Capgemini
RESEARCH INSTITUTE

THE NEED FOR SPEED

Four recommendations to turbo-charge digital performance in the automotive industry

Global Digital Mastery Research Series: Automotive

Introduction

The tenets of digital transformation – learning rapidly, allowing failure, and experimenting close to the customer – are often at odds with the automotive sector's traditional innovation philosophy. That is, a philosophy that has long focused on producing quality products better, faster, and cheaper with an emphasis on continuous improvement and lean manufacturing. This makes digital transformation that much more complex in the automotive industry.

In our 2018 research, *"Understanding Digital Mastery Today,"* we examined where organizations are in their digital transformation journey and the challenges and opportunities they face. We surveyed more than 1,300 executives in over 750 global organizations and interviewed senior executives responsible for their organizations' digital transformation programs. This latest research builds on what we learned and focuses on the automotive sector, which is represented by 174 executives in 85 organizations in our sample, including the largest car manufacturers in the world. We also leveraged insights and lessons learned from our other research on the automotive sector and from the in-depth experience we have acquired working with leading companies in the industry. The research methodology at the end of the report provides more detail on our approach.

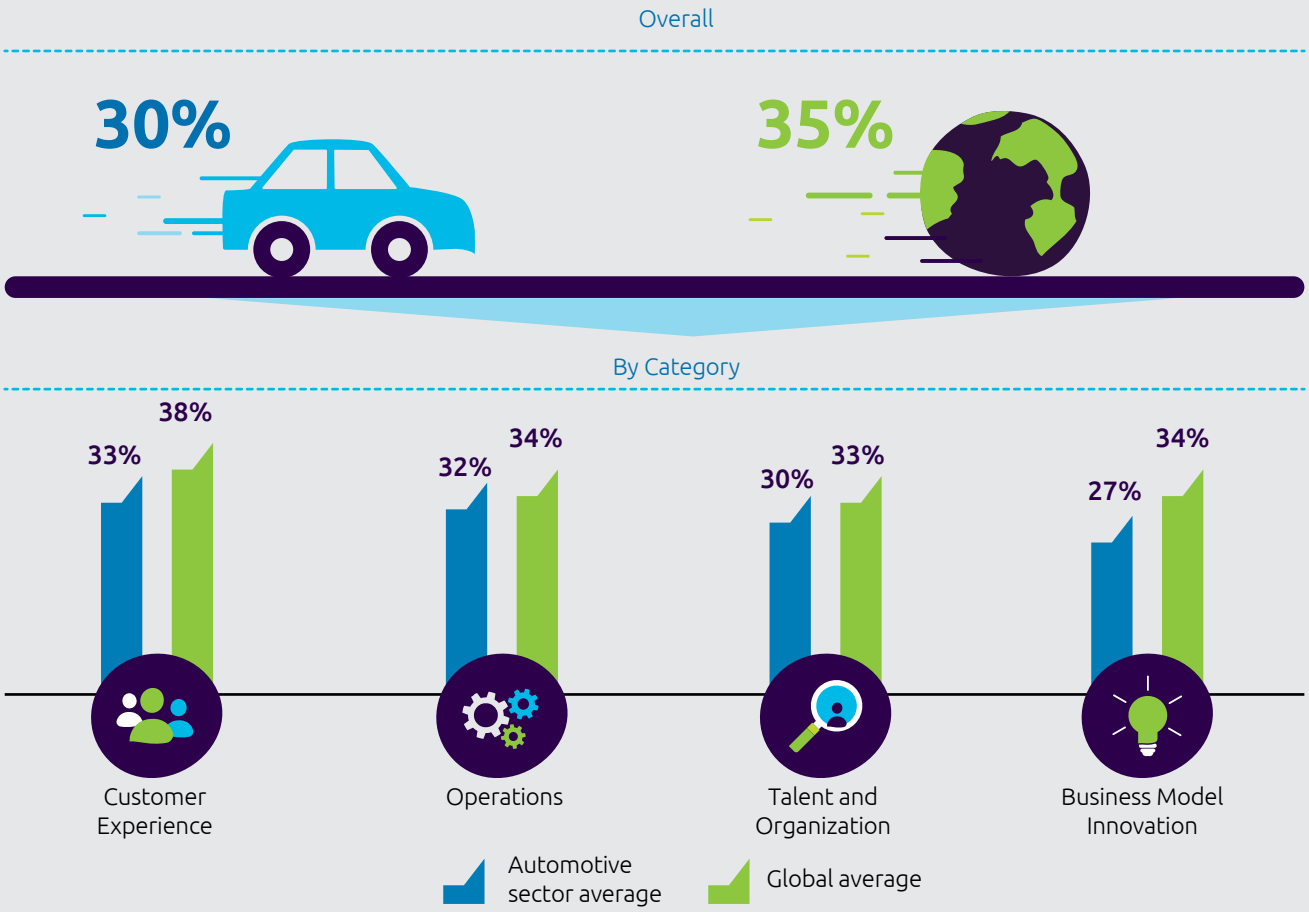
While digitization and disruption are commonplace in the automotive industry today, our research shows that, compared to other sectors, automotive companies are lagging behind considerably in their digital transformation journeys. There is no automotive company today that does not understand the importance of digital, but they all struggle to translate their vision into reality. In this report, we offer four key recommendations that can help automotive companies on their journeys to digital mastery:

- **Leverage digital technologies to enable self-service, and improve the retail experience**
- **Develop a digital culture that spans traditional automotive silos and hierarchy**
- **Create a center of excellence to set direction, coordinate digital products and services, and share learnings**
- **Build an open innovation platform for digital services.**

Automotive lags behind other sectors in their digital transformation journeys

Fewer than a third of automotive companies have the digital capabilities required for digital transformation

Percentage of organizations believing that they have the necessary digital capabilities, in the automotive sector and globally



Automotive companies struggle to leverage digital in experience design

We improve our knowledge of markets and customers through social media.....40% automotive **vs.** 47% global

We use mobile channels/apps to sell products and services.....34% automotive **vs.** 43% global

We use digital technologies with customers to enable self-service.....28% automotive **vs.** 46% global

We improve our knowledge of markets and customers through devices embedded in products.....27% automotive **vs.** 39% global

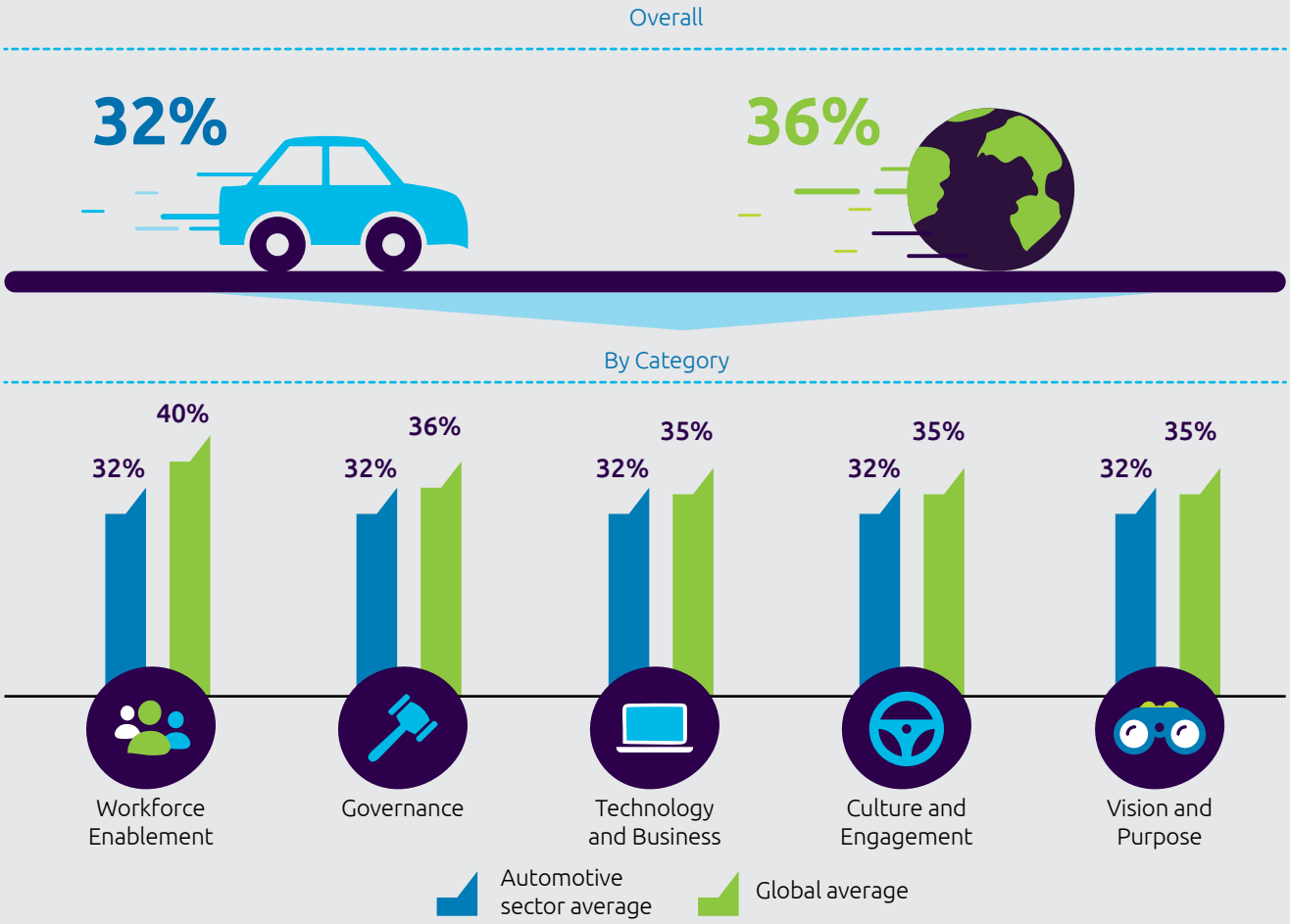
Automotive companies struggle to innovate their business model

We have launched new businesses based on digital technologies.....28% automotive **vs.** 39% global

Our digital platform allows us to reach customers we could not reach through traditional approaches....19% automotive **vs.** 31% global

Automotive companies struggle to develop the necessary leadership capabilities for digital transformation

Percentage of organizations believing that they have the necessary leadership capabilities, in the automotive sector and globally



Automotive organization are behind in developing a digitally skilled workforce

Upskilling/reskilling on digital skills is a top priority for our company .....**38% automotive vs. 44% global**

Leadership actively promotes digital skills learning and development for our employees .....**32% automotive vs. 40% global**

We actively recruit and hire new talent with strong digital skills .....**31% automotive vs. 39% global**

We have a formal program for digitally reskilling employees (e.g. training, mentoring).....**29% automotive vs. 38% global**

Source: Capgemini Research Institute, Digital Mastery Survey; April–May 2018, N=1,338 respondents, 757 organizations; N=174 automotive respondents, 85 automotive organizations.
*Please note that the global data considers all the questions and categories in our 2018 digital transformation framework (see the Appendix for the framework).

