



CHATBOTS IN HEALTHCARE

STATE OF THE INDUSTRY AND SUCCESS STORIES

2021

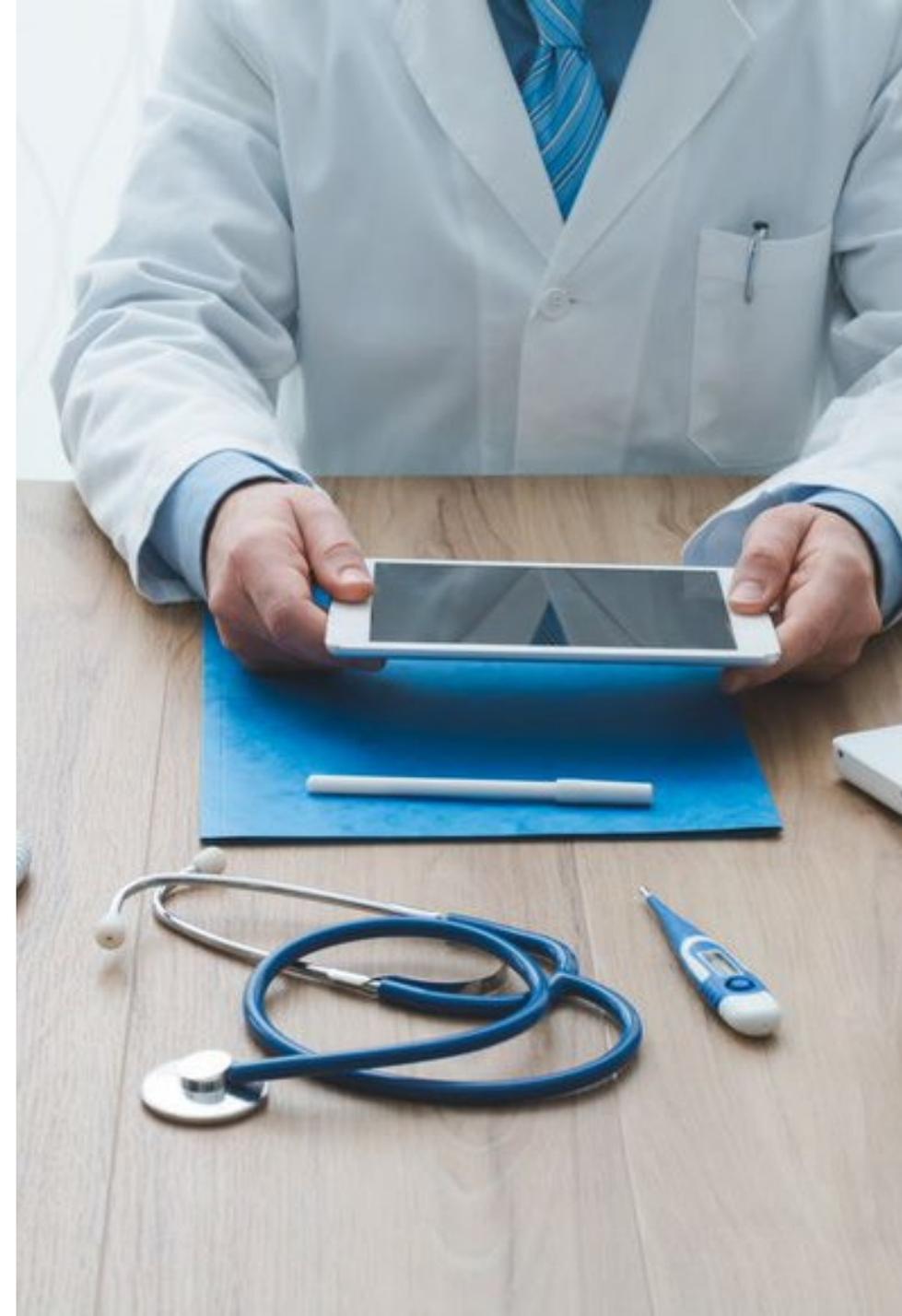


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CHATBOTS IN THE HEALTHCARE INDUSTRY

Why read this report

Key Attributes Covered

Overview

To understand the global chatbot industry- stats, platform ecosystem, and key market trends.

- State of chatbots
- Chatbot platform ecosystem
- Major chatbots statistics
 - Market Stats
 - Adoption Stats
 - Business Impact Stats
- Key chatbot trends

Chatbot Case Studies

To analyze and understand the case studies of chatbot implications across healthcare industry.

- Chatbots in Healthcare Industry: A Snapshot
- Case Examples in Healthcare Industry: Supporting Areas in Customer Journey
- Case Examples in Healthcare Industry: Result Metrics
- Case studies – In Detail

Notes:

1. List of case studies provided is non-exhaustive.
2. Major case studies focusing business and customer interactions are considered in the report.



CHATBOTS APPLICATION OVERVIEW



THE STATE OF CHATBOTS: AN OVERVIEW

The chatbot market is estimated at US\$430.9 million in 2020, and it is forecasted to reach US\$1250.1 million by 2025.

