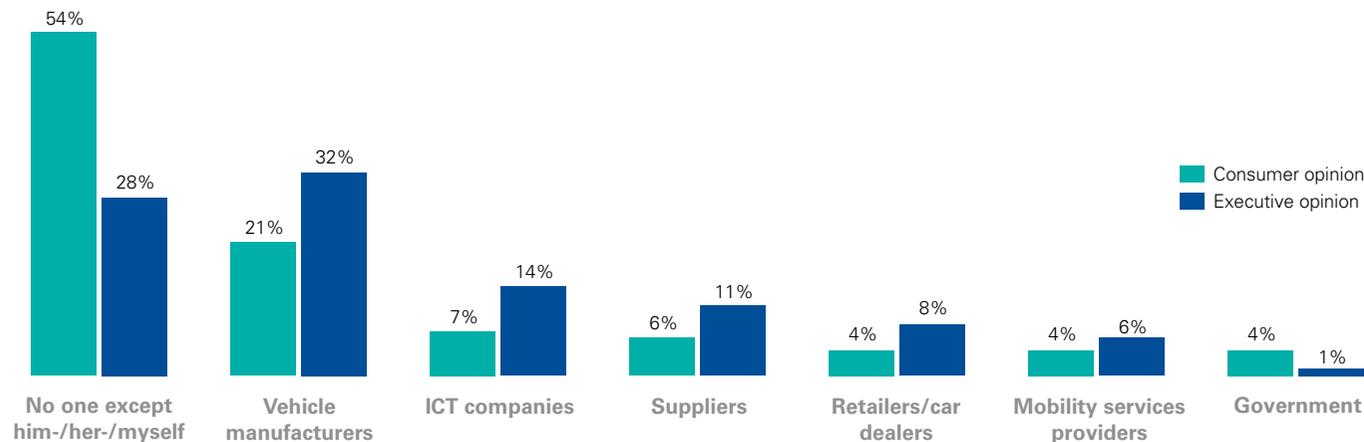
Becoming a consumer's trusted data hub

Based on the assumption that consumers will not give away their data without any reward or incentive one important question is whom consumers would trust most managing their data. The results clearly show: no one but themselves.

An astonishing 32% of executives however expect most consumers to trust the OEM on first place, which indicates that OEMs today believe to have a higher trust function than consumers actually reflect. In order to gain more trust of consumers, auto companies can make usage of their strong brands they already have today. This entails to accompany their customers and focus on becoming a trusted data hub that customers will provide their personal data in real-time rather than keeping it to themselves.

Consumers already today exchange loyalty points for cash off their shopping at the checkout and rewards are personalized. They will expect similar rewards for their loyalty to an auto manufacturer. Only if auto companies leverage their customers' loyalty and the trust function of their brand, they could have a significant competitive advantage over third parties from the tech sector such as Google or Apple.

According to this year's results, this is not just empty talk: ICT companies are ranked on third place by both executives and consumers – will we find ourselves in a world in which consumers rather trust Google instead of their personal retailer around the corner? What is certain is that it depends on the customer relationship and brand trust they have today.



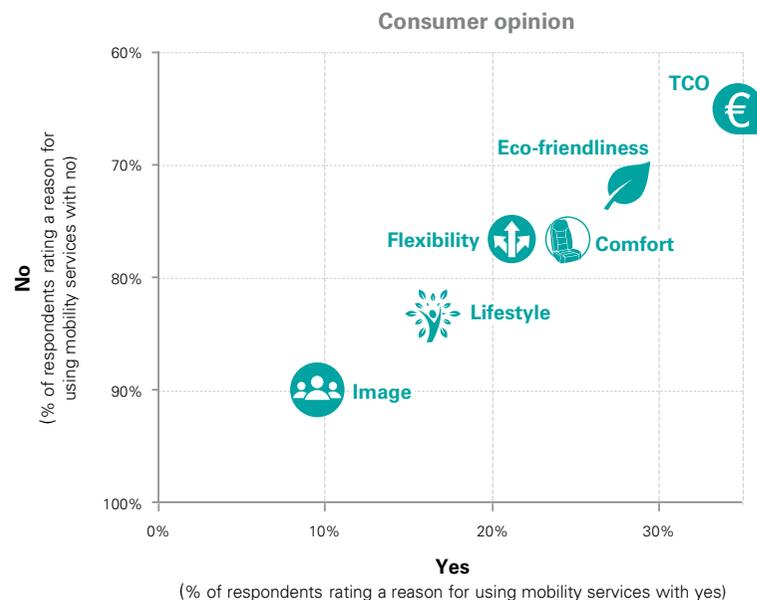
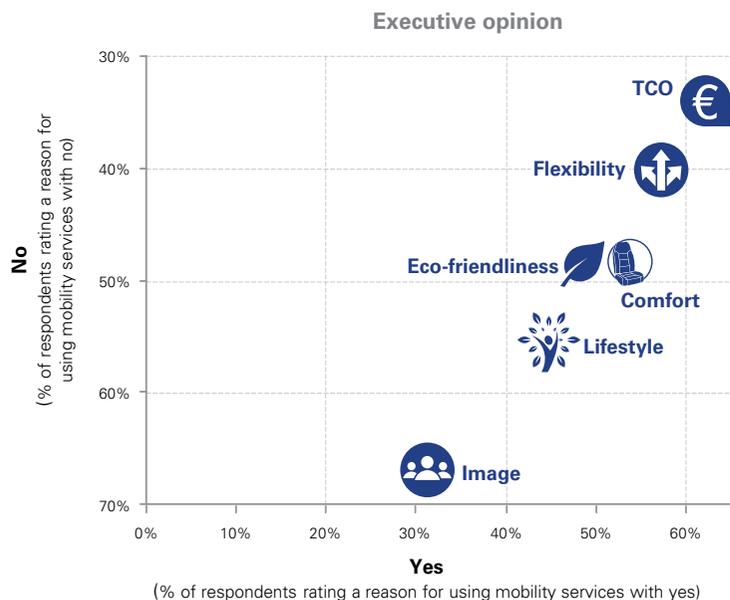
Note: Percentages may not add up to 100% due to rounding
Source: KPMG's Global Automotive Executive Survey 2016

KPMG Viewpoint

A clear majority of all consumers (54%), especially those from North America, Eastern and Western Europe, as well as from South America, respond that especially consumer data should belong to the owner or driver of the vehicle.

Over the coming years a mind-shift will take place. Consumers are increasingly carrying reward cards and using retailer apps to collect points in return for loyalty. Tomorrow's customers will be increasingly aware of the value of their data and will not be willing to provide it to third parties without receiving an attractive incentive or reward. If OEMs integrate attractive benefits into their strategy today, they could evolve as the preferred data hub whom consumers are most likely to trust their data. In comparison to the results for ICT companies, consumers trust ICT companies more than suppliers, retailers and other mobility providers.

What makes mobility services attractive?



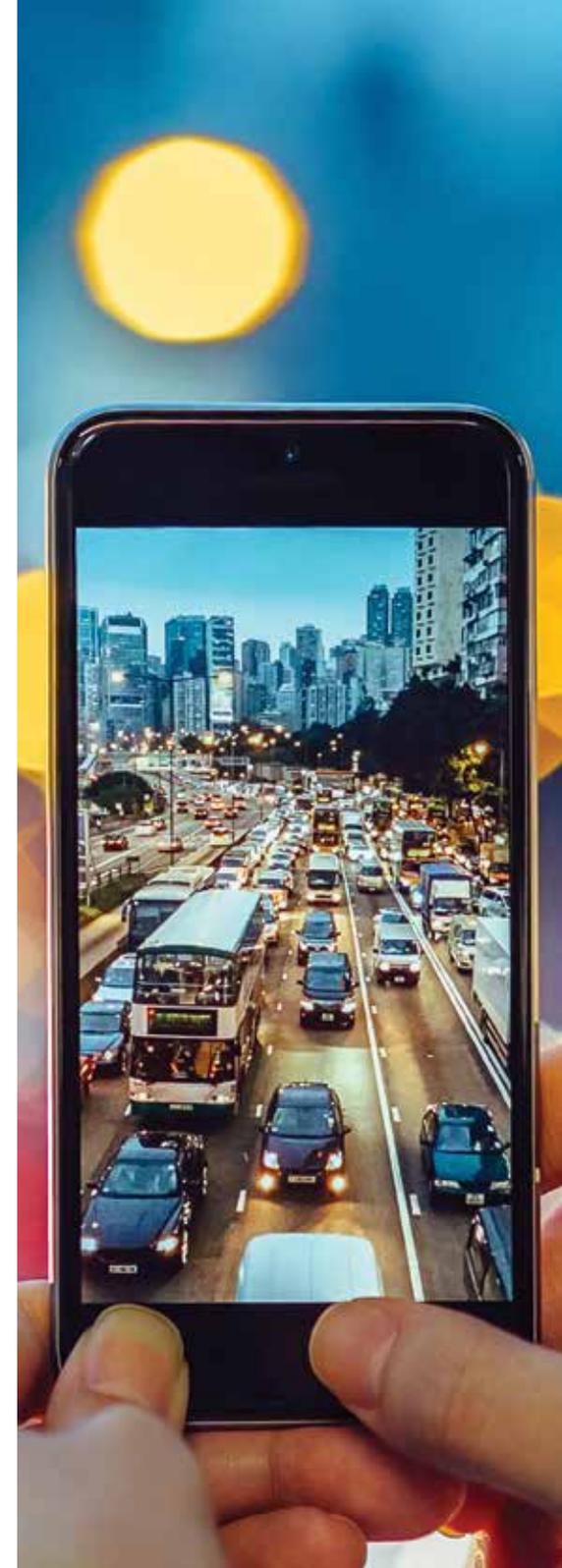
TCO is all that counts

The share economy as a growing megatrend suggests that global prosperity will rise with collaborative consumption. Shared mobility services, especially in mature markets and megacities, are becoming more attractive and show a powerful and especially increasing presence in the modern environment of big cities. Next to providing more flexibility, comfort and lifestyle, they are enabling a significant reduction of TCO for the ever more sophisticated and highly informed customer continuously striving for an optimization of his cost, time and quality of life in real-time. The use of the car (whether city/country/short and long distance) will grow in importance to play

a major role. There is no simple answer to the question, whether the time of car ownership will be over soon.

With increasing transparency enabled by connectivity the most important role in the customer's decision whether to own a car or not – and that is the opinion of both executives and consumers. In contrast to the past, where the customer paid for traditional vehicle ownership even if the car was unused much of the time, future consumers will tend to pay for using mobility on demand, depending on the individual real-time situation and application.

Note: Percentages of respondents rating a reason for using mobility services with 'yes/no'
Source: KPMG's Global Automotive Executive Survey 2016



Mobility services or car ownership?

Image is seen as the least important when using a mobility service

When analyzing both charts on page 24 in detail, the axis labeling indicates that both executives and consumers judge the value of a purchasing decision differently. In nearly all categories, executives show a more positive attitude towards the attractiveness and reason for mobility services – as the results show, which is almost twice as high of the executives (e.g. 63% of executives responding TCO to be a reason consumers prefer mobility services) in comparison to the consumers (only 36% seeing TCO as a reason but still ranking it on top 1).

