CHATBOTS IN BANKING

WHAT INCUMBENT BANKS NEED TO KNOW
TO MAKE THIS TRENDING TECHNOLOGY
WORK TO THEIR ADVANTAGE

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KEY POINTS

- **Incumbent banks today are facing increasing pressure to remain competitive, as challenger banks and fintech startups crowd the once-cavernous space.** The biggest threat to legacy players comes in the form of digital-savvy entrants that lure in consumers with user-friendly offerings.

- **To remain competitive, these legacy players must innovate digitally.** Chatbots — computer programs that typically use text-based live chat as an interface through which to carry out a task for a consumer on behalf of a business — are emerging as an inexpensive way to introduce digital products to retail banking.

- **Banks can build chatbots in two ways.** They can either partner with a third-party developer and use an external channel to host the chatbot, or, less commonly, they can build a chatbot in-house and host it within their banking app.

- **While chatbots undoubtedly have the potential to solve at least some of legacy banks' existing problems, they still have risks attached to them.** If legacy banks don't properly navigate strategic, consumer, and technical risks, chatbots can create new problems for banks —namely, they can tarnish a bank's reputation or diminish customer loyalty, which players in the industry rely on heavily.

- **The benefits of legacy banks implementing chatbots outweigh the risks.** A chatbot will be a worthwhile investment for a legacy bank if it can effectively automate a currently manual task. To do so, it must execute that task more quickly and cheaply than a human could, without undermining the quality of service customers receive.

- **Legacy banks should implement chatbots in areas where many humans are performing basic and time-consuming tasks.** This will allow them to cut down on salary and benefit costs, improve back-office efficiency, and deliver better customer care.

Download the charts and associated data in Excel »

INTRODUCTION

Banks are facing increasing competition from new, digitally savvy players — like Prosper, Stripe, and Wealthfront — that have found success attracting consumers with user-friendly offerings. At the same time, large legacy banks are finding it difficult to invest in developing innovative products that could level the playing field. That's due in part to market volatility that's hurting demand for key products like loans, and in part because challenger banks, as digitally native startup lenders are known, are less restricted by regulations that force incumbents to spend heavily on compliance and maintain large capital cushions.

To remain competitive in the space, legacy banks must adapt their traditional services by incorporating digital offerings that will attract tech-savvy customers. And one potential way to meet this goal is already emerging with chatbots — software programs that use business-to-consumer (B2C), text-based messaging as the interface through which to carry out any number of tasks.

While chatbots have been around for some time, the confluence of three trends is causing them to proliferate across industries, ranging from retail to banking: advancements in underlying technology, namely artificial intelligence (AI); the growing popularity of messaging apps, which can be used to host chatbots; and a growing consumer acceptance of chatbots.

Chatbots appeal particularly to incumbent banks because they can improve both back-office and consumer-facing functions. They provide an inexpensive means of digital innovation; they're cheaper to build than apps because they require less code; and they allow the automation of many currently manual services, cutting down on staff and salary expenditure. They can also execute simpler tasks for consumers, thereby freeing up employees' workloads and enabling them to deal more efficiently with complex inquiries.

However, there are still challenges related to chatbots that banks, in particular, have to navigate carefully before building them. These include strategic risks such as data security and a potentially weakened relationship between customer and brand. There is also the danger of misunderstanding what users want and whether chatbots can effectively deliver these services. Technological risks also abound, some of which stem from the lack of "human" skills like sympathy and empathy in AI at present, while others are due to the rapid pace at which AI algorithms evolve.

Despite these hurdles, chatbots' benefits will likely outweigh the risks that legacy banks may encounter. However, these benefits are conditional. Chatbots are more likely to be embraced if they're used to complement staff rather than replace them completely — customers still value the human element that legacy banks offer.

In this report, BI Intelligence examines the functionalities that make chatbots a valuable technology for businesses and legacy banks, in particular. The report also assesses the strategic, consumer, and technological risks banks must take into account when building a chatbot.

THE DEVELOPMENT AND PROLIFERATION OF CHATBOTS

Chatbots are computer programs that typically used text-based live chat as an interface through which to carry out a task for a consumer on behalf of a business. The concept of chatbots is an old one, but chatbots as we presently know them are fairly nascent; most AI-powered chatbots across industries have been rolled out since 2014. Since then, chatbots have evolved from offering primarily text-based interactions to accommodating point-and-click interactions, which are more seamless.

