



Automotive 2025: Industry without borders

Engage with consumers, embrace mobility and exploit the ecosystem

IBM Institute for Business Value

Executive Report

Automotive

How IBM can help

As a global manufacturer, IBM understands the issues that automotive enterprises face. Our automotive industry solution portfolio for product and complex system development, advanced mobility, manufacturing productivity and service excellence has been developed and continuously refined through implementations with clients around the world. It ranges from secure chip assurance to top-level business consulting. IBM has partnered with the automotive industry for many years, helping transform its organizations and create new business opportunities while satisfying customer expectations.

Disappearing boundaries

Our newest study shows that the dynamics of the consumer-vehicle-enterprise relationship are starting to change drastically as traditional industry boundaries disappear. Automotive (auto) enterprises must adapt to how consumers can access vehicles in new ways and use them in their digital lives — and how cars now fit into an increasingly complex web of transportation options. Interconnectedness is the essence of the creative disruption ahead: between consumers and automakers; between consumers and vehicles; and among traditional and non-traditional participants in the industry ecosystem. Looking toward 2025, the enterprises that welcome openness are setting the stage for success.

Executive summary

For decades, the auto industry was a very structured and tight ecosystem with clearly defined boundaries. The auto manufacturers ruled and few “outsiders” were allowed in — even consumers didn’t have much of a voice. But all of that began to change with the growth of digital technologies.

Based on their digital experiences with other industries, today’s consumers now expect seamless, omni-channel and customized auto-related experiences, and they are increasingly willing to contribute to product and services innovation. Consumers know how to get information online and circumvent the standard processes that used to restrict their involvement with industry participants.

As personal mobility expectations grow, non-traditional enterprises are offering technologies to help consumers with driving, including getting directions, dealing with traffic or parking, and integrating with other forms of transportation. New business models such as car sharing even threaten the need to own a vehicle.

Industry ecosystems continue to intersect and overlap. In the future, this disruption will affect major industry processes as traditional roles change and industry borders fade.

Six years ago, we published our last major auto industry perspective, “Automotive 2020: Clarity beyond the chaos.”¹ To update our understanding of the future landscape, we shifted the lens out for this “Auto 2025” report. We asked 175 executives from 21 countries in a variety of leadership roles how they expect the industry to change over the next decade and how they plan to deal with those changes.



73% of OEM executives rated mobility services as a significant area for co-creation with consumers



73% of all interviewed executives rated collaboration with other industries as the best opportunity for industry growth as we progress toward 2025



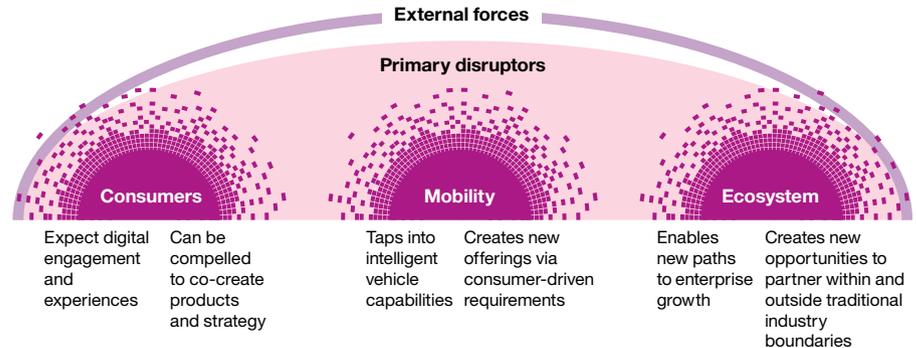
75% of all executives we spoke with expect non-traditional industry participants to have a key role in the automotive ecosystem by 2025

As always, enterprises and industries alike must deal with certain unavoidable external forces. In both “Auto 2020” and “Auto 2025,” executives ranked technology progress as the most important external force they face. Along with various external forces that affect many industries, our new study also reveals three primary disruptors whose associated “disruption” sets the stage for innovation and new value rather than being a negative influence. These primary disruptors — consumers, mobility and the ecosystem — are causing traditional industry borders to be redrawn or even disappear (see Figure 1).

Consumers are more engaged than ever — they not only want to use cars, they can be compelled to co-create them. Vehicles are increasingly intelligent, which is changing the concept of mobility including consumer-driven changes beyond the vehicle itself. This expanding ecosystem means learning to thrive under disruption as auto industry lines blur, especially as those in other industries join the mix, such as electronics and telecommunications enterprises.

