



Research Insights

—

# Automotive 2030—Japan

Accelerating on  
the digital highway

IBM Institute for  
Business Value



## How IBM can help

Automotive companies need to manage disparate sources of data across the enterprise and ecosystem in a highly secure way. Using such data, IBM helps automotive executives provide new services that the connected consumer needs and expects from the vehicle experience. Our deep global automotive expertise and innovative technologies such as Watson for analytic capabilities can meet OEM and supplier needs to help enable higher brand loyalty and customer satisfaction. Please visit [ibm.com/industries/automotive](http://ibm.com/industries/automotive).

By Noriko Suzuki,  
Hideo Yoshimura,  
and Ben Stanley

## Key takeaways

### **Reinvigorate the brand**

Both consumers and automotive executives put less emphasis on the brand in an autonomous, mobility-as-a-service paradigm. Brands need to differentiate by prioritizing digital experiences over driving features.

### **Reinvent the experience—for both consumers and employees**

Applying digital technologies to optimize processes and reduce costs isn't enough. Using these technologies to reinvent experiences, focus, and ways to work is essential to creating previously unattainable value.

### **Reinforce the expertise**

The shortage of expertise already impacts the automotive industry today—and poses a greater challenge in the future. Finding the right skills in house while also accessing them throughout the ecosystem are critical to a company's success.

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## Your morning commute in 2030

*It's a sunny Tuesday morning, and Hana Takahashi is ready to leave for work. She is a Vehicle Digital Experience Engineer at a major Japanese automaker.*

*The vehicle—let's call it "ACES" (Autonomous, Connected, Electrified, and Shared)—that she ordered Sunday night arrives and she gets in. ACES "recognizes" Hana based on her biometric information. It downloads her digital mobility profile and information to provide her with a personalized in-vehicle digital experience while she travels to work.*

*ACES quickly scans her health vitals and coordinates with her fitness app. It checks her house in case the TV or other appliances were left on. ACES suggests she might want to walk the last mile because she missed her exercise target last week.*

*Friday is Hana's parents' anniversary, and she still needs to get them a gift. She passes the concert hall and remembers her parents had expressed an interest in attending an upcoming event. She asks ACES' concierge service to check with the concert hall for tickets and, if available, purchase the best two seats for Friday night. Success! ACES purchases the tickets and arranges for a vehicle to pick her parents up.*

*Next, Hana has ACES review her list of errands, which includes getting her laundry, having groceries delivered, picking up her children, as well as other matters she needs to attend to. It occurs to her that her team might be able to create an artificial intelligence app for ACES that could optimize the logistics of her different errands and schedule use of the appropriate vehicles for her needs.*

*Hana is excited about the possibilities of the app and has ACES check both her schedule and that of her agile team to set up a design-thinking workshop to explore different scenarios for the app.*

*As she arrives near her destination, ACES drops her off to walk the last mile. It uploads new learnings and personal preferences to her digital mobility profile and wishes her a good day. ACES then clears its memory of Hana's information and sets out to pick up its next scheduled customer.*

Does this all sound a bit far-fetched? In fact, thanks to digital technologies, these and many other vehicle capabilities and mobility services are expected to be readily available by 2030.



# 28%

of consumers say the vehicle brand wouldn't matter to them in an autonomous, mobility-as-a-service paradigm, but **cost and convenience** would



# 58%

of automotive executives say that to succeed or even survive, their **organizations need to digitally reinvent themselves**



# 276 billion

automotive executives **expect the industry to spend over 276 billion yen** to reskill their employees by 2030

Many predictions about the automotive industry in 2030 support this vision:

- The sales of autonomous/AI cars are expected to be 4 million in 2040, consisting 33 percent of total vehicle sales<sup>1</sup>
- The global mobility-as-a-service (MaaS) size is predicted to reach 9.9 trillion yen (USD 90 billion) by 2050<sup>2</sup>
- Software will account for 90 percent of innovations in the vehicle, and lines of code will be a hundredfold what they are today<sup>3</sup>
- Car-sharing could make up 26 percent of global miles.

Clearly, technology advancements and consumer expectations are the constant drivers of change over the next ten years (see Figure 1). Sustainability is driving the focus on electric cars, and the need for new skills is causing shortages in the workforce. Personal mobility serves as an even greater influence as the sharing economy grows. At the same time, the influx of outside competition delivers new value and displaces traditional automotive companies.

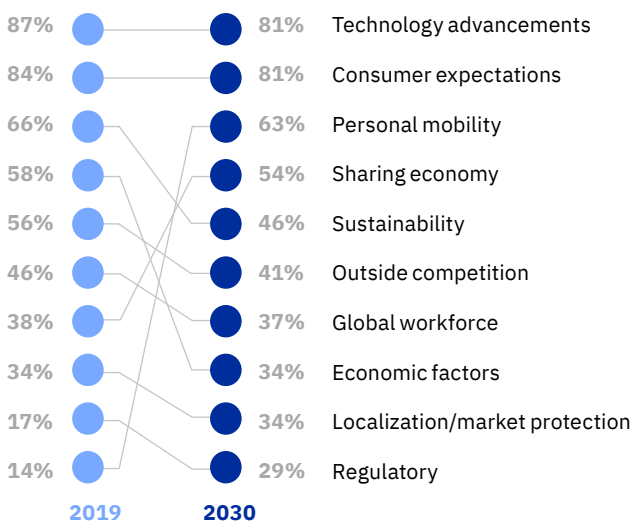
Regardless of how quickly the future materializes, two things are certain. First, digital technologies create entirely new ways to foster seamless touchpoints with consumers. They provide insights that deliver personalized services and integrate the vehicle with various aspects of a person's life. And second, consumers expect the digital experiences they get from the vehicle to be as good or better than those they get from their other smart devices.

“Digital disruption will have a great impact on the automotive industry; implementation of AI and machine learning will improve the productivity and efficiency at great scale.”

**Chief Financial Officer**, Original Equipment Manufacturer (OEM), Japan

**Figure 1**

Influencing the industry



Source: Automotive 2030 Executive Survey. Q: What are the most important external influences that will impact the industry today and in 2030? Select 5 for today and 5 for 2030.

The automotive industry was born and has operated for the past 100 years on a single business model—designing, producing, selling, and servicing vehicles. But radical change is coming fast for the global automotive industry. What actions can the industry take to accommodate this change? How can an automotive organization evolve to operate and innovate like a high-tech company that centers its business on digital and data? And how can automotive companies distinguish their brands by developing and conveying an ability to execute faster, more flexibly, and at greater scale than competitors?

To glimpse into the future, the IBM Institute for Business Value (IBV) conducted the Automotive 2030 Consumer Survey with 1,262 respondents from Japan. In addition, the Automotive 2030 Executive Survey had 140 automotive executive respondents from Japan (see “Methodology” on page 22.) These were part of a larger global study entitled, “Automotive 2030: Racing toward a digital future.”<sup>5</sup>

Fifty-eight percent of surveyed automotive executives in Japan say that to succeed or even survive, they need to reinvent their organizations with digital technologies. And 35 percent have a high sense of urgency. While the need to digitally reinvent is higher than the global average (50 percent globally) the sense of urgency is lower (42 percent globally). The lower sense of urgency comes at somewhat of a surprise considering the “2025 Digital Cliff” study developed by the Japan Ministry of Economy, Trade and Industry.<sup>6</sup> It warns that Japanese companies across multiple industries need to address existing data, systems, skills, and cultural issues now to truly achieve digital transformation by 2030. If they do this, Japan’s real GDP could improve in 2030 to over 130 trillion yen (USD 1.2 trillion).

Even something as sacred as the vehicle brand could lose importance in the MaaS world—unless the digital experience earns consumer loyalty.

## Digital in the driver's seat

Traditional descriptions of how consumers experience the vehicles focus on aspects of driving their cars. Automotive companies talk about features such as “handling,” “horsepower,” or “styling.” And within the current single ownership model, these attributes often work.

But vehicles are transitioning to being more automated and autonomous. Less time is spent driving, and more time is available for occupants to do other activities. Their focus inevitably turns from driving the car to the digital experience inside the vehicle. Attributes such as “connected,” “personalized,” and “seamless” become more viable and desirable.

For many people, getting into a car and going somewhere is a waste of time. They stop what they are doing, travel to their destinations, and then return to their previous activities or start something new. One estimate shows Japanese consumers spend an average of 78 minutes per day in their vehicles.<sup>7</sup> This time could be used for other tasks, such as online shopping, making vacation reservations, or watching personalized news reports. Virtually all of these options and more could be accessible directly through the vehicle.