For example, shopping startup Spring launched a chatbot that it calls "a personal shopping assistant." It's hosted on Facebook Messenger and enables users to find and purchase clothes within a conversation. The chatbot will, for instance, ask a user, "What do you think of these?" along with an image of a product — say, a pair of sneakers — and allow the user to select one of three options: "Buy this item," "See more like this," or "Ask a question." The user then interacts with the chatbot by clicking on the relevant response.
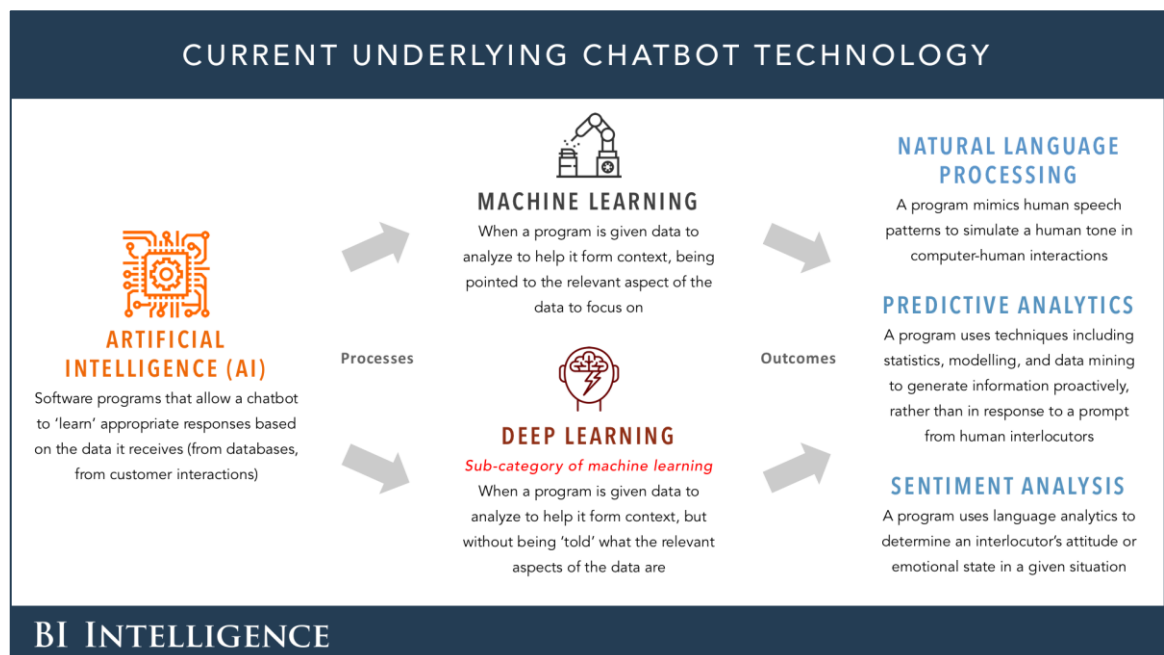
As the AI powering chatbots improves, and as developers find ways to enhance the user experience, chatbots will further proliferate across industries. There are a number of factors that will lead to further adoption of chatbots by both enterprises and users.

Improvements To The User Experience

AI is a branch of computer science that develops algorithms that learn from vast data sets and their own interactions with users by extracting meta patterns. While chatbots don't necessarily have to be powered by AI, almost all new ones are, largely because of the advantages this technology now offers compared with scripted responses, which were the norm for earlier chatbots.

- AI-powered chatbots are getting better at contextualizing information. Advances in machine learning (ML) and deep learning (DL) mean that chatbots can now detect patterns and generate appropriate responses more accurately, resulting in a more seamless interaction with users.

- Deep learning allows for more complex behaviors, such as sentiment analysis, predictive analysis, and natural language processing (NPL), allowing businesses to introduce more functions to their chatbots and thus addressing a wider range of consumer needs and demands.

While most legacy banks are using external developers' AI-powered chatbots, such as IBM's Watson or Kasisto's KAI, keeping this work in-house can result in a solution that's better tailored to the bank's customer base. This allows for more personalized products that are more relevant to consumers than one-size-fits-all solutions.

CURRENT UNDERLYING CHATBOT TECHNOLOGY

ARTIFICIAL INTELLIGENCE (AI)
Software programs that allow a chatbot to 'learn' appropriate responses based on the data it receives (from databases, from customer interactions)

Processes

MACHINE LEARNING
When a program is given data to analyze to help it form context, being pointed to the relevant aspect of the data to focus on

DEEP LEARNING
Sub-category of machine learning
When a program is given data to analyze to help it form context, but without being 'told' what the relevant aspects of the data are

Outcomes

NATURAL LANGUAGE PROCESSING
A program mimics human speech patterns to simulate a human tone in computer-human interactions

PREDICTIVE ANALYTICS
A program uses techniques including statistics, modelling, and data mining to generate information proactively, rather than in response to a prompt from human interlocutors

SENTIMENT ANALYSIS
A program uses language analytics to determine an interlocutor's attitude or emotional state in a given situation

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The Growing Popularity Of Messaging Apps

Chatbots don't have to be hosted on messaging apps, but their frequent usage and vast customer bases provide businesses with an effective medium through which they can integrate themselves into consumers' daily routines. Businesses are also more likely to effectively reach out to potential customers; because chatbots operate within an app a user may already have on his or her smartphone, they are easily accessible.
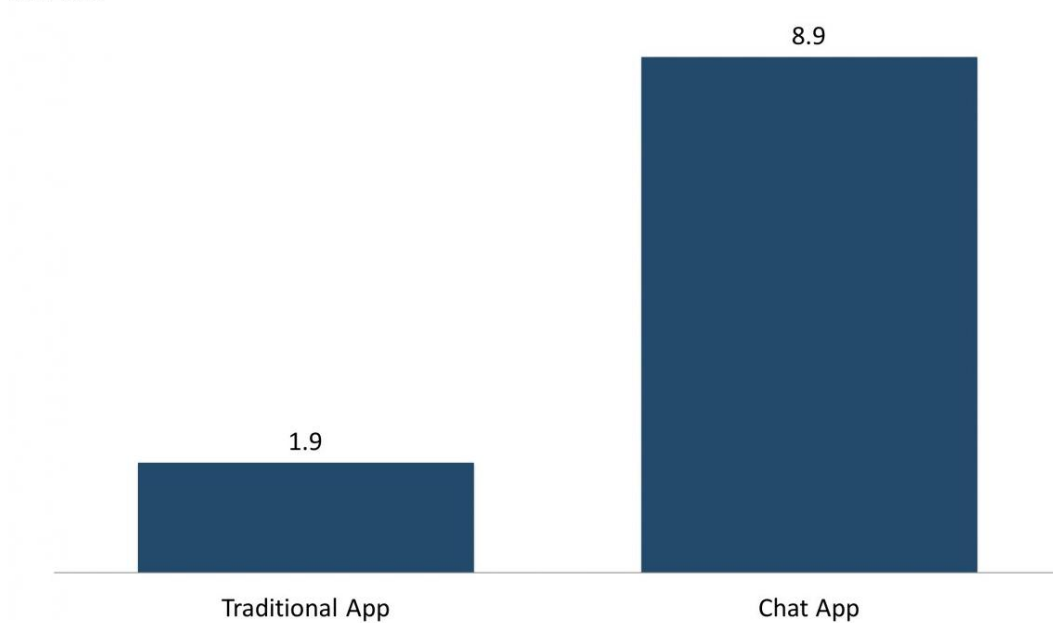
There are several key data points that support the idea that messaging apps are ideal hosts for chatbots:

- The top three messaging apps attract more than 3 billion users daily.