This observation however does not hold true for the reasons attached to lifestyle and image. Surprisingly, the ever-so-important thought of image attached to a car seems to lose significant

importance in a future dominated by sophisticated mobility services. In a world in which consumers continuously strive for an optimization of their time, cost and quality of life in real-time, TCO is all that counts and both image and lifestyle only play a minor role in the heads of the consumers.

This again shows that at a current stage the OEM still is in the driver seat when it comes to collecting valuable vehicle and consumer data: the main motivation for consumers to give their data to an OEM is the fact that he can enable a reduction in TCO – a capability a player such as Google does not have any power over or has to compensate from other business they do with consumers already.

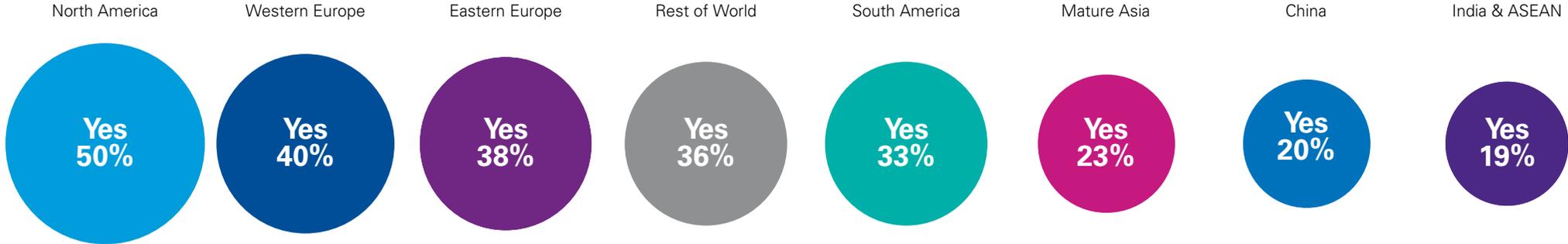
Consumer Insight

When asking the consumers for their opinion about mobility services, the results of the consumer survey demonstrate that still 32% of all consumers in total prefer owning a car instead of using mobility services – not astonishingly does this figure increase for consumers with a higher age.

The results also show, that this especially holds true for consumers coming from the mature markets

such as from North America, Western and Eastern Europe, as well as for those coming from South America. In comparison, consumers from the dynamic and emerging markets such as China as well as India & ASEAN show significantly less emotions attached to car ownership. This observation clearly supports the general impression that the consumers from these markets notably show more openness towards new forms of innovative mobility service concepts.

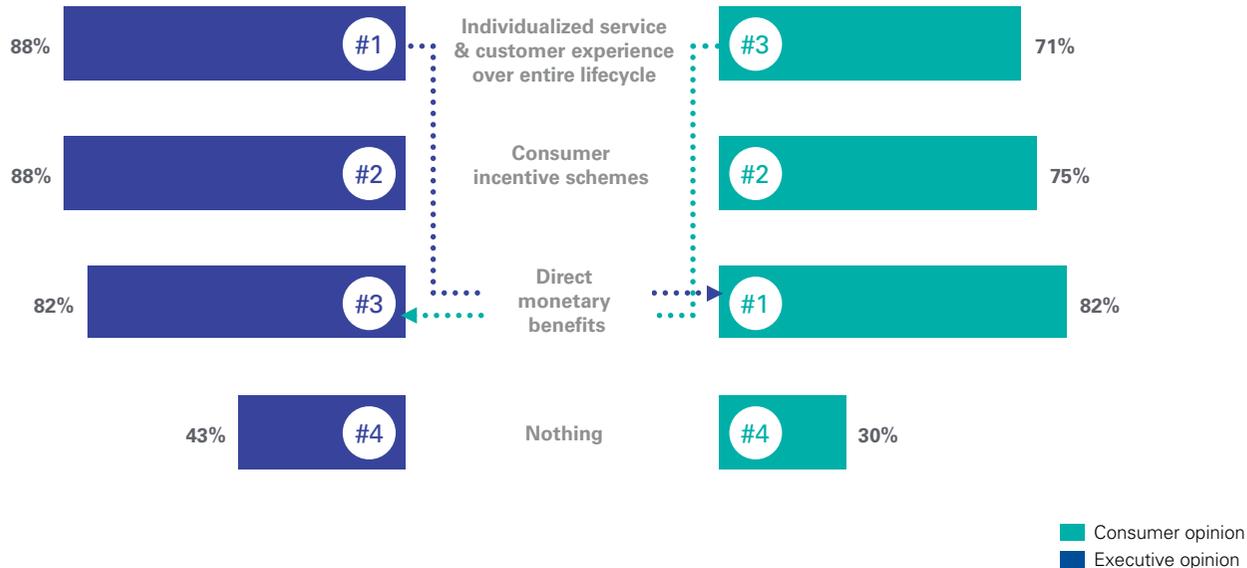
Do consumers prefer owning a car instead of using mobility services?



Note: Percentages of respondents from the respective regional cluster answering to prefer owning a car instead of using mobility services

Source: KPMG's Global Automotive Executive Survey 2016

What are attractive benefits in exchange for data?



Consumer Insight

82% of the consumers throughout all age groups and across almost all regional clusters, except for those coming from India & ASEAN, give evidence that direct monetary benefits is extremely or somewhat interesting to them. This underlines the fact that consumers are driven rather by their wallet than their consciousness. Thereby consumers see incentive schemes in terms of rewards, better service or the access to exclusive communities, on second position with almost 75% rating these benefits as extremely or somewhat interesting.

Cash is king

Consumers are aware of the value of their data and in future, they will undoubtedly expect attractive benefits in exchange. However, do executives actually know which benefits consumers find most attractive?

In this year's survey, we have therefore been interested in what customers are most likely to request in exchange for their data. The results show that, whereas executives think they can attract consumers with individualized services and incentive schemes, reducing their total cost of ownership with direct monetary benefits would be the most

interesting offer for customers in exchange for their data.

The large majority of the executives have identified individualized services, incentive schemes and direct monetary benefits as extremely or somewhat likely to be an attractive offer for customers. This shows that executives are back on track and are making a great leap ahead in terms of understanding their customers. It is simply the order that needs to be adjusted to the consumers' mind, meaning that direct monetary benefits need to be on top of the executives' agenda in terms of attractive benefits in a

future service- and consumer-oriented business model.

The survey results also clearly show that receiving nothing in exchange for data is no viable solution, although 43% of the executives have still voted for this option.

In summary, both executives and consumers have shown an understanding of the value of data. The results reveal more than double the number of respondents believe in benefits rather than receiving nothing. This clearly shows that benefits in exchange for data will become an absolute necessity.

Note: Percentage of respondents rating a benefit as 'extremely or somewhat likely' | Ranked descending by number of executives rating a benefit as most attractive
Source: KPMG's Global Automotive Executive Survey 2016

KPMG Insight

Brigitte Romani
Global Automotive Tax Leader | KPMG in Germany



Metalsmith or Multimedia Service Provider

Car manufacturers are facing new challenges. Connected car technology and new services are a steadily growing demand from consumers. Whereas this demand ranged at a lower end in KPMG's Global Automotive Executive Survey 2015, the overarching key trend until 2025 disrupting the auto industry as we know it today is connectivity and digitalization. Connected cars provide among others the possibility for music downloads, parking assistance and activation of additional car equipment. From a tax point of view various challenges are triggered by these virtual services for OEMs.

If for example a customer obtains any virtual service on his holiday trip in Italy, such as a software download of a preinstalled navigation system, it might be questionable who the service provider is – the German parent company, who sold the car, or the Italian subsidiary. In this regard, VAT is certainly the most important issue in particular since the place of supply for telecommunication services as well as electronically supplied services to customers have been newly regulated within the EU. Other tax issues as transfer prices or custom obligations are no less important and need to be considered.

The awareness of tax challenges attached to connectivity and digitalization in the automobile business has risen recently. A few years ago most tax

departments treated the connected car and tax issues related as still up in the air. However, reality has caught up with OEMs. For instance, we recently discussed with a client how the SIM card installed by the manufacturer can be used to demonstrate the place of supply for virtual services for tax authorities. This example shows that beside their tax technical knowledge tax specialists need some technical know-how as well, in order to face the new challenges.

Even if most tax topics around connected cars are new for the automobile industry it does not mean that these tax topics are new at all. Rather, tax specialists from other industries like the telecommunication industry have already been confronted with the treatment of electronically supplied services for tax purposes. Accordingly, there has already been development of a set of solutions, which could be applied in the automobile industry, as well, if the right people are brought together.

However, it is necessary to implement processes that the tax department is involved in connectivity and digitalization projects right from the beginning to set up the new services and business models as tax efficient as possible. The involvement of the tax department should be supported by the management using internal guidelines in order to secure the tax compliance of the company.

How important are self-driving cars?

Will customers prefer a self-driving vehicle and see it as an absolute purchasing criteria in the next 15 years?

Autonomous driving vehicles will give passengers the chance to use their time efficiently while commuting. 62% of executives expect self-driving technology to become a more important purchasing criterion to consumers in the next 15 years.

With the ability to drive autonomously, vehicles will transform to mobile data rooms, making virtual product features and services – uber-functionalities – increasingly relevant. These have not been core competencies for auto companies until today. It will be vehicle-independent and customer behavior-oriented

services such as customized online shopping or health checks that OEMs can tailor to consumers' needs by possessing their behavioral data (internet of behavior).

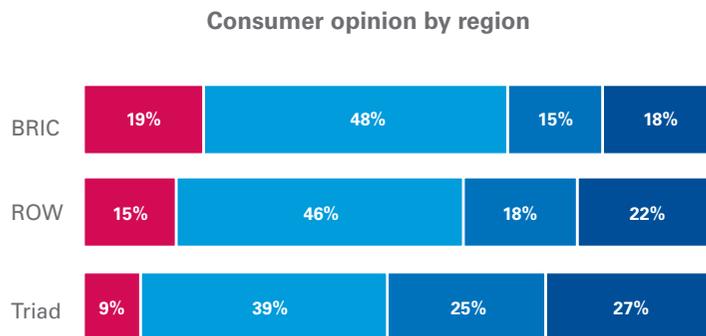
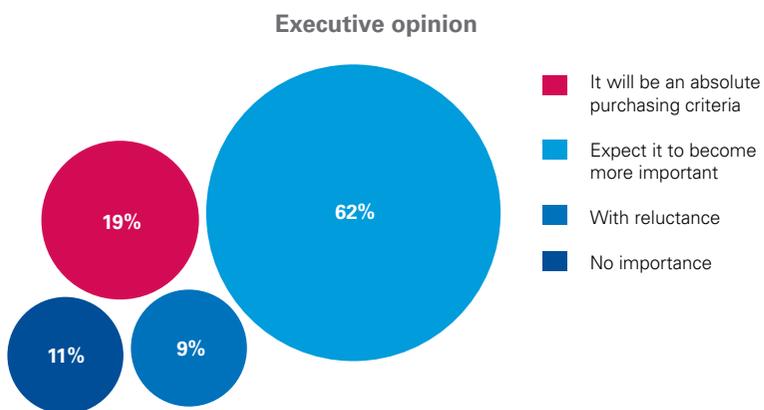
Being a very new and futuristic feature, the self-driving car is still highly product and technology based. Therefore the OEM will be the one pushing this technology to a new level while the ICT sector will mainly observe, waiting for the right moment to take over the customer interface.