Leverage digital technologies to enable self-service and improve the retail experience

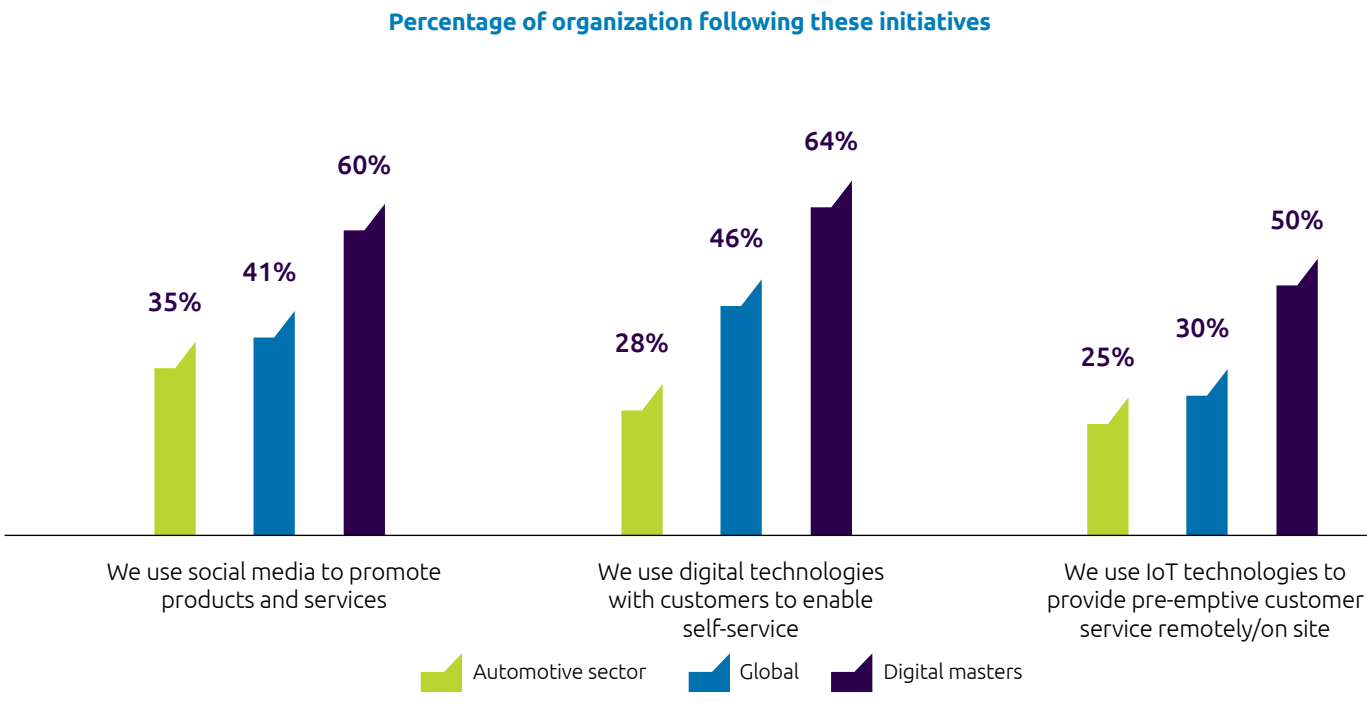
Physical retail, irrespective of sector, is having a hard time competing with digital commerce and digital mediums.[1] For example, in the US, 105 million square feet of retail space closed in 2017 and, in the first four months of 2018, 90 million square feet of retail space was shuttered.[2]

The automotive sector faces a similar situation as digital disruption takes hold. In 2017, Capgemini research found that 42% of consumers said that they were likely to buy a car online in the future, up from 35% in 2015.[3] The rise of the digital consumer raises two major questions:

1. How should automotive organizations cater to the needs of the connected consumer?
2. How should the dealership experience be augmented by digital?

Today, consumers are more connected than ever. The average online adult in the US uses 4.5 devices (e.g. smartphones, smart speakers, smart watches), 5.4 platforms (e.g. Facebook, Twitter, WhatsApp) and 4.2 connected channels (e.g. apps, websites, chatbots).[4] However, from our digital mastery research, we found that fewer automotive companies utilize digital technologies to enable self-service, use social media to promote products and services, or use IoT technologies to provide customer service remotely or on site than organizations globally (see Figure 1).

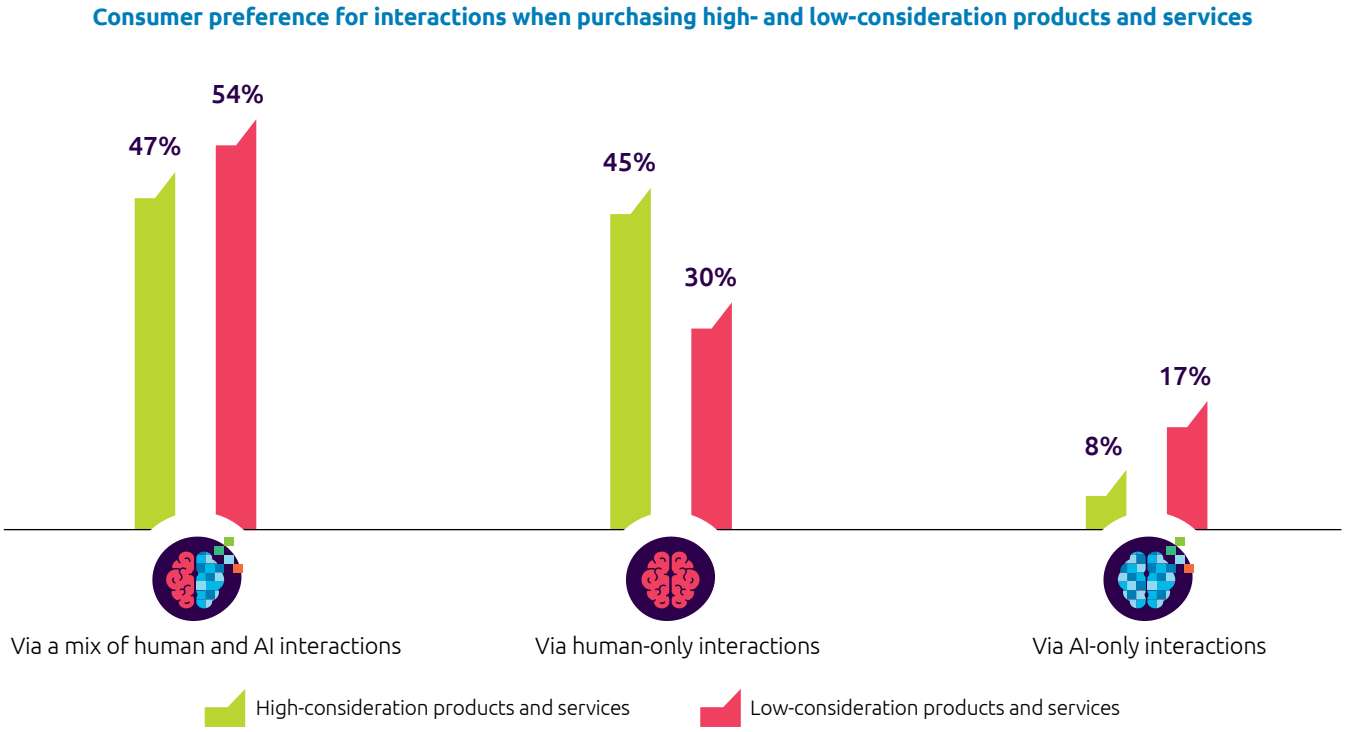
Figure 1. Automotive organizations don't use social media enough to promote products or digital technologies to enable self-service



Source: Capgemini Research Institute, Digital Mastery Survey; April–May 2018, N=1,338 respondents, 757 organizations; N=174 automotive respondents, 85 automotive organizations; N=244 digital masters across all industries.

Consumers increasingly want technology to play a part in their purchase decisions. In our research on artificial intelligence (AI) in the customer experience, nearly half (47%) of consumers say they prefer a mix of human and AI interactions when purchasing high-consideration products, such as cars (see Figure 2). When it comes to the purchase decision, automakers should leverage technology, such as AI, and not rely solely on humans. However, it is important that the AI has human-like attributes such as voice and intellect (i.e. the ability to hold a sensible conversation, respond to follow-up questions, or contribute additional information), as most consumers (64%) say that they want AI to be more human-like.