Figure 1

Three primary disruptors – consumers, mobility and the ecosystem – are fueled by external forces, causing industry boundaries to blur and even disappear



Source: IBM Institute for Business Value analysis.

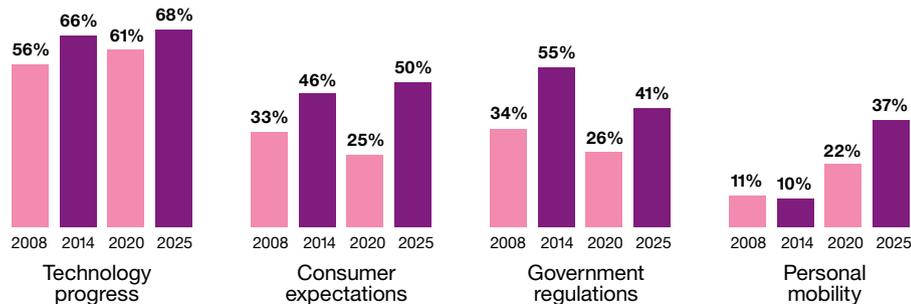
Dealing with external forces on the automotive industry

Executives we interviewed said external forces that directly affect consumers will have a greater impact on industry change than those that primarily affect the business. Technology progress, changing consumer expectations and emerging personal mobility offerings are increasingly important (see Figure 2). At the same time, they expect to be able to assimilate new governmental regulations and requirements for globalization, economies/markets and sustainability.

Figure 2

Current and expected impact of the four biggest-rated external forces at four points in time, based on interviews from "Auto 2020" (rankings for 2008 and 2020) and "Auto 2025" (rankings for 2014 and 2025)

What are the most important external forces that will impact the industry today and in the next 8-10 years?



■ "Auto 2020" study
■ "Auto 2025" study

Source: IBM Institute for Business Value.

Only 19 percent of interviewed auto executives describe their organizations as *prepared* for challenges on the way to 2025; 71 percent as *somewhat prepared*; and 10 percent as *not prepared*. Exacerbating this limited readiness, just 33 percent said their organizations are *adaptable* to face challenges, 59 percent are *somewhat adaptable* and 8 percent are *not adaptable*.

Top external forces

Technology progress. Rated the highest in both “Auto 2020” and “Auto 2025,” technology related to digital, vehicle and the enterprise will remain a major industry influence.

Consumer expectations. This was the most dramatic shift among external influencers and the only one to change direction between the two studies. It now only ranks behind technology. Digitally enabled consumers are expecting significant changes in products, services and how enterprises engage with them.

Government regulations. A significant increase from “Auto 2020,” a combination of focus on safety (such as preventing digital distraction), autonomous driving, retail channel disruption and new mobility (for example, taxi services) is leading governments to develop positions that affect industry participants.

Personal mobility. Mobility is increasing in importance for 2025 as urbanization, lifestyle changes and cost-effective alternatives affect how people want to move from one place to another.

Primary disruptors: Consumers, mobility and the ecosystem

Consumers are disrupting the relationship in two ways. First, they want auto organizations to rapidly accommodate their expectations for digital engagement. Second, they can be compelled both to co-create products and services, and to influence corporate strategy.

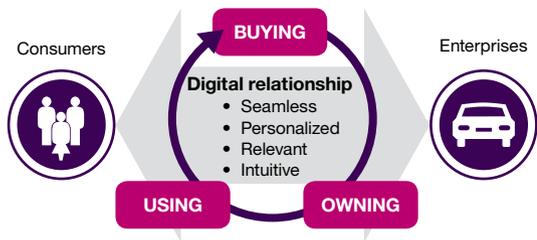
Mobility is disrupting industry products and services in two ways. First, self-enabling vehicles will become increasingly sophisticated and able to far exceed their main function of transporting people. Second, consumer-driven mobility — stemming from new innovators and digital technologies — is making it possible to deliver personalized experiences beyond the vehicle itself.

The **ecosystem** is disrupting individual enterprise growth and leading to industry expansion. First, auto organizations are looking for new paths to growth, especially to take advantage of new consumer expectations and available technologies. Second, they need to chart a course through the evolving landscape of new participants and fluid industry boundaries.