- Consumers spend 85% of their time on smartphones within apps, but only a small number of apps see frequent usage, according to Nielsen. Apps with the most usage are messaging apps and include Facebook Messenger, WeChat, WhatsApp, Snapchat, and Viber.

- Live chat's 73% customer satisfaction rating is the highest among all methods consumers can use to connect with businesses, according to a study by eDigital Research.

- Most importantly for banks, 53% of customers surveyed by Ovum identified the quick resolution of problems as the top reason they prefer to be contacted by service providers via chat apps.

If banks tailor their services to customer preferences, which chatbots allow them to do, they will likely increase uptake and secure customer loyalty.

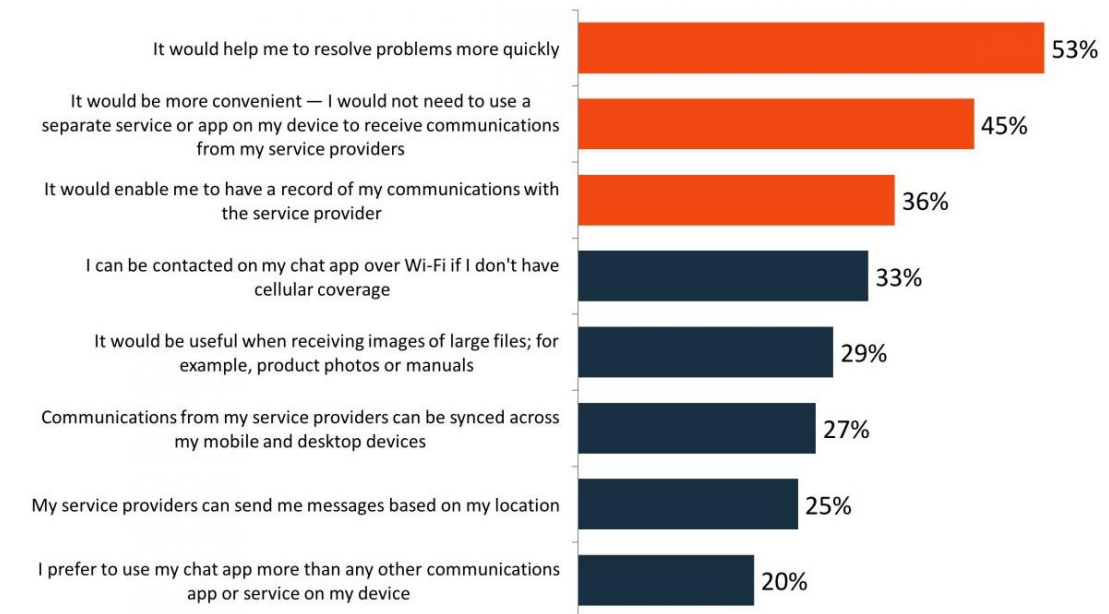## Average Number Of Daily Sessions, Traditional App Vs. Chat App
2014 - 2015

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                      Traditional App              Chat App
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Reasons Consumers In The US And Germany Want To Be Contacted By Service Providers Over Chat
2016

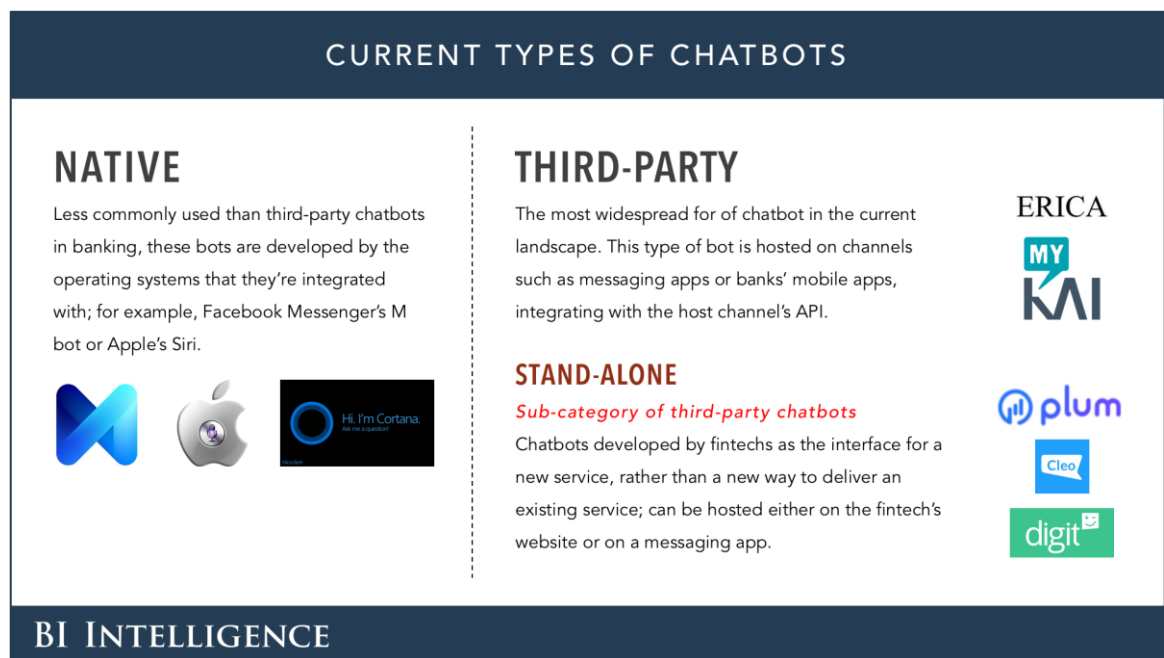|	
It would help me to resolve problems more quickly	53%
It would be more convenient — I would not need to use a separate service or app on my device to receive communications from my service providers	45%
It would enable me to have a record of my communications with the service provider	36%
I can be contacted on my chat app over Wi-Fi if I don't have cellular coverage	33%
It would be useful when receiving images of large files; for example, product photos or manuals	29%
Communications from my service providers can be synced across my mobile and desktop devices	27%
My service providers can send me messages based on my location	25%
I prefer to use my chat app more than any other communications app or service on my device	20%