Figure 2. Consumers prefer a mix of human and AI and interactions for high-consideration products, such as cars

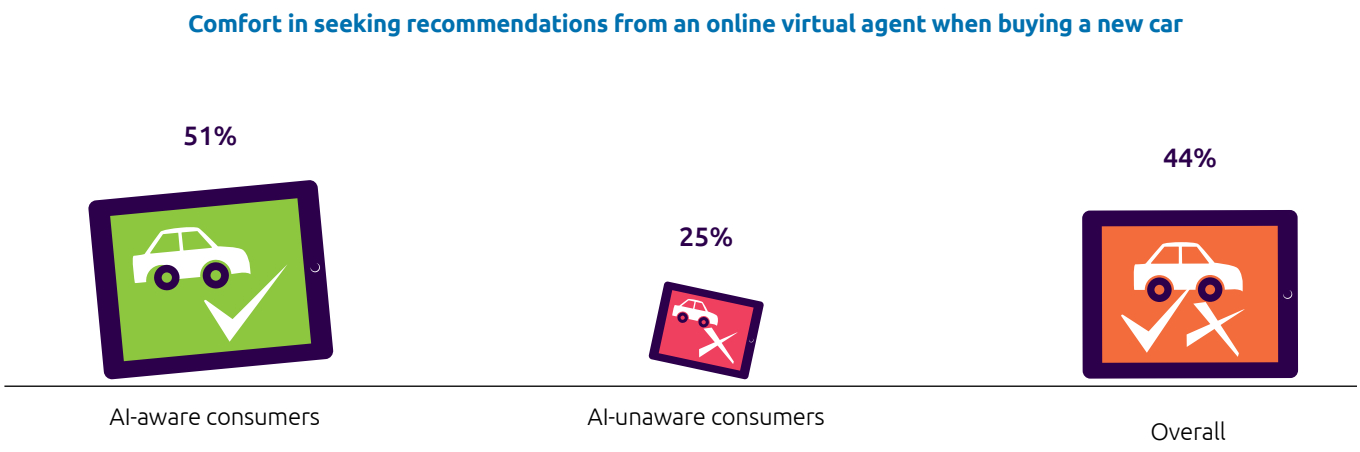


Source: Capgemini Research Institute, AI in CX Consumer Survey, May 2018, N=10,000 consumers.
*High-consideration products and services are those that have either a high cost or a high emotion/sensitivity attached to it. Examples include purchasing a car, applying for a home loan, selecting a wedding ring for a partner.

Consumers might prefer AI in certain scenarios but require the reassurance of a human presence in others. *"Sometimes it is about the situation in question, rather than just the cost,"* said a US focus group participant. *"I could buy a car online via a virtual assistant, if someone recommended it, even though it is an expensive product. But if I have a car accident and need to deal with my insurance company, I would find a human interaction more assuring."*[5]

We also tested consumer comfort in using an AI-enabled interaction to evaluate financing options for a new car in our AI in the customer experience research.[6] Consumers were given this prompt: "You are planning to buy a new car but are not sure how to finance your purchase. You have been provided with an online option to look through a host of cars and the corresponding financing options that could be right for you based on your unique credit history, income, and other variables. You will have to share your personal information with an online virtual agent." As shown in Figure 3, 44% of all consumers are comfortable in buying a new car with the help of an online virtual agent, and this increases to 51% among AI-aware consumers (i.e. consumers who said that they were aware of having interactions enabled by AI).

Figure 3. More than half (51%) of AI-aware consumers are comfortable in seeking recommendations for a new car from an online virtual agent



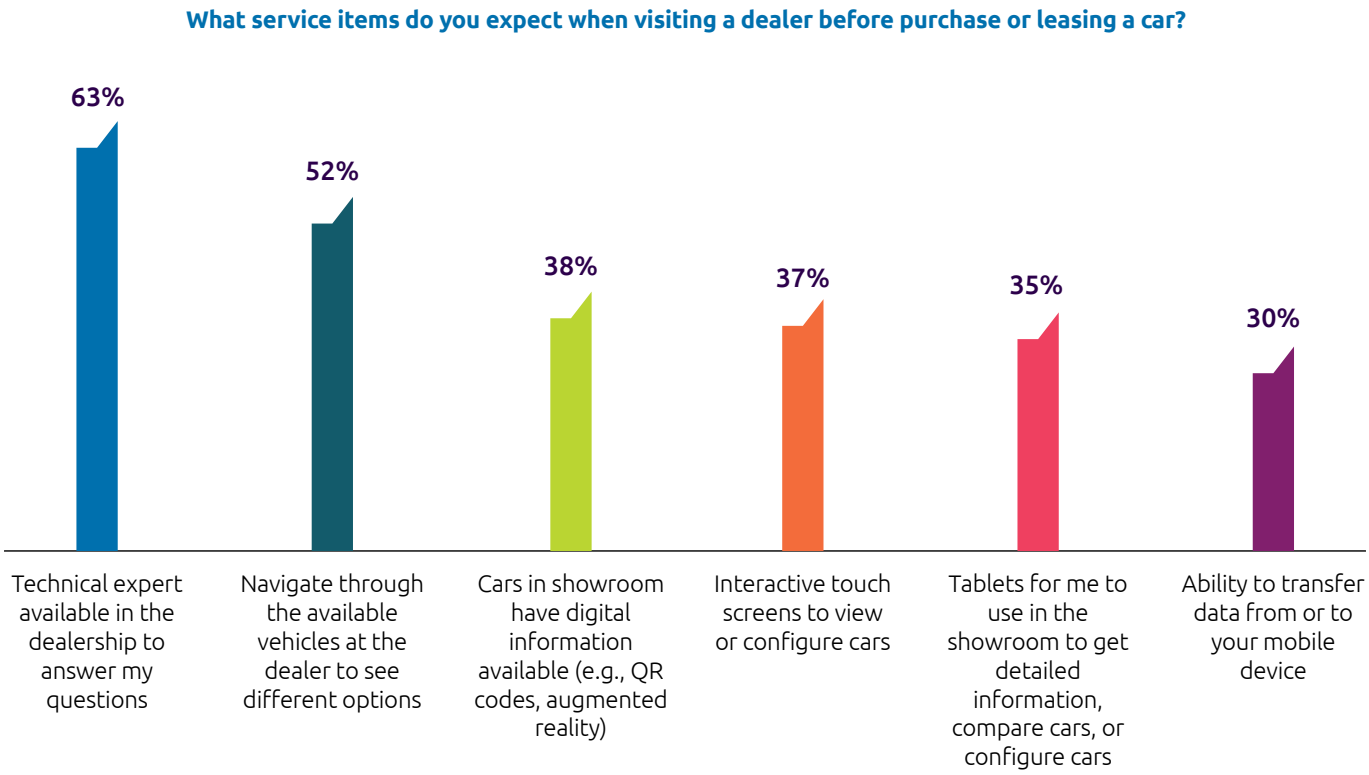
Source: Capgemini Digital Transformation Institute, AI in CX Consumer Survey, May 2018, N=10,000 consumers, 7,256 AI-aware consumers, 2,744 AI-unaware consumers.

47%

Percentage of consumers who prefer a mix of human and AI interactions when purchasing high-consideration products, such as cars

Consumer expectations of dealerships have also evolved, and dealers' unrelenting focus on closing sales is no longer sustainable. Today, consumers visit dealerships for many reasons and most want a technology-enabled experience. As Figure 4 shows, this ranges from speaking to an expert to using technology – such as interactive screens – to view or configure cars.

Figure 4. Consumers expect a technology-enabled experience when visiting dealerships



Source: Capgemini, Cars Online 2017: Beyond the Car, N=8,000 consumers in Brazil, China, France, Germany, India, Italy, the United Kingdom, and the United States.

To effectively use digital in the automotive customer journey, organizations can consider the following recommendations.

- **Personalize your messaging by leveraging social media data.** While many automotive companies have embraced social media, they can do more to use the abundance of social media data and information available today to better understand their target consumer and convert digital engagement into sales. According to our digital mastery research, only 33% of automotive organizations claim to use analytics to personalize marketing communication. On the other hand, 62% of consumers say that their purchase decision is likely to be influenced by positive comments on social media.[7] Automotive organizations can use their social media sites as effective sales channels not by "pitching deals" but by providing more personalized information, including thoughtful responses to inquiries or comments and more precisely targeted digital campaigns. Ford builds and delivers content on multiple social media channels, such as Facebook, Instagram, Tumbler, and Twitter. Ford shares tailored, relevant content to each channel's audience and engages its customers on topics as diverse as vintage advertisement, social commentary, and user-generated content to promote its products and services.[8] Automotive manufacturers should also strive to educate their dealers about the importance of a strong social media presence and also encourage sharing of customer data, where possible. Historically, dealers have been reluctant to embrace social media, citing the lack of sales originating from the channel.[9] In addition, as auto

manufacturers move towards direct sales, they will gain access to more and more customer data.

