MIT Technology Review

Insights/Research

HUMANS + BOTS: TENSION AND OPPORTUNITY

How top global brands blend human skills and
AI to build customer intimacy and drive growth

A briefing paper in association with

GENESYS™

Preface

To produce this study, MIT Technology Review Insights conducted a review of customer experience innovation, adoption of technologies such as artificial intelligence, and the business results that companies have achieved by following this path toward digital transformation. Our research was based on a global survey of 599 customer experience executives at large and mid-sized companies across 18 countries during July 2018, as well as a series of interviews with senior leaders in customer leadership roles. The report, which is sponsored by global software company Genesys, is editorially independent; the views expressed are those of MIT Technology Review Insights.

We would like to thank the following interviewees for providing their time and insight:

Oscar Cejudo, Chief Insights Officer, Customer Experience and Market Strategy, **Seguros Monterrey New York Life, Mexico**

Dr. Albert Chan, Vice President and Chief of Digital Patient Experience, **Sutter Health, United States**

Masayuki Chatani, Executive Officer and General Manager of AI Promotion Department, **Rakuten, Japan**

Nick Holdsworth, Australian and International Service Delivery Executive, **Telstra, Australia**

Jeferson Honorato, Executive Superintendent, **Next**, **Brazil**

Djamel Mostefa, Head of AI, **Orange Bank, France**

Hicham Naim, Head of Customer Experience Strategy, Europe and Canada, **Takeda Pharmaceutical, Switzerland**

Cory Wain, Director Automated Customer Experience, **Telus Communications, Canada**

Nicolas Wsevolojskoy, Director of Customer Experience, **Cielo, Brazil**

Zhu Wenli, International Business Head of Smart Customer Service, **Taobao (Alibaba), China**

Contents

1. Executive summary

This report, *Humans + bots: Tension and opportunity,* examines how companies across the world use AI through their customer journey and the business and customer benefits being delivered as a result.

Based on a global survey of 599 executives and a series of expert interviews, this report found that most companies—and particularly firms that identify as 'customer–centric'—have already deployed AI extensively in their customer–facing operations and customer experience management processes. Those that have moved earliest to automate processes and enhance customer channels with AI assistance are now reaping the greatest rewards, not only in terms of efficiency and scale but also in terms of customer loyalty and brand recognition from being perceived as technology leaders. Some of the report's key findings include:

• AI goes global

Customer experience leaders, and larger companies, are making significant AI investments with nine out of ten of all firms surveyed having added AI 'enhancements' in their customer journey. There are few differences in the levels of AI adoption across the world, which shows that customers worldwide expect a high level of service that can only be provided with the support of technology.

• Driven by efficiency

Investment in AI is largely driven by efforts to improve customer experience efficiency, but the strategic focus quickly shifts towards deepening customer intimacy, particularly for leading firms. Companies that are furthest ahead in terms of customer experience are using AI to bring a deeper level of customer understanding, driving customization and a personalized journey.

• Rapid operational improvements

AI enables customer experience operational improvement at speed and scale. Nearly 90% of survey respondents report that they have recorded measurable improvements in the speed of complaint resolution, and over 80% have noted enhanced call volume processing using AI.

• Satisfaction is driving revenue gains

Gains in customer satisfaction are improving revenue performance, and customer lifetime value. Some 80% of survey respondents report measurable improvements in customer satisfaction, service delivery and contact center performance.

• Sentiment analysis helps manage costs

For the majority of survey respondents, operational costs have increased, but less so for those that invest in customer sentiment analysis. Companies using sophisticated tools such as natural language analysis are generally the leaders in customer experience technology deployment and are more able now to see cost performance results from these investments. By investing in tools that drive deeper customer understanding, they are able to make smarter investment decisions.

2. Intelligent customer experience

Companies around the world have readily embraced artificial intelligence (AI), not just as a tool for customer experience efficiency, although chatbots and machine-assisted agents have allowed for tremendous productivity gains across the customer journey, but as a means of forging deeper relations with their customers. Customer experience-centric companies are using AI as a powerful lever to speed up customer interaction processing times and imbue transactions with better information and insight. The benefits of which are being realized rapidly in terms of reduced cost and better service outcomes. In other words, the incredible shifts in productivity that AI and machine learning engenders has quickly translated into an ability to better respond to more nuanced customer requirements and more consistently 'live up to' customers' expectations.

Methodology

To understand the ways companies are employing AI and machine learning tools to deliver more customer-centric services and connect more meaningfully with their customers, MIT Technology Review Insights conducted a global survey of 599 customer experience executives in 18 countries across the Americas, Europe and Asia-Pacific. Respondents detailed their technology investments, and to which part of the customer journey these tools and applications are being applied. They also provided views on how significant these investments have been in transforming the customer management processes, and what methods they are using to measure overall performance.

Nearly two-thirds of the executives who responded were handling the 'front line' of customer engagement, whether heads of customer experience (12%), marketing or branding heads (29%) or directors of sales or business development (23%). CxOs, and technology and strategy heads made up the remainder.

Respondents came from ten different verticals, with manufacturing and retail making up the largest sectors (22% and 18% respectively), followed by large showings in financial services and information technology and communications.

The survey gathered responses from large and small to mid-sized companies. Nearly half the respondents were from large organizations with over $5 billion in revenue and overseeing operations with more than 30,000 employees. Slightly more than a quarter of respondents were from firms with between 1,000 and 3,000 employees.

The responses of a subset within the survey of executives who benchmarked their performance relative to industry peers as 'best in class' for customer experience, brand recognition, and financial performance were designated 'customer experience leaders'.

This survey's findings were then supplemented with in-depth interviews with nine heads of customer experience at global organizations, across several vertical industries. These interviews probed the specific implementation of their AI technologies, and the strategies that they engage in to align technology with their broader customer relationship management and brand value goals.

Customer-centric companies are using AI as a powerful lever to speed up customer journeys and imbue transactions with more actionable information and insight.

Figure 1: Survey respondents

What job title best describes your position?

- 12% Head of CX, customer care
- 29%
- 23%
- 18%
- 11%
- 7%

Legend:
- Head of CX, customer care
- Head of marketing, branding, communications
- Head of sales, business development
- Head of technology
- Head of strategy
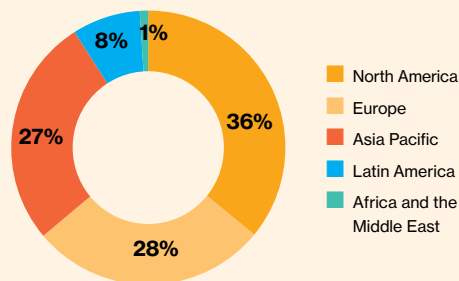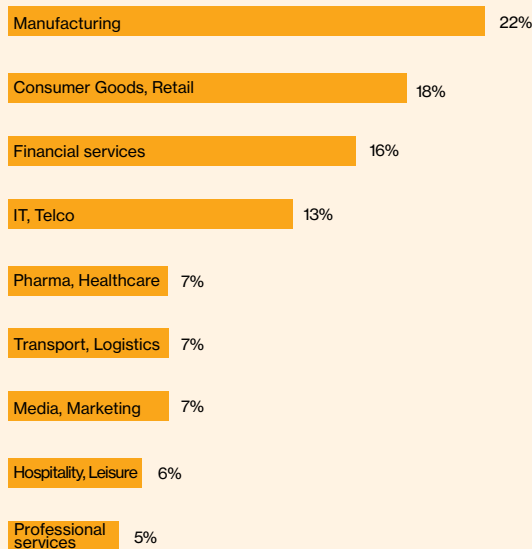- President, MD, CEO, COO, CFO
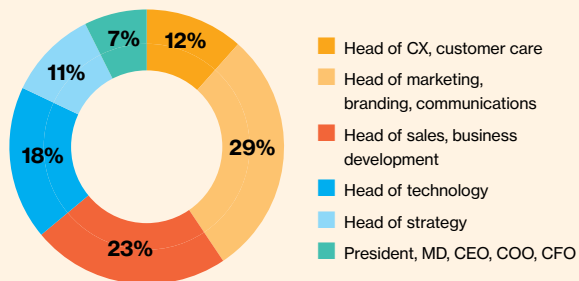
In which region is your organization's global headquarters?

- 36%
- 28%
- 27%
- 8%
- 1%

Legend:
- North America
- Europe
- Asia Pacific
- Latin America
- Africa and the Middle East

In which country are you based?

- US   n = 121
- Australia, New Zealand   n = 38
- India   n = 37
- Sweden   n = 34
- Canada   n = 33
- Southeast Asia   n = 32
- UK   n = 31
- South Korea   n = 31
- Germany   n = 31
- France   n = 31
- Mexico   n = 30
- Japan   n = 30
- Italy   n = 30
- Greater China   n = 30
- Brazil   n = 30
- Argentina   n = 30
- Other   n = 1

In what industry does your organization primarily operate?

- Manufacturing   22%
- Consumer Goods, Retail   18%
- Financial services   16%
- IT, Telco   13%
- Pharma, Healthcare   7%
- Transport, Logistics   7%
- Media, Marketing   7%
- Hospitality, Leisure   6%
- Professional services   5%

What were your organization's global revenues in 2017 (in USD)?

- 49%
- 19%
- 16%
- 14%
- 1%
- 1%

Legend:
- Over $5bn
- $500m to $1bn
- $100m to $500m
- $1bn to $5bn
- $50m to $100m
- Less than $50m
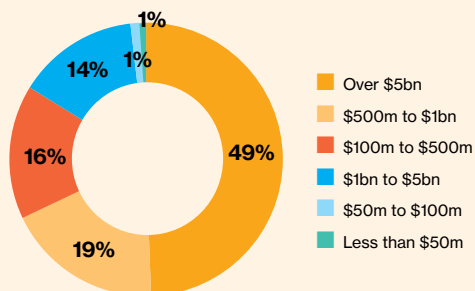
What are the total number of employees in your operations?

- 45%
- 27%
- 17%
- 11%

Legend:
- Over 30,000
- 1,001,- 3,000
- 3,001- 10,000
- 10,001-30,000
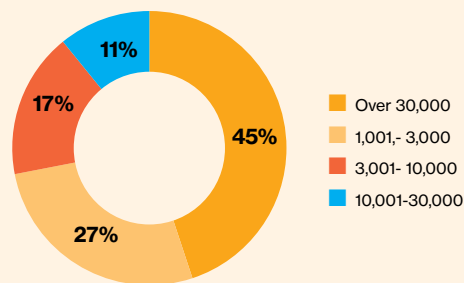
Source: MIT Technology Review Insights survey, 2018

3. AI and the customer journey

Nearly all of the survey respondents report adopting AI-enabled technology across some touchpoints in their customer journey—and are seeing immediate impact on customer experience performance as a result.

In recent years, great strides have been made by companies globally in deploying technology across the customer journey to improve understanding of customer needs, meet those needs, and manage service issues along the way. Chatbots have quickly cycled through the customer (and agent) journey in a few short years, evolving from robo-agents that risked annoying customers to becoming valued digital help-mates.

Consumers come around

Consumerization has been a primary driver of technology adoption, particularly in the US where research firm comScore estimates close to 19m US households—or 20% of internet-connected homes nationally—have a voice-activated smart speaker, nearly double the number that were in use a year ago. Technology market research firm eMarketer notes that in 2018, over 62m US consumers will interact with some form of digital assistant more than once per month, up from 45m in 2016. While US consumers are setting the global pace of personal digital assistant adoption, other regions are fast catching up. Juniper Research estimates that AI-enhanced smart speakers and voice assistants will form a large part of China's $23 billion market in smart homes this year, fueled by increasing competition from domestic internet commerce firms such as Alibaba and smartphone manufacturers such as Xiaomi.[1]

Increasingly, it is consumers themselves who are motivated to use automated channels: a 2018 survey, *The State of Chatbots*, found that over half of respondents indicated they would use automated assistants to generate quick answers to simple problems. A third indicated that one of the perceived benefits was to help them navigate to a human agent.[2]

Research is also showing that chatbots are doing more to increase top-line performance, rather than simply manage bottom-line costs: Jupiter Research reports Facebook's Octane AI is used to engage 90% of shoppers who have abandoned their online carts, and successfully converts 10% of them to sales. Juniper estimates that by 2023, chatbots deployed in the retail sector globally will save the industry $11.5 billion in costs, and generate over $112 billion in sales revenue.

