CONTACTBABEL

The Inner Circle Guide to AI-Enabled Self-Service

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Enghouse Interactive

“The Inner Circle Guide to AI-Enabled Self-Service” (UK edition)

CONTENTS

Put your customers in the driving seat *and empower them with intelligent self-service*

Enghouse Interactive provide Customer Engagement solutions for effortless customer service, anytime, anywhere and on any device.

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TABLE OF FIGURES

Enghouse Interactive is the world's most reliable contact centre technology provider. Our global brand is built on our track-record of consistently honouring our commitments – to our customers, our staff and our shareholders.

Enghouse Interactive, a subsidiary of Enghouse Systems Limited (TSX:ENGH), is a leading global provider of contact centre software and service solutions that deliver enhanced customer service and transform the contact centre from a cost centre into a powerful growth engine. Our practices and solutions enable businesses to leverage meaningful daily customer interactions to extract key insights used to deepen customer loyalty and uncover new opportunities to add value and profitability.

Our comprehensive portfolio of interaction management solutions spans omni-channel contact centres, computer telephony integration (CTI), self-service, knowledge management, operator consoles, call recording and quality monitoring, media voice services, outbound diallers and real-time video collaboration.

Supporting over 10,000 customers, in 120+ countries, Enghouse Interactive works within any local regulatory environment and supports any telephony technology, whether deployed on premise or in the cloud, ensuring that our customers can be reached by their customers – anytime, anywhere and via any channel.

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INTRODUCTION

Like so many other technology solutions in the customer contact arena, self-service started off as supporting a cost reduction strategy. DTMF IVR was beloved of the budget controllers but disliked by a large proportion of the customer base which it was meant to serve. Web self-service, with its success or otherwise being judged on the number of calls it avoided, existed in a vacuum, with the static knowledge base and FAQs becoming slowly more bloated and out-of-date, divorced entirely from the world of live customer contact.

The omnichannel, digital revolution in customer contact is not just about the advent of social media, the mobile customer or the rise in AI. While the traditional benefit of cost reduction is still very much part of the self-service tool box, there is now a growing emphasis placed upon gathering information about these interactions to feed into voice of the customer programs, improving the customer experience and optimising the knowledge base. Virtual assistants and chatbots not only encourage customers to interact with them using natural language, but are also able to provide tightly aligned and relevant marketing offers to them at the same time that they are providing the single correct answer to the customer's query.

As with so much else in the customer contact space, boundaries are blurring. Nowhere is this better seen than in the possibility of escalating a self-service session seamlessly to a live agent as required, passing along information personal to the customer and the context of the query, and feeding the eventual correct response back into the knowledge base so that the next customer with a similar query will benefit from what has gone before.

DRIVERS AND INHIBITORS

Customers choose to speak to a business through the particular channel which they believe best suits their requirements, which are usually quite generic regardless of the actual query. Specifically, customers look for service experiences which are:

- Effective
- Quick
- Painless
- Cheap.

If a channel does not meet each of these requirements to a significant extent, it is unlikely to succeed.

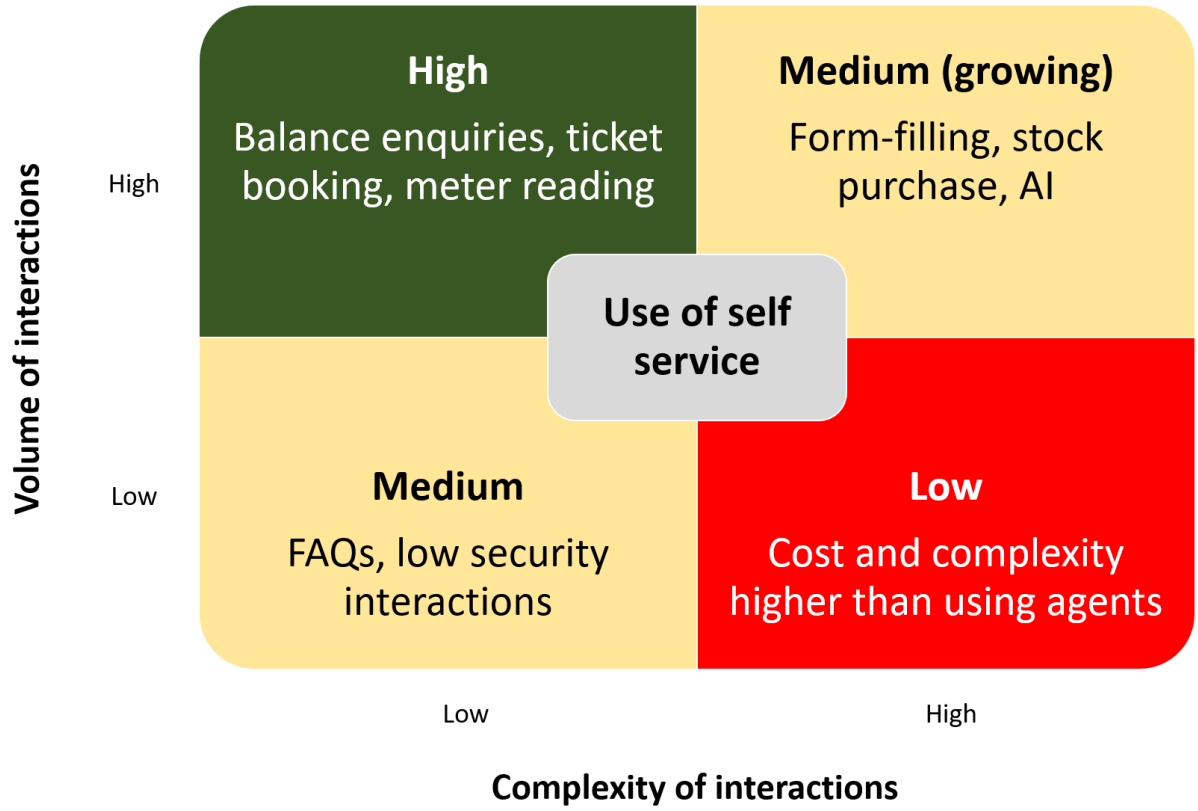
The majority of customer interactions fall into one of two categories: those that are purely transactional and those that require dialogue (interactional):

- **Transactional communications**, such as balance enquiries and travel information, require access to highly structured business information, and non-automated transactions can require an agent to act simply as an 'organic interface' between the back office systems and the customer. Such communications are suitable for self-service, whether through DTMF IVR, speech recognition or web-based self-service options which offer the speed and flexibility of visual information. By putting an automated front-end on top of an existing back-office process, cost per transaction is reduced very significantly. Customers value the speed of the self-service transaction compared to the alternatives (telephony, face-to-face, letter, etc.), so this works well for both businesses and customers. However, when customers have questions that require help in order to complete a transaction, they need to be able to get the answers, either by escalation to an agent (along with the context and history of what they've been trying to do), and/or through access to a company's knowledge base.

- **Interactional communications** - such as technical helpdesks, complex or multiple enquiries or where the customer requires reassurance and confirmation - require actual dialogue and discussion between the customer and the business's representative. It is important to note that it is not solely the level of complexity that drives a customer to choose live contact over automation, but also the state of mind of the customer at that time. For example, a customer may value reassurance rather than speed in certain circumstances (e.g. wanting to check train times to go to a wedding, or making an important hospital appointment). In such cases, not allowing the customer to interact with a live agent will have a considerable negative impact on their opinion of the organisation, potentially far outweighing the extra cost that is associated with a single instance of providing a person to talk with, rather than a self-service option. Additionally, some customers simply prefer speaking to another person and even the best self-service application is anathema to them. Results of customer surveys around channel preference by type of interaction are show later in this report.

Suitability of self-service can be seen as a function of the complexity and volume of interactions.

Figure 1: The effect of complexity and volume on the use of self-service



The diagram above suggests that the greater the number of simple interactions a company deals with, the more likely it is that it can benefit from implementing self-service.

- **Large** volumes of **simple** requests from customers (and who use agents simply as a means of reading the information from a screen – little more than an 'organic interface') should have implemented self-service by now. Historically, there were estimates that 70% of calls to helpdesks were password reset requests, which self-service was able to handle.
- Where businesses only deal in a relatively **small** number of **complex** interactions, the cost of implementing a sophisticated self-service application – and keeping the knowledge base up-to-date – may be greater than any associated salary cost reduction.
- Businesses having a **small** number of **simple** interactions may choose to have simple voice self-service functionality hosted in the cloud, paying perhaps only for the number of times that it is used. This model allows self-service functionality at a fraction of the cost of owning and maintaining a premises-based system. Alternatively, website FAQs should be able to deflect a significant proportion of calls.

- Businesses which deal with **large** numbers of **complex** interactions are building and using some of the most interesting and potentially beneficial self-service applications, particularly with the assistance of artificial intelligence. Examples include filling in insurance forms to get a quote – a lengthy and time-consuming business, which can last for tens of minutes, costing the business a great deal of money. Moving this to self-service can save huge amounts of money, as an agent may only need to be brought in to close the sale or clarify finer points of the policy and customer familiarity with price comparison sites has made this a much more widely used type of self-service. Stock purchase is another classic example of this: sophisticated users can buy and sell stocks as quickly as they could by talking to a human agent by communicating via speech recognition directly with a business's applications and databases, but much of this type of functionality has been moved to a digital self-service channel. The next level for self-service is to use AI and machine learning to converse in a natural way with customers, asking questions and clarifying responses to provide a service close to being comparable to a live agent.

The rest of this section will explore some of the main drivers and issues around self-service:

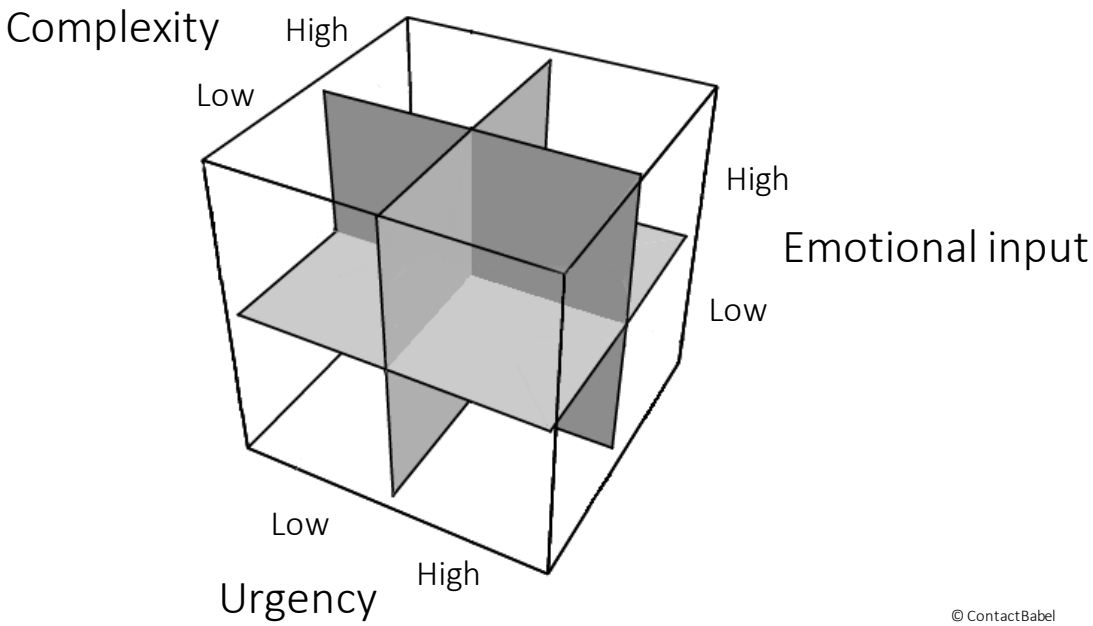
- Suitability of self-service
- Customer demand and channel preference
- Mobility and smartphones
- Increased profit
- Self-service failure
- Customer inhibitions.

SUITABILITY OF SELF-SERVICE

There are two main factors that influence contact centres within any vertical market: the commercial activity within that sector, and customers' requirements and preferences for contacting organisations. It is not only the nature of the specific business vertical market that needs to be considered. The urgency, complexity and emotional importance of the interaction is perhaps at least as important as the nature of the business that is being called: for a customer calling a bank, a simple balance request and an urgent call about the progress of a mortgage application are very different types of call, and should be treated as such.

The Customer Interaction Cube (below) is a structure developed to categorise the different types of customer interactions that businesses have to handle, considering the urgency, complexity and emotional input of the interaction from the customer's perspective. Businesses could use this to analyse their volumes of each type of interaction, cross-referencing it with other variables such as the time of day these types of interaction are received, and the customer demographic preferences seen next in this section in order to support the relevant channels through the promotion of alternatives to live calls, and the correct levels of resourcing. Doing this will not only improve the customer experience, but also reduce the cost of service through anticipating the likely resourcing required and even proactively engaging with the customer on lower cost channels first.

The Customer Interaction Cube



Using this 2x2x2 cube as a structure, there are eight types of interaction, a combination of either low or high urgency, complexity and emotional input. Our hypothesis is that each of these eight interaction types may best be suited to specific channels, and that both business and customer could benefit from matching channel with interaction type.

The examples shown below of various scenarios and the channels most suitable for these are suggestions, and will differ between customer types, businesses and vertical markets, but may offer a tentative framework for readers to build their own scenarios. It should be noted that the results of the customer survey that follow this section suggest that different age groups and socioeconomic segments have their own views on how they prefer to contact a business in each of these cases. Primary and secondary channels are suggested here, but will differ between organisations and customer types.

Figure 2: The Customer Interaction Cube and suggested associated channels

Emotional importance	Urgency	Complexity	Examples of interaction	Primary channel	Secondary channel
Low	Low	Low	Meter reading; casual product research	Self-service	Web chat
Low	Low	High	Complete a tax form	Phone	Web chat / email
Low	High	Low	Top up mobile credit; check payment has been made	Self-service	Phone
Low	High	High	Details of how to make an insurance claim; understand mobile roaming charges before imminent trip abroad	Web chat / self-service	Phone
High	Low	Low	Make a complaint about an incorrect item being delivered	Email	Phone
High	Low	High	Complaint about incorrect billing	Phone	Email
High	High	Low	Simple question about imminent desired purchase (e.g. delivery, personalization, return policy)	Web chat	Phone / social
High	High	High	Household emergency advice; 999	Phone	Web chat

There are many other variables that could be considered alongside these that will impact upon the suitability of channels:

- Demographics
- Ownership of smartphone / broadband impacts upon channel availability
- Time of day (i.e. is this an out-of-hours enquiry? Is the customer at home, at work, or travelling?)
- Whether the request is specific to an account, or a generic issue (i.e. is it necessary to pass through security first?).

While the 2x2x2 cube can help businesses to estimate the current and potential volumes and resourcing required to serve the customer base, it is important to remember that similar types of customer interaction may require very different handling depending on circumstances. For example, a query about product delivery may be a small part of a wide-ranging research process carried out by a particularly thorough prospective customer, or may be asked by a customer who has just realised they've forgotten about an important birthday and needs immediate, accurate information.

END-USER QUESTION 1: CAN THESE SOLUTIONS EVER BE APPROPRIATE AND AFFORDABLE FOR SMALLER ORGANISATIONS?

Definitely - and this comes back to focusing on areas and processes where AI delivers value. Our approach is to bring down the cost with predefined applications, such as automating booking an appointment, providing information to answer a particular question or supporting an agent. We provide better tooling to assist the operations team in deploying and managing these.

Depending on the complexity you may need a dedicated professional, or to work with partners to continuously support and develop AI for you. Above all, remember that your AI self-service processes need to be part of your overall contact centre infrastructure and be integrated into your workflow to deliver a complete, seamless customer experience.

CUSTOMER DEMAND

Successful channel uptake is generally an iterative process. Businesses introduce a channel (usually based upon it being cheaper to support than the incumbent channels), and customers trial it. If it works for all concerned, it can be deemed successful. However, if customers trial it and reject it, either vehemently or simply by reverting to the existing, well-known methods of contact, then businesses have to consider whether to drop the channel quietly or amend it so that it meets the needs of the customer, who will then retry it and make their decision accordingly.

Some of the key features that customers look for in a channel include:

- **The perceived effectiveness of the channel:** customers contact a business because they want something done. Feeling satisfied that their request has been taken care of is a vital ingredient to this – many contact centres still get calls asking if they have acted upon a customer's email – and the reassurance provided by a real-time channel that an issue has been dealt appropriately with should not be underestimated. Many businesses now look to leverage their email or messaging functionality to send out a cheap outbound confirmation once a successful self-service transaction has taken place.

- **Channel availability:** one of the advantages of telephony is its ubiquity. Of course, the rise of cheap computing and the popularity of smart devices now means that the telephone is under serious challenge in the availability stakes. Self-service is by its very nature a 24×7 channel, which is a major advantage. However, if escalation to a live agent is required, this may not always be possible outside working hours.

- **Ease of use:** familiarity also comes into this. Although it may seem as though most people are comfortable using a phone or computer, some poorly designed IVR or speech recognition systems can make life difficult for customers. Even after many years of use, customers can still be unsure about just how much a particular speech recognition system understands, may be irritated by some systems' propensity to repeat back everything that is said to it, or are unsure if they have to wait until the speech recognition system has finished 'speaking' before being able to respond themselves.

- **Low cost of use:** a particular issue for some demographics, with excessive amounts of time spent on hold in a queue costing a significant amount of money. In such cases a freephone number leading to a IVR self-service system may be welcomed, and of course there is no incremental cost to the customer in using web self-service either.

- **Painlessness:** a customer's subjective view on the amount of effort the overall customer interaction experience has needed, including the requirement for any follow-up interactions. There have been numerous studies done over many years about customers gripes towards IVR systems, in particular poorly designed IVR menu structures, popularly known as 'IVR Hell'. There is a great deal of focus being placed upon the "Customer Effort" required to deal with businesses, which is another excellent indication that the movement towards true customer-centricity is continuing within the industry.

- **Speed of conclusion:** this refers to the immediacy of response and the overall resolution time, including the need for any follow-up work, or the wait-time to get an answer. Perhaps the greatest benefit to the customer of self-service, regardless of the channel or device from which it is accessed, is the fact that there is never any queue to wait in before being attended to. As surveys have consistently shown, first contact resolution is key to customer satisfaction and this is as applicable to the self-service channel as it is to any other.

Taking these customer requirements into account, it is clear to see that self-service can offer customers what they want in many cases, especially for simpler transactional communications. Bearing in mind that self-service is far cheaper for the business as well, it is evident that self-service can be a mutually beneficial solution.

The major, and continuing issue is to improve the customer experience, and the increased use of personalisation, the ability to escalate a query quickly and with context (moving between channels to live agents if necessary), and increased customer familiarity with self-service will continue to drive this channel forwards.

However, there are many suitable tasks that are not yet being dealt with through self-service, and – perhaps more importantly for the customer experience – many which are not being handled correctly by self-service functionality. Many of the major flaws occur when customers are forced into using self-service, or when they can't complete their task effectively, leading to calls from unhappy customers. These negative customer experiences can be exacerbated if the history and context of what the customer was trying to do is lost in the escalation process.

CHANNEL PREFERENCES

To gauge the level of customer demand for self-service in various scenarios, a survey of 1,000 UK consumers was carried out to understand what the channels of preference would be in cases of high emotion, urgency and complexity through presenting survey respondents with three hypothetical scenarios:

High emotion: **notifying a company that an incorrect item has been sent to them**. This was chosen as a high emotion interaction as being sent an incorrect item is often frustrating, as not only has the desired product not arrived, but the customer is then left with the problem and effort of returning the item. This is not a particularly complex interaction, and in many cases will not be particularly urgent.

High urgency: **checking the arrival time of a flight that the customer is meeting**. This is likely to be an urgent interaction as it is very time-sensitive. Complexity is very low - as the required information is simply a time - and in the majority of cases, should have a fairly low emotional impact.

High complexity: **receiving guidance on completing a mortgage application or tax form**. This is likely to be a complex and long interaction, but is unlikely to have high levels of urgency or emotional response.

HIGH EMOTION INTERACTIONS

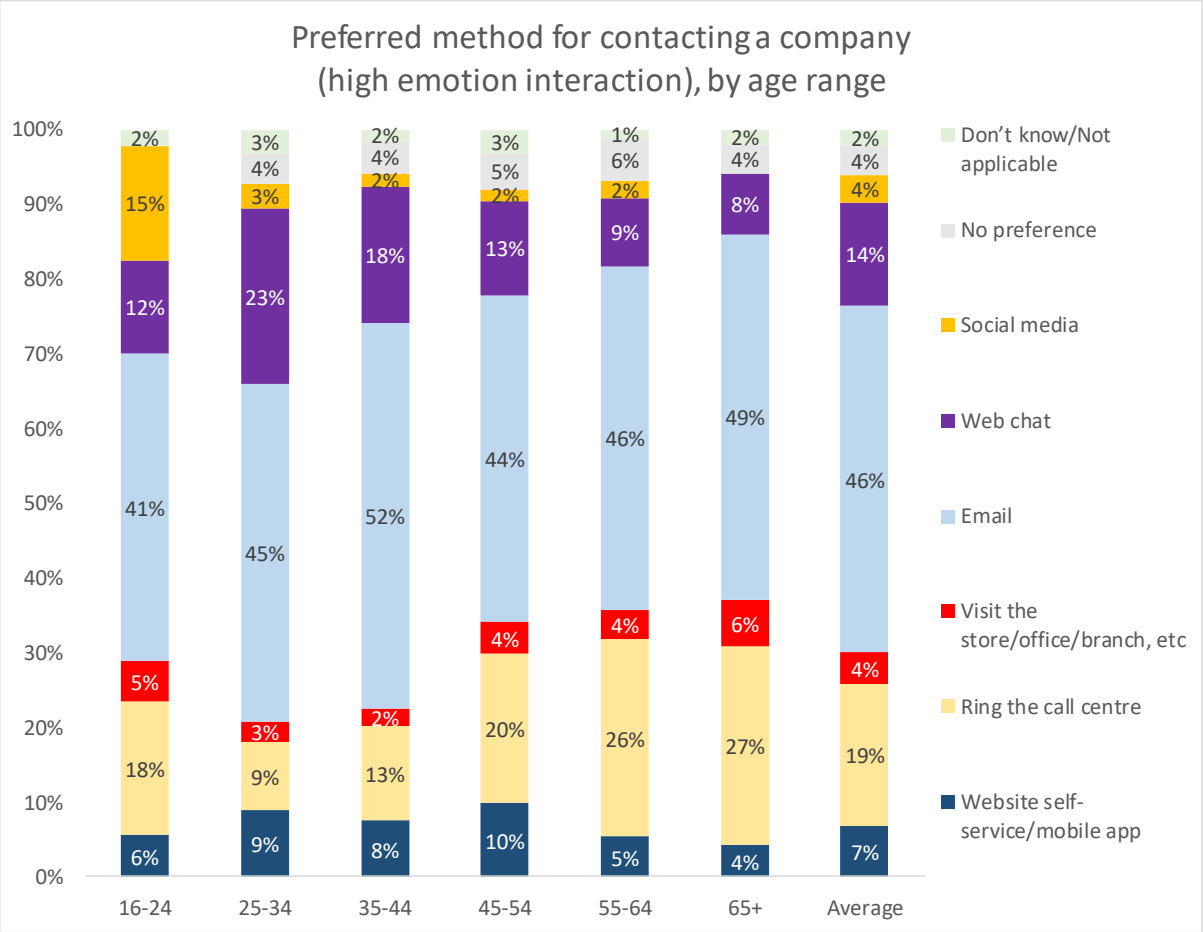
Consumers taking the survey were asked to imagine that a product which they really wanted to receive had been delivered but was incorrect. In this circumstance, they were asked which would be their preferred method for contacting the company to notify them that this was the case.

The most popular option was to email the organisation, with 46% of respondents choosing this method. The second most popular, at 19%, was phoning the contact centre, and web chat also made a strong appearance, with around 1 in 7 respondents choosing this as their preference.

There was a strong pattern based on the age of the survey respondent and their preferred channel: the older demographics were far more likely to pick up the phone, although email was popular with all age groups. Web chat was a popular option with the 25-44 age demographic, and 15% of the youngest age group would choose social media.

It is noticeable that self-service was chosen as a preference by very few customers for high emotion interactions, perhaps as while self-service – like email – would avoid confrontation, in many of its current forms it may not provide the reassuring personalised response that a human agent can give.

Figure 3: Preferred method for contacting a company (high emotion interaction), by age range

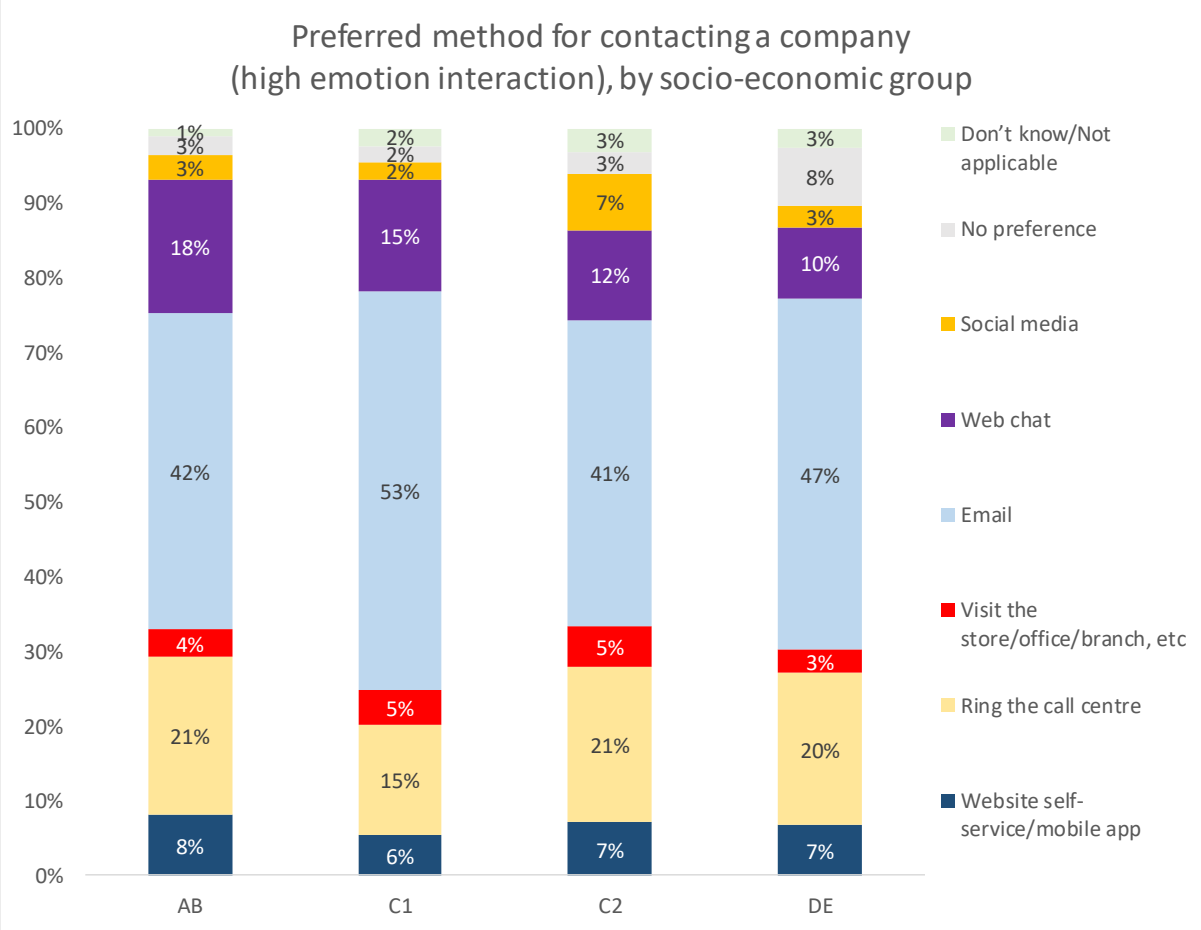


When considering the preferred method for contacting a company with a high emotion interaction, ABs were the group most likely to use web chat, although email was by far the most popular choice for all groups.

Unlike the US, there was no correlation between higher socio-economic groups and the increased use of web self-service.

Over time, we would expect to see the use of self-service increasing for high emotion interactions, assuming that more customers have a positive outcome when they use self-service for this purpose. For example, Amazon customers have been 'trained' to use self-service for returning an incorrect product, rather than searching for a phone number or email address, as their customers have learned that there is a generally effective process in place for handling exactly these sorts of query.

