AlixPartners

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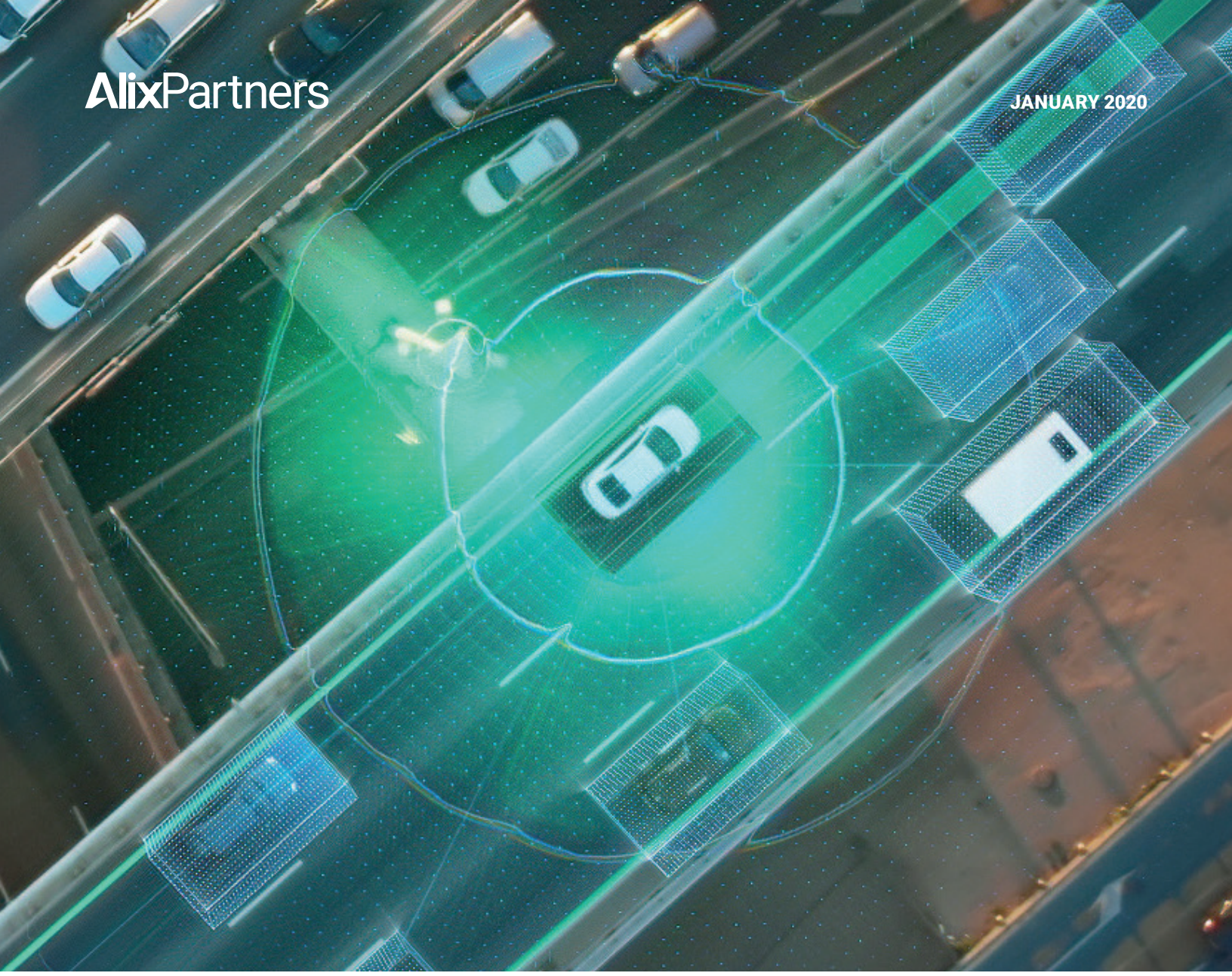


ALIXPARTNERS' GLOBAL SURVEY SHOWS LIMITED WILLINGNESS TO PAY FOR AUTONOMOUS VEHICLES

But consumers are eager to give up private ownership, especially in China

Survey shows consumer interest in ride-hailing robotaxis over car ownership, full autonomy over partial, and a potential AV epicenter in China.

