



## **Chatbots**

Riding the next-gen technology wave to operational success

Private and Confidential

November 2019



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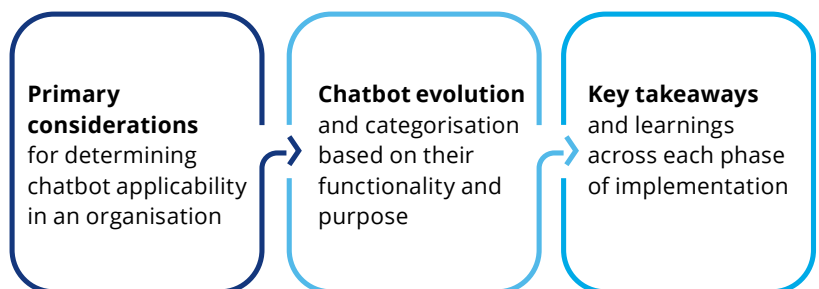
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# Introduction

An alarm goes off in the wee hours of a Monday morning and a human-like voice urges you to start your day. “Ok Alexa!”, is what perhaps many of you would reply in a similar setting. You enquire about the weather and instantly get an update from CNN. Your travel plans are sorted as a quick check with your virtual assistant leads to a list of destinations and personalised travel offers. You could also get your bank account balance and other financial queries answered within minutes through the likes of Erica (a personal assistant launched by Bank of America). These humanised robots are commonly referred as “chatbots”.

From the consumer-facing to manufacturing industries, there is no dearth of chatbot examples (Siri, Cortana, and Alexa). It is common knowledge that chatbots interact with users through text or voice channels in a natural language. They interpret a user’s intent and provide responses based on the user context and conversation flow. From a business point of view, understanding the appropriate use cases for chatbots is highly intriguing. Organisations may wonder whether they would enjoy the same degree of success across different use cases, and what are the secret ingredients for successfully implementing chatbots.

Bearing this in mind, this article discusses the following key aspects of chatbot deployment:



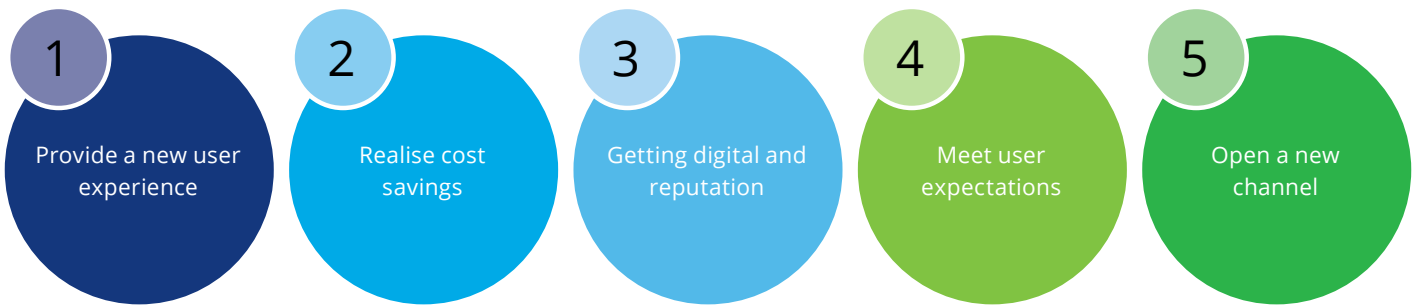
Chatbots will power 85 percent of the customer service interactions by 2020.<sup>1</sup>



# Primary considerations for chatbot applicability

At present, more organisations want to implement chatbots for different reasons, ranging from streamlining processes and improving customer experience, to merely experimenting with a new digital and innovative technology. Irrespective of the reason, use cases should be assessed in terms of both suitability and viability.

## Top five drivers for chatbot adoption



Source: Deloitte Survey<sup>2</sup>

About 40 percent of the large businesses expect to implement chatbots by 2019.<sup>3</sup>

*Does the task flow or resolution require natural conversational elements?*

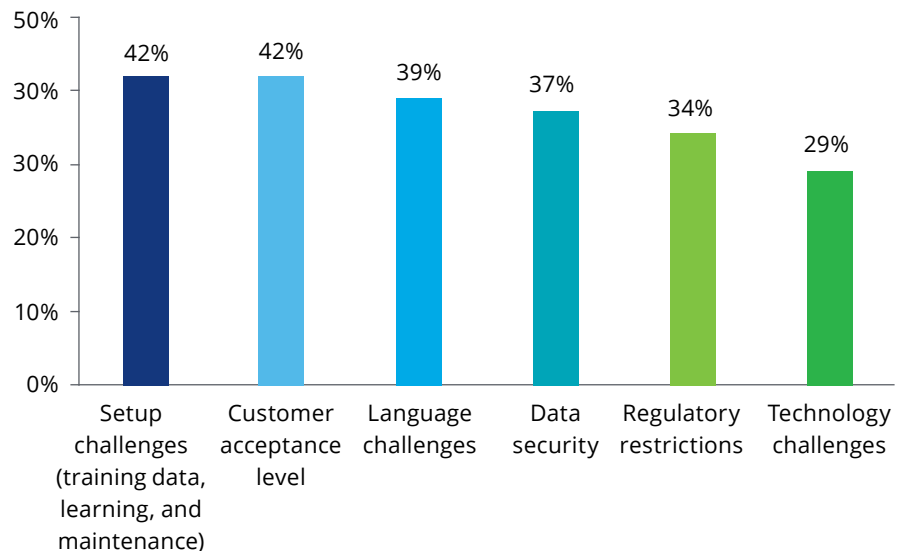
*Are the processes we are looking to automate repetitive in nature or require considerable customisation?*

*How much manual effort and time is currently spent on the processes?*

To find answers to these questions, your business line needs to conduct a suitability analysis for your chatbot use case.