Figure 4: Preferred method for contacting a company (high emotion interaction), by socio-economic group



HIGH URGENCY INTERACTIONS

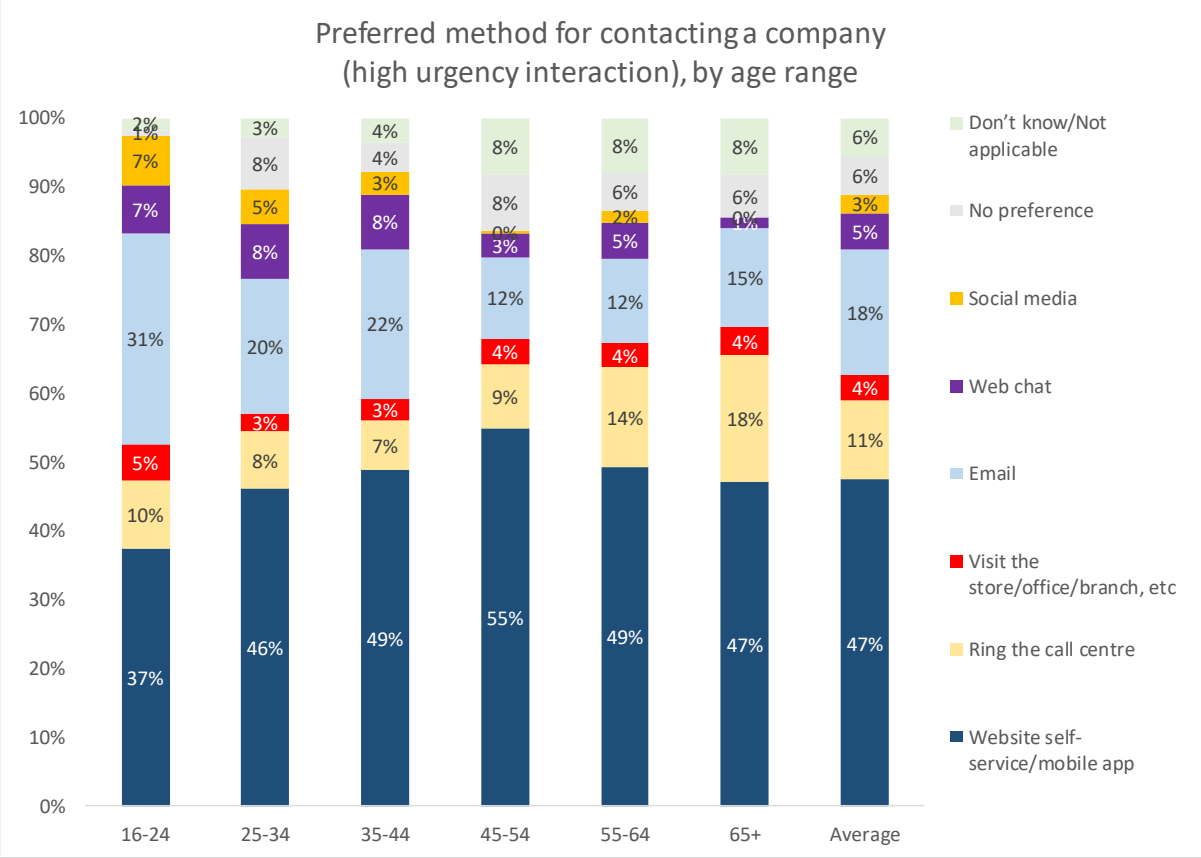
Survey respondents were asked which would be their preferred channel of choice in a situation where they were meeting somebody from a plane and needed to confirm the time at which to be at the airport.

By far the most popular channel was that of web self-service/mobile app, with all age groups choosing this as their no.1 option. Here, the interaction is time-sensitive but also simple, only being a matter of checking the information that a contact centre agent would have in front of them on a screen if they were to call.

Amongst older demographics, calling the contact centre was seen as a preferred option by a considerable minority, with email and web chat generally being restricted to younger demographics.

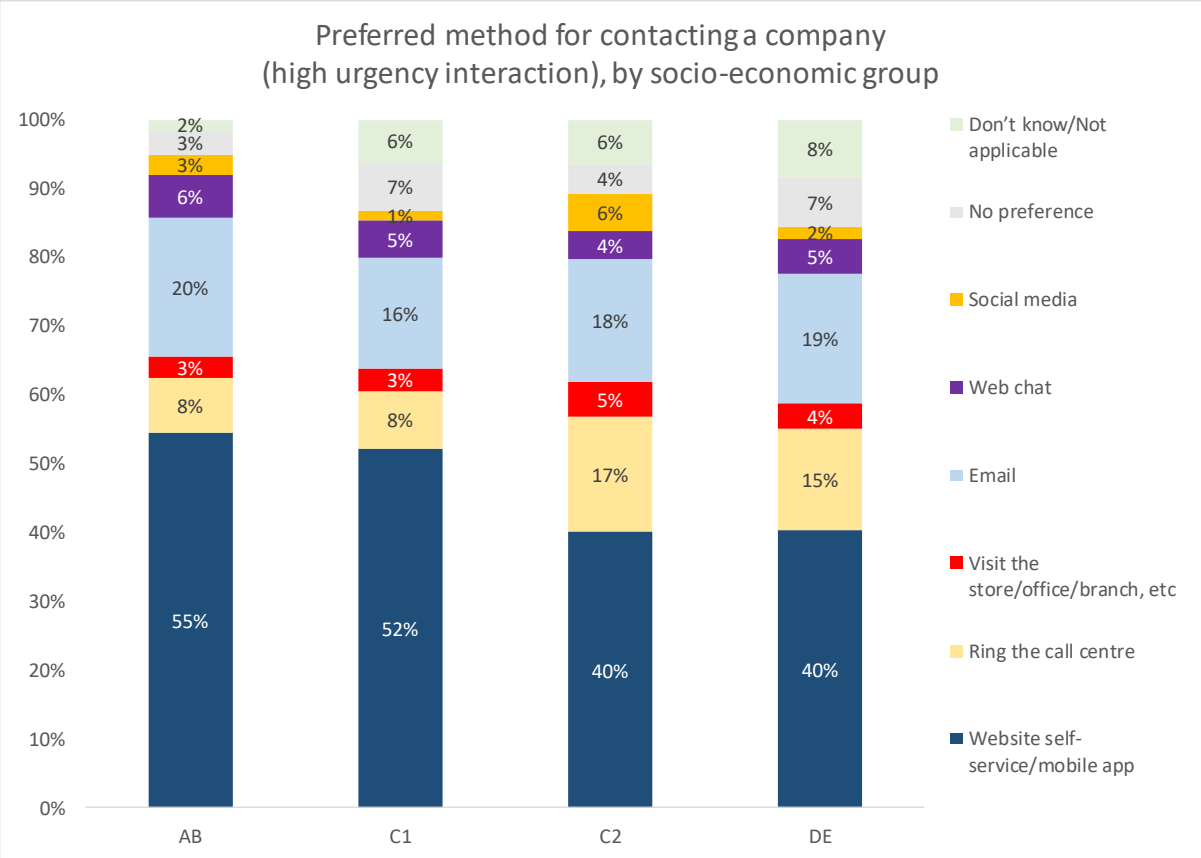
Despite the immediacy offered by web chat and social media channels, few respondents stated that these would be their preferred method of interaction even in high urgency cases.

Figure 5: Preferred method for contacting a company (high urgency interaction), by age range



When considering socio-economic groups, web self-service was by far the most popular option for AB respondents, with the contact centre having some support with DE respondents.

Figure 6: Preferred method for contacting a company (high urgency interaction), by socio-economic group



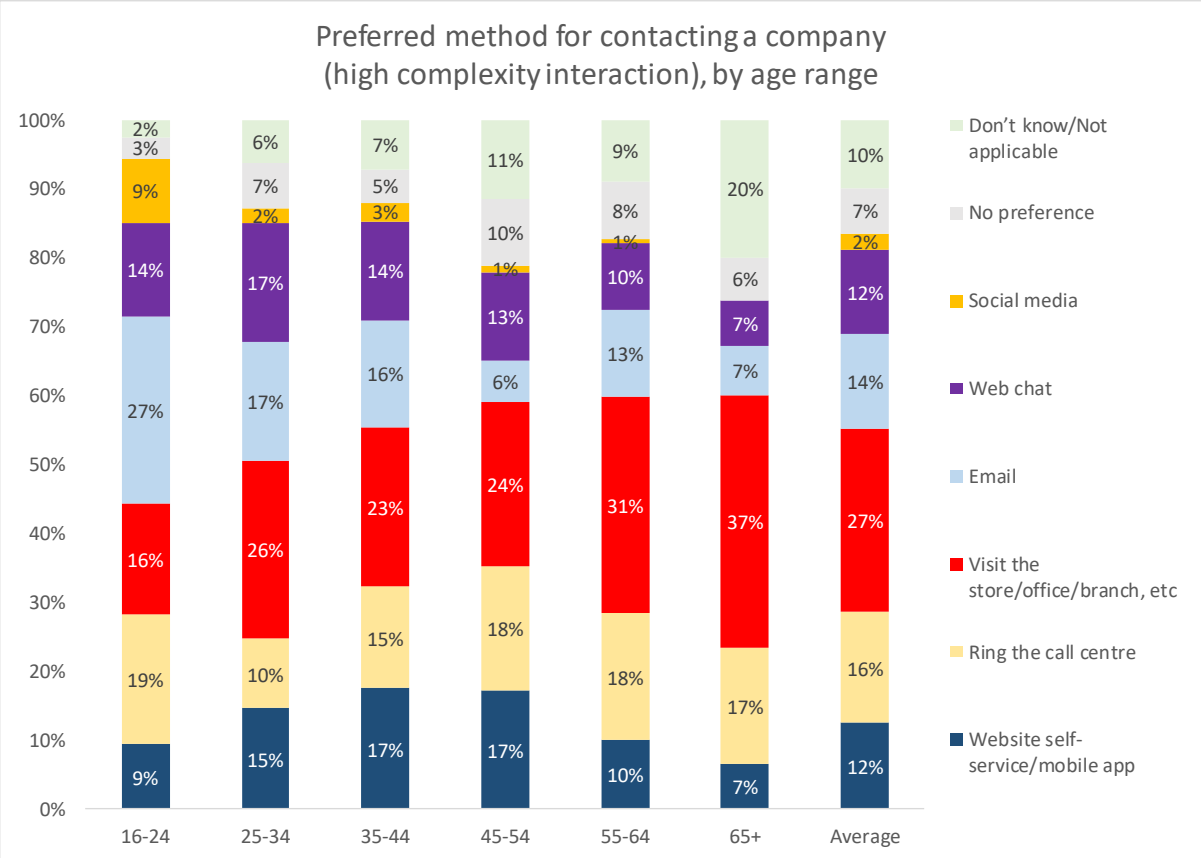
HIGH COMPLEXITY INTERACTIONS

For highly complex interactions, such as getting expert guidance with a tax form or mortgage application, the most popular contact choice was a physical visit to an office or branch, which was much more popular with the older demographic.

While web self-service was a much less popular option for complex interactions than it had been for urgent enquiries, it has similar figures to calling the contact centre. This is likely to be because customers have been trained for many years to form-fill online themselves and many are willing to at least try to use self-service. In such cases, clear escalation into assisted service such as web chat is key to a positive customer experience.

Web chat was also seen as an appropriate primary channel for complex interactions by a significant minority of the under-55s, whereas email is generally much less popular than it had been for high emotion interactions, possibly due to the probable requirement for back-and-forth communication, although this was rated the highest by the youngest age group (who perhaps yet haven't had to do this type of interaction).

Figure 7: Preferred method for contacting a company (high complexity interaction), by age range

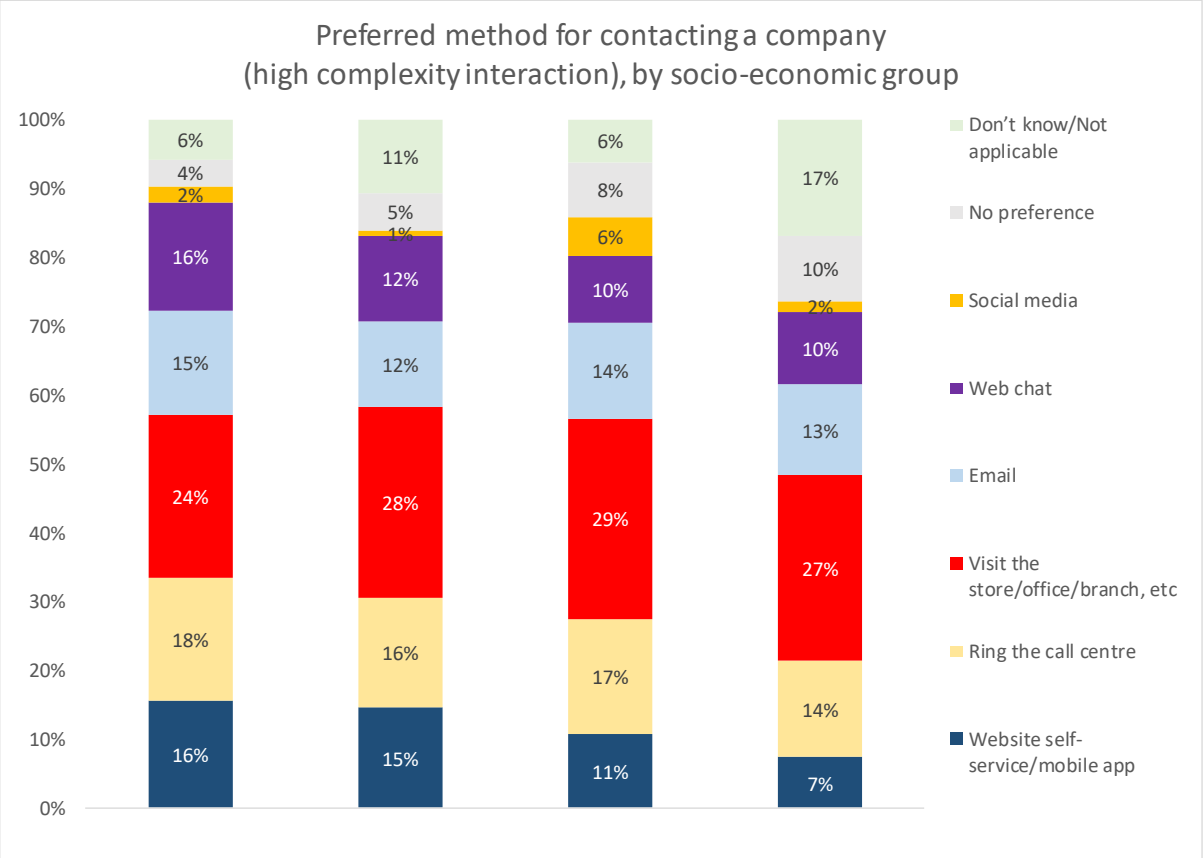


Generally speaking, communication preferences by socio-economic group were much more similar than is the case for highly urgent or emotional types of interaction, with similar proportions at each income level preferring a physical visit to an office/branch or call the contact centre.

ABC1 respondents are somewhat more likely to attempt to solve the problem through digital channels such as web self-service and web chat.

It should be noted that 17% of the DE respondents did not know how they would prefer to contact a company in this particular case.

Figure 8: Preferred method for contacting a company (high complexity interaction), by socio-economic group



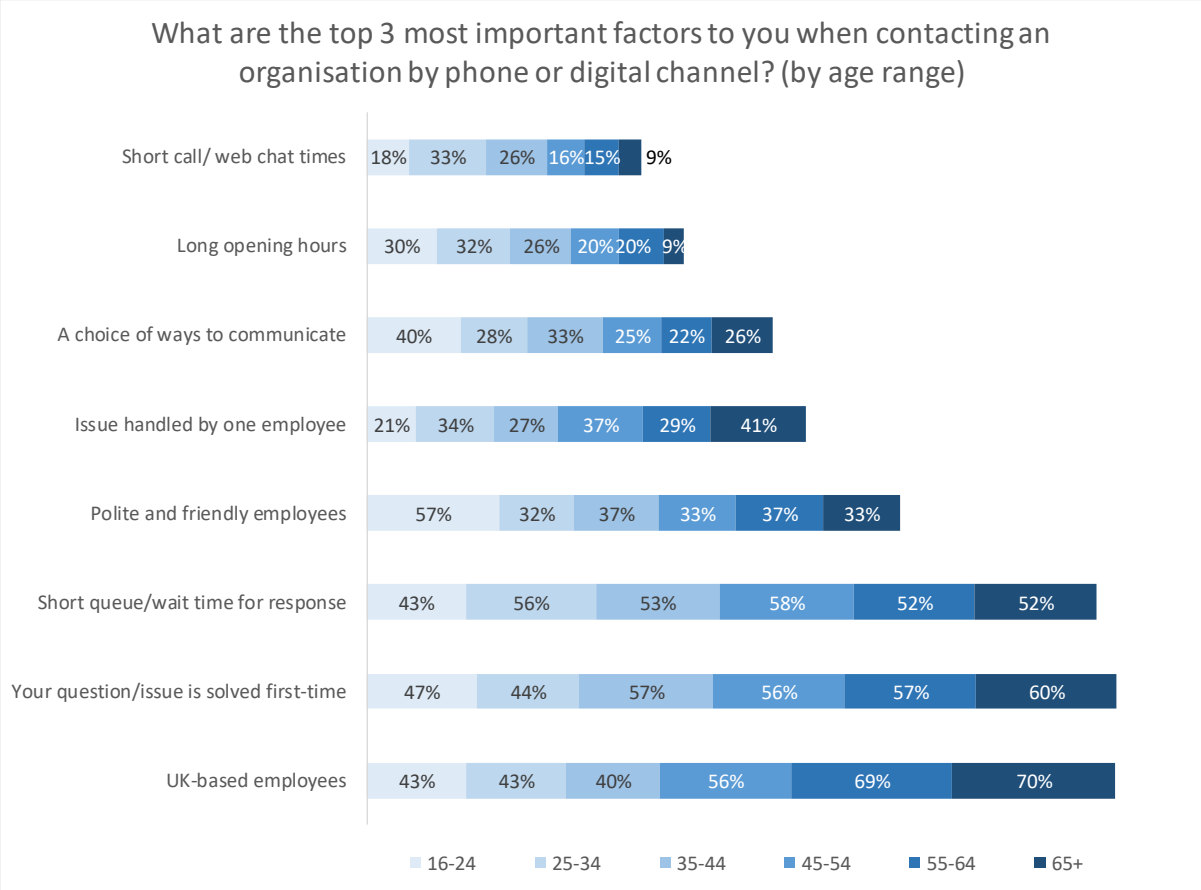
WHAT MAKES A GOOD CUSTOMER EXPERIENCE?

Having looked at when customers are most likely to use self-service, this section considers what customers believe makes for a good customer experience and how the judicious use of self-service can support this.

ContactBabel commissioned the research firm Aurora Market Research to carry out a survey of 1,000 UK consumers, who were asked to state which were the top three most important factors to them when contacting an organisation.

Figures below are expressed as the percentage of each age group that expressed an opinion.

Figure 9: What are the top 3 most important factors to you when contacting an organisation by phone or digital channel? (by age range)



The previous chart shows the importance of various customer experience factors as an aggregated bar chart, segmented by age so as to show the factors that were of most importance to customers in each age range. Aggregating the results allows an understanding of which factors were placed in the top three overall, while also providing insight on age-related opinion.

For example, 47% of the youngest age group (16 to 24 years old) stated that first contact resolution was one of their top three most important factors, whereas 60% of the oldest age group (over 65 years old) placed this in their top three.

This consumer research has some interesting findings when comparing consumer attitudes to businesses' beliefs:

- both businesses and consumers agree that first contact resolution is the most important single factor impacting upon customer experience when contacting a business ('first contact resolution' is joint first with consumers, alongside 'UK-based agents'). Using self-service appropriately and with a good user experience will support first contact resolution
- a short queue/wait time for response is also seen as being a vital part of the customer experience, and is one of the key advantages that self-service has over live channels
- having UK-based employees is seen as far more important to customers than businesses believe, although with self-service this becomes irrelevant
- having long opening hours is quite important to younger customers, whereas businesses place this amongst the least important customer experience factors. Of course, self-service is available 24/7, although if escalation is required, this can be difficult to support. More sophisticated, AI-enabled self-service can 'understand' the customers' requirements more fully and deliver a higher proportion of successful outcomes.

For each of these key customer experience factors, self-service – when used effectively – can give the customers want they most value. It is worth noting that younger customers place more importance than the older generation on longer opening hours, and are also more likely to value having a choice of ways to communicate with the organisation. Further evidence for this age group's valuing of its time can be seen in relatively high importance being placed upon short call/web chat duration compared to the older generation.

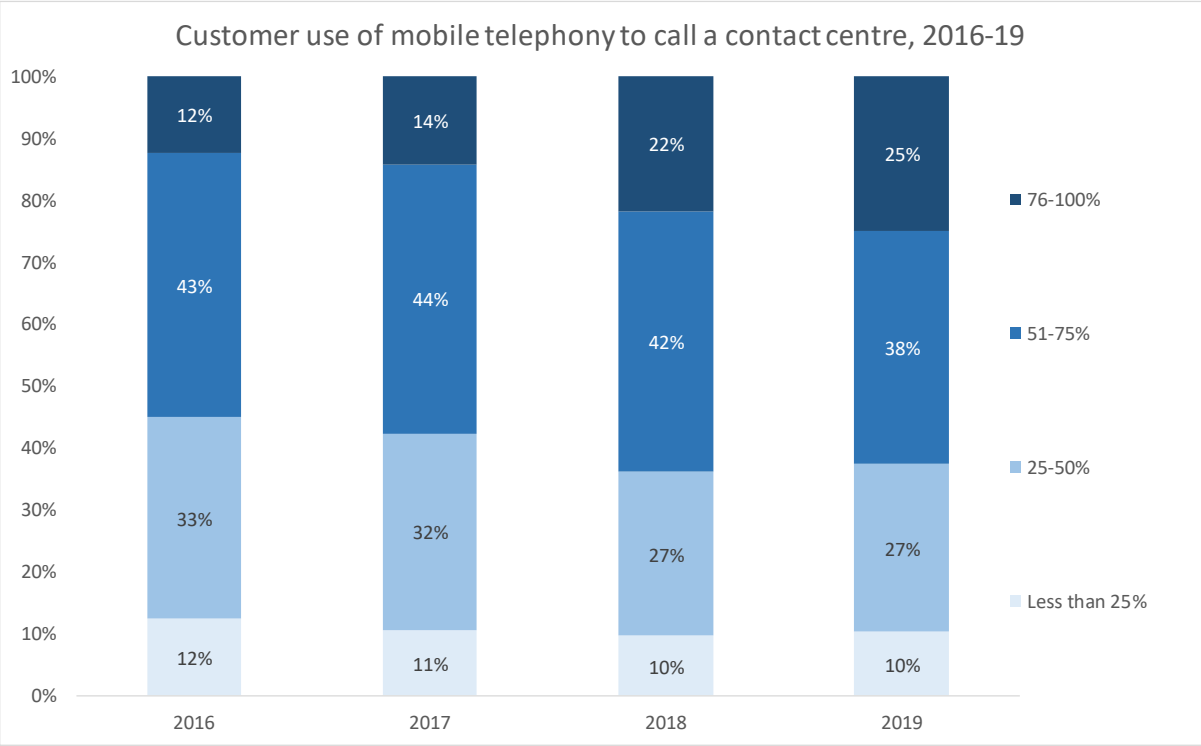
MOBILITY & SMARTPHONES

Statistics that show the number of smartphone users, volume of apps downloaded and the value of mobile transactions are rising so quickly that they would be out-of-date before this report is published. It is sufficient to note that with very few exceptions, the mobile customer is relevant to every organisation, in every vertical market, in every geography of the world.

The rapidly decreasing cost of mobile bandwidth, coupled with the huge improvements in mobile networks means that businesses can be ambitious in what they are attempting within this channel, having an opportunity to build presence and functionality in an area that is growing rapidly.

63% of survey respondents state that more than half of the calls made to their operation are done through mobile phones rather than landlines, offering huge potential for value-add services such as video, visual IVR and other mobile-related functionality.

Figure 10: Customer use of mobile telephony to call a contact centre, 2016-19



Research shows that 91% of customers who have a poor experience with shopping on a mobile site will abandon it: some may intend to return via a PC, but many others will search elsewhere: there is no differentiation or allowances made for sub-optimal mobile web experiences. Furthermore, most businesses are currently failing in this attempt, with the mobile channel lagging way behind online websites and bricks-and-mortar shops. Offering a mobile customer experience tends to mean offering a smartphone app and/or a mobile version of a website, and the next section of the report looks at what this means for businesses and customers from a self-service perspective.

MOBILE WEBSITES

A mobile website differs from simply accessing a full website via a mobile browser, rather offering a mobile-optimised alternative which is easier to use and overcomes some of the constraints around using a smartphone to access the web, such as tiny fonts, excessive scrolling and difficult-to-press buttons.

Mobile websites usually do not try to offer every single item available on the full website, but focus upon the information and processes that most users will want in order to act or make a decision. Ease of use is vital: text must be fully displayed on screen, buttons must be clickable and businesses have had to consider minimising the use of graphics to achieve quicker load times in areas with poor mobile data services, although this is becoming less of an issue as fast and cheap mobile data becomes more widespread.

Bearing in mind that a mobile site generally cannot support every type of interaction that a customer may want, businesses may consider that allowing mobile users to access the main website is a good idea. Contact details should be clear, and offering a seamless route from self-service into supported service, via email, web chat or telephony is very desirable.

It is beneficial for businesses to understand why customers are using a mobile site rather than waiting until they are in front of a PC: the request may be related to what they are doing at that current time, and so waiting is not appropriate. Generally, customers will be more task-focused on a mobile device than a PC, so the emphasis should be on delivering quick, simple, high-volume interactions, i.e. those ideally suited to self-service. For example, by looking at the current use of their full website, a bank may discover that a high proportion of users want to check their bank balance or view recent transactions rather than setting up automatic bill payments or ordering foreign currency. Consequently, the mobile version of the website may focus only on a small number of the most popular high-volume interaction types.

SMARTPHONE APPS

A good app may provide a superior user experience to a mobile website, due to the greater level of design. However, they tend to be much more expensive to build, and unlike a mobile website, a new one has to be developed for each smartphone platform, for which Android and iOS shipments account for almost all of the market. Additionally, company apps will tend to be free to download, so there is little opportunity to make money directly from them.

A native application developed for a mobile device can use some of the device's capabilities to enhance the customer experience. For example, a smartphone app can prompt drivers at the scene of a car accident to provide and capture the correct information, including photos. Such an app could also use GPS to give the exact location of the accident for use by the insurance company.

Industry estimates for building an app vary considerably depending on what they are trying to do, but many sources indicate that a cost of £20,000 upwards (per platform) is very feasible. The cost of developing a mobile website is less, and only needs to be done once. Whether an app is suitable for a company depends on their budget, and their customer base. It may be that the superior branding associated with apps is seen as being well worth the expense, even before factors like increased sales conversion rates are taken into account.

CONTEXTUAL DATA: THE GREAT MOBILE OPPORTUNITY

The nature of mobile devices means that businesses potentially have the opportunity to know more about their customers and their specific requirements and preferences than ever before.

On moving from self-service to assisted service, mobile service applications should gather the browsing history, customer information and the context of the session in order to pass this to a live agent. Smartphones are enabled with GPS tracking, so businesses should look to leverage this capability to deliver better customer experiences where possible. In fact, the inherent capabilities of the mobile device offer businesses huge opportunities to impress their customers, including location-specific information, such as local broadband outages, or the ability to leverage photo-taking functionality on the phone to provide the agent with a clearer picture of the situation (which may be particularly useful for insurance claims, for example).

This includes:

- Customer identity: once the customer has identified themselves, such as by logging on, or through the mobile phone number, this allows the agent to access their existing customer history in the same way that would be done so on a phone call into the contact centre.
- Geographical information: smartphones are GPS-enabled, allowing agents to see where customers are, and to direct them to the nearest store, for example.
- Historical activity: if the customer has been browsing a mobile website or app beforehand, the information that the customer browsed previously may be useful for the contact centre agent to have to hand, in order to see and understand what the customer has already tried to do.
- Stored data: the mobile device may have data stored that identifies the customer, such as account number, that can speed up the interaction and make it more effective.
- Collected information: the mobile device may also be used to capture and share information with the business such as photographs or videos. It may be possible to automate a two-way interaction: for example, a customer may use their mobile phone to scan a QR (quick response) code on a product. Using the information on the code, as well as the customer's input into the app about what they are trying to do, the customer may be directed to the correct place within business's self-service function in order to solve the issue that they have. This can take the contact centre out of the equation altogether, resulting in reduced costs for the business and a quicker and more effective customer experience.

INCREASED PROFIT

Unlike some efficiency-enhancing technologies, self-service can be beneficial to both the business and customer. Through 24/7 availability, revenues can be increased, and the cost differential between a live interaction and one carried out with self-service is enormous.

LIVE CONTACT AVOIDANCE

One of the key business drivers most quoted for self-service is contact avoidance: the reduction of the number of live interactions into the contact centre, and therefore a drop in costs. However, avoidance of contacts without fully delivering the required quality of service means that customers will go elsewhere, so businesses must remain wary of over-extending their self-service offering.

In terms of customer contact, one of the traditional main rationales for any business investment is cost reduction, assuming that any change does not have a negative impact on the quality of service. This has certainly been the case for self-service - whether through IVR or website - where after the initial investment has been made, cost per interaction is extremely low.

When emails started to be used as a customer service channel in the late 1990s, the expectation from businesses was that this would be a low-cost alternative to voice. In fact, the reality for most businesses and customers was that it was a low-quality alternative to voice, and that it took just as much time and effort (and thus, expense) to answer an email as it did a phone call.