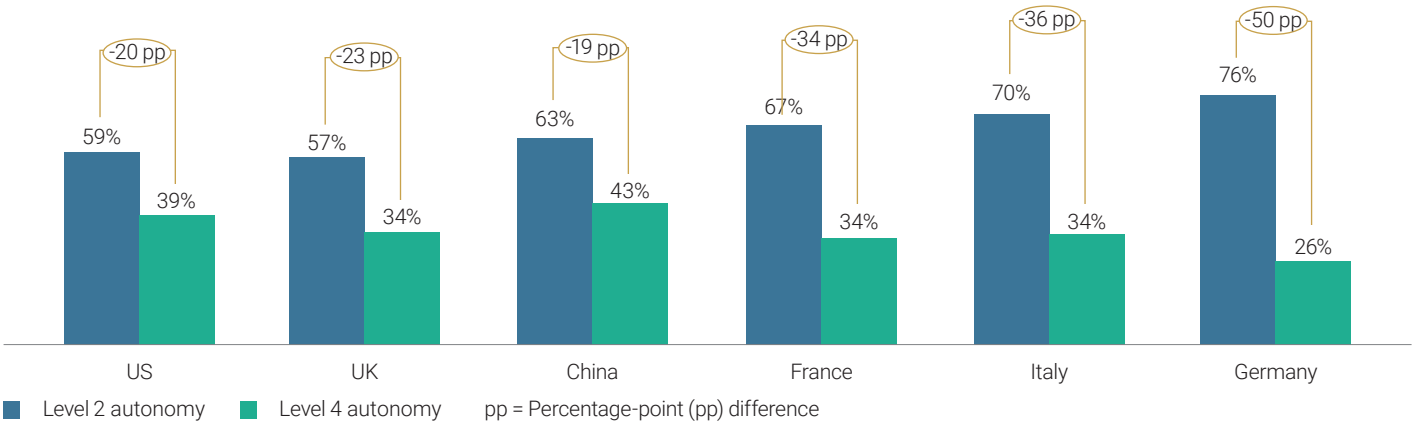
Autonomous vehicles (AVs) represent the future state of mobility, with an anticipated $75 billion investment in the technology between 2019 and 2023.[1] Once introduced, AVs have the potential to disrupt the automotive industry as we know it, with implications for automakers, suppliers, and other industry players. Although the technology has yet to be introduced to the mass market, the industry still needs to understand consumers' current and potential future attitudes about AVs. To gauge these, AlixPartners surveyed more than 6,500 representative consumers in key markets around the globe about their interest, purchase intentions, and sentiments regarding AVs.

The findings of our survey show limited willingness to pay a premium for hands-off-the-wheel (SAE Level 4/5) autonomy. Consumers also indicated a conservative approach to adoption, but a likelihood of giving up car ownership for ride-hailing in robotaxis. Importantly, half of consumers in key markets reported they are eager for AVs more for convenience than for cost savings and productivity. Our survey shows that China is well positioned to be the epicenter of AV development given Chinese consumer sentiment about AVs. Consumers surveyed in China are most willing (84%) to give up car ownership for AV ride-hailing in robotaxis—much more than all other countries surveyed. Chinese consumers are also more confident (58%) and have a higher willingness to pay for AVs, though the premium they're willing to pay for AVs is lower.

FIGURE 1: CONSUMER AWARENESS OF DIFFERENT AUTOMATION LEVELS (LEVEL 2 VERSUS LEVEL 4)

Q: Please select the level of automation in the autonomous/self-driving vehicle that you have used or heard of prior to taking this survey.