Prolonged and infrequent interactions induce break in conversation flow, affecting chatbots' contextual response ability. The use of chatbots for **regular, short interactions** enables expensive human resources to focus on higher

## Top reasons for not implementing chatbots



Source: Deloitte Survey<sup>2</sup>

value activities. For instance, HR staff can focus on more productive core activities by directing the bulk of regular employee queries to a chatbot.

Using a chatbot might make **multi-lingual level 1 (L1) support capability** for global businesses more cost efficient, compared with maintaining a dedicated support team.

Additionally, **criticality of tasks and information exchanges** influences the level of accuracy and promptness expected of the responses. Financial services organisations are a case in point that deal with sensitive information and hence, demand maximum accuracy and compliance.

Taking a note of conversational aspect and considering such an automation from the process perspective are equally important. Chatbot deployment is **feasible for repetitive tasks**. For instance, the leave application process can be automated wherein a chatbot collects the required information and integrates it with the leave management system in the backend.

A millennial job search company automated 75 percent of its recruitment process by implementing a recruitment application assistant.<sup>4</sup>

**Process amenability for chatbot implementation**

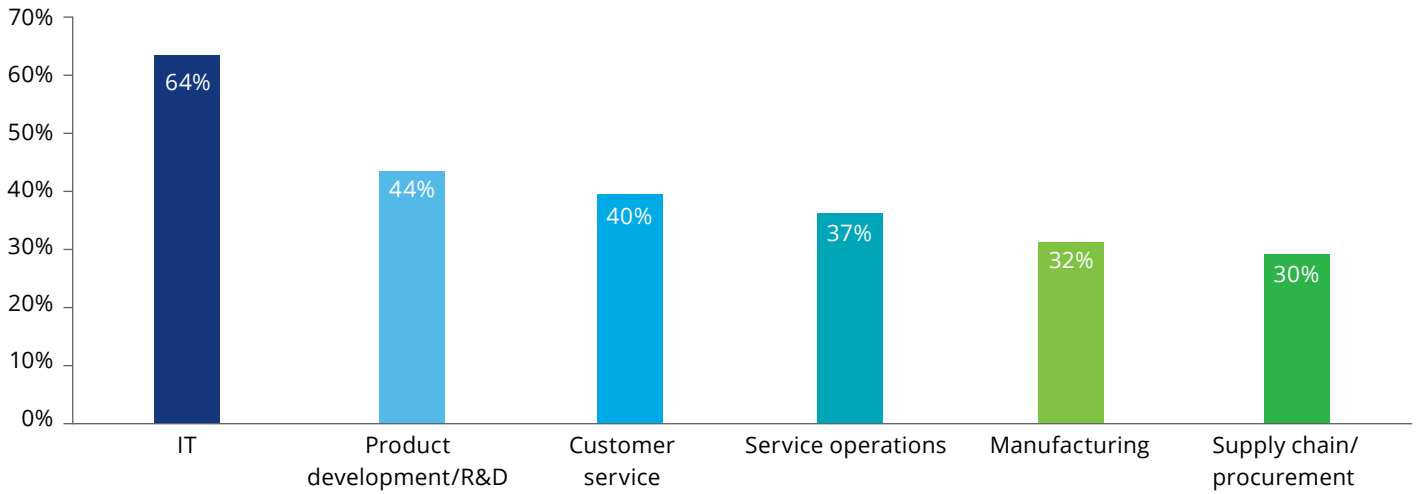
Parameter	Poor candidates for chatbot	Good candidates for chatbot	Ideal candidates for chatbot
Execution time and frequency	High execution time, less frequent	Medium execution time, medium frequency	Low execution time, high frequency
Process documentation availability	Documentation not available	Some SOPs or process maps available	Detailed SOPs, process maps, and test scripts available
Accuracy/efficiency improvement potential	Low	Medium	High
Automation feasibility	Low, <30% of activities can be automated	Medium, 30-70% activities can be automated	High, 70% of activities can be automated
Development complexity	High, requires more than eight weeks of development/testing	Medium, requires 6-8 weeks of development/testing	Low, requires less than four weeks of development/testing
External application integration complexity	High complexity	Medium complexity	Low complexity

Source: Deloitte internal framework



First and foremost, the **alignment of the use case with overall business objective** is necessary. An HR support chatbot might enhance user experience, while a sales or IT (Information Technology) service desk chatbot might help increase tangible revenue or dollar savings.

**Key business functions using cognitive technologies, including chatbots**



Source: Deloitte State of Cognitive Survey<sup>5</sup>



Standardising processes across an organisation and defining business rules are imperative. To provide a perspective, if your organisation does not have processes in place for applying leave or submitting resignations, it might not be appropriate to try and establish these using a chatbot.

Moreover with increasing digitisation in enterprises, **technology architecture has become a decisive factor** for the successful adoption of any digital interface, including chatbots. It does not make sense to first invest in a particular

technology platform to build a chatbot and then encounter a not-so-pleasant surprise of not being able to integrate it with existing ERP or other applications.

**Pricing and availability of substitutes** are other factors considered to gauge the viability of this technology. Rather than investing in an expensive but advanced chatbot platform, opting for another affordable alternative catering to similar requirements could be a prudent decision.