Figure 11: Cost per inbound interaction (phone, social media, email & web chat)

Channel	Mean	1st quartile	Median	3rd quartile
Phone	£4.53	£6.20	£3.45	£2.28
Email	£3.89	£3.29	£2.78	£1.45
Web chat	£3.39	£5.15	£2.00	£0.90
Social media	£3.18	£4.60	£2.86	£1.34

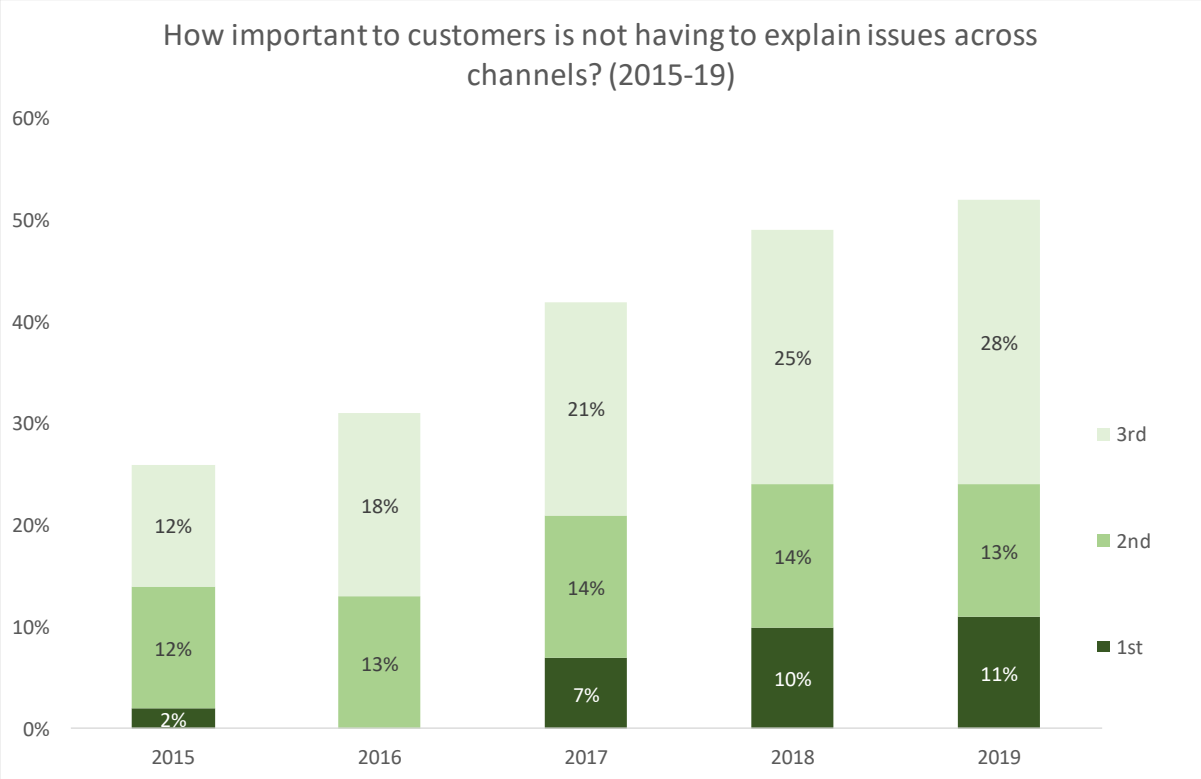
Although there is some cost differential between email, phone, social media and web chat, it is by no means dramatic. One of the main reasons for this is that there is still a relatively low level of automation being used in many businesses. For emails, it is also the case that if the query is not answered satisfactorily within a single response, the time and cost associated with multiple replies and possibly phone calls is soon greater than if the customer had simply called in the first instance.

These figures suggest that despite the omnichannel revolution, automation through self-service sill offers the greatest opportunity for the most dramatic cost savings.

The question was asked to 200+ UK contact centres about the top 3 factors that impacted most upon customer experience and satisfaction, with a long list of factors presented. Although first-contact resolution is consistently seen as the no.1 issue, not having to re-explain issues when moving between channels has risen from relative unimportance in 2015, to being seen as a top 3 customer experience issue by 52% of respondents in 2019.

As will be seen later in the report, one of the main inhibitors to a superior customer experience is that a failure in the self-service channel will be likely to lead to a live contact which probably will not take into account the context and history of what the customer is trying to do. This makes the customer have to explain their issue again, which as the chart below shows, is something that is a major issue for a growing proportion of the customer base.

Figure 12: How important to customers is not having to explain issues across channels? (2015-19)



AUTOMATED CROSS-SELLING / UPSELLING

The profitability of AI-enabled self-service may be boosted by analysing and assessing the outcomes of live and automated interactions where specific cross-selling and upselling approaches were made to customers. Analysis can show the most successful outcomes after considering the initial reason for the interaction, the type of product under consideration, the customer type, the order of presented offers and many other variables in order to fine-tune this approach in the future.

SELF-SERVICE FAILURE

No matter how good the self-service solution is, there will always be times when customers decide that they need to speak with an agent. This section looks at how often and why that happens.

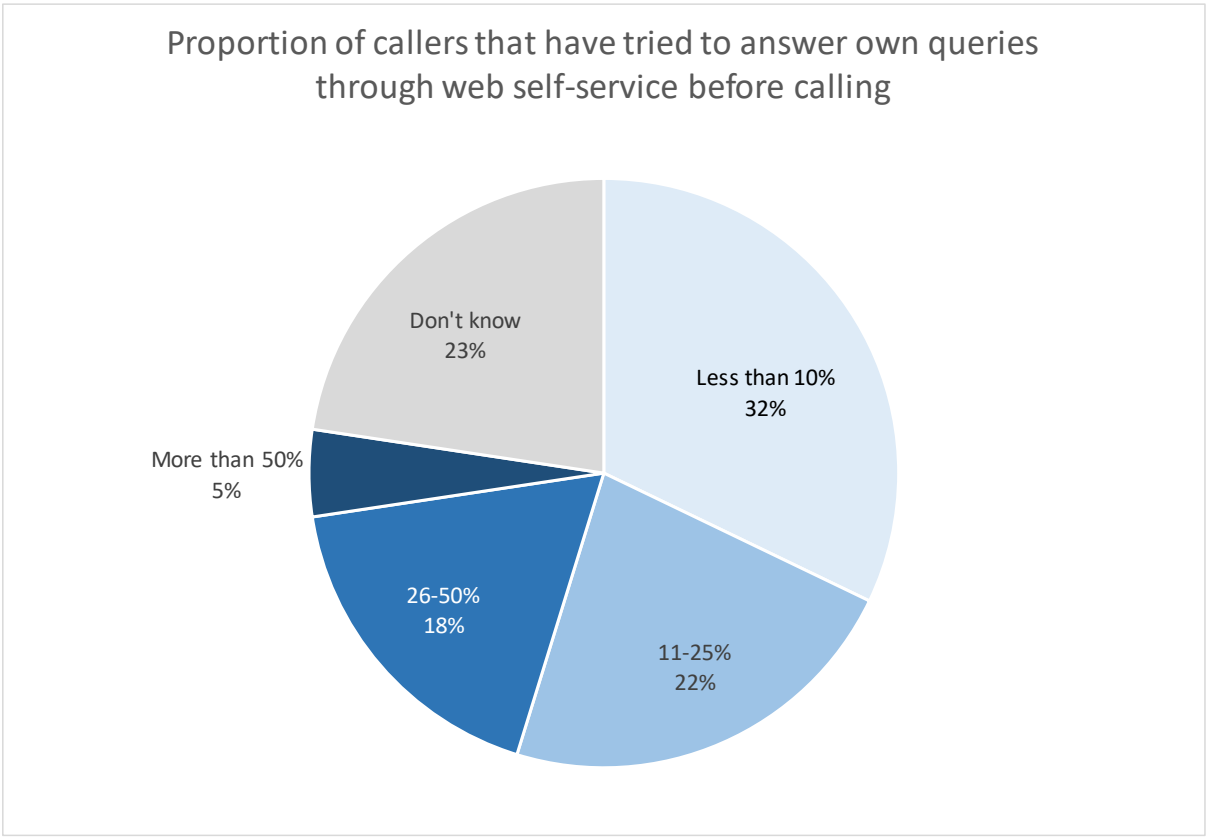
WEB SELF-SERVICE

Although 32% of survey respondents state that fewer than 10% of customers have tried to resolve issues online before calling the contact centre, 23% state that more than 1 in 4 calls come from people who have failed to complete their objective on the website first, and who may approach the call with frustration.

Worryingly, 23% of respondents using web self-service do not have any idea of its success from the customers' perspective.

Taking a midpoint average of these ranges (e.g. 11-25% = 18%, etc.), it can be calculated that 21% of calls come from people who have tried web self-service already, but failed to achieve what they wanted to.

Figure 13: Proportion of callers that have tried to answer own queries through web self-service before calling



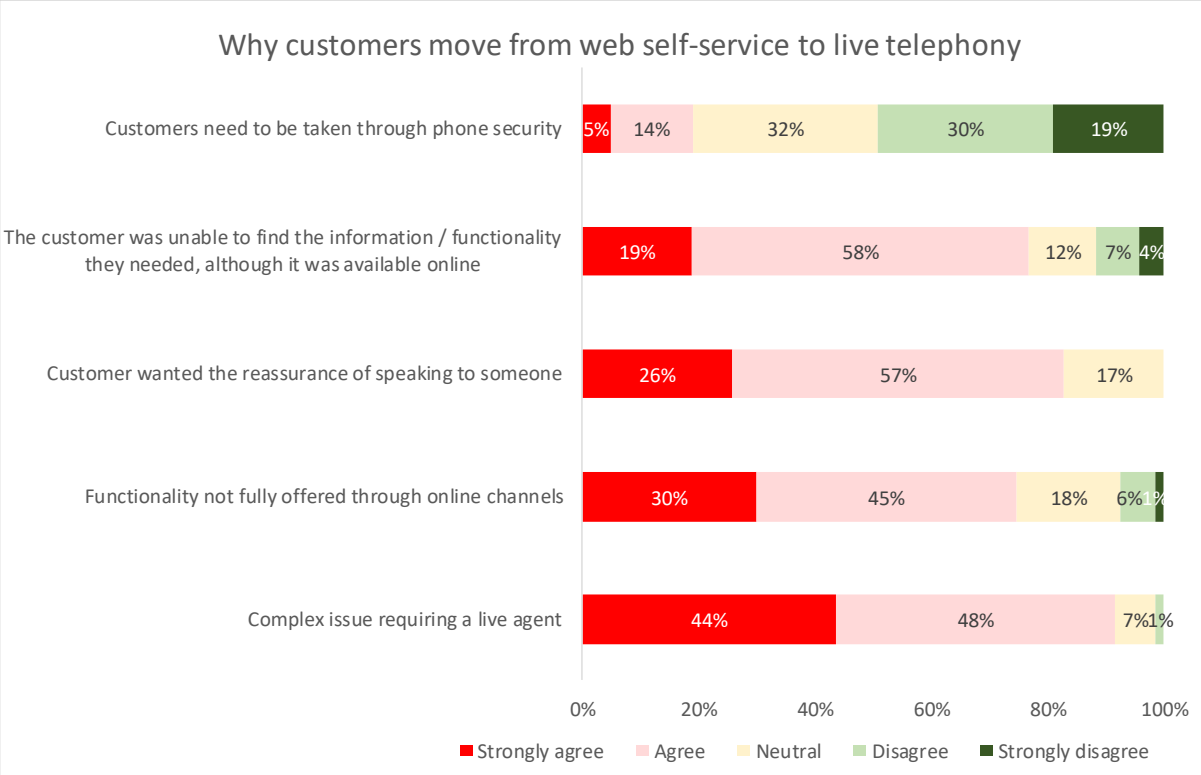
By far the most important reason for moving from web self-service to live telephony was said to be that the escalation involved a complex issue requiring a live agent to complete successfully. In many of these cases, web chat can be used to provide live support, in order that the customer does not have to break channel by picking up the phone, or waiting an unspecified time to receive an email response.

83% of respondents also felt that customers wanted the reassurance that a live agent brings to a conversation.

75% stated that the functionality that the customer calling in required was not available online, but interestingly, 76% stated that they received calls about issues that could be resolved online, but customers were unable or unwilling to do so.

Few respondents believed that website security authentication was an issue in receiving inbound calls.

Figure 14: Why customers move from web self-service to live telephony

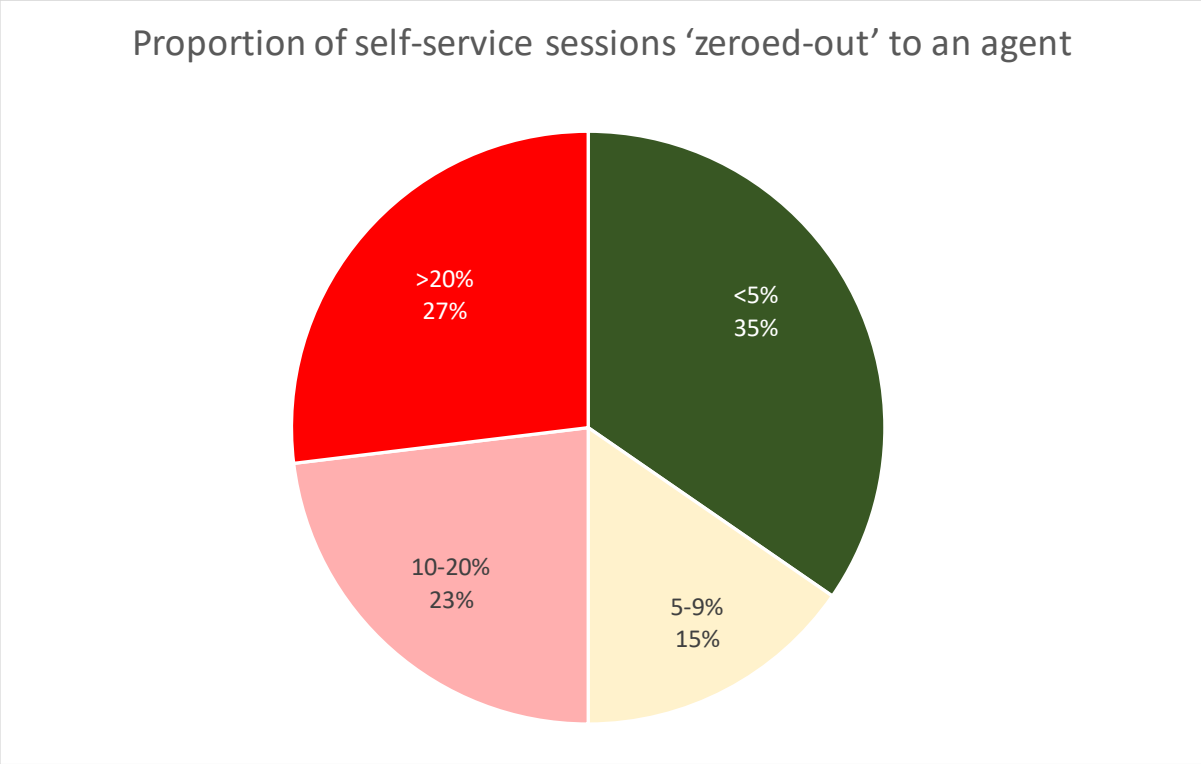


VOICE SELF-SERVICE

Overall, a mean average of 14% of calls that go into the self-service option are “zeroed-out”: instances where the customer decides that they in fact wish to speak with an operator, which is similar to the historical norm (last year’s figure was 10%, 2017’s 17%; 2016’s 15%; 2015’s 21%; 2014’s 14%; and 2013’s 13%).

NB, 1st quartile performance for 'zeroing-out' is 3%, the median is 8% and the 3rd quartile is 21%.

Figure 15: Proportion of self-service sessions ‘zeroed-out’ to an agent



There is a broadly positive correlation between the size of the contact centre and the proportion of self-service sessions that are abandoned in favour of speaking to an agent: the larger the contact centre, the more often customers abandon the session. One possible reason for this might be that larger operations are trying to do too much with their self-service. There is some evidence to suggest that this is the case, as it is very noticeable that respondents from larger organisations tend to have far more options in the auto-attendant functionality of their IVR solution, and this tendency to offer a great deal of functionality and options may well also apply to IVR’s self-service functionality as well. Overly complex or long-winded IVR functionality will tend to encourage session abandonment, and this may well be what we see here.

Due to the potential additional flexibility and functionality offered by automated speech recognition (ASR) over DTMF IVR, we would expect the self-service abandonment rate (which can be viewed as connected to customers' rejection of the self-service option) to be lower for speech recognition than DTMF IVR, but once again, this is not the case:

- In contact centres where the majority of self-service is offered through speech recognition, the mean zero-out rate is 18%.
- In contact centres where the majority of self-service is offered through DTMF IVR, the mean zero-out rate is 12%.

It may be that customers are simply more used to DTMF IVR; that speech recognition often offers an option to speak to an agent early in the script (which is taken as the easy way out); or that customers did not know what to say to an automated system to make it work, so look to speak with a live agent. That customers may actually currently prefer to choose from a finite group of options is an interesting conundrum. Despite some ASR implementations actually encouraging callers to use natural language, this behaviour does not yet come easily to most customers.

Cost differentials in self-service and live voice support

- The cost of a live service telephone call varies considerably, but has a mean average of £4.53
- Historically, the average cost of a telephony self-service session is estimated to be around 50-70p.

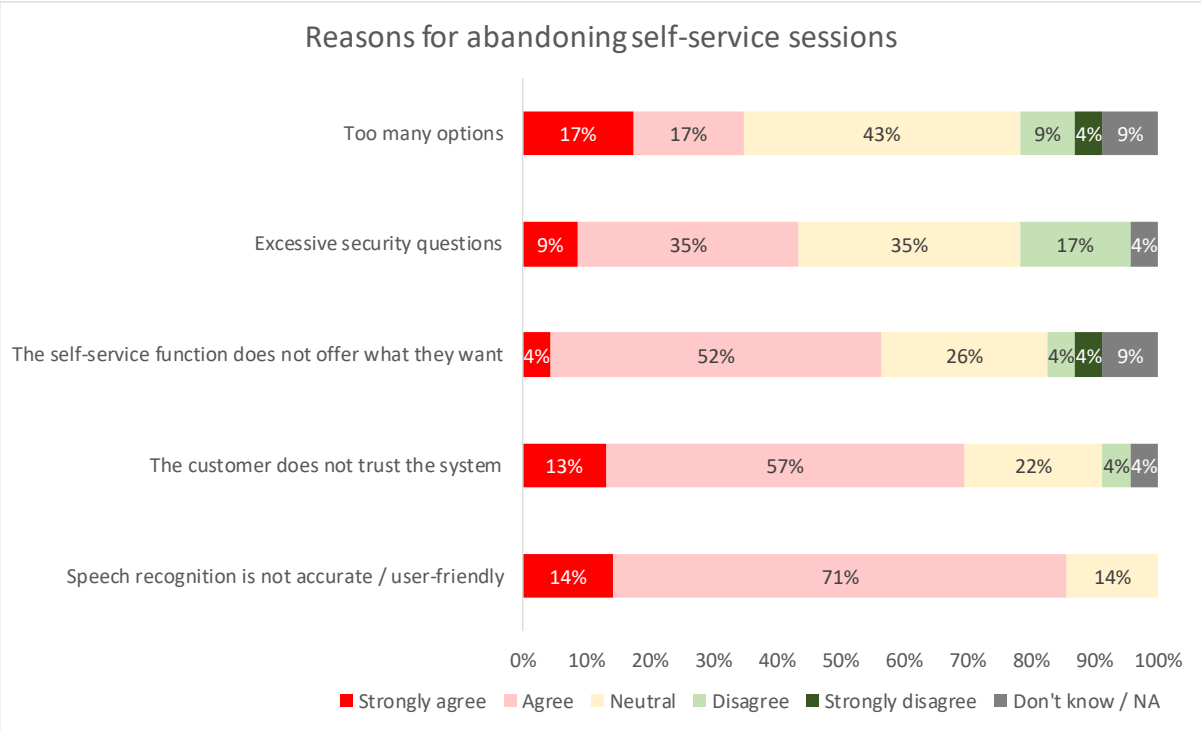
More than half of respondents agreed that customers abandoned telephony self-service sessions because the self-service function simply does not offer what the customers want. While this at first glance may appear negative, it is the case that even in the most commoditised and transaction-driven environments a substantial proportion of customers will want to speak to a person, either because the system does not allow them to do what they want, there is a complicating factor involved, or simply that they wish reassurance or have multiple questions.

In such circumstances, it is the customer’s choice to abandon the session, and this does not have to be a particularly negative experience as long as a clear exit path that leads to a live agent is marked early in the process. Situations where businesses hide their agents from customers, making them go around in IVR loops are the ones that give all telephony self-service a bad name.

17% of respondents strongly agree that having too many options presented to customers is a major reason for them seeking human assistance, and it is noticeable that 70% of respondents agree to some extent that the customer simply does not trust the system, preferring to have human reassurance that the request they have made has been carried out, or the information they are looking for is actually correct.

Of those using automated speech recognition, 85% of respondents agree or strongly agree that speech recognition is unpopular with customers due to lack of accuracy and user-friendliness. This is perhaps more to do with customer habits and lack of confidence with how to use the system than anything more technical. As customers continue to be encouraged to use natural language (both by successful interactions with corporate self-service applications, but perhaps more importantly through digital virtual assistants such as Siri and Alexa), this issue should decline.

Figure 16: Reasons for abandoning self-service sessions



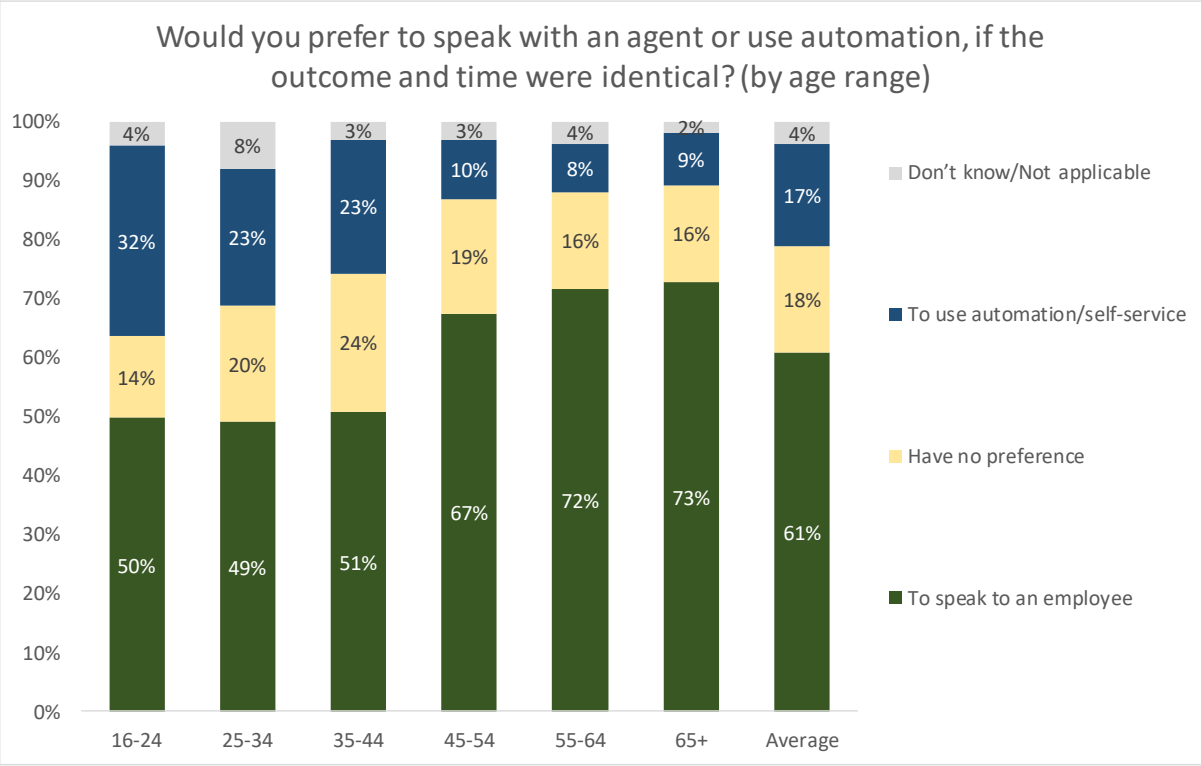
CUSTOMER INHIBITIONS

In order to gauge the level of acceptance and expectation around fully automated customer contact, 1,000 UK 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.

Looking at the age group of the customer base, older demographics feel more strongly about human contact, with 16-44 year-old customers being the age groups most likely to have no preference or to choose to use automation. This fits in with the previous findings that this section of the customer base places more value on their time, whereas the older demographic prefers to have their issue resolved first-time by a single employee.

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

Figure 17: Would you prefer to speak with an agent or use automation, if the outcome and time were identical? (by age range)



Further analysis of this data showed that 64% of men preferred to speak with an employee, compared to 57% of women. At a socio-economic level, 65% of the AB class would prefer live contact, compared to 57% of the DE group.

This reluctance to embrace automation is a major barrier for businesses to overcome. Customers' experience of self-service application will have an impact on all of their future engagements with self-service, even if they are with different companies. In the same way that customers were 'inoculated' against using the email channel in the early 2000s due to its widespread ineffectiveness, the entire customer contact industry is responsible for the wholesale uptake or rejection of next generation AI-enabled self-service as a preferred primary channel.

CURRENT AND FUTURE USE OF SELF-SERVICE

Self-service is found across most industries - there is often at least one function that self-service is suitable for, regardless of what a company actually does - but some sectors use it more than others.

Figure 18: Some functions for self-service, by vertical market

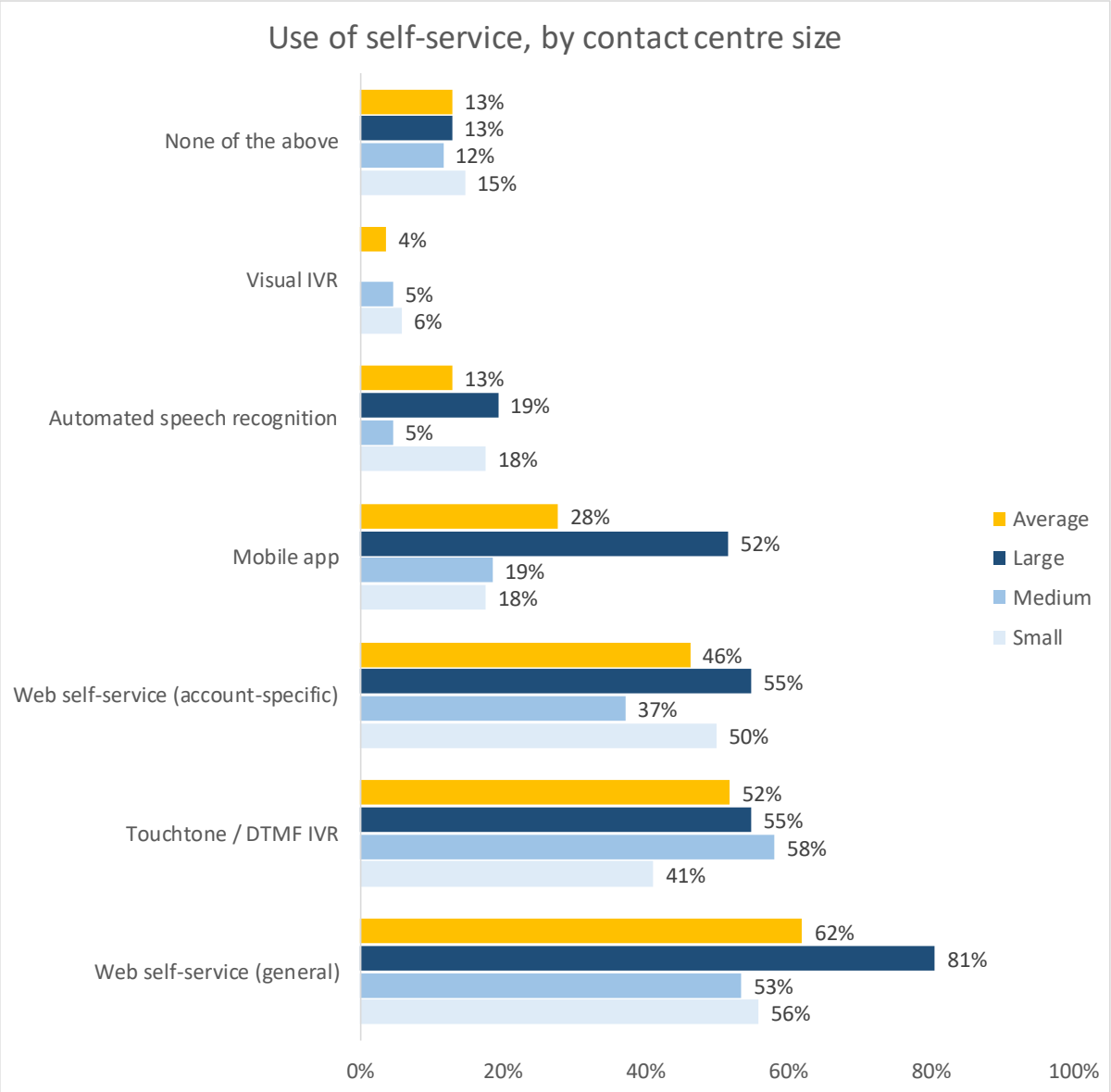
Self-service activity	Typical sector offering this form of self-service
Problem reporting and resolution	IT helpdesk
Account access & card payments	Banking
Product information & registration	Retail
Online registration	Any
Order entry	Retail, travel
Balance enquiry	Banking, credit cards
Dealer or store location enquiries	Car sales, retail
Ticket booking	Cinemas, other entertainment
Real-time punctuality checks	Airlines, trains
Order status and delivery checks	Telecoms, Retail (esp. online), IT helpdesk
Address changes	Subscription services, utilities
Form filling	Any
Brochure request	Travel, retail
Password reset	Finance, IT

87% of respondents use offer some form of self-service to customers, with general web self-service being available to 62%, and account-specific to 46%. The former allows a search of the site as a whole, perhaps using FAQs or text search, whereas the account-specific variety requires a customer login in order to access functionality and information specific to that customer.

Touchtone (DTMF) IVR is used more widely by larger contact centres, with a similar pattern amongst those using automated speech recognition. A small proportion of respondents use visual IVR.

