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The US Contact Center Decision-Makers' Guide 2019-20

The Artificial Intelligence & Machine Learning Chapter

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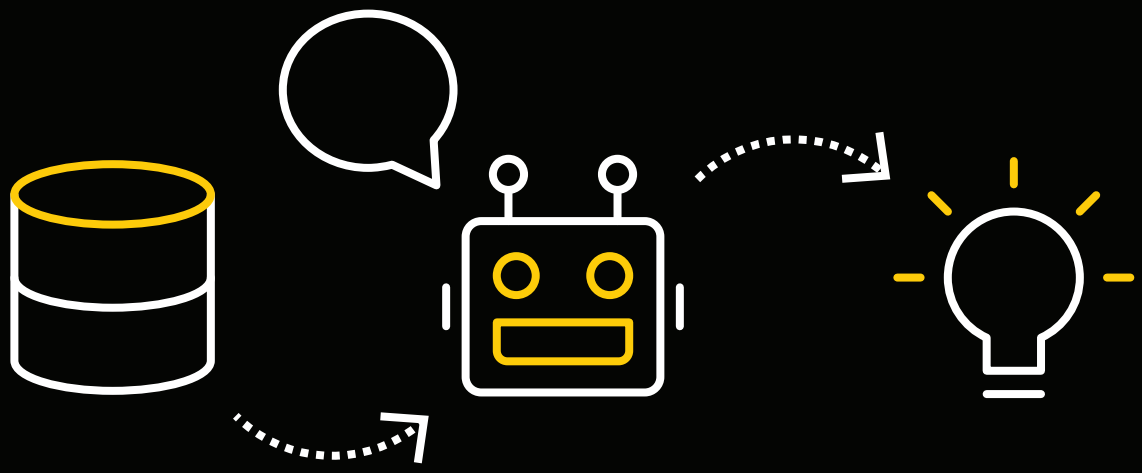

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ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

Artificial intelligence (AI) is a wide-ranging term for technology solutions which appears to emulate human cognitive capabilities through the 'understanding' of complex, natural language requirements, in order to reach its own conclusions and develop itself based on what works and what doesn't. Machine learning refers to the ability of software to evolve based on measuring its performance and success, without input from humans.

Within the customer contact space, there is a great deal of interest in how AI can work to deliver a superior customer experience at every hour of the day, across channels, leveraging the vast amounts of data that are available to many large organizations. Supported by the speed and availability of affordable processing power, and the enormous amount of structured and unstructured data available, the opportunity exists for AI to take customer contact far beyond what is feasible now.

Although we are at the beginning of the AI revolution, there are already numerous well-known examples widely used by the public, including Amazon's Alexa and Apple's Siri. These virtual assistants 'understand' unstructured natural language requests and deliver the solutions in a manner similar to a live personal assistant.

As AI can be given access to all of the relevant data a company holds on its customers, as well as unstructured data held elsewhere (for example, forums or social media channels), it has a far wider source of knowledge from which to draw, compared to human agents. In theory, an AI with sufficient sophistication could make human agents all but unnecessary, but for the foreseeable future, AI will usually work alongside its human colleagues.

The usage of the term 'AI' in the contact center covers an enormous area, and is often used by solution providers, media and businesses to refer to functionality that may only very tenuously be said to be linked to true AI, which is itself a wide-ranging term for technology solutions which appear to emulate human cognitive capabilities through the 'understanding' of complex, natural language requirements, in order to reach its own conclusions and improve itself.

Rather than arguing about semantics, the umbrella term of AI will be used descriptively rather than prescriptively within this chapter. Its use within the contact center will be linked to three broad types of linked functionality – the "4 A's of AI" – analysis, anticipation, augmentation and automation.

Analysis:

Whereas for humans, enormous, fast-changing datasets make understanding and action more difficult, AI requires extremely large sets of data in order to find patterns and work optimally. Tools such as speech-to-text and optical character recognition (OCR) enable the AI to normalize data and compare like with like, and machine learning allows systems to improve accuracy and the effectiveness of outcomes without constant input and tweaking from human users.

Anticipation:

Based upon the customer's history, the context of the interaction, and the factors influencing successful outcome of similar interactions in the past, AI will be able to predict the best action to take. This may be in the form of an answer taken from the knowledge base, the correct prioritization and routing of a call, or the prompting of an agent to ask a specific question or make a relevant sales offer.

Augmentation:

The AI is able to gather relevant information from numerous sources in real-time in order to provide enhanced information to human agents or the self-service system, increasing the likelihood of a successful outcome. The AI is also tasked with updating relevant systems and initiating the correct business processes.

Automation:

In circumstances where there is a high level of confidence that the solution presented by the AI is correct, human intervention may be circumvented altogether. The AI system may monitor the interaction in real-time, using sentiment analysis to determine whether there is a need for a live agent to collaborate.

There are numerous use cases for AI and machine learning in the contact center, and they are listed in greater detail in ContactBabel's report, "The Inner Circle Guide to AI, Chatbots & Machine Learning", including:

Improve Voice Self-Service

Using AI-enabled natural language recognition can alleviate the high level of self-service abandonment associated with speech recognition and DTMF IVR, as there is no fixed menu to navigate and no limit to the number of options a customer has to explain their issue. The onus is placed upon the system to understand the customer's intent, rather than forcing the customer to shoehorn their request into a format allowed by the predefined rules and format of the business.

Improve Web Self-Service

For most businesses, the customer is given free rein to search through documents, pre-written answers and archives, hoping to stumble across the right answer for themselves. The often proves time-consuming and ultimately frustrating for the customer, who will then go elsewhere or call the contact center in a negative mindset. An AI guide would be a valuable aid in improving CX and deflecting unnecessary calls.