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Growing Customer Acceptance Of Chatbots

Growing consumer enthusiasm for chatbots, and specifically for using them to communicate with businesses, is prompting more service providers to roll out the technology. **Acceptance of chatbots is growing particularly quickly among millennials, which will be useful for banks as they look to attract new customers.**

- A new study by data firm Survata shows that millennial message-app users, in particular, are warming up to chatbots: 55% said they had had a positive chatbot experience via a messaging app, and the same share said that using a chatbot had improved their perception of a business. This will help banks in targeting the next generation of customers.

- The same study also found that nearly 30% of all respondents have used a chatbot to speak to a service provider, and 26% of all respondents would prefer to communicate with a business via live chat or chatbot, compared with 25% who would opt for text messaging.

CURRENT TYPES OF CHATBOTS

NATIVE

Less commonly used than third-party chatbots in banking, these bots are developed by the operating systems that they're integrated with; for example, Facebook Messenger's M bot or Apple's Siri.

THIRD-PARTY

The most widespread for of chatbot in the current landscape. This type of bot is hosted on channels such as messaging apps or banks' mobile apps, integrating with the host channel's API.

STAND-ALONE
Sub-category of third-party chatbots

Chatbots developed by fintechs as the interface for a new service, rather than a new way to deliver an existing service; can be hosted either on the fintech's website or on a messaging app.

ERICA
MY KAI
plum
Cleo
digit

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Chatbot Types

There are two principle types of chatbots for businesses to choose from.

- **Third-party chatbots.** Third-party chatbots are most commonly used by businesses. These can be developed either in-house or for a business by an external developer, but they're always hosted on a third-party channel, such as a messaging app, rather than within the business's own app. Businesses prefer this type of bot because it's cheaper to develop and can later be deployed across multiple apps.

- **Native chatbots.** Native chatbots are developed in-house and operate only on the operating system or platform within which they were built. A well-known example is Apple's Siri, or Facebook Messenger's M bot.

While most incumbent banks are using third-party chatbots for the benefits outlined above, native chatbots offer an advantage despite their greater expense and more limited reach. They're not exposed to external parties' security flaws, and don't risk disintermediation between a business and its customers by introducing a third party into B2C interactions.

DRIVERS OF LEGACY BANKS' USE OF CHATBOTS

The majority of incumbent banks are still in the experimentation or deployment phase of chatbot implementation and few bank chatbots have evolved into fully mature and well-tested products. Currently, these legacy players seem to be keeping their chatbots to a small scale, scrapping ideas if they prove unsuccessful, and pivoting further efforts to areas where chatbots prove useful.

CURRENT CHATBOT USE CASES BY INCUMBENT BANKS

NAME OF BANK	GEOGRAPHY	LIVE?	CHANNEL; UNDERPINNING TECHNOLOGY	PURPOSE (CHATBOT NAME IN CAPS)
Bank of America	US	Launched October 2016	B of A mobile app; unknown	ERICA will give customers key real-time updates on their finances using a channel of their preference.
RBS The Royal Bank of Scotland	UK	Available to 10% of customers from December 2016	RBS website; IBM's Watson Conversation	LUVO will lighten the workload for human employees, freeing them up to handle more complex customer enquiries. Uses sentiment analysis not to generate an emotionally realistic response, but to gauge the urgency of a query.
ABSA	South Africa	Piloting since May 2016	Twitter; unknown	To answer simpler financial queries; to free up human staff for more complex enquiries; to use customer interactions to determine what topics come up most often and offer more targeted advice in the future.
Точка	Russia	Launched July 2016	Facebook Messenger Angry Developers LLC	To help customers with general enquiries such as locating ATMs; to let customers ask about their personal finance; and to allow customers to make transactions.
DBS	Singapore, India	To be launched in Singapore by end of 2016	Facebook Messenger, later WhatsApp And WeChat; Kasisto's KAI	MY KAI will allow customers to conduct transactions (transfers, pay bills) as well as ask about their personal finance.
CaixaBank	Spain	Launched in April 2016	IBM's Watson	CaixaBank's foreign-trade specialists taught Watson Spanish, which it now uses to answer specific queries based on large amounts of data and relating to international commerce. For example: "What is the safest payment mode for an exporter?"
Swedbank	Sweden, Estonia, Latvia, Lithuania	Launched in April 2016	Swedbank's website and mobile app; Nuance's Nina	NINA helps answer customer queries more quickly by sourcing information relevant to their query using intuitive analysis.

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While more industries are now using chatbots more for the reasons discussed above, the banking industry in particular has seen a flurry of activity around this technology in the past year. This is due to a confluence of several factors specific to the banking industry.

Increasing Competition

Incumbent banks are facing competition from many new entrants in the space. Because this competition is coming from digitally savvy players like challenger banks and fintechs, and because these competitors are gaining market share by offering consumers more streamlined solutions, banks must innovate digitally in order to compete successfully.