Larger contact centres were far more likely to have invested significant amounts in developing smartphone apps.

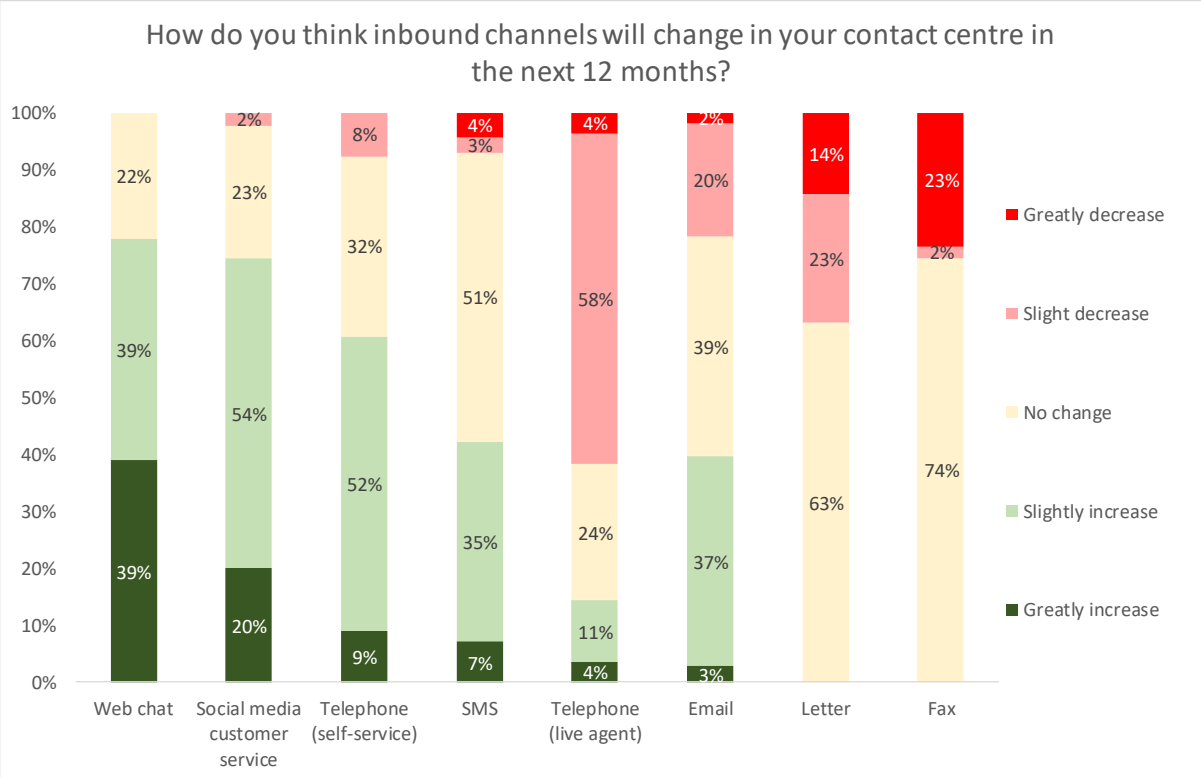
Figure 19: Use of self-service, by contact centre size



Looking at how channel usage is changing, as not all of the same respondents take part in this survey every year, a jump or drop in the usage of a minor multimedia channel could be an industry-wide phenomenon or a case of a handful of early adopters skewing the results, which is certainly possible where only a few use a channel, and where mean averages are used.

As such, a question is asked to respondents about how each inbound channel will change, so being able to judge if any alterations in the use of channels is due to real changes at a contact centre-level, or is more of a statistical blip caused by a different set of respondents providing data each year.

Figure 20: How do you think inbound channels will change in your contact centre in the next 12 months?



As usual, the traditional media of letters and fax will have a net decline in our respondents' eyes, although still have their place in the likes of the insurance, medical and manufacturing industries. Even more respondents believed the live telephony channel volumes would drop (62%) than thought they would rise (15%), a finding that is growing each year, and which signals a trend in the industry that is explored in the next chart.

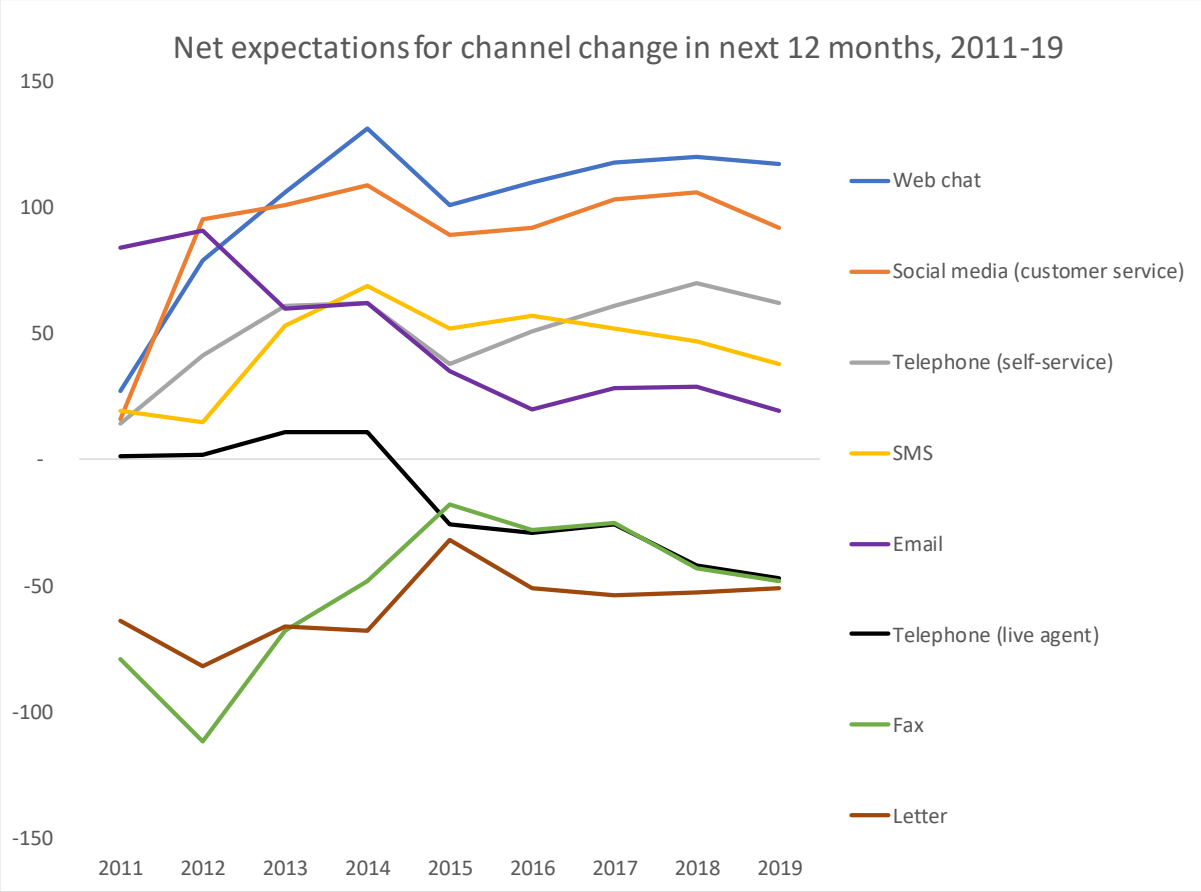
Strong growth is once again expected in web chat and social media customer service interactions (and SMS, from a very low base), with email volumes still predicted to grow although at a much lower rate than previous years. Telephony self-service is expected to grow once again this year, with its twin benefits of customer convenience and low cost still very much relevant. New approaches, such as visual IVR, are likely to encourage further use of self-service.

The previous chart's real message is that channels aren't being replaced - even letters and fax will continue to be supported in some cases - but rather augmented, and businesses have to accept that they need to develop an omnichannel approach, as that's what their customers are expecting. This means that the pressure to unify the view of the customer across channels is a challenge that isn't going to go away.

The following chart shows a historical representation of answers to this question, showing how the enthusiasm and expectation of channels has changed. Respondents could choose one of five options connected with how they believed each channel would grow in the next 12 months, and a score was given to each to reflect its effect: greatly increase (+2); slightly increase (+1); no change (0); slightly decrease (-1); greatly decrease (-2). This would give a net score of between -200 and 200, with positive scores expecting growth and negative scores decline. For example, a channel where 70% expected a slight increase and 30% a slight decrease would receive a score of +40 (i.e. "70" + "-30").

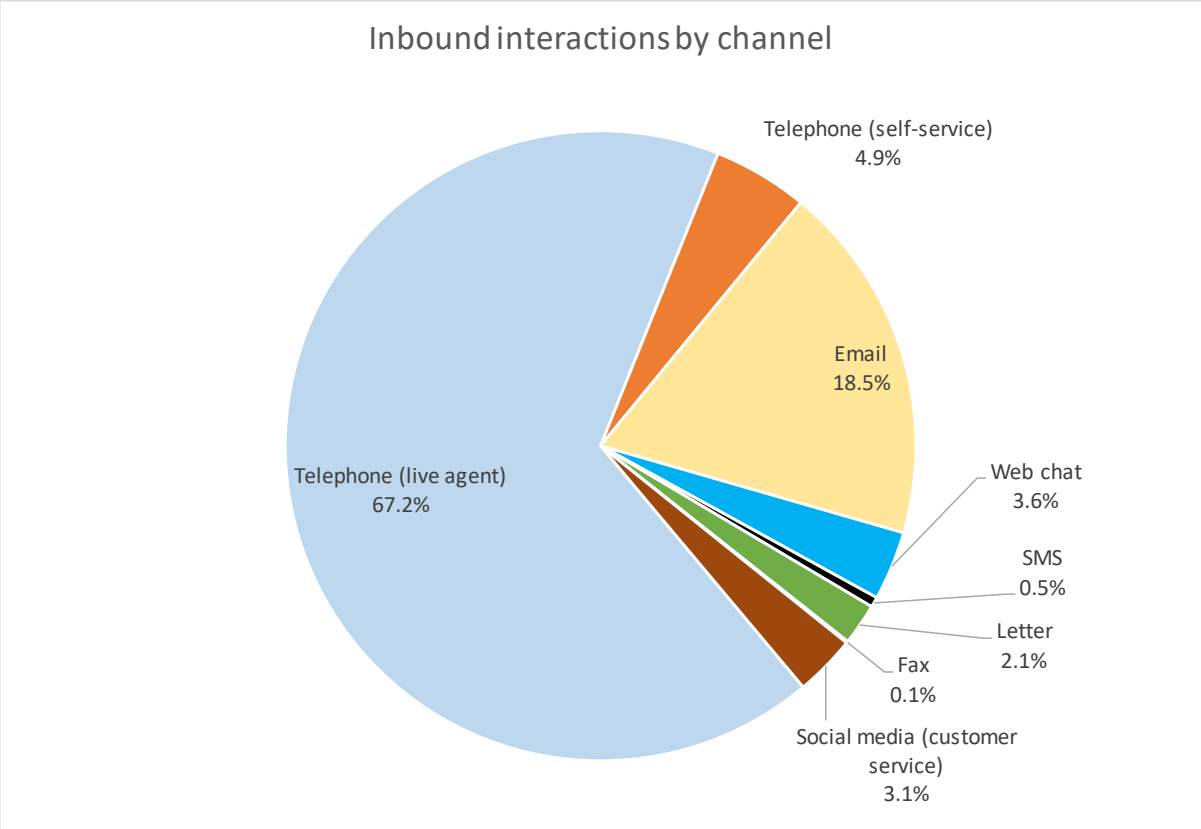
Web chat and social media show very strong growth, having net scores of 100 or over since 2012. Email, while historically strong, has shown a distinct cooling in expectations since 2012, although is still in positive (expected growth) territory. The expectations for live agent telephony have dropped considerably since 2015, showing a definite decline in its relative importance, along with letters and faxes. Telephony self-service is generally expected to grow somewhat, having seen something of a renaissance in recent years.

Figure 21: Net expectations for channel change in next 12 months, 2011-18



Looking at specific channel usage for 2019, the UK contact centre industry has clearly embraced the various forms of non-voice customer communication.

Figure 22: Inbound interactions by channel



The proportion of live inbound interactions by telephone dropped to 65.3% in 2017, its lowest recorded level, in line with a long-term gentle downward trend. 2019's figure of 67.2% is very similar to last year's figure of 67.0%.

The proportion of telephony self-service interactions remains steady, despite expectations of its future rise, although as the following table shows, it has significant presence in some vertical markets.

The email channel increased significantly in 2017, after being around 15% for a number of years. 2018 saw a slight falling-off (down to 19.5%) and 2019's figure of 18.5% suggests that email may have peaked relatively.

Web chat and social media grew slightly once again, but are minor channels on a industry-wide basis.

Looking at vertical market figures, agent-handled calls are most important to respondents in the public sector, transport & travel, housing and services sectors, with manufacturing and retail respondents reporting lower levels of telephony.

Email is well represented in most vertical markets, with the manufacturing, TMT, retail and services sectors highest.

Telephony self-service seems strongest in the utilities sector as usual, although insurance has a higher than usual finding this year.

Web chat is developing a much stronger presence in retail, so as to encourage and close online sales, but is still a way off being a major channel for any other vertical market.

The utilities sector report being ahead in terms of social media customer contact, although most vertical markets show some interest in this channel.

Figure 23: Inbound interactions by channel, by vertical market

Vertical market	FS	HS	INS	MAN	OS	PS	RD	SVCS	TMT	TT	UTILS	Mean
Telephone (live agent)	60%	76%	63%	35%	68%	82%	53%	72%	62%	82%	60%	**67.2%**
Telephone (self-service)	8%	1%	12%	0%	1%	5%	4%	0%	5%	7%	11%	**4.9%**
Email	16%	16%	14%	58%	19%	8%	31%	19%	30%	7%	11%	**18.5%**
Web chat	4%	3%	6%	1%	6%	2%	8%	6%	4%	1%	3%	**3.6%**
SMS	1%	1%	1%	0%	1%	1%	0%	0%	0%	0%	0%	**0.5%**
Letter	7%	0%	2%	1%	2%	0%	0%	2%	0%	0%	7%	**2.1%**
Fax	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	**0.1%**
Social media (customer service)	4%	3%	2%	4%	4%	2%	3%	3%	0%	3%	8%	**3.1%**

NB: "0%" refers to a number lower than 0.5%, rather than necessarily a zero value.

Care should be taken when considering vertical market statistics, as the research sample size may be small. Use only as an indication of relative importance.

WEB SELF-SERVICE

For businesses, by far the major advantage to having customers use web self-service is the fact that the cost per automated support session is estimated to be between 40 and 100 times cheaper than a live call to an agent.

Research has found that around 50-60% of calls to the contact centre result from bad website service or a failure in another channel. Quite apart from the current importance of this application, research shows that as customers become more educated and experience many different qualities of online self-service, their expectations increase across the board which puts pressure on other organisations to keep up or even exceed the current benchmark performance.

Put basically, most customers will visit a website first, but if the self-service experience does not give them what they want – immediately and accurately – they will either call the business or go elsewhere. In cases where the customer is tied into an existing business, this will result (merely) in a higher cost of service and decreased customer satisfaction. In cases where the web visitor is only a potential customer, a failure in the self-service process on a website will mean the almost-certain loss of a sale. In all cases, providing effective web self-service options - with a clear path to escalation to a live agent, along with any contextual customer-specific information - is in the best interests of the business.

The website can provide various self-service options for the customer, ranging from the most basic search and static FAQ functionality, to personalised virtual agents and dynamic FAQs.

SEARCH

Since corporate websites first came into being, businesses have offered search tools for customers to look through indexed information, based on keywords found in these documents, in order to answer their questions without the need to call the business. While such functionality has the advantage of at least being familiar, indices grow, documents get old and out-of-date, and customers become educated that there are more sophisticated and effective self-service solutions available, with customers' opinions of standard search functionality suffering as a result.

With only a blank text entry box to guide them, the onus to search successfully is with the customer, who has to try to 'get into the mind of the business' and phrase the question or search terms in a way that fits the business and its internal jargon. However, this is not always possible, and customers have a limit to the maximum number of times that they will attempt to search, or how many pages they will read from the numerous documents that a wide keyword search can bring back, claiming that it has answered the query. The customer then has two possibilities: to engage the business through a high cost channel such as telephony or email, or worse, to find an alternative supplier that can help them without going through this high effort process.

Search functionality does have its place: for example, if a customer wanted to find out very specific information about a product that had an unambiguous name (for example, 'SDK36479 installation'), a search on this particular term would at least bring back documents that had a high level of

relevance to this product and how to set it up. However, if the customer had a query that used keywords that were very popular and widely found elsewhere (for example, "What are your delivery times?"), typical search functionality might return every document that contains the word 'delivery', relying upon the customer's patience and goodwill to find the correct answer for themselves. In the case of very large companies, this could bring back potentially hundreds or thousands of documents, many of which could be out-of-date and have been superseded. The major problem with search functionality is that it pays close attention to the answers, but very little to understanding the question or the customer's thought processes.

It is one thing to be presented with a long list of documents while sitting in front of a large screen of a PC, where scrolling up and down the page is not an issue. For the same flawed search functionality to be placed onto a mobile website, expecting the user to zoom in and out, scrolling up and down, and then to potentially scan through numerous documents whose text is too small to read properly is probably a step too far even for the most enthusiastic and loyal of your customers.

Some self-service solutions alleviate this issue by using customer feedback to judge the success of the search results provided so as to increase future customers' chances of being given the correct information.

FAQS

FAQs - frequently asked questions - are one of the most popular forms of Web self-service. At its simplest, an FAQ list can simply be a group of static documents and/or text, categorised under wider thematic headings, and kept up-to-date manually. Solution providers state that perhaps 80% of questions can be answered by 20% of documents, however for most businesses, customer requirements change on an ongoing basis so it is unlikely to be the same 20% of documents that are most useful as time progresses.

More complex applications can use techniques such as text mining and fuzzy search (approximate string matching) to return documents that are not just an exact or very close match to the search terms entered by the user. Sophisticated FAQ technology will leverage natural language processing to deliver more accuracy than standard search functionality.

It is possible to minimise the use of manual updates and supervision by making the FAQ list more dynamic and self-learning through using responses taken from emails to customers who have asked specific questions, which will then dynamically enter the FAQ list at an appropriately high level. Being able to restructure the knowledge base on a regular and ongoing basis through automation is key to maintaining the usefulness and relevance of the FAQs. Unlike the virtual agent (below), FAQs by their nature provide the user with a list of alternatives, asking them to judge and choose the correct most relevant answer for themselves. While this process takes longer for the customer than the provision of a single answer, it is currently more closely aligned with the typical user experience, and thus has the advantage of familiarity. Providers of FAQ technology report that the typical reduction seen by customers in inbound live contact (such as email or telephony) is in the region of 25%.

VIRTUAL AGENTS

Virtual agents, increasingly referred to as conversational AI, are software applications that engage customers in conversations in order to provide them with an answer to their queries. They may be personalised to reflect the company's branding, and often act as the first point of contact between the website visitor and the business. Detail on this functionality can be found in the **"AI for Web Chat and Email"** section of this report.

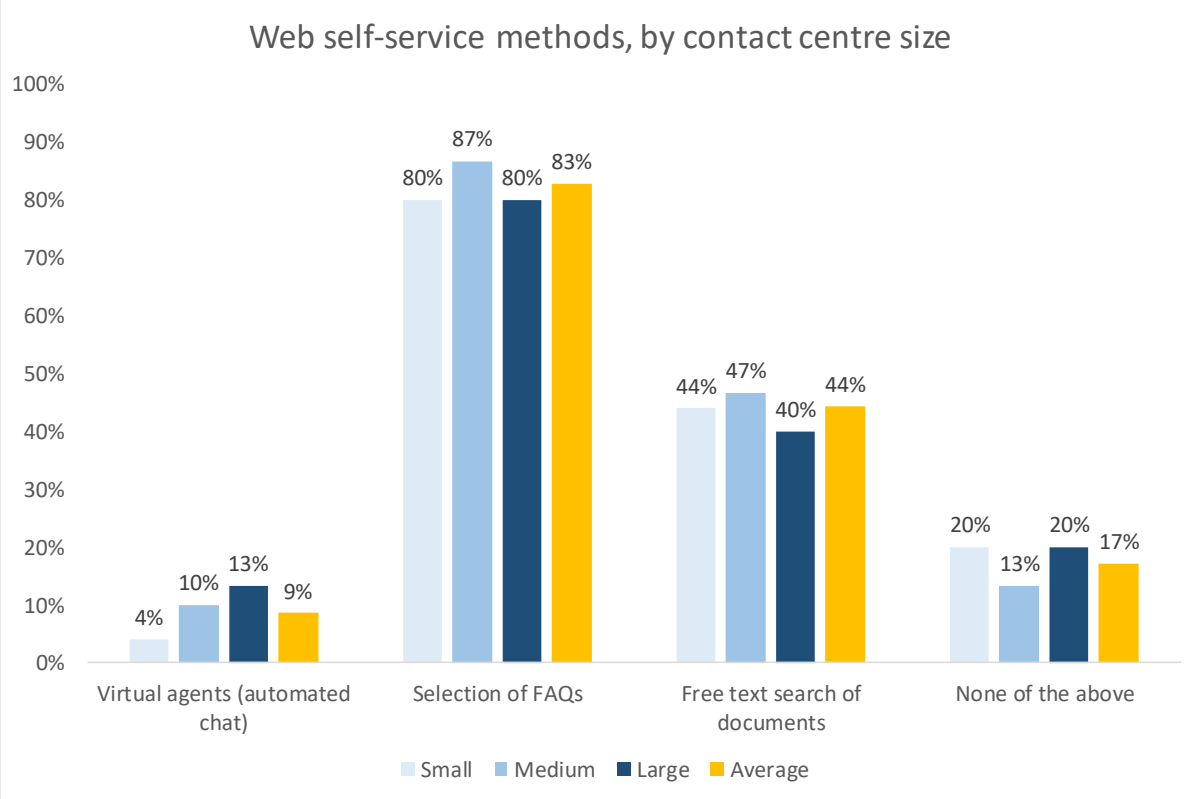
The ContactBabel report, "The Inner Circle Guide to AI, Chatbots & Machine Learning" also considers the use of AI in the contact centre.

Some solutions offer chat agents the opportunity to see what the customer is typing in real time, and enabling the agent to get a head start, while at the same time linking to the contact centre knowledge base in order to provide a list of most likely answers, which will increase the accuracy of response and decrease the overall time to serve.

Virtual agent functionality is of interest to most sectors, however the commercial reasoning and business drivers differ greatly. Banks have an appreciation that they need to understand their customers to keep them loyal in a highly commoditised and competitive environment, and as such there is considerable interest in using virtual agent functionality within Voice of the Customer initiatives. For example, using real-time analytics, such organisations can learn that customers are talking about a specific issue, which can feed into wider commercial decisions in business areas unconnected to customer service. Sector such as utilities (which may be virtual monopolies) may be less concerned about competitiveness, instead being heavily focused on cost reduction, and these business cases will focus on contact avoidance. Online retailers, which want to cross-sell and reduce their shopping cart abandonment rates, will have yet another strategy.

By far the most prevalent functionality within web self-service is that of FAQs (frequently asked questions), which are used by 83% of respondents. The free text search of the document library is somewhat less well supported, at 44%. Virtual agents are employed by only 9% of respondents, more often those within large enterprises. 17% of respondents offer no web self-service at all.

Figure 24: Web self-service methods, by contact centre size

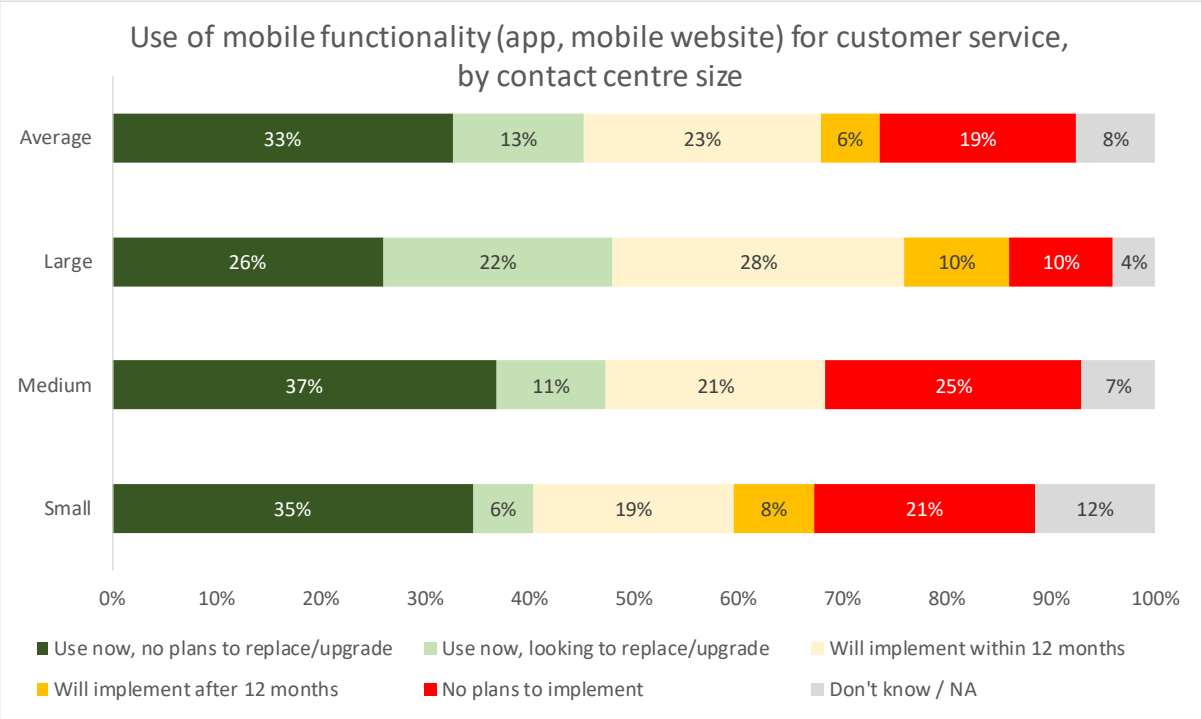


USE OF MOBILE SERVICE FUNCTIONALITY

46% of this year's survey respondents stated that they offer mobile functionality for customer service, with a further 29% having definite plans to doing so.

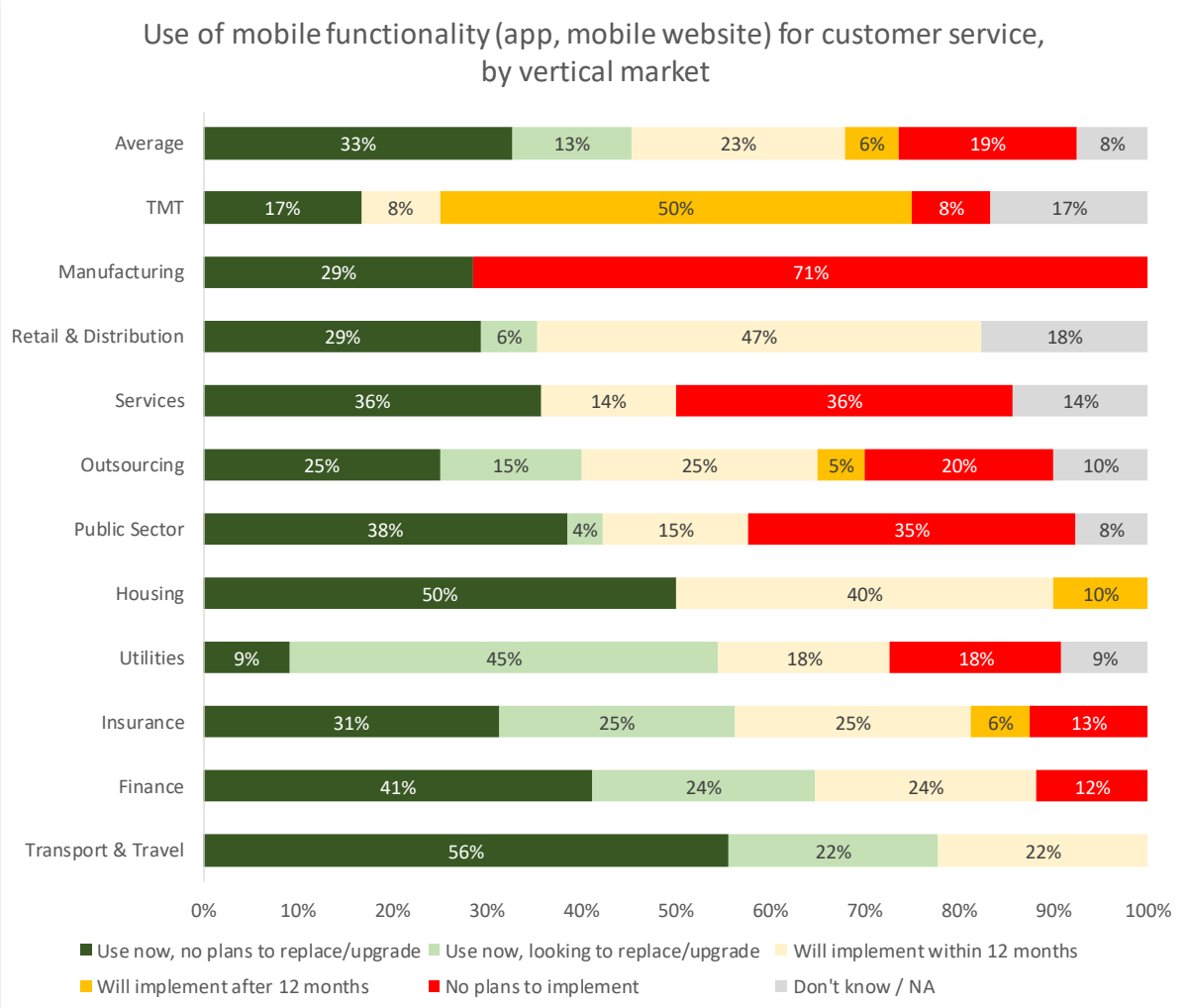
Respondents from large operations are more likely than others to be looking to upgrade their functionality.