- **Leverage digital technologies, such as over-the-air (OTA) updates to deliver personalization and post-purchase services.** Consumer expectations have changed considerably in the last decade with a focus on personalization and customizable service. Connectivity is a technology that can help to bridge this gap. Thirty-six percent of consumers say their current car does not have connected car services which they would like in their next car.[10] It also has major implications in the post-purchase stage. Predicative maintenance and OTA updates can greatly improve the consumer experience. Tesla Motors' OTA update system ensures consumers have the latest features and upgrades without the need to visit dealerships or service centers. After Consumer Reports, an American magazine that publishes product testing and consumer research, announced that it would not recommend the Model 3 based on braking performance, Tesla responded with an OTA update.[11] Tesla improved braking performance within days as compared to the industry standard method of costly vehicle recalls.[12] Traditional automakers are also closely following suit and entering the OTA market. Jaguar's new all-electric I-PACE includes OTA updates and both Ford and GM have announced that some of their 2020 models will allow OTA updates.[13]

- **Incorporate technology in the dealership to improve the retail experience.** As Figure 3 shows, consumer expectations on what they want their dealership experience to be has evolved as technology has progressed. To pair digital with the human element in the dealership, automotive companies can consider incorporating technologies such as virtual/augmented reality, QR codes, interactive touch screens, and tablets for detailed information. Offering self-serve kiosks and check-outs could also be considered. Online used car dealer, Carvana operates 11 coin-operated car vending machines across the U.S. There are no sales people, just a small staff to load vehicles, maintain machinery and help customers. Customers order vehicles online and can arrange to have them delivered to their home or one of the vending machines.[14] Ford has partnered with Panasonic and software provider GoMoto to create Smart Service Kiosks, which allows customers to drop off and pick up their vehicles, and pay for service, outside a dealership's normal hours.[15] Technologies such as virtual reality are being increasingly used in the automotive sector to extend technology with the in-store buying experience. Audi launched Audi VR experience as a first fully functional virtual reality application for customer consultation at dealerships across Germany, the UK, and Spain. Nils Wollny, head of Digital Business Strategy and Customer Experience at Audi AG says: *"With [Audi VR], we are taking the next step in our strategy to combine digital innovation with the strengths of the brick-and-mortar dealership."* [16] A coherent retail experience, complemented by digital tools, will lead to a strong competitive advantage. Holger Suffel, vice president of Global Service and Parts Operations at Daimler agrees: *"There is great potential for the physical retail to provide customers with a more enjoyable service experience, by using digital channels."* [17]

- **Incentivize retail staff not to sell, but to educate and assist consumers in their decision-making process.** This could be done through the automaker educating its partner dealers or hiring and deploying its own staff to work at the dealership on a salaried basis without a sales commission. Through its Genius Program, BMW employs "geniuses" at dealerships. With no incentives for sales, they ensure that they help the consumer in evaluating choices and sharing information in a pressure-free atmosphere. BMW has also rolled out a Genius App, a Genius Hotline, and BMW Encore sessions to address any questions post sale.[18,19] Dealers who participate in the Genius program are seeing a financial boost – the employees' no-pressure explanation of available feature has led to a 10% to 15% increase in the purchase of high-margin options.[20]

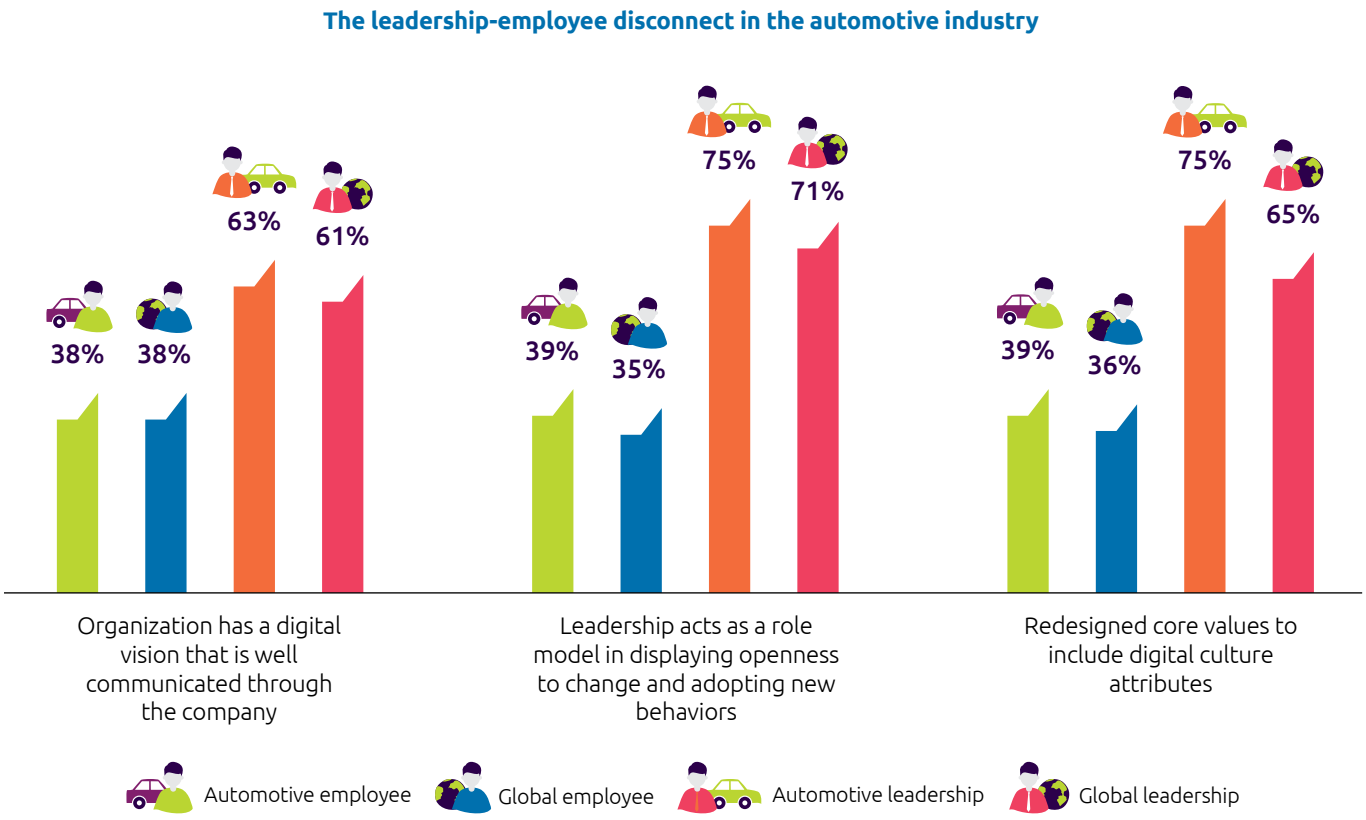
33%

Percentage of automotive organizations that use analytics to personalize marketing communication

Develop a digital culture that spans traditional automotive silos and hierarchy

While automotive leadership claims to have made progress on adopting certain aspects of a digital culture, this does not always translate into actionable results. In our research on digital culture, over six out of ten automotive respondents (63%) say that culture is the top hurdle to digital transformation. The same research also reveals a strong disconnect between automotive leadership and the automotive workforce when it comes to understanding what digital culture means. This disconnect is more pronounced in the automotive sector than in other industries globally (see Figure 5).

Figure 5. The leadership–employee gap is significant for digital culture in the automotive industry



Source: Capgemini Research Institute Survey, Digital Culture; March–April 2017, N=1,700 respondents, 340 organizations; N=340 automotive respondents, 68 automotive organizations.

To create a digital culture, automotive organizations will need to have the right blend of top-down and bottom-up approaches that engage, empower, and inspire employees to build the cultural change together.

- **Deploy change agents and empower employees to drive digital culture.** Automotive organizations need to identify and encourage employees who can be change agents or "digital ambassadors," demonstrating to others that new behaviors are not a risk.

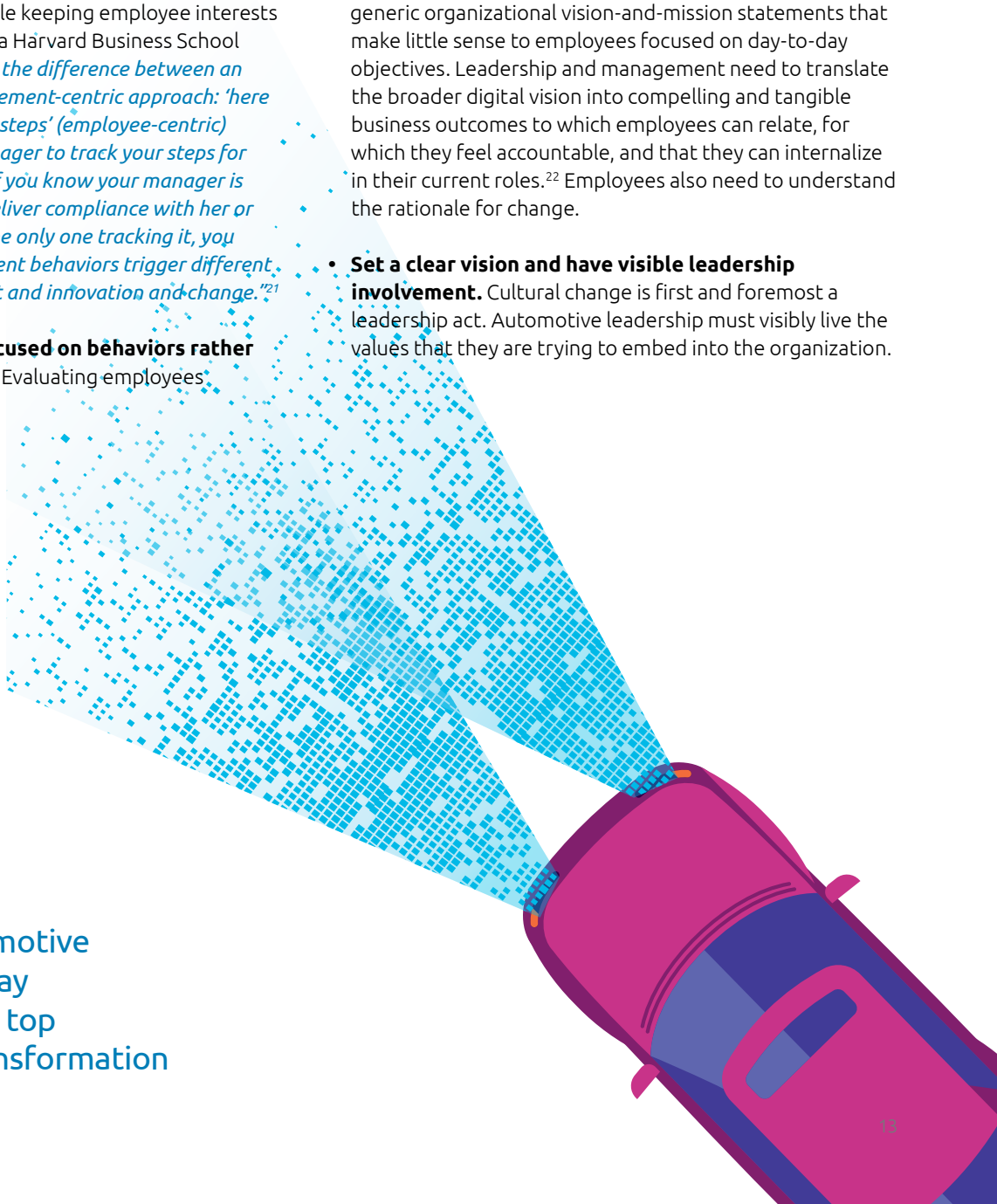
- **Use collaboration tools to increase transparency and reach out to employees.** Internal social networks oil the wheels of employee collaboration and help to connect the bottom and top parts of the organization. Tools should be developed and deployed while keeping employee interests in mind. As Ethan Bernstein, a Harvard Business School professor explains: *"Imagine the difference between an employee-centric and management-centric approach: 'here is a tool for you to track your steps' (employee-centric) or 'here is a tool for your manager to track your steps for you' (management-centric). If you know your manager is tracking performance, you deliver compliance with her or his expectations. If you are the only one tracking it, you experiment to see how different behaviors trigger different results, yielding improvement and innovation and change."*[21]