These trends have been key drivers for the technology adoption strategies of leading firms for some time now. *Getting to Iconic*, a 2017 MIT Technology Review Insights survey and briefing paper in association with Genesys, found that the companies who made early investments in AI tools to enhance customer experience and data analysis benefitted from greater brand recognition, market performance and customer experience

For leading firms, AI is fast becoming not only a valuable asset for enhanced customer experience performance, but also a powerful symbol of a firm's commitment to customer experience excellence.

[1] www.cbinsights.com/research/china-voice-assistants-smart-speakers-ai/
[2] www.drift.com/wp-content/uploads/2018/01/2018-state-of-chatbots-report.pdf

excellence.[3] For leading firms, AI is fast becoming not only a valuable asset for enhanced customer experience performance, but also a powerful symbol of a firm's commitment to customer experience excellence.

Early adopters are in the lead

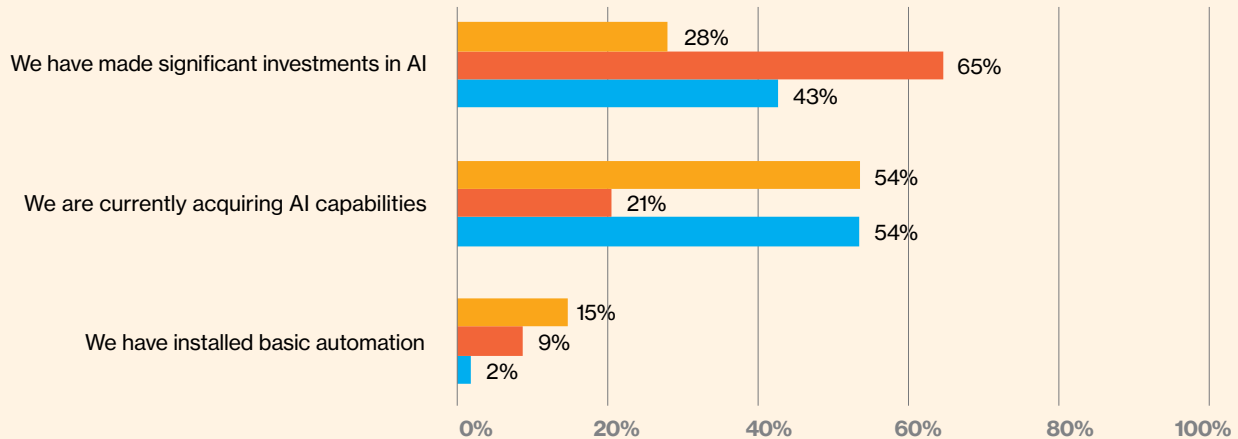Companies that identify themselves as industry leaders in customer experience, brand recognition, and financial performance—the customer experience leaders—are markedly further down the path of AI adoption than the average of all survey respondents. Two-thirds of customer experience leaders have already made significant investments in AI (either through acquiring technology or their own R&D efforts) in both their front-line customer engagement channels and in their 'back of house' analytics functions. This compares to less than 30% among respondents overall.

Figure 2: AI investment strategy in customer processes and analytics

Describe your company's current strategy for the use of AI in CX processes

(% of respondents)

FRONT-LINE CUSTOMER PROCESSES

We have made significant investments in AI
- 28%
- 65%
- 43%

We are currently acquiring AI capabilities
- 54%
- 21%
- 54%

We have installed basic automation
- 15%
- 9%
- 2%

CUSTOMER ANALYTICS

We have made significant investments in AI
- 26%
- 61%
- 41%

We are currently acquiring AI capabilities
- 47%
- 30%
- 49%

We have installed basic automation
- 23%
- 6%
- 10%
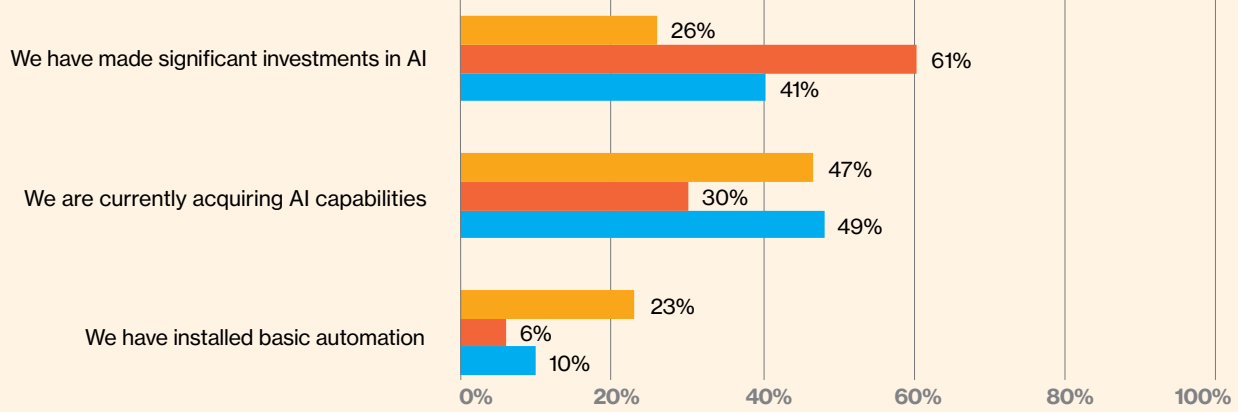
■ All responses   ■ CX leaders   ■ Large companies, over 30,000 employees

Source: MIT Technology Review Insights survey, 2018

---

[3] www.technologyreview.com/s/609208/getting-to-iconic

Figure 3: Strategic focus for AI investment

To what extent do you agree with the following statements?

(% of respondents)

AI IS DRIVEN BY A NEED TO
IMPROVE CX EFFICIENCY

94%
97%
97%

AI IS DRIVEN BY A NEED
TO IMPROVE CUSTOMER INTIMACY

82%
91%
94%

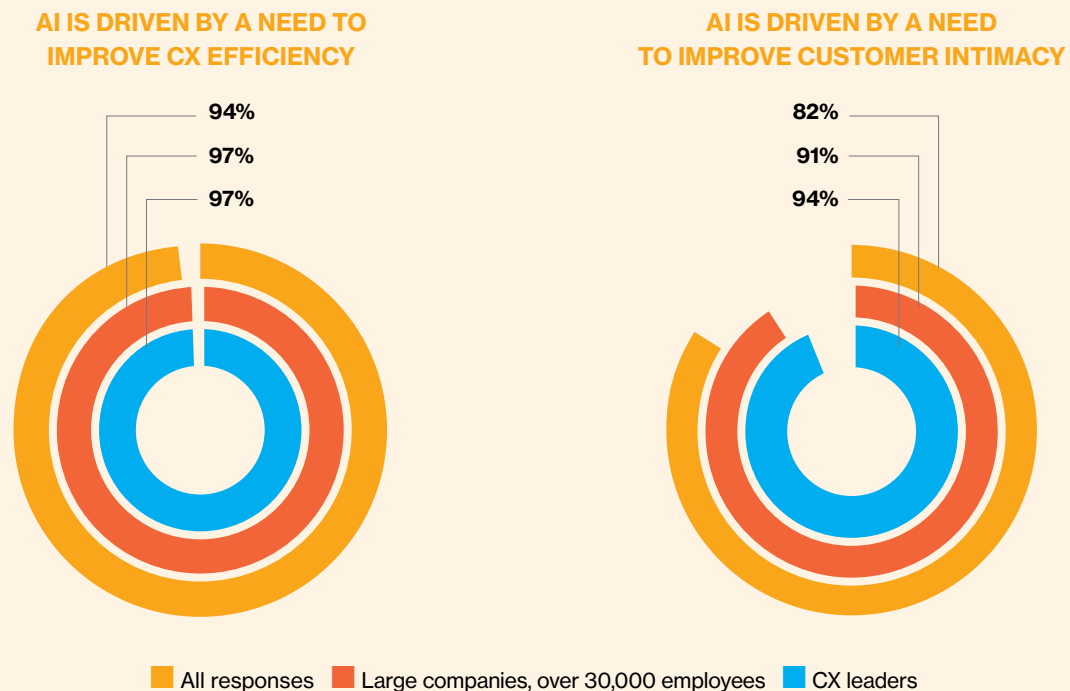■ All responses ■ Large companies, over 30,000 employees ■ CX leaders

Source: MIT Technology Review Insights survey, 2018

Larger organizations, unsurprisingly, are proportionately driven to achieve efficiency on a massive scale. Respondents at organizations with more than 30,000 employees were over 50% more likely to have made significant AI investments in both front-line engagement systems and customer analytics.

While almost 95% of respondents report that AI investments are driven by the need to improve customer experience efficiency, larger firms are also in pursuit of more holistic goals for AI. In addition to pursuing efficiency, executives at large companies are much more likely to be focusing on improving customer intimacy as a goal for their AI investments.

A deeper customer understanding

Given the increasing familiarity respondents have with AI tools—over two-thirds of

respondents have employed automated self-service channels, instant messaging chatbots and even sentiment analysis tools for more than a year—unsurprisingly they also regard these investments primarily as tools to improve and deepen ties with their customers. Larger companies (those with more than 30,000 employees) have employed AI longer than the average: over 30% have employed such tools for more than two years (compared to less than a quarter of respondents overall). The deeper understanding of customer needs and challenges is now viewed through a different strategic lens: not as an end in and of itself but as a component (often a key driver) of a broader set of shared values with the customer. Customer intimacy involves understanding needs and preferences on a segmented and personalized level, allowing companies to deliver highly customized and individualized experiences.

Deep dive: AI fuels Singles' Day

Winning in a digital marketplace involves continually increasing volume as well as quality of service. AI has delivered on these objectives for China's e-commerce giant, Alibaba. The company has used major customer experience 'events' as catalysts for optimizing the use of AI in the customer journey—in particular the 11th of November, known as Singles' Day, an unofficial shopping holiday in China which has become the company's biggest sales event.

In 2017, over $25 billion in sales were made on the company's **Taobao** site. Zhu Wenli, international business head of smart customer service at Taobao notes that more than 93% of customer queries were resolved through AI-enabled chatbot tools, "the equivalent of over 120 million rounds of customer conversation, which would have required 83,000 human agents working around the clock." These chatbots are now being provided as a stand-alone service that Alibaba provides for its merchant partners as well as on AliCloud.

The majority of companies surveyed for this report have rapidly deployed AI throughout the customer experience delivery process. On average, the top six customer experience-centric AI applications and tools are being deployed by nine out of 10 of all our global survey respondents. The only technology with slightly lower adoption (at 87% of respondents) is interactive voice response (IVR) systems, a less mature (and often more capital-intensive) technology.

Customer experience executives' growing familiarity with AI to enhance customer transactions and process management means that they are also integrating these tools into their customer satisfaction evaluation process. Two-thirds of respondents indicate that they design their AI tools with brand alignment goals in mind, and that they routinely analyze conversations across channels to assess performance (customer experience leaders indicated slightly higher levels of activity, see Figure 5). Some 45% (and over three-quarters of customer experience leaders) also indicate that AI helps them understand the distance between their stated brand attributes and customers' perceptions of them.

This AI-enhanced insight is being plowed back into the customer journey: significantly, over 80% of respondents use predictive AI to provide agent prompts and information that help service staff align their responses with brand messages and customer requirements, a figure even higher among respondents from firms with over 30,000 employees.

Not all capabilities are in place, however, even among leading firms. IVR, voice-responsive AI technology, is also less prevalent among respondents. Even among the customer experience leader cohort, only 20% report that they are using AI and machine learning to directly support voice calls.
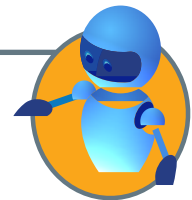
Customer experience executives' growing familiarity with AI to enhance customer transactions and process management means that they are also integrating these tools into their customer satisfaction evaluation process.

Figure 4: Timeline of AI deployment

How long have AI-enhanced tools and applications been in place in the following customer engagement functions?