Global Chatbot Market

(in US\$ Million)



Chatbots are expected to grow at a significant rate, enabling companies to adopt the technology. According to MIT technology review, 90% of the business reported faster complaints resolution with the bots.

Companies are aiming to provide better personalized customer experience and leverage long-term relationships for boosting revenues. This has led to incorporation of chatbots through diverse messaging applications, such as WhatsApp, Facebook Messenger etc.

The chatbot market is highly competitive, owing to the presence of many small and large players in the market. To stay ahead of the competition, companies adopt strategies, such as product innovation, creating innovative use cases, omnichannel experience etc..

Chatbots are increasingly deployed in various industries such as Healthcare, Utilities, Banking and Financial Services, Retail, Vacation/ Travel, Entertainment etc..

As of 2019, Retail, Healthcare and Utilities are the top three industries in the US with high chatbot engagement among the consumers - accounting for 40%, 22% and 21% respectively.

With the outbreak of COVID-19, the chatbot has been increasingly deployed by various organizations to respond to customer queries and other related information. IBM stated a 40% spike in traffic to its conversational AI platform Watson Assistant, between February and April 2020.



North America is the largest market for chatbots, contributing approximately 42% in 2019.



Advancement in technology, rising customer demand for personalized experience, and brands' focus on consumer preferences to better engage their customers - are the key drivers of chatbot industry.

CAGR refers to Compound annual growth rate

Sources: Grand View Research, Industry Articles & Publications, Valorem Reply Analysis



CHATBOT PLATFORM ECOSYSTEM

At a broader level, the two types of companies that provide chatbot solutions are:

- **End-to-end solution providers:** This is usually adopted by large companies in need of a complex chatbot solution and has not invested in building an in-house solution.
- **Self-Service solution providers:** This suits well for smaller businesses with few requirements and a smaller budget for their chatbots. The companies leverage the self-service solution so that they can leverage existing APIs to build a chatbot. This is also used by large firms who may want to use self-service solutions to build their solution on top of an existing framework to save time.

The chatbot platform ecosystem

Common AI Conversational Platforms



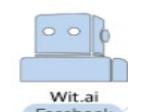
Cloud-based Conversational AI Platforms



Messenger Platforms



Chatbot Deployment Platforms



Note: The list of platforms provided is illustrative and is non-exhaustive.



CHATBOT STATISTICS - MARKET

01 Market

37% of AI start-up founders said chatbots and virtual agents would be the top consumer application for AI over the next five years.

- Emerj

Projected value of chatbot eCommerce transactions by 2023 is

\$112 billion.

- Juniper Research

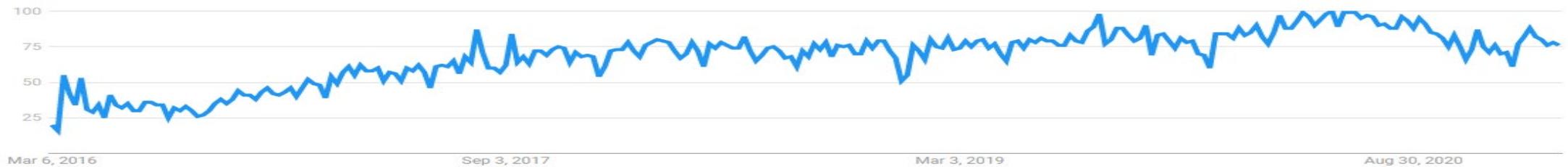
According to Google Trends, interest over time* in chatbots has increased almost **5 times over the last 5 years.**

● Chatbot
Software type

+ Compare

Worldwide ▼ Past 5 years ▼ All categories ▼ Web Search ▼

Interest over time ⓘ



* Interest over time: Numbers represent search interest relative to the highest point on the chart for the given region and time. A value of 100 is the peak popularity for the term. A value of 50 means that the term is half as popular. A score of 0 means there was not enough data for this term.

Sources: Industry Articles & Publications, Valorem Reply Analysis



CHATBOT STATISTICS - ADOPTION

02 Adoption

US, India, Germany, the UK, and Brazil are the top 5 chatbot using countries. (Chatbots Life, 2019)

Chatbots are popular among both **millennials and baby boomers**. (Chatbots Magazine, 2019)

The willingness to use chatbots for purchases rose from 17.1% to **41.3%** from 2019 to 2020. (Drift, 2020)

eCommerce stores adopting Facebook Messenger along with an abandon cart chatbot have started to boost revenue by **7-25%**. (Chatbots Magazine, 2018)

40% of consumers are interested in branded chatbots. (Uberall, 2019)

