Voice
on the
go

*How can auto manufacturers provide a superior in-car voice experience*
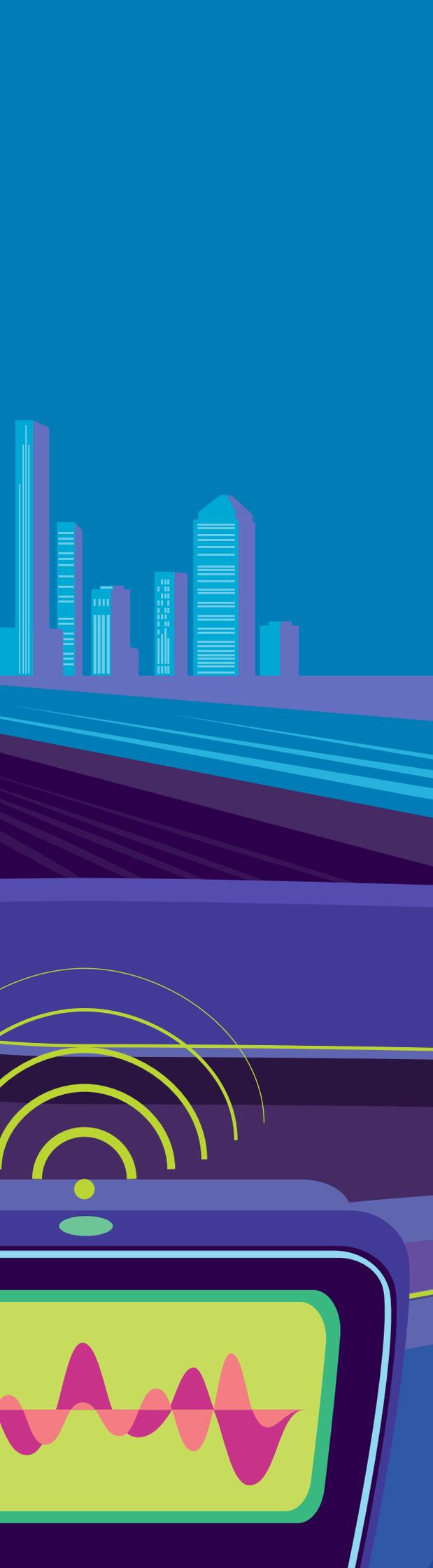
Introduction

Our research, "Smart Talk: How organizations and consumers are embracing voice and chat assistants," has shown that consumers and organizations alike consider these assistants to be crucial for customer engagement.[1] The automotive industry has history when it comes to voice-controlled systems. They were in cars a decade before Amazon launched Alexa – while Amazon launched Alexa in 2014, Honda already offered a voice-driven navigation system in 2004.[2]

Over the years, these in-car assistants have started performing a variety of tasks – from playing music to making phone calls, from providing navigation directions to placing orders. Today, consumers can use voice commands to warm up their cars before leaving the house, to open their garage doors, or even to turn off their car engines. In-car assistants are becoming smarter and automotive companies are making enormous efforts to deliver a platform that provides an experience akin to natural speech.

The use of in-car assistants has been accelerated by the advent of systems such as Alexa and Siri. Automakers today can choose from a host of platforms – from big tech providers such as Echo Auto, Apple Carplay, Android Auto, to voice-service providers such as Cerence's "Dragon Drive,"[3] and SoundHound's "Houndify," among others.

But while there are many platforms, are consumers satisfied with their experience? What are their preferences and what are the common in-car assistant use cases? Would delivering smooth and seamless integration across voice assistants benefit automotive organizations? How should these organizations go about delivering a superior consumer experience?

To better understand consumer preferences and the benefits to be gained by the industry from delivering a best in-class voice experience, we undertook thorough and broad-based research. We surveyed more than 7,000 consumers who have used a voice assistant inside the car as well as 300 auto executives. We also conducted a number of one-to-one interviews with senior auto-industry executives and voice-service providers. Drawing on that research, this report looks at:

1. How consumer appetite for voice assistants in car is growing
2. How this uptake translates to a huge opportunity for automotive organizations
3. What steps those organizations should take to provide consumers with a great experience.

Executive summary

Consumers already use in-car voice assistants extensively and this is only going to surge:

- Consumers use in-car voice assistants mainly for playing music, navigation, and making phone calls.
- 24/7 availability and reduction in effort while interacting with the brand are the top reasons for preferring voice assistants.
- Three years from now, nearly 95% of consumers are expected to use conversational assistants, including voice assistants, to access information in their cars.
- In three years, voice will likely become the preferred medium of interaction over direct visits to dealerships or ordering products online.
- Despite the convenience and increasing use of voice assistants, three out of five consumers say that automotive organizations need to improve the overall experience.

Voice assistants provide automotive organizations with a great opportunity to enhance the customer experience

- Three in four consumers would use the voice assistant more frequently provided they have a good experience.
- 62% of consumers prefer using a single integrated voice service across their vehicle, home, and mobile device.
- 37% of consumers are willing to pay a premium or a monthly fee for a voice subscription in their cars and another 48% would consider doing so in the future.
- While automotive organizations realize the importance of voice assistants for customer engagement, they overestimate their voice capabilities. For instance, 81% of industry executives believe that their assistants understand people's needs and preferences, but only 59% of consumers agree.

Automotive organizations should focus on three major areas to deliver a superior experience

- Anchor
  - Educate users on skill discovery, skill search, and layer in visuals to improve recommendations.
  - Assuage consumer concerns about privacy by being transparent with regard to the data collected and how it is used.
  - Earn trust by improving the experience of commonly used functionalities before providing a gamut of complex features.

- Customize
  - Ensure that the features are tested at a granular level and for each micro-segment.
  - Provide consumers the option to customize their voice assistants.
  - Develop contextual relevance over time through analytics.

- Expand
  - Integrate the functionalities of in-car and at-home assistants.
  - Build an ecosystem with other players to offer more services.

Consumers make extensive use of voice assistants inside cars

The use of voice assistants will soar in the next three years

On average, approximately half of the consumers we surveyed use in-car voice assistants for various functionalities today. They make significant use of basic infotainment functions, such as navigation and music, but increasingly want to control at-home functions, such as home heating.

In the future, however, as Figure 1 shows, the use of these assistants is expected to soar, with 73% using assistants compared to today's 49%. The most growth will occur in areas such as integrating with at-home voice services (78%), or booking an appointment for a car service (74%).

A senior executive at a German OEM elaborates, *"Voice is getting more and more important in the car and if you compare to other environments, it's, let's say, an ideal environment for voice as a medium because you want the driver to focus on driving the vehicle and not to stretch it too much, so you would need your voice assistants to do many things, much more than, for example, in the home where you can still look at screens and touchscreens; in the driving situation, voice has a very special role."*

The convenience of around-the-clock-availability is the main reason consumers are increasingly motivated to use these systems. When we asked which benefits they prize most, the order of importance was:

- First: 24/7 availability
- Second: Reduction in effort in their interaction with car manufacturers
- Third: More personalized experience
- Fourth: Faster and accurate resolution of support queries.

Figure 1. Inside the car, consumers currently use voice to a great extent

	Play music, check directions and other in-car functions	Integrating with at-home voice systems, e.g. setting a comfortable temperature at home before arriving and vice versa control of car from home	Booking an appointment for a service (e.g. tire change)	Using the in-car assistant to order specific services (e.g. shopping/ordering food, groceries etc)	Booking a cab (e.g., Uber) for individual/shared rides	Providing feedback or make a complaint for the car	Using the in-car assistant to order specific mobility services	Average
Current usage	77%	50%	46%	45%	44%	42%	42%	49%
Future preference	85%	78%	74%	72%	69%	68%	66%	73%

🟩 Consumers: Current usage 🟦 Consumers: Future preference, three years from now

Source: Capgemini Research Institute, Conversational Interfaces Research, Consumer Survey, April 2019–May 2019, N=7,078 consumers.

Voice assistants allow consumers to interact with the car (for example, to increase cabin temperature) and also to purchase and pay for their morning coffee or even highway tolls without having to take their eyes off the road in order to pull out their mobile phones.

"There is no doubt that voice assistants will take over with unparalleled speed – because, for humans, speech is the most natural form of communication," says Axel Neuhaus, head of digital marketing at Volkswagen Germany.