(% of respondents)

ALL RESPONSES   **CX LEADERS**

Automated self service

ALL RESPONSES: 9% / 18% / 73%
CX LEADERS: 3% / 56% / 41%

Chatbots

ALL RESPONSES: 8% / 32% / 60%
CX LEADERS: 6% / 28% / 66%

Interactive voice response

ALL RESPONSES: 13% / 24% / 63%
CX LEADERS: 3% / 41% / 56%

Customer journey analytics

ALL RESPONSES: 7% / 25% / 68%
CX LEADERS: 3% / 38% / 59%

Sentiment analysis

ALL RESPONSES: 5% / 11% / 84%
CX LEADERS: 6% / 47% / 47%

■ More than 2 years   ■ Less than 2 years   ■ Not yet deployed
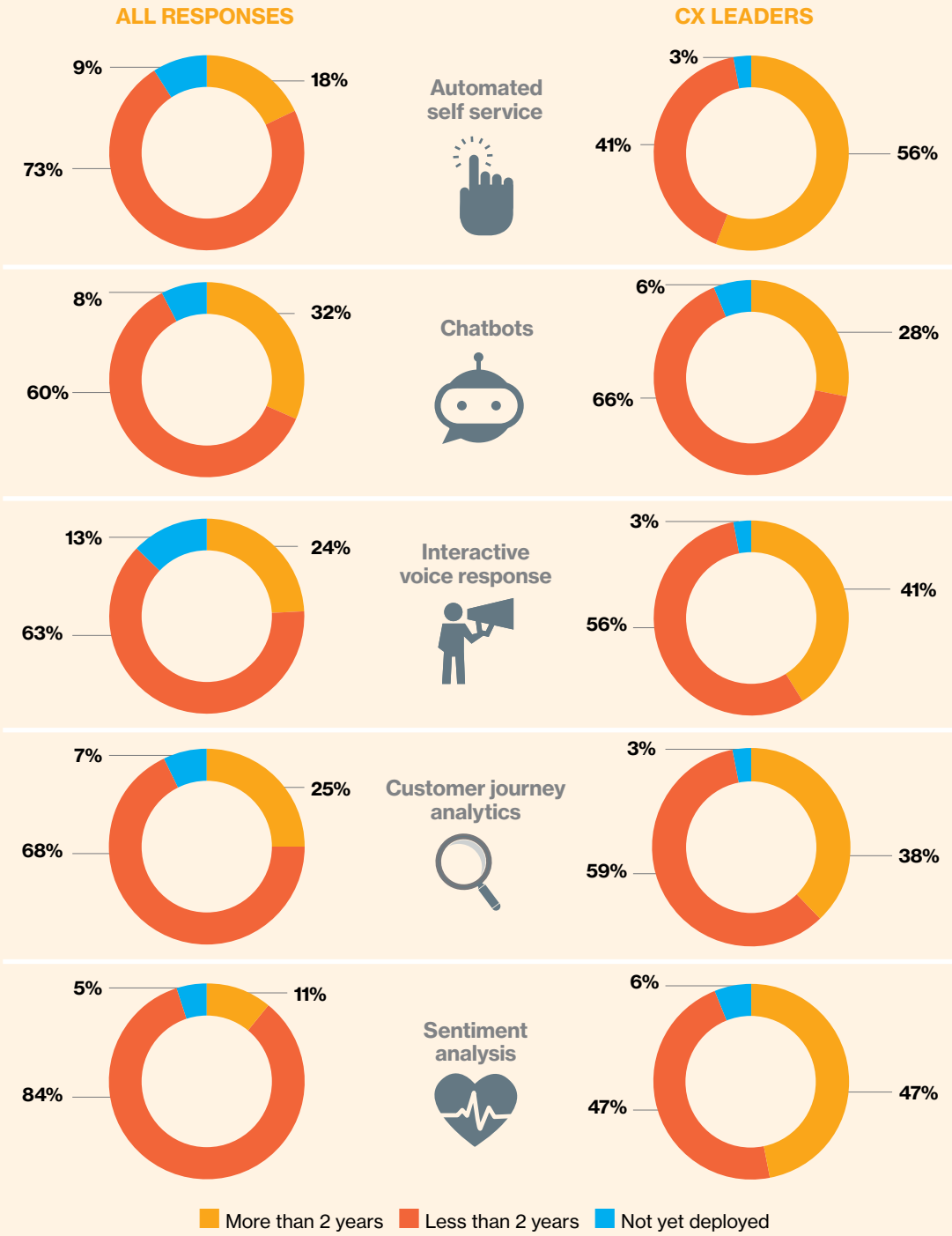
Source: MIT Technology Review Insights survey, 2018

But while AI is clearly being used as a tool to both enhance customer experience, and to evaluate customer experience satisfaction, respondents—even leading ones—have mostly yet to link the two. This is a corner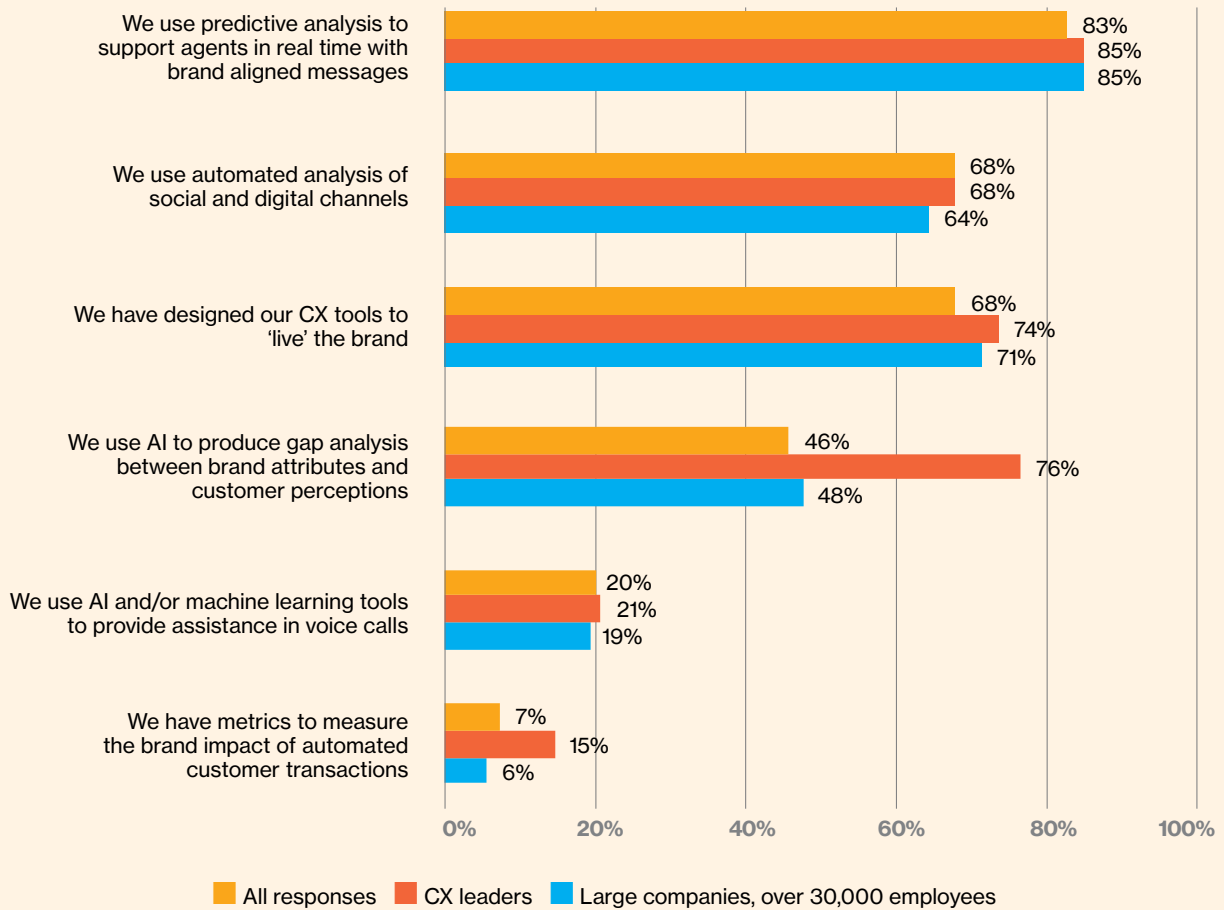stone of customer sentiment analysis yet unlaid: less than 15% of customer experience leaders (and 7% of respondents overall) report that they use formal metrics to understand the impact of AI-enabled customer transactions and their customers' feelings towards them. "There is no dedicated customer experience metric that measures the emotional relationship," says Zhu at Taobao, even though emotional engagement "is in our genes. Our number one concern is to resolve our customer issues, and we do so in a very personable way," which according to Zhu, is one of the leading attributes of the Taobao brand.

Figure 5: Use of AI to support brand positioning

How are you using AI to support brand loyalty and customer sentiment analysis?

(% of respondents)

	All responses	CX leaders	Large companies, over 30,000 employees
We use predictive analysis to support agents in real time with brand aligned messages	83%	85%	85%
We use automated analysis of social and digital channels	68%	68%	64%
We have designed our CX tools to 'live' the brand	68%	74%	71%
We use AI to produce gap analysis between brand attributes and customer perceptions	46%	76%	48%
We use AI and/or machine learning tools to provide assistance in voice calls	20%	21%	19%
We have metrics to measure the brand impact of automated customer transactions	7%	15%	6%

Source: MIT Technology Review Insights survey, 2018

4. Realizing the value of AI

The ability of AI to dramatically improve efficiency, process speeds and transaction volume has been rapidly observed by survey respondents, which is accelerating the pace of customer experience transformation.

One of the most significant findings of this survey is the immediacy of positive results that respondents have observed from their A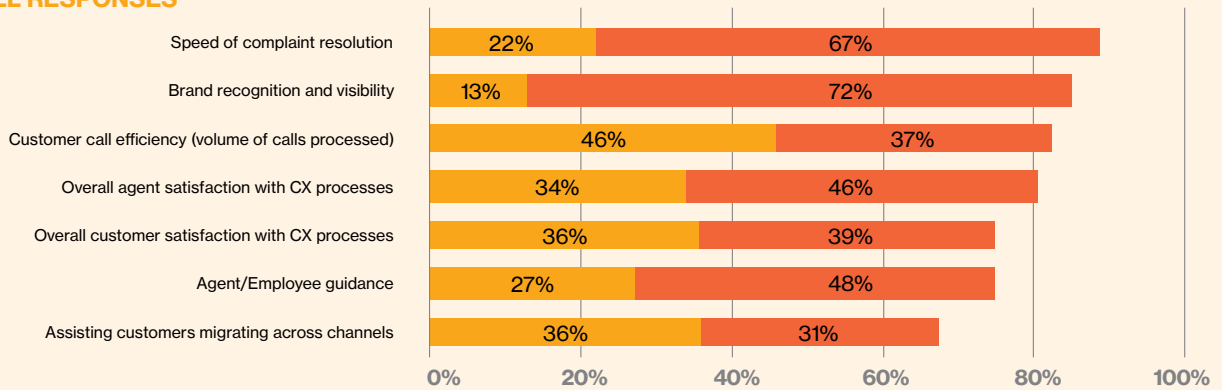I-enhanced customer experience capabilities. Nearly 90% report that they have recorded measurable improvements in the speed of complaint resolution, and over 80% have noted enhanced call volume processing using AI. Similar levels of improvement

---

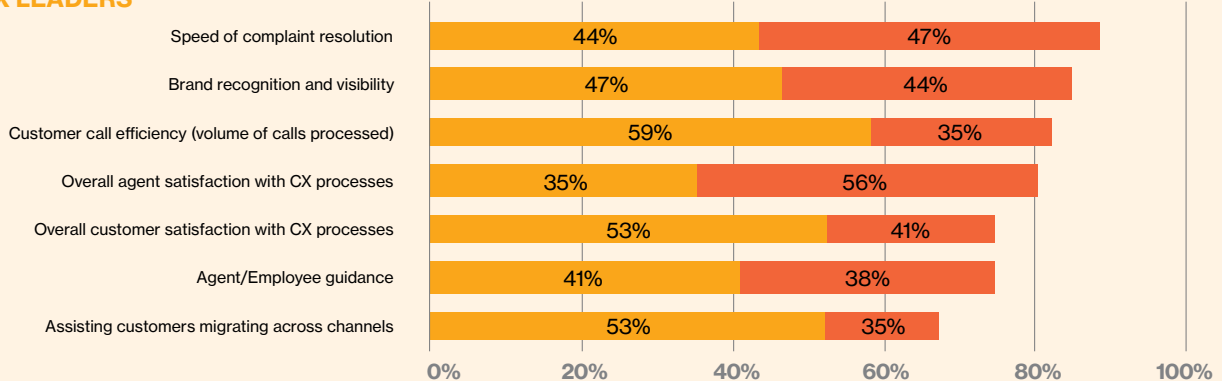## Figure 6: The impact of AI on processes and operations

To what degree have AI investments improved CX processes and contact center operations?