**Building blocks of a chatbot use case**

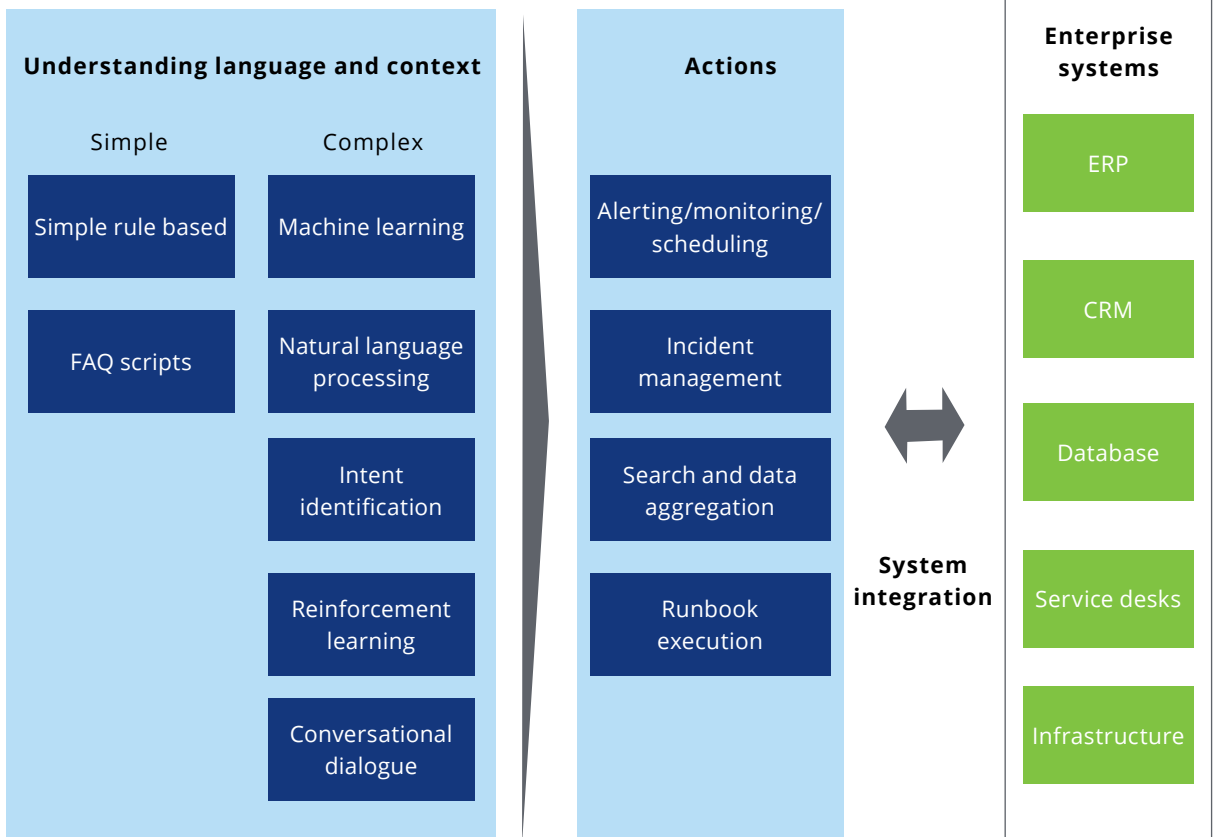
**Interaction channels**

End-user communication with chatbot



**Bot features**

Types of chatbot, capabilities, and actions required to be automated



Source: Deloitte Intelligent Virtual Agent (IVA) Vendor Comparative<sup>6</sup>



# Chatbot evolution

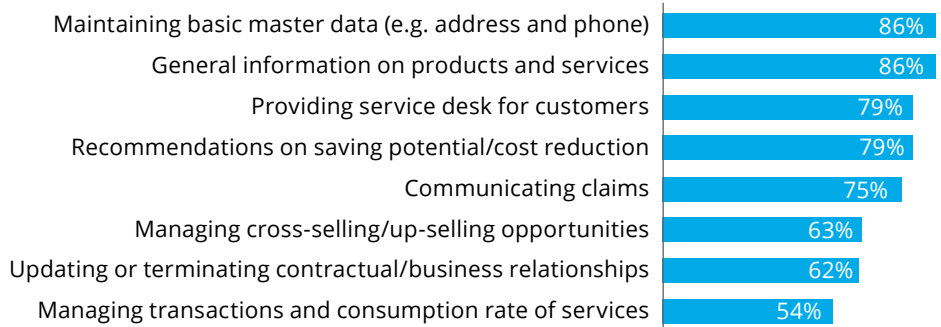
After assessing the suitability and viability of your chatbot use case, the next logical step is to identify and define the scope of activities (features) the chatbot will perform.

Although chatbot applications offer a variety of features and processing capabilities, they can be divided into two main types – **conversational and transactional** (from the perspective of functionality and purpose).

**Conversational chatbots** provide information to resolve queries or facts within a specific domain. The **Mitsuku**<sup>7</sup> and **Freshdesk** support bots<sup>8</sup> are two such examples.

**Transactional chatbots** help carry out transaction-related tasks, such as booking a cab, making payments, and ordering food. Amazon’s **Alexa**, HDFC Bank’s **EVA**, and IPsoft’s **Amelia**<sup>9</sup> are some prominent examples.