Assisted Service

The use of AI to assist agents in real time within a call offers the chance of a real paradigm change: by the nature of the job, an agent-customer interaction has always necessarily been between two people, and the level of support that an agent can actually receive within a call is very limited. AI can work alongside agents to provide relevant knowledge that may be otherwise take a long time to find, and update the knowledge bases available to humans and AI self-service systems using an automated feedback loop that is constantly improving based on actual outcomes.

Improve Digital Channel Experience and Decrease Cost

Perhaps the currently most popular use of AI in the customer contact environment is in handling digital enquiries, where web chats generally take far longer than phone calls (due to agent multitasking, and typing time) and some email response rates can still be measured in days.

As the cost of web chat is broadly similar to other channels such as email, voice and social media, there is room for increasing efficiencies and lowering costs. Digital channels may work well for customers, but businesses are not generally seeing the cost savings that automation can bring. Very few emails or web chats are handled entirely by AI, although a growing proportion of web chats are dealt with by AIs working alongside agents, suggesting responses which agents can then accept or amend. This way of working is most likely to be the norm in the foreseeable future, with the speed of automation and the emotional intelligence of humans combining to provide superior service at a lower cost.

Real-time Analytics and Support

AI can be trained to understand intent and recognize patterns through immersion in vast quantities of historical data, so that when a call is taking place, it can draw upon this knowledge and provide advice or action that has proven successful previously, moving towards the actual provision of real-time analytics.

AI assists in real-time speech analytics through applying the results of machine learning that have been carried out on large quantities of previously recorded conversations, providing:

- agents with the understanding of where their conversational behavior is falling outside of acceptable and previously successful norms (such as speaking to quickly or slowly, or in a monotonous fashion)
- an assessment of the meaning of non-verbal cues such as intonation, stress patterns, pauses, fluctuations in volume, pitch, timing and tone in order to support sentiment analysis
- understanding the actions and information that have been seen to provide successful outcomes in previous similar interactions, and relaying this to the agent within the call.

Augmenting RPA

Robotic process automation (RPA) consists of digital software agents that handle repetitive, rules-based tasks at high speed, with great consistency and accuracy. The RPA workforce acts in the same way as human agents, working at the presentation layer level rather than requiring deep integration with systems, replicating the work that live agents or chatbots would be doing, but more quickly and without requiring any rest. RPA agents can input data, trigger processes, pass work onto other robots or humans as rules dictate and replicate data across multiple applications without making any copying mistakes.

AI can work in association with other process automation solutions (which may in themselves not fall under the category of AI). For example, in the case of unstructured data such as customer emails or letters, optical character recognition can assist the entry of the customer requirements into the business system. Using natural language understanding, AI is able to discern the intent of the inquiry, using a knowledge base and assessing the previous best responses to similar enquiries in order to provide an agent with a recommended solution. It is very likely that the agent will be given the option to add or amend this response before sending to a customer. Any feedback from the customer can be assimilated in order to gauge success and fine tune future responses.

Improving the Customer Journey

AI can be applied across the entire customer journey, including sales, marketing and service, helping organizations understand customer behavior, intent and anticipating their next action. For example, an AI solution may find a pattern amongst previous customers that they are likely to search for specific information at a particular point in their presales journey, and proactively provide this information (or an incentive) to the customer before they have even asked for it. AI can also help with customer onboarding through predicting which customers are likely to require specific assistance.

Machine learning will allow AI to go beyond simply what they have been programmed to do, seeking out new opportunities and delivering service beyond what has simply been asked of them. Through understanding multiple historical customer journeys, AIs will be able to predict the next most-likely action of a customer in a particular situation, and proactively engage with them so as to avoid an unnecessary inbound interaction, providing a higher level of customer experience and reducing cost to serve.

Improving Routing Strategies and Outcomes

AI can be applied to IVR interactions, asking a series of questions to customers using natural language processing to understand their intent. Depending on the customer requirements, it may be possible to answer the query without using a live agent, or in those cases where agents are needed, the prioritization and routing of the call can be optimized, decreasing call transfer rates and increasing first contact resolution. Over time, routing strategies will move away from being rules-based and towards cognition, which will also feed forecasting and scheduling processes.

Predictive behavioral routing uses insights gathered from historical calls and the analysis of customer communication types in order to choose the agent whose skills and characteristics are most likely to achieve a positive response from the next caller in the queue. Predictive behavioral routing uses millions of algorithms to decode the language used by agents and customers, in order to understand sentiment, personality type, preferred method of communication, emotional intelligence and transactional attributes (such as ability to overcome objections and willingness to sell.

Each customer can be allocated a specific personality style, and when calling again, are routed through to an agent whose performance when interacting with this specific personality type has generally positive results.

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Applying Expert Intelligence to Improve Automation

By Mike de la Cruz, Chief Business Officer, Directly

Many analysts project that 50-80 percent of customer service inquiries will be automated within just five years. However, Gartner estimates that "through 2022, 85 percent of AI projects will deliver erroneous outcomes due to bias in data, algorithms or the teams responsible for managing them."

Out-of-the-Box and Into-the-Trash

AI systems left to their own devices will collapse over time. Engineers, algorithms, and lines of code alone will not help you create a better AI product. It's one thing to get an AI initiative up and running; it's another to devote the time and money to actually make it smart. The real intelligence in AI comes from training AI with accurate data from the people who understand the material most: subject-matter experts.

Subject-matter experts are those who know the ins and outs of a topic. In customer service, they are your customers and superfans. They are the ones using your product or service every day. Usually, they are already providing feedback either directly or indirectly—on forums, FAQs, Twitter, and by simply using the product. They usually know its pain points more intimately than the people who built it. By incorporating their expertise into your systems, you can create a better customer experience.

Why Subject-Matter Experts Are The Key to Intelligent Automation

We need to ask the people who use the product to train the system—and reward them for doing so. By putting subject-matter experts at the center of the system, AI can consistently learn and provide the correct output.