(% of respondents)

ALL RESPONSES

Category	Significant improvements	Some improvements
Speed of complaint resolution	22%	67%
Brand recognition and visibility	13%	72%
Customer call efficiency (volume of calls processed)	46%	37%
Overall agent satisfaction with CX processes	34%	46%
Overall customer satisfaction with CX processes	36%	39%
Agent/Employee guidance	27%	48%
Assisting customers migrating across channels	36%	31%

CX LEADERS

Category	Significant improvements	Some improvements
Speed of complaint resolution	44%	47%
Brand recognition and visibility	47%	44%
Customer call efficiency (volume of calls processed)	59%	35%
Overall agent satisfaction with CX processes	35%	56%
Overall customer satisfaction with CX processes	53%	41%
Agent/Employee guidance	41%	38%
Assisting customers migrating across channels	53%	35%

■ Significant improvements   ■ Some improvements

Source: MIT Technology Review Insights survey, 2018

were recorded with the ability to migrate customers across channels, although over a quarter did not have metrics to support these gains, suggesting that more discipline and data needs to be applied to AI-enhanced channel management.

Generally, customer experience leaders report similar levels of improvement to the survey respondents overall. They are moderately more likely to report their performance gains as "significant," except in one key area; nearly half of all leaders report that they have seen significant measured

improvement in their brand recognition and visibility from their AI investments. This compares to 13% in the general respondent pool (and a similar level among large firms) suggesting that their brands have benefitted from becoming known as early technology adopters.
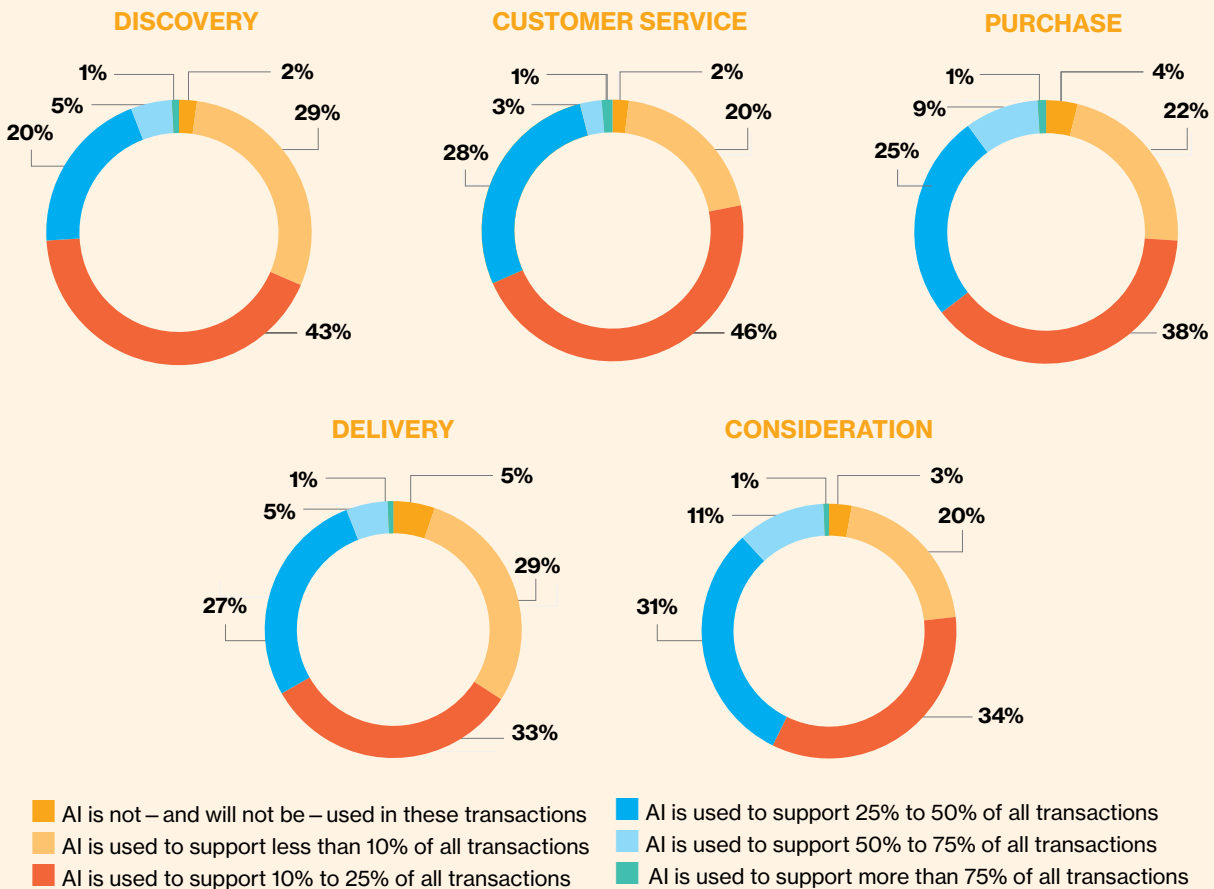
AI spans the customer journey

The survey results show that across the survey sample globally, between 10% and 25% of all customer transactions are supported through

Figure 7: The impact of AI on customer transactions

To what extent does AI support the volume of transactions at each stage of the customer journey?

(% of respondents)

DISCOVERY
- 1%
- 2%
- 5%
- 29%
- 20%
- 43%

CUSTOMER SERVICE
- 1%
- 2%
- 3%
- 20%
- 28%
- 46%

PURCHASE
- 1%
- 4%
- 9%
- 22%
- 25%
- 38%

DELIVERY
- 1%
- 5%
- 5%
- 29%
- 27%
- 33%

CONSIDERATION
- 1%
- 3%
- 11%
- 20%
- 31%
- 34%

- AI is not – and will not be – used in these transactions
- AI is used to support less than 10% of all transactions
- AI is used to support 10% to 25% of all transactions
- AI is used to support 25% to 50% of all transactions
- AI is used to support 50% to 75% of all transactions
- AI is used to support more than 75% of all transactions

Source: MIT Technology Review Insights survey, 2018

AI tools and over a quarter of survey respondents state that AI enables up to half of their customer transactions, and that figure rises to over 30% among respondents from large firms. The highest utilization rates are in mature customer experience processes—consideration, customer service, and purchasing.

Taken together, over half of respondents have seen increases in overall revenue of more than 5%, and over 30% can link the increased use of AI to revenue growth of more than 10%. Even higher levels of improvement were recorded for customer lifetime value and brand awareness. However, these gains have not come without costs. A third of respondents report that their customer contact operational costs have seen slight increases, and nearly as many report cost increases of 5% or more.
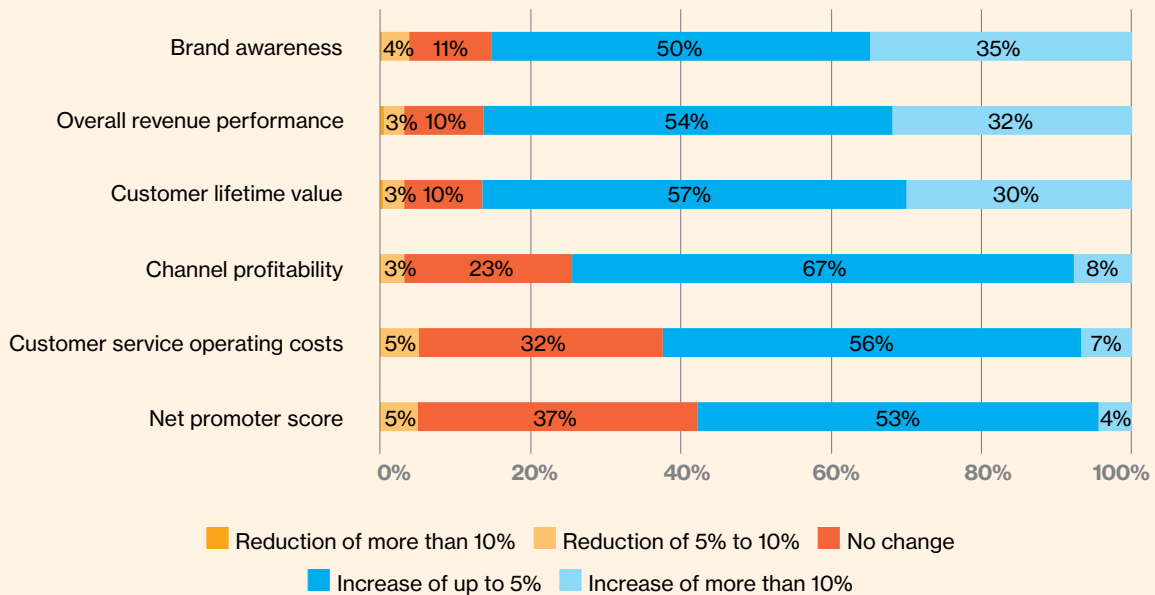
Big wins in efficiency

Survey respondents report making particular progress in the automation of customer inquiries. The average respondent indicates that between a quarter and a half of all inquiries are now completely resolved through automated channels, and nearly one in ten indicated that the majority of inbound customer contact is fully automated. That percentage is even higher among customer experience leaders, indicating that customer-centric firms are able to manage both the escalation of full contact automation without loss of customer satisfaction.

As with most AI performance aspects examined in this survey, respondents in the customer experience leader cohort have even higher levels of AI utilization across the customer experience chain.

Figure 8: Business performance metrics

Can you quantify the changes in the following CX attributes in the last 12 months?

(% of respondents)

Attribute	Reduction of more than 10%	Reduction of 5% to 10%	No change	Increase of up to 5%	Increase of more than 10%
Brand awareness		4%	11%	50%	35%
Overall revenue performance		3%	10%	54%	32%
Customer lifetime value		3%	10%	57%	30%
Channel profitability		3%	23%	67%	8%
Customer service operating costs		5%	32%	56%	7%
Net promoter score		5%	37%	53%	4%

Source: MIT Technology Review Insights survey, 2018

Deep dive: managing the rollout

Companies are training their AI technology to better understand and respond to human emotions, and methods for training are not dissimilar to those employed in teaching human agents. "We knew that at the start it was going to be an uphill battle to gain customer and agent acceptance," says Cory Wain, director of automated customer experience at Canadian mobile telecommunications carrier **Telus**, about the company's rollout of AI-enabled chatbots, noting that when customers first gave feedback, "usually they ticked the bottom two boxes."

While customers did not initially fully embrace bots, there was no evidence that this was causing them to jump ship. In fact, the data showed the opposite, particularly once Telus was able to achieve a 45% call offload—literally 55,000 calls saved. "We were facing long wait times; cutting customer call resolution time down from a half hour or more to two and a half minutes directly links to a customer's emotional state." And while this improved customer experience is the real prize, there are also substantial operational efficiencies: Wain expects that by the time the company hits its goal of over 690,000 calls offloaded, it will have saved millions of dollars in call center costs.

The impact of the AI rollout was also keenly felt by the company's front-line agents. Wain explains that when AI was first deployed, front-line agents were concerned that the technology would have an impact on jobs. Over time, the data again started telling a different story. "Within six months, the 'Voice of the Agent' survey reports told us that they loved the experience, and the increased work challenges," that the AI-enabled task shifting afforded them.

One in five leaders reported that over 75% of their customer service transactions are facilitated with AI.

Over 70% of respondents report that they have benefitted from improved revenue across the discovery, consideration and purchasing process through the use of AI. Similarly, a large cohort indicate that their purchasing and delivery transaction speeds have accelerated. AI has also helped surveyed firms increase customer satisfaction, loyalty and, particularly in the customer service function, brand affinity.