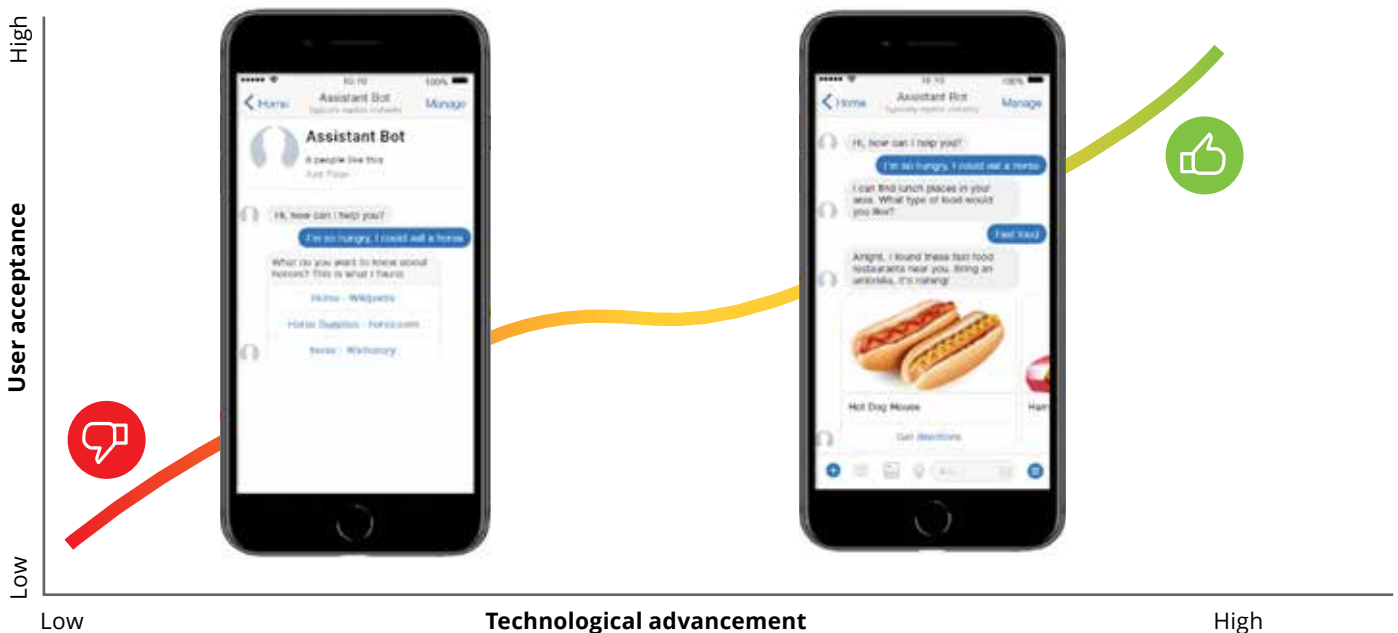
## Preferred chatbot functionalities



Source: Deloitte Survey<sup>2</sup>

Using chatbots will help businesses save US\$ 8 billion by 2022.<sup>1</sup>

## User acceptance: Moving from “command” driven to “conversation” driven



Source: Chatbots Point of View – Deloitte Digital<sup>10</sup>



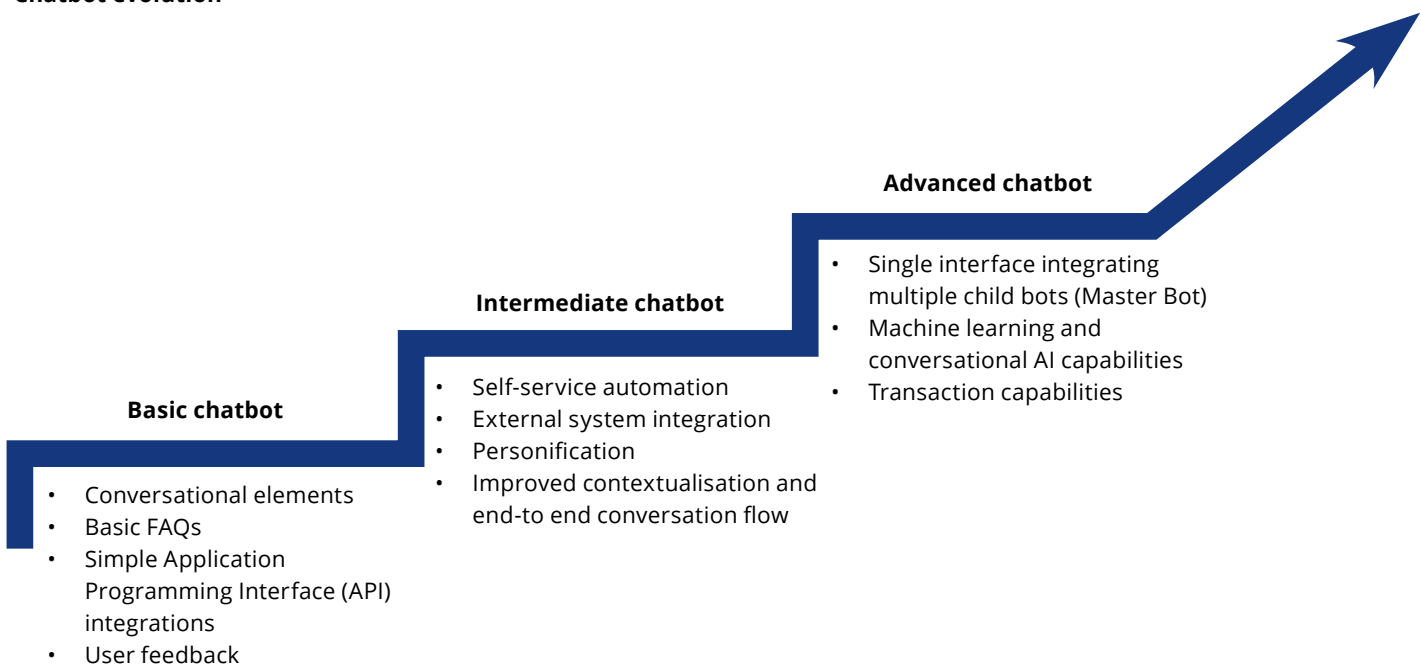
The key is to understand that chatbot development is a long journey. Enriching a chatbot with features takes time. There is a minor distinction **between a conversational chatbot and a transactional chatbot**. In most cases, the **features may overlap** over a period of time after multiple scope enhancements. For example, Facebook Messenger started as a messaging platform but now offers transactional capabilities as well.