Even though Google is building a self-driving car, the main purpose is testing and finding

out more about additional revenue streams. Consequently, Google will not compete with OEMs in building or selling cars but rather for the vehicle and consumer data generated in or by a car.

This presents challenges to the new business model as traditional OEMs need to increasingly integrate ICT hardware and software components into their vehicles.

As self-driving capabilities do need a certain infrastructure, it is not surprising that consumer respondents around the world do have a different perspective.



Note: Percentages may not add up to 100% due to rounding | Right graph is ordered descending by 'it will be an absolute purchasing criteria'
Source: KPMG's Global Automotive Executive Survey 2016

Consumer Insight

With autonomous cars becoming present and constantly available in our daily life, the decision of choosing a car will present new priorities. Instead of being focused on brand image, total cost of ownership will become even more influential. Product features that are important to us while owning a car will be overtaken by those important when using a car.

Although half of consumers say self-driving cars will become more important or even an absolute purchasing criteria in the next 15 years, consumers are more reluctant (20%) than executives (9%) actually expect. This could be due to customers' respect for unaccustomed technology that is not yet integrated into their daily life and regulatory system. Consumers from Triad markets (especially mature markets such as North America, Western and Eastern Europe) are less keen on self-driving cars than those in BRIC markets. 24% of consumers from China and 22% from India & ASEAN see self-driving as an absolute purchasing criteria. Does this indicate high growth potential for self-driving vehicles in emerging markets?

//

Does using the auto-pilot mean losing sight?

//



Long or short development cycle?



The auto industry is in a clockspeed dilemma

The major issue for automakers will be to solve the clockspeed dilemma. This means significantly different clockspeeds exist between the innovation and product development cycles of car hardware, ICT hardware components and ICT software.

Solving the clockspeed dilemma will mean a giant leap for automakers. They are currently unequipped with the necessary organizational processes, teams and innovational culture to synchronize their own clockspeed with the faster clockspeed of innovative ICT players, such as those from Silicon Valley.

In our survey, few respondents show an understanding that some components require a shorter product development cycle. More than 40% of executives from OEMs still say that IT hardware and software components can be developed in the longer product development cycle, which at the end is not solving the clockspeed dilemma.

Note: Sorted descending by percentage of components that can still be developed in a longer development cycle | Percentage of respondents answering for long/short development cycle.

Source: KPMG's Global Automotive Executive Survey 2016

KPMG Insight



Gary Silberg

The Americas Head of Automotive
KPMG in the US

The clockspeed dilemma - what does it mean for
automotive innovation?

Changes in consumer behavior and in the competitive balance are accelerating the pace of innovation in the auto industry. Having a sexy, dynamic experience is not purely for smartphones.

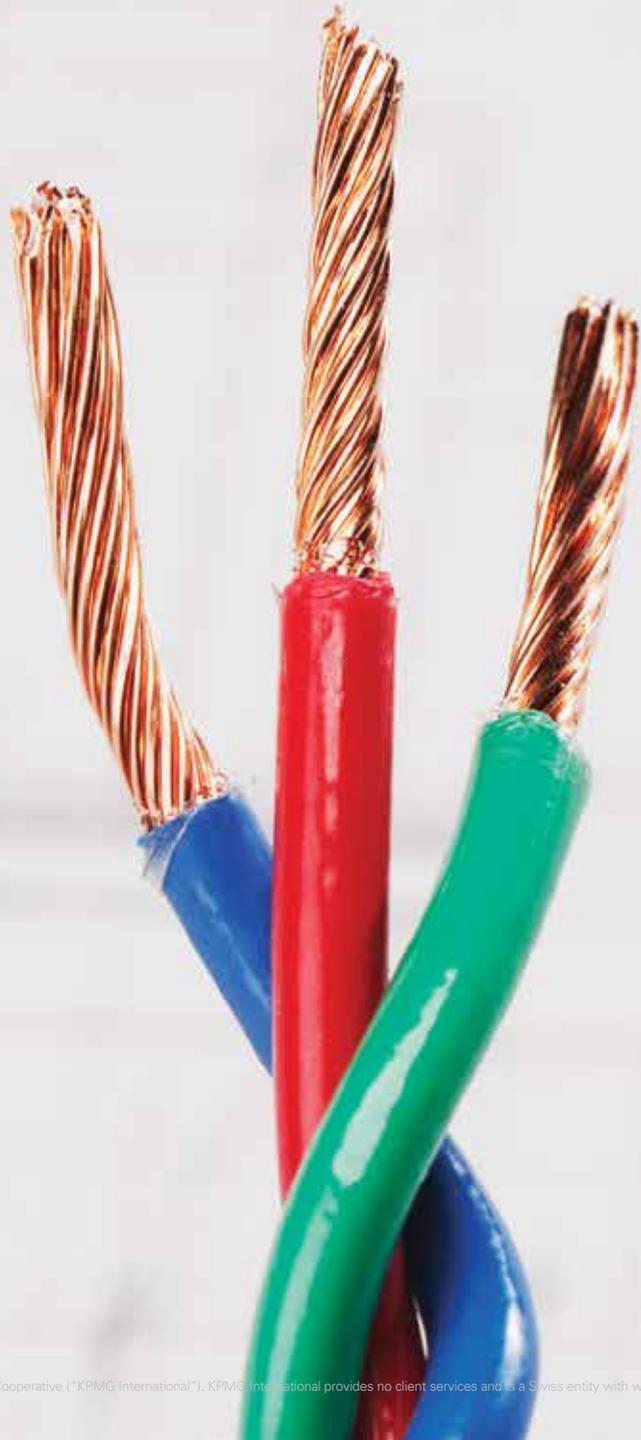
An accelerated pace of innovation is occurring at different rates in key areas of mobility-on-demand, autonomous vehicles and connectivity. Consumers expect a safe, reliable, fault-tolerant car and the new sense of good they feel when their tablets or smartphones upgrade during the ownership cycle. There are different clockspeeds for those expectations and the auto industry must work within them all.

Speed of innovation in the auto industry in the last century included mass production and automatic transmissions and now we have added sensors, cameras, radar and lidar remote sensing technology. It is clear executives understand the speed of change is not slowing.

Customers are increasingly demanding Six Sigma quality in their car, together with innovation, flexibility and availability. The auto industry ignores their demands and the need for varied clockspeeds within the production and service process at their peril.

Source: The clockspeed dilemma, KPMG 2015





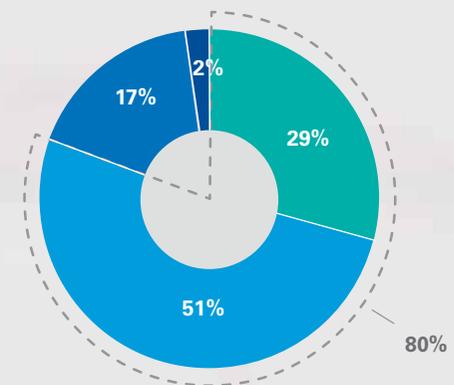
How to cope with the disruption?

Advancing innovation in eco-friendly technologies and products

Although connectivity and digitalization is the overarching and most disruptive factor transforming the automotive business over the coming years, this does not mean that the technological challenges resulting from the pressure put on the auto sector by legislation and regulation has reduced.

A high proportion (80%) of automotive players across all regional segments and stakeholder clusters see legislation and regulation as having a high or very high impact on the development of the automotive industry in their home country.

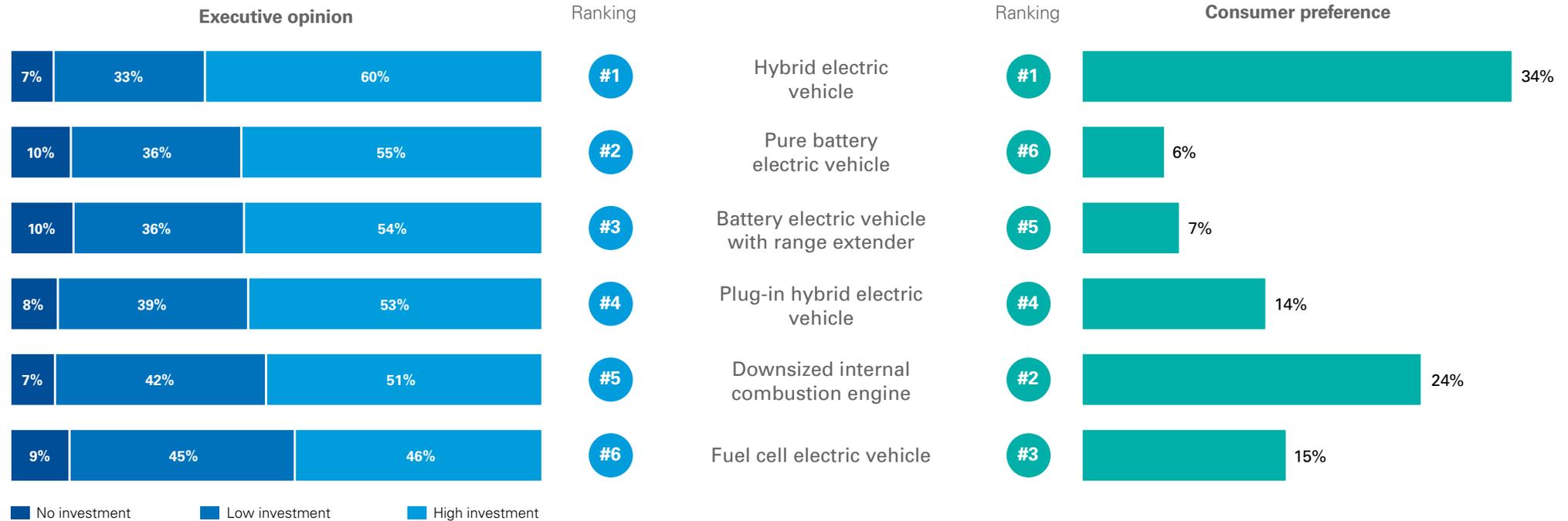
Considering stakeholder segmentation, mobility services providers and vehicle manufacturers feel the highest impact of regulation.



- Very high influence
- High influence
- Average influence
- Low influence or no influence

Note: Percentages may not add up to 100% due to rounding
Source: KPMG's Global Automotive Executive Survey 2016

What powertrain technology to invest in?



Legislation has a significant impact on the future of the automotive business. In particular, the strict enforcement of the introduction of more eco-friendly and sustainable alternative powertrains to lower the environmental impact of cars will need heavy investment.