Figure 3

The digital relationship consumers expect from auto enterprises is being influenced by what they get from other industries: how they buy, own and use vehicles is transforming

Consumer expectations of the digital experience during the buying, owning and using lifecycle



Source: IBM Institute for Business Value analysis.

Consumers: Disrupting the customer relationship

Know what consumers want

Consumer expectations of seamless, omni-channel and individualized experiences is transforming the relationship between consumers and enterprises. They want seamless interactions across both channels (online and offline) and value chain participants such as retailers, suppliers, communications providers, electronics manufacturers and others. They also seek information and value that are personalized and relevant. Ideally, the consumer experience is also intuitive, based on what the organization knows of the individual.

Digital technologies and lifestyle changes are creating new expectations in how auto consumers buy, own and use vehicles (see Figure 3). Fifty-four percent of “Auto 2025” executives expect people will buy cars directly through the Internet and 61 percent anticipate people will want different pricing models. Interestingly, only 45 percent of interviewed OEMs expect consumers to seek alternative ownership models versus 75 percent of other study participants. To best differentiate in how vehicles are used, industry executives’ top answers were: comprehensive connected services (cited by 80 percent), physical and digital personalization (59 percent), and data security and privacy (56 percent).

Want what consumers know

It won’t be enough to know what consumers want today; the forward-thinking industry participants will need to solicit their views to plan for the future as well. Digital and social technologies compel the collective set of consumers — we can refer to these informal, sometimes *ad hoc* groupings as a crowd — to participate more directly in various aspects of the enterprise’s business and offerings.

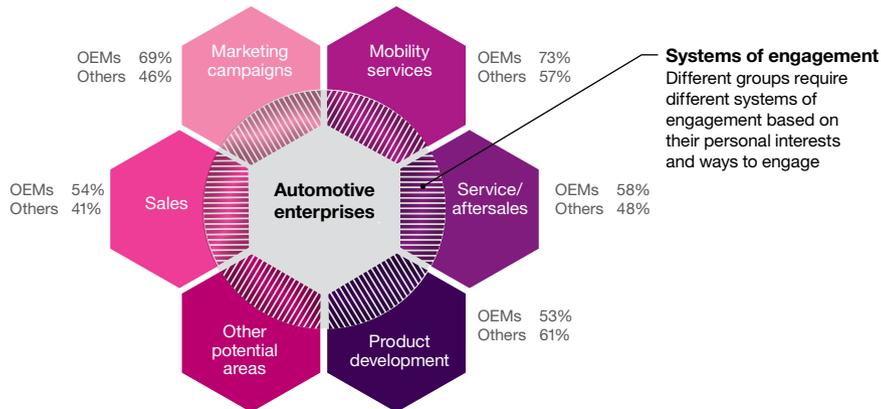
By 2025, those we spoke to expect more consumers to actively participate in the creation of new products and services, especially mobility services (cited by 63 percent), product design (59 percent) and marketing programs (54 percent). Sixty-six percent expect consumers even

to influence business strategy.² The “power of the crowd” can bring additional insights and benefits, and extend beyond enterprise confines by taking advantage of consumers’ desire to participate, exploiting the power of many and avoiding the constraints of corporate culture.

Multiple systems of engagement and business models will be developed to collaborate with the right crowd in a given situation, and attain relevant insights and benefits (see Figure 4). These systems of engagement could take the form of games, contests or other methods, and must be easy, intuitive and provide a great consumer experience.

Figure 4
The OEMs see greater opportunity in key areas of co-creation with consumers; each needs a different system to engage

How extensively will your enterprise use co-creation with consumers in the following areas by 2025?



Source: IBM Institute for Business Value analysis.

Recommendations: Engaging with consumers

Embrace the wisdom of the customer

- Learn from great consumer experiences in other industries. Examine similar processes and technologies associated with consumers to incorporate and optimize for auto.
- Listen widely, analyze extensively and engage quickly with consumers when opportunities arise. Target channels that are mobile and accessible anywhere, at any time. Learn from interactions. Handle high volumes of information from various sources, including databases and social networking platforms.
- Deliver intuitive, meaningful and consistent digital experiences across all consumer channels. Work with retail partners to assure consistency across consumer touch points.