For practical implementation purposes, it is simpler to look at chatbots as three types – **basic, intermediate, and advanced**. Progressing from a basic to an advanced chatbot is a journey spanning over a substantial period of time, and involving continuous improvement and incremental enhancement in features.

Chatbot development does not always start from basic and then move on to

the intermediate and advanced stages. The features mentioned above are only indicative for each stage. An organisation might want to explore and incorporate some of these across the different stages, depending on its business objectives and priorities. Always remember that chatbot development is a journey and the features will only be developed incrementally.

**Chatbot evolution**



Source: Deloitte internal framework, Chatbots Point of View – Deloitte Digital<sup>10</sup>

# Key takeaways for chatbot deployment

So far we have looked at how businesses can focus on selecting the ideal use case to implement a chatbot and how they can prioritise the feature development journey. However, only half the path is covered by getting these first two steps right. Businesses would start facing major challenges once they start deploying chatbots. In this context, we want to highlight some best practices and learnings that might help businesses avoid committing same errors.

Each phase of deployment (solution design, build, and roll-out) presents a different set of fundamental challenges and opportunities, which are more critical from a delivery standpoint.

## Solution design

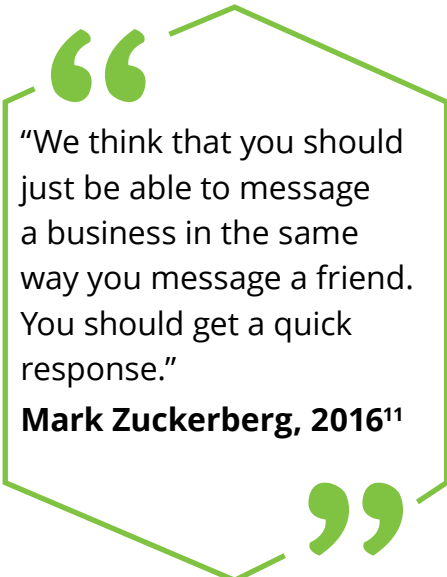
Every organisation or business line wants a perfect solution for their business problems. However, do organisations design a perfect solution? Getting the design right is one of the most critical aspects of chatbot deployment. The underlying design of the chatbot solution and the associated natural language processing (NLP) differentiates successful chatbot implementation from a failed one.

A chatbot solution design can be **incrementally enhanced but should not be iteratively altered**. For an organisation with process variances across multiple geographies, the chatbot solution (for market-specific process knowledge) should take a market-wide modular approach into consideration as part of its initial design element. New feature inclusions are always possible. However, with each such addition, the entire cycle of training, refining, and testing chatbots needs to be carried out. Now you can imagine the impact of frequent design changes on bots' accuracy and performance.

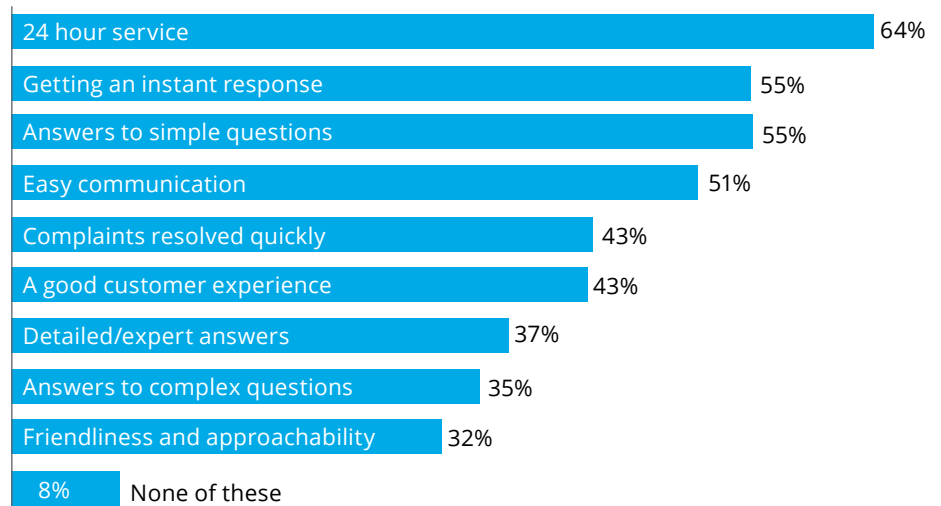
Another common miss is **lack of user engagement features** as part of initial design. A chatbots' primary objective would be to reduce turn-around-time (TAT), improve efficiency, lower the number of service requests, and so on. While these use cases may address the key business problems, users would only engage with a chatbot on a need basis. This would significantly reduce overall traffic to the platform. For example, if your chatbot addresses

only basic IT troubleshooting and HR-admin queries, its primary user base would mainly include new joiners. To **increase adoption and drive repeated use**, envisioning different new-age user engagement features to be part of the chatbot is important. Why do you not think of enabling your chatbot to book travel tickets and meeting rooms; and share rewards, recognitions, and other organisation announcements, in addition to the defined use cases?