Automotive companies have a tremendous opportunity to create in-vehicle digital experiences that can attract consumers to their brands. With the ability to learn from, configure to, and personalize occupants' preferences, vehicles become the most sophisticated smart device consumers use. Now occupants can focus on what activities they want to pursue while in the vehicle. The interruption of traveling changes from “time wasted” to “time well-spent.”

## Gauging interest in digital mobility

An important indicator of the consumer's desire for mobile digital experiences is their overall adoption of digital technologies. And while in-vehicle digital technologies can remain complicated, consumers who use the technology typically have embraced other forms of digital.

Another factor is whether people live in urban or rural settings (see “Methodology” on page 22). People who live in urban settings have more mobility options. Owning a personal car has higher costs and is less convenient due to space constraints and traffic congestion. People who live in rural settings often do not have alternative convenient mobility options, so they prefer to own a vehicle.

From a global perspective, we see that consumers living in urban settings tend to be higher users of digital technologies than those residing in rural areas. But, in Japan, there doesn't seem to be a significant difference in many cases. Twenty-six percent of urban consumers regularly use social media, compared to 28 percent of rural users (see Insight: “Japanese consumers offer fewer opinions”). Also, 30 percent of urban consumers use multiple digital devices each day, as opposed to 25 percent of rural users. And finally, only 18 percent of urban consumers have a digital assistant in their homes, with only 11 percent of rural users using these devices.

Urban and rural consumers differ slightly in their attitudes toward sharing personal information in exchange for value. Twenty-seven percent of urban consumers are willing to share their medical information in an emergency, versus 30 percent of those who live in rural areas. Twenty-two percent of urban users say they will share their mobility information in return for better products and services, compared to 19 percent of rural consumers. Seventeen percent of urban consumers indicate they would be willing to share financial information during e-commerce transactions from vehicles, versus 13 percent of rural users.

The consumer’s mobility digital expectation includes the vehicle’s cognitive capabilities. While most of the discussion is about the ability of the vehicle to drive itself, digital technologies, such as artificial intelligence (AI), Internet of Things (IoT), and cloud, can fuel many other features. Vehicles will be able to recognize occupants and personalize the content displayed to them. Vehicles will also continuously learn and offer new suggestions based on consumer interests. And most significant, vehicles will be able to engage their occupants in natural conversation.

The ability to talk, understand things in context, and help people can be a great advantage for those not technically astute or comfortable with the technology in the car. Figure 3 shows the interest level consumers have in the cognitive capabilities of future vehicles. Again, the difference between urban and rural is very slight.

## Insight: Japanese consumers express fewer opinions

Japanese respondents were less opinionated among all countries surveyed (see Figure 2). In questions related to their desire of the digital mobility experience, 48 percent of Japanese respondents were neutral. This tendency is consistent with past IBV surveys such as “A New Relationship—People and cars.”<sup>8</sup>

**Figure 2**

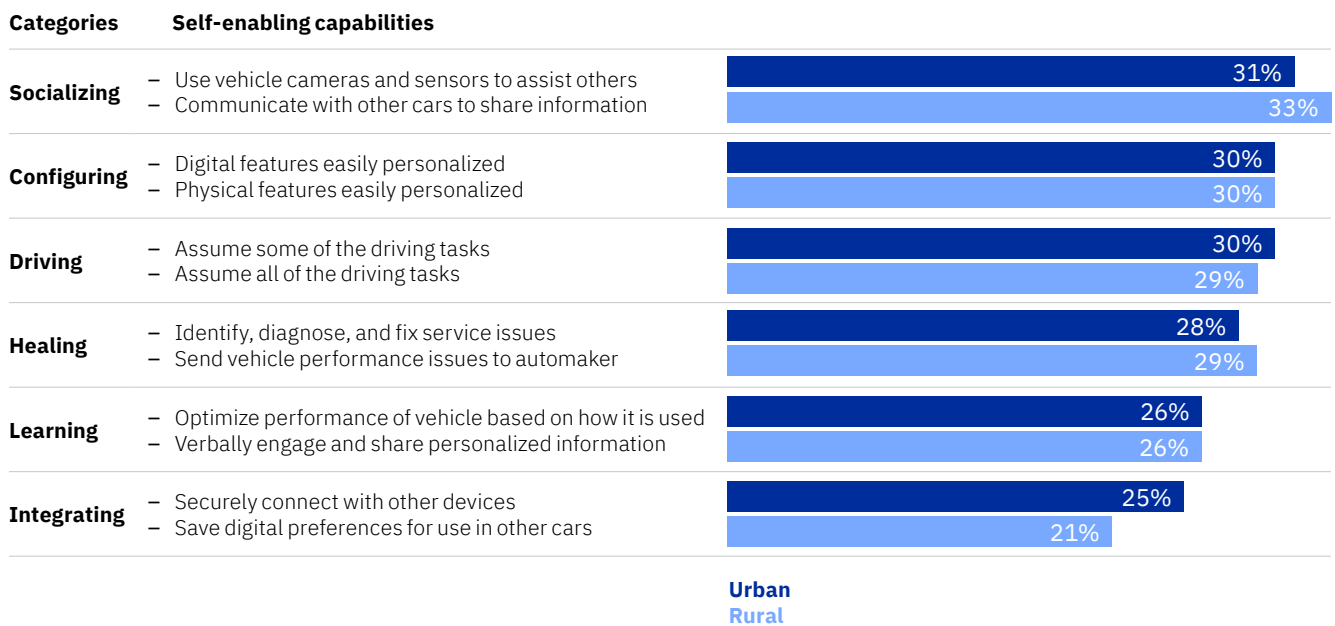
Japanese consumers provide more neutral responses.

Country	Neutral responses
Japan	48%
S. Korea	40%
Germany	37%
United Kingdom	30%
United States	29%
China	27%
Brazil	24%
India	21%

Source: Automotive 2030 Consumer Survey. Average number of respondents who answered 3 in a 1 to 5 ranking

**Figure 3**

The ultimate digital device



Source: Automotive 2030 Consumer Survey. Q: How interested would you be in the following capabilities in future vehicles? Rank 1 to 5. 4/5 responses.

With people having time on their hands for other tasks besides driving the car, mobility services will be a critical consideration. For consumers who are health conscious or have a medical condition, the vehicle will be able to monitor their health, alert them of issues, and share the information with other health-related devices.

Concierge capabilities can assist in locating and reserving the nearest hotel or make dinner reservations at a favorite restaurant based on estimated travel time.

Location-based marketing and sales promotions will be available. Connected life services allow the vehicle to preheat the oven and turn on the lights while traveling to the consumer’s home. Figure 4 reveals those services both urban and rural consumers report they are most interested in.



Besides the cognitive functionality in the vehicle and the mobility services consumers can use while they move around, they are also increasingly interested in how they can move around using non-ownership models of transportation.