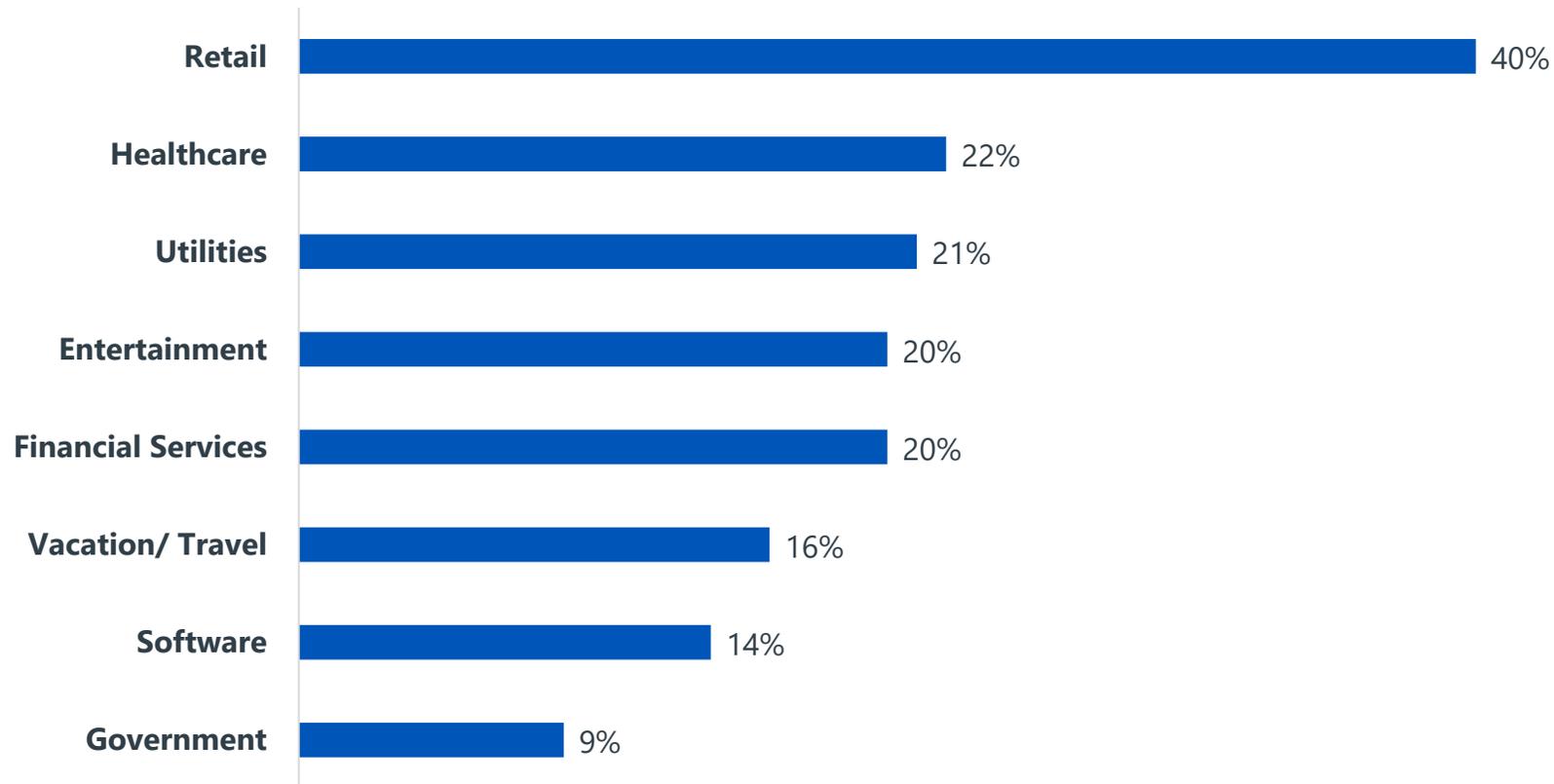
27% of consumers predict they would buy an essential item through a chatbot (Drift, 2018)

By 2021, more than **50%** of enterprises will spend more per annum on bots and chatbot creation than traditional mobile app development. (Gartner, 2018)



CHATBOT STATISTICS - ADOPTION (CONT'D)

Industry Chatbot Engagement Among Consumers (in percentage) in the US, 2019



Retail and Healthcare are the top industries in the US with high chatbot engagement among the consumers



CHATBOT STATISTICS - BUSINESS IMPACT

03 Business Impact

Business leaders say chatbots have increased sales by **67%** on average. (Forbes, 2019)

57% of businesses claimed that chatbot delivers large ROI on minimal investment. (Accenture Digital, 2018)

By 2025, customer service businesses that embed AI in their multichannel platform will elevate operational efficiency by **25%** (Gartner, 2019)

AI and machine learning will handle **40%** of all customer interactions by 2023 (Gartner, 2019)

Consumers and businesses will save over **2.5 billion customer service hours** by 2023. (Juniper Research, 2018)

Business cost savings from chatbots are estimated to be worth **US\$8 billion** by 2022 (CNBC, 2017)



MAJOR CHATBOT TRENDS



Chatbots are expected to become more human

- With advancements in technology, companies are focusing on improving the human aspect of their chatbots – decreasing the misinterpretation of requests, accents or cultural dialect and the intents of the customers. This is to enable chatbots provide a customized experiences unique to each customer; boost customer loyalty and improve perceptions to satisfy consumers & gain positive feedback.
- To enhance the customer experience, sentiment analysis is also leveraged to respond to customer emotions. Using sentimental analysis, chatbots enhance the user experience in - understanding the satisfaction levels of customers; adjusting responses in alignment with customer emotions; and directing angry customers to a dedicated team to deliver personalized customer support.