Incumbents' new rivals are doing so well because they're responding to consumer demand for online services, and for these digital services to be free, easy, and fast to use. Chatbots are a way of onboarding new technology to roll out these services and products to consumers. Take, for example, fintech startups such as Plum, Digit, and Cleo, which are deploying chatbots to drive microsaving — putting small amounts into savings accounts every few days for the user. These companies' chatbots are the core product, rather than supplements to a core product, as they are for most legacy banks.
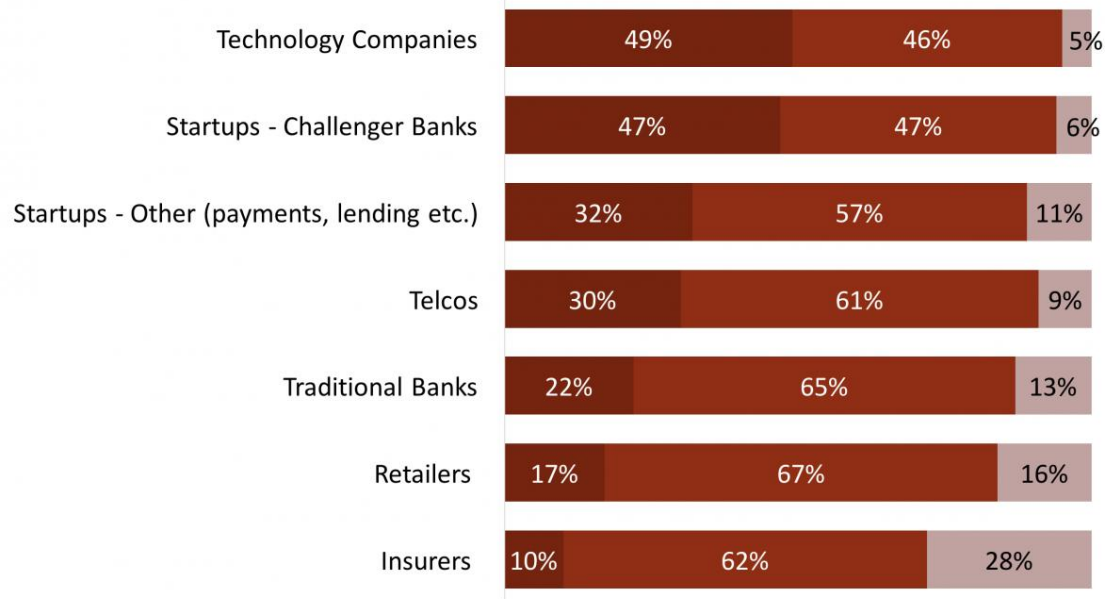
However, incumbent banks have not yet lost the battle to fintechs and challenger banks. The fact remains that while consumers might want the new services that startups offer, they don't trust the emerging providers themselves. Only 23.6% of consumers say they trust fintechs, compared with 36.6% who say they trust traditional firms, according to Capgemini.

Incumbents can therefore capitalize on their established reputations and consumer trust by using new technologies like chatbots to deliver the services that customers want but don't trust new market entrants to securely provide.

Threat Of Disruption To Retail Banking From Different Market Participants

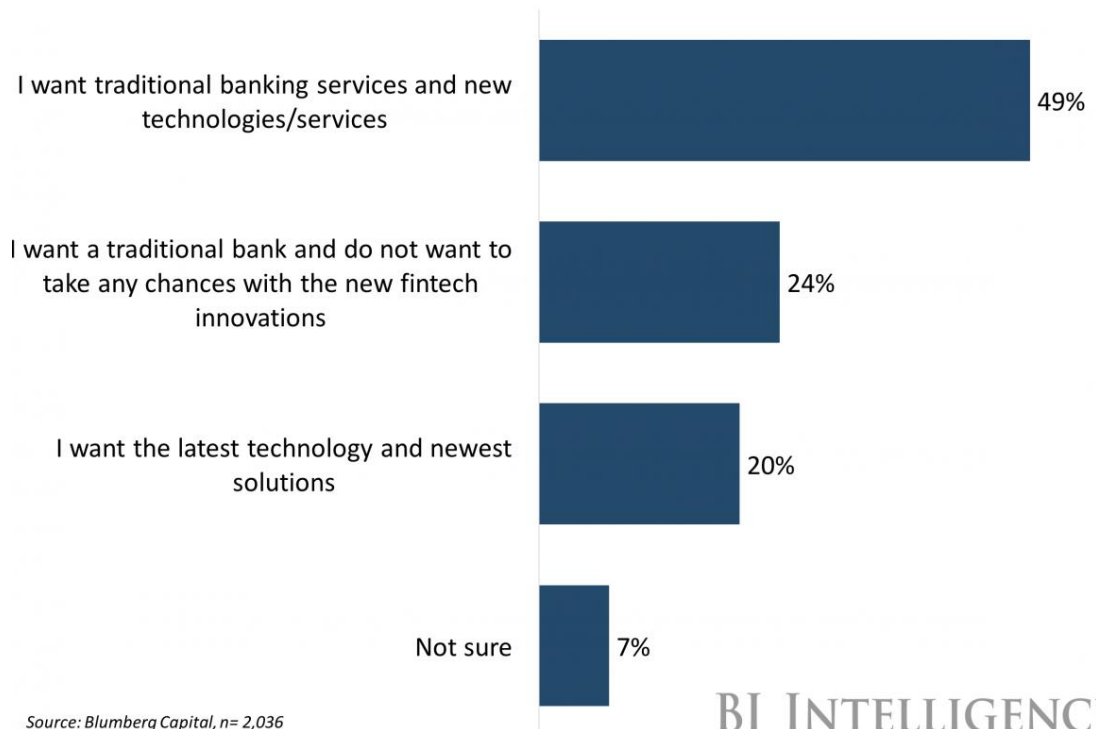*Global banking execs, 2016*

■ High ■ Neutral ■ Low

Participant	High	Neutral	Low
Technology Companies	49%	46%	5%
Startups - Challenger Banks	47%	47%	6%
Startups - Other (payments, lending etc.)	32%	57%	11%
Telcos	30%	61%	9%
Traditional Banks	22%	65%	13%
Retailers	17%	67%	16%
Insurers	10%	62%	28%