For example, Samsung won a Stevie Award for sales and customer service after the company integrated Directly across 75 million devices. The AI project helped Samsung achieve 95 percent customer satisfaction. Impressively, Directly resolved 80 percent of questions without requiring agents. By incorporating subject-matter expertise into your systems, you not only create a better product, but you also create opportunity in the AI era for other types of specialists outside of those with traditional analytical or technical skills.

Learn how we can help you deliver intelligent automation here.

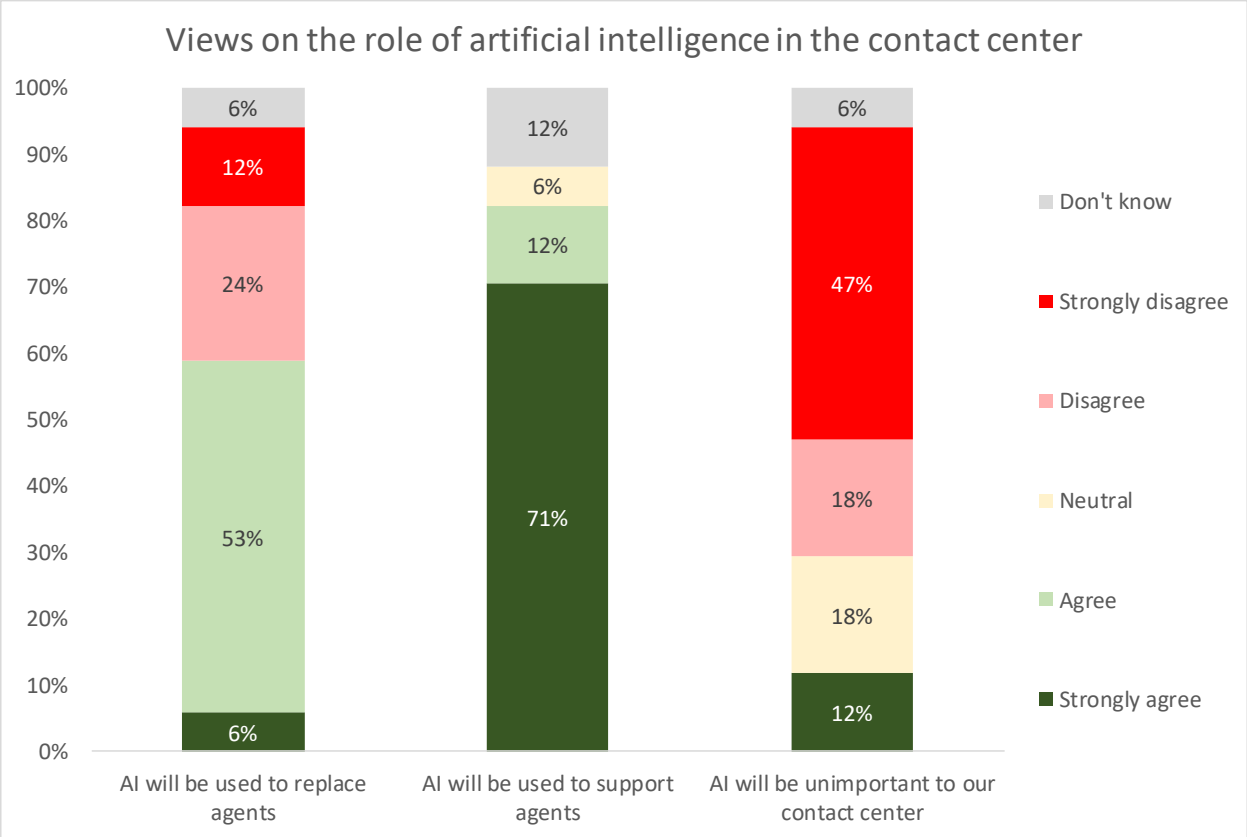
VIEWS ON THE EFFECT OF AI ON THE CONTACT CENTER

Survey respondents were very conflicted in the views as to whether AI would replace agents, with 59% agreeing or strongly agreeing that this would be the case, and 36% disagreeing to some extent. Since last year, there has been a movement towards believing that AI will replace agents, and this will be interesting to track further in future reports. Respondents from large 200+ seat contact centers were more likely to feel that AI would replace human agents, with those in small and medium operations tending to believe that this would not be the case.

More unanimity was found when the question was asked as to whether AI would support human agents, with 83% agreeing or strongly agreeing. Large and medium operations were very likely to agree that this would be the case, and it seems the most likely outcome, reducing risk, speeding up responses and providing customers with higher quality resolutions.

47% strongly disagreed that AI would be irrelevant to their contact center: while this seems quite emphatic, it is fewer than last year's figure of 70%.