- **Design new digital KPIs focused on behaviors rather than successes or failures.** Evaluating employees on outcomes and traditional KPIs might set them up for failure and create greater resistance to cultural transformation. Therefore, automotive organizations need to shift the dial to create performance systems that reward positive digital behavior. Such questions could include:

  – Are employees collaborating across business units?
  – Are they engaging with the wider automotive ecosystem?
  – Are they encouraging other teams to use new behaviors?

- **Make digital culture change tangible.** Our research shows that employees are not engaged in the culture change journey. This disengagement is often due to generic organizational vision-and-mission statements that make little sense to employees focused on day-to-day objectives. Leadership and management need to translate the broader digital vision into compelling and tangible business outcomes to which employees can relate, for which they feel accountable, and that they can internalize in their current roles.[22] Employees also need to understand the rationale for change.

- **Set a clear vision and have visible leadership involvement.** Cultural change is first and foremost a leadership act. Automotive leadership must visibly live the values that they are trying to embed into the organization.



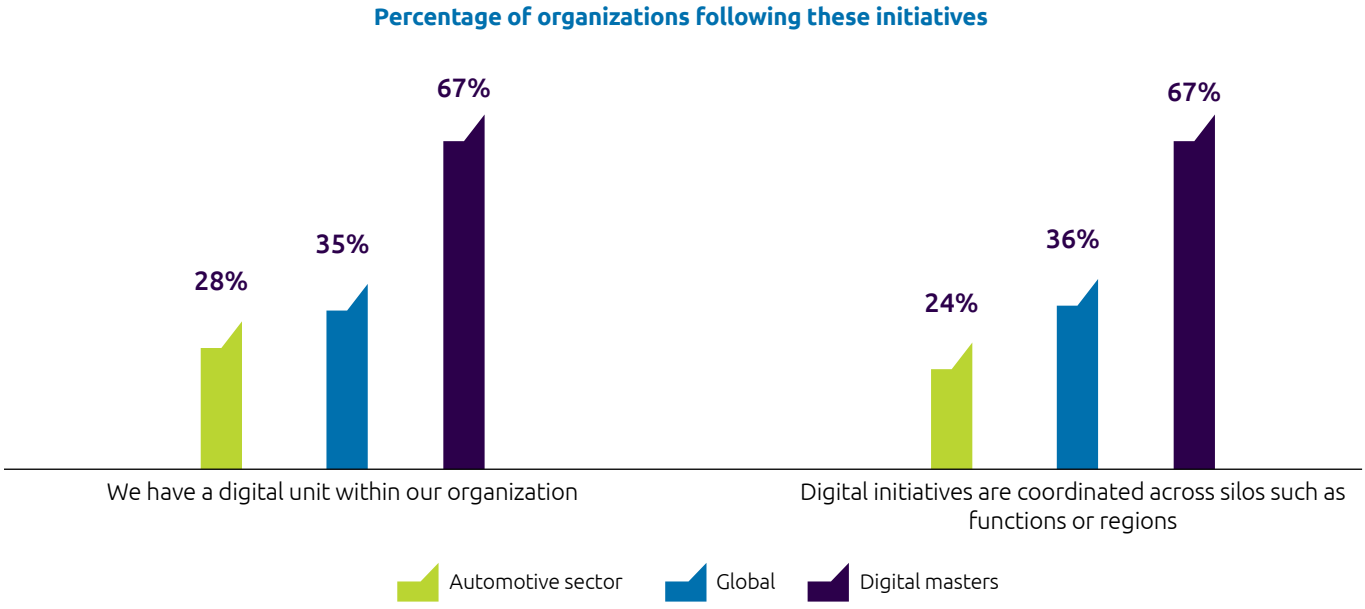
63%

Percentage of automotive organizations that say digital culture is the top hurdle to digital transformation

Create a center of excellence to set direction, coordinate digital products and services, and share learnings

Having a digital culture will be critical for automotive companies to remain competitive and one way to accelerate cultural transformation is to ensure an operating model that prioritizes digital innovation. As shown in Figure 6, nearly 70% of digital masters (across all industries) have a digital unit. Automotive companies lag behind their global peers in having a dedicated digital unit and coordinating digital initiatives across silos. This suggests that they may have a challenge with governance. One hypothesis for the automotive sector's traditional siloed structure and governance focuses on the complexity of the product itself. Cars are complex products to manufacture that must meet consumer expectations and follow strict regulations. To handle this complexity, capabilities have been broken up into smaller parts, which manifests itself as siloed divisions and teams within the organization. Therefore, a single digital unit that requires cross-functional collaboration becomes even more critical in order to break down barriers between organizational silos.[23]

Figure 6. Fewer than 30% of automotive organizations have a digital unit or coordinate digital initiatives across silos



Source: Capgemini Research Institute, Digital Mastery Survey; April–May 2018, N=1,338 respondents, 757 organizations; N=174 automotive respondents, 85 automotive organizations; N=244 digital masters across all industries.

There is indeed a debate on the best organizational construct for digital in the automotive industry. One point of view is that digital should be embedded throughout the organization instead of confined to a specific unit or division. Our digital engineering research also shows a lack of consensus, with 50% of the automotive sector building an independent entity for connected cars and 50% incorporating connected cars within their existing structure.[24] However, for very large organizations, a digital center of excellence would help support the acceleration of digital – especially since automotive organizations are lagging behind other industries. The gap between functions, business units, and geographical teams is significant. For such large organizations, effective collaboration and synchronization of

efforts is a herculean task, especially given the complexity of the offer.

A digital center of excellence would provide cross-functional coordination and leave the development of digital products and services to the individual business units since most are large and operate relatively independent. It would also aim to break down silos across business units to improve communication and collaboration. A digital center of excellence is not necessarily a permanent solution, rather it's a critical step for automakers to catch up to their global peers. As their digital transformation matures, automotive organizations can work to embed the digital and innovation capability throughout the organization. Other objectives of the digital center of excellence would be to:

- Set a digital vision that is shared across the organization and enable its execution
- Deliver guidance and consultation for digital initiative in the organization
- Share learnings of new technologies developments across business units
- Coordinate talent and skills across technologies that might be complementary
- Guard against risks such as duplication of effort.

Automotive organizations can consider the following recommendations as they think about implementing a digital center of excellence.

- **Set-up the digital center of excellence so it has leadership support and direct visibility with the board.** This will help to ensure autonomy, the ability to execute decisions, and acknowledge that the group is critical to the digital transformation of the company at large.
- **Ensure that the digital center of excellence can draw upon talent and expertise across the organization.** By introducing workforce ambassadors into the digital transformation, the chances of adopting digital solutions and behaviors catering to their needs increases greatly. The disconnect between the overall transformation and the leadership-workforce is a critical challenge when addressing areas such as culture and ways of working.
- **Ensure that the digital center of excellence has a dedicated space and budget to execute critical projects that are required by multiple business units.** This would also enable them to harmonize areas such as data, systems and analytics to uncover consumer and product insights that could be leveraged across business units.