"This technology is far more convenient than all other operating aids. Convenience, speed, and being addressed personally are reasons for the rapid growth of voice assistants."[4]

In addition, more than 50% of consumers indicated that they expect to use some form of conversational assistant all the time to access information on the go inside the car, either through the embedded in-car assistant or through assistants on their phones, while nearly 40% expect to use it on limited occasions (see Figure 2).

| Figure 2. | Three years from now, 95% of consumers expect to use a conversational assistant, including voice, in the car to access information |

- I expect to use these assistants all the time
- I expect to use these assistants on very limited occasions
- I expect I will not use these voice assistants

Three years from now, more than 50% of consumers expect to use conversational assistants, including voice, all the time to access information inside the car

Voice assistants are progressively replacing direct visits and calls to dealers/showrooms

Three years from now, 71% of consumers, on average, say they will increasingly use their voice assistants over other mediums of interaction. There will be increased comfort in using voice over making calls for service appointments, ordering products and services online/by phone, or even visiting a dealer for complaint or feedback (see Figure 3).

71% *consumers on average will increasingly use their voice assistants over other mediums of interaction, three years from now*

Figure 3. Consumers will be extremely comfortable using voice three years from now
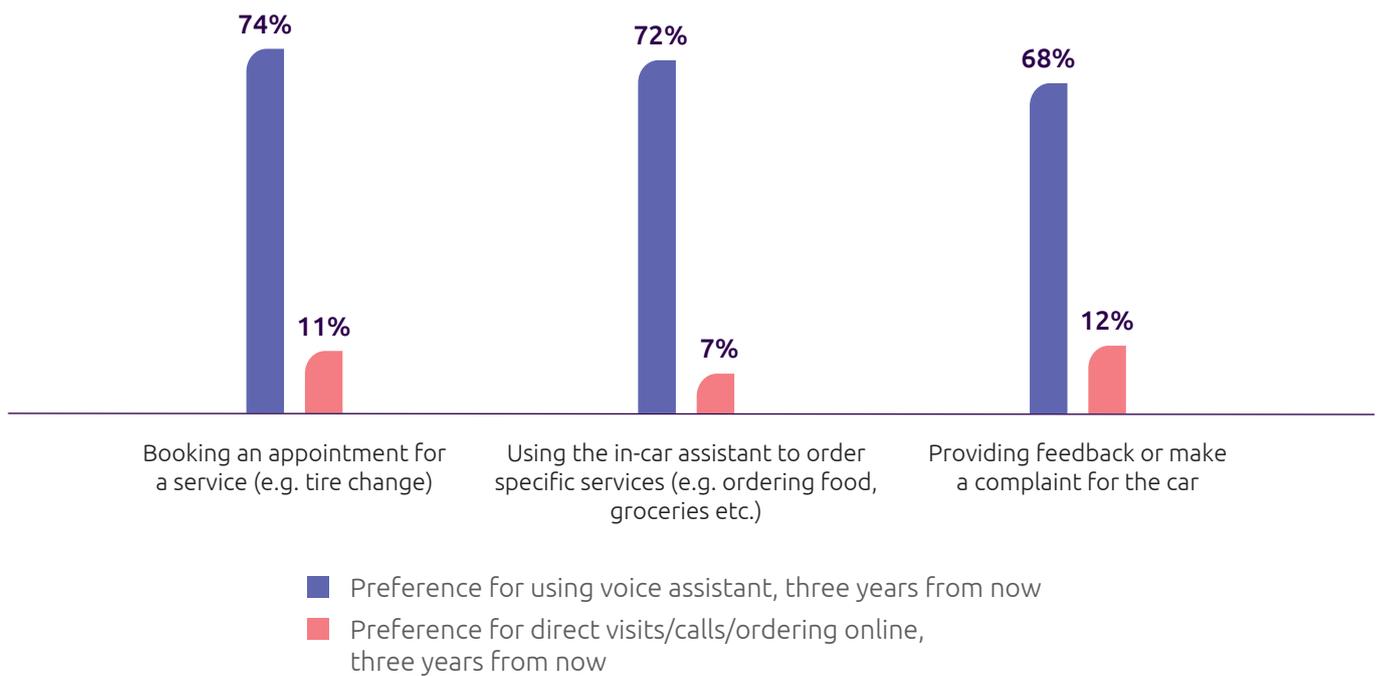
74%	**72%**	**68%**
11%	**7%**	**12%**
Booking an appointment for a service (e.g. tire change)	Using the in-car assistant to order specific services (e.g. ordering food, groceries etc.)	Providing feedback or make a complaint for the car

■ Preference for using voice assistant, three years from now
■ Preference for direct visits/calls/ordering online, three years from now

Consumers aged between 32 and 44 years are the greatest users of in-car conversational assistants, including voice assistants

Figure 4. 30% of consumers that use in-car conversational assistants are in the 32 to 44 age bracket
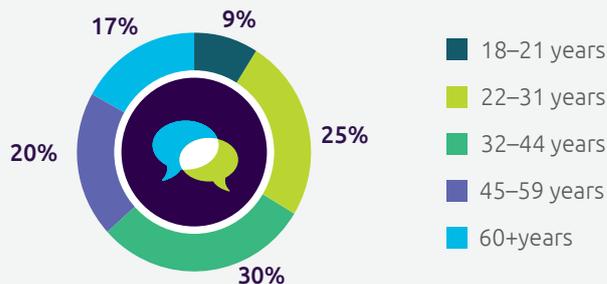
- 17%
- 9%
- 25%
- 30%
- 20%

Legend:
- 18–21 years
- 22–31 years
- 32–44 years
- 45–59 years
- 60+years

Source: Capgemini Research Institute, Conversational Interfaces Research, Consumer Survey, April 2019 – May 2019, N=7,078 consumers.

Figure 5. Nearly 40% of users of in-car conversational assistants, including voice, earn more than $60,000

Figure 6. Nearly 60% of users of in-car conversational assistants, including voice, reside in urban areas

Share of consumers using conversational assistants in car: by household income

- 4%
- 5%
- 11%
- 7%
- 24%
- 11%
- 16%
- 23%

Legend:
- Less than $20,000
- $20,000–$39,999
- $40,000–$59,999
- $60,000–$79,999
- $80,000–$99,999
- $100,000–$119,999
- $120,000–$139,999
- $140,000 or more

Share of consumers using conversational assistants in car: by residence
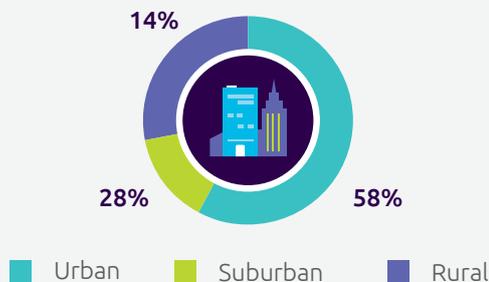
- 14%
- 28%
- 58%

Legend:
- Urban
- Suburban
- Rural

Source: Capgemini Research Institute, Conversational Interfaces Research, Consumer Survey, April 2019 – May 2019, N=7,078 consumers.

Figure 7. More than 50% of the users want to personalize their voice assistants
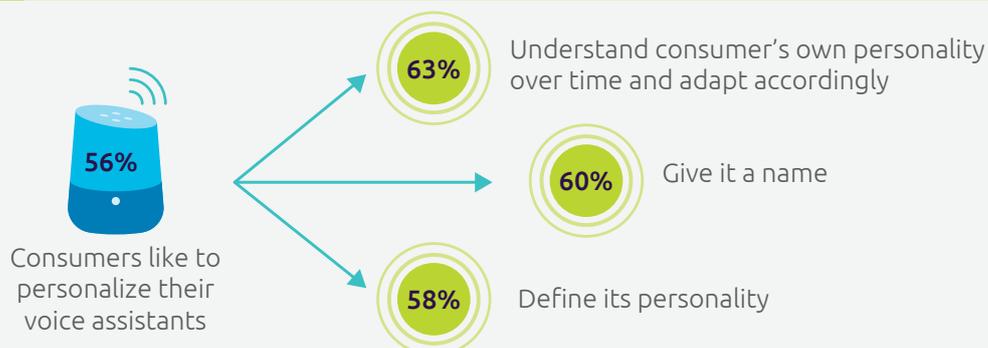
56% Consumers like to personalize their voice assistants

- **63%** Understand consumer's own personality over time and adapt accordingly
- **60%** Give it a name
- **58%** Define its personality

Source: Capgemini Research Institute, Conversational Interfaces Research, Consumer Survey, April 2019–May 2019, N=6,387 consumers.