Recent events have shown that regulating the worldwide automotive industry is also a necessity. The 'dieselgate' scandal has revealed that downsizing the internal combustion engine may not be sufficient to meet the strict environmental regulations in the key auto markets. In the face of these strict efficiency and emission standards, ICE downsizing has significantly decreased in importance from first to fifth priority since the

corresponding 2015 survey.

Although fully electric vehicles like the Tesla Model S/X have received a lot of attention in the past year, the total number of fully electric vehicles and their application for daily use is still far from the mainstream needs of today's customers.

In fact, pure battery electric vehicles rank last for consumers when asked which powertrain technology they would choose if they were to buy a car in the next five years. Meanwhile, the automotive industry sees future innovation in pure battery e-mobility as #2 priority. This shows that many consumers seem to be reserved towards the concept of pure battery electric vehicles. Reasons could be low distance ranges, fragmented charging infrastructure, long

charging times and high total cost of ownership.

Hybrids, in contrast, offer the benefits of electrification while still being appropriate for daily use. Emphasizing the hybrid powertrain technologies as #1 investment priority, OEMs correspond well to consumers' demand. They rank hybrid electric vehicles #1 as the next purchasing choice, combining alternative powertrain with a common internal combustion engine (ICE).

Moreover, consumers prefer hybrids over downsized ICE cars, probably because they cater to their needs for fuel efficiency and environmental friendliness.

In particular, their rating of vehicles with a downsized ICE can change in the future, if regulation affects consumers.

Note: Sorted descending by percentage of 'high investment' in powertrain technology | Percentages may not add up to 100% due to rounding

Source: KPMG's Global Automotive Executive Survey 2016

KPMG Insight

Stephanie Göring

EMA Executive for Automotive | KPMG in Germany



In last year's survey, we identified the gap between the regulator and the consumer vision, with the OEM in the middle. Until this year, consumers relied on the framework of different regulators. There was no overriding necessity for them to understand how these regulations had been set or met.

The main reason for this attitude was that customers never questioned certification processes, they just treated a car the same as other consumer products. They wanted to understand in which category it was classified (for example, classifications in energy efficiency levels) and whether there was a financial consequence reflected in the vehicle tax.

At the same time, customers are constantly moving from seeking a technology focused perspective to demanding a much more service oriented business model.

How should we respond? Which focus has to be set now in the era after 'dieseltgate'? Do customers have to understand how a test cycle or a certification process has been set up and rolled out? If so, why would this only be valid for the automotive industry and not for other consumer goods? It is crystal clear that customers cannot be involved in the certification process if there are no consequences to bear.

Consumers must rely on a regulatory process that is transparent and secure. For the regulator, this means test cycles will never reflect reality. There is not one sole reality. Rather, conditions are different from day to day, driving behavior is different, people are different. Therefore, to ask for adoptions in test cycles will not lead us to better and more reliable results. It has to be accepted that test cycles have their limits.

The more interesting question is now the impact we see on the technology roadmap of OEMs: downsizing to three or fewer cylinders, double and triple charged, will limit technological solutions as the bandwidth of technical adoptions and less cost intensive solutions will be limited.

Consequently, the pressure on OEMs is increasing. Currently, downsizing is the only choice OEMs have to achieve the set goals on CO₂ emissions in the short term. In the long run, consumers will have to pay for it. OEMs will prefer to offer CO₂ neutral technical solutions and accelerating the path to hybrids, BEVs and fuel cell driven vehicles. This matches the ranking of key trends at the very beginning of this survey.

Downsizing the internal combustion engine has been ranked only as #10 key trend compared to #2 last year. As only developed markets will be able to pay for CO₂ neutral latest technologies, we will again generate a two class system.

On the one hand, high regulations with strict CO₂ rules will be reflected in mature and developed markets. On the other hand, we will find low price segments in big growth markets where the ratio between technology built in the car and total sales price needs to fit earnings and income models.

This leads us to the final question, whether the diesel era is over? Latest test cycles already have shown that in combination with high mileages, the diesel engine still wins the game.

The matrix on the next page presents a more detailed insight into how far manufacturers will really focus on the production of vehicles equipped with diesel engines.

VW has the highest diesel volume, but others have a far higher diesel share

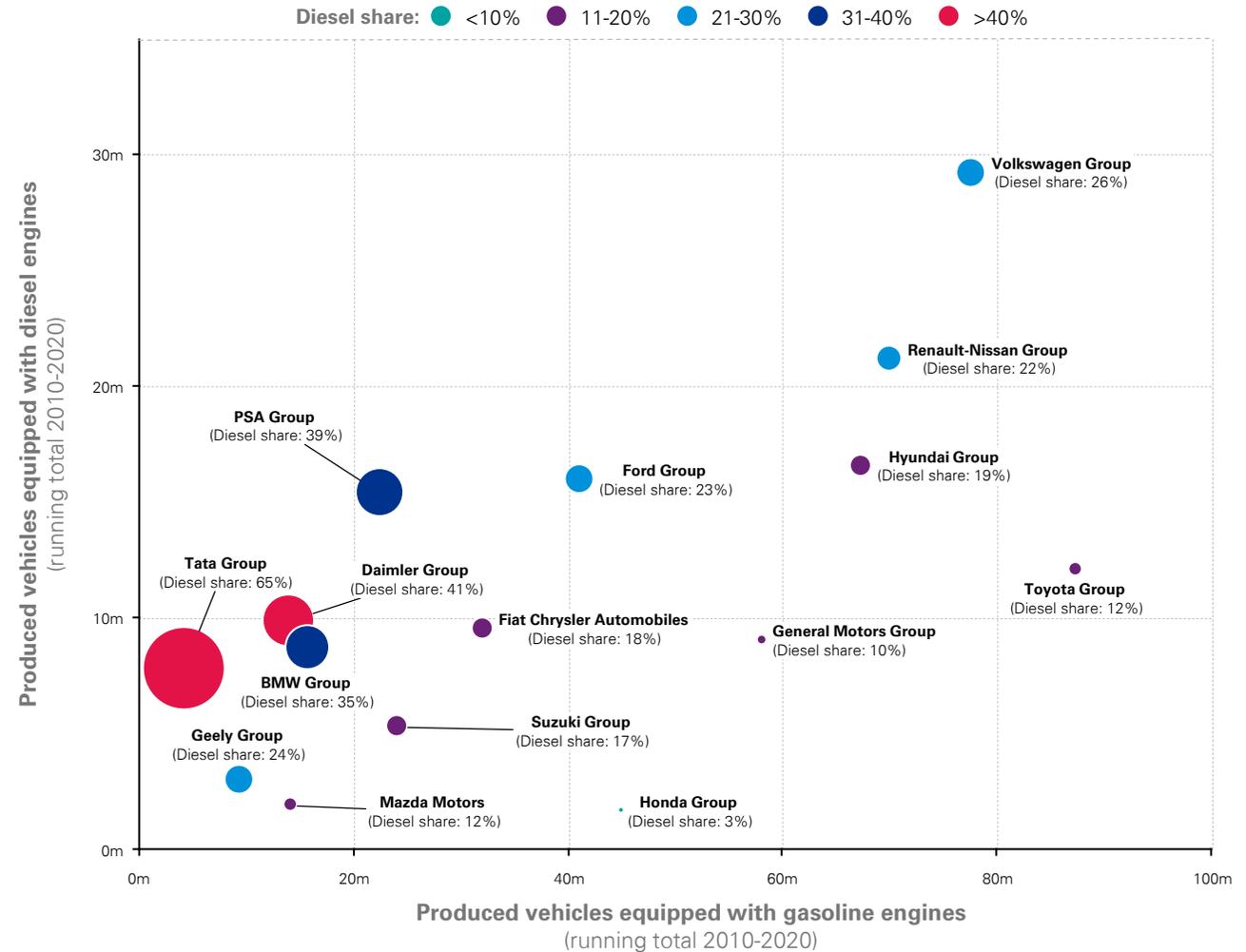
The impact of diesel

The following graph analyses the accumulated production of diesel and gasoline engines of various manufacturers between 2010 and 2020. It considers the previous five years as well as a forecast for the next five years.

In terms of volume, Volkswagen Group has the highest number of diesel engines in its portfolio among all manufacturers worldwide. Looking at the overall diesel share, Volkswagen actually has a significant lower share than the Indian Tata Group with a diesel share of 65%, which includes JLR. The Daimler Group has the second highest diesel share and 41% of its vehicles will be equipped with diesel engines over the course of this decade.

In contrast, other well-known high volume manufacturers such as Toyota and General Motors clearly focus on gasoline engines and have a comparably low diesel share.

The same is true for the Asian manufacturers with Hyundai, Honda, Suzuki and Mazda all having a comparably low diesel share.



Note: Size of bubbles represents the share of vehicles equipped with diesel engines in the period between 2010 and 2020 | 2015-2020 numbers are estimates

Source: KPMG Automotive Institute, LMC Automotive 2015



How to cope with the disruption?

Conquering new spheres remains a focus

Business models, technologies and products are changing. So, too, are strategies and potential in foreign markets. Market growth in emerging markets has been ranked #1 trend in our last three surveys and has only marginally dropped in importance with the growing trend of connectivity.

Even if digitalization is conquering the industry, the pressure put on automotive companies by the regulator has not vanished at all and the presence in emerging markets is also still fundamental to the success of auto companies.

For most manufacturers, China has been important for volume, but that is no longer the only reason and driver. China has become the biggest market for most global automakers and the primary place to pilot

new innovations, launch new products and invest in the future.

However, even if China remains the most attractive country for future investments, it can no longer be regarded as emerging.

A second wave of growth will therefore take place in new emerging countries as the global automotive market is still far from being saturated. Millions of potential customers are waiting in what are no longer 'underdeveloped' countries.

According to this year's respondents, Southeast Asia – especially Thailand and Indonesia – seem of high interest.

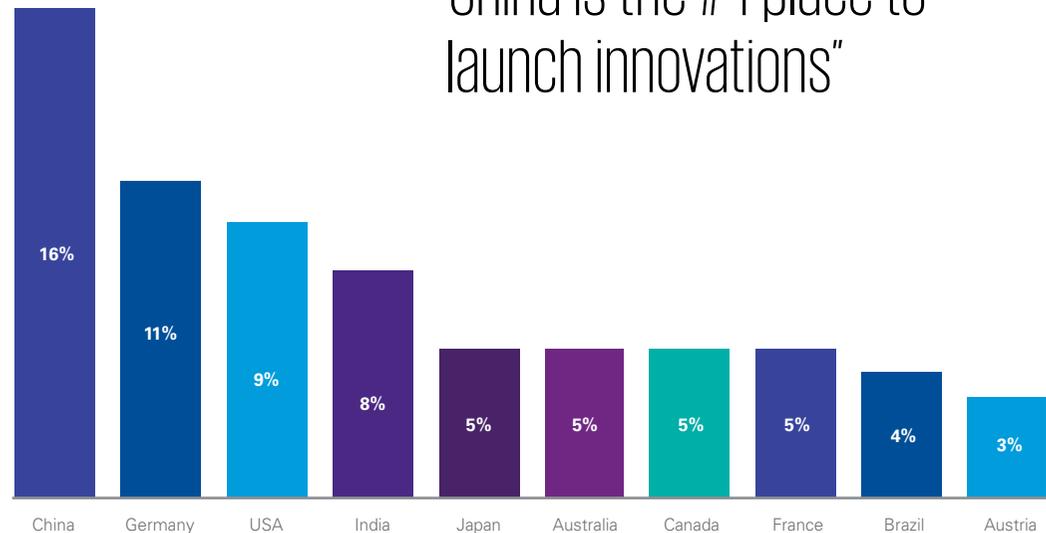
Other regions, like South Africa, will also become more important for the automotive industry due to increasing political and social stability and sales potential.