Having delivered considerable improvements in customer experience and better business results, survey respondents report further growth targets. Over half are planning to achieve gains of over 10% in revenue growth, customer lifetime value and brand awareness over the next twelve months. Two-thirds expect to begin improving brand affinity, hoping for gains of at least 5% in their net promoter score (NPS).
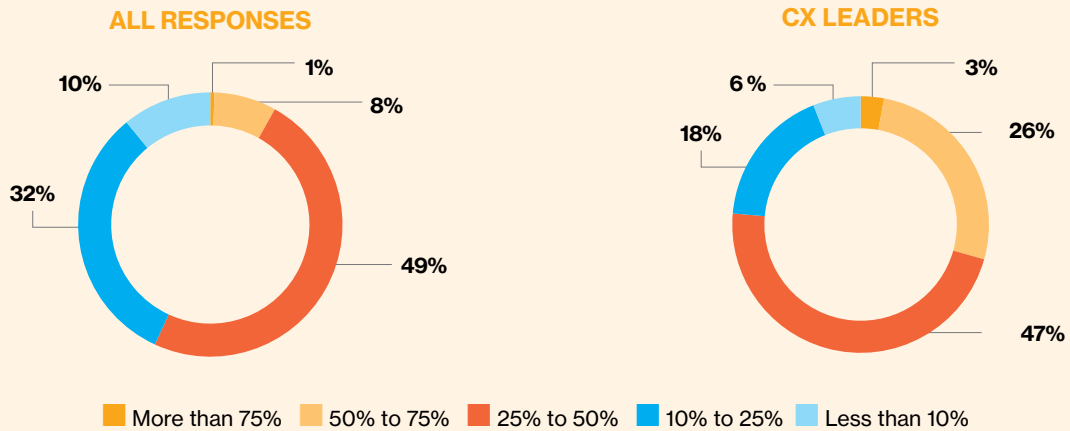
NPS still lags

The one measure which lags compared to other customer satisfaction metrics is NPS, arguably the most salient measure of customer approval. Nearly 40% of respondents report either no change on this score, or a small decrease. But customer experience leaders report much higher rates of NPS improvement. Over 57% report NPS increases of more than 5%.

Quantitative, easily gathered, and increasingly used as a cross-industry gold standard, NPS carries significant weight as a metric with heads of customer experience. Nick Holdsworth, Australian and international service delivery executive at global telecommunications company **Telstra**, shares that his team is running a pilot project using AI to gain customer insights. Through real-time monitoring of each trending conversation, the AI tool provides Telstra's agents with feedback on a call and then guides them to specific actions to resolve issues and enhance experience.

Figure 9: Automation of customer enquiries

What percentage of customer enquiries are resolved completely
by automated channels?

(% of respondents)

ALL RESPONSES

- 10%
- 1%
- 8%
- 32%
- 49%

CX LEADERS

- 6 %
- 3%
- 18%
- 26%
- 47%

■ More than 75%   ■ 50% to 75%   ■ 25% to 50%   ■ 10% to 25%   ■ Less than 10%

Source: MIT Technology Review Insights survey, 2018

The AI tools then provide Telstra's agents with feedback on the call, which then guides them to specific actions to resolve issues and enhance experience.

Artificial intelligence has, in Holdsworth's view, gone from a "tactical resource to a strategic one," adding that the use of AI is just one way that Telstra is using technology to enhance the customer experience. "Customers have been quite positive about our technology path," he said, "recognizing that we are a technology brand committed to staying ahead of their rising expectations." As mentioned earlier, these rising expectations are the result of the rapid diffusion of AI assistance technology in consumers' daily lives. "The industry has spent the last 30 years convincing consumers to adopt these new technologies; now the customer is ahead of us and expects us to catch up."

"The industry has spent the last 30 years convincing consumers to adopt these new technologies; now the customer is ahead of us and expects us to catch up."

Nick Holdsworth
Australian and International Service Delivery Executive, Telstra

5. The quest for customer intimacy

Most respondents say AI investments are driven by their need to increase both efficiency and customer intimacy—a deeper understanding of customer needs leading to customized and personalized solutions. But building human sensitivity into algorithms is not an easy feat.

A 2017 customer experience survey by PwC found that efficiency is the largest driver of customer satisfaction, and that people are willing to pay more for a valued experience.

Human interaction as an attribute of customer experience ranks behind several other factors, including importantly, having up-to-date technology.

Figure 10: What people value most in their customer experience

For a great customer experience, how important will the following be in the future? Which will be worth paying more for?
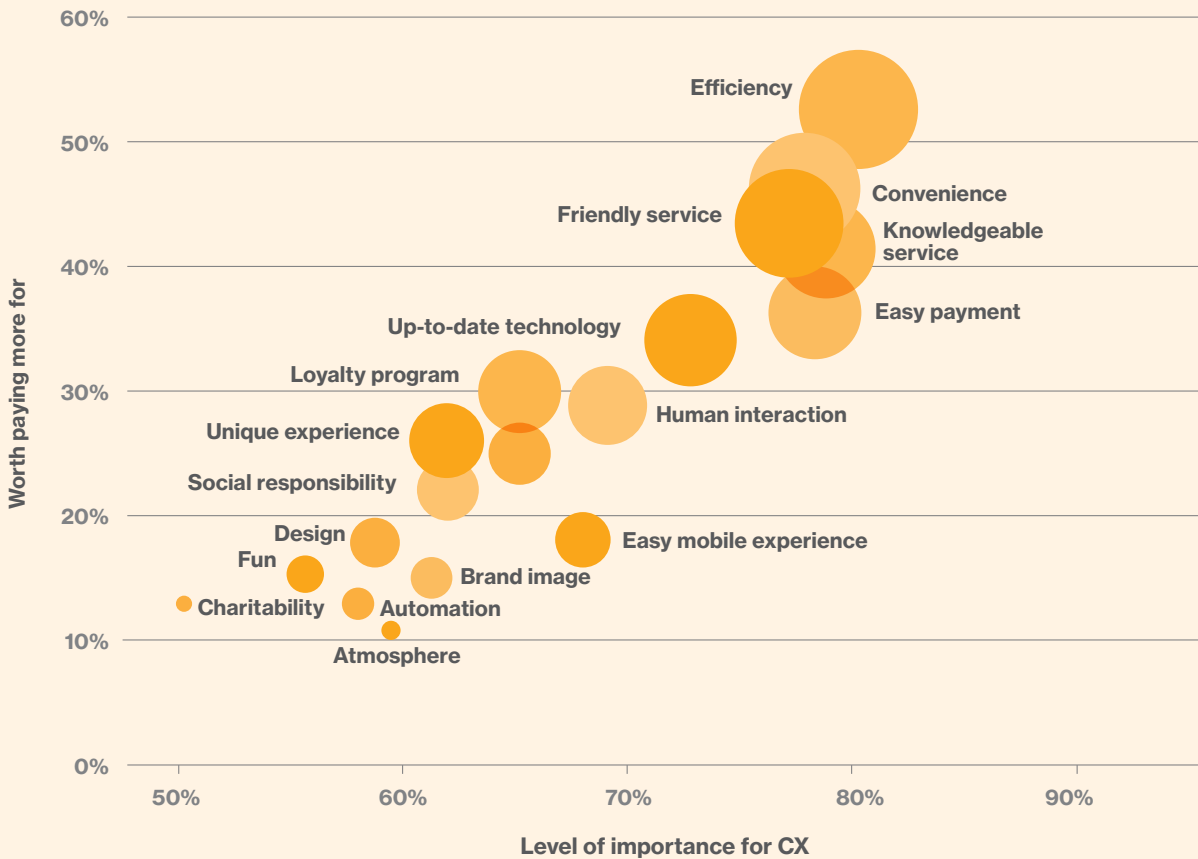
Compiled by MIT Technology Review Insights based on data from PwC's "Future of Customer Experience Survey 2017/2018"

In this survey, we also find that AI investments are driven by efforts to improve efficiency. But in addition to that, nearly all respondents globally believe that integrating AI into front-line processes will help them to improve customer intimacy, and that these investments are both recognized by their customers as steps taken to improve their experience, and that customers feel closer to them as a result.

This trend is even more pronounced for the customer experience leaders—with one crucial distinction. Some 67% of leaders feel strongly that AI has allowed them to rebalance workloads and redesign processes in such a way as to engage with customers more meaningfully, compared to only 16% of respondents overall. Customer

experience-centric firms appreciate that AI is enhancing human interaction—and not displacing it. By using 'blended AI', where people and machines work together, businesses achieve stronger performance from their human and technology resources.

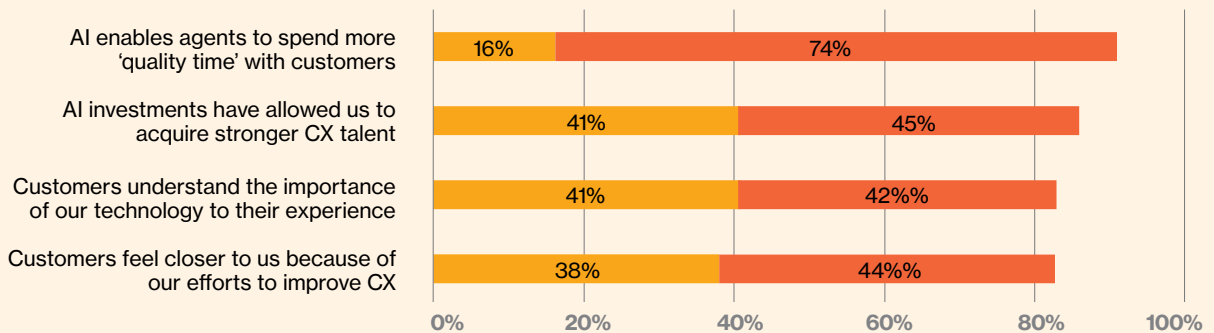## An algorithm for emotion?

However, a strategic approach to using AI for building customer intimacy remains elusive, even for leaders, because there is yet no precise measure that links the two. To overcome this, many customer experience leaders deploy AI in an iterative approach across the customer journey, to gather insight in stages and use those for

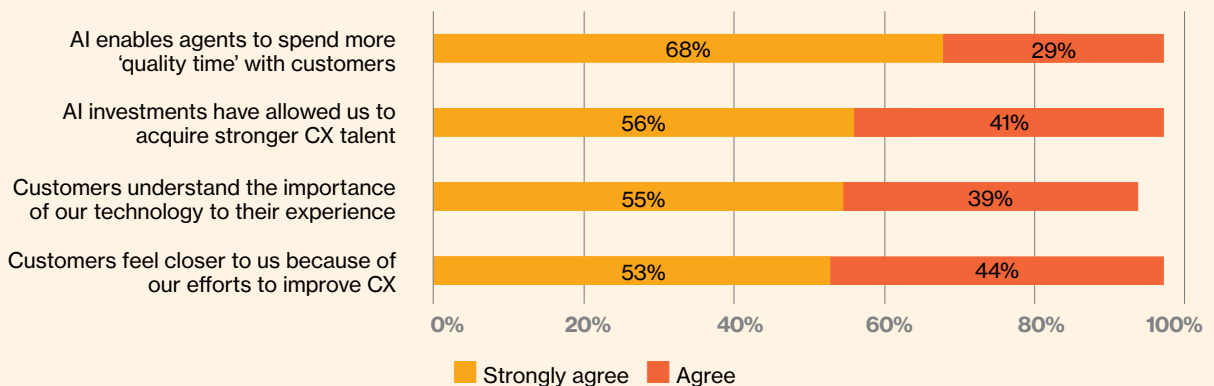### Figure 11: Strategic priorities for AI adoption