From our digital engineering research, 68% of automotive respondents state that balancing traditional development while driving business model innovation is a challenge.[25] To help alleviate this challenge, many automotive organizations have created separate divisions or subsidiaries for connectivity, mobility, or autonomous cars. However, a digital center of excellence could provide the vision and direction for all these different entities. Ford Smart Mobility LLC is a subsidiary of Ford that designs, builds, grows, and invests in emerging mobility services, including initiatives such as ride sharing, car sharing, and even e-bikes. Ford Smart Mobility is part of the company's expanded business model to be both an auto and a mobility company. *"Ensuring the freedom of mobility requires us to continually look beyond the needs of today and interpret what mobility will mean to future generations,"* said Bill Ford, executive chairman, Ford Motor Company. *"This new subsidiary will enable us to develop mobility solutions to address the rapidly changing transportation challenges of an increasingly crowded world."*[26]

24%

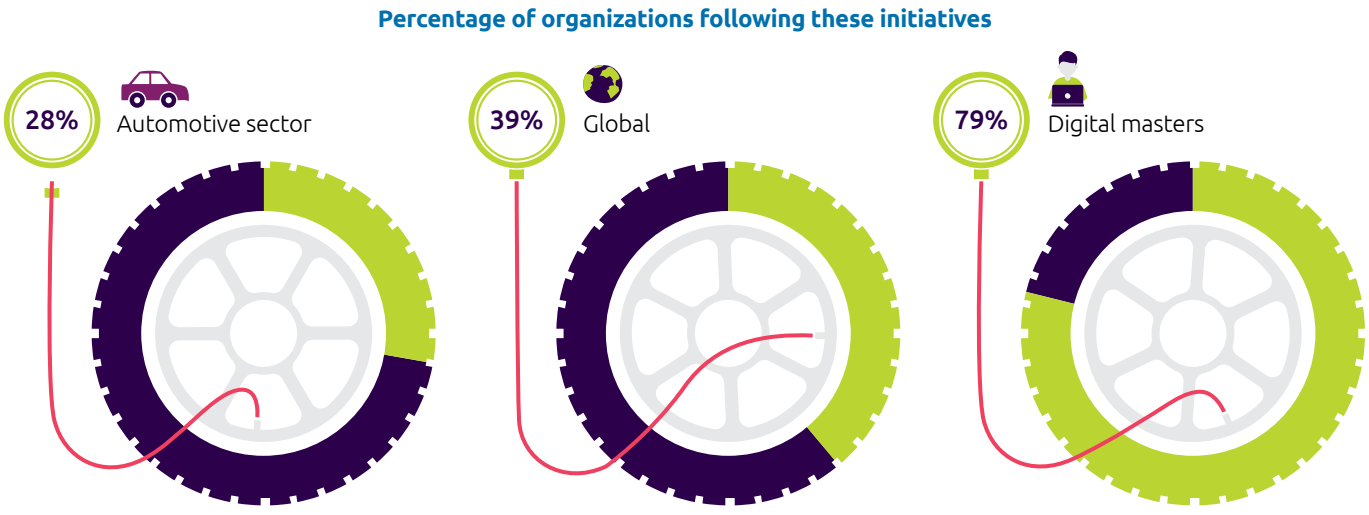
Percentage of automotive organizations that say digital initiatives are coordinated across silos

Build an open innovation platform for digital services

With the pace of change today, no company can act as an innovation island – open innovation through digital platforms is critical. By providing a standardized and open digital platform for third-party contributors and partners, an automotive organization can increase innovation capacity significantly. Innovations, such as autonomous cars and mobility services, will further alter the relationship with the consumer. However, a common theme will be the in-car experience replacing the driving experience. Organizations that can deliver the applications and content that consumers want will be the premium experience players. Digital natives – such as Google, Apple, and the Chinese technology company, Baidu – understand that while autonomous cars might give them an entry point to the sector, digital platforms, along with apps and services, will establish their long-term staying power in the automotive industry. Consumers are equally attracted to these technology firms. Over half (57%) of consumers say that if a technology company (such as Apple or Google) produced a car, they are likely to switch from their current brand.[27]

Automotive companies need to keep pace with this sort of business model innovation, yet many are faltering. As shown in Figure 7, 39% of organizations globally have launched new businesses based on digital technologies. And, this number drops to 28% for automotive firms. With 45% of consumers saying they would like to be able to buy in-car apps and services (e.g. additional navigation features) online open digital platforms will play a critical role in addressing this gap.[28] As Nils Wollny, head of Digital Business Strategy and Customer Experience a Audi AG says: *"At Audi we have a great ambition for digital business. We are creating digital services, mobility services, platforms and solutions for customers, dealers and new ecosystem partners. With digital business, we want to contribute to the operating result. Obviously, we need partners who can help us to realize our ambition, challenge us, provide knowledge as well as insights and bring strategies to life."*[29]

Figure 7. Less than a third of automotive organizations have launched new businesses based on digital technologies



Source: Capgemini Research Institute, Digital Mastery Survey; April–May 2018, N=1,338 respondents, 757 organizations; N=174 automotive respondents, 85 automotive organizations; N=244 digital masters across all industries.

An example of a large, traditional company from the healthcare sector that has built an open digital platform is Philips, the multinational technology company headquartered in Amsterdam. Philips' HealthSuite is a cloud-based, open, and secure platform of services, capabilities, and tools aimed at the development of connected health products and wellness innovations. It interoperates seamlessly with other cloud-based technologies, such as the Salesforce Health Cloud and Amazon Web Services. The platform connects multiple stakeholders – pharmaceutical companies, patients, and care professionals – and it has public API access, so any device or organization can develop on it. Patients who need medical care can obtain more personalized care that they can monitor themselves and healthcare providers can better monitor, treat, and communicate with their patients.[30]

Some automotive players are following suit. With the acquisition of Silicon Valley-based Autonomic, Ford launched its Transportation Mobility Cloud (TMC), an open digital platform designed to help connect smart transportation services and adjacent connected offerings (e.g. tying together cars with vehicle-to-everything communications, such as bike-sharing networks, public transformation, parking spots).[31]

The use of open digital platforms, with third-party offerings, can help automotive organizations bridge this gap and accelerate innovation. Automotive organizations should consider the following recommendations when building a digital platform.

- Develop a clear-cut monetization policy for your digital partners
- Ensure that the digital platform follows open standards and is backed by well-documented functionality
- Develop strong cybersecurity and privacy norms
- Promote third-party developers even if they compete with your existing solution
- Ensure that services, such as payments, hosting, networking, and other overheads are addressed so that third-party partners can focus on innovation and development
- Give potential partners (e.g. Google) access to the platform on a fair basis, as it could help automotive organizations expand to a new market or generate new revenue streams.

Traditional automakers should be aware that if they don't develop these digital platforms, other disruptors might come along. Alibaba, the Chinese multinational conglomerate specializing in e-commerce, is an example of how a major technology giant is muscling-in to the automotive space. Alibaba is currently positioning itself to be the de-facto player for consumer automotive and mobility needs. Through various partnerships with OEMs, including Ford, Hyundai, Daimler, BMW, and Volvo, Alibaba enables consumers to browse cars through a "virtual showroom." Alibaba also offers insurance and financing via its subsidiary Ant Finance, maintenance and service, and used cars through its Xianyu platform.[32,33,34] Furthermore, Alibaba has stakes in electric car maker Xiaopeng Motors, Didi Chuxing, the largest ride sharing company in China, and it also runs its own autonomous vehicle division.[35,36,37]

Conclusion

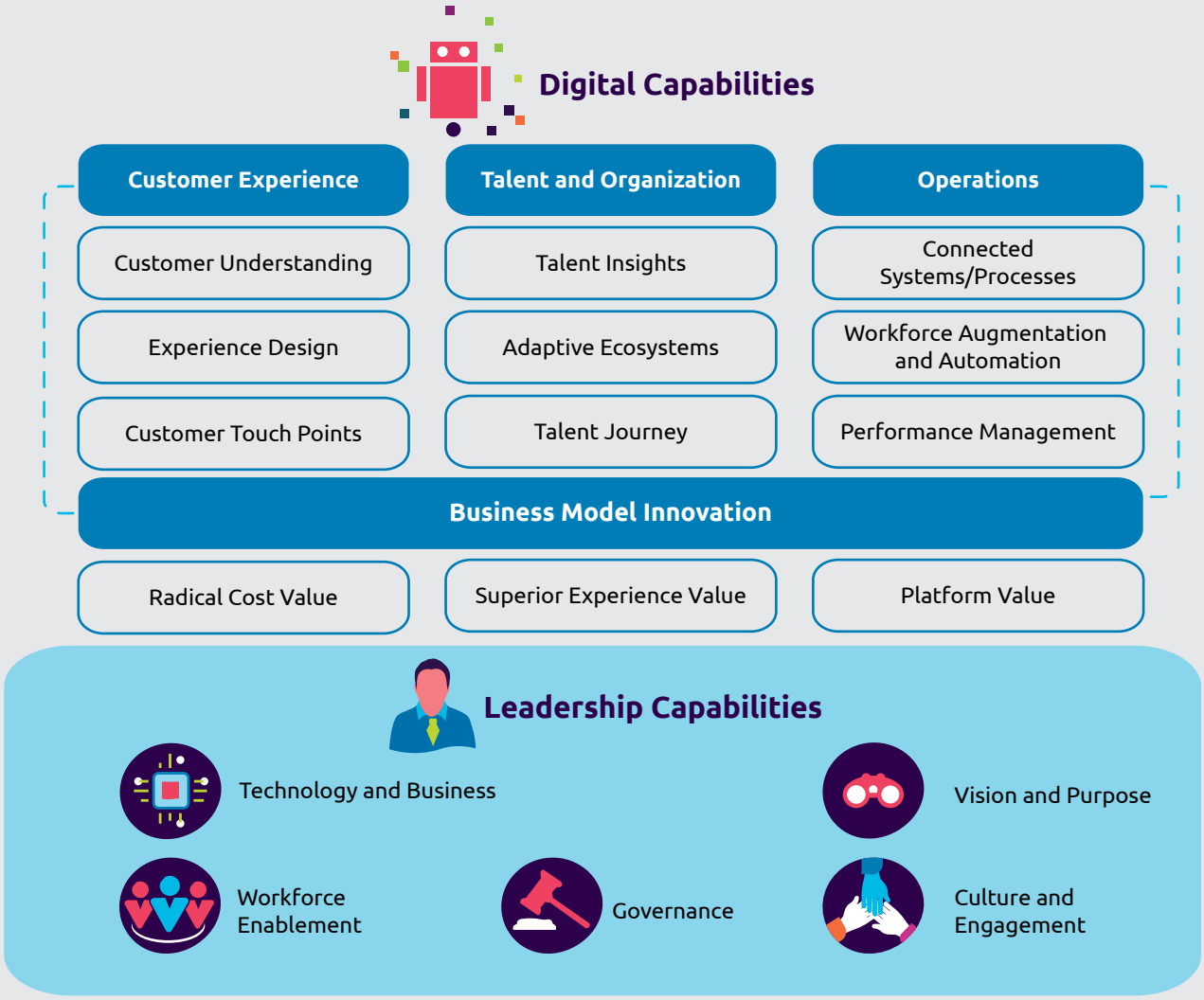
Our global digital mastery research reveals that many organizations across sectors struggle with digital transformation. This problem is particularly acute in the automotive industry, wherein organizations trail behind the global norm on all key dimensions of digital transformation. Given the scale of change in the industry – and how quickly it is arriving – it is the ability to prioritize customer experience, culture, operating model, and open innovation that will, ultimately, separate the digital masters from the digital laggards. The industry stands before its most critical juncture since the invention of the internal combustion engine and driving digital mastery by focusing on these priorities will be key to who powers ahead and who is left by the side of the road.