One more common challenge businesses face is with regard to bot persona. Although this challenge is faced primarily during the solution build phase, its roots are traced back to the design phase. Businesses, deeply engrossed in making the solution perfect, notice at a much later stage that the chatbot has a limited or no persona. During the design phase, **the bot persona needs to be aligned based on an organisation's values and vision**, resulting in improved user personification and contextualisation. This can be achieved at a later stage, but at the cost of development rework, increased implementation timelines, and bot instability.



## What users expect from chatbots



Source: 2018 State of Chatbots Report<sup>12</sup>

**Key stakeholders across the organisation or business unit should have a buy-in on the chatbot scope.**

The area of functioning (in terms of domain and intents), logical conversation flows, and interaction touchpoints need to be lucidly spelt out. It is equally important to have a clarity on a chatbot's limitations.

**Solution build**

**Lack of data and sufficient information** that needs to be fed into a chatbot is a major roadblock hindering its performance. If a bot is being built to respond to user queries related to HR policies, information across different policy documents should be readily available in a way that can be consumed by the bot. Many advanced chatbot platforms offer a document extraction capability whereby the policy documents can be directly integrated with the chatbot to provide responses. The challenge is to know what your end-users might be interested in and prepare that information.

Adoption would be low if users do not receive relevant information from the bot, resulting in fewer chances of improving accuracy by learning from user interactions. It is advisable to start implementing a chatbot solution with about 80 percent of the data and then collect the remaining over time.

Many people perceive that if design is done right, other things will fall into place. Although design is pivotal, solution development cannot be assigned low priority. **Chatbot development and architecture need to be extremely modular** to accommodate future enhancements. Modularity in intent structure and guided flow creation allows for easy incorporation of new user intent. Reusable APIs can be helpful in seamless integration with technology applications, requiring minor configuration changes for different purposes.

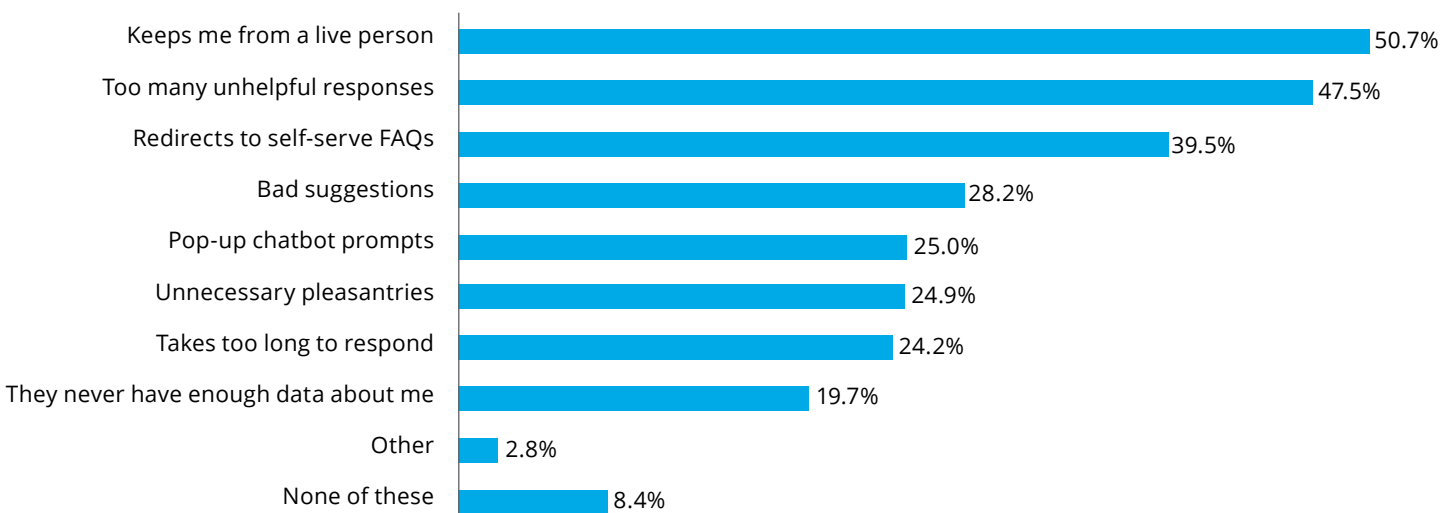
**Solution roll-out**

The single most overwhelming concern during the chatbot roll-out phase is **change management**. Similar to most technology implementations, chatbot roll-outs should be practiced in phases and within segments of user groups. Once a couple of initial rounds of review (commonly known as alpha and beta testing) by a closed group of business end-users are conducted, the chatbot can be launched to the entire target user base. However, this is the easy part.

Conscious effort is required to **incentivise chatbot adoption** and thereby, deter users from going back to existing mechanisms. The chatbot needs to be inducted into the business as another employee and the drive needs



**Typical challenges faced while using chatbots**



Source: eMarketer<sup>13</sup>





to begin at the executive level. To give a perspective, if you are building a chatbot for ticketing purpose, service request and incident portals should redirect tickets to the chatbot application. There could be a live agent hand-over, but the starting point has to be your chatbot. **Strong branding is essential for users' top-of-mind recall**, and post roll-out regular communication will keep users engaged and aware.

Key business stakeholders need to be aligned on the chatbot's current potential, capability, feature roadmap, and expected failure points. These need to be continuously apprised to end-users. Processes need to be in place to record user interactions, identify failed responses, and rolling them back as a part of bot training. Chatbot usage is not a typical scenario where business users might raise service requests if desired performance is not met. Therefore, monitoring should not just boil down to basic IT application support and maintenance, without improving their overall performance and accuracy.