Figure 1: Views on the role of artificial intelligence in the contact center

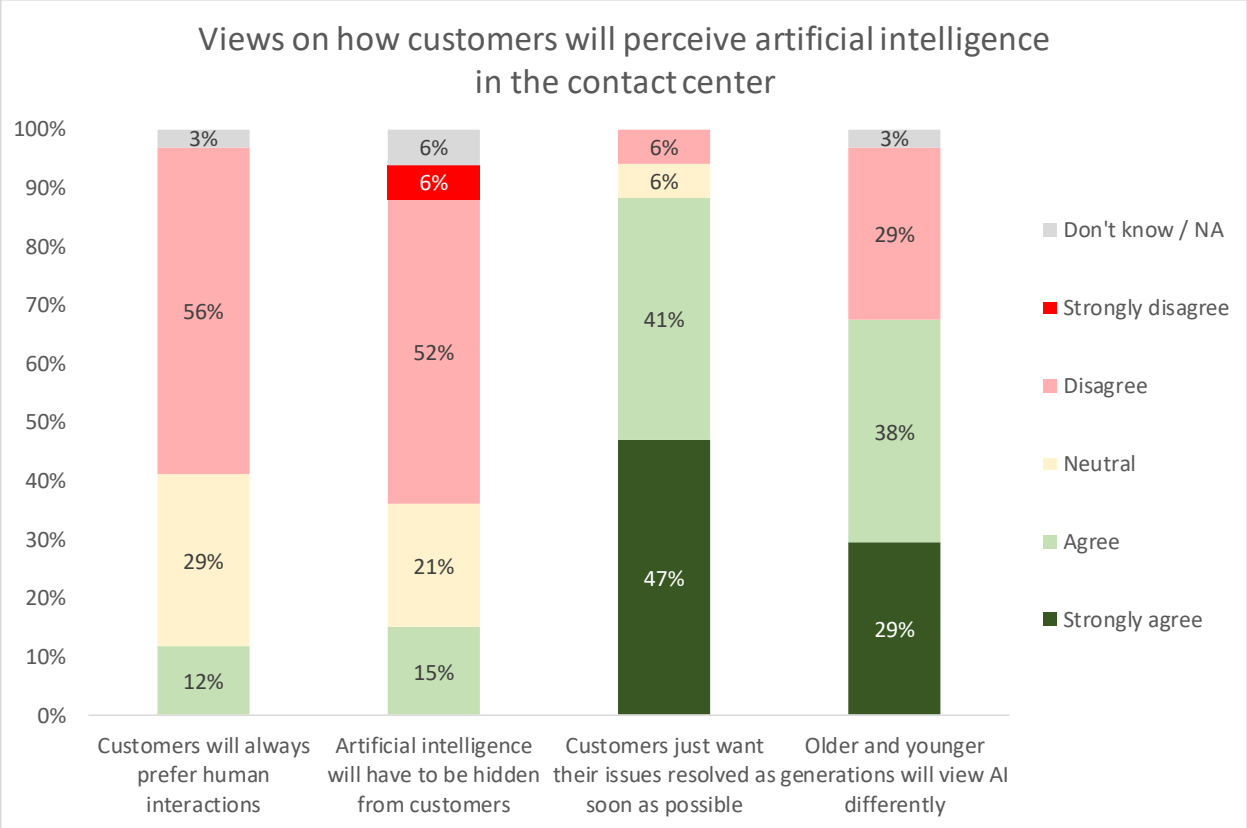


There is a widespread belief that customers will not have a problem with AI if it helps them to resolve their issue as quickly and easily as possible. The uptake in web self-service suggests that customers will accept non-human assistance if it is most convenient for them, although there was something of a disagreement between small and large operations: the former were more likely to think that customers would prefer human interactions, whereas those in large contact centers felt that customers would not be too concerned about being served by AI.

There was general agreement that older generations will take more persuasion to be happy with AI compared to a younger generation that is already used to dealing with AI in their everyday life (e.g. through smartphones or other virtual assistants in the home).

There was also a general feeling that AI would not need to be hidden from customers.

Figure 2: Views on how customers will perceive artificial intelligence in the contact center



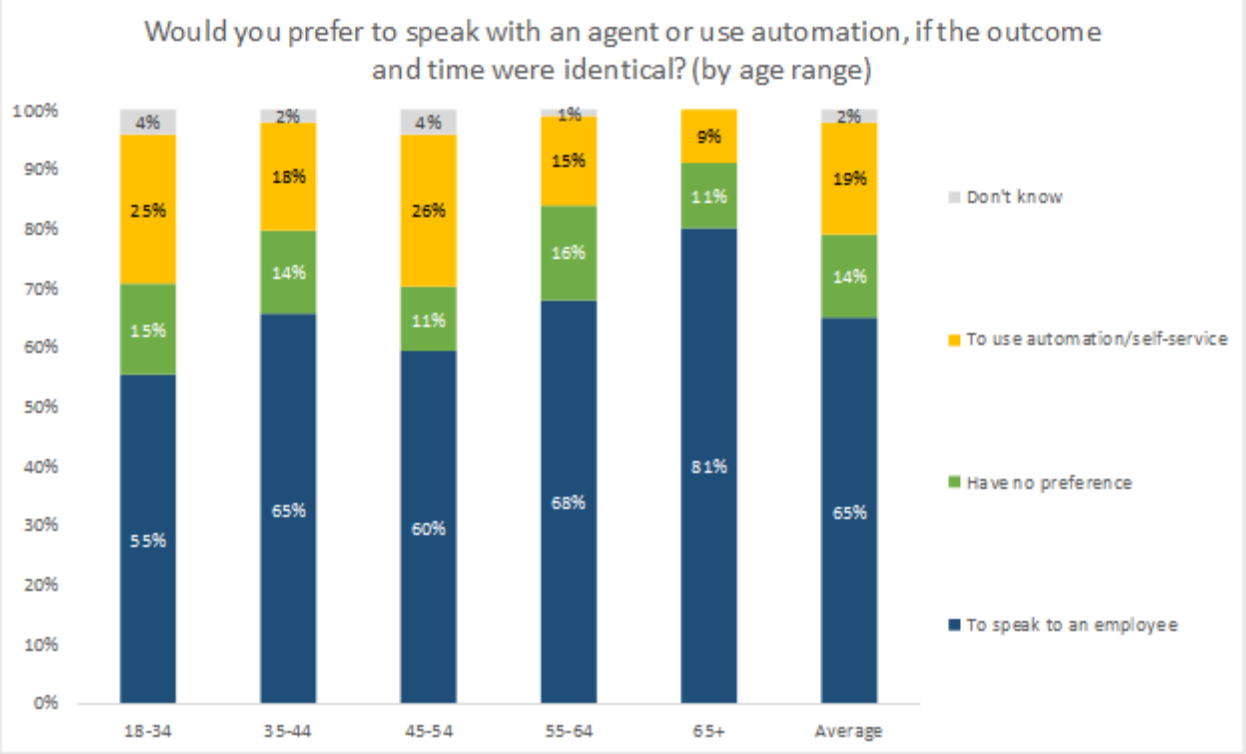
In order to gauge the level of acceptance and expectation around fully-automated customer contact, US consumers were asked whether automation or human assistance would be preferable to the customer base in circumstances where the customer effort, time and outcome were exactly the same. Bearing in mind the rapid advance and uptake in digital channels, the findings were quite surprising, as it was found that the customer base is currently strongly in favor of speaking to a human employee.