Possible responses: Level 2 = some driving tasks performed by the vehicle, with expectation that human driver will respond appropriately to intervene; Level 4 = all aspects of driving controlled by the vehicle even if a human driver does not respond appropriately to a request to intervene.



Source: AlixPartners' 2019 International Autonomous-Vehicle Consumer Survey

CONSUMERS GLOBALLY REPORTED HIGHER AWARENESS OF LEVEL 2 AUTONOMY

1. AlixPartners' 2019 Global Automotive Outlook Autonomous Vehicle Investment Study

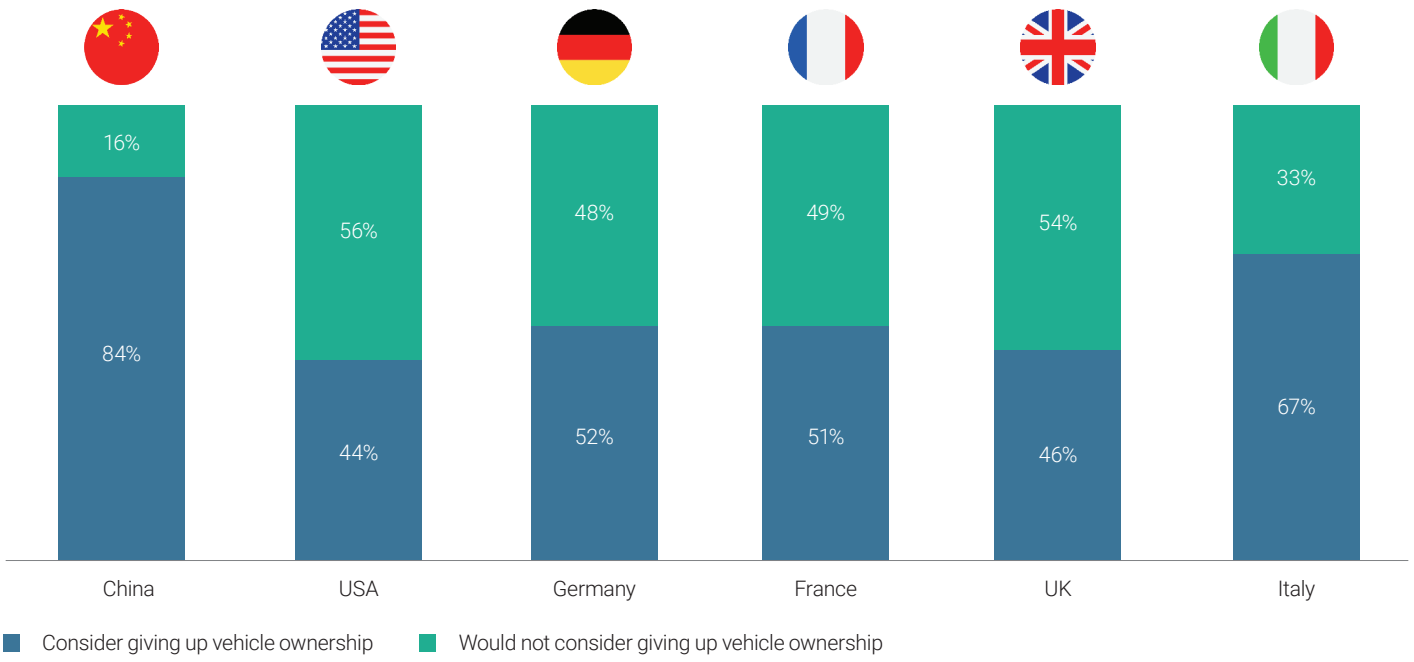
POTENTIAL CHALLENGE TO VEHICLE OWNERSHIP AND OPPORTUNITY FOR RIDE-HAILING

Consumers showed considerable interest in robotaxis and a corresponding willingness to give up personal-vehicle ownership, should robotaxis become widespread and cost about the same over time as personal vehicle ownership. This could suggest both a threat to traditional auto sales and an opportunity for the ride-hailing to capture new revenue and profit pools. It's imperative that industry players—especially automakers—consider the implications of less personal ownership to their business model and to participate smartly in the progression toward autonomous ride-hailing and car-sharing.