Messaging platforms to drive growth of chatbots

- Chatbots in messaging platforms enable one-to-one conversions and provide great customer service.
- Brands with such platforms along with chatbot functions can boost brand awareness, sales/lead generation, marketing engagement, and customer support.

There were over 300,000 chatbots on Facebook in 2018.



Customer Experience (CX) is driving chatbots adoption

- Digital disruption is raising customer expectations and consumers are looking for differentiated personalized experiences. Chatbots help companies reduce customer wait time, resolve support cases, handle efficient customer inquiries, provide personalized human interaction etc..
- For example, beauty retailer Sephora uses messenger chatbot service. Features include - Sephora Reservation Assistant (a chatbot that helps clients quickly identify store locations and make appointments) and Color Match (a bot that allows users to scan an image with a smartphone and instantly receive the closest color match from Sephora's range of products).

67% of millennials in the US reported that they would likely purchase products and services from brands with chatbots. (Chatbot Magazine, 2018)



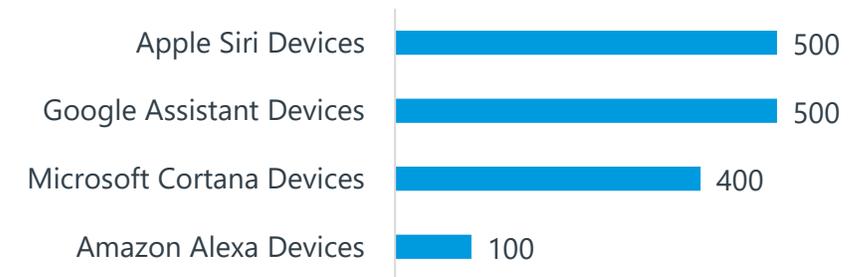
MAJOR CHATBOT TRENDS (CONT'D)

Voice experiences becoming mainstream



- Voice recognition chatbots are becoming popular. According to eMarketer research, more than 111 million Americans use voice-activated personal assistants at least once a month.
- Messaging platforms with both voice and text-based programs are becoming popular and a preferred method to engage with businesses.
- Apple's Siri and Google Assistant lead the market in terms of installed base, with each being present on over 500 million devices.

Voice Assistant Installed Base, 2019
(in million)



Conversational Advertising



- Conversational advertising is the use of automated natural language conversations between business and customers to increase brand awareness, understand purchase intent, convert leads and more.
- A feedback-based approach - including chatbots, live chat, and a targeted messaging helps conversational marketing to create genuine conversations with the customers.



CHATBOTS IN THE HEALTHCARE INDUSTRY



CHATBOTS IN HEALTHCARE: A SNAPSHOT

Chatbots are becoming popular in the healthcare industry as AI-enabled virtual agents help in automating the routine procedures and provide quick response 24/7, especially in areas like customer support service, information services (both internally and externally) and marketing.

Major healthcare providers such as GlaxoSmithKline, Pfizer, Cigna, Roche Pharma, Walgreens, Humana, Allianz Worldwide Care, Now Health International, Sanofi etc. have successfully implemented chatbots to better engage their customers.

Pharma companies mainly leverage chatbots to assist in providing greater customer experience, intelligent customer support service, information services etc. Healthcare insurance companies also effectively make use of chatbots for generating leads and customer acquisition. Hospitals engage chatbots mainly for quick customer support service, patient engagement, manage appointments, internal assistance (administrative support, billing, patient information services) etc..

Major Chatbot use cases Healthcare:



By 2021, Gartner predicts that 75% of healthcare delivery organizations (HDOs) will have invested in an AI capability that is explicitly improving either operational performance or clinical outcomes. The more activity there is around using AI in healthcare, the greater the need for HDOs to establish AI governance.



HEALTHCARE CHATBOT SUCCESS STORIES

| | Awareness & Consideration | Engagement | Conversion | Retention, Loyalty, & Re-engagement |
|--|--|---|--|--|
| Touchpoints | Digital Marketing, Brand Awareness, Marketing Campaign, Lead Generation | Personalized Experiences, Customer Engagement, In-store Experiences | Increasing Sales & Customer Acquisition | Customer Support Service |
| Stakeholder(s) | Marketing | Marketing / CX / Sales | CX / Sales | CX / Sales / Customer Service |
| Customer-focused | | | | |
| Swica | Enterprise Bot: Support Lead Generation | Enterprise Bot: Delivering Personalized Experience | | Enterprise Bot: Handle Customer Queries |
| Lupin | | Quickwork: Delivering Personalized Experience | | Quickwork: Handle Customer Queries |
| Zydus Hospitals | | Wotnot: Delivering Personalized Experience | Wotnot: Increased Sales & Revenue | Wotnot: Handle Customer Queries |
| Mayo Clinic | | Orbita: Delivering Personalized Experience | | Orbita: Handle Customer Queries |
| Sterling Accuris Diagnostics | Wotnot: Support Lead Generation | Wotnot: Delivering Personalized Experience | Wotnot: Increased Sales & Revenue | |
| Bupa UK | | Spixii: Delivering Personalized Experience | | Spixii: Handle Customer Queries |
| Walgreens Boots Alliance | | | | Microsoft: Handle Customer Queries |
| Humana | | | | IBM: Handle Customer Queries |
| GSK | | Delivering Personalized Experience | | |
| Cigna Corporation | | | | Clare.AI: Handle Customer Queries |
| Roche UK | | | | Lifelink: Handle Customer Queries |
| Dialogue | | Rasa: Delivering Personalized Experience | | |
| GSK | | | | IBM: Handle Customer Queries |
| Operations | | | | |
| Northwell Health | Microsoft: Internal Support (Supporting The Clinicians With Patient Information); Information Services (Self-service Support For Healthcare Professionals) | | | |
| GSK | IBM: Internal Support (Supporting The Field Sellers) | | | |