Appendix

What is the digital mastery framework?

We established our digital mastery framework in 2012 in partnership with the MIT Center for Digital Business. In our 2018 research, we evolved the 2012 model in both the digital and leadership dimensions (see Figure 8). Digital capabilities are the use of technology to change how the company interacts with customers, structures its organization and people, operates internal processes, or defines its business model. Leadership capabilities consist of creating the necessary conditions to drive digital transformation in the organization.

Figure 8. The building blocks of digital transformation



Source: Capgemini Invent.

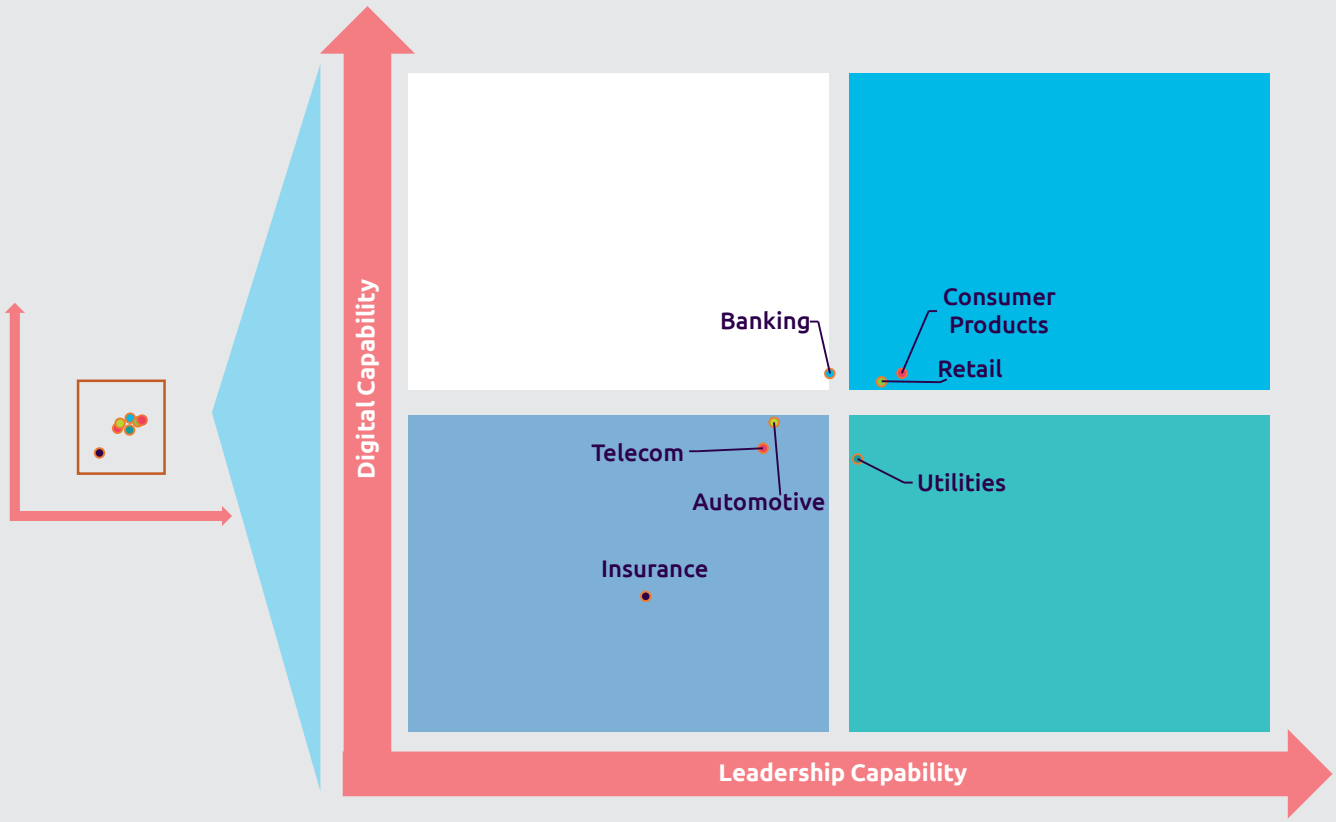
Where is the automotive sector positioned?

Based on our unique digital mastery framework, we can categorize industries and organizations according to their relative digital mastery, with this report looking at the four groups:

1. Beginners – low mastery of both digital and leadership capabilities
2. Conservatives – mastery of leadership but not digital capabilities
3. Fashionistas – mastery of digital but not leadership capabilities
4. Digital masters – high mastery of both digital and leadership capabilities.

Figure 9 shows the placement of industries on the digital mastery matrix.

Figure 9. Digital mastery of industries*

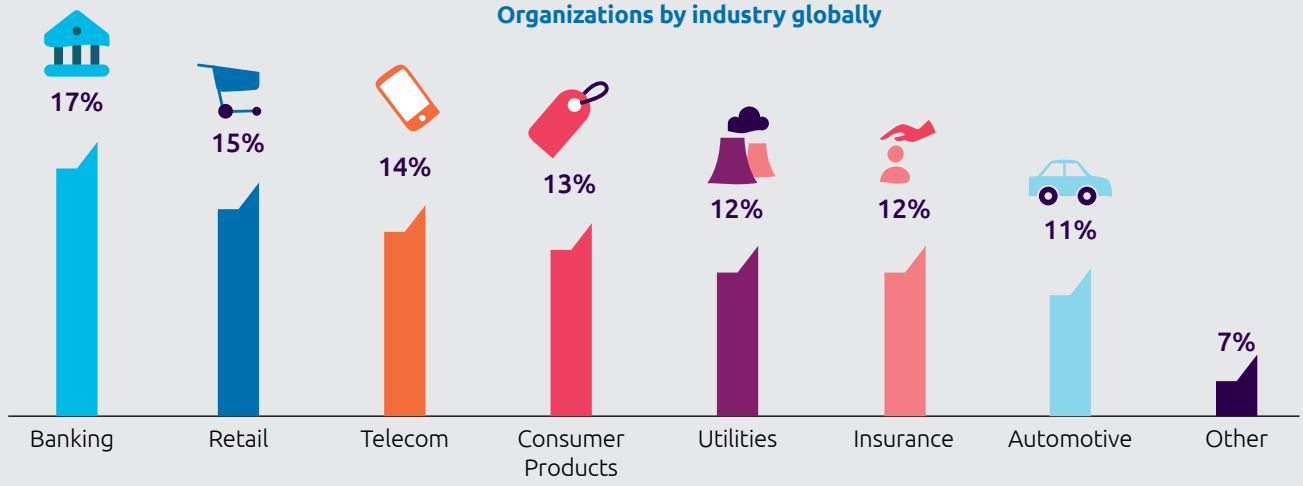


Capgemini Research Institute, Digital Mastery Survey; April–May 2018, N=1,279 repondents, 705 organizations.
*Industries were included in this analysis if they had 85 or more organizations.

Research Methodology

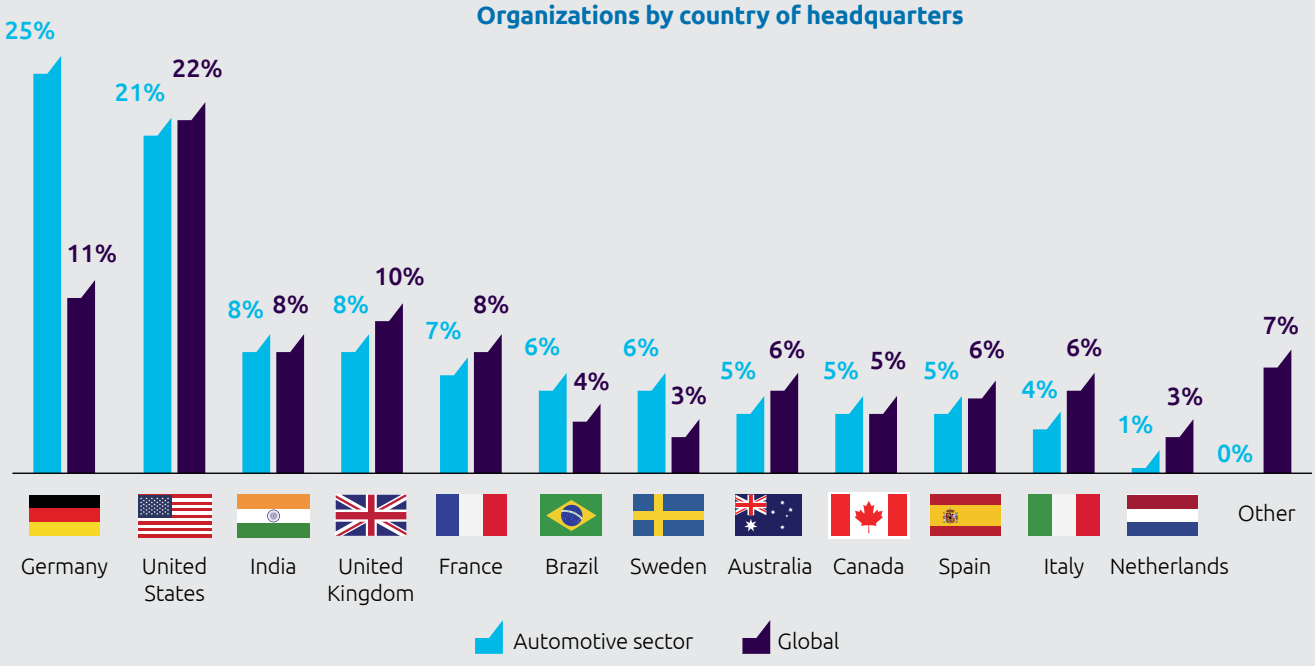
We surveyed 1,338 business leaders at the manager level or above at 757 organizations. Seventy one percent of organizations reported revenue of more than $1 billion in FY 2017. Within the automotive sector, we surveyed 174 business leaders at the manager level or above at 85 automotive organizations. Approximately 51% of the automotive sample are OEMs and the remaining are suppliers or retailers. Forty eight percent of automotive organizations reported revenue of more than $10 billion in FY 2017. The global survey took place from April to May 2018. More detail follows.