Deliver lifestyle choices

- Envision lifestyle choices and user experiences through journey maps. Use journey maps to emulate and activate the sharing of consumer content to personalize the experience.
- Develop new ownership and usage models that meet consumer expectations and create alternative revenue streams. Explore similar models in other industries. Use partnerships and technologies to acquire enabling capabilities, as needed.
- Focus on in-vehicle capabilities that deliver the digital, automated and personalized experience consumers expect. Make sure these capabilities are transferable.

Exploit your crowd

- Collaborate with crowds to uncover new ideas. Use technologies that are device- and time-independent to allow the crowd to connect how they want.
- Implement effective “systems of engagement” for the best results. Learn about and use engagement models that fit the preferences of each targeted crowd.
- Follow up on consumer input and recognize people for their contributions and ideas that are used. People will lose interest without two-way engagement.

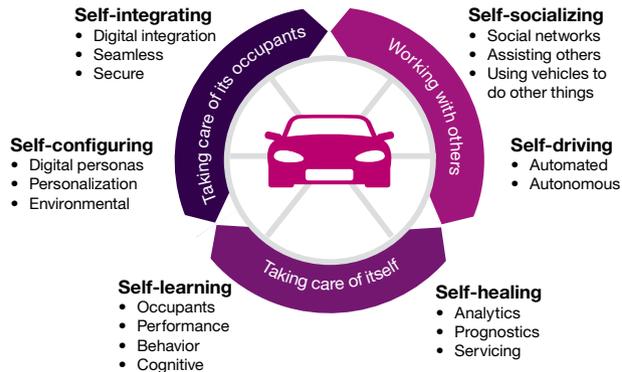
Mobility: Disrupting products and services

Self-enabling vehicles

By 2025, the vehicle will be sophisticated enough to configure itself to a driver and other occupants. It will be able to learn, heal, drive and socialize with other vehicles and its surrounding environment (see Figure 5).

Figure 5

Intelligent, intuitive, self-enabling vehicles will provide extremely personalized experiences and capabilities that go well beyond their primary function of transporting people



Source: IBM Institute for Business Value analysis.

Self-integrating. Like other smart devices, the vehicle will be an integrated component in the Internet of Things (IoT).³ It will collect and use information from others concerning traffic, mobility, weather and other events associated with moving around: details about driving conditions, as well as sensor-based and location-based information for ancillary industries, such as insurance and retail.

“Vehicles will become an integrated part of a person’s life via smart phones and connected car features providing personalized mobility services.”

Vice President, Advanced Engineering, European supplier

What is “self-driving?”

Automated: Driver must be present

- *Partially* – Driver monitors automatic functions, cannot perform non-driving tasks.
- *Highly* – System recognizes its limitations and calls driver to take control, if needed. Driver can perform some non-driving tasks.
- *Fully* – System handles all situations autonomously without monitoring by driver. Driver allowed to perform non-driving tasks.

Autonomous: No driver required

- *Limited* – Designated areas where vehicles, infrastructure and the environment are controlled.
- *Fully* – Integrated with other vehicles in normal driving conditions.

Self-configuring. Individual mobility personas will contain the necessary digital information about an individual to provide the desired vehicle experience: for example, personal preferences on configuring controls and seats, multi-media preferences, financial information for making purchases from the vehicle or medical information about the driver or its usual occupants.

Seventy-seven percent of “Auto 2025” executives expect digital personas to exchange information within a brand, while 62 percent see it happening across an automaker’s own brands. Just 26 percent expect this to be happening between automakers by 2025. Vehicles will configure themselves using mobility personas. With permission, vehicles will access additional personal information as required. For example, a driver with a heart condition could authorize the monitoring of vital signs. If the vehicle senses a potential heart attack, the driver would be alerted, the vehicle would automatically slow to park, and additional information about his or her medical preferences could be released to appropriate health facilities.

Self-learning. Seventy-four percent told us that vehicles will have cognitive capabilities to learn the behaviors of the driver and occupants, the vehicle itself and the surrounding environment to continually optimize and advise. As the vehicle learns more about the driver and occupants, it will be able to expand its advice to other mobility services options.

Self-healing. Vehicles will be able to fix and optimize themselves based on certain events or situations without human intervention. Analytics capabilities will help vehicles identify and locate issues, schedule fixes and even help other vehicles with similar problems with minimal impact to the driver.

Self-driving. Vehicles will become highly automated with some areas of limited autonomous function in controlled environments (see sidebar, “What is ‘self-driving?’” and Figure 6). Automated vehicle safety is another area that can differentiate a brand: 68 percent of interviewed executives consider this a key consumer differentiator.