Figure 25: Use of mobile functionality (app, mobile website) for customer service, by contact centre size



Looking at the picture by vertical market, those in the insurance, transport & travel and finance vertical markets are most likely to be offering mobile functionality, with interest in doing so coming from the retail sector and the housing respondents.

Figure 26: Use of mobile functionality (app, mobile website) for customer service, by vertical market



Of the respondents which provide mobile customer service, over 80% offer a mobile version of their website, for example by having the most popular elements available, speedy load times, optimised graphics, improved readability and scrolling, etc.

Around half of respondents offered a smartphone app for service, with larger respondents much more likely to be doing so. However, only 25% offer the same mobile support for sales, with larger operations again being more likely to try to win new business through investing in an app.

MOBILE SELF-SERVICE ESCALATION

If the customer cannot successfully self-serve on a mobile app, they will be forced to initiate a service request via another channel, which will be treated by the business as a separate request without any understanding of the history, activity or effort that the customer has already undertaken. No business where this occurs can describe itself as being 'omnichannel'.

The most basic challenge on escalation from self-service to live service is identifying the customer and if they have been authenticated, passing them securely to a live agent without having to go through security again. However, this in itself is not the whole story. Ideally, the context and history of what the customer was trying to do should be captured in a contextual data store which is then made available on the agent's desktop to allow them to see what has happened before and to act accordingly. It may also be that the customer has tried web self-service, then a virtual agent and finally has to come into the contact centre through an IVR which has not been provided with this context. By the time the customer reaches an agent, they are very unlikely to be enjoying their customer experience.

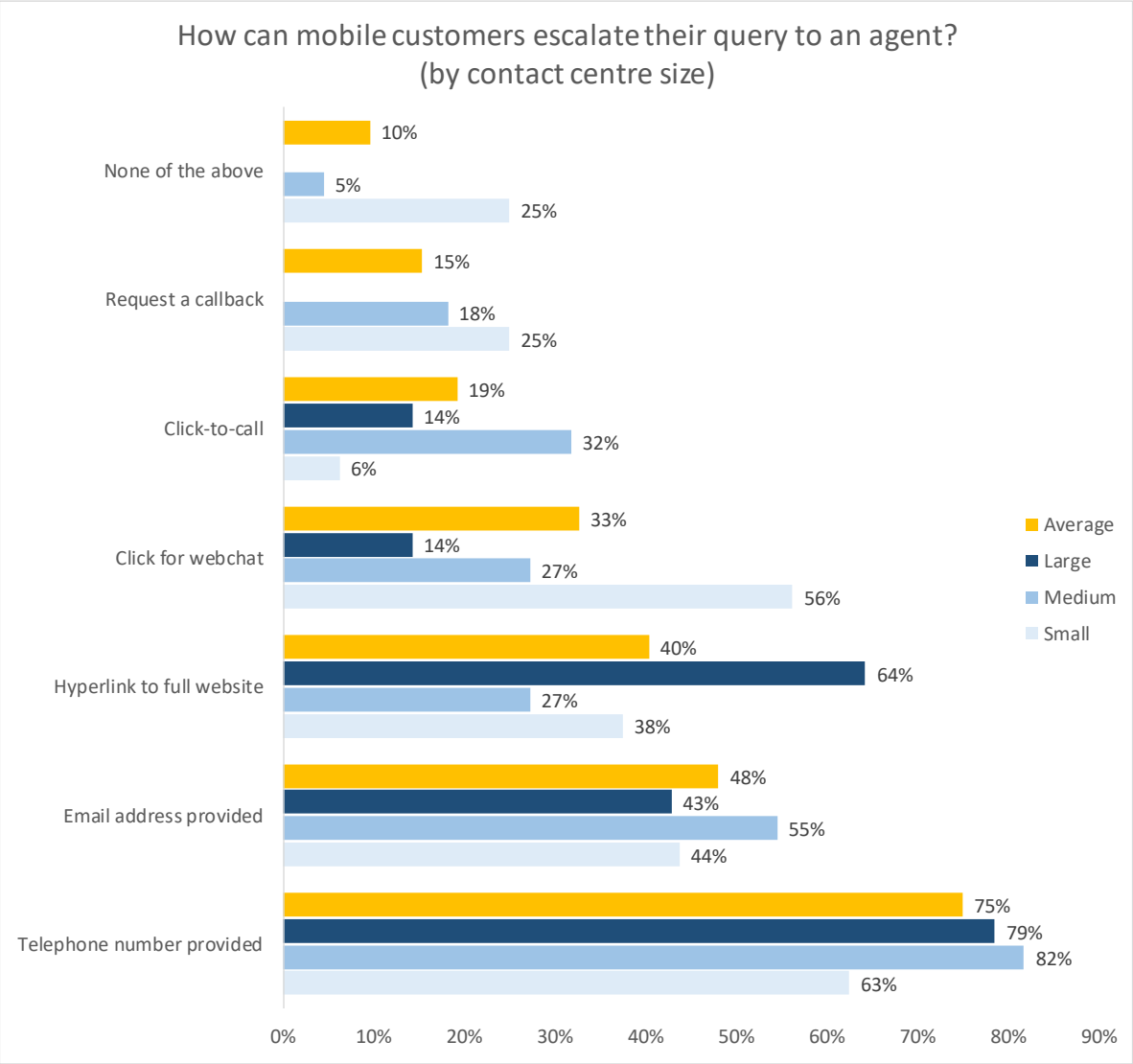
Gathering, understanding and using the contextual data that can surround the mobile consumer will be key to pushing the uptake and functionality of this channel forward. The plethora of channels immediately available to the mobile consumer - including voice, web browsing, SMS, social media, and web chat - encourages the customer to act immediately for all their service or information requirements, rather than waiting until they are in front of a desktop computer. In cases where the user needs to pass through security - and also where other reasons mean that the customer cannot complete their interaction solely through mobile browsing or using an app - businesses should consider how they will keep the customer or prospect engaged with the business.

The easiest way to support cross-channel contact is to offer a telephone number on the mobile website or inside the app, and 75% of respondents do so. However, the user/ customer must often start their request again from the beginning, as many respondents will not credit the security and identification process that the customer has already been through, nor will the browsing history be passed onto the agent. Effectively, the customer may as well not have used mobile self-service at all, which is a negative for them and their attitude towards this channel in future.

Providing an email address is the second most popular escalation method, which does allow the pre-population of fields in an email form (user details, account details, type of issue etc.) although only a few respondents go as far as this. However, email is a slow medium even when done correctly, and the user will not get an answer in real time. Sales operations prefer to encourage mobile browsers to contact them through a more immediate channel, to reduce the chance of losing a sale.

19% of respondents using the mobile channel state that they offer scheduled call-backs to customers. While this is a positive and proactive response, the user is often left in the same situation as if they had called in the first place, as the agent will often have to take them through security and establish what the problem is.

Figure 27: How can mobile customers escalate their query to an agent? (by contact centre size)



33% of respondents offered a web chat option within the mobile site or app, this being the channel most closely resembling the activity the user is already undertaking (i.e. using the mobile device to look for information, and typing rather than speaking). Web chat is more immediate than email, and offers a chance to move between self-service and assisted service seamlessly, with the agent being able to push links and video to the user in real-time. The difficulty in typing on a smartphone screen means that this is still not a perfect solution.

A significant minority of respondents state that upon escalation, an agent is provided with some information about the customer, most often only the customer's name, rather than anything more closely linked and relevant to what the customer was trying to do, their account details, or where they are currently located. As such, this means an escalation from the mobile channel will rarely provide a quicker customer experience (for example, by jumping a call queue or by having details of the mobile session already undertaken screen-popped onto the agent's desktop).

VISUAL IVR AND VIDEO

The audio-only nature of DTMF IVR places limitations upon how user-friendly the experience can be for a customer. There has always been a trade-off required between functionality and usability, which manifests itself in the number of menu options and levels that made available within the IVR system.

The rapid growth in smartphones has meant that it is now possible to offer a visual representation of IVR menus on a device which will then be used to call the business. Because it is far quicker to read text than to listen to text being spoken - some studies show that a caller can navigate a visual IVR menu between four and five times quicker than a DTMF IVR menu - the customer experience is improved without sacrificing any functionality or options. Furthermore, visual IVR can be used to send video presentations while waiting for an agent, for educational or marketing purposes, or to answer the self-service requirement (for example, pushing the relevant YouTube clip in order to show the caller how to do something).

Many businesses that use DTMF IVR have made long-term investments in this technology, and retiring the system entirely is not desirable. Giving existing IVR functionality a visual interface simply means that the IVR's path can be shown as a picture on a website or smartphone, with callers touching the selection that they require without having to listen to all of the options or to go up and down levels or branches. This has the dual benefit for the customer of being far quicker than listening to IVR menu options, and of being significantly more likely to get them the correct information or to be routed to the department most appropriate to their needs. Visual IVR menu systems integrate with existing DTMF structures and reuse the same VoiceXML scripts, meaning that any changes made to the existing DTMF IVR system will be automatically replicated regardless of channel or device.

Visual IVR offers companies the ability to develop value-added applications for their customers, rather than simply providing a visual representation of existing IVR menus. For example, in cases where very specific expertise is required, visual IVR can be used to help the caller self-diagnose where in the organisation they need to be going, rather than having to speak to a front-line agent who will then have to ask them the same questions in order to route the call to the appropriate resource.

It is worth noting that despite the huge uptake in smartphones and mobile apps, it is very unlikely that customers will find it convenient to have an app for every company with which they deal. Like apps, a visual IVR option provides businesses with an opportunity to display corporate branding and deliver an improved customer interaction experience and enhanced self-service capabilities.

Figure 28: Visual IVR: benefits for businesses and customers

Business	Customer
Cost reduction through improved call avoidance and more accurate routing, improving first contact resolution and decreasing call transfer rates	Greater granularity of routing, and improved functionality means that callers are more likely to arrive at the place where they need to be. Consistent functionality shared across IVR channels and customer devices means that customer engagement and confidence in using the system will be improved
Leveraged existing IVR investments, without having to rip and replace	Significant decrease in customer effort to access self-service or call routing capabilities
Reusability of existing scripts lowers development costs	If the agent has contextual information, there is less likelihood of the caller having to repeat information
Contextual information gathered within the visual IVR session can be popped to agents, giving an improved understanding of the customer's journey, reducing agent handle time and customer frustration	As more customers are finding the correct information without having to call the contact centre, this means lower wait times for the customer base in general

Building a business case for visual IVR may involve looking at the self-service 'zero-out' rate for your specific industry compared to your own statistics, considering your call transfer rate and listening to the 'Voice of the Customer' via call recording or speech analytics as they comment upon their IVR experience.

Carrying out a specific IVR customer experience survey is also a good way of gaining accurate insight into what might turn out to be a significantly negative experience for some of your customer base.

Visual IVR (some similar functionality is also referred to as IVVR - interactive voice and video response) provides both visual and audio information, allowing businesses to send video clips for educational or marketing purposes to mobile telephones while waiting for an agent, or to answer the self-service requirement (for example, presenting the relevant YouTube clip in order to show the caller how to do something). Self-service videos on the website are an effective way to support technical issues as it is far easier for someone to understand a solution when they are shown it, rather than being told about it.

TELEPHONY SELF-SERVICE

Despite the rapid growth in the use of web-based services, the importance of the voice channel has not diminished to the extent predicted by some commentators:

- Customers still find voice the most convenient, flexible and quickest communication channel in many instances, especially in older demographics and for complex and high-emotion enquiries
- Customers' expectations continue to rise. Not only do they seek out competitively priced goods and services, but they require quick, efficient service as well
- The general level of awareness of identity theft as a real issue has also grown, and the voice channel still provides customers with the greatest level of confidence.

The challenge for businesses is to improve the customer experience, protect their customers' private and personal information and control their own costs. As such, the use of automated voice-based solutions has become widespread and offers a rapid service option to customers while keeping contact centre costs down.

Voice self-service is usually delivered either by touchtone (known as DTMF – dual tone, multi-frequency) IVR, which allows customers with a touchtone phone to access and provide information in a numerical format. Some businesses, often with large contact centres and high call volumes, use automated speech recognition (ASR), which allows customers to speak their requirements to the system, allowing greater flexibility and functionality. The emergence of visual IVR – a front-end developed for smartphones which bridges the gap between digital and voice – has the potential to give self-service a significant boost although current usage is low.

IVR (interactive voice response) - whether through DTMF or speech recognition - has four main functions:

1. to route calls to the right person or department (e.g. "Press 1 for sales, or 2 for service…") in auto-attendant mode
2. to identify who's calling via either caller-line identity (where the caller's number is recognised, and their records brought up immediately), or through inputted information, such as account number. The caller's information is then "popped" onto the screen of an agent who then understands who the customer is and what they are likely to want
3. to segment and differentiate between customers, prioritising against business rules in order to deliver a premium standard of service to them (e.g. minimising time on-hold, spending longer on the phone with them, offering high-value services, etc.)
4. to deliver a total customer self-service interaction without having to use a human agent, saving the business money: historically, it has been calculated that 6 or 7 self-service IVR calls cost about the same as a single person-to-person call.

This section of the report considers the role of IVR and speech recognition as part of a full telephony self-service solution, i.e. one that takes the place of an agent to handle the **whole** interaction.

Figure 29: Advantages and disadvantages of telephony self-service

Advantages	Disadvantages
Cost avoidance: 6 or 7 IVR calls cost less than a single person-to-person call	Can be inflexible to change IVR options, due to proprietary nature of many legacy IVR solutions
Captured customer data from an IVR enables key CTI (computer-telephony integration) solutions, such as screen popping and skills-based routing to take place	IVR menus difficult to visualise for customers, leading to stress and dissatisfaction. Users may feel "there is no end in sight" and become frustrated.
Frees agents from boring and repetitive work, reducing staff attrition and improving morale	Long-winded menus annoy customers, where shorter ones can reduce the options available, and thus, the functionality. Visual IVR can alleviate these issues
Allows agents to spend more time doing high value-add work, like cross- and up-selling, and complex customer care and loyalty work	When overdone, self-service can be seen as a low-cost option aimed at helping the business, not the customer. Overuse of IVR makes customers feel as though the company does not value them
Reduces queue times and call abandonment rates, improving customer satisfaction for those needing live agent help	Expensive, proprietary hardware has kept businesses locked into existing suppliers in the past, although open standards and cloud-based delivery has alleviated this issue somewhat

THE USE OF TELEPHONY SELF-SERVICE

Of those contact centres offering telephony self-service, a mean average of 18% were handled entirely by self-service without requiring an agent.

Figure 30: Overall proportion of calls handled entirely through self-service (only in respondents which offer telephony self-service)

	Proportion of calls handled entirely through self-service if offered
1st quartile	30%
Median	10%
3rd quartile	5%
Mean	18%

Many calls are not suitable for self-service, as they may require multiple requests within the same call, be of a complex nature or be from a caller who feels that they need to speak with a person. Additionally, some small businesses may have such a low volume of calls that it is not cost-effective to implement self-service.

Even amongst those respondents for whom telephony self-service is a vital part of the customer contact strategy, it's no use trying to shift every customer service interaction onto telephony self-service, as if customers don't want to use IVR, they will "zero-out" (press 0 for a live agent, or try to find a similar shortcut). And if businesses don't offer a live agent option to an irate and frustrated caller, they won't need to worry about providing customer service to them in the future, as they'll go elsewhere.

It is worth reiterating that if callers agree to try a company's self-service system rather than insisting upon talking to an agent, there is an implied contract that if the self-service session is unsuitable, the caller should be allowed to speak with an agent. Few things can frustrate callers more than being hectored into using an unhelpful and irrelevant self-service system.

DTMF IVR

The rise in VoIP and SIP (session initiation protocol) has allowed IVR to run on standard servers, rather than more expensive and proprietary telephony cards or specialist hardware, with media gateways and IP PBXs being supported within an open standard, commoditised telephony environment.

The pure software IVR platforms used today run on standard servers, reducing the restrictions that proprietary hardware placed upon functionality, scalability and flexibility, as well as the cost of purchasing and maintaining dedicated hardware. Companies increasingly prefer to adopt the cloud-based method of providing IVR options to the customers, and 58% of those using telephony self-service (whether DTMF IVR or automated speech recognition) access this functionality in the cloud, with a further 26% planning to do so by 2022.

Speech-enabling IVR increases the features available to the caller. Standards-based languages such as CCXML and VoiceXML support speech recognition and improved access to relevant corporate data, the integration of which into the IVR experience supports text-to-speech and the use of caller profiling to enable personalised IVR sessions based on who the caller is, their history, their contact preferences and any other relevant information that would further assist the self-service session.

With PCI compliance so much to the fore for many businesses, we would expect to see an increased use of IVR to take card payments, whether within a call or at the end of it (more information on this can be found within the '**PCI DSS Compliance'** section of this report). With the focus of many solution providers on achieving the relevant ISO security standards, it can be seen that the vendor community is very aware of what the market requires. DTMF has the advantage of extreme simplicity, which means that it may well have an important role to play on a sector-specific basis, even with the advent of newer and more sophisticated solutions. In situations where callers need the same piece of information on a recurring basis - such as checking the balance of prepaid credit cards - customers can access the information within a few seconds by typing in the DTMF digit sequence that they have learnt off-by-heart, and it may well be that this method of accessing information is the most convenient and quickest for customers. In addition, interactions that require a simple list of digits may be more suited to the unambiguous nature of DTMF (which, unlike speech recognition, is unaffected by background noise). Of course, by far the most common application for delivering long sequences of numbers is through making a payment via credit card, and placing a customer call into an automated DTMF session in order to do this has numerous advantages for businesses and customers in terms of convenience, familiarity and security.

The take-up of cloud-based IVR solutions, particularly by small-medium sized companies, is driving growth within this sector. The ability to personalise IVR sessions, as well as the low initial start-up costs and limited in-house maintenance required, means that businesses that traditionally were unable or unwilling to see the benefits of IVR for their own company are now revisiting this.

Many solution providers state that they are actively increasing the power and range of the analytics solutions not just within live contact channels such as chat and voice, but also within automated IVR environments as well. This can be used to adapt and personalise the IVR experience in real-time to suit the customer's behaviour and preferences, and also to detect and manage fraud.

The use of DTMF IVR (touchtone IVR) is particularly prevalent in high-volume, transactional environments. Despite relatively little planned new growth in this area, there is still significant scope to upgrade or replace this functionality, with Visual IVR potentially providing a major boost amongst smartphone users.

Figure 31: Current technology usage and short-term investment plans - DTMF IVR by vertical market, end-2019

Vertical market	Use, no plans	Use, replace	<12 months	>12 months	No plans	Don't know	USING NOW
Finance	16%	28%	3%	0%	26%	28%	44%
Housing	35%	21%	10%	0%	28%	6%	56%
Insurance	59%	10%	0%	3%	18%	10%	69%
Manufacturing	21%	4%	13%	0%	32%	30%	25%
Outsourcing	67%	0%	10%	0%	8%	15%	67%
Public Sector	63%	13%	5%	4%	5%	11%	76%
Retail & Distribution	39%	23%	8%	3%	14%	13%	62%
Services	42%	13%	2%	0%	32%	11%	55%
TMT	43%	11%	3%	3%	21%	19%	54%
Transport & Travel	22%	34%	0%	0%	33%	11%	56%
Utilities	49%	24%	0%	0%	9%	18%	73%
Average	**45%**	**15%**	**5%**	**2%**	**18%**	**15%**	**60%**

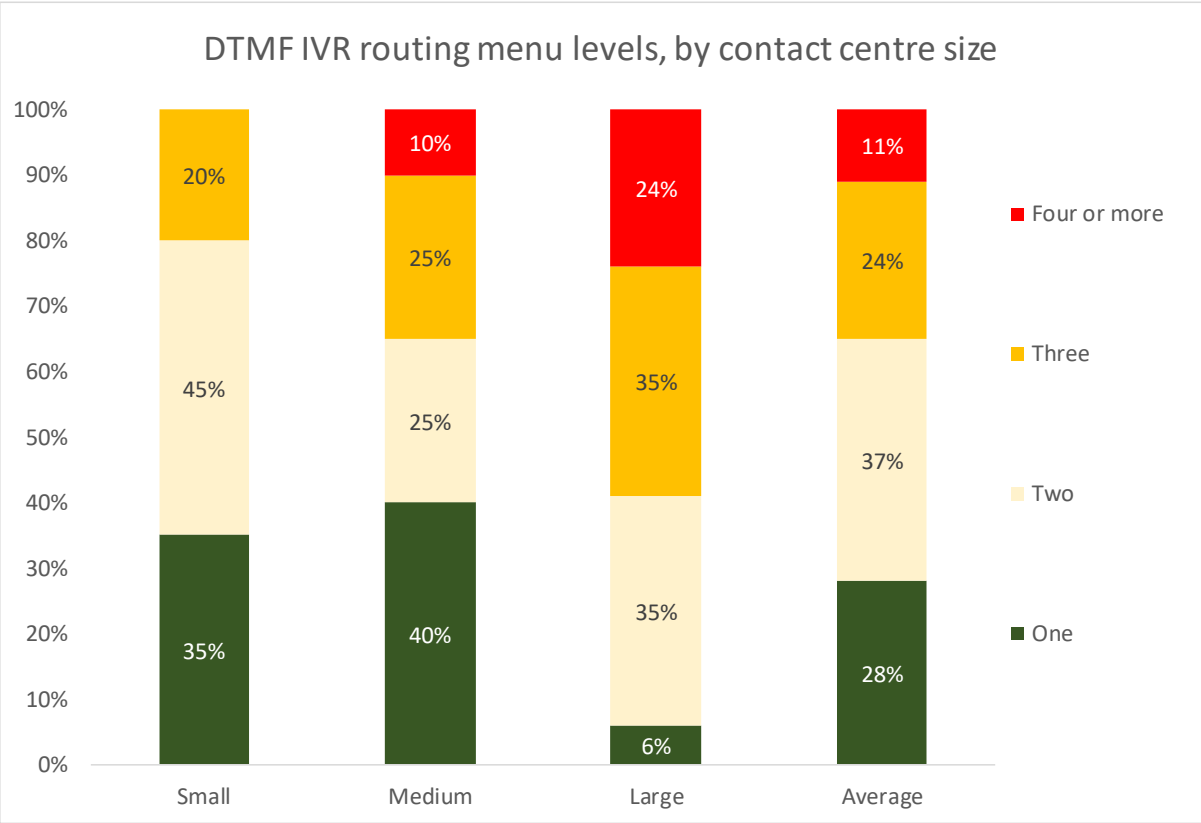
Key to titles: Use today, no plans to replace; Use today, looking to replace or upgrade; Likely to implement within 12 months; Likely to implement after 12 months; No plans to implement; Don't know; Total proportion using the technology today (regardless of replacement intention).

The audio-only nature of DTMF IVR places limitations upon how user-friendly the experience can be for a customer. There has always been a trade-off required between functionality and usability, which manifests itself in the number of menu options and levels that made available within the IVR system. The greater the functionality, the longer the announcements and the worse the customer frustration.

Looking at the number of levels used on a DTMF IVR (i.e. how many key-presses a caller must make to reach their destination), only 28% of respondents keep it simple with a single-level of options, e.g. "Press 1 for Sales; 2 for Service; 3 for Accounts".

24% of large operations present a possible four or more routing menu levels to their customers, a level of granularity that must appear daunting to their customer base.

Figure 32: DTMF IVR routing menu levels, by contact centre size

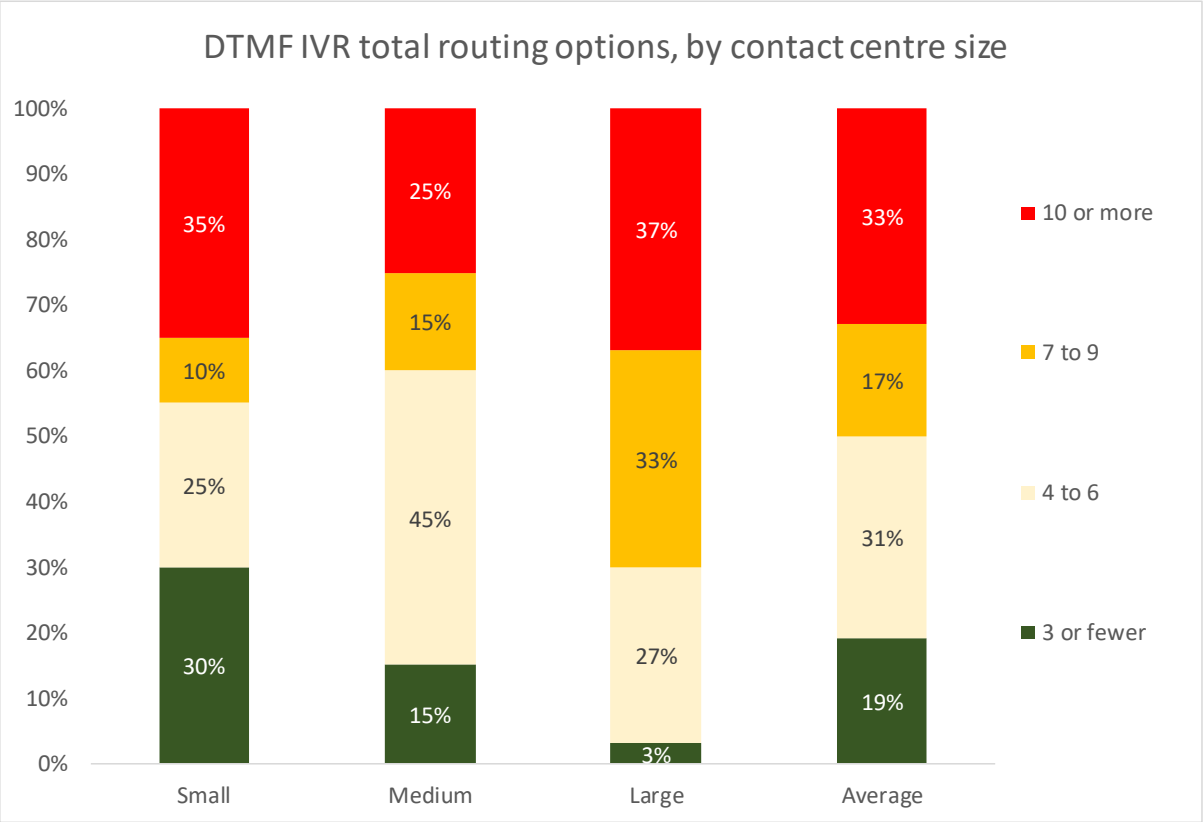


It is not just the number of levels in a menu that can frustrate customers, but also the overall number of options within each level. As the customer cannot see what the options are, but has to listen to each, it can be a very frustrating experience, and one which the movement to visual channels such as web self-service or visual IVR via a smartphone will go a long way towards alleviating.

Respondents report a median of between 6 and 7 options, which can still be a considerable number for a caller to listen to, especially if their preferred choice is the last one in line.

Logically, larger contact centres will tend to support larger businesses, which usually have more departments, offer a greater level of segmentation and have more products and services available to customers. Consequently, there are on average many more menu choices offered in the phone menu of large contact centres, with 70% of these respondents reporting offering seven or more routing options to their customers. Clearly, this excessive routing choice is a major opportunity for automated speech recognition or visual IVR.

Figure 33: DTMF IVR total routing options, by contact centre size



AUTOMATED SPEECH RECOGNITION

DTMF IVR has been a notable success for many businesses, and many businesses have added to this, leveraging the added flexibility and power of speech recognition as well as being able to share the functionality that businesses have recently developed with their web self-service applications. Of course, this is likely to come at an additional cost, and trying to find capital budget to invest in these solutions may be difficult, leading to a significant take-up of cloud-based speech recognition.

One of the most consistently strong inhibitors against the uptake of speech recognition is the initial cost involved, as well as the expected ongoing support costs, and cloud has a particular appeal to organisations who don't wish to invest or tie-up large sums of up-front capital investment on their own systems or software, or pay for the in-house IT resource to run them. One advantage of cloud is that the need for significant upfront technology investment is lessened, providing on-tap access to extensive telephony resource, albeit of a third-party nature. Additionally, the use of cloud-based solutions means that businesses don't need continual ongoing investment to upgrade their own systems.

Like other self-service applications, automated speech has of course been more attractive for organisations with high volumes, where the cost of handling the call can even exceed the business value it represents. In this scenario, the need to reduce cost is imperative, but for speech-based self-service to work well, the technology infrastructure on which it depends must be robust enough, and the number of phone lines linked to it large enough to accommodate the maximum number of callers ever likely to contact the service, or run the risk of turning callers away, an opportunity cost which can be very high. Cloud-based speech services, where the telephony and technology infrastructure is centrally owned and managed by a third party overcomes this capital investment hurdle, and the pay-as-you-go model adopted by most cloud suppliers means that ongoing operating costs are directly pegged to transaction volume, providing valuable operational flexibility.