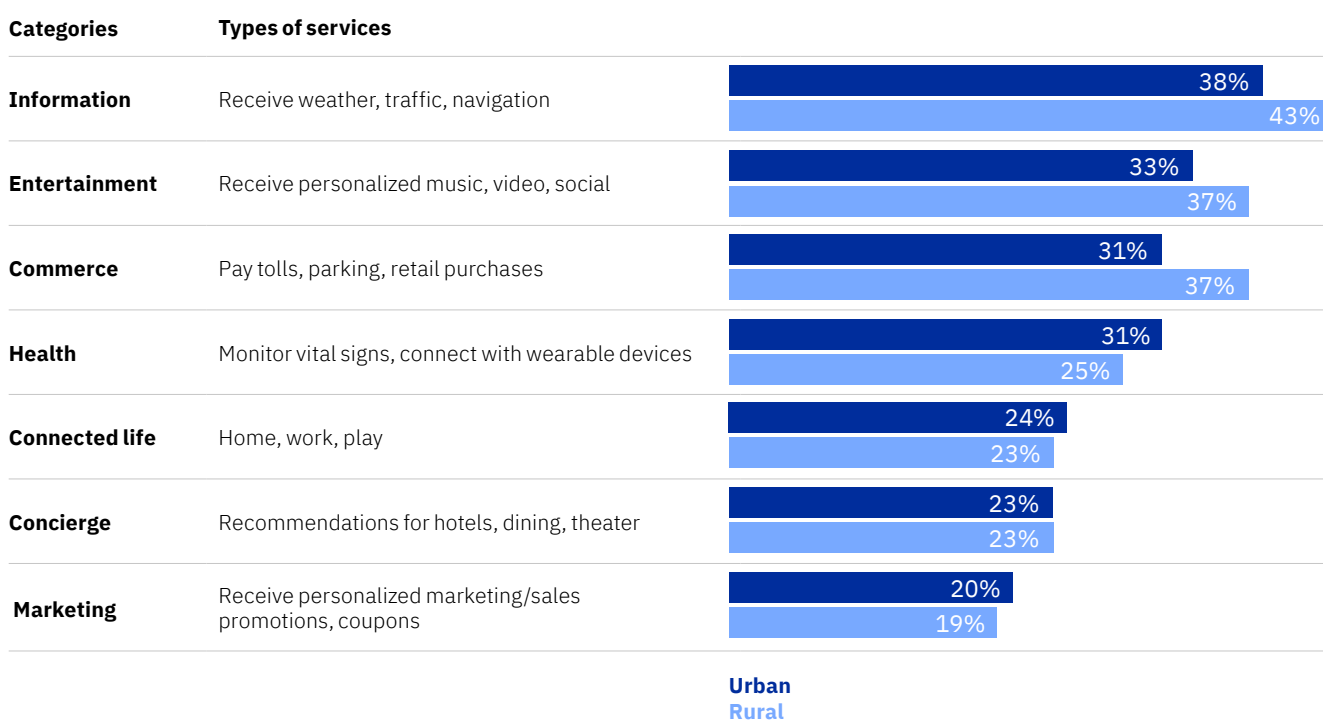
Once again, urban and rural users express different preferences. Twenty-two percent of urban consumers say they are strongly interested in ride-sharing, versus 14 percent of rural. Twenty percent of urban consumers cite

strong interest in “e-hailing,” compared to 16 percent of rural. Fifteen percent of urban consumers say they are strongly interested in peer-to-peer car sharing, almost double the 8 percent of rural respondents who shared this interest.

The ability to hail a taxi, share a ride, or borrow your friend’s car has been available for a long time. But doing it “on demand,” where the car comes to you through an integrated digital mobility platform, has caused consumers to reconsider owning a car at all.

**Figure 4**

When drive time becomes thrive time



Source: Automotive 2030 Consumer Survey. Q: How interested are you in being able to do other things from your car while moving from one place to another? Rank 1 to 5. 4/5 responses.

“The major value creator will be the customer experience and digital initiatives, which will help us to improve our brand value.”

Senior Executive, Digital Services, OEM, Japan

Looking at each of these mobility components—digital maturity, vehicle capabilities, services, and transportation modes—can give us insight into consumer desires. Analyzing these components allows us to create four distinct clusters of consumers with similar digital mobility interests (see Figure 5).

The Pacesetters and Fast Followers groups are the most technologically advanced and, together, represent 25 percent of urban respondents and 24 percent of rural respondents. These groups are users of technology and have indicated a strong interest in different mobility options.

The Pack, which represents 58 percent of urban respondents and 63 percent of rural, is somewhat hesitant about future mobility capabilities and services. But this group could be influenced once they better understand the potential value of these services. Finally, Spectators are happy with the status quo and generally inflexible about exploring new mobility solutions.

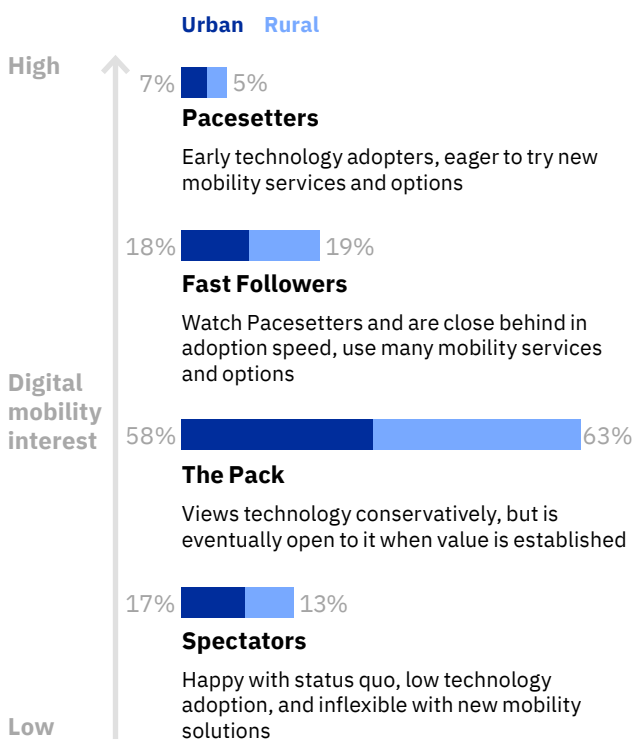
Automotive companies should pay close attention. Being able to personalize the experience based on these consumer groupings can encourage greater interest and adoption.

### Survival of the brand

One critical question that looms is what happens to the brand in an autonomous MaaS world. As electric, autonomous vehicles start roaming the streets, fuel and driver charges could disappear, drastically reducing the cost-per-mile. One study estimates the cost-per-mile could be as low as 7.5 yen (6.8 cents).<sup>9</sup> How can automotive companies prevent their vehicles from becoming nothing more than nondescript, cheap transportation vehicles—with the brand, which was once the company’s identity, sinking into irrelevance?

Twenty-eight percent of consumers say the brand wouldn’t matter to them—cost and convenience are most important. In addition, another 52 percent are undecided whether the brand is important or not. But consumers are willing to look beyond cost and convenience if the brand can provide other experiences—especially digital (see Figure 6).

**Figure 5**  
Digital mobility adopters

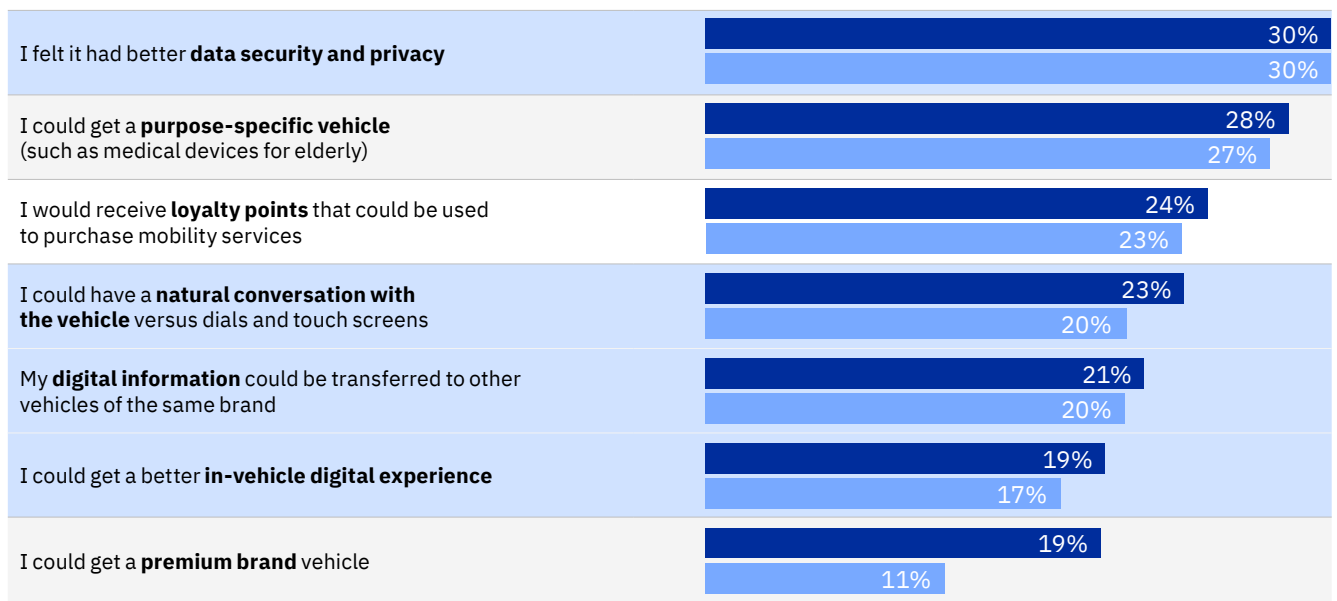


Source: Automotive 2030 Consumer Survey. IBM IBV analysis.