Self-socializing. By 2025, 57 percent of interviewed executives say vehicles will connect with other vehicles and the infrastructure around them to share information and solutions, and 64 percent of OEMs anticipate it. These vehicle social networks could extend beyond mobility as the vehicle connects into the greater IoT and socializes with devices from other industries (see sidebar on page 12, “How self-socializing vehicles can support public safety.”)

Consumer-driven mobility

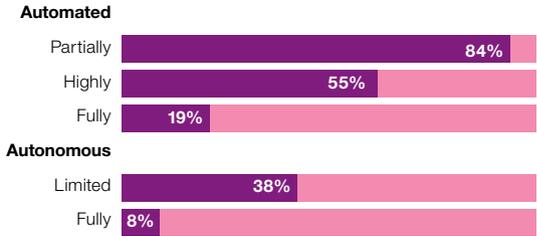
The vehicle is just one component of the new customized mobility options that are enabled by technology and demanded by consumers. Mobility includes products and services that enable different ways for consumers to move from one point to another according to each individual’s preferences and lifestyle (see Figure 7).

Because consumer-driven mobility is not controlled by the auto industry, it offers tremendous opportunities for new business models, providers, products and services that transcend the traditional vehicle-centric focus. Sixty-nine percent of the executives cited such new services as a top way to grow. OEMs control vehicle-centric services that drivers use during vehicle operation, but other mobility services — including driver convenience and occupant experience — will see intense competition from non-traditional industry participants.

Some mobility services, such as car sharing, directly conflict with the traditional auto business model of selling vehicles. But if auto enterprises develop transferable personas that allow people to have a car feel like their own as they use the car-sharing model, then consumers will begin to demand certain models based on this differentiator. Forty-three percent of “Auto 2025” executives agreed such innovation could extend the importance of auto enterprise’s brand beyond car ownership.

Figure 6
Vehicles will become highly automated, with some areas of limited autonomous driving

How mainstream will the use of automated vehicles be by 2025?



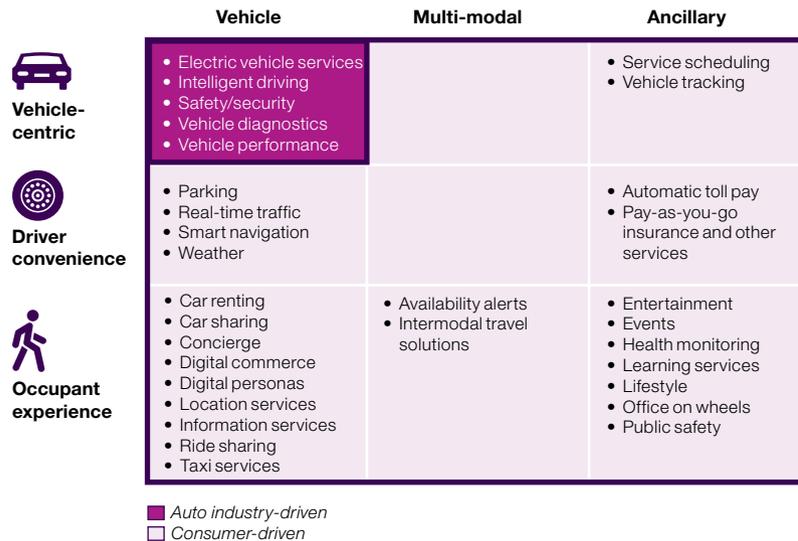
Source: IBM Institute for Business Value.

How self-socializing vehicles can support public safety

Drivers could allow the cameras on their cars to connect to a local department of public safety. This could support search efforts for missing children, escaping criminals or other search efforts in the public interest.

Figure 7

Consumer-driven mobility extends far beyond vehicle-centric services controlled by the auto industry and offers opportunities for both traditional and non-traditional industry participants



Source: IBM Institute for Business Value analysis.

Recommendations: Embracing mobility

Create an integrated, personalized in-vehicle experience

- Assure the vehicle is active in the IoT. Provide additional lifestyle services via connectivity.
- Leverage mobility personas and event-based personal data access and usage. Provide new products or services based on data access and assure security to gain trust.
- Work with others to provide a consistent digital experience regardless of ownership or usage model. Promote as a differentiator to consumers who are loyal to your brand.