Where to launch new products and pilot new innovations?

Chinese whispers – the Triad in its new definition

The Triad is dead – but this does not mean that those countries will disappear from the automotive world. Rather, the results show the Triad needs to be newly defined as there will not be just three regions – North America, Western Europe and Mature Asia – dominating the market. They will be joined by China. More precisely, China has not only become the hugest market for most global manufacturers, it has even become the number one place to pilot new innovations or launch new products according to 16% of this year's executives – easily overhauling Triad countries like Germany (#2), the US (#3) and Japan (#5). Those results show that the Triad in its old definition as the major driver of the auto business has become obsolete.

“China is the # 1 place to launch innovations”



China clearly needs to be included, forming a group of four – some call it quadriga. It can no longer be considered as an emerging country as it has developed to a highly dynamic market, which is outperforming the whole industry. The bet on India is still unclear, but executives keep it in their top five list in anticipation that the country's potential is realised.

On the other side, former high potential states like Russia – currently on a downward slope due to economic downturn and sanctions – seem to have

lost in attractiveness for launching new products, being ranked by the executives far behind on 22nd place. Countries like Austria, however, which have never played an important role in the automotive industry, can be found within the top ten. Eastern European respondents especially tend to see Austria as an 'automotive hub' and as the 'entry country' to the European market, by rating it as third most attractive country for launching a product or an innovation, as well as for future investments (please also see page 38).

Note: Percentage of respondents rating a country as Top 1 country for piloting a product or an innovation in descending order | Some ranks are assigned several times due to an equal number of respondents
Source: KPMG's Global Automotive Executive Survey 2016

Where will automotive companies invest in the future?

China and Germany are the most attractive countries

Globally, executives surveyed this year plan to increase their investments – in terms of production – in China (16%) and Germany (11%). India is just following right away with 9%. Nevertheless, the less stable markets of Australia, Argentina and Colombia also appear in the top 15 of most interesting countries for investment.

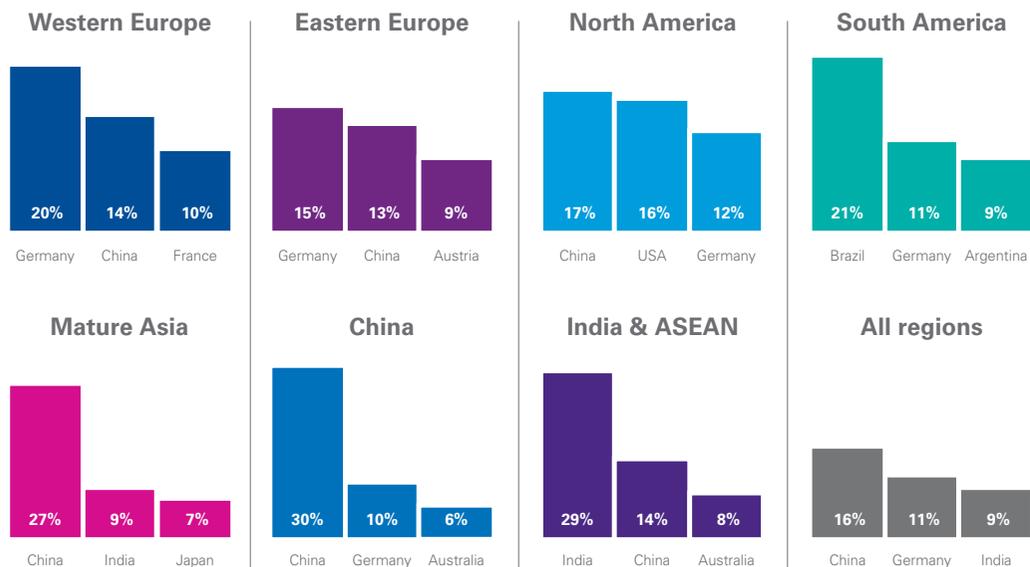
But opinions differ from a regional perspective. Most executives also see high investment potential in countries from their own wider region due to their geographical proximity.

Almost a third of the respondents from India & ASEAN, for example, rate India as #1. Most executives from South America, on the other hand,

are planning to invest in Brazil (21%), and also ranked Argentina in third place.

By taking a closer look at the opinions of the different stakeholder groups participating in this year's survey, only ICT companies (#1 Brazil), financial and mobility services providers (#1 Germany) see countries other than China on top.

However, the Chinese market also seems to be very promising, especially for mobility services providers (#2). Even if the Chinese population still prefers owning a car, ideally one from the premium segment, the need for alternative mobility solutions is obvious, due to massive traffic problems in their numerous megacities.



Note: Percentage of respondents per region rating a country as 'most attractive for investment'
Source: KPMG's Global Automotive Executive Survey 2016

KPMG Insight



Huu-Hoi Tran
 Head of Automotive China
 KPMG in China

China can no longer be regarded as emerging. It's one of the world's most dynamic markets and in the next two years will experience rapid changes. China's government is keen to modernize the auto industry and create flexible opportunities for consumers.

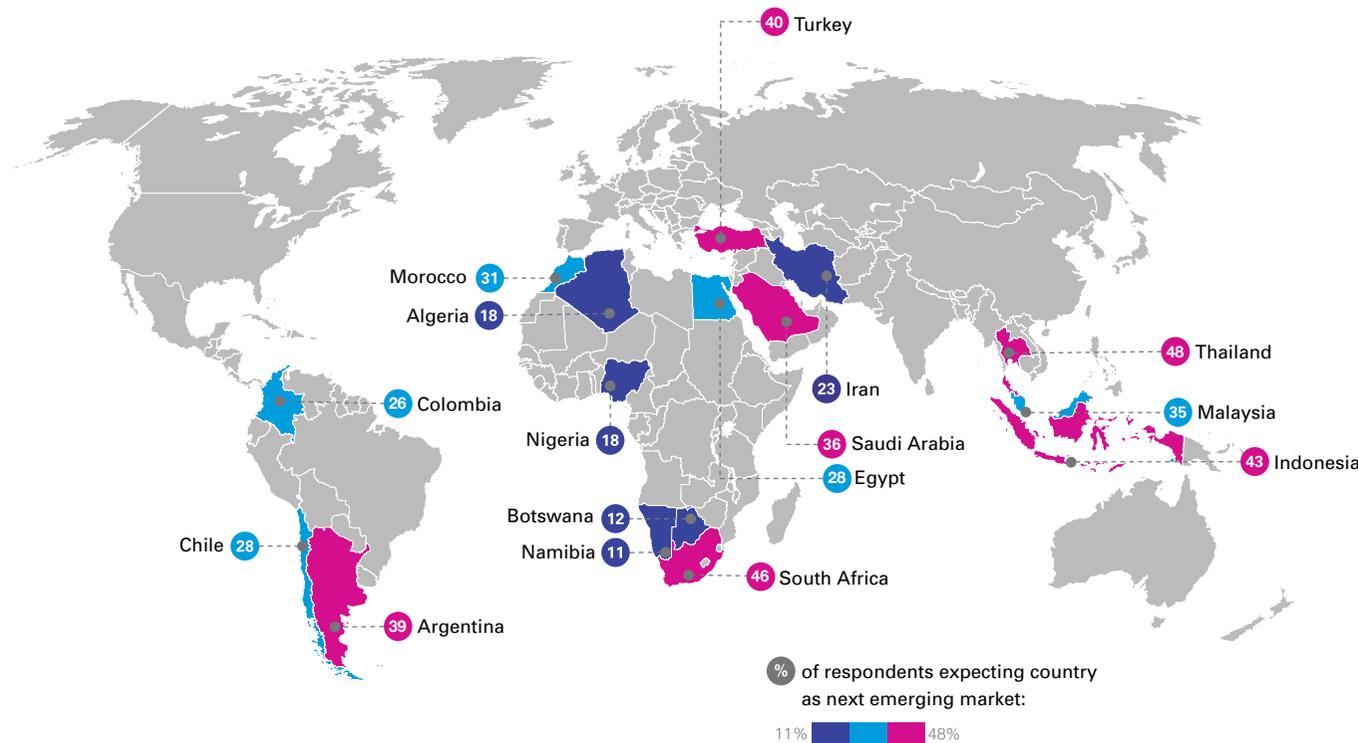
Regulation is traditionally strict in China and today's government is helping foster new technologies and innovations that can leapfrog the traditional technological path that has taken years in the rest of the world. Connected cars and New Energy Vehicles will be a focus in the coming decades and consumers buying electric cars or those with lower car emissions will benefit from savings direct from the government.

Despite alternative mobility options helping reduce traffic issues in this increasingly urbanized society, car ownership remains a priority and a status symbol for Chinese consumers.

The control of license plates – and hence car ownership – is challenging, especially in Tier 1 and 2 cities. Whereas another Asian city, Bangkok, runs a lottery, Shanghai has a fiercely competitive bidding system. But new mobility will enrich the mobility landscape in urbanizing China.

Chinese OEMs are finding their place in the local market and across Southeast Asia. German, Japanese, Korean and American auto manufacturers have their own priority regions. The future is wide open, but Chinese OEMs may focus on the increasing demand for electric cars, especially in large cities. They are becoming more aware of the need for ICT and financial services, developing their business models to benefit China's connected consumers.

Where are the next emerging markets?



Top 5 next emerging markets



Note: Percentage of respondents rating country as next emerging market
Source: KPMG's Global Automotive Executive Survey 2016

Conquering new spheres

The auto industry has witnessed enormous growth within the last few years – predominantly in the BRIC economies. However, with the global automotive market still far away from being saturated, a new wave of growth will take place in new emerging countries in the coming years.

Executives view those countries as being mainly located in Southeast Asia – with Thailand (48%) and Indonesia (43%) of particular. However, other regions will also become more important for the automotive industry. South Africa, for example, has been ranked #2 due to increasing political and social stability as well as sales potential in this highly-populated country. But also countries from South Eastern Europe, like Turkey (40%), the Middle East, like Saudi Arabia (36%), and also South America, like Argentina (39%), have regained the attention of the experts.

Despite this, fewer than 20% of executives believe that other Sub-Saharan countries, like Namibia, Botswana, and very surprisingly Nigeria, will become high potential countries.