**Figure 6**

Brand magnets

**I would request a specific brand if...**



Functionality  Digital  Physical  Other

**Urban**  
**Rural**

Source: Automotive 2030 Consumer Survey. Q: When thinking about an e-hailing service that uses self-driving cars, how important is the brand to you? Rank 1 to 5. 4/5 responses.

Consumers expect their personal data to be secure and private. This becomes even more complicated when using an e-hailing or car-sharing service where the personal data must only be accessible during the time physically spent in the vehicle. This data cannot be shared with vehicles from competing brands. But the ability to transfer personalized digital information from one vehicle to another within the same brand can create loyalty regardless of the mobility platform used.

Digital experiences are not the only differentiators that motivate consumers to stick to a brand. Purpose-specific vehicles are also desirable. A parent with two children would want a vehicle with car seats. An elderly person

with medical needs may want a vehicle equipped with their required medical devices. A person with disabilities needs easy access and the ability to store equipment such as a wheelchair. Finally, the automotive industry could seek inspiration from industries such as travel to introduce loyalty programs.

Interestingly, the ability to have in-vehicle digital experiences is rated higher than procuring a premium brand. And the consumer's latest, best experience becomes the gold standard, regardless of what industry that experience was from. Automotive companies should look at other industries to benchmark, learn, and emulate.

# “Sustainable growth should be a major concern for the automotive industry.”

**Senior Executive**, Manufacturing, OEM, Japan

## New routes to growth

As previously mentioned, the traditional single vehicle ownership business model has been the industry mainstay. Automotive companies have built large and successful businesses from this model. And the industry plays a significant role in global economies. For example, according to 2017 estimates, the automotive industry was responsible for 12 percent of the gross domestic product (GDP) in the US, 12 percent in Japan, 14 percent in Germany, and 10 percent in South Korea.<sup>10</sup>

For many, the traditional ownership model will continue to be a valid option in 2030. But a growing opportunity exists for automotive companies to exploit new routes to growth through mobility. One estimate shows global revenues from on-demand mobility and associated services growing from 3.3 trillion yen (USD 30 billion) in 2016 to 165 trillion yen (USD 1.5 trillion) in 2030. This is potentially an additional 30 percent in revenues and a tremendous opportunity for automotive companies—or at least for those with a renewed focus beyond traditional manufacturing and marketing.<sup>11</sup>

### Innovation is the differentiator

For automotive companies to differentiate their brands, innovation continues to be of paramount importance. Seventy-seven percent of surveyed automotive executives say innovation is among the most significant attributes for defining competitive advantage.

The importance of innovation drives reinvention across multiple aspects of automotive organizations. Eighty-seven percent of executives say strategy innovation is critical to creating the agility to address rapid change and opportunities. Strategy innovation is also critical as companies explore and pilot new business models for ownership, mobility services, and data. Even though process innovations—such as Kaizen and lean—were born in Japanese automotive production facilities, companies continue to work to create more operational efficiencies. Eighty-four percent say process and operations innovation

is very important. Of course, products and services innovation remains high, with 81 percent of executives identifying it as a key driver of success.

For organizations looking to redefine or even create new industries, industry model innovation is essential, according to 80 percent of executives. And even the different roles a company can play in the multiple ecosystem networks is important, with 64 percent of executives citing enterprise model innovation. Sixty-two percent of executives say innovation will play a strong role in new revenue models. This is especially true as automotive companies expand their portfolios beyond traditional vehicle sales to include data revenue and more.

### Reviving the entrepreneurial spirit

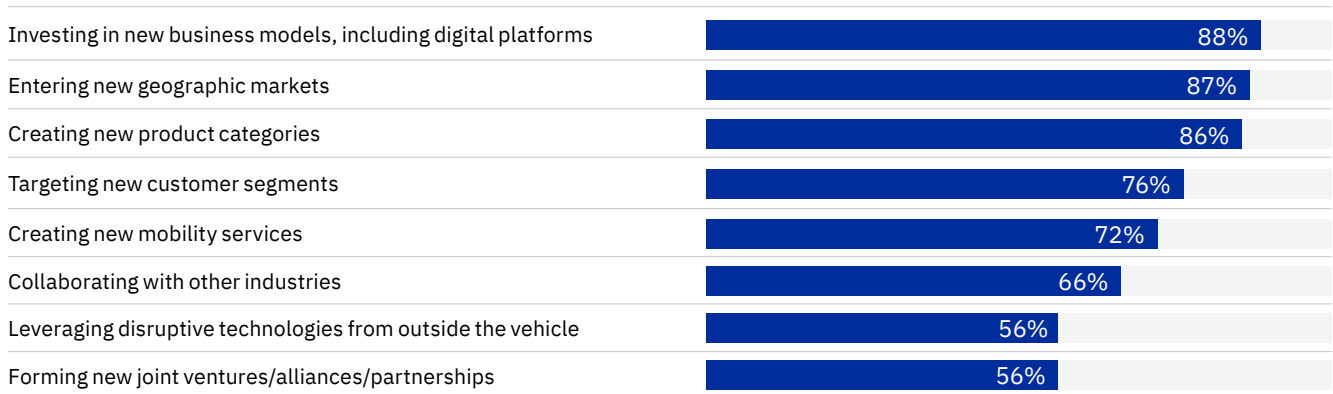
The automotive vehicle was born from an entrepreneurial spirit and a desire to create a better, safer way to move people around. And the industry has been a global leader in research and development spend over the years, continually improving the performance of its vehicles. Yet, until now, little has been done to introduce fresh, new ways for people to travel.

However, the emergence of digital technologies has changed this. Nontraditional companies have disrupted the marketplace with new business models and new ways to move people from one point to another. Industry executives have taken notice and now realize that, if they don't reignite their entrepreneurial passion, they might be left in the dust. This could be why 89 percent of executives expect a culture of entrepreneurialism and new ideas to significantly contribute to their success and growth.

When asked which routes to growth were most viable, executives rated new business models, including digital platforms, the highest (see Figure 7). Executives also see entering new geographic markets as critical, with global companies continuing their push into growth markets. And conversely, automotive companies based in growth markets are making their presence known globally. This will be particularly true as electric vehicles become more mainstream over the next ten years.<sup>12</sup>

## Figure 7

### Routes to growth



Source: Automotive 2030 Executive Survey. Q: Where do you see the best opportunities for your organization's growth looking toward 2030? Rank 1 to 5. 4/5 responses.

When we looked at specific countries, executives in Brazil (83 percent), South Korea (79 percent), and the US (73 percent) rated “collaborating with other industries” as one of their top opportunities for growth. India (80 percent), Brazil (76 percent), China (76 percent), Mexico (76 percent), and Germany (74 percent) were above the average for other respondents in selecting “creating new mobility services.”

The explosion of on-demand mobility and associated services over the past several years—and the expectations for these services in the future—is creating new revenue streams for the automakers that take advantage of them.

To determine the potential impact of mobility services on overall revenue pools, we asked executives how their portfolios could change by 2030. We delineated the revenue portfolio into three groups: traditional one-time vehicle sales, mobility services, and other services (for example, aftermarket, captive finance, and insurance).

Executives reported an average of 80 percent of their revenue comes from traditional sales, 5 percent from mobility services, and the final 15 percent from other services. Projecting to 2030, respondents reported the average percentage from traditional sales is expected to drop to 76 percent, mobility services to double to 10 percent, and other services, at 14 percent, to remain about the same. For a company with total revenues of 11 trillion yen (USD 100 billion), this would be a 550 billion yen (USD 5 billion) increase for mobility services, not taking into account overall revenue growth between 2019 and 2030.

Of note is that 55 percent of the executives we surveyed generate revenue from mobility services today. Based on their expectations, 88 percent of executives anticipate they will do so by 2030.