Source: EFMA-Infosys, n=158

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US Consumer Banking Preferences

2016

Preference	%
I want traditional banking services and new technologies/services	49%
I want a traditional bank and do not want to take any chances with the new fintech innovations	24%
I want the latest technology and newest solutions	20%
Not sure	7%

Source: Blumberg Capital, n= 2,036

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Shrinking Budgets

Increasingly, banks not only have to digitally innovate, but to do so frugally as a result of regulatory burdens and higher capital requirements.

Between 2008 and 2015, for example, the annual volume of regulatory publications increased 492%, according to Thomson Reuters data. Many of these new rules and regimes, including Basel III, Dodd-Frank in the US, and MiFID II in Europe, are extensive and complex. That gives rise to copious amounts of supplementary documents detailing how they must be enforced.

In response to these measures, banks are spending much more on compliance teams. In the UK, financial services providers now spend between £10 billion and £20 billion ($13 billion to $25 billion) annually on regulatory compliance. In that context, innovation must come relatively cheap. **Chatbots appeal to banks because they are a digital solution that is relatively inexpensive to develop and maintain.**

Here are some of the advantages they provide:

- They're cheaper to develop because they require less coding than stand-alone banking apps. They are an easier way of transitioning into digital than a full IT overhaul.

- They can also make use of existing messaging apps as platforms, saving banks the trouble of developing their own channels to host them on.

- They are cloud-based, updating automatically on user's phones as well as saving banks money on data storage.

- They allow banks to make use of one of their most valuable resources, their vast troves of customer data. Their underlying AIs can crunch these data to deliver more tailored products and services for customers, based on their past requests and usage patterns.

Automation

Chatbots automate many services that are currently manual within banking, both in back offices and on the front end. They thus allow banks to cut down on human staff, and hence on salary expenditures. In the US alone, for example, 29% of customer service positions could be automated, resulting in annual savings of $23 billion, according to Public Tableau data. This number doesn't account for further savings from cutting costs on benefits such as health insurance for each employee.

Chatbots can work 24/7, unlike human staff, which means both that they can process more customer inquiries, and that they can adapt themselves to customers' timetables, unlike human staff who can only offer services during a bank's working hours. By taking over the processing of more basic customer inquiries, chatbots can free up human staff to deal more thoroughly with more complex customer problems, thus providing better customer experience and using time more efficiently.

A quality human customer experience is something consumers still want but digital-only challengers don't offer. **Chatbots can help legacy banks compete by allowing human staff to dedicate more time to individual customers' most difficult problems.**
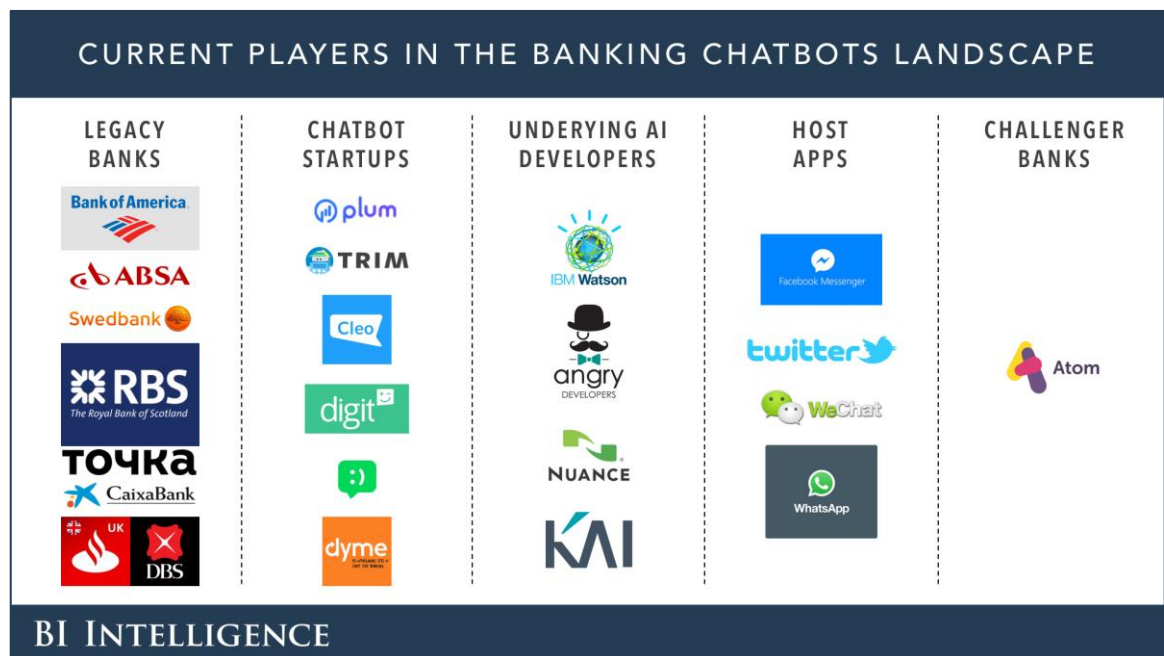
RISKS AND RECOMMENDATIONS

When it comes to implementing chatbots, the stakes are high for banks, and for incumbents in particular. This is because while new-entrant banks are attractive to consumers in many ways, they still don't have a reputation for trustworthiness like incumbents do. Given their well-established reputations and customer loyalty, legacy banks have more to lose by introducing new technology that's not well-received by customers. That's especially the case when it comes to technology that deals with customer data. And because banks offer an ongoing service rather than one-off products, customer retention is more important within this industry than it is in some others.