The Nigerian automotive industry has witnessed serious interest from global and local automotive brands in setting up and doing business there since the National Automotive Industry Development Plan (NAIDP) was announced by the Federal Government.

Also, Iran does not seem to yet be of interest for the executives, with only 23% expecting it to be one of the next emerging markets. But this might change soon as the embargo which was imposed over Iran has been set aside. As the country has been completely closed in recent times, a considerable backlog – and therefore an enormous potential of high sales – can be expected.

Which macroeconomic changes will affect strategies most?

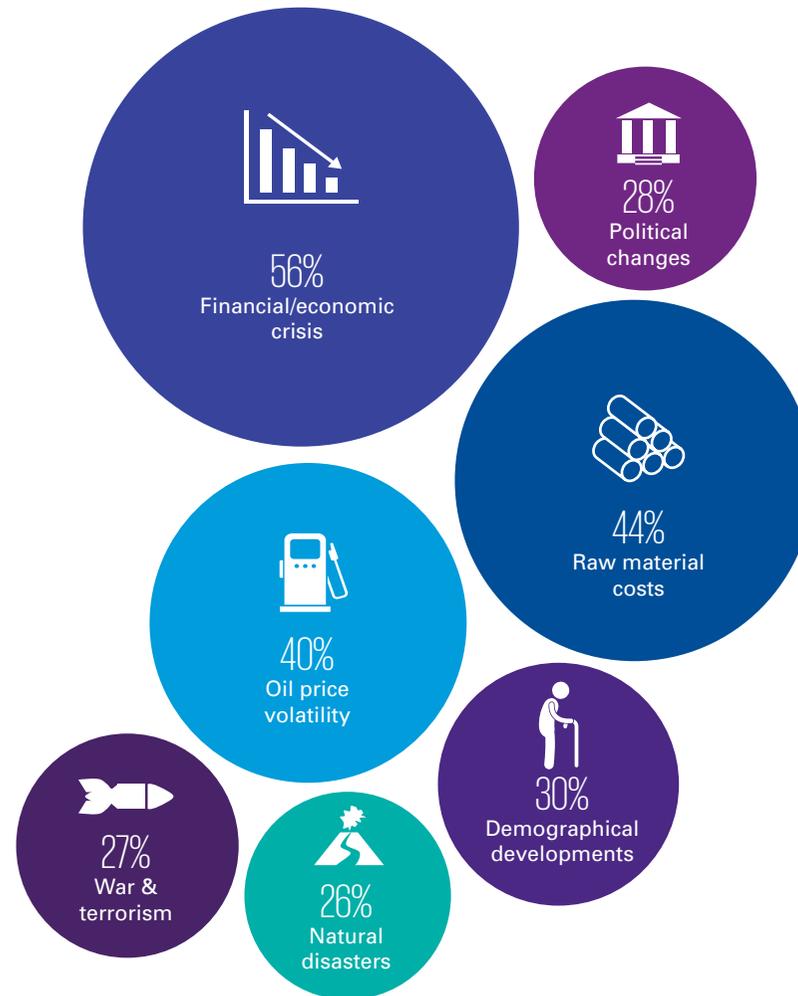
Financial and economic crises are the main threats

One could assume that the low interest in the Nigerian market of the executives is a reflection of the terrorism and riots in the country. But despite unrest around the world, more than 56% of executives rated the most influencing macroeconomic change to a company's strategy – for example, when considering moving or expanding to another country – to be financial or economic crises.

This shows that the last crisis that had enormous impact on the automotive industry is still present and in the minds of the executives. However, as this survey took place before recent terrorist acts, a higher evaluation of the influence of war and terrorism could be expected now.

Generally, most concerns seem to be caused by changes that might affect production, like instability in raw material costs (44%) and oil price volatility (40%). Fluctuating oil prices are especially able to disrupt the whole production and development plan of an OEM who might have been forced by the regulator to increasingly focus on alternative powertrain production. The customer's purchasing decision, however, is mostly driven by the total cost of ownership that comes with driving a car and not by the CO₂ emission of the vehicle.

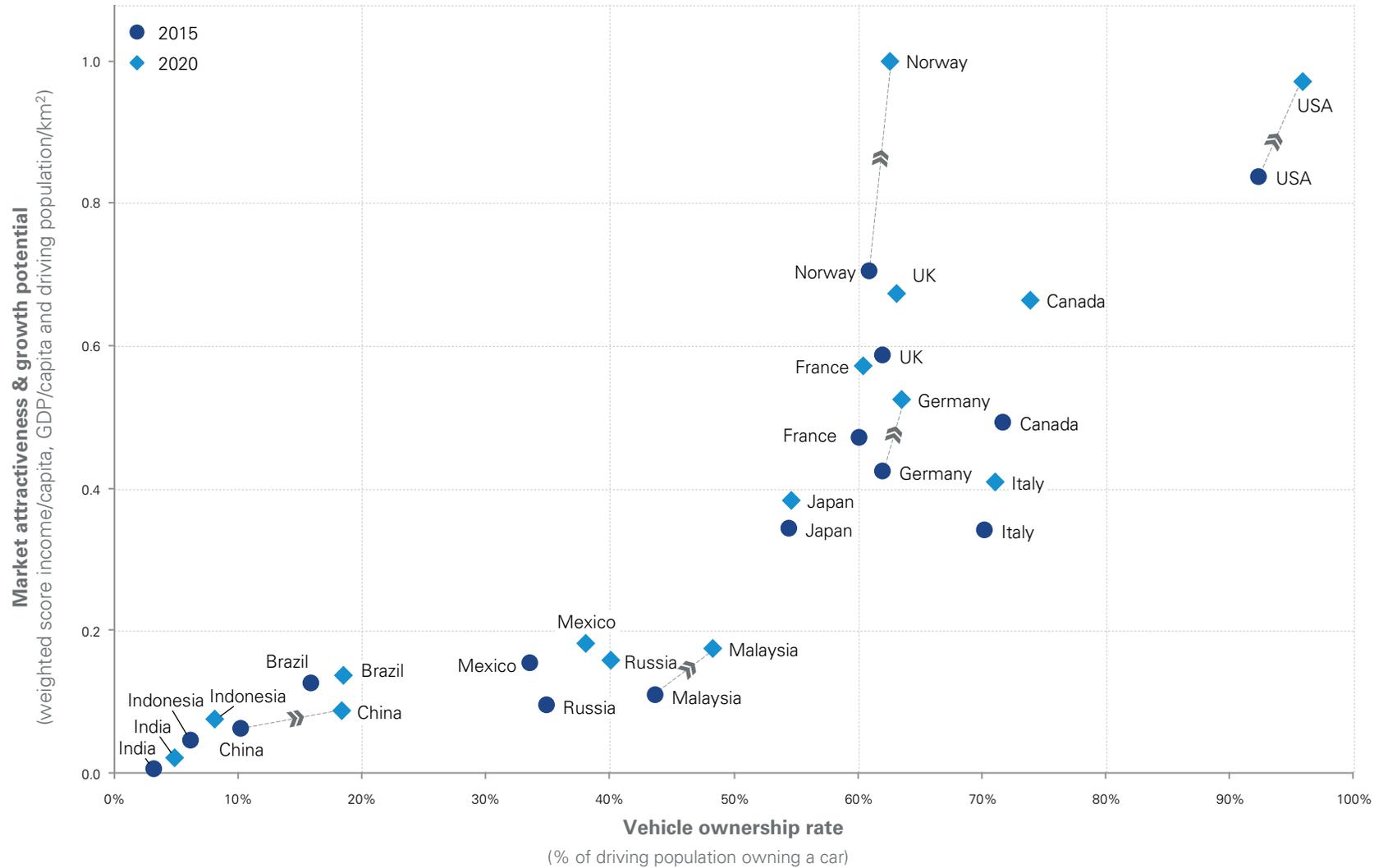
Changes related to the customer, on the other hand, are fairly underestimated by the executives, with only 30% rating demographical developments as highly influential on a company's strategy. This shows that, although the customer clearly should become the center of interest in a successful business model in the future, focusing on the customer has still not become an overall motto for the executives.



Note: Percentage of respondents rating 'high influence' of a macroeconomic change

Source: KPMG's Global Automotive Executive Survey 2016

Macroeconomic market maturity assessment



Source: KPMG Automotive Institute, LMC Automotive, Economic Intelligence Unit, OECD, World Bank

Who is best prepared?

Will the highest market share still be the key to success?

One thing is clear now: the auto industry is changing and the countdown for disruption has already started. In order to keep the control of the customer touchpoints, and not to lose them to new industry entrants, manufacturers need to change their business models at the very core. Premium manufacturers might be able to cope best with the upcoming changes due to their strong and trusted premium brands. They might also have the most power to seek innovations and cope with the regulators' vision of future mobility in terms of e-mobility and autonomous driving.

But will they also be the companies with the highest increase in market share?

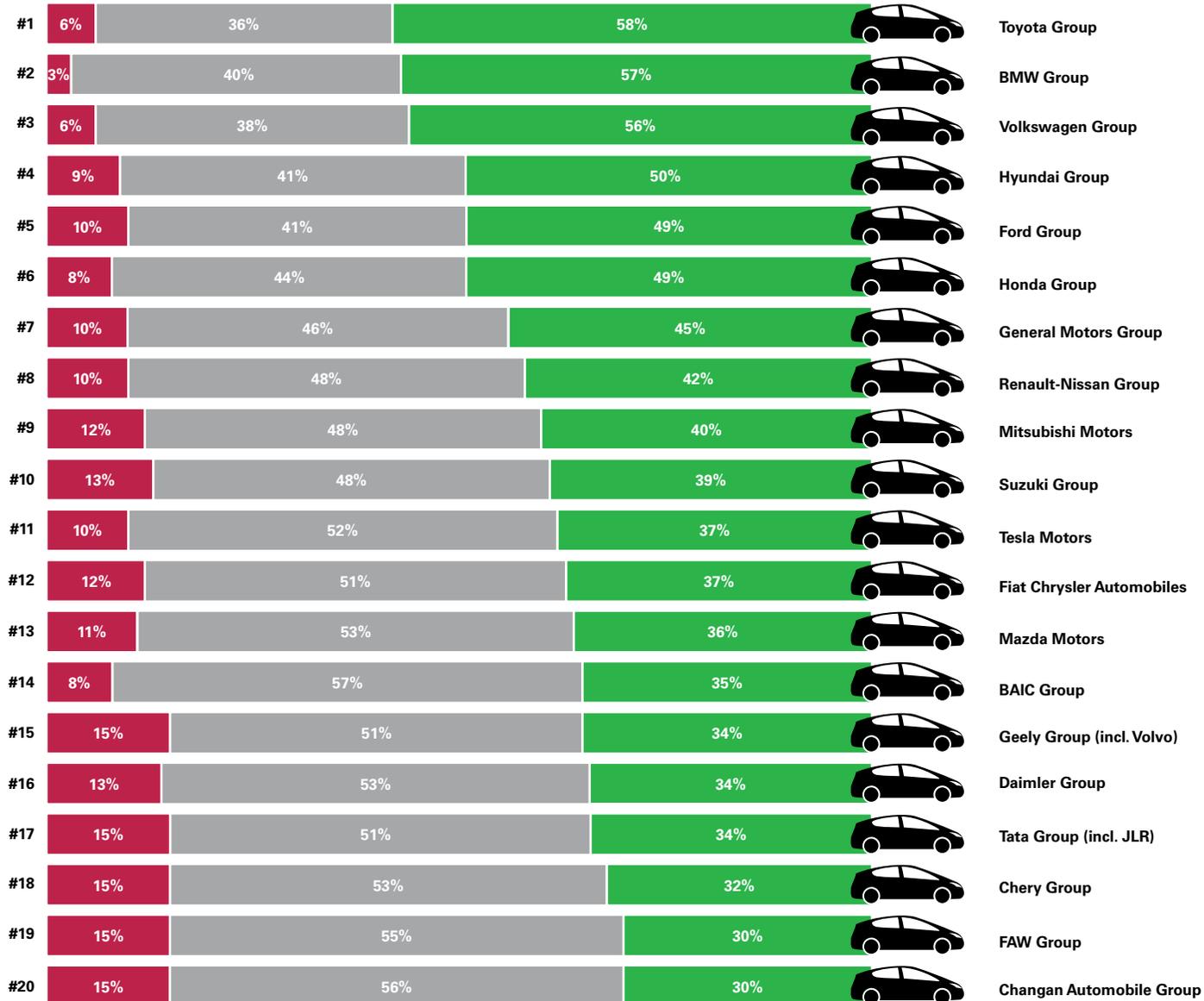
Independent of whether they are or not, the question that arises is: Will the highest market share still be the key to success for auto manufacturers, as data and revenues generated by the customer while driving in fully connected vehicles will become more important than just selling cars on a high volume basis?