### Branding for safety and personalization

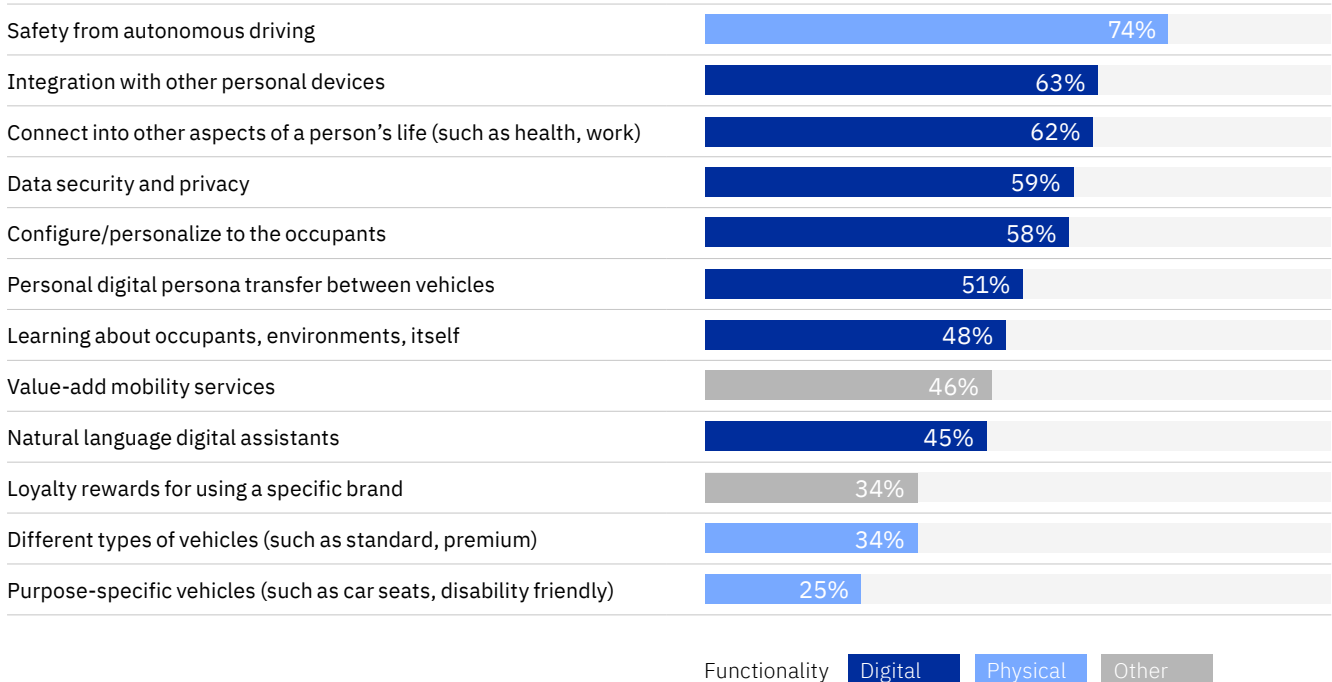
Today, 79 percent of automotive executives say the brand is a competitive advantage. But only 56 percent expect this to be the case by 2030. This is a decrease in brand confidence by 29 percent. If automakers don't find a way to attract consumers, their brands could become irrelevant. How can automotive executives enhance the value of their brands and retain customer loyalty?

Seventy-four percent of executives identify safety as a brand differentiator for autonomous vehicles (see Figure 8). This makes perfect sense—a brand perceived as unsafe will not survive in the autonomous world. Following safety, digital in-vehicle experiences compose the next seven of eight highest-rated attributes.

**Figure 8**

Experiences that stick

#### Brand loyalty attributes



Source: Automotive 2030 Executive Survey. Q: What will be the most important differentiating attributes for creating customer loyalty and "stickiness" to a vehicle brand when using on-demand mobility services? Select 6.

“Bringing more agility in the business workflow will possibly make the integration of changes easier and more dynamic.”

**Chief Information Officer, OEM, Japan**

In fact, 79 percent of executives expect customer experiences to be greatly enhanced by digital services. The vehicle’s abilities to learn about its occupants, integrate with other devices, protect and share personalized information within the brand, and have a natural conversation can all lead to greater brand eminence and loyalty.

Brand loyalty drives choices that transcend business models. Imagine a scenario in which a young couple is using an on-demand e-hailing service. It provides them with not only the cost and convenience they desire, but also with the vehicle brand that can give them the personalized, digital experience they’ve become accustomed to. Now this couple starts a family and may want the convenience of a personal car. They could conceivably buy a vehicle from the same brand used for e-hailing.

Executives have low expectations about the perceived value of a premium brand. Only 34 percent anticipate different categories of vehicles (such as premium) will be brand differentiators.

One category where executives should reconsider their opinion is with purpose-specific vehicles. Only 25 percent of executives say this is a differentiating attribute. But for urban and rural consumers, this option was the second highest rated for selecting one brand over another.

Loyalty points are another way to create brand stickiness. Automotive executives seem less optimistic than consumers about this option and may want to consider it more seriously.

## New ways to work

Today’s automotive companies face intense competition from startups and internet ventures. These nimble organizations are becoming successful in mobility with new business models, agile processes, rapid releases, and laser-sharp focus on the customer. To innovate and scale, industry leaders need to combine the creative capabilities and skills of a startup with the traditional strengths of an industrial enterprise.

Ninety percent of executives say incorporating new ways to work will contribute to the success of their companies. These include integrating design thinking, co-creation, agile processes, and data-driven decisions into their organizations’ cultures. Eighty-nine percent of executives agree that promoting agile and flexible business processes and technical architectures are critical to their success.

The ability to build dynamic cross-functional teams that can quickly learn from market experiences is important for 75 percent of executives. Seventy-three percent say agile teaming will foster the ability to rapidly transfer skills and knowledge development in the transformation from idea, to pilot, to production.

Dynamic, cross-functional teams are not bounded by the organization. In today’s world of rapid development and co-creation, these teams need to expand beyond the organization into the ecosystem and even become cross-industry.

For example, Toyota revealed plans to build a prototype “city” of the future on a 175-acre site at the base of Mount Fuji in Japan.<sup>13</sup> Envisioned as a “living laboratory,” the Woven City will serve as a home to full-time residents and researchers who will be able to test and develop technologies, such as autonomy, robotics, personal mobility, smart homes, and artificial intelligence, in a real-world environment.

“The auto industry is expected to transform to a platform-based business and run online with ease in the coming years.”

Senior Executive, Manufacturing, Supplier, Japan

### Partnering through platforms

Automotive executives are enthusiastic about the benefits of digital platforms. Eighty-five percent say platforms enable greater innovation of products and services, while 86 percent say platforms enable greater personalization for the consumer. Seventy-nine percent say platforms contribute to lowering industry barriers of entry, and 74 percent say platforms facilitate greater value from data and information. Digital platforms drive greater collaboration and trust between partner organizations, according to 71 percent of executives surveyed.

Five types of digital platforms are providing value today (see Insight: “Driving new growth with five types of digital platforms”). Business, asset, and technology platforms are the most active (see Figure 9). This fits with the product-focused business model the industry currently embraces. Multiple businesses are brought together, collaborating with technology, facilities, and expertise, to design, build, sell, and service vehicles.

But as we look toward 2030, we see the experience platform becoming much more relevant. This supports the shift to a greater digital focus that creates more personalized, seamless experiences with consumers—and takes advantage of the huge amounts of data accessible to automotive companies. One estimate has an autonomous vehicle, driven an average distance, generating up to 4,000 GB of data per day.<sup>14</sup>

But today, the use of multiple platforms remains relatively immature. Only 16 percent of executives say their organizations are operating or participating in three types of platforms. This is expected to grow to 31 percent in 2030.

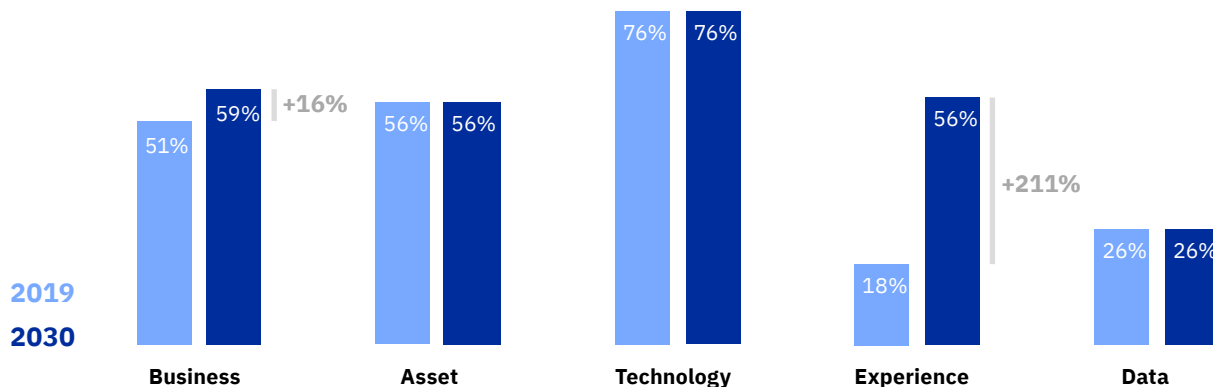
By 2030, executives in our survey estimate revenue from platforms will be 14 percent of their total, a 75 percent increase over today’s platform revenue. To accomplish this, industry executives expect to increase their annual investment budgets dedicated to industry platforms from 6 percent to 10 percent over the next ten years. This equates to a 38 percent increase.