Despite the convenience, nearly 60% of consumers feel that the in-car voice experience must be improved

On average, only 28% of consumers say that their experience with in-car voice assistants was "great" and that they would happily use them again (see Figure 8). While 59% said the experience was satisfactory, they were clear that it needs improvement. Common bugbears for consumers were the complexity of the assistants and their inability to interpret speech. For example, nearly 50% of consumers say that their current in-car voice assistant is confusing, and they prefer manual dials for controls. A similar number feel that their in-car voice assistant often fails to understand them.

Privacy and data security continue to remain major concerns for consumers with in-car assistants. We found that 50% of consumers said they do not trust voice assistants with the safety and security of their personal data and 48% say voice assistants are too intrusive and seek too much personal information. While driving, consumers not only use assistants to access car features and functions, but also control smart devices at home, order food and groceries and manage personal appointments. As a result, the voice assistant digests a lot of consumer data, leading to increasing concern about privacy and security.

Figure 8. Consumers feel that the in-car voice experience needs improvement

Play music, check directions and other in-car functions — 43% | 49% | 8%

Booking a cab (e.g., Uber) for individual/shared rides — 26% | 58% | 15%

Using the in-car assistant to order specific services (eg: add to cart, order groceries, etc.) — 26% | 59% | 14%

Booking an appointment for a service (e.g. tire change) — 25% | 60% | 15%

Using the in-car assistant to order specific mobility services — 25% | 60% | 15%

Integrating with at-home voice systems, e.g. setting a comfortable temperature at home before arriving and vice versa control of car from home — 24% | 63% | 13%

Providing feedback or make a complaint for the car — 23% | 61% | 16%

Average experience across these use cases — 28% | 59% | 14%

■ It was great, will use it again

■ It was satisfactory, but the experience needs to be improved

■ It wasn't satisfactory, won't use it again

Source: Capgemini Research Institute, Conversational Interfaces Research, Consumer Survey, April 2019–May 2019, N=7,078 consumers.

Less than 30% consumers say that their experience with in-car voice assistants was "great"

Voice assistants provide a great opportunity to enhance the customer experience

While in-car voice assistants have been around since 2004, consumer traction has only really picked up in recent years, supported in part by the proliferation of at-home voice assistants. As we saw in Figure 2, by 2022, 95% of consumers will likely use a conversational assistant to access information inside the car. This vast user base presents automotive organizations with a great opportunity to enhance the customer experience, but only if certain significant challenges are overcome.

A positive experience will drive higher customer engagement

A good experience with a voice assistant encourages further engagement and migration to this channel. As Figure 9 shows, for example, 76% of consumers said that they would use the voice assistant more frequently on the back of a positive experience and 65% said it would encourage them to lessen their dependence on conventional customer service in favor of the assistant.

Figure 9. Three in four consumers who have a good experience with a voice assistant will use it for more functions
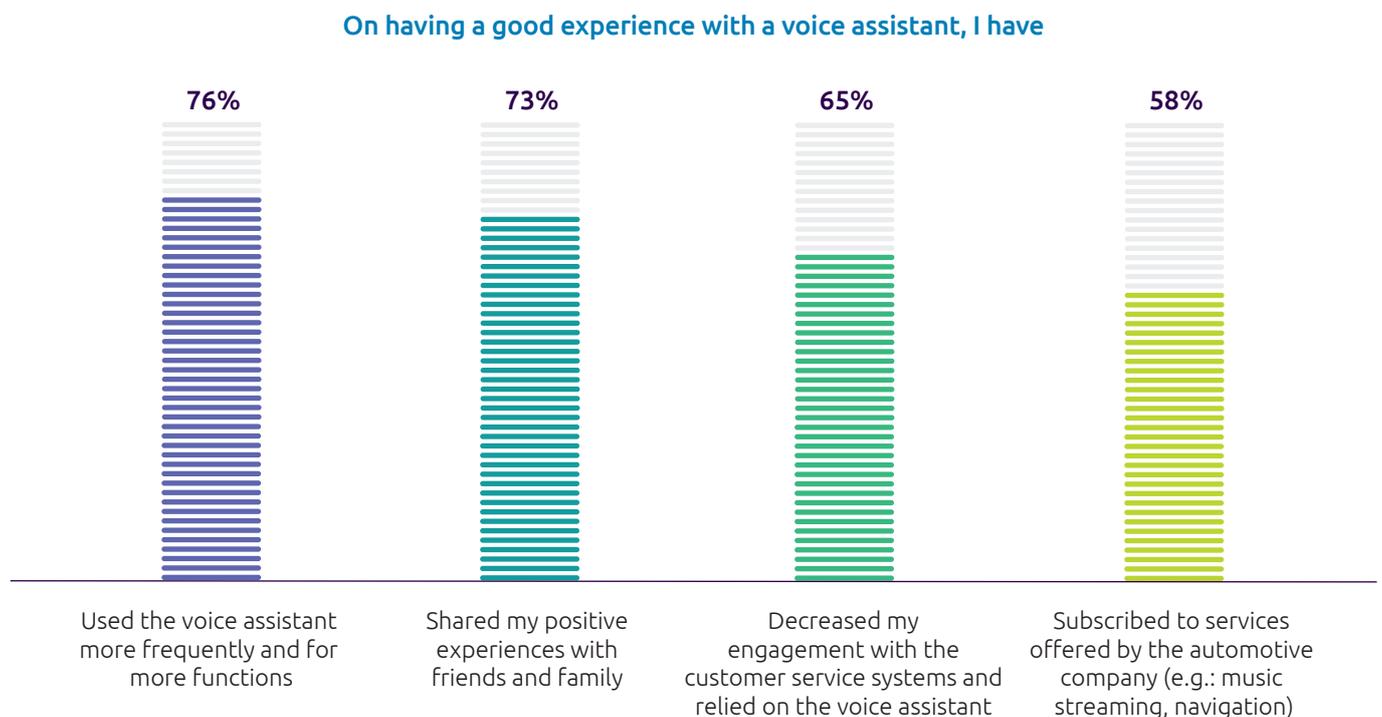
On having a good experience with a voice assistant, I have

76%	73%	65%	58%
Used the voice assistant more frequently and for more functions	Shared my positive experiences with friends and family	Decreased my engagement with the customer service systems and relied on the voice assistant	Subscribed to services offered by the automotive company (e.g.: music streaming, navigation)

Source: Capgemini Research Institute, Conversational Interfaces Research, Consumer Survey, April 2019–May 2019, N=7,078 consumers.

In-car voice assistants have an edge over at-home voice assistants:

- In the US, the number of people with a voice assistant in the car is nearly double those with access to smart speakers.[5]
- Our research shows that 53% use their in-car voice assistant for more diverse functions than at-home assistants.

We found that three in five consumers also said that they prefer using a single integrated voice service across vehicle, home, and mobile (see Figure 10). Anticipating this sentiment, BMW in China introduced Alibaba's voice assistant, Tmall Genie, into some of its country models. This allows customers with a Tmall Genie-compatible device at home to also operate vehicle functions easily and conveniently.[6]

Figure 10.   Three in five consumers prefer using a single integrated voice service