To what extent do you agree with the following statements?
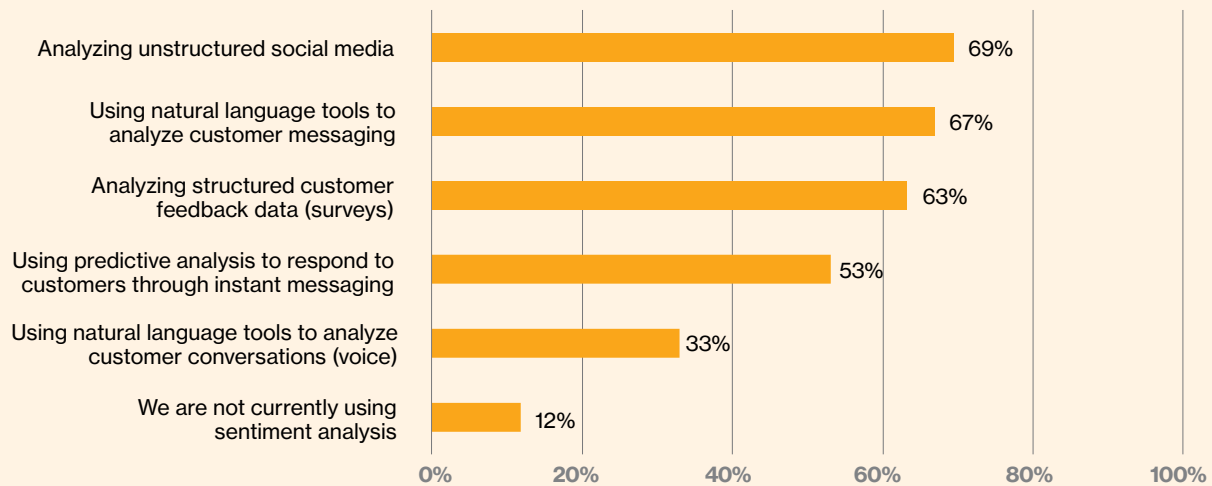
(% of respondents)

ALL RESPONSES

	Strongly agree	Agree
AI enables agents to spend more 'quality time' with customers	16%	74%
AI investments have allowed us to acquire stronger CX talent	41%	45%
Customers understand the importance of our technology to their experience	41%	42%%
Customers feel closer to us because of our efforts to improve CX	38%	44%%

(Scale: 0% – 100%)

CX LEADERS

	Strongly agree	Agree
AI enables agents to spend more 'quality time' with customers	68%	29%
AI investments have allowed us to acquire stronger CX talent	56%	41%
Customers understand the importance of our technology to their experience	55%	39%
Customers feel closer to us because of our efforts to improve CX	53%	44%

(Scale: 0% – 100%)

■ Strongly agree   ■ Agree

Source: MIT Technology Review Insights survey, 2018

Figure 12: Use of sentiment analysis tools

How are you using sentiment analysis in your CX processes?

(% of respondents)

Category	Value
Analyzing unstructured social media	69%
Using natural language tools to analyze customer messaging	67%
Analyzing structured customer feedback data (surveys)	63%
Using predictive analysis to respond to customers through instant messaging	53%
Using natural language tools to analyze customer conversations (voice)	33%
We are not currently using sentiment analysis	12%

Source: MIT Technology Review Insights survey, 2018

improving processes. Nicolas Wsevolojskoy, head of customer experience at **Cielo**, Brazil's largest payments and credit card operator, describes his company's AI progress as "a quest for efficiency, based in pragmatic AI, not the 'Hollywood' version of artificial intelligence."

For the past nine years, Cielo has been pursuing a technology strategy "with a simple objective of encapsulating transaction data and giving humans the tools," Wsevolojskoy says, to add more value to each transaction. Payment terminal clients at Cielo facilitate some 45% of all card transactions in the country. This provides Cielo with rich data on over 200 different industry sectors, which the company organizes to understand how each client in each vertical uses their terminals. "AI helps us define usage patterns," he says, which go into building algorithms that help sales agents guide customers through onboarding processes, develop pre-prepared customer offers for each sales channel and determine optimum next steps in the customer engagement journey.

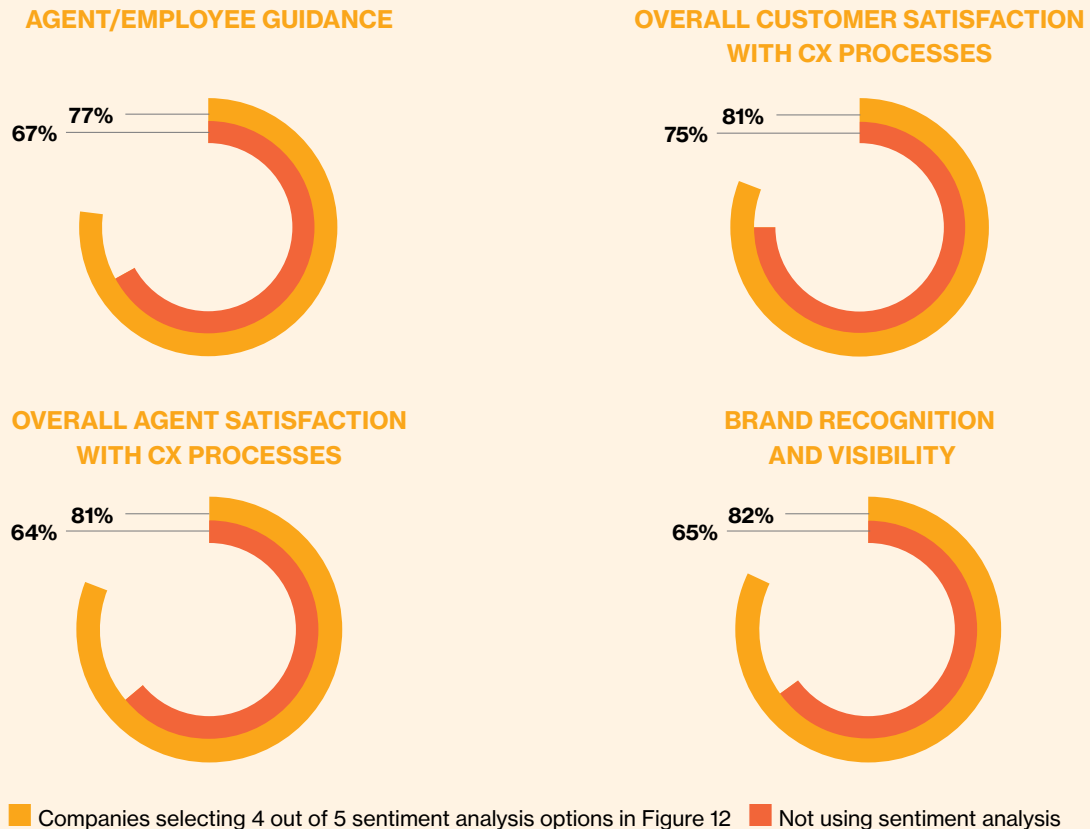AI-assisted customer engagement is a continuous process for Cielo, where "we try to

> **67% of customer experience leaders believe AI is allowing agents to spend quality time with customers versus 16% of respondents overall.**

assess customer satisfaction at each transaction, and overall," says Wsevolojskoy. The methods are simple field officer administered questionnaires, provisioned with AI-enabled apps on their smartphones "to measure NPS along each step of the journey, to increase the volume of data in the model." Cielo works to increase the number of checkpoints, correct inefficiencies and gather more data for understanding customers better. The algorithms, therefore, become a tool "to

Figure 13: CX and operational costs

To what degree have AI investments improved CX processes and contact center operations?

(% of respondents)

AGENT/EMPLOYEE GUIDANCE

67%   77%

OVERALL CUSTOMER SATISFACTION WITH CX PROCESSES

75%   81%

OVERALL AGENT SATISFACTION WITH CX PROCESSES

64%   81%

BRAND RECOGNITION AND VISIBILITY

65%   82%

■ Companies selecting 4 out of 5 sentiment analysis options in Figure 12   ■ Not using sentiment analysis

Source: MIT Technology Review Insights survey, 2018

increase customer intimacy," he notes, adding however that this is not a straightforward process. "Building emotion into a mathematical equation is a challenge we haven't quite tackled yet," he observes, in large part because the data that is gathered through various channels is in different formats and levels of depth.

Sentiment analysis makes a difference

Using sentiment analysis, particularly the use of voice recognition technology to analyze customer reactions during trans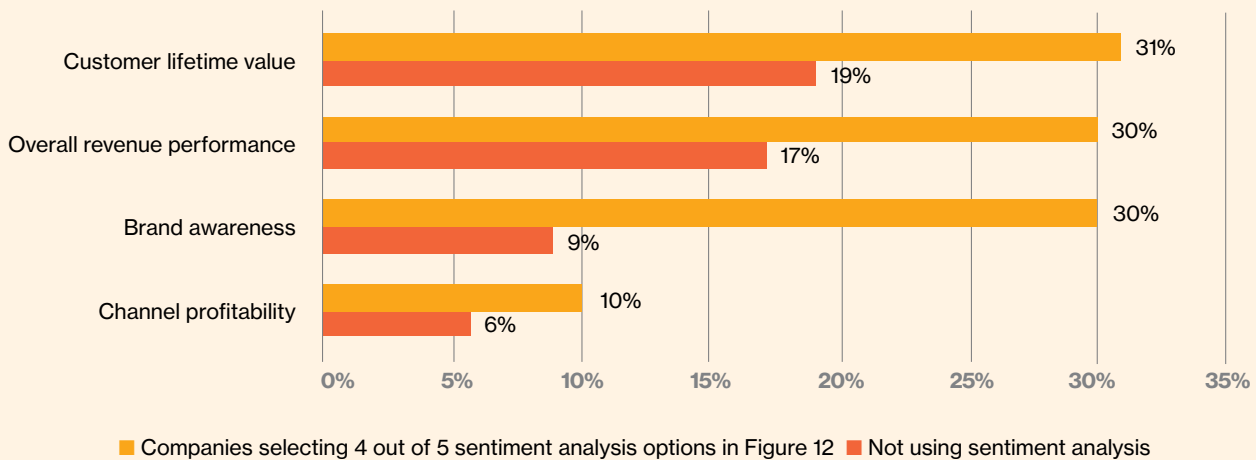actions, appears to have a distinct impact on a firm's ability to improve their brand perception and relationships—both with customers and customer agents.

Sentiment analysis is a powerful suite of capabilities that global respondents are deploying to deepen their understanding of their customers. More than two-thirds of respondents use it to analyze both structured (customer surveys) and unstructured customer feedback (social media conversations) and use natural language tools to parse instant messages from customers. Their use of natural language to gain insight from voice interactions is less developed (although more than half of customer experience leaders

Figure 14: Business results, by companies use of sentiment analysis

Can you quantify the change in the following business results in the last 12 months?

(% of respondents)

Customer lifetime value — 31% / 19%
Overall revenue performance — 30% / 17%
Brand awareness — 30% / 9%
Channel profitability — 10% / 6%

■ Companies selecting 4 out of 5 sentiment analysis options in Figure 12   ■ Not using sentiment analysis

Source: MIT Technology Review Insights survey, 2018

already do so), but overall sentiment capabilities are well-entrenched; less than 12% indicate that they do not use them at all.

Respondents that have widely deployed sentiment analysis tools also indicate higher levels of brand awareness and customer lifetime value than respondents that have not. Nearly a third of respondents with widely-deployed sentiment analysis indicate that both those metrics have increased by over 10% in the last year. All of these reported gains are much higher than those without such listening capabilities, but a clear gap can be seen in the relative levels of brand awareness. As digitally-native consumers increasingly take to social media channels to discuss their relationships with brands and their feelings about customer service levels, or simply to make comments when disappointed by customer agents performance on the phone, the

ability to capture those customer reactions and determine their true value to the relationship, is a powerful capability.

Another finding is that respondents that have embraced complex (voice) sentiment analysis tools indicate proportionately lower customer experience operational cost increases than respondents that have not deployed these tools. For the majority of respondents (two-thirds), operating costs are increasing, yet less than ten percent of those who have adopted advanced sentiment tools see significant (10% or more) cost increases, half the rate as those who have not. This isn't necessarily causality—earlier AI adopters are generally farther along their technology journeys—but it does suggest that customer experience technology leaders are likely more able now to see cost performance results from these investments.

6. Machine learning laboratory

Making chatbots and other AI tools to 'live the brand' is easier for firms that make digital efficiency core to their value proposition and use their own operations as R&D platforms.

Alibaba places great importance on ensuring that customer interfaces play a role in fostering emotional bonds with their customers. "Taobao is a playful, personable Internet brand," says Zhu, noting that from the icons used to interact with customers, to the light language that chatbots use, "the AI is constructed in a way to allow our customers to connect with our culture." This includes imitating human-to-human interaction patterns designed for Taobao customer transactions and sharing customer stories and photographs for special events.