CASE STUDIES IN HEALTHCARE INDUSTRY

| Customer | Result Metrics | | |
|---|--|--|--|
| <u>SWICA</u> | 1.24 times higher leads captured | > 80% accuracy | 24/7 availability |
| <u>Lupin</u> | 92% efficacy in terms of correct and contextual content delivery | | |
| <u>Zydus Hospitals</u> | 88,000+ conversations handled | 5527 appointments/tests booked | US\$276K in business revenue |
| <u>Mayo Clinic</u> | Improved Patient Education | | |
| <u>Sterling Accuris Diagnostics</u> | 3600+ conversations | 220+ appointments fulfilled | INR ₹6.5L business value generated |
| <u>Bupa UK</u> | User-friendly messaging interface providing gave customers a guide price | | |
| <u>Humana</u> | 7k+ voice calls/day + positive user feedback | | |
| <u>Cigna Corporation</u> | 91% customer query resolution rate | 1,000+ customer enquiries resolved within first week of trial launch | 3X faster response time for customer enquiries |
| <u>Roche UK</u> | 91% user satisfaction ratings | | |
| <u>GSK</u> | Engaged with 7k unique users answering a total of 83k questions | | |
| <u>Northwell Health</u> | Single source of patient information | | |



14) SWICA enhances its customer service with AI

Year: 2017

Partner: Enterprise Bot

Overview:

SWICA, an Insurance company, wanted to make insurance product information and the Swiss health insurance system easier to access and understand for its clients, 24/7.

SWICA collaborated with Enterprise Bot to add a multilingual insurance product information chatbot called 'IQ'.

Language: German, French, English and Italian

Features:

- Give users detailed insurance product information
- Provide users with insurance recommendations based on their needs
- Give information about the Swiss health insurance system
- Hybrid Chat

Results:

- 1.24 times higher leads captured
- >80% accuracy
- 24/7 availability

For detail read, please refer [link](#)



CASE STUDIES



2) Lupin's Anya chatbot for patients

Year: 2020

Partner: Quickwork

Business Requirement:

Lupin — a multinational, pharmaceutical company wanted to create a high context, NLP (Natural Language Processing) enabled chatbot to educate and interact with patients around diseases like diabetes, hypertension and tuberculosis.

The chatbot had to -

- Work on a public, social messenger like Facebook Messenger to allow millions of users world-wide to interact with it.
- Answer more than 2000+ medically verified questions.
- Maintain context of a disease when a patient asked questions in her natural style and language. For example, when a patient asked a series of questions around diabetes, Anya had to recognise that the context was 'diabetes' and continue to maintain the context until the patient changed the subject of the conversation to another disease.
- Offer logical suggestions to patients about the next probable questions, using AI (Artificial Intelligence) and ML (Machine Learning).
- Work in multiple languages like Hindi and Telugu in addition to English.
- Throw insights and analytics for Lupin team to understand what the patients were curious or anxious about for a disease.

Solution:

Quickwork created Anya chatbot which met above requirements, by integrating and connecting multiple applications as follows -

- Facebook Messenger as messenger to interact with patients
- Dialogflow to train Anya in NLP (Natural Language Processing) queries
- Quickwork Context Manager to maintain high context in conversations
- Amazon Machine Learning engine for automated, self-learning of Anya
- PredictHQ to predict next set of probable questions

Results:

- Anya became very successful with more than 900,000 users asking questions over multiple sessions, 3 languages with 92% efficacy in terms of correct and contextual content delivery.

For detail read, please refer [link](#)





4) Zydus Hospitals leveraged conversational marketing to generate 5000+ appointments

Year: 2020

Partner: WotNot

Business Requirement:

Zydus Hospitals, an Indian super specialty medical establishment, wanted a way where the website experience was gamified to an extent, and the visitors would get a far more personalized experience, and in turn, be more inclined to book an appointment. Also, Zydus' support lines were always clogged with questions on admissions, services, doctor's availability which were taking up the sales and support teams time significantly, and it was time that they explored new ways to engage with prospects and customers in real-time.