FIGURE 2: CONSUMER READINESS TO GIVE UP VEHICLE OWNERSHIP FOR ROBOTAXI SERVICES

Q: At what level cost difference (increase or decrease) per month would you consider switching from owning (or leasing) a car to robotaxi-based (autonomous self-driving taxi) ride-hailing?

Possible responses: Would not consider giving up car ownership; +20% (robotaxi more expensive); +10%; Same; -10%; -20%; -30%; -40%; greater than -40%



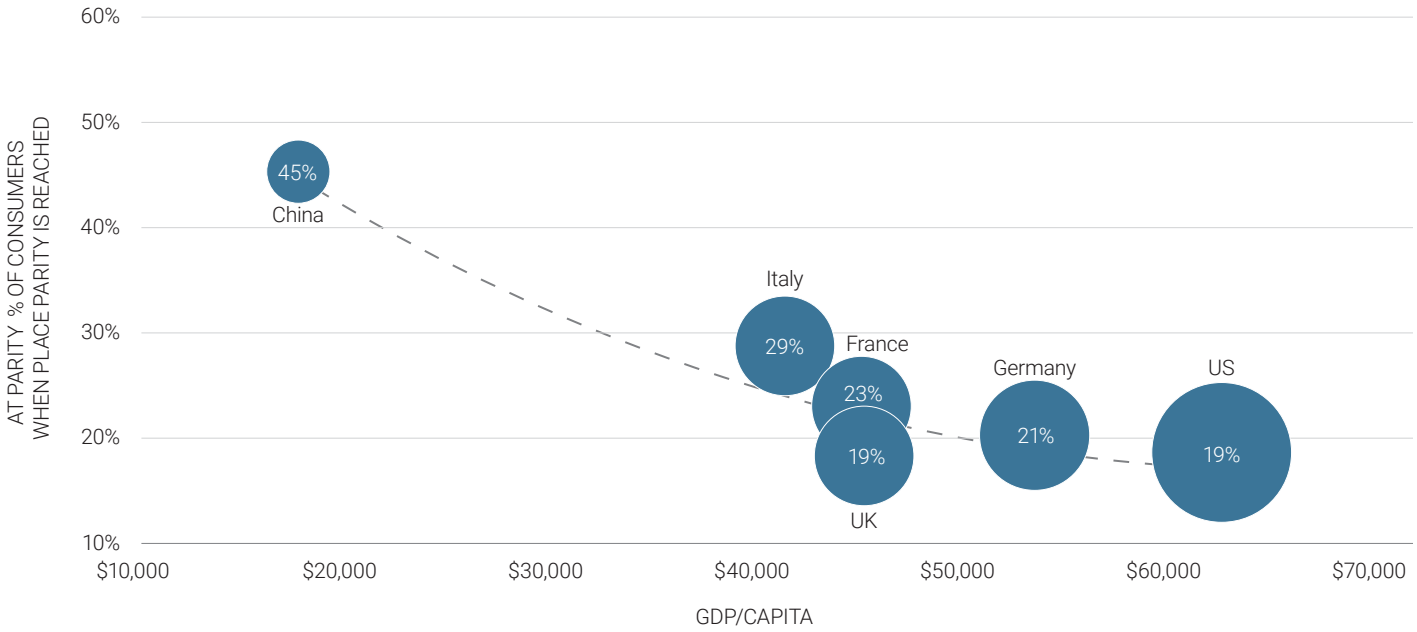
Source: AlixPartners' 2019 International Autonomous-Vehicle Consumer Survey

This interest in ride-hailing robotaxis in lieu of vehicle ownership correlates to GDP (and car parc, defined as vehicles per 1,000 population): in the countries surveyed where GDP is lower, and thus consumer income elasticity for vehicle ownership is high (change in car ownership to change in income), consumers see vehicle ownership as a higher burden. That trend is less pronounced in the US and Germany, with higher GDP per capita (and mature car parcs) and their cultures of car ownership (figure 2).