Consumers who prefer using a single integrated voice service in the vehicle, at home, and on a mobile device
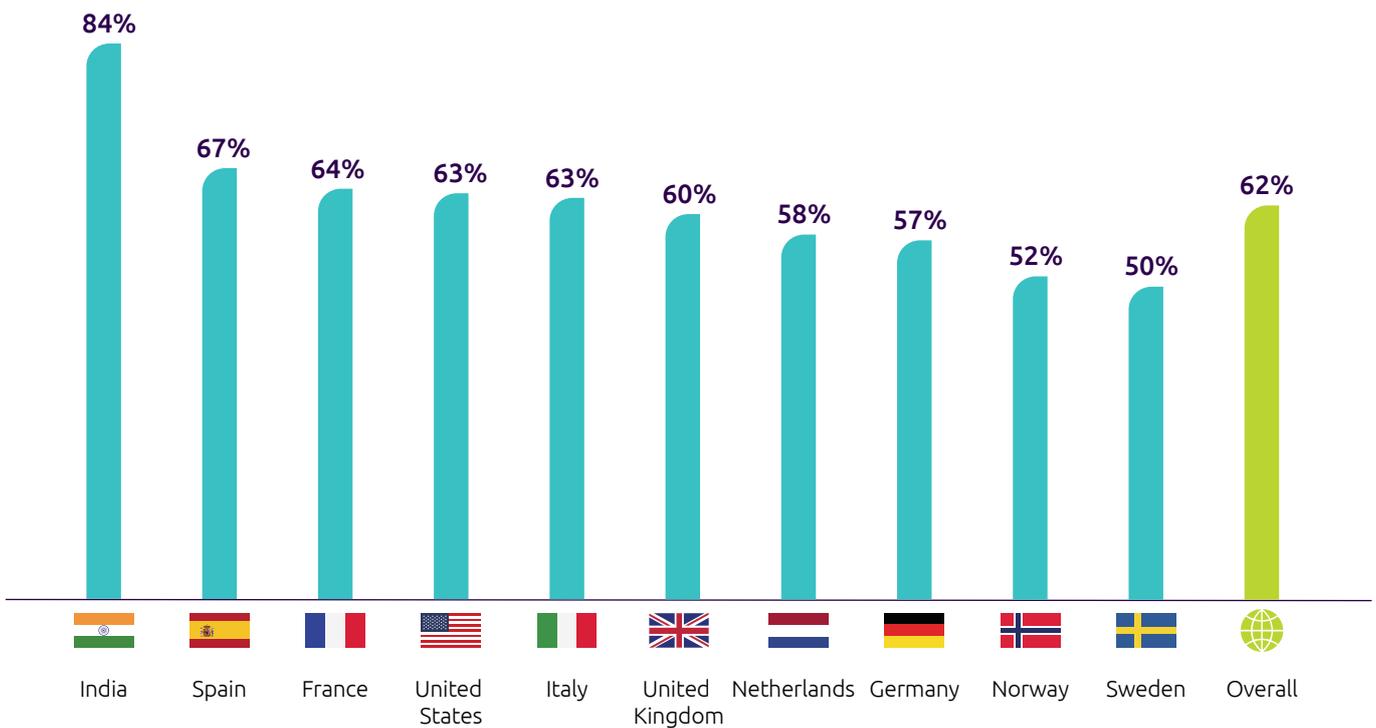
India	Spain	France	United States	Italy	United Kingdom	Netherlands	Germany	Norway	Sweden	Overall
84%	67%	64%	63%	63%	60%	58%	57%	52%	50%	62%

Source: Capgemini Research Institute, Conversational Interfaces Research, Consumer Survey, April 2019–May 2019, N=7,078 consumers.

Three in five consumers prefer using a single integrated voice service in the vehicle, at home, and on mobile device

Advanced voice assistant use cases

The top use cases for in-car assistants are playing music, making a telephone call, and navigation.Today's car assistants are, however, capable of handling more complex queries. For instance, Dragon Drive – an AI-powered voice assistant from Cerence Inc. that is used in certain Audi, Daimler, and Ford models among others – has a number of advanced features, such as:[7]

- **AI integration with sensors:** When you make a request to find somewhere to park, Dragon Drive can use contextual information. For example, if the windshield wipers are being used, the system understands that it's likely raining and will therefore prioritize covered parking in its recommendations.

- **Multi-passenger interaction:** If any individual passenger says, "it's a little cold in here," Dragon Drive can adjust the climate only in the area where that specific passenger is sitting, through the use of seating awareness and voice biometrics.

- **Multi-modal usage:** Drivers can look at a restaurant while driving by and ask Dragon Drive to call that particular outlet and the voice assistant can assist them.

General Motors (GM) in Canada has enabled integration with Amazon Alexa, which means that its Canadian consumers can remotely start their car using a PIN. This can be a significant convenience when it is cold outside and consumers prefer to get the car warmed up without stepping outside. Consumers can also use their voice assistants to lock and unlock their vehicles.[8]

BMW's Intelligent Personal Assistant allows consumers to control all the standard in-car features by voice. Over time, the assistant learns their preferences and can even proactively suggest changes. For instance, if consumers are driving outside the city at night, it could suggest they use the High Beam Assist headlight feature.[9]

Mercedes is aspiring to deliver a superior personal experience through its infotainment system, Mercedes-Benz User Experience (MBUX). MBUX can respond to complex commands and take actions such as switching on the reading lamp if the driver simply extends a hand toward the rear-view mirror. Mercedes Me app launched with MBUX will notify the driver if the parked car is bumped into or towed away.[10]

# Customers are willing to pay a premium for voice assistants

Our research shows that not only are consumers using voice assistants for a number of activities, they are also ready to pay a premium for them:

- More than one-third (37%) are willing to pay a premium or a monthly fee for a voice subscription installed/embedded in the car.
- 48% said they would consider it in the future.
- Only 15% said they would not be open to paying.

As Figure 11 shows, more Indian consumers are willing to pay a premium (68%) for the voice assistants than consumers in other countries (37%). India has both healthy car sales (annual sales of more than three million cars just in the passenger segment)[11] as well as a growing mobile user base. Ford is gearing up to launch models with Alexa as the in-car assistant in India by 2020. Alexa will be consolidated with the existing Microsofy Sync interface in these models. Amazon is reportedly training Alexa to understand Indian dialects for this launch.[12]

Figure 11. India ranks the first among the consumers willing to pay a premium for voice assistants
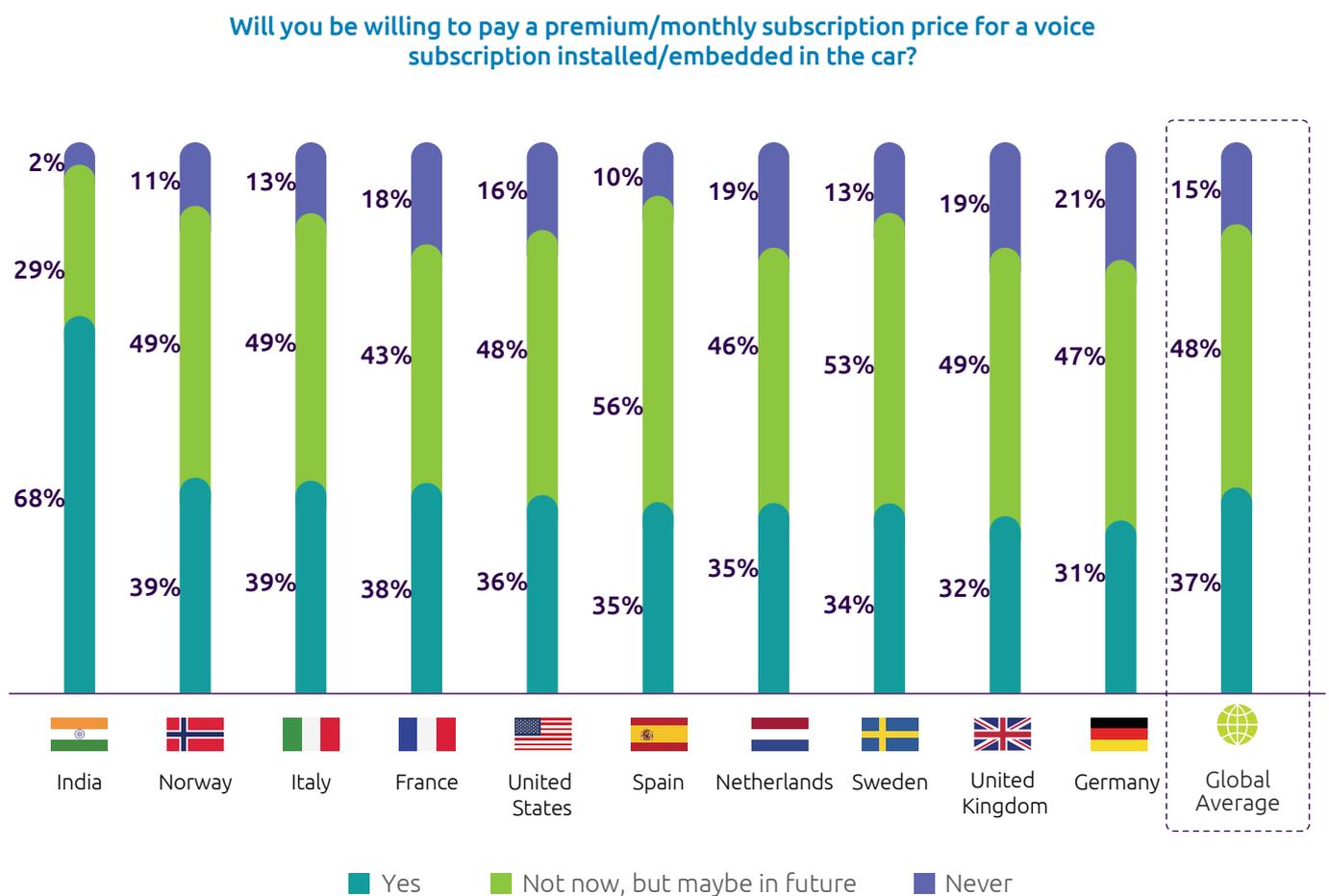
Will you be willing to pay a premium/monthly subscription price for a voice subscription installed/embedded in the car?