Looking at the age group of the customer base, older demographics feel more strongly about human contact, with younger customers most likely to have no preference or to choose to use automation. This fits in with research findings[1] that finds the younger section of the customer base to place more value on their time, with the older demographic preferring their issue resolved first-time by a single employee.

Bearing in mind that this question emphasized that the outcome and customer effort/time **would be identical** in each case, the customer base at present is not at a stage where automation is generally seen as being on equal terms with human contact, let alone the preferred method of contact with a business.

Further analysis of this data did not reveal a pattern when segmented by income or gender, although at an educational level, college graduates were more likely than high school graduates / non-graduates to prefer automation (23% v 15%).

Figure 3: Would you prefer to speak with an agent or use automation, if the outcome and time were identical? (by age range)



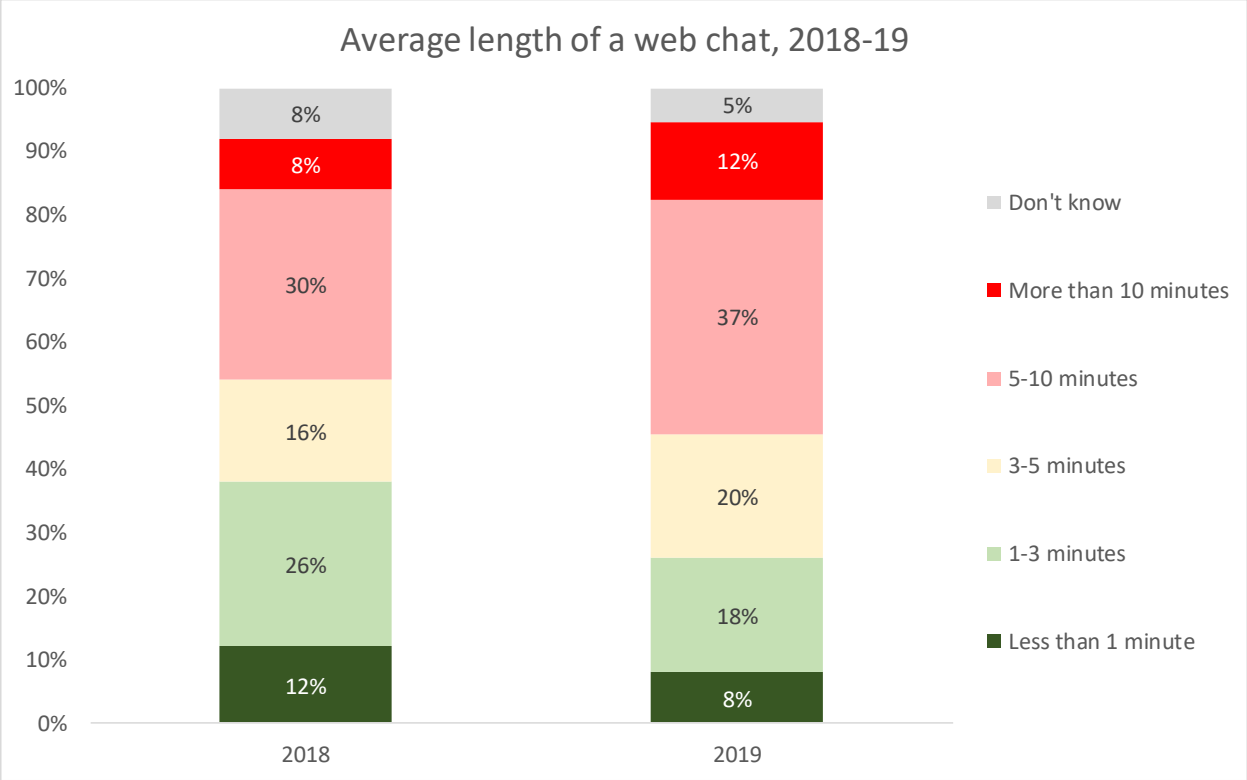
[1] See "The US CX Decision-Makers' Guide" for more information. Available for free download at www.contactbabel.com

AI FOR WEB CHAT AND EMAIL

Perhaps the most obvious potential use of AI in the customer contact environment is in handling digital enquiries, where the following charts show that web chats generally take far longer than phone calls (due to agent multitasking, and typing time) and that some email response rates can still be measured in days.

The most sophisticated chatbots or virtual agents encourage the visitor to engage with them using natural language, rather than keywords. The virtual agent will parse, analyze and search for the answer which is deemed to be most suitable, returning this to the customer instantly. Many virtual agent applications will allow customers to give all sorts of information in any order, and either work with what it has been given, or ask the user for more detail about what they actually meant. Having been unconsciously trained over the years to provide their queries in a way which standard search functionality is more likely to be able to handle (for example, a couple of quite specific keywords), customers must be encouraged and educated to use natural language queries in order for virtual agents to be able to deliver to their full potential.