FIGURE 3: CONSUMER WILLINGNESS TO GIVE UP VEHICLE OWNERSHIP AND GDP PER CAPITA

Q: At what level cost difference (increase or decrease) per month would you consider switching from owning or leasing a car to robotaxi-based (autonomous self-driving taxi) ride-hailing?

Possible responses: Would not consider giving up car ownership; +20 (robotaxi more expensive); +10%; Same price; -10%; -20%; -30%; -40%. Data below mapped to parity



RIDE-SHARING COMPANIES COULD AFFECT VEHICLE OWNERSHIP IF THEY BUILD A SUCCESSFUL BUSINESS MODEL WITH AVs; CHINA COULD BE THE LEADER FOR THE TREND

$R^2 = 0.93$ Bubble size is parc/1,000 people parc = all vehicles in operation
Source: AlixPartners' 2019 International Autonomous-Vehicle Consumer Survey

CONSUMERS ARE LESS INTERESTED IN HANDS-OFF-THE-WHEEL (SAE LEVELS 4 AND 5) THAN DRIVER-ASSISTED AUTOMATION

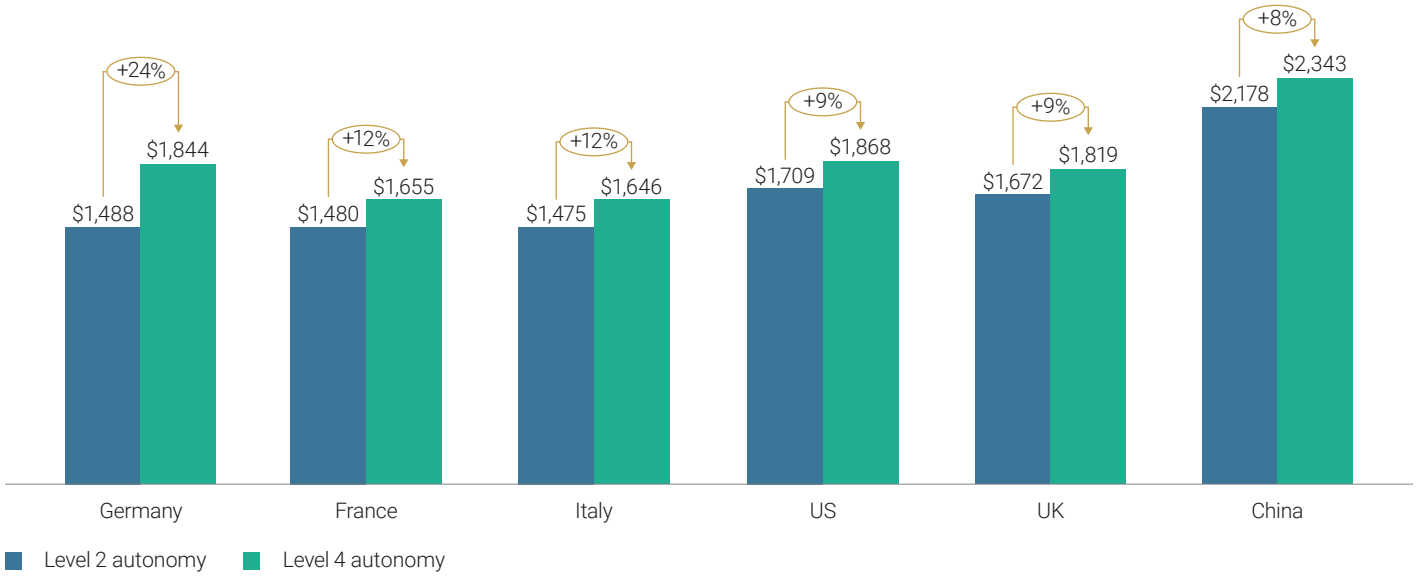
While consumer awareness of autonomous vehicles (AVs) is near universal, their understanding of and interest in the various levels of automation below full Level 5 autonomy drops off significantly, along with their willingness to pay a premium for them. Even higher levels, including hands-off, eyes-off, and mind-off Level 4 and 5 autonomy isn't enough for them, likely in connection with their expectation of convenience. Defined as making their commute or daily routine easier, convenience is the top reason consumers cite for wanting to buy an AV. Industry participants need to be aware of these limits to the evolution of automation and look to new opportunities that the AV platform creates to find new sources of value to consumers.