#### Replacing Mobile Apps



By 2021, more than 50 percent of enterprises will spend more per annum on bots and chatbot creation than traditional mobile app development

Source: Gartner<sup>14</sup>

# Key pitfalls

Surviving through this arduous journey is a daunting task. There are enough success stories as there are examples of failures. Although there is no single guaranteed way to success, we have tried to highlight some guiding practices that might help businesses to implement a chatbot solution. To summarise, organisations must watch out for the below mentioned pitfalls to script a successful chatbot story.

*Select any chatbot use case first. Users will eventually start adopting it.*

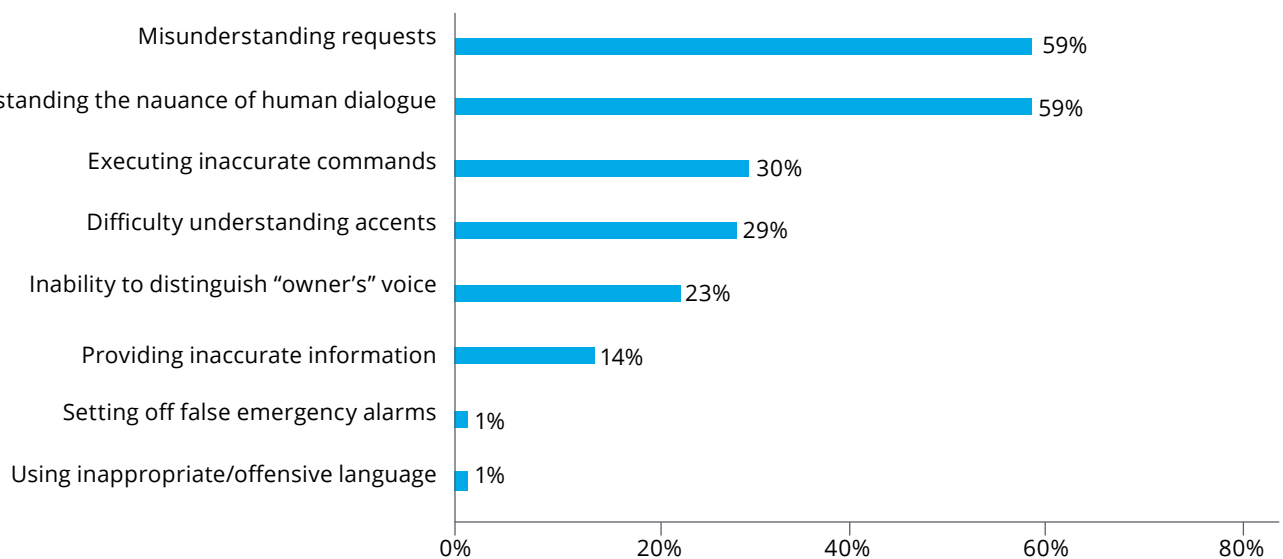
- Never leave a chatbot implementation programme to chance. First identify if you certainly need such a technology. If yes, choose a suitable and viable use case on the basis of what your business is trying to achieve and what end-users would welcome as a solution.

*A basic FAQ-based chatbot will suffice. There is no need to think about complex features.*

- A chatbot will surely require advanced features over a period of time. Features that seem to be complex initially (for instance, payments processing) might become necessary at a later stage.



## Common errors encountered while using chatbots



Source: Spiceworks<sup>3</sup>



*Design changes are easy fixes for the chatbot. Just change the response and it should be done.*

- A chatbot solution can be incrementally enhanced, but frequent design changes are not advisable. Any small change element may potentially disrupt the underlying chatbot NLP. Therefore, every change needs to go through a development, re-training, regression, and testing phase. This might involve a longer-than-expected turnaround time.

*If the chatbot addresses the key business metric, it will automatically drive user adoption.*

- Solving your key business problems is not enough for a chatbot. Without a strong repeat user base, the chatbot initiative will fall flat. To ensure a steady user adoption, adding some “wow factor” to your chatbot is a must.

*Let us get the chatbot to resolve user queries first. The bot persona can be developed later.*

- Although this might be technically true, developing your bot persona has to be a priority. Your chatbot needs to be humane enough to strike a chord with users. After all, a chatbot’s first impression on users might just be its last impression.

*The chatbot gives wrong answers to user queries.*

- The data used to develop a chatbot is extremely critical. Different user intents and their variations (fed in as part of the initial solution) will be enhanced incrementally as the chatbot starts learning other intents, user variations and data patterns. A chatbot’s learning curve is like any other human learning experience. All it needs is a bit of patience and support.

*Let us launch the chatbot. Users will definitely start using it.*

- Unless a communication and change management plan is created, users will continue pursuing inherent means to solve their everyday issues. If chatbot use is not incentivised, users will have no motivation to switch to the new way. Extensive branding and communication are key in driving chatbot use.

Chatbots are a powerful mechanism that makes repetitive tasks more efficient, and provides analytics and insights into employee preferences and organisation’s improvement areas. With such high stakes, investment in the adoption of chatbots makes sense. It would not be an exaggeration to conclude that if some pain points and best practices highlighted in this article are taken care of, the implementation and use of chatbots could be rewarding for organisations. However, this would not be an easy task.