Source: Capgemini Research Institute, Conversational Interfaces Research, Consumer Survey, April 2019–May 2019, N=7,078 consumers.

Among the age groups researched, nearly half of those aged between 22 and 31 (47%) said they would be willing to pay a premium for voice services in their cars, 10 points higher than the average (37%).

Will you be willing to pay a premium/monthly subscription price for a voice subscription installed/embedded in the car?

|	18–21 years	22–31 years	32–44 years	45–59 years	60+ years	Global average
Never	10%	9%	14%	19%	23%	15%
Not now, but maybe in future	46%	44%	43%	52%	59%	48%
Yes	44%	47%	44%	29%	18%	37%

■ Yes   ■ Not now, but maybe in future   ■ Never

Source: Capgemini Research Institute, Conversational Interfaces Research, Consumer Survey, April 2019–May 2019, N=7,078 consumers.

In-car voice assistants, given that they are hands-free, provide further possibilities for consumers beyond in-car features. Capgemini research this year on autonomous cars found significant appetite for wider applications within self-driving cars:[13]

- 63% would like to socialize or catch up with friends or family, through a text/call
- More than half would like to use the time for various entertainment purposes, including – listening to music (76%), watching movies/series (54%).

There is a clear opportunity for automotive organizations, not just in autonomous cars but also in today's cars, to build engagement with consumers and strengthen the customer experience.

Nearly 50% of consumers aged between 22–31 years are willing to pay a premium for voice services in their cars

Automotive organizations overestimate the capabilities of their voice assistants

The automotive industry, which has been working on in-car assistants for more than a decade, understands the customer experience potential of these assistants:

- 72% of industry executives said that a conversational assistant is a key enabler of the company's business/customer engagement strategy
- 76% said they have a framework to constantly update their conversational assistants' skills based upon user needs.

However, there is a gap between what executives think and what consumers feel when it comes to the capabilities of these assistants, as Figure 13 shows. We have found that the organizations overestimate their voice assistants' capabilities by at least 15 points. For example:

- 81% of industry executives believe their voice assistants understand people's needs and preferences
- Only 59% of consumers agree.

Figure 13. Automotive organizations overestimate the capabilities of voice assistants in meeting consumer expectations

22 points		19 points		15 points	
81%	59%	84%	65%	74%	59%

Voice assistant understands the consumer's needs and preferences when making suggestions

Voice assistant keeps improving based on user's personalized suggestions over time

Voice assistant considers context into account when interacting

■ Automotive executives ■ Consumers
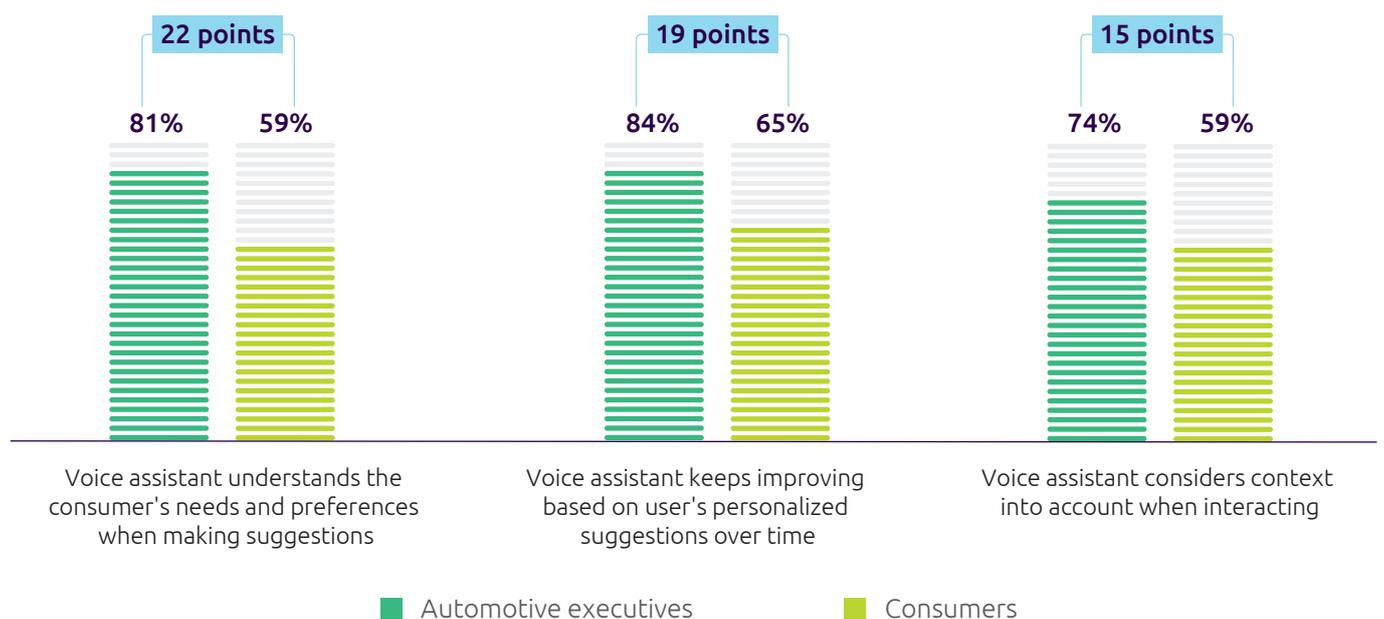
Source: Capgemini Research Institute, Conversational Interfaces Research, Executive Survey, April 2019–May 2019, N=6,386 consumers, N=117 Automotive organizations.

We already know from the previous section that nearly 60% of consumers want the experience of using their voice assistant for various use cases to be improved. Taking that finding in conjuction with this expectation gap shows that the industry needs to work harder to provide consumers with a better and seamless user experience.

Our research also shows that compared to other industries, organizations lag behind in the processes required for providing a great experience to consumers. For instance, as shown in Figure 14, just 57% of automotive organizations said that they have a common platform that can integrate the required data, technologies, and processes for AI initiatives for voice assistants. Such an intergrated platform helps the assistants understand context and consumer behavior, and to respond appropriately.

Please indicate the level of maturity for the following

A common platform that integrates data, technologies and processes to overlay AI initiatives for voice assistants

57%

70%

Feedback loop to register and continuously correct the errors that the assistants generate

55%

68%

■ Automotive   ■ All sectors (CPR, FS, and Automotive)

Less than 60% automotive organizations have a common AI platform to integrate data, technologies and processes for voice assistants

How can automotive organizations leverage voice assistants to provide a great consumer experience?

Years of familiarity with in-car assistants have raised consumer expectations. As a quality professional at a large OEM told us, *"When we started [in India, in 2012] to build-in voice assistant functionalities, it was a craze but later it became a necessity. Consumers not only think of these as a necessity but are already expecting advanced use cases. For example, in case of an accident, they want the voice assistant to automatically dial the emergency number."*

But auto manufacturers are not fully geared to meet such increased expectations. In our research, the organizations cited "lack of skill set in AI and natural language processing" and "lack of understanding of the customer needs" among the top three challenges in scaling conversational assistant initiatives. To overcome this, auto manufacturers are partnering with big technology companies and voice service providers such as Cerence and SoundHound – almost nine

in ten auto manufacturers have a partner to develop and integrate voice technologies in order to provide a better experience.