Figure 4: Average length of a web chat, 2018-19



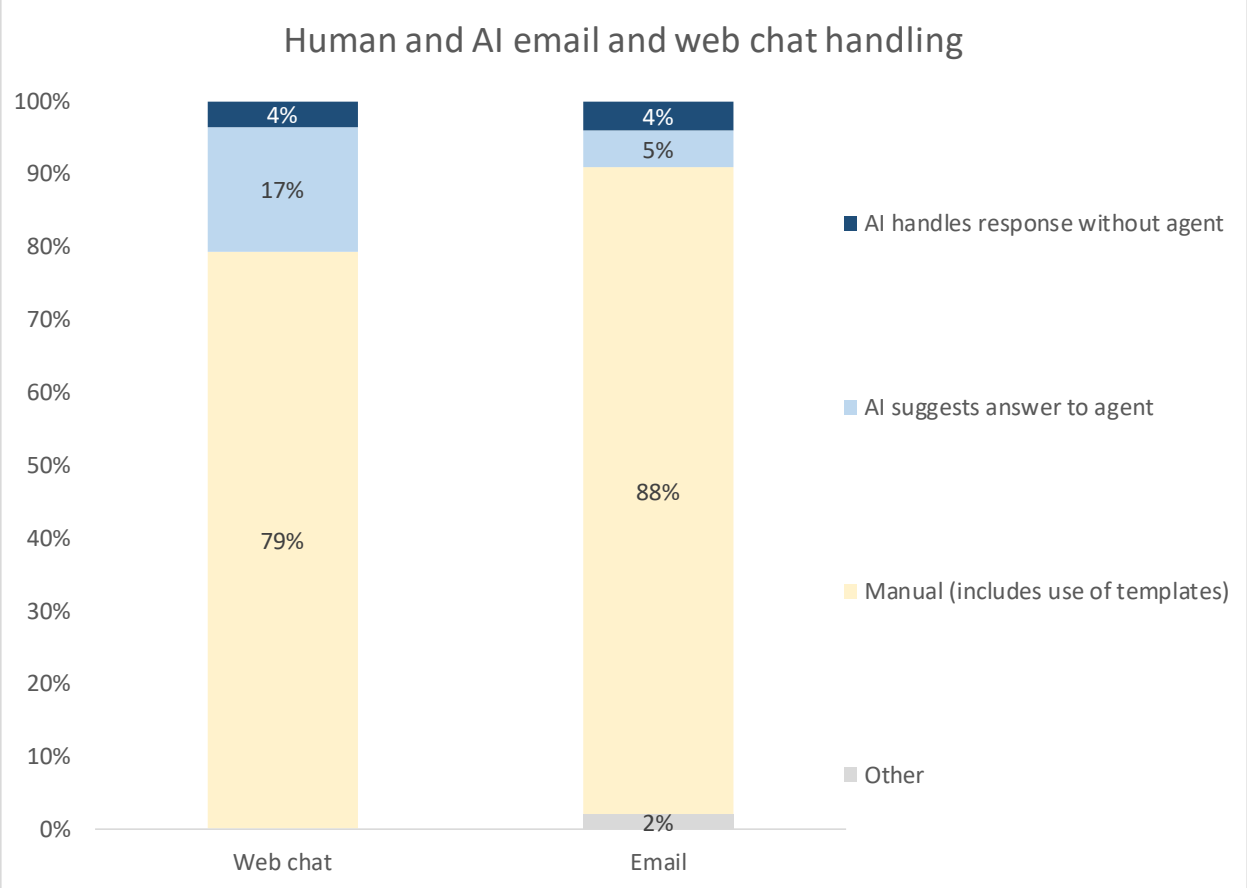
AI can also be used for email to create responses that look as though they have been written by a person rather than a machine, using natural language processing to write content, as well as understand it. Emails can be tailored based on the customer's history and behavior, optimizing marketing messages as well as service, sending emails at a time when they have been calculated that they are most likely to be opened. Personalized emails can be sent, based on subscribers' past email browsing activities to understand the type of content that they actually care about. This is a way in which AI can outperform human agents, who do not have the time or expertise to find patterns or draw conclusions from huge amounts of data.

Figure 5: Time taken to handle emails

The main reason for this slow response rate and excessive length of web chats is that there is very little automation currently being used in the US contact center industry, which also means that the cost of an email or web chat has historically been very similar to that of a phone call.

Digital channels may work quite well for customers, but businesses are not generally seeing the cost savings that automation can bring. Very few emails or web chats are handled entirely by AI, although a growing proportion of web chats are dealt with by AIs working alongside agents, suggesting responses which agents can then accept or amend. This way of working is most likely to be the norm in the foreseeable future, with the speed of automation and the emotional intelligence of humans providing superior service at a lower cost.

Figure 6: Human and AI email and web chat handling



The Virtual Agent or chatbot may appear to a browsing website visitor to be a human agent, offering web chat. However, it is an automated piece of software which looks at keywords and attempts to answer the customer's request based on these, including sending relevant links, directing them to the correct part of the website or accessing the correct part of the knowledge base. If the virtual agent cannot answer the request successfully, it may then seamlessly route the interaction to a live web chat agent who will take over. It is possible that the browser will not even realize that any switch has been made between automated and live agent, particularly if the web chat application is sophisticated enough to pass the context and the history to the agent, although as seen previously, many businesses believe it is best practice to identify clearly between virtual and real agents.

Sophisticated AI applications attempt to look for the actual intent behind the customer's question, trying to deliver a single correct answer (or at least a relatively small number of possible answers), rather than a list of dozens of potential answers contained in documents which may happen to contain some of the keywords that the customer has used. The virtual agent application may also try to exceed its brief by providing a list of related questions and answers to the original question, as it is well known that one question can lead to another. Solution providers and users train the system to pattern-match the right words or association of words with the correct result: the application, unlike older forms of web search techniques, does not simply guess what the customer wants, or how they will express themselves. Through 'listening' to what the customers actually say - perhaps through a mixture of large quantities of audio and text – the initial set-up configuration can achieve a good accuracy rate, which really benefits over time as a positive feedback loop is established. Solutions that gather and differentiate customer requests and results from multiple channels, noting the difference between them, have an even better success rate.