Solution:

Zydus Hospitals partnered with WotNot team to deploy an intelligent chatbot for the website. The WotNot team took this in phases:

- **Phase 1** – The phase was focused on the chatbot recommending healthcare packages to visitors based on their inputs. The chatbot named "ZyE", would ask questions similar to how a doctor would, and then suggest a health checkup package, and assist the visitor(s) in booking an appointment. The objective of the chatbot was to initiate conversations, offer value, build trust and share requisite information with the end user.
- **Phase 2** – Two months into launching the chatbot, the next phase involved developing a contextual conversational flow, for healthcare packages and a myriad of symptoms after rigorous user testing. The multi-lingual symptom checker allowed visitors to enter their symptoms onto the chatbot, and the bot would ask relevant questions pertaining to existing symptoms and ailments. After a series of QnA, the chatbot would arrive at a diagnosis, and connect the patient with the right department for an appointment. This helped the staff and doctors at Zydus immensely, as the chatbot was competent enough to set the context and help them save time in asking basic questions.
- **Phase 3** - As part of phase 3, Zydus and WotNot launched their e-consultation chatbot over WhatsApp in May 2020. The goal is to provide an omni-channel customer experience and tap into a demographic & user base that is more inclined to use WhatsApp across India and abroad.

Results:

- 88,000+ conversations handled
- 5527 appointments/tests booked
- US\$276K in business revenue

For detail read, please refer [link](#)



CASE STUDIES

6) Orbita brings Mayo Clinic to Google Assistant and a voice-interactive chatbot for the web

Year: 2019

Partner: Orbita

Overview:

Mayo offers consumers and patients fast and reliable access to health and wellness information through the modality of voice and text-based chatbots. Mayo Clinic envisions virtual assistants in the following ways:

- Educating patients on their medical conditions, including post-procedure care
- Guiding patients through physical therapy
- Answering frequently asked questions

Orbita and Mayo Clinic teamed up to publish a Google Assistant action as well as a voice-interactive chatbot. The voice-interactive chatbot is available online at Mayo Clinic's website.

The Mayo First Aid Google Assistant action offers features as users can say, "Hey Google, talk to Mayo First Aid" to get started. The voice-interactive chatbot is available at www.mayoclinic.org/voice/apps, and the Mayo Clinic symptoms or disease conditions pages on the web and mobile browsers that support voice input.

For detail read, please refer [link](#)



13) Sterling Accuris Diagnostics' chatbot for lead generation

Year: 2018

Partner: WotNot

Business Requirement:

Sterling Accuris Diagnostics, an Indian corporate hospital establishment, faced major competition in the market. Sterling Accuris Diagnostics already implemented the usual marketing campaigns spanning radio and TV ads, coupled with hoardings across the state. However, in order to differentiate themselves from the market of pathology chains, they began search for a tool or process to add to marketing stack. The goal was to generate more brand awareness and business revenue through digital channels, while being able to show actual ROI on ad spend.

Solution:

Sterling Accuris Diagnostics partnered with WotNot team to build a custom chatbot, to improve conversions and improve lead generation across digital ad campaigns. The first step in getting started with this project was to design the conversation flow of the chatbot. The idea was to develop a watertight conversational funnel, which would guide and recommend users on the different tests they could opt for, based on their medical profile. The chatbot was trained on recommending tests as per different age groups, health status, ailments, medical profile, and assisting users in booking an appointment with the nearest lab.

Results:

- 3600+ conversations
- 2950 minutes saved
- 220+ appointments fulfilled
- INR ₹6.5L business value generated

For detail read, please refer [link](#)



10) Bupa UK's health insurance chatbot to transform digital healthcare

Year: 2019

Partner: Spixii

Business Requirement:

Bupa, an international health insurance and healthcare group, set out to explore the potential of chatbot technology to return a conversational element to their digital customer journey.

Solution:

Bupa and Spixii reviewed the existing digital customer journey for Bupa customers looking to buy or get a quote for health insurance. The teams worked together to break the journey into its constituent parts, piecing it together using plenty of post-it notes. They reviewed the customer information required to generate a quote, and then created a conversation that elicited this from the customer, in an interactive way. Then the conversation was created and validated through testing.

To build a strong architecture, aligned with the requirements of this solution, SPIXII has leveraged the benefits of the AWS Services including EC2 instances, Load balancer, RDS, CloudWatch and VPN Gateway to facilitate interconnections between the conversation solution and the payment interface.

Result:

The resulting chatbot provided a user-friendly messaging interface, which gave customers a guide price, before working through a more detailed conversation to understand their preferences for different product features, in order to provide them with a more precise quote.

- The chatbot was hosted on the Bupa UK website and available to around half of customers visiting the website during the pilot.
- It provided access to additional information, to help the customer better understand the product features.
- It gave further insights into Bupa's customers, giving them the opportunity to express detailed feedback in real-time.

For detail read, please refer [link](#)



7) Humana, a leading health insurance provider, reduced costly pre-service calls and improved the provider experience with conversational AI

Year: 2019

Partner: IBM

Business Requirement:

One of the largest insurance providers in the US, Humana offers Medicare supplements, health insurance, dental insurance, vision insurance and pharmacy coverage to more than 13 million customers across the country. Humana's interactive voice response (IVR) system was transferring far too many calls to human agents, at tremendous cost to the company and its customer satisfaction scores. To meet ever-growing user expectations, Humana needed a way to completely rethink how they addressed customer queries. The Humana Provider Services Innovation (PSI) team was charged with finding a solution that could better address these costly pre-service calls and improve the provider experience.