Incumbent banks considering launching a chatbot should keep an eye out for current use cases by their peers. These are increasingly pointing to unresolved questions and risks around the technology that ought to be addressed and avoided. It's important to note that some of the same developments that are boosting chatbot use and making chatbots more appealing are also creating new risks for banks.

Strategic Risks and Recommendations

Potential disintermediation. Using third-party chatbots means customers may lose sight of their bank's brand during interactions, thereby weakening brand loyalty.

- Banks can reduce this risk by ensuring that their brand is highlighted throughout chatbot interactions, perhaps by making the bank's logo prominent on a user's screen.

- Bank of America, for example, in April 2016 had initially planned to launch its chatbot with Facebook Messenger. However, when it finally unveiled its chatbot, Erica, in October, it emerged that the bot would be deployed in-app. This suggests that the bank considered the risk of disintermediation posed by an external app to be too great, and possibly that it had qualms about the third party's security measures.

Ensure data protection. Third-party chatbots make end-to-end encryption, which normally protects customer data in transit between the bank and a customer's device, impossible.

- For a third-party chatbot to work, it has to be given access to a customer's data, meaning that this data becomes exposed to the messaging app's system. A messaging app's security policy may be far more permissive than a bank's, which could make banks' users reluctant to engage with a chatbot.

- Some incumbents are dealing with this by rolling out chatbots in-app instead — one example of this is Swedbank. Yet others use data anonymization and read-only access to data instead. Banks using third-party chatbots should in any case consider consulting regulatory bodies to improve oversight of their product.

- Incumbents such as UBS are also beginning to experiment with "screenless chatbots", by offering their services through voice assistants such as Alexa, which is hosted on Amazon Echo, a wireless speaker. Banks will have to carefully consider how to move to screenless channels while maintaining data security, perhaps by using biometrics such as voice recognition.
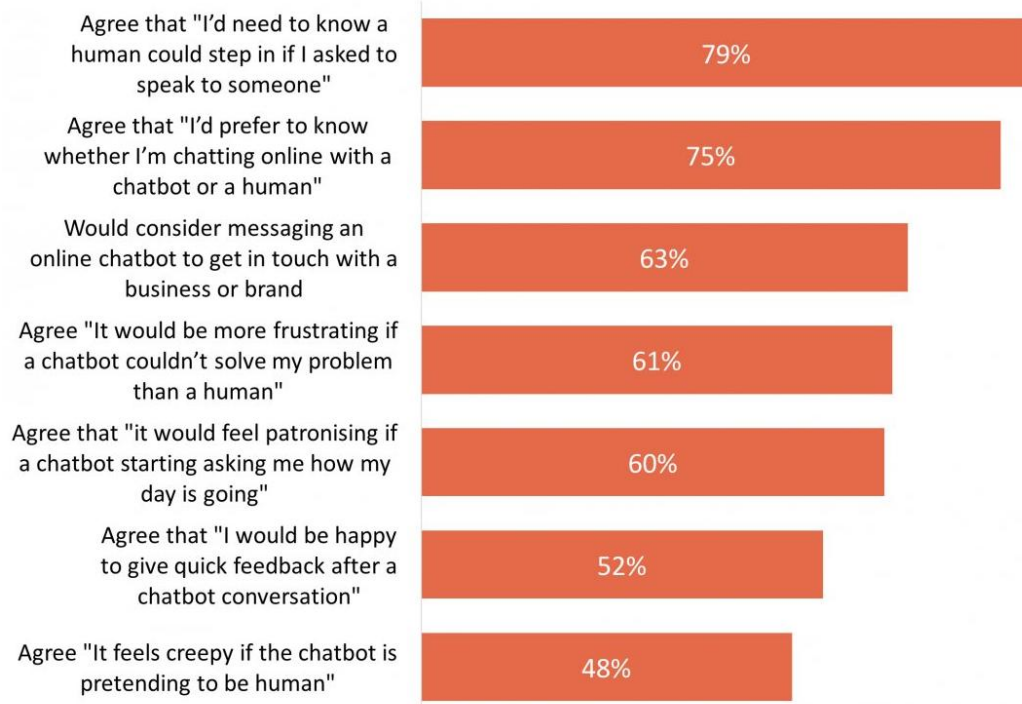
Consumer Risks And Recommendations

Lack of customer education. The popular conception of AI and chatbots is conversational, but in reality they are still weak in this area. Customers might be disappointed with the more mundane tasks bots can actually achieve in their current state. Banks should take measures to explain the exact purpose and capacity of their chatbots, as well as teach customers how to use them. Indicatively, 8% of consumers think AI is still only a science-fiction concept, and "robot" is still the predominant association with AI, according to a global survey by Weber Shandwick.

This confusion is further exacerbated by the fact that the terminology surrounding chatbots and AI is still in flux, with terms being used interchangeably. For example, TD Bank, a Canadian and US incumbent, was the first legacy institution to use Facebook Messenger to communicate with its customers. When it launched this service, it was often referred to as a "chatbot." However, customers were still speaking to human staff, but via live chat than a phone, and still only between the bank's working hours. Banks should be careful about how they market and the media report their new products.