Consumers surveyed said they'd be willing to spend only 8 to 24% more for hands-off autonomy over today's driver-assisted Level 2 autonomy from advanced driver-assistance systems, or ADAS, which include features such as lane-keeping assistance and automatic emergency braking. Consumers in Germany are willing to pay the most for the jump in autonomy—a 24% premium—and Chinese consumers are on the low end at 8%; yet Chinese consumers are willing to pay the most overall for levels of autonomy.

FIGURE 4: CONSUMER PREMIUM FOR HANDS-OFF-THE-WHEEL AUTONOMY (LEVEL 4) VERSUS ADAS AUTONOMY (LEVEL 2)

Q: What is the most you would be willing to pay (data converted to USD) for self-driving capabilities?

Possible responses: <$500, $501 to $1,000; $1,001 to $2000; $2,001 to $3,500; $3,501 to $5,000; $5,001 to $7500; more than $7,500. Graph arranged by premium consumers placed on Level 4 over Level 2.



Source: AlixPartners' 2019 International Autonomous-Vehicle Consumer Survey

This raises questions for the more-than 60 companies investing in a full AV stack, considering consumers' limited willingness to pay, conservative attitudes toward adoption, and likelihood of giving up car ownership. While many companies are working to deliver an AV to market, companies evaluating automation simply as an add-on feature risk acting shortsightedly—consumers are less eager for an evolutionary approach than some companies are hoping for.

Delivering a full autonomous solution to market still requires much deeper investment in testing and development, yet the eventual AV market is unlikely to have 60 winning solutions given the network and learning effects and the low marginal cost compared to the investment. Automakers should consider a measured approach to seeking partnerships to be part of a winning ecosystem.

Buyers' current caution around autonomous vehicles compounds the situation—80% of self-identified likely buyers of higher-level AVs said they'll wait five or more years after widespread availability to buy an AV. UK consumers were the most cautious, with 81% saying they'd wait five years or more to purchase, followed by 79% of Americans. Chinese consumers were the most eager to adopt, with only 51% of consumers waiting five years before buying.

CONSUMER CONFIDENCE IN AVs IS LOW

One likely reason for consumers' caution around purchasing AVs could be their concerns about safety. Though 58% of consumers in China say they are confident in the ability of AVs with the highest levels of autonomy (Levels 4 and 5) to navigate them safely, responses in the other countries range from a high of 36% down to just 18% in Germany. This helps explain consumers' overall unwillingness to pay high premiums for Level 4 and 5 autonomy over Level 2 autonomy now. Therefore AV manufacturers will have to do more than develop a good product—they will need to invest in consumer experiential marketing, work with regulators to show consumers that the infrastructure is ready for a safe introduction, and as a group, not scare off the public by having major incidents due to unsafe and undertested solutions in consumers' hands.

CONSUMER EXPECTATIONS FOR AVs ARE DIFFERENT THAN FOR TRADITIONAL CARS

While consumer interest is theoretical until they experience it, another challenge for the industry is gauging consumers' attitudes on what they are looking for from AVs. This is especially true in three areas:

Vehicle interiors: In most markets, consumers are ambivalent about major changes in the interiors or infotainment systems of AVs. This suggests automotive companies should carefully weigh making large investments to radically change car interiors and other features to appeal to consumers. The exception was China, where 69% said they expected significant changes in AV interiors.