While automation is no longer considered the core purpose of AI enhancements in customer experience management, the impact that even simple chatbot deployments are having on workloads and processes is proving to be profound. In many cases the transformation is such that entire new classes of jobs are being created, and the capacity being built is allowing leading firms to experiment further with business process transformation higher up the value stack.

"We emphasize effectiveness, not efficiency," says Hicham Naim, head of customer experience strategy and operations, for Europe and Canada for **Takeda Pharmaceutical**. He notes that the company does not try to profile customers, as doctors and other health care professionals in the pharmaceutical buying cycle are driven by complex and rapidly changing patient- or facility-dependent requirements. This makes traditional transactional metrics used to measure successful customer interactions irrelevant. Rather, the role of AI is to help the pharmaceutical company maintain an informed dialogue with its customers, "to be more open with them, and through this process we can understand customer needs more and do right by them." To emphasize this, he points out that the company does not even measure customer satisfaction as such, using instead a "customer experience quotient," which ranks a customer interaction along three vectors: trust, relevance, and simplicity.

Artificial intelligence, Naim believes, will allow them to eventually turn this proprietary view of customer experience into a much more nuanced tool. "AI can play a crucial role for us, once there is enough data," noting, however, that this is a process that will likely take years to carefully evaluate their options. "We have some 70 use cases to test, and we don't want to get 'pilot-itis', but innovation is tricky in our industry," he explains, adding that getting feedback from doctors is an exacting process; care and precision is needed to build up data sets in the privacy-conscious healthcare industry. As a result, "our industry is perhaps seven to ten years behind the FMCG industry [fast moving consumer goods]."

> "We have traditionally wanted to understand the ROI of our AI investments, but more and more the real value comes back to the role it plays in defining the connection between customers and their brand relationships."

Nick Holdsworth
Australian and International Service Delivery
Executive, Telstra

Dr. Albert Chan, vice president and chief of digital patient experience at **Sutter Health**, a not-for-profit healthcare network in northern California with 24 hospitals, over 50,000 employees and 12,000 physicians, agrees with this view. "Trying to measure [the emotional impact] of our efforts is tricky, as patient privacy requirements always create a tension with our analytic efforts," he says.

Customer experience executives interviewed for this report say that the insight gathered through AI is accelerating their understanding of the link between customer experience and brand. "We have traditionally wanted to understand the

ROI of our AI investments, but more and more the real value comes back to the role it plays in defining the connection between customers and their brand relationships," says Holdsworth at Telstra. Like Google, Facebook, and other tech firms leading the pursuit of customer experience insight through machine learning technologies, he sees Telstra's ongoing AI deployment as "an investment horizon which never ends."

To accelerate the effectiveness of their AI deployments, companies are using their own operations as R&D platforms for new strategies. Some examples include:

Deep dive: growth follows AI

Japanese e-commerce company Rakuten has an AI development roadmap that is split into three distinct phases. The first, similar to most consumer brands (and certainly online consumer brands) is to focus on routine tasks, so that most of its human operators are now only handling non-routine tasks. Rakuten has found that three-quarters of its inbound calls have now migrated to chatbots since the e-commerce conglomerate started introducing them into the customer service channels for external customers and employees across 70 different product and service lines in in April 2018. Ironically, however, this hasn't caused the expected change in transaction volumes. "Since implementing 24/7 chatbots, we've seen off-hour contact grow incredibly, adding 15,000 hours of conversations per month," says Masayuki Chatani, executive officer and general manager of the AI promotion department at **Rakuten**. The firm has also extensively employed chatbots to enhance internal processes: in Bangalore, which serves as the company's India headquarters and a center for its global IT support, chatbots assist its team with travel reservations and other HR functions. As of September 2018, the number of AI chatbots had reached more than 50.

The second phase of AI at Rakuten involves

rolling out decision support tools, such as a virtual shopping assistant prototype that the company has been trialing for its mobile customers using a voice recognition agent developed in-house, which maintains conversational context throughout a natural language shopping and purchasing process. In its envisioned third phase, Rakuten plans to introduce separate AI capabilities that provide collaborative business process execution support across business units and internal departments, "such as when an accounting AI requires contract signing by a legal AI, thus freeing human team members to engage in more creatively productive tasks," says Chatani.

For Rakuten, the ability for AI to "execute effectively against goals defined by humans" defines the progress made along a journey towards a more emotion-led response to customer care. As a large firm with varied product and service lines, "retention will always be challenging, and the expectation is that we will always be able to sort out a customers' issues in a short period of time." AI's key role, Chatani therefore believes, is to provide this support, so that ultimately, collaboration between AI and humans—both employees and customers—is optimal in every transaction.

- **Collaborating with technology vendors:** Sutter Health "offers technology partners a unique place to pilot and scale," says Dr. Chan, citing collaborations with early stage start-ups to mature technology firms such as Google. "We are focused on reducing friction for our patients, and use AI platforms including Google Home and Alexa to bring customer information to bear for operationalizing workflows in diagnostics and emergency care. These collaborations help connect patients to the right care, in the right place, and the right time."

- **Integrating AI R&D activities with ongoing business processes:** "We have access to a very large data lake with internal structured historical data, where most of our analysis and algorithms are built-on," says Jeferson Honorato, executive

superintendent at the Brazil-based digital banking company **Next**. Honorato explains that "customer interactions through email and chat are now being analyzed using NLP [natural language processing] to get the intention and mood of the customer, so we can prioritize them. We also analyze the customer behavior using the app to better define his or her journey."

- **Building up talent and capabilities internally:** Alibaba has a talent development path that takes front-line customer agents to become 'AI trainers' and work with analytics and engineering teams to coach virtual assistants on natural language paths and escalation procedures. The company has certified over 20,000 agents (its own, and those of ecosystem merchants and enterprises) as AI trainers.

Deep dive: building AI in a regulated environment

Djamel Mostefa is head of artificial intelligence at **Orange Bank**, the eponymous French telecommunications company's financial services arm launched in 2017, which offers a user-friendly range of free digital banking tools across its 100% mobile application. He describes the bank's AI roadmap as a journey in three stages, all rooted in increasing customer insight.

The first, says Mostefa, "is developing AI for better customer experience," citing the launch of Djingo, a natural language-based virtual assistant that is being used to answer customer inquiries and ultimately offer financial products. The second stage is ensuring that all data gathered through these interactions is funneled into the bank's Know Your Customer (KYC) process, and the third, while still in the planning stages, is about Robot Process Automation (RPA), for instance using AI to proactively assess risk and detect fraud. While this represents a complex

challenge, "many problems can be resolved with AI as long as you have enough quality data," he says.

The use of AI in the banking sector has to comply with different regulations that are in place at the European and national levels. Among the stipulations of the General Data Protection Regulation (GDPR) is that data must not be held for longer than is absolutely necessary for the exact purpose it was gathered. This presents a challenge, says Mostefa: "it is true that more data makes more effective AI systems, but we have to keep control on the data," and that some restriction on data usage, particularly in the financial services industry, will always be in place. "These are complex systems based on deep learning and artificial neural networks, and are still something of a black box, which does not always comply with the 'explainability' requirement in the banking sector for instance."
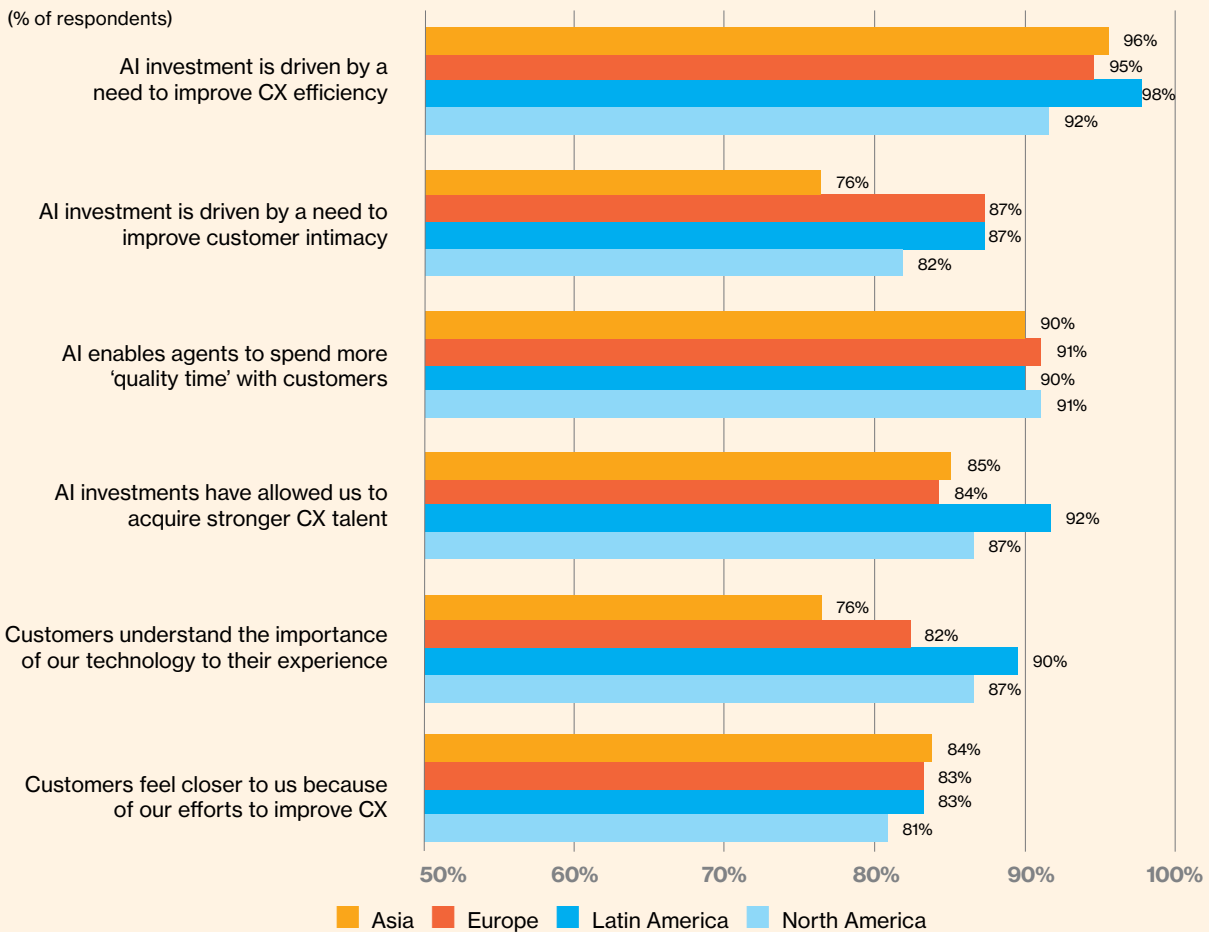
7. Regional comparisons

Regional, or even country-to-country, differences with regards to IT and communications infrastructure, regulatory and policy environments and cultural and customer preferences can have a significant impact on how companies use technology in their customer processes. For example, Nicolas Wsevolojskoy, director of customer experience at Brazilian credit card and payments firm Cielo, says, "Brazilians are not very confrontational, and so some customers will only indirectly indicate their dissatisfaction with us," noting that this makes it a challenge to analyze customer experience.