Reap value from intelligent vehicles

- Use learning and automating capabilities to reduce complexity of use. Understand the technology aptitude of the occupants to simplify where necessary.
- Analyze and use diverse forms of data. Treat data as the next natural resource and find ways to exploit it regardless of data type or source.
- Identify new business model and revenue-generating opportunities intelligent vehicles can enable, especially involving non-traditional industries.

Move from mobility concepts to generating revenue: Stake a claim

- Create a separate mobility entity within your enterprise with the required support and investment to develop mobility strategies, products and services.
- Embrace personal mobility services and extend the brand beyond the vehicle. Develop brand advocates based on their mobility experiences and not just the vehicle.
- Recognize non-traditional industry participants and the value they can bring to your mobility solutions. Eliminate old biases and pursue new collaboration opportunities.

“There is a need for partnerships between public and private sectors for personal mobility.”

Group VP and General Manager, North American supplier

The ecosystem: Disrupting industry boundaries and participants

Seeking enterprise growth

In contrast to “Auto 2020” findings, we see that growth will come from delivering additional value rather than just selling more vehicles. The top opportunities for growth are seen as: collaborating with other industries; creating new services-based offerings; and leveraging disruptive technologies outside the vehicle (see Figure 8).

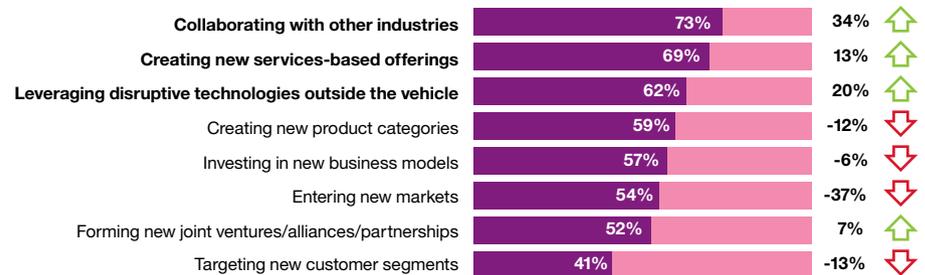
Interestingly, in the middle of the pack, 57 percent of the “Auto 2025” sample see new business models as one of the best growth options. But on this question and many others, the contrasting perspectives of suppliers and OEMs were apparent: 71 percent of suppliers say they will invest in new business models to grow, compared to just 51 percent of OEMs.

Figure 8

The top growth strategies are highly focused on initiatives that require auto enterprises to extend well beyond the traditional industry boundaries

Where do you see the best opportunities for industry growth looking toward the year 2025?

Percentage change from “Auto 2020”



Source: IBM Institute for Business Value.

Currently, suppliers are better able to expand beyond the traditional industry through mobility and working with new partners, while OEMs are more vested in maintaining the status quo.

However, today's industry executives seem to be overlooking important chances to grow that were recognized six years ago — especially “targeting new consumer segments.” Only 41 percent of executives named this an important path to growth. The value of making new digital experiences possible should not be overlooked — today, it seems many are limiting their ideas here to just offering new product features.

In their quest for growth in a changing environment, industry executives must also address persistent workforce challenges. Organizations must infuse talent from other industries into their workforce as they engage more dynamically with consumers through digital and connected technologies. Only 35 percent said their enterprise is effective at doing this.

Auto organizations also need to be effective at using talent across the enterprise, yet only 37 percent of executives report doing this well. They need a deep understanding of expertise and know-how inside and outside the enterprise to quickly engage for specific issues and opportunities. In addition, just 36 percent said they are doing well at developing skills rapidly to meet ever-changing technology advancements, operational efficiencies and consumer expectations.

Transforming the industry ecosystem

The biggest ecosystem disruption seen by auto executives is in retail channels, with 71 percent seeing significant change. In general, processes and participants closer to the consumer will see more disruption than participants farther down the supply chain — and OEM executives expressed this trend even more strongly than suppliers (see Figure 9).

“Developing talent the right way is a very challenging activity. We need new HR policies and initiatives to bring in talent from outside the industry.”