Smartphone Users' Attitudes Towards Chatbots
*UK, 2016*

Attitude	Percentage
Agree that "I'd need to know a human could step in if I asked to speak to someone"	79%
Agree that "I'd prefer to know whether I'm chatting online with a chatbot or a human"	75%
Would consider messaging an online chatbot to get in touch with a business or brand	63%
Agree "It would be more frustrating if a chatbot couldn't solve my problem than a human"	61%
Agree that "it would feel patronising if a chatbot starting asking me how my day is going"	60%
Agree that "I would be happy to give quick feedback after a chatbot conversation"	52%
Agree "It feels creepy if the chatbot is pretending to be human"	48%

Source: Mindshare, n = 1,000

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Consumers' Level Of Knowledge About Artificial Intelligence
% of global consumers, 2016

Know a lot about, 18%

Know a little about, 48%

Don't know anything about, 34%
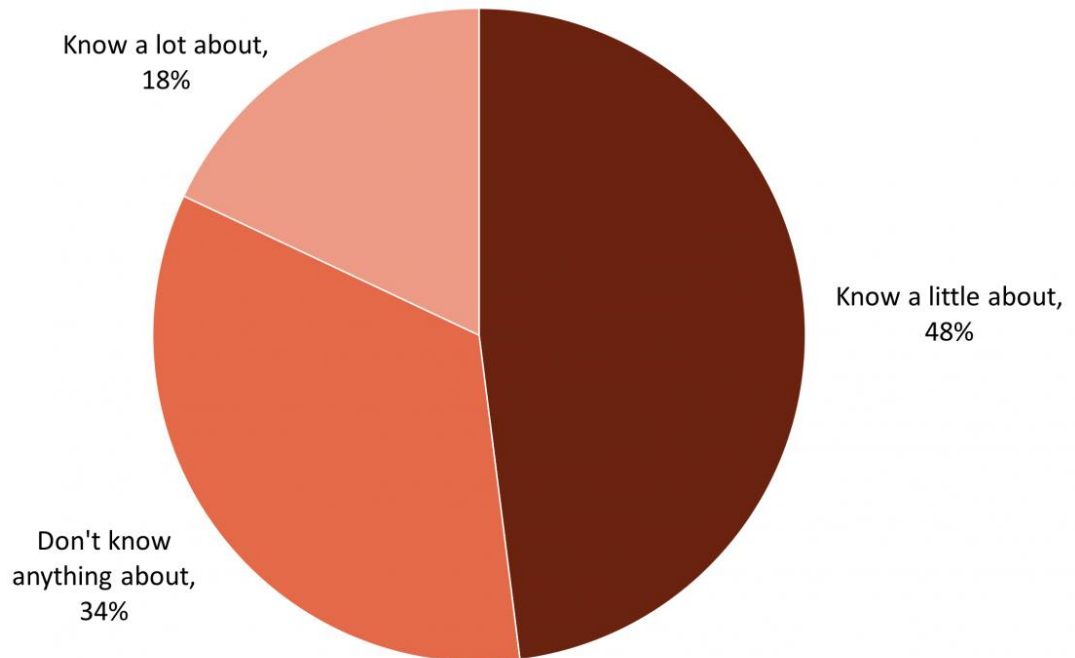
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Avoid making too many assumptions about customer preferences. Users might not want to use messaging apps to communicate with their bank, even if they like using them for personal and social interactions. While most studies indicate that consumers prefer communicating with their service providers via live chat, individual banks should nevertheless survey their customer bases and note each group's specific preferences.

- Moreover, while the majority of customers might be most familiar with the popular image of chatbots and AI as humanoid interlocutors with the same level of soft skills as human employees, this doesn't mean that they will be happiest with a chatbot that focuses heavily on conversational skills at the cost of executing a task quickly and smoothly. In fact, research by Mindshare indicates that consumers would find an overly chatty chatbot patronizing.

- To this end, RBS launched its [Luvo](#) chatbot with the intention of freeing up its human staff to deal with more complex customer inquiries, by training the bot to field more commonplace questions; at the same time, the bank consciously cut down on consumer-facing conversational gimmicks.

Technological Risks And Recommendations

AI does not do soft skills (well). Banks should not attempt to stretch AI beyond what it can actually do. A useful bot will work within the limitations of current AI — namely, its current inability to speak naturalistically.

- As such, banks should not roll out a chatbot to make themselves seem more approachable, but to actually make themselves more efficient, by using AI'S data-crunching capacities to enable a chatbot to solve problems and give to customers advice more quickly.

- A chatbot will only pay off if it can perform a task more accurately, quickly, and cheaply than it could be performed manually by human staff. At the moment, AI simply cannot match the "soft skills" of a human. In a recent blog post, a Tochka employee and bot developer warned that while banks should deploy chatbots eventually, they should not do so for some time — until AI is more capable — to avoid ending up with basic products that do not deliver on their promises and frustrate customers.

Keep on top of AI as it evolves. As AIs crunch more data than humans can, humans will find it harder to stay on top of how they "interpret" this data and draw conclusions from them to be able to intervene and readjust their algorithms if necessary.

For example, Microsoft's Tay AI recently caused the company PR problems when it started mimicking the abusive attitudes it "learned" from its interactions with humans on Twitter. It took Microsoft's developers some time to intervene and modify the chatbot. And, in a recent opinion piece, Ravi Shawney of FI Electronic Trading discussed the difficulties human developers will increasingly face to keep up with AIs' data-crunching capacities.

THE BOTTOM LINE

- Incumbent banks today are facing increasing pressure to remain competitive, as challenger banks and fintech startups crowd the once cavernous space.

- To remain competitive, these legacy players must innovate digitally. Chatbots are emerging as an inexpensive way to introduce digital products.

- Banks can build chatbots in two ways. They can either partner with a third-party developer and use an external channel to host the chatbot, or, less commonly, they can build a chatbot in-house and host it within their banking app.

- While chatbots undoubtedly have the potential to solve at least some of legacy banks' existing problems, they still have risks attached to them.

- But the benefits of legacy banks implementing chatbots outweigh the risks.

- To reap the benefits of chatbots, legacy banks should implement them in areas where humans are performing basic and time-consuming tasks.

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