Despite the wider and more powerful functionality that speech recognition gives to an IVR system, significant inhibitors are present. It is generally acknowledged that speech recognition can be considerably more expensive to implement than DTMF IVR, and is also likely to require significant, highly paid in-house resource to fine-tune and operate it going forward. Some solution providers note that the majority of businesses' interest in moving from DTMF to speech recognition comes when the existing telephony self-service legacy system is approaching end-of-life.

Speech-based IVR is particularly useful in cases where very long lists of items such as place names or surnames may be chosen, for which the more structured DTMF IVR is unsuited. The success or otherwise of speech-based IVRs is very affected by how callers are encouraged to use the service. It has been the case that some speech implementations have actually made life more difficult for the customer, who may not have the confidence that the system will understand their natural language request and provide very short, one-word answers; if nothing is given in the way of prompts or examples, callers may give too little or too much information as they are unsure of the sophistication or capabilities of the system, and this is often a reason for high self-service abandonment rates. Using prompts such as "describe in a few words why you are calling us, for example 'to start a new mortgage application'" can be extremely useful in setting ground rules for the successful use of the system.

Some solution providers offer a semi-automated option for their speech recognition-driven IVR, whereby the agent has a chance to hear one or two pertinent words from within the speech recognition session before the live call is taken, giving the agent an initial insight into the context, mind-set and intent of the customer before the conversation actually begins.

In previous years, the main issue that held back speech-enabled self-service was that their business wasn't really suited to automation. However, previous research has shown that more than half of the contact centres that currently offer no full self-service options could see some benefit in automating at least some part of their processes.

As such, there are likely to be issues around expenditure, operational costs and customer reaction to address for these potential users of self-service. Respondents are more concerned than previously they do not have the in-house IT resource to run automated speech self-service, and many believe that the ongoing costs and effort would not be worth it. However, the biggest inhibitor was the initial investment, which could be alleviated through a cloud-based model. As DTMF IVR, when badly implemented, is a major bugbear for customers, replacing it with a quicker and more powerful alternative (ASR) could be seen as a benefit.

In all, there is still a great deal of work to be done by solution providers to deliver ASR solutions - either as a replacement for DTMF IVR, or as a new solution - through offering innovative payment and service delivery methods, and to create a greater market awareness of the success stories in this area. Against a background of potential inhibitors, there is some positivity coming from the consumer base. Because there are so many speech recognition applications now in use in daily life – for example Siri, Alexa and PC-based voice recognition software – consumers are now becoming more comfortable giving voice commands to an automated system. With every successful speech interaction, customers' confidence increases and speech-enabled self-service becomes a little more firmly embedded in the customer base's psyche.

As with DTMF IVR, the use of automated speech recognition is a factor of call volumes and the level of transactional contact. As it also tends to be significantly more expensive, it is far more prevalent in large operations. As penetration into large operations is already significant, the greatest CAGR will occur in mid-sized operations.

Figure 34: Current technology usage and short-term investment plans - ASR by vertical market, end-2019

Vertical market	Use, no plans	Use, replace	<12 months	>12 months	No plans	Don't know	USING NOW
Finance	0%	5%	12%	22%	48%	13%	5%
Housing	3%	3%	16%	5%	64%	8%	6%
Insurance	6%	9%	22%	22%	35%	6%	15%
Manufacturing	0%	0%	13%	32%	55%	0%	0%
Outsourcing	12%	3%	20%	24%	29%	13%	15%
Public Sector	17%	5%	8%	24%	45%	2%	21%
Retail & Distribution	21%	6%	0%	15%	57%	0%	27%
Services	17%	1%	9%	4%	66%	4%	18%
TMT	24%	8%	0%	16%	43%	8%	33%
Transport & Travel	0%	0%	11%	22%	67%	0%	0%
Utilities	0%	15%	9%	22%	48%	7%	15%
Average	**11%**	**5%**	**11%**	**18%**	**50%**	**5%**	**16%**

Key to titles: Use today, no plans to replace; Use today, looking to replace or upgrade; Likely to implement within 12 months; Likely to implement after 12 months; No plans to implement; Don't know; Total proportion using the technology today (regardless of replacement intention).

CUSTOMER AUTHENTICATION

There is an enormous hidden expense in the contact centre world which is beginning to be addressed by some leading companies, often in the finance sector. The expense is driven by the growing need to identify and authenticate customer identity: industry-wide, a mean average of 67% of UK inbound calls are stated to require caller identity verification.

93% of respondents who authenticate identity do so through human means, taking an average of 37 seconds to do so.

In a large proportion of instances, respondents that use IVR or speech recognition also use the agent to double-check customer identity, wasting the caller's time and increasing the contact centre's costs.

Using figures from this report and other ContactBabel research, it is possible to estimate the industry-wide cost of customer identification authentication using an agent. Please note that as respondents change each year, this figure is an indicative estimate based on this year's survey and should be read only as such, rather than being definitive.

67% of all calls require a security and identification process to be completed first. This year, 93% of calls were reported to be authenticated by agents. On average, it takes 37 seconds to go through security. Using these statistics, it is possible to estimate how much UK contact centres spend each year on screening customers by using agents.

- Inbound calls per year (handled by agents): 7.06bn
- Proportion of inbound calls that require security and identification checks: 67%
- Average length of agent-handled security and identification check: 37 seconds
- Average call duration: 5m 29s (329 seconds), therefore 11.2% of the call is ID&V
- Mean average cost per inbound call: £4.27
- Cost of time spent on agent-handled security and identification check: 47.8p per call
- Proportion of calls requiring ID&V: 67%, of which 93% require an agent
- **Therefore, the overall cost of agent-handled security and identification checking is £2.1bn per year**

Identity verification through agents is slow, expensive, prone to error, open to fraud and disrupts the customer experience. Clearly, a reliable and cost-effective method of customers identifying themselves through self-service would be of huge benefit.

VOICE BIOMETRICS

Biometric technology uses physiological or behavioural characteristics to verify a person's claimed identity. Physiological biometrics includes fingerprints, iris, or retina recognition, and voice verification. Behavioural biometrics includes signature verification, gait and keystroke dynamics.

Of these, voice is the only biometric that can currently be used over the phone, making it a viable identity verification solution for contact centres. It should be noted that some businesses now allow thumbprint-enabled smartphones to be used as trusted devices to log into mobile apps.

Voice verification systems use spoken words to generate a voiceprint, and each call can be compared with a previously enrolled voiceprint to verify a caller's identity. Systems generate a voiceprint by analysing spoken words to calculate vocal measurements of a caller's speech, which is influenced by physical and behavioural factors, including vocal tract, pronunciation, emphasis, accent and speech rate, thereby creating a unique digital representation of an individual's voice. These systems are not affected by factors such as the caller having a cold, using different types of phones, or aging.

A significant advantage of voice biometric verification is that verification can be done unobtrusively - in the background during the natural course of customers' conversations with an agent - using text-independent and language-independent technology. Real-time authentication significantly reduces average handle time and improves the customer experience by utilising voice biometrics to authenticate customers within the course of the conversation. Enrolment can also be relatively informal, although it should be noted that under GDPR, callers must give explicit permission for a biometric voiceprint to be created from their spoken words, with the agent or system first asking and then recording that permission was given.

With this technology, contact centres can:

- Voiceprint the vast majority of customers for seamless passive enrolment: in the course of a conversation, a voiceprint is created for that customer which lies on record for them to be authenticated against on the next call
- Securely authenticate customers with no customer effort: the first few seconds of a call should be enough to match the customer's voiceprint against those on record
- Open up wider options for self-service as the business can be sure about who the customer is
- Cut seconds off average handle time: no need for customers to answer numerous security questions as the conversation they are having provides enough information to identify them
- Significantly reduce fraud risk for all customers, and deter fraudsters when combined with other layers of security, for example, phoneprinting, which analyses the background audio of the call
- avoid bad publicity for your brand through high profile data breaches.

The customer's experience of voice biometrics should be positive: since speaking is natural and intuitive, a well-planned implementation can result in a better customer experience that eliminates the need for PINs or passwords.

It is worth mentioning that some businesses have found that their calls-per-customer figure increases once they make contacting the organisation a less unpleasant experience. This may drive up call volumes to some extent, but also provides agents with more chance to build brand loyalty and to cross-sell and upsell.

Methods of gathering and using customer voiceprints include:

- In the case of text- and language-independent authentication, the customer's voiceprint (collected on previous calls) is authenticated in the background during the natural course of conversation with an agent, while simply outlining their service request - minimizing both customer effort and time-to-service. There is no need to remember PINs or passwords, which greatly improves the customer's experience
- 'Account Number'-based voice verification - the caller is asked to speak their account number. The account number identifies the caller, and the spoken words are used to generate a voiceprint that verifies the caller is the account holder
- 'Challenge Response'. Typically, the customer is asked to repeat a series of numbers, e.g. "Please say 'one seven three four'". The spoken words are used to generate a voiceprint. The numbers spoken are usually different each time the caller phones and can be used to avoid instances where the fraudster has recorded the customer's voice.

The latest Payment Services Directive (PSD2) means that European businesses involved in financial transactions have to use multi-factor authentication: effectively, two of something the customer knows (e.g. a password), something they have (e.g. a number-generating token) and/or something that they are (e.g. biometrics).

In cases where a two-factor authentication process is required, voice verification can be combined with a 'something you know' - such as an answer to a memorable question. Real-time agent guidance can prompt agents to ask a further security question within the call if the process requires it. Some biometric solution providers offer continuous authentication throughout the call, rather than assuming that the person initiating the call is the same as the one who is asking to transfer money into a different account, for example.

An alternate method is to blend biometrics with something that the customer has, such as a list of random numbers which the customer has to repeat, in order to eliminate the possibility that someone has recorded them speaking their password. This can be done entirely through self-service: the biometric enrolment has already happened, and call be used initially to verify the caller, and automated speech recognition can then identify and verify the number sequence that the customer reads out from their phone.

It is also possible to use contextual analysis, such as the caller's geolocation (as detailed from their mobile phone's GPS coordinates, or their ANI) to add another layer of confidence in the security process, automatically notifying the agent whether the caller has been identified successfully, and guiding the agent to ask alternative questions if further verification is required.

Voice verification can also be used to protect the enterprise against repudiation (where the customer says at a later date that they did not do it) as it can verify the physical presence of an individual at the other end of a phone line. Interestingly, this capability is already used by various US law enforcement agencies to check that released offenders are where they should be.

For procedures such as internet password resetting, the higher level of security achieved with voice verification can enable businesses to offer real-time password resets or reminders. This benefits both customer and business and can reduce up to 70% of helpdesk calls.

Biometrics can go beyond voice, with some solutions able to identify how a customer typically types, uses a mouse or the type of language that they use, flagging up suspicious activity if this deviates from the norm. Keyword spotting is also employed: the identification of words associated with a significant level of fraudulent activity, for example "I want to move money from my personal account to my credit card", or "my address has just changed and I'd like a new credit card sent there".

Contact centres wishing to deter fraud may consider combining voice biometrics with phoneprinting or call signalling analysis for a multi-layered solution. These solutions rely upon background audio, source, and channel features that are more difficult for an adversary to manipulate than voice. Phoneprinting can detect CLI spoofing, voice distortion, and social engineering-based fraud attempts giving another layer of protection.

PCI COMPLIANCE & CARD FRAUD REDUCTION

The November 2018 PCI SSC information supplement "Protecting Telephone-Based Payment Card Data" had a change of emphasis away from "recorded" account data, towards "spoken" account data. The paper emphasised that "accepting spoken account data over the telephone puts personnel, the technology used, and the infrastructure to which that technology is connected into scope of PCI DSS", which also includes VoIP: "where VoIP is used for transmissions of payment card account data between a cardholder and an entity, the entity's systems and networks used for those transmissions are in scope.[1]"

The PCI SSC information supplement provides a useful classification of technology types. Technology is classified firstly by customer experience where the agent attends (in constant voice contact with the customer for the entire duration of the transaction) or unattended when they are not. The guidance then considers technology in terms of delivery media, either telephony or digital. Examples include:

- Telephony/attended: includes pause and resume, DTMF suppression
- Digital/attended: includes agent-initiated payment links sent via email, chat, SMS, social etc., where the agent remains on the call and can assist the caller
- Telephony/non-attended: IVR-based solutions, fully automated or initiated by agent
- Digital/non-attended: automated payment links sent without agent's action, or where the agent closes the call after the link has been sent but before payment is made.

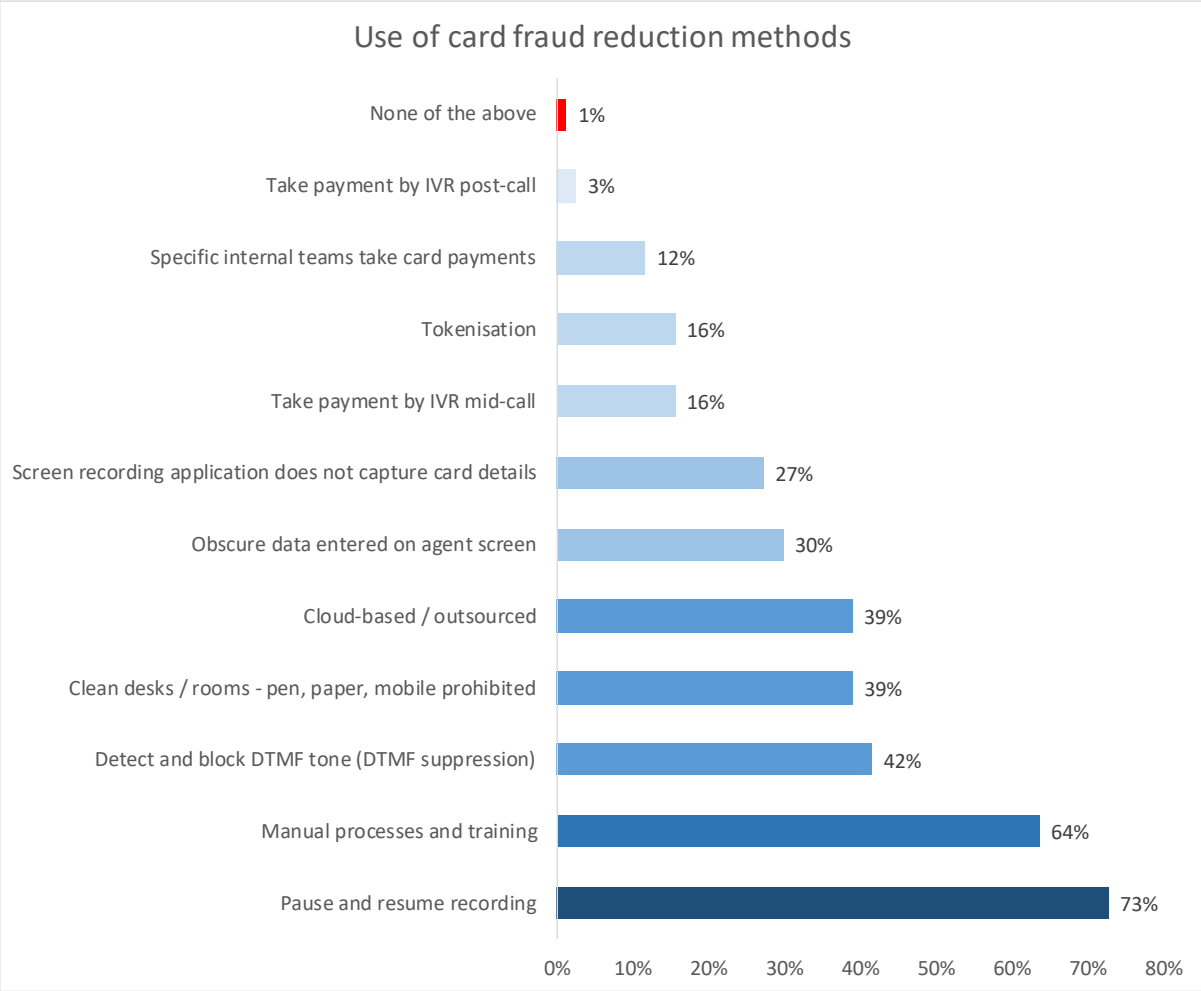
The 'non-attended' variations – effectively self-service – are become more prevalent as the PCI regulations encourage businesses to take their employees out of the scope of PCI altogether.

Survey respondents were presented with a long list of solutions, approaches and business processes that aimed to reduce the risk of card fraud within the contact centre, and were asked to indicate which they used. It should be noted that some of these methods used do not in themselves render the operation fully PCI-compliant, although methods that do not allow the card data into the contact centre at any point (even encrypted) will take the operation out of the scope of PCI. Respondents used a mean average of 2.8 card fraud reduction methods.

Pause and resume recording and improving processes and training were by far the main methods used to reduce card fraud.

[1] See FAQ 1153 How does PCI DSS apply to VoIP? for more detail.

Figure 35: Use of card fraud reduction methods



From the perspective of self-service, once the customer and agent are actually talking, there would not seem to be any opportunity for self-service to take place. In fact, increasing numbers of businesses are implementing mid-call IVR in order to take a customer's payment card details, in order to comply with the PCI DSS requirements around card security.

IVR Payments – post-call (3%) and mid-call (16%)

A minority of respondents, especially those with a large contact centres, using automated IVR process to take card details from the customer, cutting the agent risk out of the loop entirely. Mid-call IVR (or agent-assisted IVR) is seen as a more customer-friendly approach than post-call IVR: the caller may have additional questions or the requirement for reassurance and confirmation after the payment process, perhaps around delivery times or other queries not related to the payment process. However, the card data is still within the organisation's network, so although this approach takes the agent out of scope, it does not in itself ensure PCI compliance.

Businesses that wish to take card payments, but not to have any spoken or recorded card data in their telephony or agent environment, have a number of choices of solution, including IVR and DTMF suppression/masking. (While pause/resume removes card data from the recorded environment, it still leaves the agent in scope).

An alternative to these solutions is to send the customer a secure hyperlink via SMS, email, chat or social media which directs them to key in their card details, potentially treating this as a 3D Secure ecommerce payment rather than a MOTO (mail order / telephone order) payment (which are likely to be treated as non-secure payments by card brands), attracting lower fees and protecting the merchant against fraud-related chargebacks.

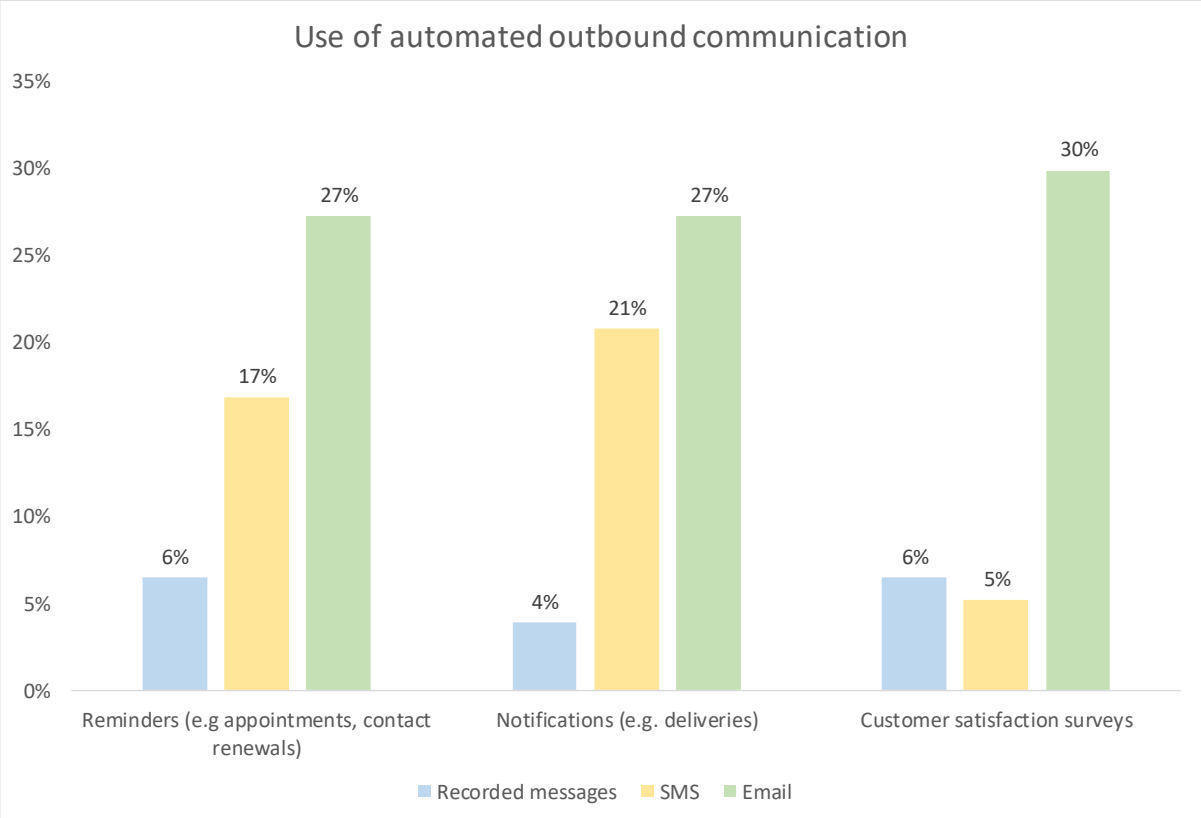
While this method takes the voice channel out of scope, this may not work for customers who do not have access to a device that allows them to pay online, who are prevented from doing so by disability, or who see online payments as insecure and refuse to use this option. Alternative measures should be put in place to handle these payment exceptions.

PROACTIVE OUTBOUND

While the vast majority of targeted outbound contact is carried out by agents, the opportunity exists for automated outbound service to expand - such as sending reminders and notifications to customers through an automated process - thus significantly reducing the cost to the business while improving the overall customer experience. Many customers will choose to seek clarification or a status update at some point in the buying process through making an inbound interaction. By sending a pre-emptive outbound message, the business is proactively assisting the customer to manage their interaction, and in fact encourages them to use self-service by confirming that they'll be in to collect a delivery, or to complete an automated customer survey.

Automated SMS messages are used by around 20% of respondents this year, mainly for notifications and reminders. Email is used also for notifications, reminders and outbound customer satisfaction surveys. A small minority of respondents use recorded messages (which will usually include an IVR session to capture customer input) for these purposes as well.

Figure 36: Use of automated outbound communication



THE BUILDING BLOCKS OF SELF-SERVICE

One of the most central and critical elements to a company's service capability is the knowledge base, which is vital to the accuracy and consistency of the self-service experience for both agent and customer across channels.

KNOWLEDGE BASES

For many organizations, a knowledge base started off as a list of useful documents and files, which quickly grew into a wider, less coherent collection of information sources, requiring increased levels of expert management, amendments, editing, and deletion. However, the resources required to keep these knowledge bases up-to-date are very scarce, as the people within the business that have the capabilities and expertise to do so also have their own jobs to do. Very quickly, what started off as a useful and highly tailored information resource has mushroomed into an expensive, out-of-date and increasingly less-useful collection of information of wildly varying quality. AI can assist in the management of knowledge bases by feeding back successful outcomes, and noting when the answers provided did not meet the requirement.

On an ongoing basis, feedback from agents and customers will identify gaps in the knowledge base which will need to be filled by product experts. Some knowledge bases will require full-time, dedicated resource to manage them, whereas others will rely on automated systems making dynamic changes depending on callers' and agents' requirements. It is often the case that large businesses with many products and services to maintain will have numerous editors across many departments who can make suggestions, although it may only be a small handful of people who will verify and publish this information. Businesses may want to consider allowing certain contact centre agents to create new entries based on their communications with the customer. Understanding which documents are being used the most allows the maintenance efforts be focused on the most important areas.

It is not just the publishing of information that is vital: crowd-sourcing of answers, and feedback on accuracy and success from the wider "super-user" community will help the business to fine-tune the knowledge base and train the AI. Processes to gather this feedback should be put in place, and continually revisited to check effectiveness, and it's possible to add successful answers to the knowledge base very quickly if a response from an agent (for example, via email or web chat) has been marked to be successful, and AI is an effective method of doing this regularly and consistently. Those who contribute timely and useful information - whether a customer or an employee - can be rewarded and recognised accordingly. People **want** to share their knowledge with others, and enabling them to do so easily is beneficial for all parties concerned. Businesses could measure the success of the knowledge management system by measuring the return on investment from call avoidance, by the rating or score given by readers of recommended articles, or through targeted customer satisfaction ratings.

The process of assembling the data and knowledge can be done through data labelling, which requires a tag to be put against each knowledge source (e.g. text, pictures, videos), showing what it is about, for example “a video clip showing how to change an oil filter on a specific car model”.

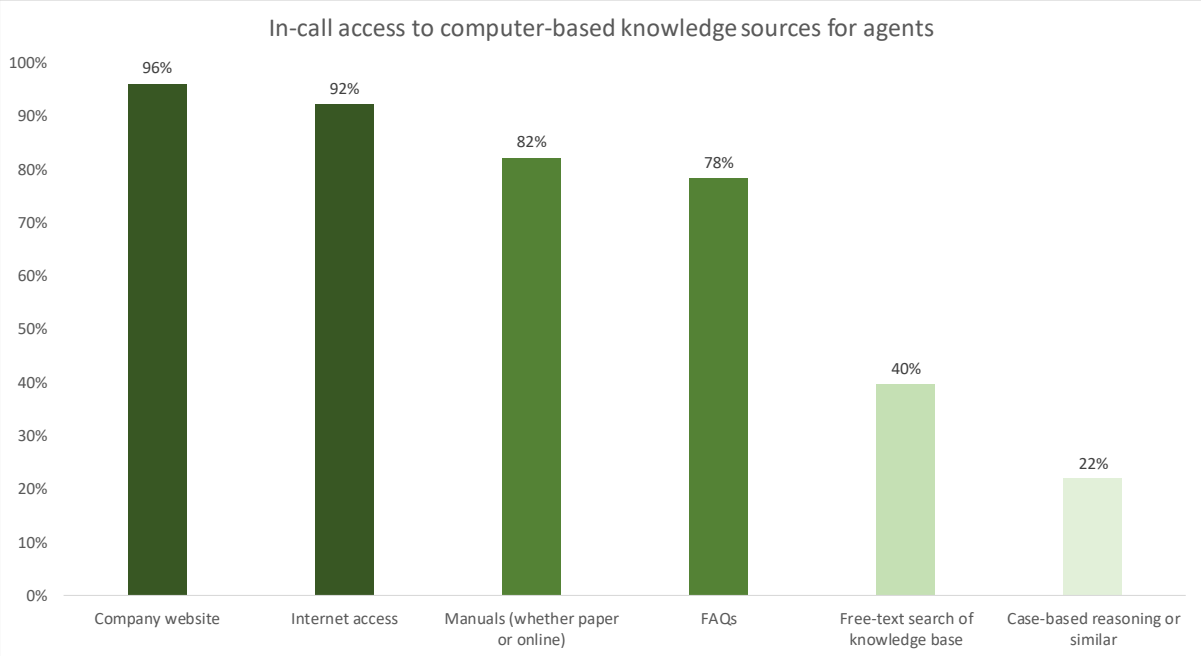
As this can require a great deal of resource, another method may be to crowdsource the collation and tagging of data form a number of sources: the agent as they go about their everyday business; a field technician solving the customer’s issue; or super-customers who are happy to answer queries from other customers on a web forum. A subset of machine learning, ‘deep learning’ is a “class of machine learning algorithms that uses multiple layers to progressively extract higher level features from the raw input. For example, in image processing, lower layers may identify edges, while higher layers may identify the concepts relevant to a human such as digits or letters or faces”[2]. This requires a great deal of data, tagging, human evaluation and AI training until an acceptable threshold for accuracy is reached, and the AI-enabled self-service system can recognise and handle matters for itself.

It is not only the customer that can benefit from this type of AI assistance. Agents cannot be expected to know everything about each product, issue or service, especially in high attrition operations where expertise is at a premium. Even where the knowledge is available to agents, they have to know where to find it. Within the call, the typical agent is likely to have to use multiple knowledge sources, which will also take longer and run the risk (especially for new agents) of missing vital information that is available but perhaps hidden away. Robotic process automation (RPA) can gather knowledge sources and provide them to the agent in a unified manner, and any updates to this information can be shared automatically across applications and systems (including self-service), providing an immediate, up-to-date and consistent source of information. RPA can assist with agent tasks in the background, provided guided assistance at specific stages of the call, including dynamic scripting and compliance hints.

[2] https://en.wikipedia.org/wiki/Deep_learning

The following table shows the knowledge resources that agents have within a call. Finding, reading, assimilating and using information actually within a call as very difficult and is rarely done seamlessly. An application such as case-based reasoning, which prompts the agent to ask specific questions, drilling down to find the right answer, is very useful but only 22% of agents have access to this sort of dynamic application. Most have to search around on a company website or FAQ page, or rely on a wide, unsupported search of knowledge bases or the wider Internet, hoping to get lucky.

Figure 37: In-call access to computer-based knowledge sources for agents



Businesses interested in how AI can help service should aim for a symbiotic relationship between customer self-service and agent assistance, the focal point of each being a knowledge base which is continually refreshed, amended and added to by agent, customers, super-users and AI itself.

Depending on its sophistication, the creation, uptake and maintenance of a knowledge base may require a dedicated team, at least in its initial phase, of a user experience designer, data scientist and developer to build the model, with inputs from business experts to keep the model aligned with what the commercial requirements actually are. Those looking to implement use-cases which are tightly focused upon specific high-volume queries and processes (e.g. chatbots), will need less intense support. Solution providers may have editable templates and predefined applications for many popular business processes, or even have pre-trained bots. Key to success is remembering that this is about solving a business issue, not implementing impressive technology, so it is vital that both the user interface and implementation procedure are friendly for those other than AI specialists.