### Data-driven strategies

Automotive companies are sitting on a treasure trove of data—data generated by their businesses, products, services, customers, and other external sources. The potential uses of this data are tremendous—from greatly improving industry and company practices, to personalizing consumers’ in-vehicle experiences, to creating new mobility options. Eighty-nine percent of executives say their organizations understand the strategic value of data.

**Figure 9**

The platform play



Source: Automotive 2030 Executive Survey. Q: What types of digital platforms will your organization operate or participate in? Select all that apply.



## Insight: Driving new growth with five types of digital platforms

### **Business platform**

Creates integrated environments that support and enable ecosystems to operate.

### **Asset platform**

Provides or manages physical assets used for production either within supply chains or networks, or other critical activities within ecosystems.

### **Technology platform**

Provides technological capabilities that cannot be sourced affordably elsewhere.

### **Experience platform**

Creates and orchestrates the end-consumer experience.

### **Data platform**

Provides critical or essential data in the ecosystem.

Automotive executives recognize many opportunities where insights from data could create a strategic advantage. They report some more progressive ways data insights could drive value, including:

- New experiences: Creating personalized touchpoints with consumers (cited by 94 percent of executives)
- New focus: Defining and testing new business model ideas (89 percent)
- New ways to work: Enabling a responsive organization (78 percent)
- New expertise: Developing opportunities with other industries (90 percent).

When asked where their organizations are today in data usefulness, executives indicate they are using data to create value in how they work. Ninety-one percent say their organizations access both structured and unstructured data that come from a variety of sources. These sources could include IoT devices in plants, vehicle sensors, and cameras, or dealer technician reports that include handwritten analysis. Eighty-one percent of executives report the ability to extract and link data from these and many other sources. Eighty-two percent are creating actionable insights from the data they collect.

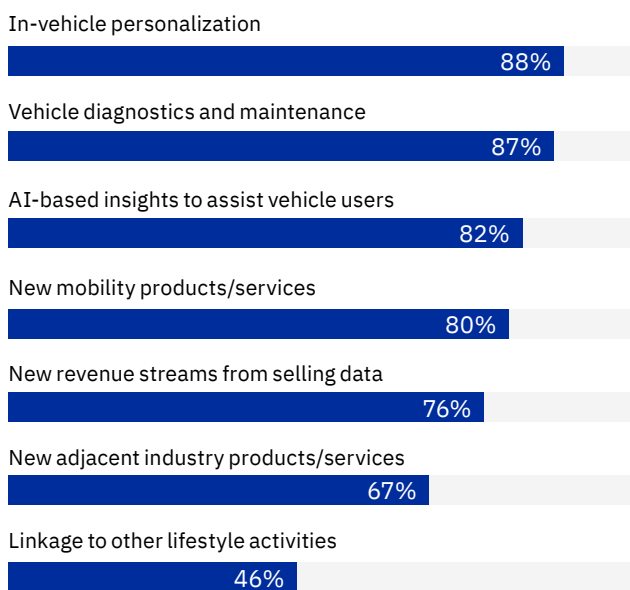
Also, 82 percent of executives report they are applying AI and other emerging technologies to uncover new insights. These could include identifying undefined or unmet consumer needs and sharing data with business partners to uncover product and service opportunities.

The analysis and use of vehicle-specific data will also bring new value to organizations and consumers. Figure 10 illustrates the different ways executives expect vehicle data to contribute to their organizations' value.

In-vehicle personalization tops the list. Consumer experience opportunities, such as personalization, AI-based insights about occupants, and linkage to lifestyle activities, are digital capabilities that can create brand loyalty. Vehicle diagnostics and maintenance are close behind. Being able to proactively diagnose and fix issues using insights from data is especially valuable because cognitive vehicles handle more maintenance situations on their own. New mobility and adjacent industry products and services, along with the ability to sell data, create new income streams for automotive companies and their business partners.

**Figure 10**

Data-driven value



Source: Automotive 2030 Executive Survey. Q: Where will vehicle usage data drive the most value in your organization? Rank 1 to 5. 4/5 responses.

While 82 percent of executives we surveyed say their organizations are making the most out of the data they collect, most companies may not actually be doing so. In the 2019 IBM Global C-Suite study, “Build your trust advantage: Leadership in the era of data and AI everywhere,” only 26 percent of Japanese executives across all industries have identified and validated effective use cases for data utilization.<sup>15</sup> Yet paradoxically, companies reinvented through digital technologies will be powered by data. Mining data from all business facets, including data that describes how products and services are used and data that customers allow access to, can facilitate deep context and insights. These can support new growth for companies and new experiences for both employees and consumers.

### Dominance of digital

Two out of three executives agree that some OEMs will significantly outsource their vehicle production operations to focus on becoming digital companies.

Digital initiatives are expected to bring high value across the business functions of the organization, with those functions directly impacting the consumer rated the highest. Digitized products and services (78 percent) enable the brand transition from functions and features to experiences. Digitized marketing and sales (73 percent) can allow multiple, seamless touchpoints with consumers during the use of the vehicle, as well as giving marketing and sales executives continuous feedback about what consumers want. New personalized products and services can be offered in both subscription and pay-as-you-use models.

Sixty percent of executives expect new business models to be enabled through digital initiatives. The ability to integrate the vehicle to other aspects of a consumer’s life gives automotive companies the opportunity to explore new business models in industries such as insurance, finance, and health.

In addition, 58 percent say supply chains will be significantly impacted through the use digital technologies such as sensors, IoT, and AI. The ability to have actionable insights into the movement and condition of material and goods throughout the supply chain allows companies to proactively predict and respond to issues—instead of reacting after the fact. And manufacturing automation technologies, such as software-based robotic automation, virtual and augmented reality, and wearables, assist workers in finding new ways to improve and optimize the plant floor, according to 46 percent of executives.

When asked how they saw their organizations allocating their investments in digital initiatives over the next ten years, surveyed executives told us cloud computing, AI, and IoT top the list (see Figure 11).

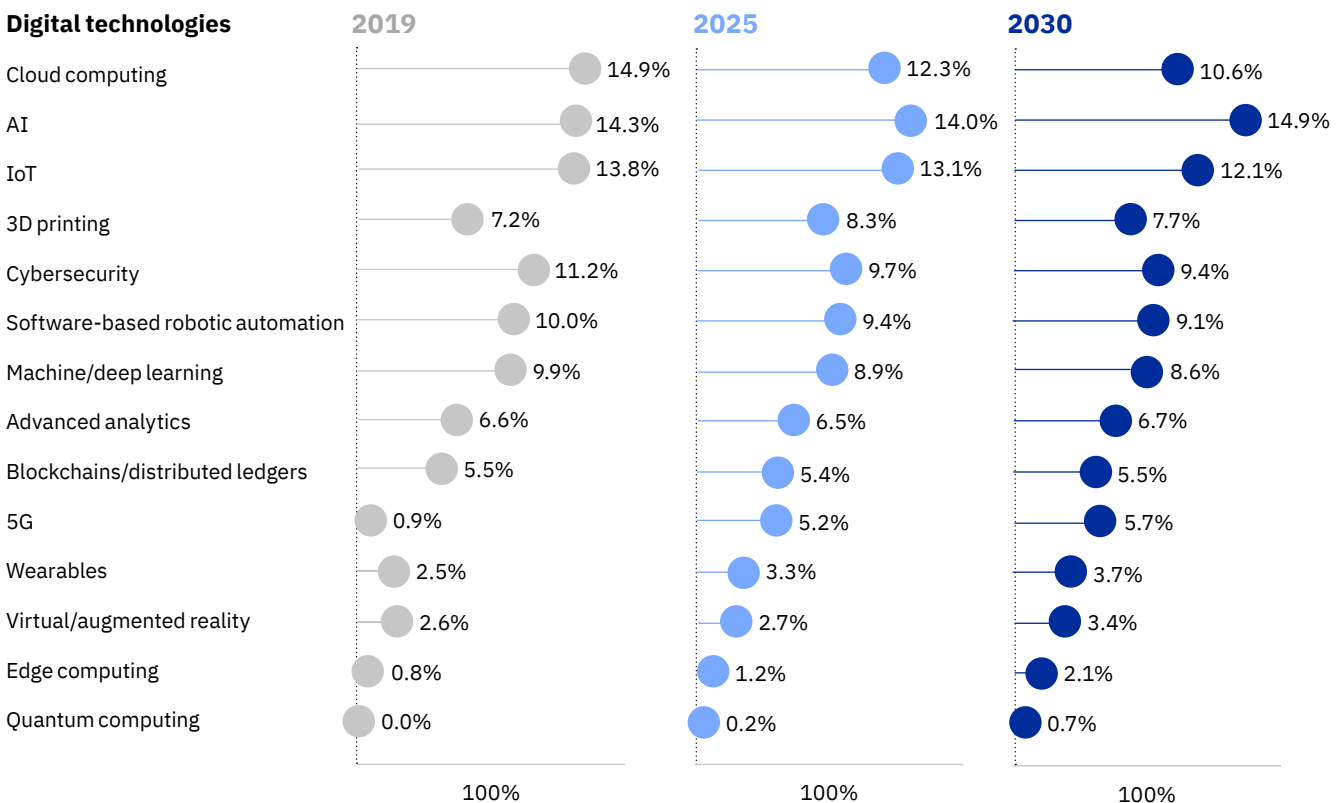
Certain technologies are ascending in industry importance. With improvements in printing technologies and materials, 3D printing is moving beyond just creating prototypes and expanding to low-volume production and re-manufacturing. Accessing 5G communications means faster vehicle connectivity, facilitating high-speed video or gaming applications that demand heavy bandwidth.