A German auto executive says, *"You [car manufacturers] might want to do everything on your own, control the overall experience and each and every single service … the other extreme would be to let everybody in and not moderate anything. But both these are not the right approaches. You should let third parties in and, at the same time, ensure there is an overall consistent experience. That's the role the car manufacturers need to play."*

Auto manufacturers and voice service providers need to master three stages, which we call Anchor, Customize, and Expand, to deliver a superior customer experience (Figure 15).

Figure 15. How can organizations provide a superior in-car voice experience

Expand
- Integrate in-car and at-home functionalities
- Build an ecosystem for the long term

Customize
- Test at micro-segment level and build adaptability
- Give voice assistants a unique personality
- Ensure and develop contextual relevancy

Anchor
- Educate users about "skill" recommendations, discovery, and search
- Soothe privacy concerns
- Master basic features and earn trust
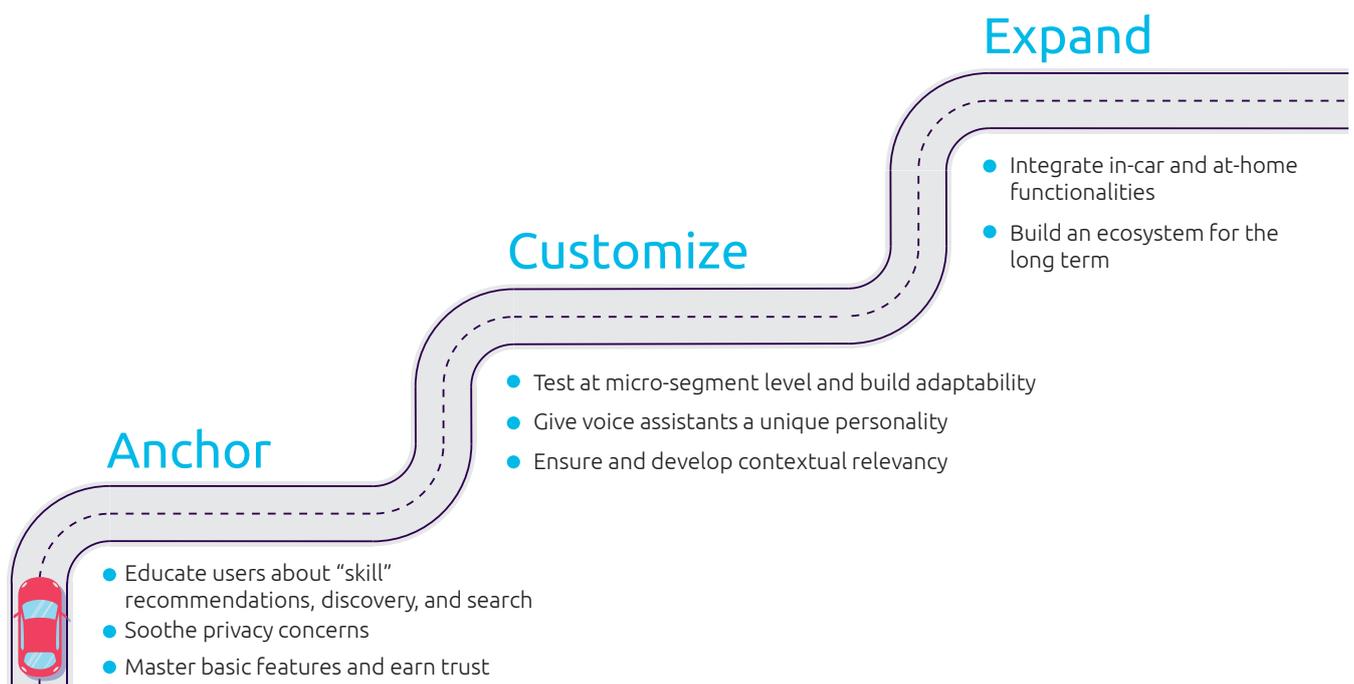
Source: Capgemini Research Institute analysis.

Anchor

Educate users

The number of skills offered by voice interfaces is increasing. For example, Amazon alone offers 90,000 skills on its Alexa devices.[14] However, consumers are not aware of the range of capabilities of in-car voice assistants. Consumer education, therefore, should focus on three aspects:

- **Skill discovery:** Lack of awareness about the existence of a skill can inhibit the voice customer experience. While auto manufacturers are educating consumers about different functionalities during the purchase of the car, the designers of voice interfaces at leading companies are embedding educational elements. For example, customers are given an option to learn more about complementary skill sets when the assistant has successfully fulfilled another skill. Voice assistants also take consumers or users through a tour of the most popular skill sets for in-car use.
- **Skill search:** Consumers should not only be aware of a skill, but also what commands will invoke the skill they are looking for. Typically, customers do not understand whether the voice assistant has understood the request in the right context or why it cannot perform a function. Voice assistants need to be transparent and provide clarification. In instances where the request cannot be handled by the assistant, it can recommend some related use cases.
- **Skills recommendation:** Offering timely, correct recommendations without interfering with the experience is another important facet of a valuable voice experience. Leading auto manufacturers layer in visuals to provide interactivity. In case of use cases involving multiple back and forth (for example, ordering food) a video console can help streamline the interaction. As a senior executive at a large automotive OEM told us, *"The capability of showing images/videos to the user is critical in enhancing the use of voice assistants. When the consumer does not know the exact command for a specific task, the videos or the demos can provide recommendations."*

Soothe privacy concerns

Automotive consumers, as we have seen, are sensitive about the use of personal data by in-car voice assistants. But data from voice assistants will be critical for these systems to learn quickly and improve their functionality and relevance.

To earn consumers' trust, in car-assistants need to be transparent about how data is used to make a recommendation, where the data was sourced, and what permissions are in place. Respecting data privacy can provide a competitive edge. Recent research we conducted found that organizations that are compliant with GDPR (General Data Privacy Regulation) see a positive impact on customer ratings, satisfaction and trust. For example, 82% of customers would give higher NPS ratings to compliant organizations against 65% of consumers to non-compliant ones.[15]

Master basic features and earn trust

Our research shows that although auto manufacturers are marketing in-car voice assistants as a differentiating factor, they lack reliability and consistency. As a result, while they set a high expectations bar, it often leads to disappointments. Around half (48%) of consumers said that "a voice assistant is not able to understand me or my reactions." Setting reasonable expectations will make them come back to use the voice assistant again.

Voice assistants need to reliably fulfill utility, basic entertainment, and information functions before they can engage consumers for more complex ones. As they learn more about the customers and their satisfaction scores improve, they can personalize interactions. As Eric Turkington, VP, Strategic Partnerships at RAIN told us, *"I think many voice experiences are still stuck in the novelty phase. What's important in developing a voice utility is not trying to do too much. Companies that approach voice the most intelligently are those that do want to provide some sort of enduring utility. I think some of the more marketing focused flash in the pan type executions can be effective for marketing, but not necessarily for a long-term success in voice."*

I think many voice experiences are still stuck in the novelty phase. What's important in developing a voice utility is not trying to do too much."

- Eric Turkington, *VP, RAIN*

To achieve this, organizations need to keep interactions simple to avoid a lot of back and forth. For example, placing an order for food delivery from scratch can be complicated. However, re-ordering a previous delivery is much easier, and better suited to voice.

Customize

Test at micro-segment level and build adaptability

A voice user experience (UX) cannot always be easily ported across geographical and cultural groupings. Even within group with a common language, for example, different accents can play a part. There are a number of priorities for addressing these issues:

- **Test at a granular level:** Before rolling out features in a new geography, test them extensively for each micro-segment and region. Companies need to enable multi-lingual support for functions such as selecting music or point of interest. Adding simultaneous support to multiple languages and supporting different dialects are critical for success in large countries such as India and also in Europe where people commute across countries in their cars.
- **Build adaptability:** It is important to build adaptability for unexpected responses. Voice assistants are vastly different than traditional interactive voice recognition (IVR) systems, which are programmed for specific conversational flow. The possibilities in a voice assistant are numerous but the interface must have a fallback mechanism, as suggested earlier in the Anchor phase.
- **Regular over-the-air updates:** With voice assistants, companies are looking at a very different product lifecycle. The average age of a car is around 12 years in the US,[16] but digital hardware technologies might change substantially during that period. Consumers' interactions will become more mature and likely grow in complexity. Companies will need to allow for pushing software updates and latest functionalities based on user demands. This require constant upgrades to software, testing and learning using the data and feedback from consumers. Anish Patel, project leader – Connected Car at Groupe PSA, elaborates, *"Language evolves over time. It means that the solution is not static. It must be consistently updated and improved for which we can use OTA (over-the-air updates) for an embedded model. It also means that the quality is heavily dependent on not only the data size, but also on how recently the data was obtained."*

Give voice assistants a unique personality

Previous Capgemini research on AI in the Customer experience found that nearly 64% want AI to be more human-like.[17] There is an opportunity for auto manufacturers to differentiate their brand and build loyalty.