# End notes

1. AI By The Numbers: 33 Facts And Forecasts About Chatbots and Voice Assistants - by Forbes (statistics published by Gartner, Forrester, Juniper Research and others) ([Link](#))
2. Deloitte Survey "Chat, Talk, Touch" ([Link](#))
3. AI Chatbots and Intelligent Assistants in the Workplace - by Spiceworks ([Link](#))
4. Recruitment chatbot automates 75 percent of the hiring process - Venture Beat ([Link](#))
5. Deloitte State of Cognitive Survey, August 2017 ([Link](#))
6. Intelligent Virtual Agent (IVA) Vendor Comparative Analysis - by Deloitte Cognitive Technologies and Automation
7. Meet Mitsuku - A four-time winner of the Loebner Prize Turing Test and the world's best conversational chatbot - by Pandorabots ([Link](#))
8. Freshdesk Support Bot - Your smart new support agent ([Link](#))
9. IPsoft Amelia - The Most Human AI ([Link](#))
10. Chatbots Point of View - by Deloitte Digital ([Link](#))
11. Mark Zuckerberg's keynote speech at Facebook Developer Conference 2016 ([Link](#))
12. 2018 State of Chatbots Report ([Link](#))
13. Customer Service Seekers Prefer Bypassing Humans - eMarketer ([Link](#))
14. Gartner Top Strategic Predictions for 2018 and Beyond ([Link](#))



# Authors

## **Supriyo Chakrabarti**

Senior Consultant  
Consulting, Strategy and Operations, Global Business Services  
[chakrabartis@deloitte.com](mailto:chakrabartis@deloitte.com)

## **Aritro Ghosh**

Manager  
Consulting, Strategy and Operations, Global Business Services  
[aritrghosh@deloitte.com](mailto:aritrghosh@deloitte.com)

# Key contributors

## **Ankur Bansal**

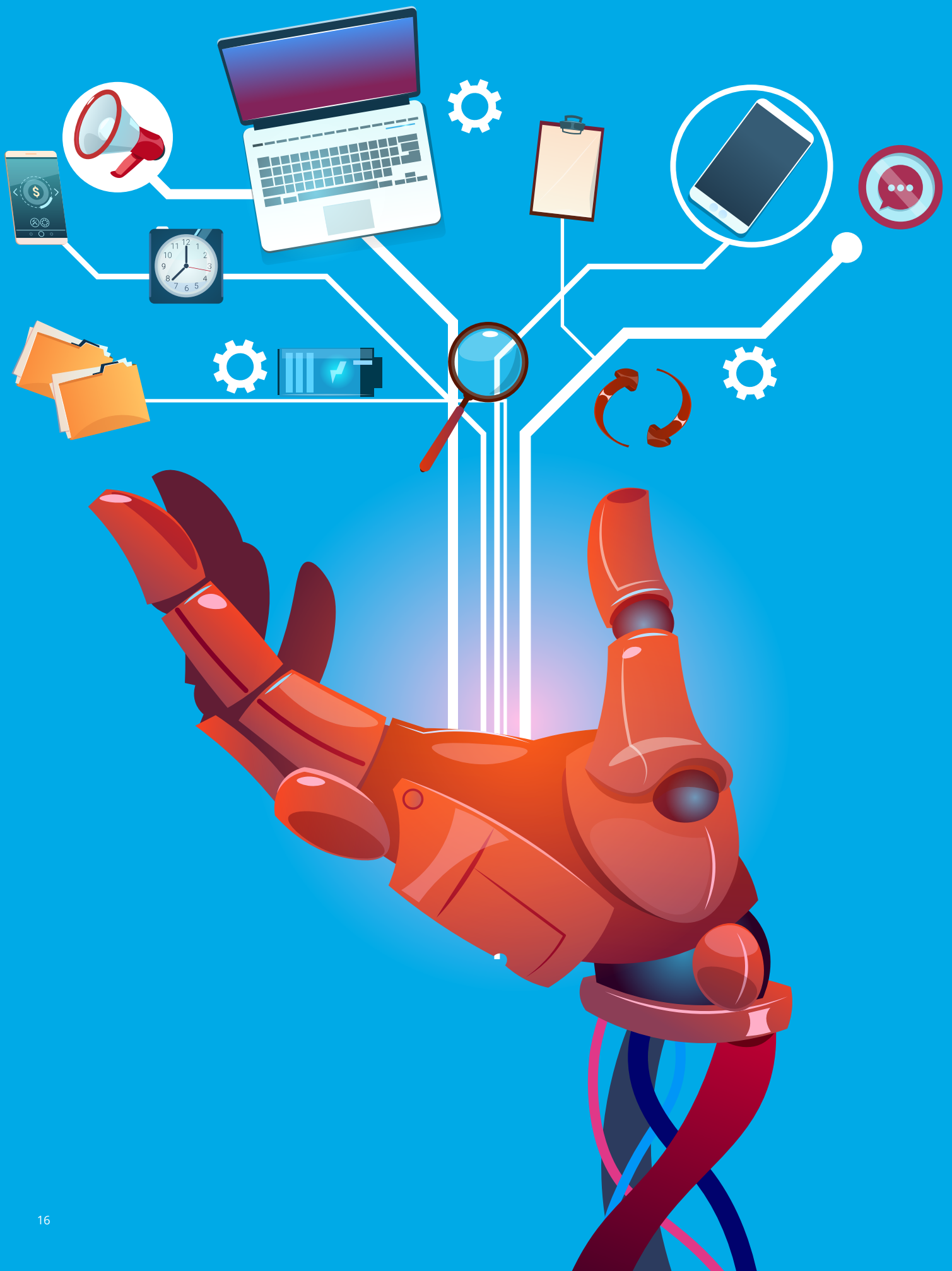
Director  
Consulting, Strategy and Operations, Global Business Services  
[ankurb@deloitte.com](mailto:ankurb@deloitte.com)

## **Sumeet Salwan**

Partner  
Consulting, Strategy and Operations, Global Business Services  
[sumeetsalwan@deloitte.com](mailto:sumeetsalwan@deloitte.com)

## **Viral Thakker**

Partner  
Consulting, Strategy and Operations, Global Business Services  
[vthakker@deloitte.com](mailto:vthakker@deloitte.com)







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