Blockchain is gaining momentum in the industry, helping to provide trust and authenticity within the supply chain. Electric vehicle owners could possibly authenticate the use of their car batteries for future revenue streams with blockchain.

Even an emerging technology such as quantum computing is expected to see an increase in investment over the next ten years.

**Figure 11**

Divvying up the digital investment portfolio



Source: Automotive 2030 Executive Survey. Q: Of the total amount of investments planned for the following digital initiatives, what will be applied to each? Assign a percentage to each for a total of 100%. Note: Technologies are ordered based on the highest average across 2019, 2025, and 2030.

# “We are seriously lacking electronics and AI skills.”

Senior Executive, R&D, OEM, Japan

## Expertise becomes the enterprise

With the fast pace of industry change, skills grow obsolete quickly. More recent analysis shows the half-life of skills is now only five years.<sup>16</sup> This means the skills learned today are only half as valuable five years from now—and we don’t even know what we don’t know yet.

The pace at which new jobs are added, especially in the autonomous mobility ecosystem, will have automakers scrambling to fill them. Imagine a “Mobility Traffic Controller” to help navigate autonomous cars in complex scenarios. Or a “Personal Mobility Advisor” who works at a dealership and helps families determine the most appropriate mobility solution for their needs.

Reinventing the digital automotive enterprise requires new skills—not just skills that help workers do things faster. These new skills enable the workforce to perform the digital tasks that can support and create new ways to work.

Companies face a critical decision: what skills to keep in house and what can be provided by outsourcing and partnering. Seventy-seven percent of executives report that using digital platforms to match skills and demand would contribute to organizational success.

### Reskilling the workforce—repeatedly

On average, automotive executives estimate 14 percent of the workforce will need to be reskilled by 2030 to meet the digital needs of their organizations. Sixteen percent of executives report that more than a quarter of their workforce are candidates for reskilling. These numbers do not consider the five-year half-life of skills and the possibility of new jobs, so the final numbers are probably much greater.

For a direct workforce population of over three quarters of a million people, this would mean the industry would spend over 276 billion yen (USD 2.5 billion) throughout the next ten years to bring their workforce up to digital speed. To achieve this, executives expect their training/reskilling budgets to increase by 47 percent.<sup>17</sup>

From a functional perspective, manufacturing, marketing and sales, and connected vehicle executives report the highest need to reskill. From a global perspective, executives in the US, India, China, and the UK have the highest urgency.

Executives rated automotive “hard” skills as most critical by 2030 in five of the top seven skills needed (see Figure 12). These technical skills necessary to design and build a high-quality vehicle have traditionally been essential. But now alternative power, autonomous capabilities, and connectivity are adding to vehicle complexity. Automotive companies don’t readily have the related skills at their disposal.

At the same time, innovative/entrepreneurial and critical thinking/problem-solving are essential as companies reinvent themselves into highly efficient high-tech companies.

Not all skills will be—or should be—hired directly in house. The strategic value of having the skills on staff, the urgency of the need, and the length of time the skills are needed can dictate which of the multiple strategies companies use to fill skill gaps.

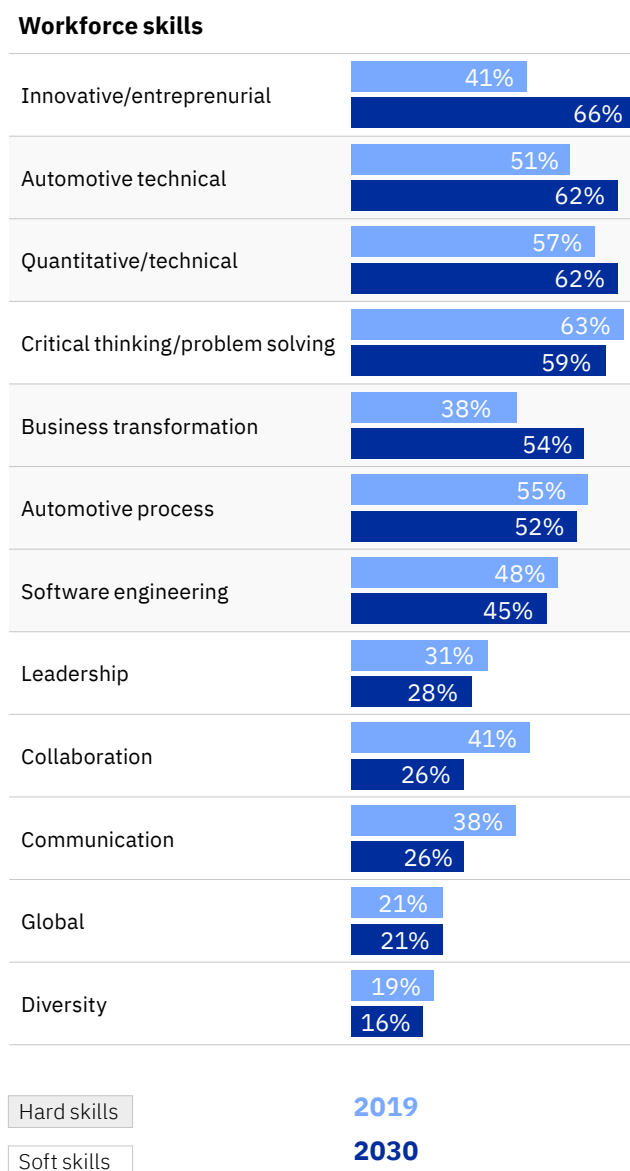
Hiring directly is most preferred, with 93 percent of executives using this approach. Next, 71 percent indicate they would use outsourced resources on a temporary basis. Forty-three percent say their companies would purchase other companies that have the sought-after skills. And finally, 34 percent will outsource the responsibility of the work itself to another company.

### The eclectic automotive ecosystem

When we published our 2008 study, “Automotive 2020: Clarity beyond the chaos,” the focus was industry optimization.<sup>18</sup> Companies were rushing to sell their vehicles in emerging markets such as China and determining how to globally optimize their product development, manufacturing, and skill-based footprints. Limited natural resources and being “green” were beginning to drive investments into alternative fuel solutions. The connected vehicle was just starting to show potential and the term “personal mobility” was seeing use but not necessarily understood.

**Figure 12**

Skills for success



Source: Automotive 2030 Executive Survey. Q: What workforce skills are/will be critical to your organization's success? Select 6.

In 2015, when we introduced our next study, “Automotive 2025: Industry without borders,” digital disruption was in full swing.<sup>19</sup> The invasion of nontraditional companies was offering new ways for people to move around. Consumers were rethinking even owning a car, and automotive companies were scrambling to figure out where they fit in the mobility ecosystem. Consumers were calling the shots now and demanding experiences over functions and features.