Leading auto companies allow customization to their voice assistants. Nearly 60% of consumers want to personalize their in-car assistants such as giving it a name or defining its personality. Bosch recently developed a voice recognition system that understands and speaks 30 different languages with a total of 44 female and 9 male voices. The driver activates the assistant by calling out "Hey, Casey" or uses the new name given to the assistant.[18]

As users become more comfortable interacting with voice, providing a personality can be quite useful. Although voice assistants were built for efficiency or to automate a task, people are now establishing relationships with them. *"There is an opportunity to build loyalty by extending the relationship with the user beyond just the physical aspects of the car and into a much deeper interactive experience"* says Michael Zagorsek, VP, Product Marketing at SoundHound Inc., developers of the Houndify voice AI platform.

Ensure and develop contextual relevance

Leading auto manufacturers are already experimenting with sensor data such as physical location, past searches and application activities, calendar, interests etc. to model context.

Conversational analytics are essential to understand and optimize the interaction with the user for a positive user experience. To accomplish this, it is important to evolve the analytics approaches. Traditional analytics are not adequate for analyzing conversational inputs. For example, the text logs of a conversation do not necessarily capture the tone or pitch of the customers. Advanced analytics combined with real-time context analysis (for example, cadence, crosstalk or variation in tone or pitch etc.) will unearth customer sentiments more accurately and provide better suggestions.

Technology companies are investing in embedding context into their voice assistants. Amazon's Alexa will be able to handle ambiguous references, such as, "Are there any Italian restaurants nearby?" (Near where?). Companies need to work on preserving context of the conversation when invoking a new skill – for example, remembering the location of a certain movie theater when suggesting nearby restaurants.

Voice assistants such as Alexa are also trying to model empathy in their customer interactions.[19] Based on the customer's mood, Alexa can take actions or provide a different experience to the user. This experience can also be potentially ported to the in-car assistants. This will add another layer to the relationships of voice assistants with customers.

Expand

Integrate in-car and at-home functionalities

Auto manufacturers and voice service providers are integrating multiple assistants in the car to offer more flexibility of interaction to the consumers. These assistants are closely integrated within the dashboard to retain some amount of control or ownership of data flowing through the cabin. For example, Maserati integrated three voice assistants (Alexa, Bixby, and Cortana) in its dashboard, each of which can be accessed by turning a knob.

We have seen that consumers want to port their home-based voice experiences into the car. To address this, auto manufacturers, voice-service providers and big technology companies are building partnerships. These partnerships need to balance out the need to secure data, sharing norms between platforms and the level of integration necessary to provide a complete experience.

Surfacing the right response at the right time, no matter where it resides, is best achieved via close integration of in-car and at-home voice assistants. Consumers can already perform functions such as remote locking/unlocking, sending destination information from their smartphone to their navigation system, and tracking car's location, via the carmakers' smartphone app. Making the same features accessible through in-home voice assistants will help meet users' demand for closer integration of at-home and in-car assistants. Recently, General Motors (GM) announced its plans to directly integrate Amazon's Alexa into its vehicles starting in 2020.[20]

Build an ecosystem for the long term

As connected cars become increasingly the norm, consumers would expect complex tasks to be completed smoothly in the car. Companies, therefore, need to create an ecosystem of apps integrating payments, shopping, music, gas purchase, toll and parking payments etc. GM has launched the 'Marketplace' app to allow consumers to purchase goods and services. Honda Motor Company has partnered with Visa, Chevron, MasterCard and PayPal to create a unified platform for services integrated within the dashboard and accessible without a mobile device.[21]

Juergen Bauer, Manager Strategy and Central Functions in Technical Project Management, Engineering & Planning Center, at Volkswagen summarizes, *"Voice assistants could commoditize pretty quickly. So, the differentiation can only be the real user experience, how you get into car, how you start the car, how you interact with the system, how it displays back information to you, how smooth the integration is, how much it connects with outside services. It is a very complex system, and the art is the smooth integration of all the hundreds of moving parts. It all needs to match up beautifully."*

As the world moves towards an autonomous future, a fully developed ecosystem can provide a competitive edge to automotive organizations, opening new monetization avenues and creating engaging drive experiences.

Conclusion

Consumers view their car as an extension of their digital lives. In-car assistants must be considered as part of a new generation of enhanced and simplified digital interfaces, immersing consumers within their environment. Consumers expect a seamless, personalized, and interactive experience from their car brands.

While in-car assistants offer convenience and faster resolution to queries, auto organizations overestimate the quality of the experience – most consumers want the experience to be improved. There are certain technological challenges, which will likely be overcome with time through right partnerships and investments. But there are also concerns about privacy, which organizations should act upon right now. Consumers will happily trade personal information in exchange for value if their data is protected, and the organizations are transparent about how it is being used.

Car brands that delight consumers through their in-car experience will gain consumers' trust and loyalty and will also enjoy a price premium over their competitors. The in-car voice assistant is the window to deliver such an experience.

Research Methodology

We surveyed 300 executives from large automotive organizations with revenues of more than 1 billion US dollars.

Organizations by country

22%
17%
16%
12%
11%
7%
5%
5%
2% 2%

Legend:
- Sweden
- Germany
- Netherlands
- Norway
- France
- Spain
- Italy
- India
- United Kingdom
- United States
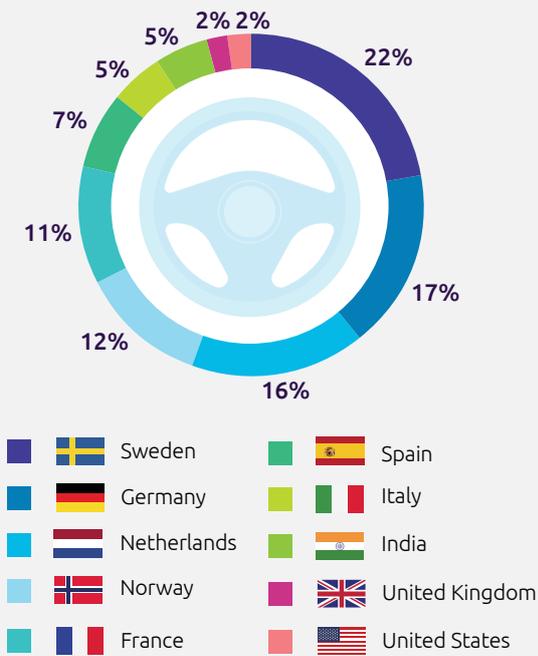
Organizations by revenue

48%
29%
18%
5%

- 1 billion USD to less than 4 billion USD
- 4 billion USD to less than 10 billion USD
- 10 billion USD to less than 20 billion USD
- More than 20 billion USD
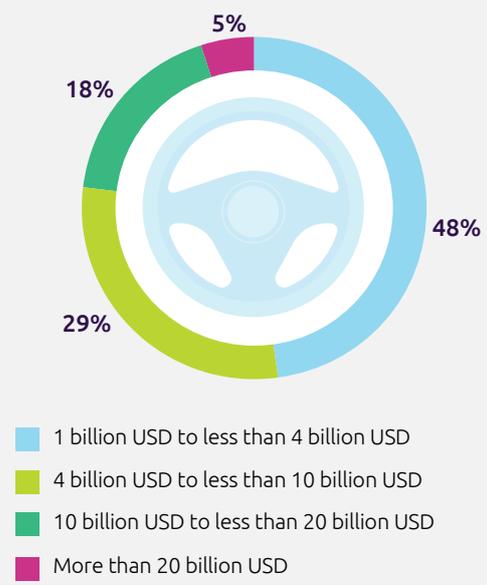
Organizations by number of employees