However, as former results show, BMW and Toyota are in good shape for the future, according to the executives, and they also expect both of them to be the biggest risers in market share, led by Toyota. In general, they are very optimistic and only a few expect a decrease in market dominance of the top 20 OEMs – for most of them it might just remain as it currently is.

Anyway, even if their market share might remain stable, that doesn't mean they are immune from competition for future groundbreaking innovations. OEMs seem to be aware of that fact, as even if they are basically expected to be the innovators in the next years, they do not see themselves as having the leading position, nor best prepared to hold that position.

The industry will be increasingly penetrated by a new and fresh culture dominated by start-up companies, which will not focus on just building a car, and are – just because of that – until now not seen as big entrants or threats in the market.

Who will succeed in the market place?



Toyota and BMW in leading positions

Our survey responses make it clear that market share is a constantly changing factor in the auto industry. That's not going to change, but is market share based on volume still the best measure of success?

In times of digitalization and connected vehicles, the customer, their data and revenues generated while driving a connected vehicle and using personal gadgets and apps are likely to be more significant than market share based on sold units. That means that in the future, 5,000 connected cars could be more valuable than 50,000 traditional, unconnected vehicles due to valuable revenue streams that can be generated in a connected car by customers providing information about their entire lifecycle.

Nevertheless, considering traditional business models, Toyota has made the biggest leap ahead and the executives of this year's survey expect the company to be the big riser in market share in the next five years, after being ranked #9 in 2015. Toyota's innovative new models and increasing sales in Europe seem to have convinced the executives of its future success. BMW and Volkswagen just follow on second and third place.

Last year's winner Hyundai is falling on fourth place in this year's survey, with 50% of respondents expecting an increase in market share, followed by Ford on #5 with 49%. In general, most executives are optimistic and only a few expect a decrease of market share of the listed companies. Most of them expect them to either increase or remain at least stable, like, for example, Daimler with 53%. Also the new player Tesla (#11) is expected by 52% of the respondents to remain fairly static.

Note: Percentages may not add up to 100% due to rounding | Sorted descending by percentage of 'increase in market share'

Source: KPMG's Global Automotive Executive Survey 2016

Decrease Remain stable Increase

Have vehicle manufacturers lost confidence?

The supremacy of auto companies is not set in stone

In the big picture, the executives are optimistic that traditional manufacturers will be the groundbreaking innovators in the future. However, as they are facing a new highly digitalized and connected age with numerous new players, OEMs seem to be aware that these developments are not (yet) sufficiently reflected in their business models. Or why are they expecting ICT companies to be the big innovators among new market entrants in the future – and not themselves?

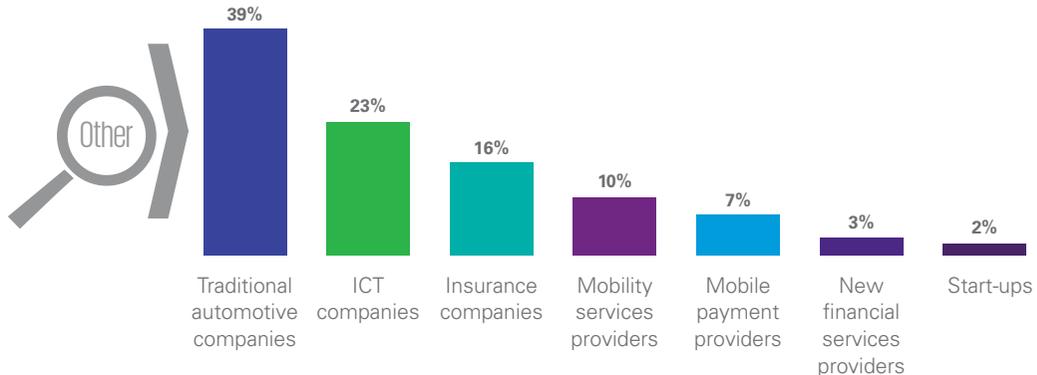
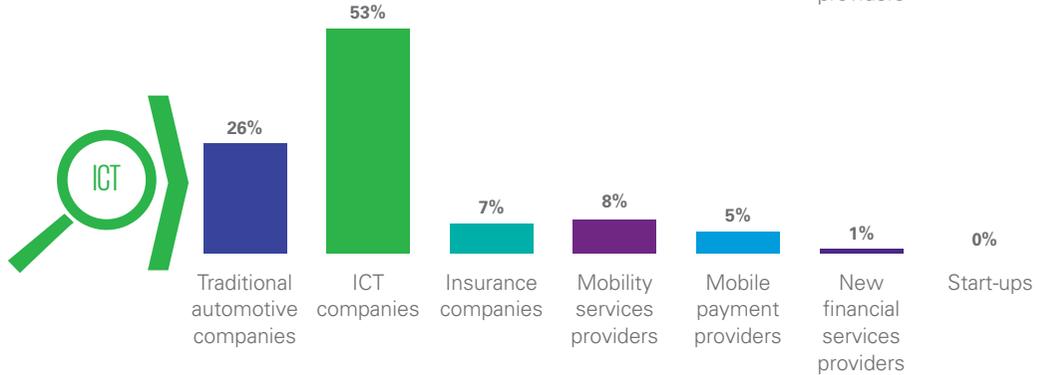
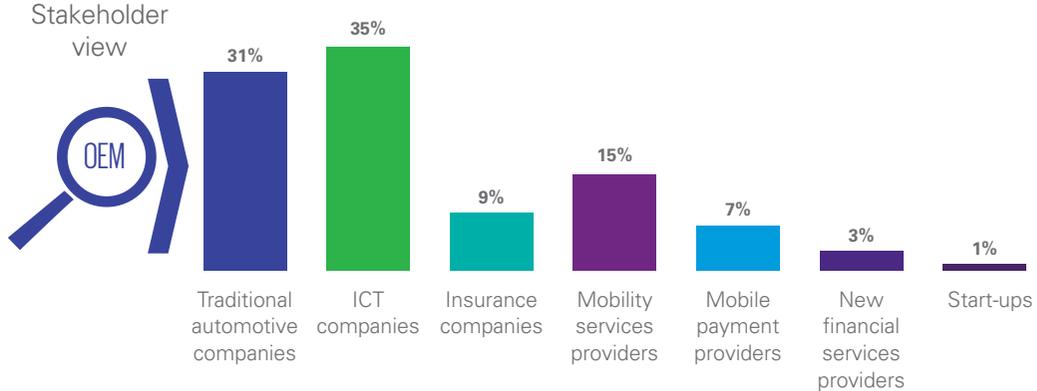
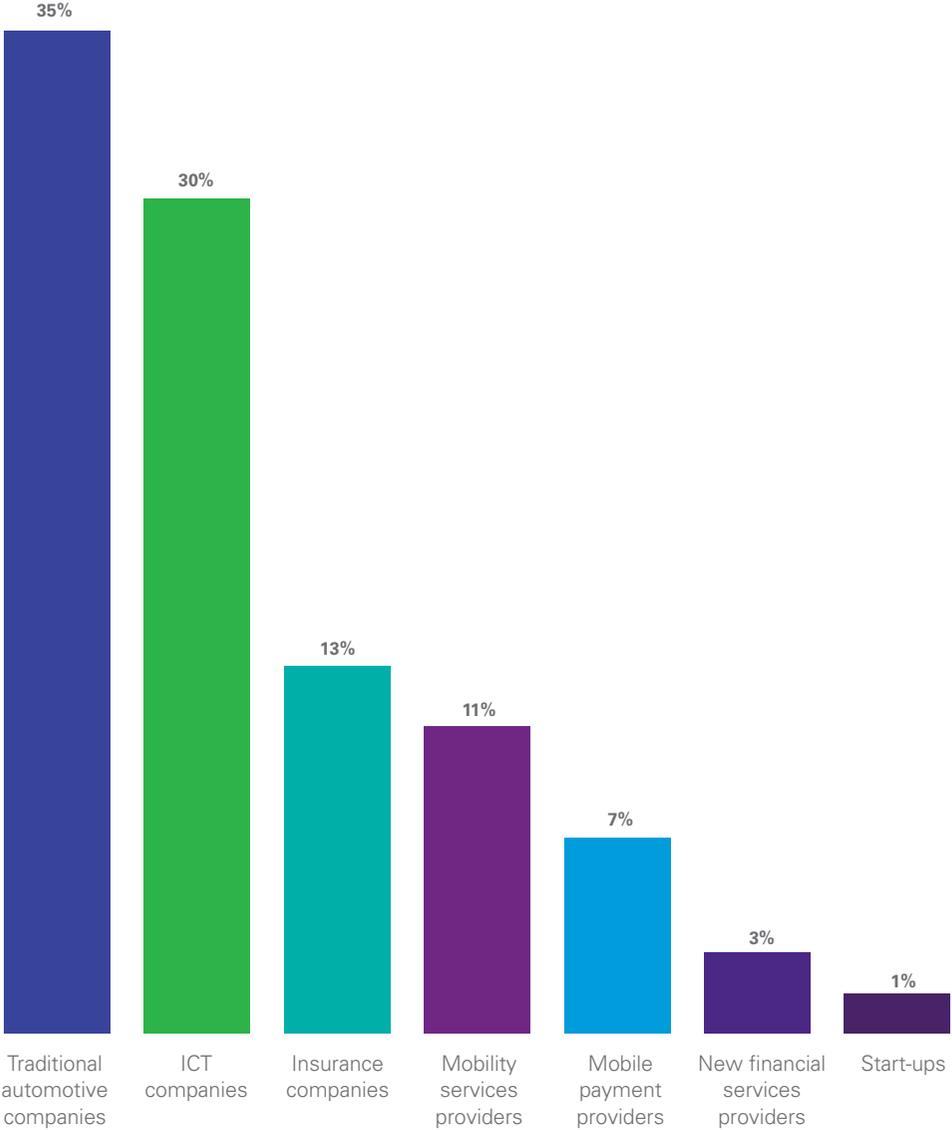
More than one-third (35%) of all respondents, however, expect traditional auto companies to be the groundbreaking innovators within the industry in the next five years. They are followed directly by ICT companies on second place with 30% of respondents, predominantly naming Google and Apple in this context. Other players, including mobile payment providers, new financial services providers and start-ups, are only seen by few executives as the overall future innovators.