For this 2019 study, digital is dominant, consumers are king, and automotive companies, to stay relevant, realize the need to reinvent themselves as high-tech companies within a vibrant ecosystem. Autonomous, connected, electrified, and shared is the mantra for the future. The automotive industry ecosystem is expected to be a mixture of technical, agile, high-performance companies from multiple industries, each bringing its own specialization and value to the mix.

The 140 executives we surveyed reveal some interesting—even paradoxical—observations

- Sixty-one percent say significant consolidation will occur in the industry due to the expected decrease in personal ownership sales
- Seventy-nine percent expect the value of dealers to diminish and the number of dealers to be greatly reduced
- At the same time, 81 percent agree that dealers will expand their value by developing new services to support mobility
- Twenty-nine percent see an automotive company purchasing a technology giant (for example, Amazon or Google) for their digital expertise
- At the same time, 36 percent expect a digital giant to purchase an automotive company for their automotive expertise.

Will these predictions manifest themselves? Time will tell, but they are certainly something to ponder.

## Are you ready to embrace the digital automotive future?

- How will you provide exceptional, personalized in-vehicle experiences that create brand loyalty in an autonomous, MaaS environment?
- By what metrics will you determine your organization's desired platform participation level—participant, owner, or both? How will you set expectations accordingly?
- How can you create a nimble organization that competes with new mobility startups and internet ventures? What is your roadmap for integrating design thinking, co-creation, agile processes, and rapid releases?
- What is your plan to establish a data-driven culture? Remember, this includes a willingness to infuse insights into virtually every action, interaction, and decision.
- What is your strategy to continuously reskill your organization to take advantage of digital technologies that power new ways to work? How will you leverage business partners and other channels to fill skill gaps?

## Action guide

### *Automotive 2030—Japan*

The industry is once again at an inflection point, but this differs from prior crossroads. Previously, the driving factor for change came from the business itself. Expansion into new markets, optimization of global footprints, and sustainable operations caused automotive companies to develop new strategies, products, services, and skills to succeed. The fundamental single-ownership business model stayed the same.

Now, digital technologies and consumer expectations are having a profound impact on all aspects of the business. Even the core business model—one that has sustained the industry for over a century—is under attack. To add to the confusion, an industry that was once closed to others is now open to any entrepreneurial venture that can provide a mobility experience of value to consumers.

Automotive companies have a decision to make. They can seize the opportunity to reinvent their organizations through digital technology—unleashing new experiences, new focus, new ways to work, and new workforce skills. Or they can continue down their current path, running down the clock and risking obsolescence.

We recommend executives take the following actions:

#### **1. Re-examine the brand value. Create loyal customers with personalized experiences that “stick.”**

- Create brand value through digital experiences for differentiation.
- Align digital vehicle profiles with consumer digital profiles to deliver consistency and cross-brand stickiness.
- Use AI capabilities to combine personal information with vehicle usage and environmental information to learn, predict, and optimize the consumer experience.

- Integrate with other aspects of the consumer’s life to create a brand experience that transcends beyond the vehicle.
- Instill a sense of consumer confidence and trust through unparalleled data security and privacy.

## **2. Innovate through platforms beyond “Keiretsu”— promote purposeful collaboration.**

- Look beyond the traditional vertical automotive “Keiretsu” value chain. Standardize business process and data structures/models to make such collaboration go smoothly.
- Identify what is strategically core to the business. The new core capabilities may look different from the traditional automotive core.
- Leverage deep expertise, open workflows, and data synergies to seize the expansion potential within that ecosystem.
- Create “fast and frictionless” entry points for platform participants to enable them to quickly add value.

## **3. Get agile and change fast—cross organizational boundaries within the company.**

- Implement design thinking, co-creating, and agile processes, together with the customer, for rapid idea creation and testing.
- Define and test specific minimum viable products (MVPs). Select successful POVs and scale to the enterprise. Repeat the process with speed.
- Grow and spread the agile culture to the entire organization, across functions. Lean startup methods are derived from Japanese lean production. Reinvent the spirit.
- Use automated processes and self-learning, self-correcting workflows to deepen customer relationships and change the nature of work for employees.

## **4. Exploit and share data.**

- Create corporate-wide data strategy, data architecture, and standardization policies. Align with the corporate business strategy and priorities.
- Continuously uncover new data sources from all facets of the business, the vehicles, mobility services, and customers to gain new insights and opportunities.
- Use AI technologies to curate and enrich data that “thinks” and “acts” to meet specific business needs. Remember, one view of the data does not fit all.
- Relentlessly share data and insights within your enterprise and across your ecosystem to co-create new business models and revenue streams.

## **5. Make your workforce relevant for the new mobility era—shift skills portfolio to increase organizational productivity.**

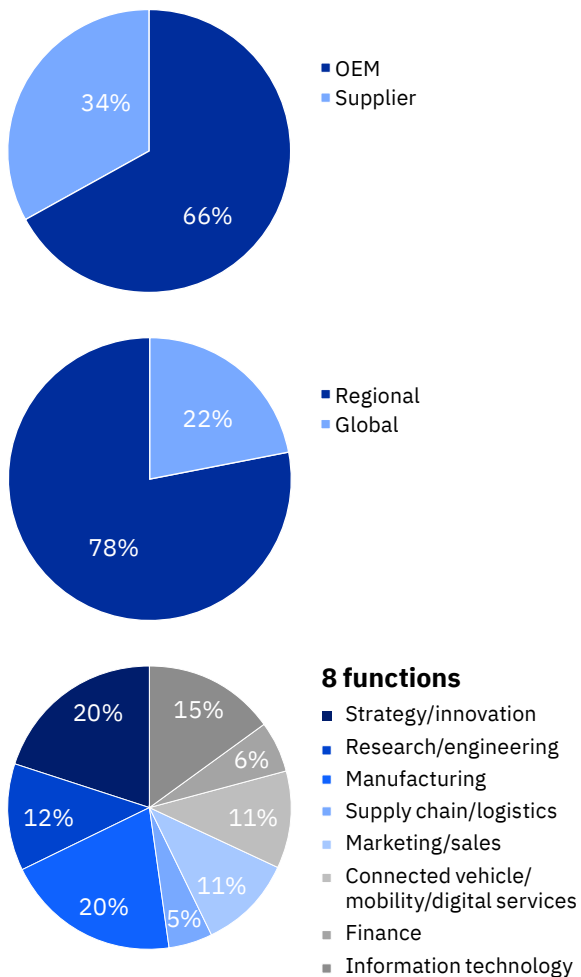
- Review new expertise requirements and implement skills identification.
- Utilize AI, augmented reality, and other technologies to train and supplement worker capabilities.
- Create a learning platform ecosystem to allow all types of content, functions, and multiple parties to connect and interact. Add content to the learning platform at speed and scale, and dynamically personalize learning for every employee. Focus on an engaging learning experience to achieve greater outcomes.
- Leverage outside partners for filling skill gaps, especially skills that are non-core or difficult to train.

# Methodology

## Automotive 2030 Executive Survey

In collaboration with Oxford Economics, the IBV surveyed 140 automotive industry executives in Japan. The objective was to better understand their vision of digital reinvention—a reinvention their organizations need to make in the next ten years to be relevant in the world of future mobility. These individuals included C-suite officers (CEOs, CIOs, CFOs, CMOs, COOs, CHROs, and others) as well as managing directors, executive VPs, senior VPs, VPs, and directors.

This was part of a larger survey where we surveyed 1,500 automotive industry executives across 11 countries.



## Automotive 2030 Consumer Survey

In collaboration with Survey Monkey, the IBV surveyed 1,262 consumers in Japan to better understand their digital mobility interests. These interests include the cognitive capabilities of the car, digital mobility services, and various transportation modes such as e-hailing and ride sharing. We also explored the importance of the brand in on-demand, autonomous MaaS.

Consumers were split between urban and rural environments. Urban respondents were from Tokyo, Osaka, Fukuoka, and Nagoya, while rural respondents were from urban centers with populations less than 15,000 people.

This was part of a larger survey where we surveyed 11,566 consumers across 8 countries.

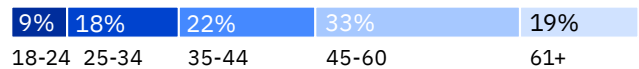
### Urban/rural



### Gender



### Age





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