54%
24%
14%
7%
1%

- <1000 employees
- 1000 to 5000 employees
- 5001 to 10000 employees
- 10001 to 20000 employees
- More than 20000 employees
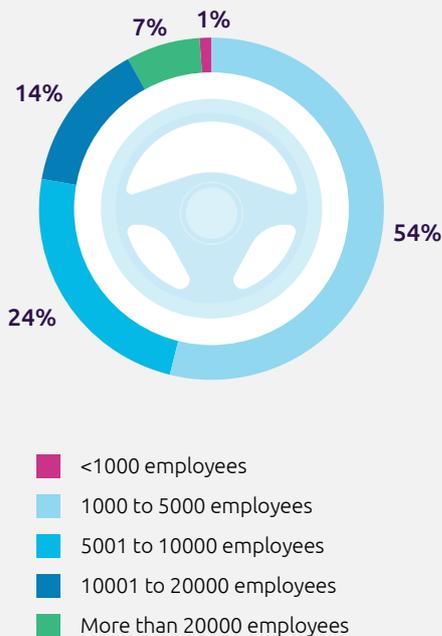
Respondents by designation
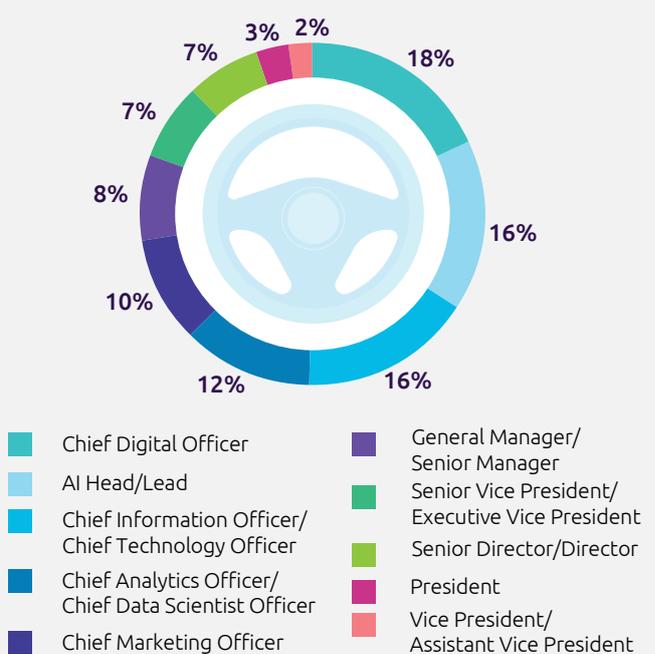
18%
16%
16%
12%
10%
8%
7%
7%
3%
2%

- Chief Digital Officer
- AI Head/Lead
- Chief Information Officer/ Chief Technology Officer
- Chief Analytics Officer/ Chief Data Scientist Officer
- Chief Marketing Officer
- General Manager/ Senior Manager
- Senior Vice President/ Executive Vice President
- Senior Director/Director
- President
- Vice President/ Assistant Vice President

We also conducted in-depth interviews with a number of industry experts and voice solution providers.

We surveyed over 7,000 consumers using in-car voice assistants.

Consumers by country

- 15% — United States
- 12%
- 12%
- 11%
- 11%
- 10%
- 10%
- 8%
- 6%
- 5%

🇺🇸 United States	🇫🇷 France
🇪🇸 Spain	🇩🇪 Germany
🇬🇧 United Kingdom	🇳🇱 Netherlands
🇸🇪 Sweden	🇮🇳 India
🇮🇹 Italy	🇳🇴 Norway
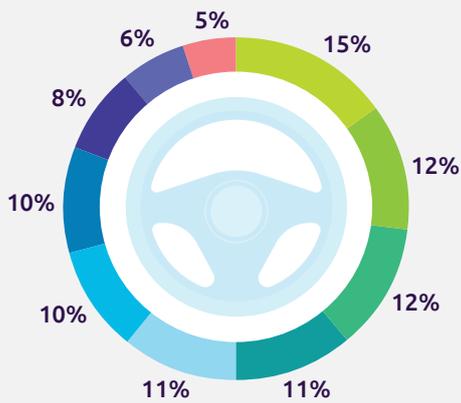
Consumers by annual household income

- 11%
- 24%
- 23%
- 16%
- 11%
- 7%
- 4%
- 5%

Less than $20,000	$80,000–$99,999
$20,000–$39,999	$100,000–$119,999
$40,000–$59,999	$120,000–$139,999
$60,000–$79,999	$140,000 or more
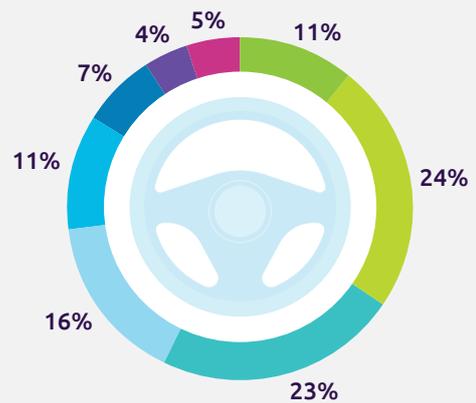
Consumers by type of residence
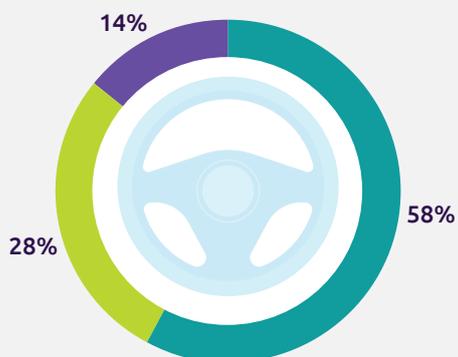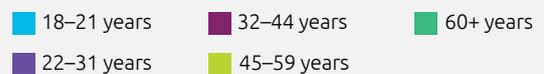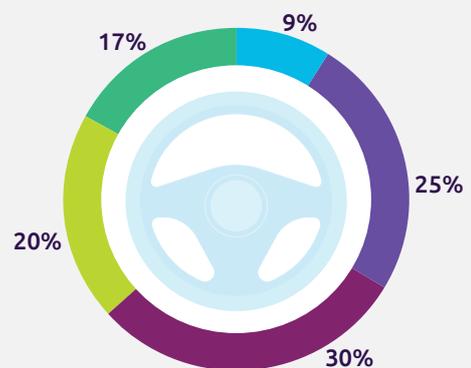
- 58%
- 28%
- 14%

- Urban
- Suburban
- Rural

Consumers by age

- 9%
- 25%
- 30%
- 20%
- 17%

18–21 years	32–44 years	60+ years
22–31 years	45–59 years	

Source: Capgemini Research Institute, Conversational Interfaces Research, Consumer Survey, April 2019 – May 2019, N=7,078 consumers.

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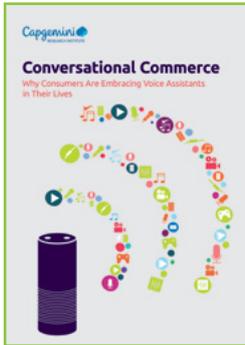
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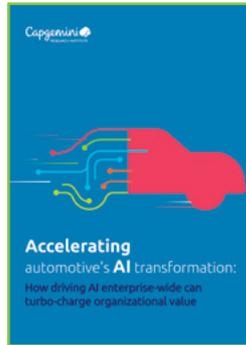
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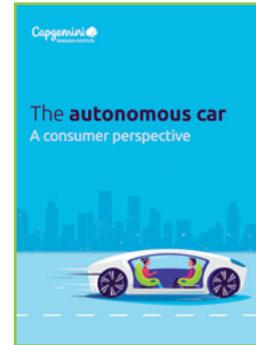
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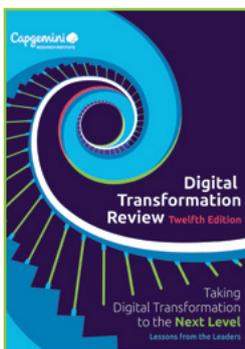
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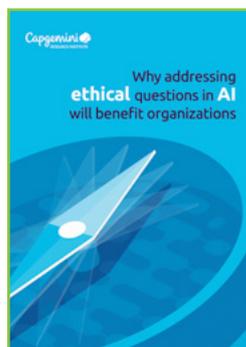
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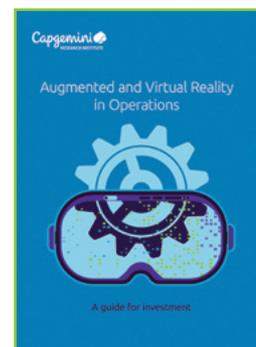
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