Solution:

Humana chose to work with Watson and began a collaboration with IBM's Data and AI Expert Labs & Learning (DAELL). After a three-month proof of concept, Humana and IBM began development of what became the Provider Services Conversational Voice Agent with Watson. The solution combines multiple Watson applications in a single conversational assistant, run on the IBM cloud, while the Watson Assistant for Voice Interaction runs on premise at Humana.

Humana's Voice Agent with Watson provides a faster, friendlier and more consistent way for administrative staff at healthcare providers to access pre-service, medical eligibility, verification, authorization and referral information without the need to speak with a live agent. The solution relies on AI to understand the intent of a provider's call, verify they are permitted to access the system and member information, and then determine how best to provide the information requested.

The solution receives more than 7,000 voice calls from 120 providers per business day, and feedback from users has been incredibly positive.

For detail read, please refer [link](#)



8) Cigna Hong Kong improving health insurance customer service with the WhatsApp Business API

Year: 2019

Partner: Clare.AI

Business Requirement:

Cigna Corporation is a global health service leader dedicated to helping people improve their health, wellbeing, and peace of mind. With a presence in over 30 countries and jurisdictions, Cigna's global network includes more than one million healthcare professionals, clinics and facilities.

The insurance provider wanted to reduce the volume of calls received and increase customer satisfaction, as well as offer an additional tool to local group customers.

Solution:

WhatsApp is one of Hong Kong's most popular messaging platforms, so Cigna Hong Kong decided to use it as a communication tool to interact with people in both English and Cantonese in post-purchase and customer care stages.

Cigna Hong Kong partnered with Clare.AI, a local startup offering a natural language digital assistant solution, to create a WhatsApp virtual assistant. Cigna was the first Hong Kong medical insurer to offer this convenient communication channel to local group customers 24/7 to help them resolve their queries.

Cigna WhatsApp assistant is capable of handling common customer requests in a matter of seconds, like finding suitable doctors or medical experts based on location and specialization. It also provides people with details such as clinic locations, operating hours and directions. The virtual assistant helped reduce the volume of calls handled by live customer agents, who were then free to assist people with more complex queries.

Result:

- 91% customer query resolution rate
- more than 1,000 customer enquiries resolved within first week of trial launch
- 3X faster response time for customer enquiries

For detail read, please refer [link](#)



9) Roche UK deploys LifeLink chatbot as next generation medical information desk virtual assistant

Year: 2019

Partner: LifeLink

Overview:

LifeLink deployed an advanced conversational chatbot technology at Roche UK, which provides information in response to questions from UK healthcare professionals on the Summary of Product Characteristics (SmPC) and from UK patients on the Patient Information Leaflet (PIL). Patients and providers utilize the Roche medical information desk to get answers to common questions about prescription medicines and report potential adverse events.

Typically, these inquiries have been handled through call centers. The LifeLink chatbot augments human agents with an automated, virtual assistant that handles inquiries through an interactive text-based messaging interface that is mobile-friendly and always available, on demand.

The configuration capabilities of the LifeLink platform allow the Roche team to accelerate the approved content refresh cycle, which can make the bots more effective than tightly scripted human representatives. The bots also collect valuable information about adverse events related to the medicine as part of standardized feedback interactions that are embedded in the chatbot's conversational design.

The chatbot can be configured to automate the medical information desk for any pharmaceutical product, at any stage of development. Projects have been initiated to extend the scope of chatbot to support other global regions and products.

Result:

- Conversational messaging bot supports FAQs and collects adverse event data, achieving **91% user satisfaction ratings**

For detail read, please refer [link](#)



CASE STUDIES



1) Northwell Health's NORA enables improved patient care

Year: 2020

Partner: Microsoft

Business Requirement:

Northwell Health, an integrated healthcare delivery network in the New York City area, includes 23 hospitals and nearly 800 outpatient facilities - wanted to provide clinicians, pharmacists, social workers, and other care team members with a common tool for highly secure messaging, to enable better patient care, improve processes such as patient transport and medication delivery, and help clinicians to maintain a better work-life balance by improving mobility options.

Solution:

Northwell Health partnered with Microsoft to create NORA, a chatbot extension to Teams. NORA enables clinicians to use Teams chats to search the EMR (electronic medical record) solution and get patient information quickly. NORA also has a notification feature for clinicians to request alerts when lab results become available. They can also forward responses from NORA to other clinicians to get specialist opinions on the results.