Organizations by industry globally



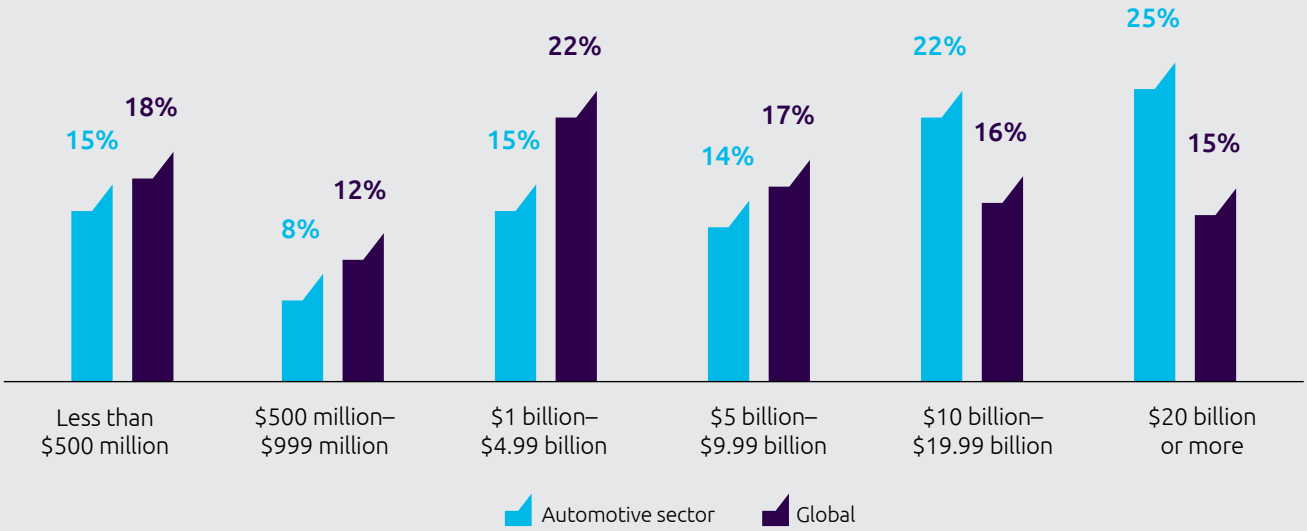
Source: Capgemini Research Institute, Digital Mastery Survey; April–May 2018, N=1,338 respondents, 757 organizations.

Organizations by country of headquarters



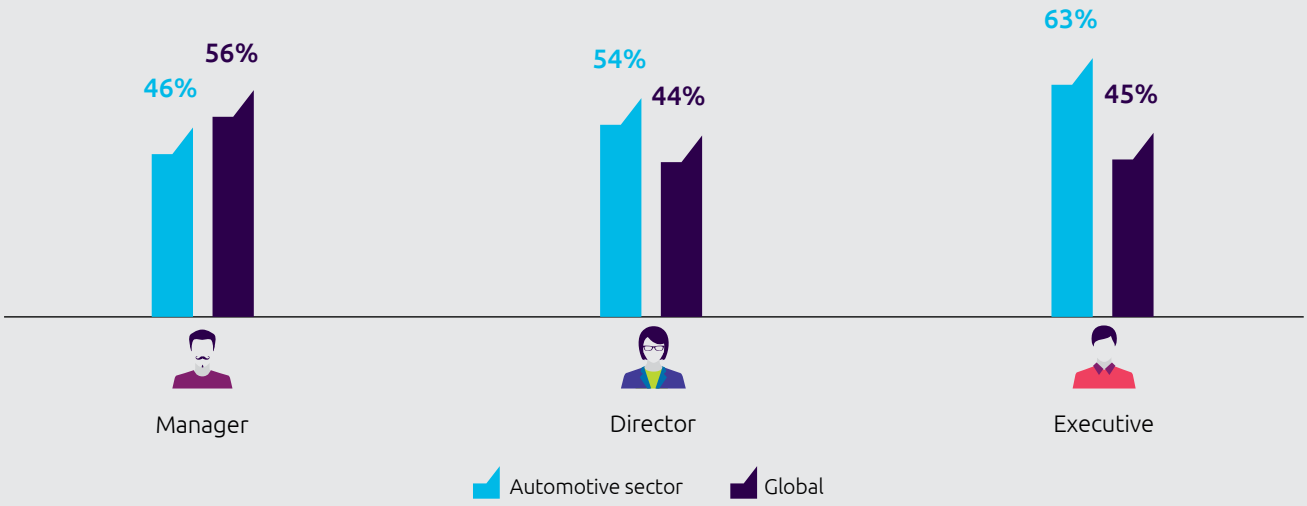
Source: Capgemini Research Institute, Digital Mastery Survey; April–May 2018, N=1,338 respondents, 757 organizations; N=174 automotive respondents, 85 automotive organizations.

Organizations by revenue



Source: Capgemini Research Institute, Digital Mastery Survey; April–May 2018, N=1,338 respondents, 757 organizations; N=174 automotive respondents, 85 automotive organizations.

Respondents by designation



Source: Capgemini Research Institute, Digital Mastery Survey; April–May 2018, N=1,338 respondents, 757 organizations; N=174 automotive respondents, 85 automotive organizations.

We also leverage insights and lessons learned from our other research on the automotive sector listed below. In addition, we conducted extensive secondary research to identify digital transformation trends in the automotive sector.

- *The Secret to Winning Customers' Hearts with Artificial Intelligence: Add Human Intelligence*
- *The Digital Culture Challenge: Closing the Employee-Leadership Gap*
- *The Digital Talent Gap: Are Companies Doing Enough?*
- *Digital Engineering: The New Growth Engine for Discrete Manufacturers*

Partner with Capgemini on Smart Mobility Connect

Enabling businesses to reinvent mobility for people

The automotive industry is in a time of great disruption. Its territory is growing, but it's simultaneously being encroached upon by new entrants and new business models. It is unprecedented; a new reality of connected mobility in which consumers are exploring the quickly widening range of products and services on offer that help them get from point A to point B.

For OEMs and other automotive businesses, it's a case of innovate or stagnate. If they are to maintain their competitive advantage and ensure future growth as the tech giants move into their landscape, it is imperative that they meet rising consumer expectations and offer vehicles and services that operate seamlessly within their customers' lives.

Capgemini's Smart Mobility Connect empowers OEMs to create a mobility ecosystem of the future that is designed with people at heart. We bring this mobility ecosystem to life through a host of products and services within three core pillars:

1. Connected Customer: Cutting-edge technology to reimagine customer experiences
2. Connected Services and Products: New capabilities that extend business success
3. Connected Ecosystem: Strategic vision to create the business of the future.

The technological framework that helps us deliver on our approach, the Customer Engine, connects these pillars and integrates intelligence into different stages of the journey.

Join us to adapt, transform, and lead.

Learn more here: *www.capgemini.com/service/invent/smart-mobility-connect/*

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The Capgemini Research Institute is Capgemini's in-house think tank on all things digital. The Institute publishes research on the impact of digital technologies on large traditional businesses. The team draws on the worldwide network of Capgemini experts and works closely with academic and technology partners. The Institute has dedicated research centers in India, the United Kingdom, and the United States. It was recently ranked Top 1 in the world for the quality of its research by independent analysts.
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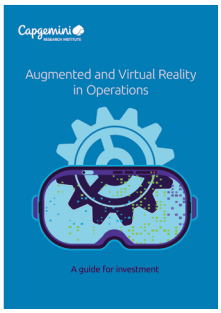

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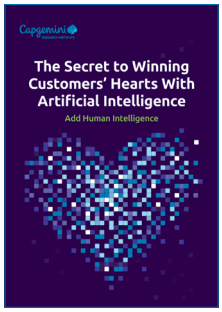
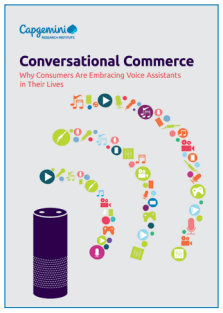


The Secret to Winning Customers' Hearts with Artificial Intelligence: Add Human Intelligence



Conversational Commerce: Why Consumers Are Embracing Voice Assistants in Their Lives

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A global leader in consulting, technology services and digital transformation, Capgemini is at the forefront of innovation to address the entire breadth of clients' opportunities in the evolving world of cloud, digital and platforms. Building on its strong 50-year heritage and deep industry-specific expertise, Capgemini enables organizations to realize their business ambitions through an array of services from strategy to operations. Capgemini is driven by the conviction that the business value of technology comes from and through people. It is a multicultural company of 200,000 team members in over 40 countries. The Group reported 2017 global revenues of EUR 12.8 billion.

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