END-USER QUESTION 2: WHAT DOES CREATING AND MAINTAINING A SELF-SERVICE KNOWLEDGE BASE ACTUALLY INVOLVE?

The success of a self-service knowledge base largely depends on the quality and accuracy of the information that it contains, which means it needs to be kept up to date continually. Automation tools and collaboration from across your business can reduce and spread the effort required to create the initial content, tapping into the knowledge that your agents have. We would then recommend utilising a knowledge manager (either an individual or a small team) to act as a librarian to keep content well organised and delivered with a consistent voice, assessing feedback and changes provided by both agents and consumers.

THE ROLE OF AI IN SELF-SERVICE

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 organisations. 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 available 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 try to '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.

DEFINITIONS

AI (artificial intelligence)

Within the contact centre, AI involves technologies such as machine learning, speech-to-text, deep learning, analytics, chatbots and natural language understanding, all closely integrated and working together, aiming to provide outcomes similar or even superior to those achievable by human agents.

Some of the typical characteristics of AI-enabled solutions include:

- An understanding of the customer's meaning and intent, rather than just accurately decoding the syntax of the request
- Use of multiple questions in a conversational format to improve understanding
- Using past outcomes to predict and deliver the likeliest most successful output
- The use of confidence levels rather than a binary right/wrong output
- The ability to improve future outcomes without constant human input or monitoring.

Chatbots / Virtual Agents / Virtual Assistants / Conversational AI

As with so much in the world of AI, there is disagreement about definitions. In the case of chatbots, virtual agents, virtual assistants and conversational AI, it is better to focus on the functionality and 'intelligence' powering it, rather than the phrase in itself.

AI for customer contact is currently best known for chatbots, applications that run automated tasks and simulate conversation with the customers. It may be given a human avatar and personality characteristics, and includes natural language processing, dialogue control, access to knowledge bases and a visual appearance that can change depending on who it is talking to, and the subject of the conversation. Chatbots are often found in the web chat channel, but the functionality can be used in any other digital channel, such as social media, email or even voice self-service.

Chatbots are not always fully-automated or AI-enabled, and may in fact be a glorified FAQ interface, lacking 'understanding' and simply searching through keywords. However, some use NLP and can ask questions to understand customer intent and improve the accuracy of the output, and may also use machine learning to improve future outcomes.

In this report, "chatbots" and "virtual agents" are used interchangeably and refer to the same functionality.

Virtual assistants (VAs) are not dedicated to a single task (such as customer service), and can assist in numerous ways such as taking notes, carrying out web research, setting alarms, communicating with smart devices, etc.

Both chatbots and VAs are conversational interfaces, but the level of AI involved can differ greatly.

Machine Learning / Deep Learning / Neural Networks

Through the use of pattern recognition, previous outcomes and other algorithms, machine learning enables systems to improve themselves without the need for continuous human user input (although supervision and guidance is often needed in reality). It relies upon extensive datasets and computational power in order to make predictions with theoretically continually-improving levels of confidence.

Based on the workings of the human brain, neural networks consist of input and output layers as well as one or multiple hidden layers (Deep Learning uses multiple layers, each carrying out their own specific task), working to find patterns which will be too onerous or complex the humans to identify. Neural networks can be trained to spot patterns in data and provide accurate output, with programmers correcting any mistakes. Eventually the neural network can 'understand' whether it is producing accurate output, with far less human correction.

Neural networks can be set up using supervised or unsupervised learning techniques. Supervised learning techniques involve giving the neural network a specific problem such as "is this customer likely to complain?". Programmers then provide the system with large datasets of customers who have or have not complained, and then the neural network will find patterns of characteristics that

make some customers more prone to complaint. They are then able to predict which customers are likely to be dissatisfied, allowing the business to act accordingly. In the case of unsupervised learning, no specific output is given to the system, which will then find patterns in the data and classify groups accordingly. Supervised learning is by far the more common use of AI in businesses.

Natural Language Processing / Understanding (NLP/NLU)

NLP refers to the branch of AI which enables computers to understand human language, whether spoken or written. It goes beyond speech to text processing - although of course accurate transcription is vital - and attempts to understand the actual intent of the customer. NLU is a subset of NLP which looks at the challenges of understanding human communication, such as mispronunciation, sub-optimal word order, slang and other elements which are a natural part of human speech but which can cause major problems for computers due to their unstructured and outlying nature.

One of the keys to successful automated service, whether via telephony or website, is for the user to be able to describe their issue in their own words, rather than feeling that they have to use specific terms or a stilted, incomplete account of the issue. Natural language processing-based systems encourage users to describe their issue more fully, asking follow-up questions if there is any degree of ambiguity in the initial request. One of the obstacles to overcome for NLP-based systems (whether through speech recognition or text recognition) is that many Internet users have been trained to use keywords, believing that simplifying the description of their issue will lead to greater levels of accurate response. In fact, NLP works best with longer and more detailed requests, and it is a challenge for businesses and solution providers to encourage and support users of the system in using the solution in an optimal way.

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. This often proves time-consuming and ultimately frustrating for the customer, who will then go elsewhere or call the contact centre 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: 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. The next section looks at this in some depth.

As the cost of web chat is broadly similar to other channels such as email, voice and social media, there considerable opportunity to increase efficiencies and lower 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.

AI FOR WEB CHAT AND EMAIL

Perhaps the most obvious current potential use of AI in the customer contact environment is in handling digital enquiries, as web chats often take considerably longer than phone calls (due to agent multitasking, and typing time) and that many email response rates can still be measured in days.

The most sophisticated conversational AI or virtual agents encourage the visitor to engage with them using natural language, rather than keywords. The virtual agent will parse, analyse 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.

The virtual agent 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 realise 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 many businesses believe it is best practice to identify clearly between virtual and real agents.

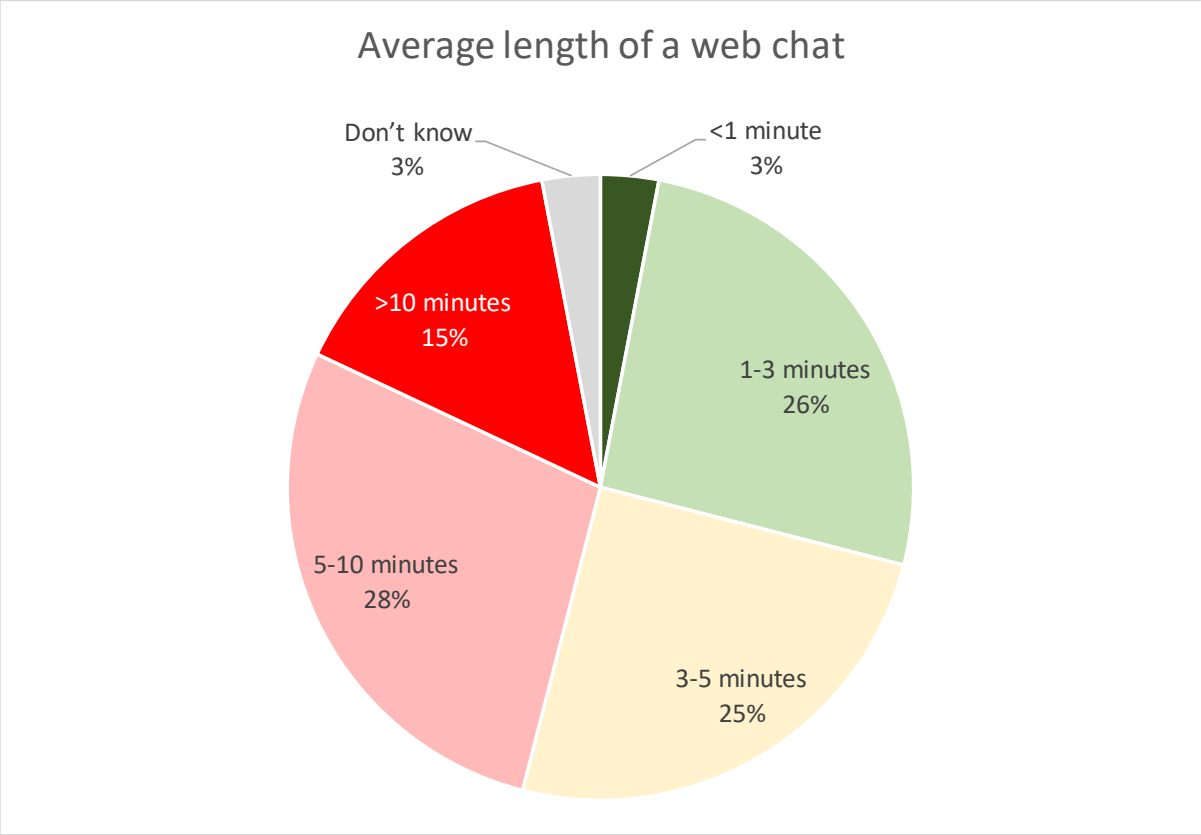
Sophisticated AI applications attempt to look for the actual intent behind the customer's question, trying to deliver a single correct answer (or at least a relatively small number of possible answers), rather than a list of dozens of potential answers contained in documents which may happen to contain 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.

The following chart shows the excessive amount of time spent to handle a live web chat: while the agent may be handling multiple chats, the experience for a customer is that a typical chat will take longer to complete than a live phone call.

Figure 38: Average length of a web chat

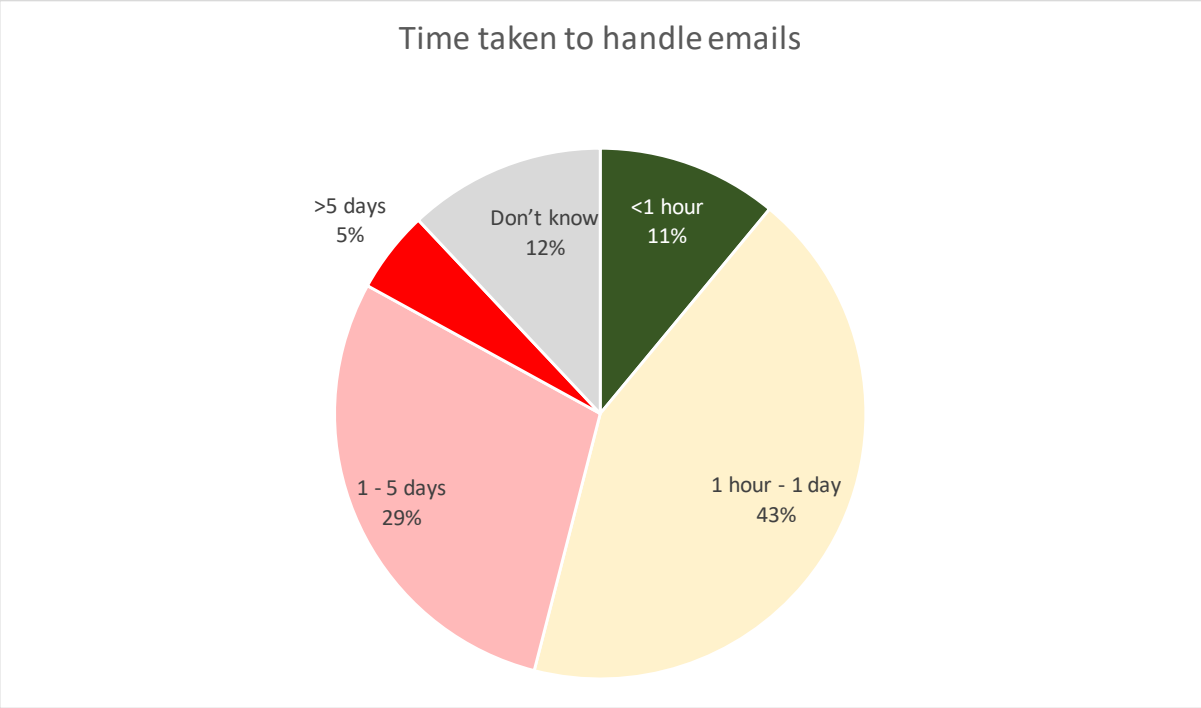


AI can also be used for email to create responses that look as though they have been written by a person rather than a machine, using natural language processing to write content, as well as understand it. Emails can be tailored based on the customer's history and behaviour, optimising marketing messages as well as service, sending emails at a time when they have been calculated that they are most likely to be opened.

Personalised 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.

As with web chat, agent-handled emails by their nature take considerably longer than a phone call to be handled correctly, and so are unlikely to deflect as many calls from the contact centre as could be wished.

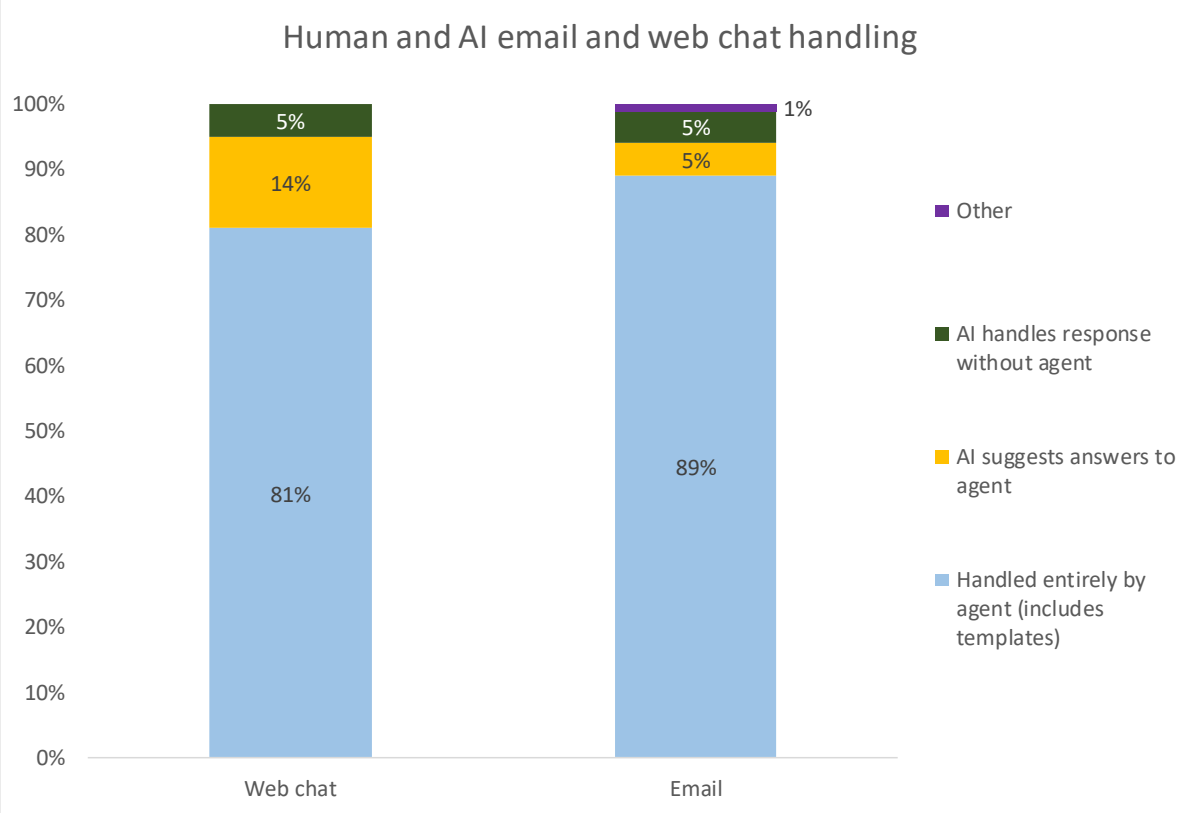
Figure 39: Time taken to handle emails



The main reason for this slow response rate of emails, and the excessive length of web chats is that there is very little automation currently being used in the UK contact centre industry, which as was shown earlier, means that the cost of an email or web chat is 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 and commercial understanding of humans providing superior service at a lower cost.

Figure 40: Human and AI email and web chat handling



Enghouse Interactive

Why businesses need to get smarter about AI-driven self-service

The rise of advanced automation and AI and the ongoing march to customer self-service go hand in hand. The power in people's pockets – much of it generated by fast broadband and the latest smartphones - means the ability for customers to self-serve has increased significantly in recent years. In response to this, many businesses are investing in AI-enabled tools that address this capability and enable customers to self-serve more intelligently.

The onward march of self-service

Having some kind of self-service capability is increasingly taken as read. 88% of customers expect a brand or organisation to offer an online self-service portal, according to the Microsoft 2018 State of Global Customer Service survey. Moreover, when AI is used to power self-service options the potential benefits grow. Chatbots are great at answering routine questions. They process information quickly and unlike their human counterparts, they are always available. Moreover, they excel at triaging customers; interfacing with self-service applications and intelligently searching for information to help resolve queries.

Research by Accenture on 'Chatbots are here to stay', published in 2018, found that CIOs and CTOs around the world believe conversational bots will play a critical role in the enterprise architecture of the future. Indeed, 60% of executives surveyed for the research said bots can 'improve their organisation's ability to handle customer queries by networking with other bots', while 57% believed they can 'deliver personalised attention to website visitors by being more conversational'.

That is not to say that AI-driven self-service is the panacea for all customer service pain points businesses experience today. Some customers will always want to speak directly to advisors over the phone and some interactions, typically the more complex, will always be better handled in that way.

Route map for customer service success

Businesses should also map optimal customer journeys before they use AI and automation to reduce the steps involved and make processes shorter, faster and more efficient. The key is keeping everything straightforward. Self-service platforms need to make it easy for customers to navigate across any channel. Open-ended navigation, poor hierarchical menu structure, buried content, multiple tabs and lack of standardized document formats and inputs all lead to confusion, frustration and drop-off.

It is also key that organisations provide an 'escape hatch' if customers get stuck and their self-service approach starts to 'run out of road'. Businesses must have the ability to escalate and hand off any call to a human if there is any sort of issue with the self-service process. In addition, it is crucial, as part of that process, that relevant contextual information about the customer and their failed self-service interaction, as well as their previous engagement history, is transferred over to the advisor.

Businesses also need to carefully manage and maintain their self-service offering. They can't just launch it and expect it to keep working. They need to keep it continuously up-to-date. In line with the 'garbage in garbage out' principal, any robot is only ever as good as the knowledge at its disposal. Organisations must ensure that when a question is answered in the contact centre, that knowledge is captured and delivered into the Knowledge Management System (KMS), so customers, bots and human agents can feed off it.

In summary, there is a growing role today for AI-driven self-service within the customer service mix but it is rarely the only solution. Interaction with agents will often need to be part of the offering. And even where self-service is the primary interaction mode, organisations should ensure they provide escalation paths where required. AI-driven self-service is what many customers are looking for but businesses must always know how best to use it.

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IMPLEMENTATION, ROADBLOCKS AND PITFALLS

It's important for businesses to understand that if they're not already using AI-enabled self-service, then they haven't already missed the boat, and that even with unlimited budget and resource, there are many contact centre activities that are more appropriate for a person to do.

For first-time AI deployments, the focus should be on delivering a high-quality self-service solution for a relatively small and clearly defined business process or issue, rather than taking on more complicated situations, even if there is a potentially higher benefit. It might be appropriate to start with a tightly focused AI-enabled self-service project, and then look to roll this out for more complex customer self-service requirements, as well as to other parts of the customer journey including call routing, back-office processing, analytics and agent assistance.

Apart from the dangers associated with an overly complex initial project, scale is also an issue to consider. To begin with, businesses may consider it wise to limit the number of concurrent customer or agent users that AI supports (i.e. dozens rather than hundreds of concurrent users), in order to learn what works and what needs improvement in each use case, and in order to optimise processing performance by providing the right amount of processing capacity. Over time, machine learning tends to require less processor power and running a relatively small scale AI implementation for a few months will provide a more informed view of what full-scale usage of AI will involve, meaning that the right amount (and cost) of processing power can be established.

If you're considering implementing AI-enabled self-service, there are some questions that you should ask yourself first:

- Is there a specific pain point or issue within the operation that needs to be addressed? e.g. lack of available resource to handle existing enquiries, suboptimal business processes, inability to analyse large datasets, etc.
- How does this affect the customer experience, and how would the customer like this to be improved?
- Are there solutions in the marketplace that have successfully addressed these issues already in live environments?
- How quickly can this be implemented, and what initial and ongoing resource will actually be required to make it run successfully?
- What upheaval would it create within the existing operation? What effect does it have on the customer experience?
- Are the improvements measurable?
- Is there enough clean data available to train an AI-enabled self-service system effectively?
- Will our infrastructure or existing platform need to be replaced?
- Is AI definitely the most appropriate way of dealing with this issue?

In theory, a simple chatbot deployment can sit alongside existing channels without integration, but if and when it can't handle a customer request, the customer experience will be negative as they will have to start their quest again on a different channel. An integrated deployment, ensuring the right connectivity and APIs are in place, can hand over the context and history of the self-service session to a live agent, improving the customer experience and keeping the internal reporting accurate.

It is likely that senior decision-makers within the enterprise have a sketchy or unrealistic expectation of how AI can help within the self-service environment. As such, it is important that the boundaries of the project are clearly understood, with relevant baseline metrics captured before the project, and clear and achievable outcomes signposted so that the eventual level of success of the project can be clearly understood.

Many contact centres may consider a limited, low-risk use case which can be implemented quickly and relatively cheaply in order to demonstrate a quick win and assert the viability of AI within a customer contact operation. For example, increasing the number of self-service interactions through improved AI-enabled website guidance in certain defined cases is an example of a project which has a clear and easily measured metric which translates directly into call and cost reduction.

Having said this, it is important for contact centres not to sell this to high-level management as being an opportunity to reduce headcount, as it is very unlikely that this will be an appropriate response to the success of an AI-enabled self-service project, certainly in the short-to-medium term. It may be better for the project to be viewed as improving the customer experience through providing customers with an alternative to a frustrating web browsing experience, ending with an unnecessary and unwanted live call.

While it is important for the initial implementation to focus on achieving success within its own terms, it is also important that this is not seen as a tactical point solution with a single end in sight. For example, while the initial implementation may be focused on increasing the effectiveness of self-service in a defined area, the longer term view may be to roll out AI into the agent's sphere, assisting them while on live calls. As such, a roadmap of logically linked business cases can help to establish a long-term vision which can be shared with non-operational senior personnel to help them understand the strategic use of AI across the customer-facing parts of the business.

For example, a simple yet strategic roll-out may look similar to the following:

- Use a virtual assistant to improve the take-up of knowledge held within the FAQ database, by improving the search mechanism and offering a two-way conversation interface in order to provide more accurate answers. Capture the phrases used by customers in existing human web chat sessions to understand the questions they will ask your chatbot

- Place this virtual assistant upon the agent desktop in order to provide them with more knowledgeable potential answers within the call

- Meet customer requests over voice and text through the use of natural language processing, in order to assess customer intent, and provide answers or optimal routing strategies

- Improve efficiency, consistency and effectiveness of back office processes connected with the contact centre through the use of robotic process automation

- Deploy analytical AI in order to discover patterns of data relevant to the business that would otherwise not be identified.

Once the process, objectives and outcome are clearly defined, the selection of a vendor and solution can then be approached. In a rapidly growing and heavily hyped market sector such as AI-enabled self-service, it can be difficult to compare vendors with like-for-like solutions.

For example, in the case of chatbots or virtual agents, on the one hand these can be rule-based, have limited conversational capability and are unable to learn; on the other, they may use natural language processing, engage with customers in order to ask further questions to determine intent, and be capable of self-improvement. The development time, resource and cost associated with each of these types of project are very different, and businesses must decide whether they are looking for a quick win, or whether they have a definite long-term strategy in mind.

Businesses should also consider the type of developer and implementation model that's most appropriate: some self-service chatbots can be based on off-the-shelf software which is then customised and implemented by an in-house development team, whereas some businesses may prefer to bring in third-party developers with greater experience in implementation. The rate of change within this technology sector is very high, so implementations that are measured in a handful of months rather than longer would seem to make more sense at this point.

At the request for proposal (RFP) stage, businesses may consider asking potential suppliers:

- What are the current capabilities of your AI-enabled self-service solution and what does your product roadmap look like?

- How do you propose escalating interactions to live agents if the solution cannot handle it?

- What metrics do you propose using in order to judge the success of an AI implementation?

- What does the timeline of a successful implementation look like? Do you have a reference site?

- How do you propose to train the AI, and what will our training data need to look like?

- How do you propose to integrate AI with our existing self-service and live agent support systems, and how much customisation will be needed?

At the initial stage of the implementation process, datasets that the AI models will be learning from must be analysed, cleansed and curated to provide a solid basis for the solution to learn from. Vendors will have dedicated examples of neural networks that work for various business cases such as providing answers to queries or estimating the time taken for a process to be completed. These can be used as a starting point for training the AI model, and to enable it to start making predictions of its own.

While each vendor will have their own framework and architecture, they are likely to follow a similar path involving input, interpretation, action and improvement. Input is gathered by the system - often from a customer – and is then translated into a form which the system can understand (e.g. through speech-to-text or optical character recognition). Once the data are converted, the AI looks for the customer intent behind the input using NLP as well as other metadata such as location or customer history. Once the intent has been decided with a certain level of confidence, various solutions are considered and presented to the customer. Finally, the loop is closed through gathering feedback about the success or otherwise of the answer, which is then taken into account in future interactions, with the AI learning what works best.

In theory, despite the often onerous effort involved in creating a clean pool of data, the implementation of a virtual assistant or chatbot should not have to materially change the existing IVR or web chat infrastructure, as the AI agent is treated as just another user of this technology.

The more data that the AI has to train on, the more likely it is to succeed. As machine learning works through pattern recognition, this can include metadata and context which may seem somewhat peripheral to the process, but there are likely to be patterns that have not been recognised by human users. This allows the AI model to understand customer intent and also to be able to discern which customers need to be treated in a way outside of the ordinary (e.g. in an emergency situation, if the customer is likely to defect, or if they have contacted the business multiple times in a short timeframe). Analysing the use of existing data shows the ways in which customers want to express themselves

As with any IT project, testing is key to success but with AI implementations this is even more important. IT systems work on an input-processing-output basis, where the point of the implementation is that the same thing happens every time, reliably and predictably. As the processing element of AI involves elements of learning (and hopefully improvement), the output can change over time. This does not always end optimally - Microsoft's Tay[3] is an example where conversational AI displayed inappropriate and offensive responses after interacting with Twitter users. Businesses should be aware that AI solutions, especially in the early stages, may require very close supervision and possibly intervention. Dedicated chatbot testing vendors offer services to make sure the chatbot is working properly before putting it into a live environment.

Measuring the performance and success of an implementation is always vital, but never more so when it is for a highly anticipated and poorly understood solution such as AI. There is likely to be far greater interest in from the higher echelons of the business as is the case for most contact centre technology implementations, and thoroughly understanding the outcome of the initial implementation is vital.

There is no baseline set of metrics that every AI-enabled self-service implementation should be measured against, although in the widest sense, the impact upon customer experience, agent experience and operational change should all be considered. Of course, it also depends on the area of the contact centre business processes that implementation is aimed at improving.

[3] https://en.wikipedia.org/wiki/Tay_(bot)

Some examples of AI-related metrics include:

Self-service:

- volume of self-service attempts, segmented by type of interaction
- customer satisfaction by self-service segment (particularly useful for comparing AI enabled self-service with scripted self-service)
- proportion of self-service attempts that are handed-off to agents, and following from this, the proportion of these which are handled by a single agent (shows the efficiency and accuracy of routing and the collection of relevant information in the initial self-service session)
- length of self-service session (this is related to customer effort)
- change in inbound call volumes

Assisted service (i.e. the AI's impact on live agents)

- first contact resolution rates, with and without AI
- proportion/volume of simple/complex interactions and by agent
- call duration (is the AI assistant cutting down on unnecessary screen navigation by providing the answer on the agent desktop?)
- if using RPA, effect upon downstream business processes and reduced call durations and post-call wrap-up times
- impact upon customer satisfaction scores.

END-USER QUESTION 3: HOW DO WE MEASURE THE POTENTIAL ROI OF AI-ENABLED SELF-SERVICE BEFORE INVESTMENT DECISIONS ARE MADE?

Deflection is one metric, but it isn't the only one – for example, you can use AI-enabled self-service to support your agents to give more comprehensive and faster responses on channels such as the phone, email or chat. If you think solely in terms of deflection there is a risk of automating processes best handled by human agents, impacting the overall experience. Instead, think of your AI processes as agents/channels with different use cases. Then set and monitor SLAs and use dashboards and reports to demonstrate to senior management the tasks completed by automation versus live assistance, and the cost savings.

KEY POINTS FOR IMPLEMENTATION AND ADOPTION OF AI-ENABLED SELF-SERVICE

In any technology implementation there will be risks of failure: with AI covering a vast amount of territory and with the potential to be misunderstood by business owners, planning and expectations must be managed very carefully.