Director of Mobility, Japanese OEM

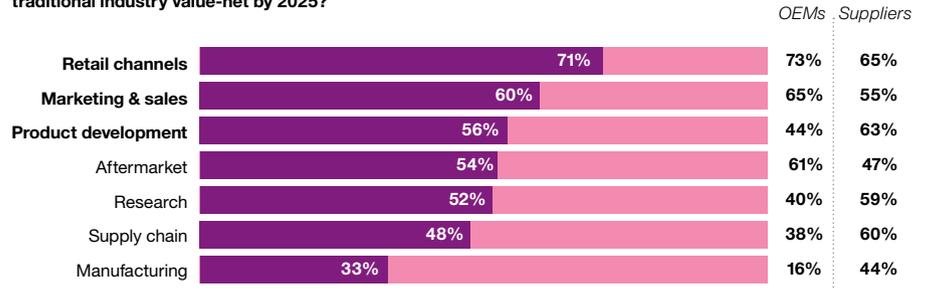
“Retail models will have to be more flexible in order to leverage customers’ demands.”

Executive board member, major European supplier

Figure 9

Disruption is expected in almost all functional areas of the business, although OEMs are not as convinced about the areas farther removed from the consumer

Where do you see the biggest disruption occurring in the traditional industry value-net by 2025?



Source: IBM Institute for Business Value analysis.

The most-cited drivers of disruption to the work that is done were:

- *Retail channels, and marketing and sales*: Digital technologies, consumer expectations, online intermediaries, dealer value, Internet buying and mobility services
- *Product development and research*: Digital technologies, co-creation with consumers, non-traditional industry participants and collaboration with other industries
- *Aftermarket*: Digital technologies, mobility services, 3D printing and co-creation with consumers
- *Supply chain and manufacturing*: Digital technologies, collaboration with other industries and non-traditional industry participants.

Recommendations: Exploiting the ecosystem

Partner to disrupt

- Break down traditional barriers, seeking non-traditional partners and disruptive business models for untapped opportunities. Enable your organization to design, invest in and pilot innovation, bypassing traditional organizational constraints.
- Leverage technologies outside the vehicle to create high-value product and services offerings that enhance mobility and the rest of the consumer experience.
- Re-evaluate consumer segments in terms of mobility services versus product categories to envision potential services offerings. Target passengers, not just drivers. Find ways to increase wallet share of existing customers while pursuing new ones.

Address workforce challenges through new ways to collaborate

- Harness the collective intelligence of consumers, employees and partners through social tools and techniques. Provide feedback and reward success.
- Make pervasive use of deep data analytics to empower the workforce.
- Strategically “re-skill” to meet ever-changing technology advancements, operational efficiencies and consumer expectations. Consider placing employees in other industries for short periods of time to learn and share.

Profit from ecosystem changes

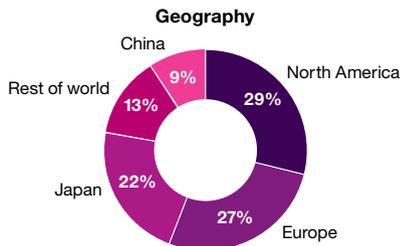
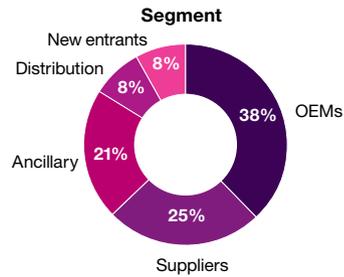
- Take advantage of change to uncover new ways to transform processes and form new relationships. Build consistent alliance management as an enterprise competency.
- Be accessible to non-traditional participants and quickly adapt to their culture, processes and development cycles. Adopt different systems of engagements for different industries.
- Keep a consistent consumer relationship experience with participants in your value chain — even while major disruption occurs in both the work that is done and who does it.

Ready or not? Ask yourself these questions

Even if your organization is among the 19 percent that consider themselves prepared to compete in the auto industry of 2025, it can be tough to articulate and prioritize the actions that may be necessary to get you there. Answering these questions should help you prepare to profit from the blurring industry borders.

- How will your organization learn to interact in ways that consumers prefer?
- What is your plan to develop appropriate systems of engagement for specific crowds you want to serve?
- What can you do to support and take advantage of self-enabling vehicle capabilities?
- How will you take advantage of untapped opportunities in consumer-driven mobility and generate new revenue streams?
- In what ways can your enterprise plan for growth, given the greater opportunities that partnering outside the organization makes possible? How can you prioritize actions to deal with persistent workforce challenges facing the industry?
- How can you form relationships with newer, non-traditional industry participants to provide the digital relationship and customer experience that today's drivers and passengers demand?

Study demographics



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