Payment models: Consumers across all six markets showed high interest in alternative payment models for AVs, which suggests there are additional revenue streams available for the industry and massive business model changes coming. Consumers surveyed in China showed the most interest, with 72% saying they would want alternative ways of paying for the autonomous features. Interest was lowest in Italy at 48%. Furthermore, subscription or pay-per-use models could also enable more monetization of data and open up new recurring revenue streams. The challenge for automakers is to harness these alternative models, especially as they compete against Silicon Valley, which may look at data monetization and other revenue models as their primary revenue sources, as compared to automakers focused on selling vehicles.

Who the players are: Consumers indicated they expect the way AVs are developed to be different from that of traditional vehicles and must involve true partnerships between tech companies and automakers to gain their trust. This points to consumers expectation of a different user experience of AVs, and a perception that automakers or tech companies alone are unlikely to independently produce what they are looking for.

CONCLUSIONS

The global auto industry is deep into the challenge of keeping up with long-term innovation that will setup their future business without wasting resources that starve them on the journey. Strategic choices need to be made about the offerings, the targeted use-cases and business model and smart partnering has to be in place to accommodate the long period of investment required for this technological leap. Meanwhile, the traditional, cyclical business must continue providing the cash to see these investments through several years of pure investment (the industry has announced its plans to invest $75 billion in autonomous-vehicle development between 2019 and 2023).

With consumers' current muted value premium for Level 4 and 5 automation, companies need to make sure they're investing smartly and not overshooting. How should they structure the development teams and what types of partners should they work with? How can they help shape (or reshape) consumer perceptions about AVs? How can they develop and maximize alternative revenue streams? Every player will have to figure out their own individual path, based on their starting position, investment amount, technological capability, and level of ambition.

Consumers have concerns about the capabilities of autonomous vehicles, so automakers need to bring early adopters along without mistaking the difference in the volume market. Targeted business models—such as geofenced fleets, limited situational autonomy, fixed-route autonomy for goods and then people—can raise the public's comfort level with AVs. But automakers need to be cognizant that many other entrants from different fields which aren't constrained by the same regulatory rules may take far more aggressive approaches to safety and blitz-scaling.

In all, the traditional automotive ecosystem is facing its biggest change ever, and its leaders need to consider vastly different business models to manage the transition prudently while securing a profitable role in the future.

METHODOLOGY

The AlixPartners AV survey polled more than 6,500 consumers in six countries in key automotive regions, including 1,072 in China, 1,019 in France, 1,015 in Germany, 1,037 in Italy, 1,009 in the United Kingdom, and 1,594 in the United States. Survey-takers were ages 18 and above, they reported holding driver's licenses, represented all major regions and income levels in each country, and in total were 50.5% male and 49.5% female. The poll was conducted online from April 23 to May 17, 2019.

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ABOUT US

For nearly forty years, AlixPartners has helped businesses around the world respond quickly and decisively to their most critical challenges – circumstances as diverse as urgent performance improvement, accelerated transformation, complex restructuring and risk mitigation.

These are the moments when everything is on the line – a sudden shift in the market, an unexpected performance decline, a time-sensitive deal, a fork-in-the-road decision. But it's not what we do that makes a difference, it's how we do it.

Tackling situations when time is of the essence is part of our DNA – so we adopt an action-oriented approach at all times. We work in small, highly qualified teams with specific industry and functional expertise, and we operate at pace, moving quickly from analysis to implementation. We stand shoulder to shoulder with our clients until the job is done, and only measure our success in terms of the results we deliver.

Our approach enables us to help our clients confront and overcome truly future-defining challenges. We partner with you to make the right decisions and take the right actions. And we are right by your side. When it really matters.