Virtual agent functionality 'understands' the context of what the customer is asking, with the result being more akin to that of an empathetic human who also has had access to what the customer has been trying to do. For example, if asked "When can I expect my delivery?", the context and the required answer will be different depending on whether the customer has placed an order and is enquiring about its status, or has only a hypothetical interest in turnaround times in case they decide to place an order.

When the virtual agent application has low confidence that it has returned the correct result, it is able to escalate the customers query seamlessly to a live chat agent, who then has access to the self-service session history, enabling a greater chance of a successful resolution without repetition. (It is generally considered best practice that escalations to real agents are not hidden from customers). The eventual correct response can be fed back to the automated virtual agent (and the knowledge base underlying it), which will make it more likely that future similar requests can be handled successfully through automated agents.

CURRENT AND FUTURE USE OF AI

Despite a low current use of AI across industries, there is widespread interest in implementing this solution, with 43% of respondents that do not currently use AI intending to implement it at some point, especially in larger operations and the transport & travel, TMT and insurance sectors.

Figure 7: Use of AI / Machine Learning, by vertical market

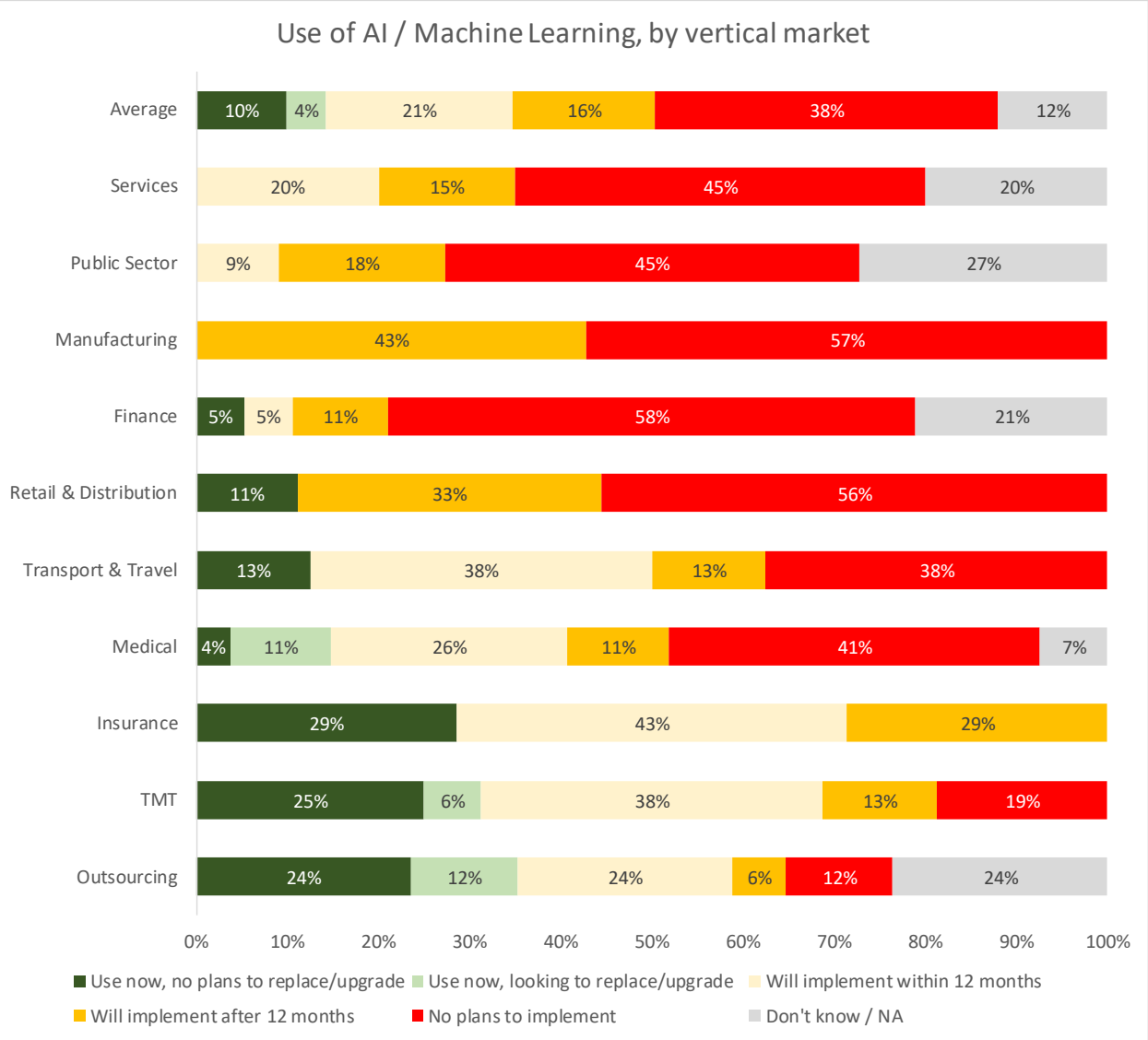
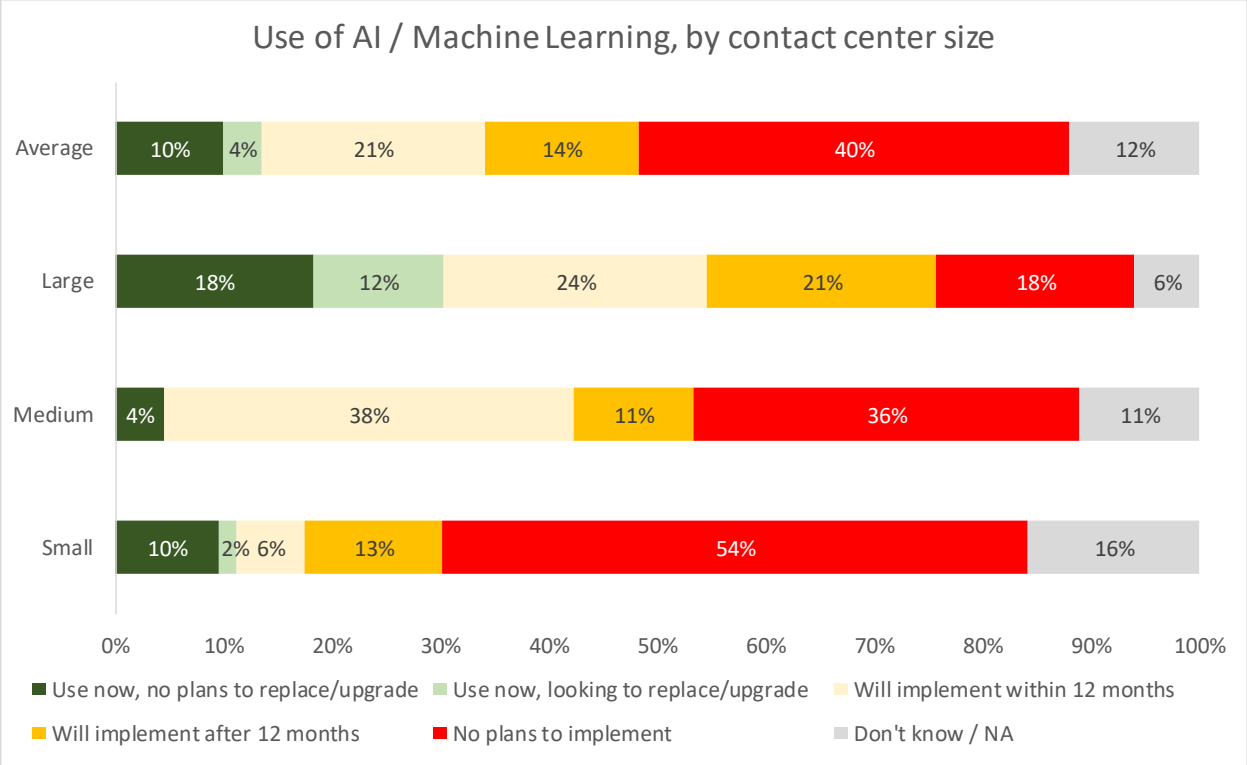