However, by having a closer look at the view of the different stakeholder groups participating in the survey, it is most surprising that OEMs expect ICT companies (35%) to be the most groundbreaking innovators in the future, rather than traditional automotive companies, and therefore not themselves. Are they losing confidence in not being able to compete with those new market entrants?

The executives from the ICT companies, on the other hand, are convinced that they themselves will be the leaders in fields of innovation over the next five years (53%) – far ahead of all other players or market entrants.

An interesting fact is: When it comes to regional differences, Triad respondents most often think that only traditional automotive companies will be leading innovators, while the executives from the BRICs and from the rest of the world see innovations coming mainly from ICT companies.

Which players will be the groundbreaking innovators?



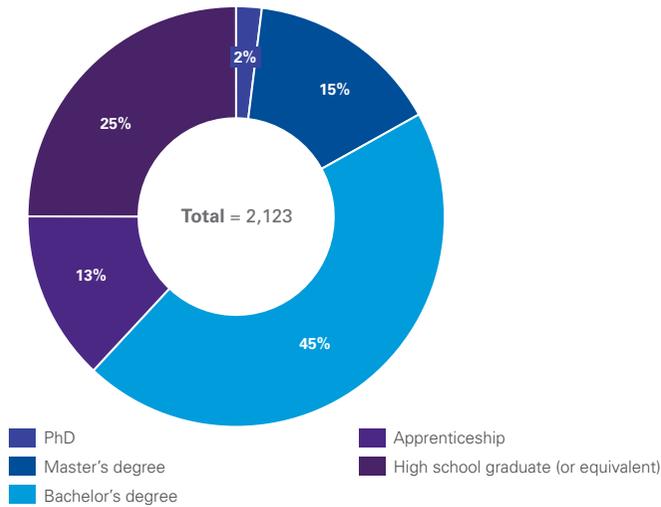
Note: Percentages may not add up to 100% due to rounding
Source: KPMG's Global Automotive Executive Survey 2016



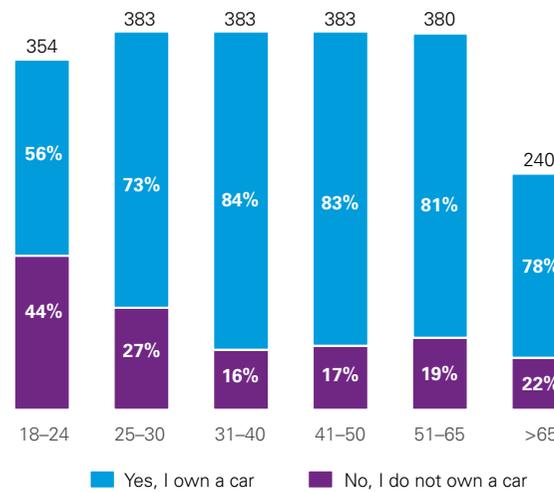
// ... There is no doubt: exciting times are ahead. We believe these changes will help to convert the industry into the next development cycle and we should see these changes as a huge chance and not as a risk. We hope you enjoyed reading this survey and we look forward to the interesting discussions it will generate like in the years before... //

Dieter Becker, Global Head of Automotive, KPMG International

Respondents by education level



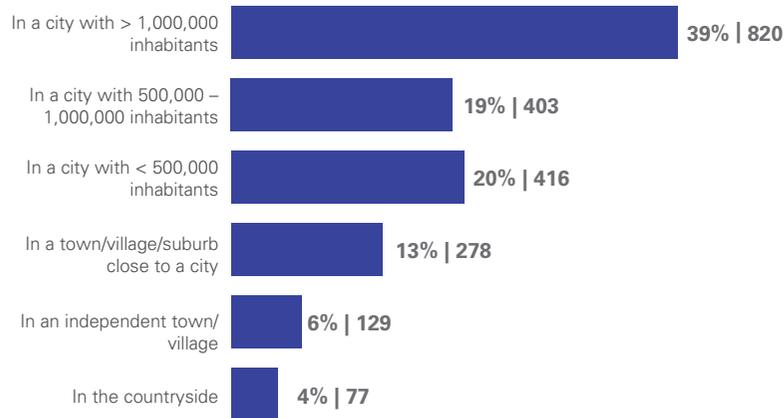
Respondents by age and car ownership



Respondents by regional cluster



Respondents by living circumstances



Note: Percentages may not add up to 100% due to rounding
Source: KPMG's Automotive Executive Survey 2016

About the consumer survey

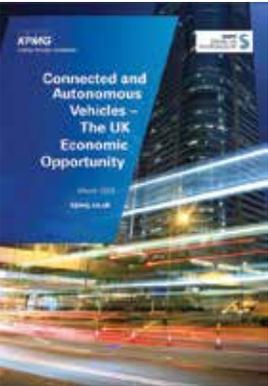
Consumer demographics

As customer-focus and service-orientation becomes ever more important for the automotive business in the age of digitalization, we have for the first time additionally interviewed 2,123 consumers from around the world to give us their valuable perspective and compare their opinion against the opinion of the world's leading auto executives.

We have asked consumers with various educational backgrounds, throughout all age groups, living circumstances and regional clusters.

For the 2016 survey we have asked more than 2,100 consumers from 35 countries around the globe

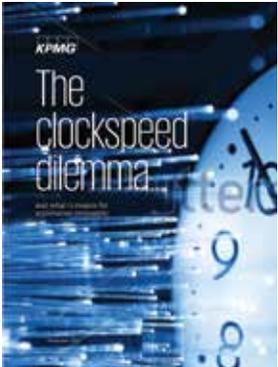
KPMG Global Automotive Thought Leadership



Connected and Autonomous Vehicles - The UK Economic Opportunity

This report examines how these innovative vehicles will transform the UK economy – expanding our industrial base, improving safety and congestion, driving up productivity and freeing up space usually devoted to vehicles in our urban areas.

(March 2015)



The Clockspeed Dilemma

Last year's groundbreaking paper Me, My Car, My Life described a convergence of consumer and automotive technologies. This year, we examine how the automotive industry must innovate in response to these transformations. We're riding a wave of fantastic innovation that is moving faster and faster. Who will be among the next generation of leading companies?

(November 2015)



The Future of the Car

The future of the car offers a series of opinions from KPMG industry professionals, addressing what is arguably the greatest change to the automobile sector since Ford's first Model T was delivered. We ask how this next generation of vehicles will benefit drivers and wider society. We look at who will win and who will lose the race to build the car of the future, and examine the obstacles that must be overcome to make the promise of a driverless future a reality. Articles feature thoughts and opinions from experts within the Automotive, Cyber, Insurance, Strategy, Telecommunication and Transport sectors.

(November 2015)

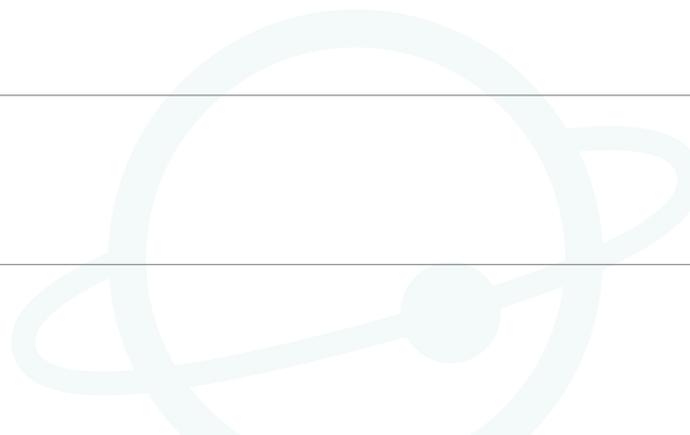
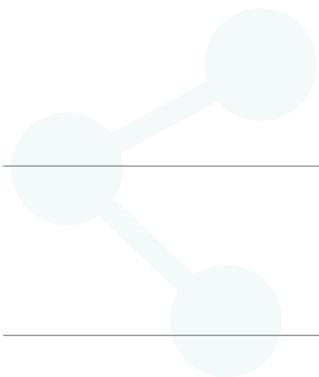


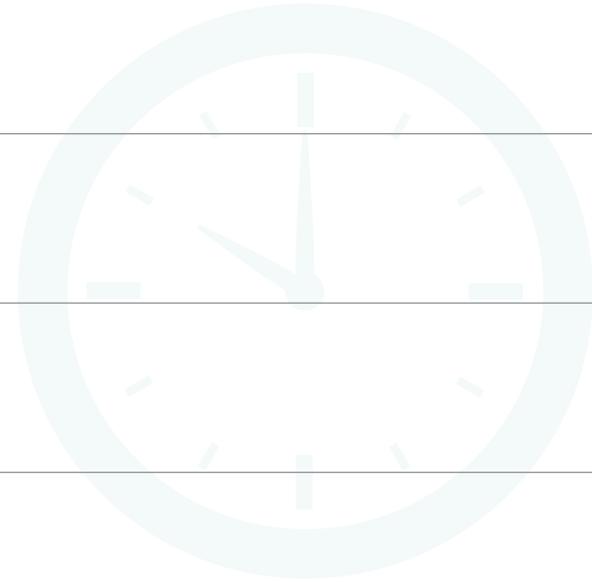
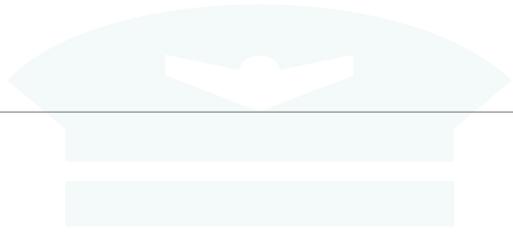
Metalsmith or Grid Master

This report explores how the industry can adapt in an age where the car itself will no longer be the sole focus. The focus is shifting increasingly to the customer data that can be harnessed to generate entirely new and scalable revenue streams. After all, the ubiquitously connected car is a gigantic data generating machine.

(November 2015)

Notes





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