Often, it is assumed that firms in markets where talent is more expensive and less plentiful, and technology more pervasive—North America in particular, and Europe—more readily invest in and deploy customer experience solutions. This

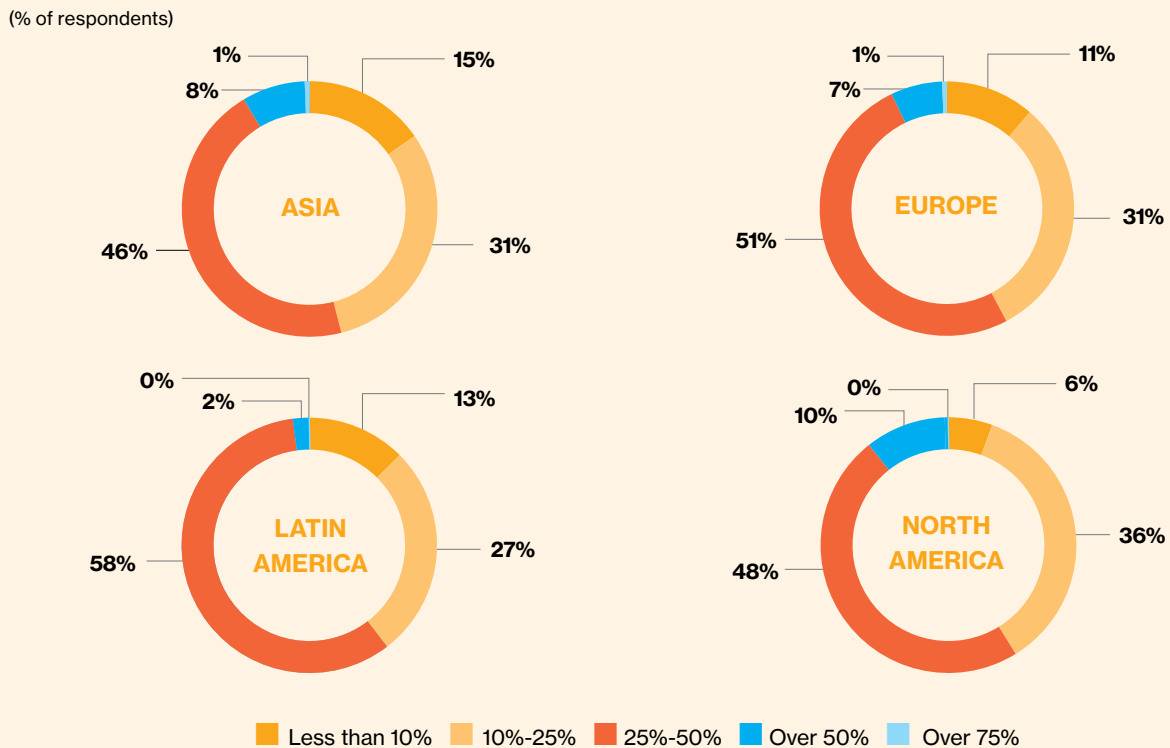## Figure 15: Strategic focus for AI investment, by region

To what extent do you agree with the following statements?

(% of respondents)

AI investment is driven by a need to improve CX efficiency
- Asia: 96%
- Europe: 95%
- Latin America: 98%
- North America: 92%

AI investment is driven by a need to improve customer intimacy
- Asia: 76%
- Europe: 87%
- Latin America: 87%
- North America: 82%

AI enables agents to spend more 'quality time' with customers
- Asia: 90%
- Europe: 91%
- Latin America: 90%
- North America: 91%

AI investments have allowed us to acquire stronger CX talent
- Asia: 85%
- Europe: 84%
- Latin America: 92%
- North America: 87%

Customers understand the importance of our technology to their experience
- Asia: 76%
- Europe: 82%
- Latin America: 90%
- North America: 87%

Customers feel closer to us because of our efforts to improve CX
- Asia: 84%
- Europe: 83%
- Latin America: 83%
- North America: 81%

Legend: Asia | Europe | Latin America | North America

Source: MIT Technology Review Insights survey, 2018

Figure 16: Automation of customer enquiries, by region

What percentage of customer inquiries are completely resolved by AI?

(% of respondents)

ASIA
1% · 8% · 15% · 31% · 46%

EUROPE
1% · 7% · 11% · 31% · 51%

LATIN AMERICA
0% · 2% · 13% · 27% · 58%

NORTH AMERICA
0% · 10% · 6% · 36% · 48%

Legend: ■ Less than 10% ■ 10%-25% ■ 25%-50% ■ Over 50% ■ Over 75%

Source: MIT Technology Review Insights survey, 2018

includes earlier adoption of AI, particularly in front line inbound query and digital channel management. Firms in Asian or Latin American markets, by contrast, are assumed to be later adopters for the opposite reasons.

While these trends were broadly visible in our survey's results, the level of divergence between respondents about their adoption of AI, and the extent to which this technology had contributed to improved customer experience, were much less significant than even recorded in the 2017 report on customer experience excellence, *Getting to Iconic*.

This observed convergence in customer experience technology adoption levels globally is likely the result of two interdependent reasons. The first is that, worldwide, consumers are broadly adopting smartphones and choosing internet-enabled channels to engage brands at the same pace. The second is that the expectations of digital consumers with regards to the speed, efficiency,

and quality of transactions have also accelerated in 'internet time'.

North American respondents, slightly more than their regional peers, indicate that their AI investments are defined by these rising customer expectations, as opposed to a quest for efficiency—recording the biggest differential between the two, amongst all regions.

These respondents also believe that their customers appreciate that their AI investments are important to their customer experience efforts, more so than respondents elsewhere, likely due in part to the relatively higher adoption of AI-enabled virtual assistants by consumers in the US and Canada. North American respondents are also much farther along in their use of automation to resolve customer transactions: one in ten respondents indicate that more than half of their inbound queries are completely handled by AI assistants.

Figure 17: Business results, by region

Can you quantify the changes in your business performance over the past 12 months?

(% of respondents reporting improvements)
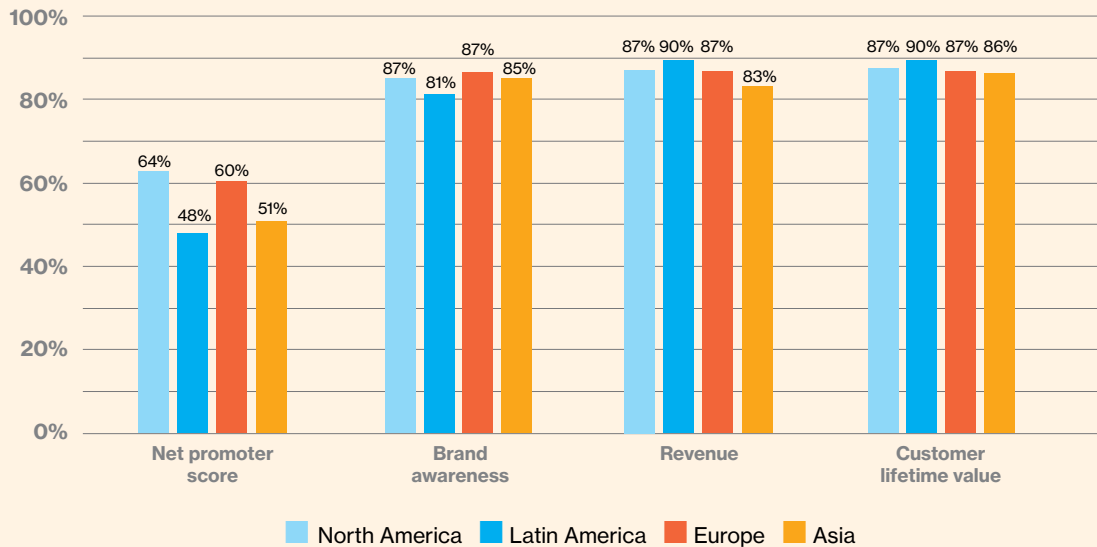
Source: MIT Technology Review Insights survey, 2018

European respondents have similarly high expectations from their AI investments, and in fact seem to believe even more in the ability of AI to increase customer intimacy than their North American peers. European respondents also believe strongly that their AI tools help them to build stronger customer experience talent, more so than their regional peers. They also lead regional respondents in having used AI to increase brand awareness over the last year, and generally track their North American peers in most other improvement measures, including significant improvement in NPS. Interestingly, however, European customer experience executives have lower expectations than others that AI will continue to deliver significant improvements in the coming year.

Latin American responses pose a bit of a quandary. Executives surveyed from the region indicate more so than their peers that efficiency, rather than intimacy, is the primary AI investment driver and have reported the lowest levels of automation in resolving customer transactions.

At the same time, Latin American respondents indicate the highest levels of revenue improvement, as well as customer lifetime value, suggesting that while they are slightly behind the AI adoption curve compared to their peers, they see relatively higher performance gains once they do deploy these tools.

Asian respondents share a strategic concern for efficiency over intimacy with their Latin American peers, but by contrast to them, their AI-enabled customer experience automation levels rival those of North American respondents, in terms of the percentage of customer queries resolved without a human agent interface. This is likely due to the large scale of AI-assisted touchpoints required to service populous, digitally-savvy markets—particularly China. Asian respondents also largely track their peers in terms of measured improvements to date and have greater confidence than most other regional respondents that AI will contribute to significant brand awareness and customer lifetime value performance in the year ahead.

8. Conclusion

This report, *Humans + bots: Tension and opportunity*, has examined how companies across the world use AI through their customer journey and the business and customer benefits being delivered as a result. The global survey of 599 executives and a series of expert interviews has revealed the following key findings:

1) **Ninety percent of companies are deploying AI across some aspect of their customer journey.** Yet the scale of adoption is far greater in companies that are leaders in customer experience. Some two-thirds of customer experience leaders report significant investments in AI, compared to less than one-third overall. Similarly, AI adoption is higher at large organizations. More than 40% of companies with more than 30,000 employees have made significant investments in AI in front-line customer processes as well as analytics.

2) **AI investment is driven by efforts to improve efficiency and, at leading companies, also customer intimacy.** Efforts to boost efficiency are delivering dramatic results in customer satisfaction and process speeds, which is why the majority of companies are focusing their AI efforts here. Customer experience leaders are also increasingly using AI to focus on building customer intimacy—focusing on analytics and sentiment analysis to deepen their knowledge of customers and continually deliver more tailored and personalized services.

3) **Companies experience dramatic volume growth following the deployment of AI in customer contact channels.** Despite receiving poor initial feedback on AI in customer channels, companies have persevered and are now reaping the benefits. Executives interviewed for this research topic report that call and other customer interaction volumes have grown dramatically following the launch of AI tools.

4) **Faster call processing and complaint resolution are reported by nine out of ten companies.** Nearly 90% report that they have recorded measurable improvements in the speed of complaint resolution, and over 80% have noted enhanced call volume processing using AI. On average, between 25% and 50% of customer inquiries are fully handled by automated channels.

5) **Gains in customer satisfaction are improving revenue performance.** Some 80% of survey respondents report measurable improvements in customer satisfaction in service delivery and contact center performance. This, for 70% of survey respondents, is leading to an increase in customer lifetime value of 5% or more in the past 12 months.

6) **Operational costs are up, as companies continue to invest in their customer channels.** Customer service and contact center operating costs have increased at 60% of the companies overall. This figure is even higher in customer experience-leading firms, some 80% say their opex has increased in the last 12 months. Throughout the survey, data shows that companies are prioritizing revenue generation over channel profitability.

AI as a tool for increasing customer satisfaction and business performance is here to stay. Indeed, the companies that benefited from first mover advantage are now reaping the greatest rewards, not only in terms of efficiency and scale but also in terms of brand recognition from being perceived as technology leaders. In a highly competitive global marketplace, this survey finds that technology is continuing to be a point of differentiation between the best, and the rest.

About MIT Technology Review Insights

For more than 100 years MIT Technology Review has served as the world's longest-running technology magazine, the standard bearer of news and insights on how the latest technologies affect the world around us. Read by a global community of innovators, entrepreneurs, investors and executives at the highest level, it offers an unrivaled authority that is backed by the world's foremost technology institution, and features editors with a deep technical knowledge and understanding of technological advances.

MIT Technology Review Insights is the content solutions division of MIT Technology Review. It includes two main divisions: Research and Live Events. Aligned with the same stellar editorial heritage and standards as the magazine itself, we leverage our access to a wide network of subject matter experts and leading content contributors to create custom content for clients who want to reach new audiences with relevant, cogent and high-quality stories and experiences to users wherever they want it—in digital, print, online, and via unique in-person experiences.

From the sponsor

Genesys® powers more than 25 billion of the world's best customer experiences each year. Our success comes from connecting employee and customer conversations on any channel, every day. Over 10,000 companies in more than 100 countries trust our #1 customer experience platform to drive great business outcomes and create lasting relationships. Combining the best of technology and human ingenuity, we build solutions that mirror natural communication and work the way you think. Our industry-leading solutions foster true omnichannel engagement because they perform equally well across channels, on-premise and in the cloud. Experience communication as it should be: fluid, instinctive and profoundly empowering.

Visit genesys.com on Twitter, Facebook, YouTube, LinkedIn and the Genesys blog.

MIT Technology Review

🌐 insights.techreview.com

🐦 @techreview @mittr_insights

✉ insights@technologyreview.com