Figure 8: Use of AI / Machine Learning, by contact center size



Potential uses of AI in the customer contact space include:

- Emails that look as though they have been written by a person rather than a machine, using natural language processing to write content, as well as understand it
- Tailor information based on the customer's history and behavior for marketing as well as service, sending emails at a time when they have been calculated that they are most likely to be opened
- Increased opportunities for personalization, as the full customer history can be checked in near real-time, with far more data practically available to the AI than would be for a human agent
- Machine learning will allow AI to go beyond simply what they have been programmed to do, seeking out new opportunities and delivering service beyond what has simply been asked of them
- Use of text analytics to assess not only data held within the company, but also in unstructured, third-party environments, such as social media, comments on websites and public forums, in order to learn and deliver proactive service before it is even requested

- Text analytics can also be used on inbound interactions such as emails, running an AI triage system to assess the priority and urgency of each request in order to handle these more effectively and in an appropriately timely manner

- Work alongside agents to provide relevant knowledge that may be otherwise take a long time to find, and update the knowledge bases available to humans and AI self-service systems using an automated feedback loop that is constantly improving based on actual outcomes

- Through understanding multiple customer journeys, AIs will be able to predict the next most-likely action of a customer in a particular situation, and proactively engage with them so as to avoid an unnecessary inbound interaction, providing a higher level of customer experience and reducing cost to serve.

Businesses' interactions with customers will become a highly-polarized mixture of the automated and the personalized. Moving a large proportion of interactions onto self-service works for businesses, and is increasingly popular with a customer base that is becoming more sophisticated and demanding in what it expects from self-service. AI takes this a step beyond, offering personalized service without the need for a human agent in some cases.

We can expect to see personal technology applications seeking out the best deals on offer, or interacting with a business on behalf of customers without involving the customer at all. This leads to the conclusion that many customer-agent interactions will be exceptional, such as a complaint, an urgent or complex issue or a technical query that an FAQ or customer community couldn't solve. It is also likely that whole segments of the customer base who don't want automation at all will be handled directly by live agents in many cases.

Many self-service scenarios suggest a world in which customers speak directly to 'intelligent' systems, but an e2e world is becoming more possible, in which systems talk to systems. The customer will delegate many of their business interactions to a pseudo-intelligent device, which will store information such as personal preferences, financial details and individuals' physical profiles. Customers will instruct the device to research the best deals for products and services, and to come back to the device's owner with the best selection. The personal AI would 'call' the relevant contact center (which could in fact be either a AI or possibly a live agent in some cases) and even purchase the best deal without having to involve the owner in any way. The same principle applies to customer service: using the 'Internet of things' means that, for example, utilities meters would send their own readings to suppliers on request, and a manufacturer can detect when a part on an appliance is about to fail, and organize a replacement part and engineer visit with the customer's permission.

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ABOUT CONTACTBABEL

ContactBabel is the contact center industry expert. If you have a question about how the industry works, or where it's heading, the chances are we have the answer.

The coverage provided by our massive and ongoing primary research projects is matched by our experience analyzing the contact center industry. We understand how technology, people and process best fit together, and how they will work collectively in the future.

We help the biggest and most successful vendors develop their contact center strategies and talk to the right prospects. We have shown the UK government how the global contact center industry will develop and change. We help contact centers compare themselves to their closest competitors so they can understand what they are doing well and what needs to improve.

If you have a question about your company's place in the contact center industry, perhaps we can help you.

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