- Expectations of what the implementation can actually achieve must be closely managed. There may be the expectation from senior management that headcount will immediately begin to drop, but in the majority of instances this is not why AI-enabled self-service is being implemented. Focusing on a tightly defined use case would reduce the risk of implementation delays and expecting too much, too soon. However, it is important not to see even a relatively modest implementation as being a point solution, rather than a single strategic step

- There are areas of customer interaction where AI-enabled self-service cannot come close to matching a human agent. Machines simply are incapable of feeling empathy, and even sophisticated sentiment detection at its best comes close to what an ordinary human being can do naturally. Use cases should be focused upon areas where there is a gap in functionality, rather than trying to replace something that isn't broken, or in areas where even the best human agent could not improve on the AI's answer

- AI in the contact centre is relatively new, and with it being so popular, there is a shortage of skills, support and resource within the industry as a whole. In-house technology departments are less likely to have capability, expertise and experience, meaning that the risk of suboptimal deployment and the requirement for third-party assistance may be higher than with other more traditional IT implementations

- Businesses' data assets must be in place before implementation of AI-enabled self-service, as more complex implementations rely upon having large, clean pools of data that AI can train on and learn from. Without this in place, it will be virtually impossible for any implementation to get close to its potential. The preparation of data will involve having an organised, non-siloed data architecture, a consistent data vocabulary, the means of accessing this data securely and quickly, and the ability to access other pieces of relevant information (e.g. customer-related metadata) in order to include greater context. Without this, it will be difficult for a machine learning process to train itself effectively, or for a chatbot to be able to use all of the relevant data in order to reach a correct conclusion

- Always have a well-designed and clear path out of AI-enabled self-service and onto a human agent. Trapping a frustrated customer in a self-service session runs the risk not only of training them not to use self-service again, but also poisons the well for other companies using AI. This is what happened in the early days of email support – customers would try to communicate with one or two businesses via email, and when they didn't receive a response for days (or ever), they decided that the whole email support channel was unworthy of their time. It took many years to change this perception and to get them to trust the channel again

- There have been a lot of media scare stories about AI and robots making people unemployed. It is important to emphasise to agents that any implementation is about making their jobs more interesting and effective by allowing AI-enabled self-service to handle simple and repetitive requests, as well as providing them with more of the information that they need to serve the customer more effectively. While agents are experts on answering customer queries, it may be too much to ask them to spend significant amounts of their time on contact curation as well. As such, businesses should consider how to incentivise power user experts (both inside and outside the enterprise) to help with knowledge management and problem resolution

- In the AI world, knowledge management is not something that is a part-time job or that can be handled by amateurs. Consider developing more full-time, expert roles to support knowledge bases and to enable understanding of data models and flows across the entire enterprise. AI experts have to understand both data and also the real-life business / customer issues, and this resource can be difficult to find.

To encourage the uptake and long-term use of self-service, consider a few actions which make self-service work both for businesses and customers:

Knowledge is power

Make sure you have a process in place where the knowledge base is continually updated and kept fresh. Issues can change quickly, especially if there is an unexpected issue that has recently arisen: updating the knowledge base should be a priority in this case. Keeping a close eye on what customers are asking to the self-service application is a good way of gauging what's happening in the minds of the customers. Gather feedback from customers about how well their questions have been answered, and use this to identify gaps (but do so sparingly, and only when you will actually use this data to improve). It is often the case that in the search for simplicity, the self-service system will be set up to provide only basic answers which only go part of the way to answering the question: consider adding more detail to this by a 'read more' button or links to other answers.

Make self-service the first port-of-call, not the last

Publicise the new self-service functionality through other channels: the IVR announcement; by having agents tell callers about it at the end of the conversation; by promotion on the website itself, perhaps being placed more prominently and accessible with less effort than the telephone number or email address. Strong branding and an attractive, clean user interface are also key to recognition and long-term uptake.

Experience the full customer journey

Before committing to adding or improving self-service to a process, take the time to understand fully how the customer experiences not only the activity that you are looking to optimise, but also the various routes and actions that have brought them there in the first place. It may be that the typical customer has had to try other channels first, or that the current self-service functionality is hidden away or has an unfriendly user interface. In such cases, direct replacement of the functionality will not improve the play rate or success rate of the self-service action anywhere near as much as it could be.

Encourage the use of natural language

If you are implementing a self-service system that works best with natural language inputs (rather than a simple keyword search), support customers to use it correctly. While some businesses prefer to let customers know that they are speaking with AI, this can be off-putting for some who will react by making things as simple as they can, thinking that they are helping the system that way. A customer who thinks that they are communicating with another person will do so in complete sentences, so some businesses may prefer to hide the nature of the AI-enabled self-service to see if the customers' inputs are of higher quality that way.

Measure success

Each business should know which outcomes it wants to see from an AI-enabled self-service implementation: a drop in call volumes; an improvement in customer experience scores; more sales through the website etc. It's important to measure the factors that affect the business's success, rather than the factors that are internal to the self-service application itself (such as the number of knowledge articles that an agent contributes, rather than beneficial metrics such as the article's rating by customers or the reuse of each article). As with telephony agents, measuring the wrong self-service metrics encourages behaviours that may not align with what you're trying to do with your business.

END-USER QUESTION 4: IS THERE ANYTHING THAT SUCCESSFUL AI-ENABLED SELF-SERVICE IMPLEMENTATIONS / PROJECTS HAVE IN COMMON? ARE THERE ANY PITFALLS TO AVOID?

AI-enabled self-service projects, such as chatbots, should never operate in isolation and need to be treated in the same way as traditional contact centre projects. Start by identifying specific areas where they can help and give them job descriptions. What do you need them to do? What is their purpose? Integrate AI projects within your overall channel mix to deliver a seamless customer journey that works hand in hand with human agents and provide access to resources such as your existing knowledge base, which must be kept up to date. Finally, continually monitor performance to identify where they can improve moving forward.

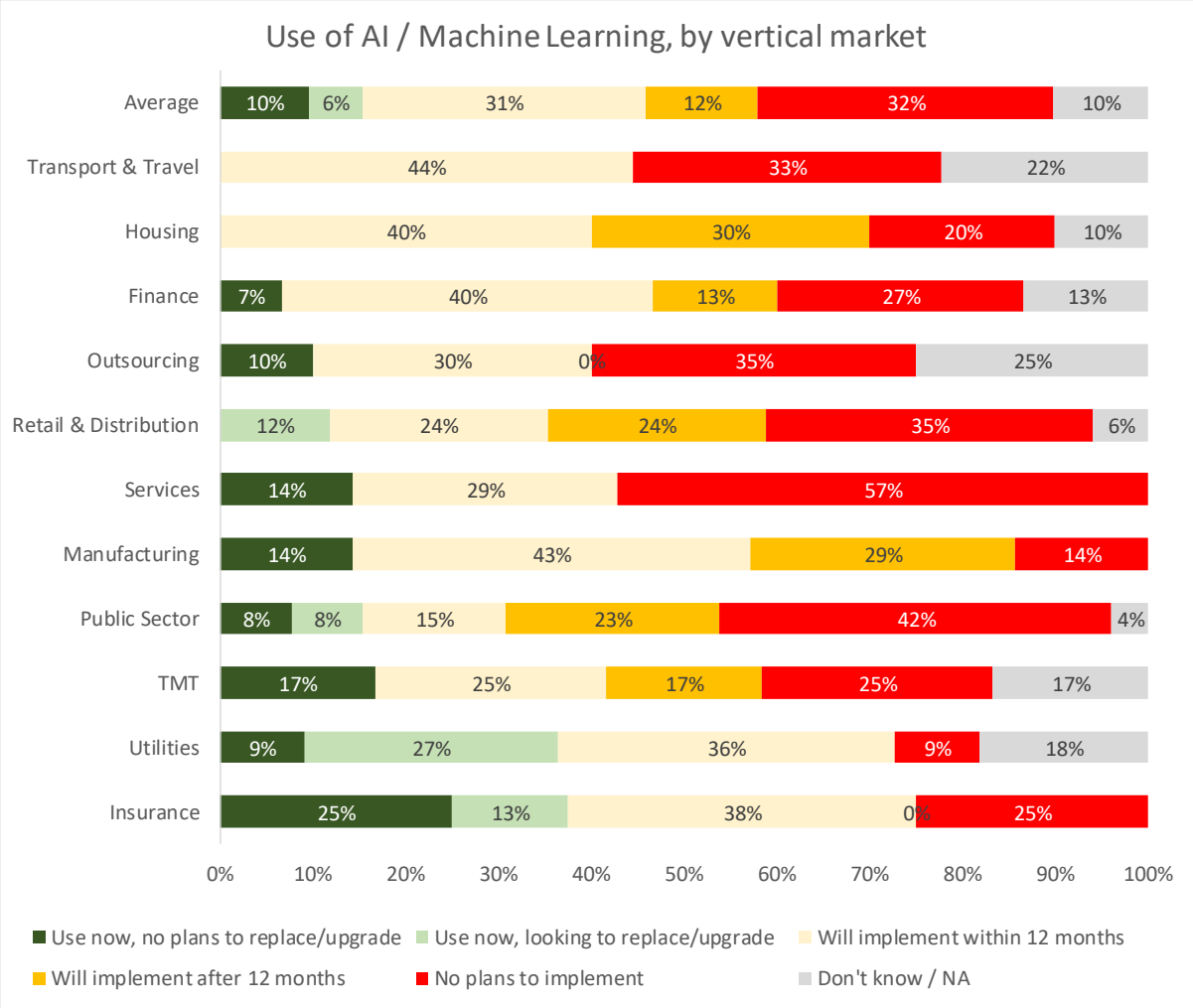
THE FUTURE OF SELF-SERVICE

CURRENT AND FUTURE USE OF AI

Despite a low current use of AI across industries, there is widespread interest in implementing this solution, with 31% of respondents intending to implement AI within 12 months. While these figures are probably overly ambitious, it does show real interest from the contact centre industry.

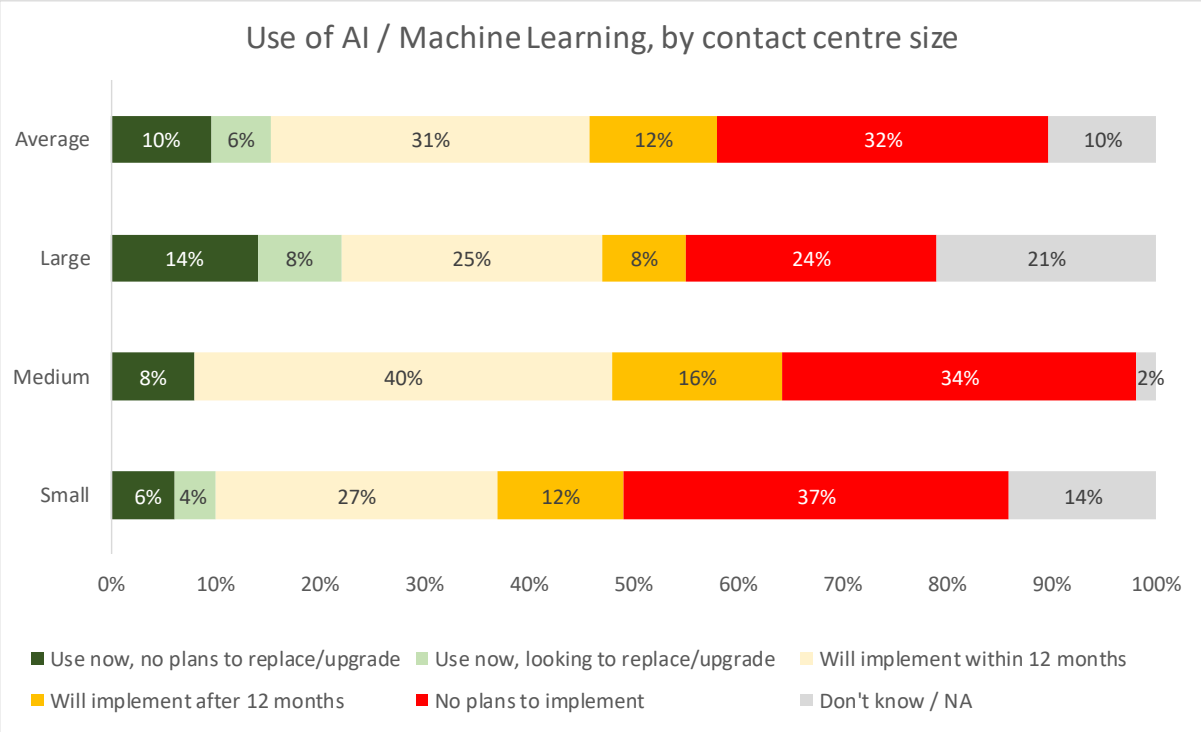
The utilities, insurance and TMT respondents report the greatest current use of AI.

Figure 41: Use of AI / Machine Learning, by vertical market



As might be expected, larger operations are more likely to have implemented some form of AI, although there is considerable interest even amongst smaller contact centres.

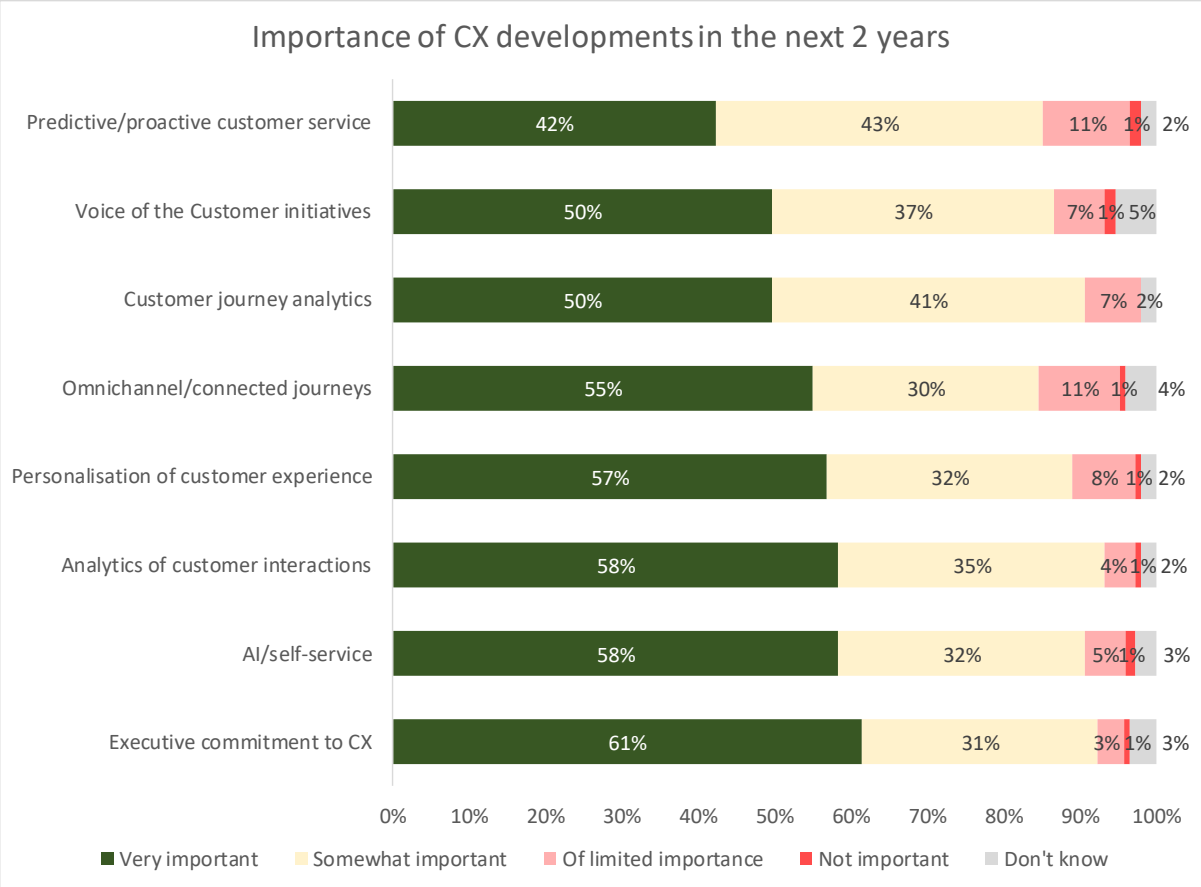
Figure 42: Use of AI / Machine Learning, by contact centre size



Business leaders were asked their opinion on how important various customer experience developments would be to their organisation in the next two years.

While perhaps the most striking finding was that the most important factor determining the future success of the customer experience programme was a requirement for the continuing and strengthening executive commitment to improving customer experience, AI-enabled self-service led the group of technologies in terms of importance, a significant jump up from what had been found in 2018's survey.

Figure 43: Importance of CX developments in the next 2 years (until 2021)



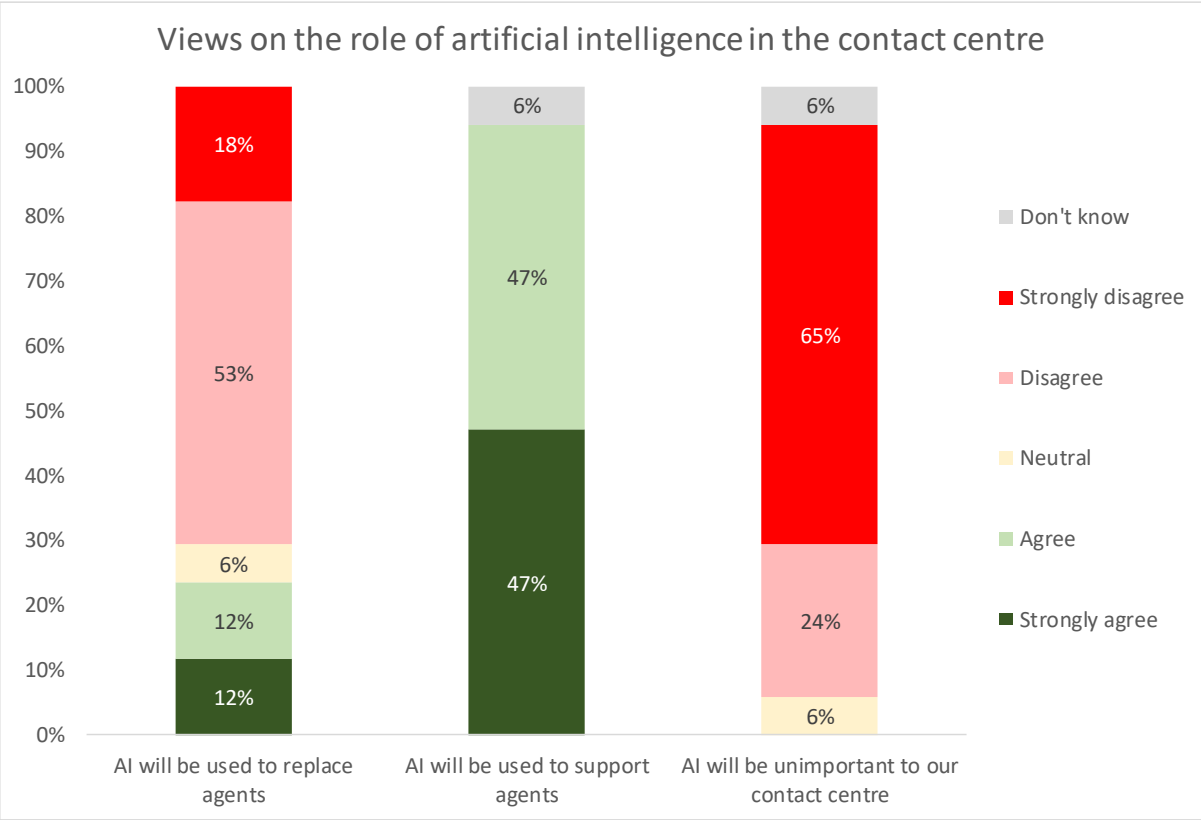
THE ROLE OF AI IN THE CONTACT CENTRE

Survey respondents generally did not believe that AI would replace agents: although 24% agreed to some extent that this would be the case, 71% disagreed. Respondents from large 200+ seat contact centres were more likely to feel that AI would replace human agents, with those in small and medium operations doubted that this would be the case.

Unanimity was found when the question was asked as to whether AI would support human agents, with 94% agreeing or strongly agreeing. There was agreement across all size bands that this would be the most likely outcome, reducing risk, speeding up responses and providing customers with higher quality resolutions.

65% strongly disagreed that AI would be irrelevant to their contact centre, with general agreement that AI will affect contact centres of all sizes. This figure is growing year on year as AI becomes more widespread and the benefits better understood.

Figure 44: Views on the role of artificial intelligence in the contact centre



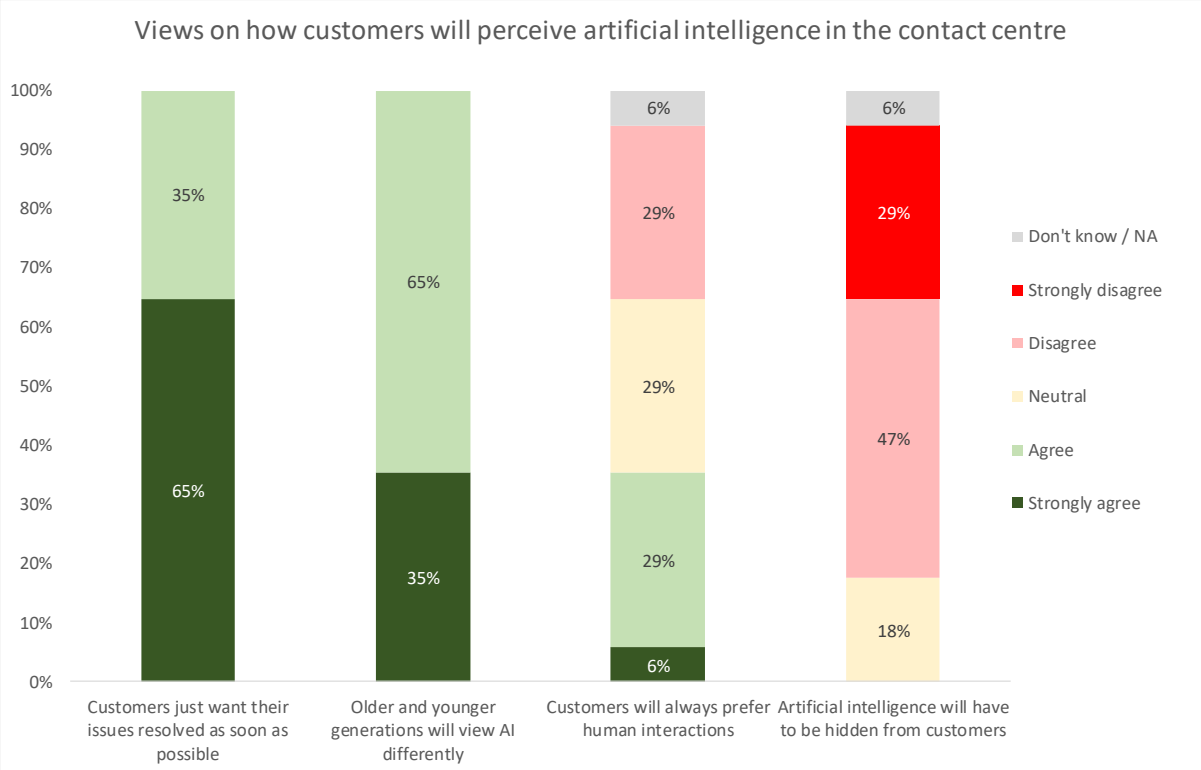
There was a very strong widespread belief that customers would not have a problem with AI if it helped them to resolve their issue as quickly and easily as possible. The uptake in web self-service suggests that customers will accept non-human assistance if it is most convenient for them.

There was also agreement that older generations would take a lot 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 widespread feeling that AI should not need to be hidden from customers.

Respondents disagree about whether customers will always prefer human interactions, with an fairly even split.

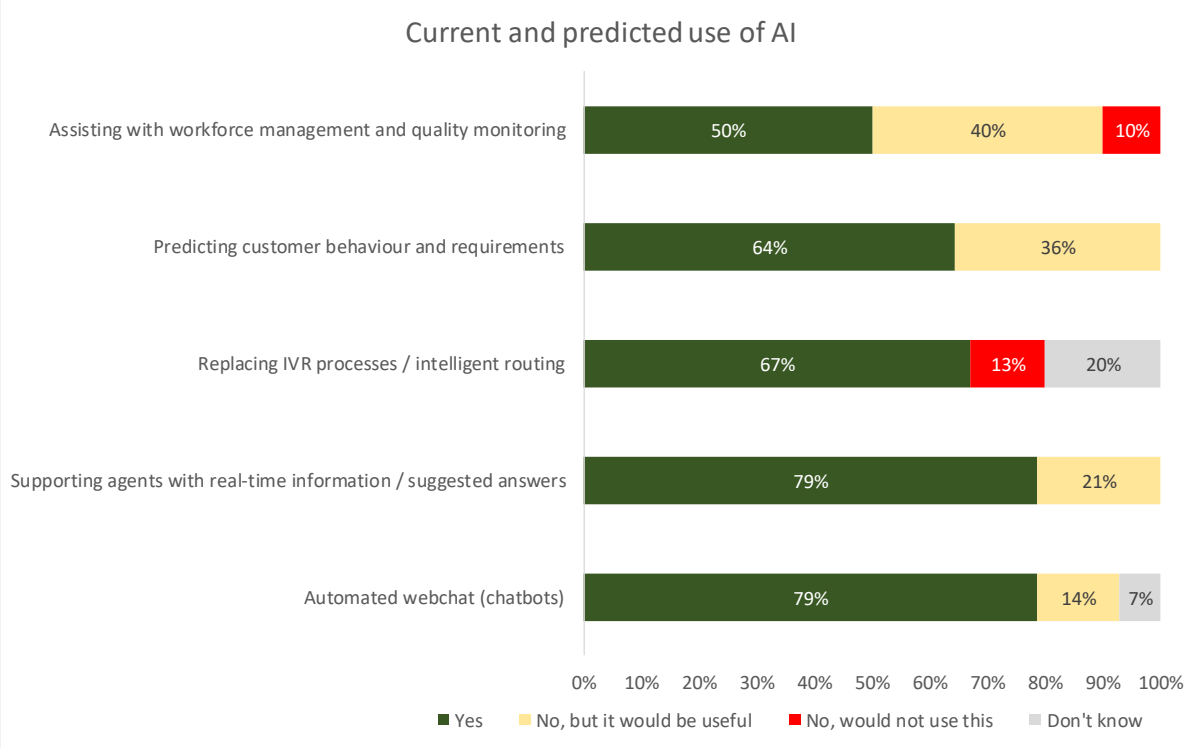
Figure 45: Views on how customers will perceive artificial intelligence in the contact centre



Looking at the wider use of AI for customer contact, the current use of AI is focused upon conversational AI / chatbots / virtual agents, although supporting agents in real-time is also used by the majority of respondents that have implemented AI. Both of these use cases draw from the same knowledge base, and having a deep pool of clean data, and the processes in place to enrich this is a very worthwhile ongoing project.

Looking to the future, there is widespread interest amongst AI users to widen the focus to include predictions of customer behaviour, to assist with quality and performance monitoring and to augment and improve call routing.

Figure 46: Current and predicted use of AI (current users of AI only)



Potential uses of AI-enabled self-service 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 behaviour 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 personalisation, 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.

END-USER QUESTION 5: WHAT WILL CUSTOMER SELF-SERVICE LOOK LIKE IN FIVE YEARS' TIME?

Self-service will change and expand considerably over the next five years, with customers embracing it when it benefits them, i.e. they get served faster, more efficiently, in a personalised way, in less time. In the future, customers will self-serve from anywhere or any device over any channel to receive instant gratification and the responses they will get will answer more complex queries. This relies on technologies such as conversational AI for context, sentiment and tone analysis, inference extraction and interpretation, and more domain-specific Natural Language Processing (NLP) engines. However, self-service will still need to integrate with agents to enable seamless escalation, particularly around queries that require human skills such as empathy and emotional understanding.

E2E: SELF-SERVICE IN A POLARISED WORLD

Looking further into the future, businesses' interactions with customers are becoming a highly polarised mixture of the automated and the personalised. 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.

A few years down the line, we can expect to see self-service using large amounts of sophisticated artificial intelligence, with personal technology applications seeking out the best deals on offer, or interacting with a business on behalf of customers. This leads to the conclusion that many customer-agent interactions will become even more exceptional, such as a complaint, an urgent or complex issue or a technical query that an FAQ or customer community couldn't solve. It may also be that whole segments of the customer base who don't want automation at all will still be handled directly by live agents.

Many self-service scenarios suggest a world in which customers speak directly to 'intelligent' systems, but the world of the 'virtual intelligent personal assistant' (VIPA) turns this idea on its head, postulating an e2e world (in which systems talk to systems), where the customer delegates many of their business interactions to a pseudo-intelligent device. The VIPA is something which isn't yet widely available, but is being driven by improvements in technology and the desire of the customer to get the best deal with the least effort. Perhaps the most widely used (albeit very basic) version of the VIPA is the iPhone's "Siri", which provides basic web search functionality based on speech recognition. It is still a very long way from being a true VIPA though.

Storing information on a VIPA device - such as personal preferences, financial details and individuals' physical profiles - is the first step, and one can be done today. Customers of the future will instruct the device to research the best deals for products and services, or to find out the answer to a service query, and to come back to the device's owner with the right information. The VIPA would 'call' the relevant contact centre (which would in fact be either a number of back-office company systems 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, smart appliances such as utilities meters now send their own readings to suppliers on request, and in theory a manufacturer can detect when a part on an appliance is about to fail, and organise a replacement part and engineer visit with the customer's permission.

VIPAs may be used in association with intelligent agents which roam the web for answers to questions or situations, and could act as a third-party broker between the customer and a business. Price comparison sites act today as a type of first-generation smart assistant, but are entirely reliant on accurate and complete data inputs being provided by suppliers and the site's owners. If VIPA technology could be relied upon to work, and standards of interoperability between VIPA and businesses were implemented, then this immediate and extensive market knowledge could create a 'perfect market' for commoditised products and services, with major impacts on the way business operates, creating a true self-service ecosphere.

ABOUT CONTACTBABEL

ContactBabel is the contact centre 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 analysing the contact centre 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 centre strategies and talk to the right prospects. We have shown the UK government how the global contact centre industry will develop and change. We help contact centres compare themselves to their closest competitors so they can understand what they are doing well and what needs to improve.

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