Products and Services

- Azure Bot Service (AI)
- Azure Cosmos DB
- Azure Data Lake Storage
- Azure Databricks (AI)
- Azure DevOps
- Azure Event Hubs
- Microsoft 365 Enterprise
- Microsoft Teams
- Power Apps
- Power BI Pro

Results:

- Create a single place to find and share patient information

For detail read, please refer [link](#)





11) GlaxoSmithKline launched 16 virtual assistants in 10 months with Watson Assistant

Year: 2018

Partner: IBM

Overview:

GSK is a global pharmaceutical company that researches, develops, and manufactures innovative pharmaceutical medicines, vaccines, and consumer healthcare products. GSK was dependent on expensive call centers to provide 24/7 support. But about 20% of incoming calls were customers looking for standard info, putting unneeded pressure on overburdened call center resources. Due to large call volumes and long wait times, GSK began assessing virtual assistant technology to allow customers to self-serve.

GSK collaborated with IBM Watson Assistant to provide a chatbot service while reducing costs. With the successful launch in customer care, GSK set out to deploy eight more virtual assistants. After just ten months, GSK doubled its target and launched 16 bots.

One of the most successful use cases was providing Watson Assistant to field sellers. GSK trained Watson Assistant on all products, and now field sellers can get answers to even their most complicated questions, on the road or right in front of a client. Watson Assistant proved essential during the spread of COVID-19. With guidelines and regulations changing almost hourly, GSK field sellers were able to stay up to date and felt confident they always had the latest information.

Results:

- In Q3 2020, Watson Assistant engaged with 7,000 unique users answering a total of 83,000 questions.

For detail read, please refer [link](#)



5) GSK launches Medzy, a new UAE patient-friendly chatbot, aimed at increasing antibiotic adherence

Year: 2019

Overview:

The global healthcare company GSK launched Medzy, a UAE-focused chatbot, to help patients use antibiotics more responsibly. This is in response to results of research commissioned by GSK, which revealed significant gaps in antibiotic awareness and best practice amongst patients in the UAE, which could contribute to the growing threat of antimicrobial resistance (AMR).

The patient-friendly chatbot provides simple-to-understand information including, but not limited to, the below:

- What antibiotics are, when to take them and how they work
- What AMR is, its causes, long terms effects and prevention tips
- How to care for someone who is taking antibiotics
- Reminders for patients to take their medication
- Dosage and treatment length
- Formulation of medication, ingredients and side effects
- Safe disposal and storage
- A way for users to report any side effects.

For detail read, please refer [link](#)



3) Walgreens Boots Alliance boosts customer service with chatbots built on Microsoft Azure

Year: 2020

Partner: Microsoft

Business Requirement:

Walgreens Boots Alliance (WBA) operates several well-known retail pharmacy chains, including Walgreens, Boots, Duane Reade, and select Rite Aid stores, and it has affiliated stores in more than 25 countries. To make its websites more responsive to customer needs, WBA wanted to add chatbot technology, and those plans accelerated in response to the COVID-19 pandemic.

Solution:

WBA used Microsoft Healthcare Bot service to add a COVID-19 Risk Assessment bot to the Walgreens.com Find Care webpage, and it used Microsoft Bot Framework to add a general question-and-answer bot to the Boots.com pharmacy webpage. Customers now get answers to common questions quickly, and WBA is strengthening partnerships with telemedicine and healthcare partners.

Products and Services

- Azure
- Azure Bot Service (AI)
- Cognitive Services (AI)
- QnA Maker (AI)

Results:

- Based on the success of the bot so far, WBA plans to expand the functionality of the Boots.com pharmacy bot to include things like specific order information and other features to improve the customer experience.

For detail read, please refer [link](#)



12) Dialogue removes human bias from medical evaluations with conversational AI

Year: 2018

Partner: Rasa

Business Requirement:

Dialogue, a healthcare company that provides virtual care treatment and telemedicine, wanted to automate the patient intake process by developing a conversational AI assistant capable of gathering information about patients' medical conditions through a conversational evaluation before introducing them to a member of the care team.

Solution:

During the patient intake evaluation, Dialogue's contextual assistant uses Rasa NLU to classify patients' chief complaint and uses Rasa Core for generating conversational responses. The assistant supports three different languages—English, French, and German—depending on user preference and can support multiple users in a single conversation.

Multimedia and innovative message types provide a richer patient experience within the Dialogue Virtual Clinic. Moving beyond simple text questions with suggested replies, patients can upload files and images through the interface, and the Dialogue Virtual Clinic even allows patients to select a specific part of the body where they experience pain from a visual representation.

For detail read, please refer [link](#)



CASE STUDIES

| Company | Description |
|---|--|
|  | <p><u>Buoy Health: Symptom checker chatbot</u></p> <ul style="list-style-type: none"> • Buoy Health’s symptom checker chatbot leverages AI to deliver personalized and more accurate diagnoses. • The chatbot thoroughly asks about the details of medical state and offers various solutions and actionable steps to take. |
|  | <p><u>Johnson & Johnson vision’s AI powered virtual assistant for contact lenses</u></p> <ul style="list-style-type: none"> • Johnson & Johnson Vision introduced Andy, a virtual assistant chatbot powered by artificial intelligence (AI). Andy is designed to help guide US consumers throughout their ACUVUE Brand Contact Lens journey – from those considering contact lenses for the first time to long-term wearers. The chatbot also provides intuitive coaching to help new wearers develop healthy contact lens habits. • With Andy, Johnson & Johnson Vision aims to empower those who are considering contact lenses, while also helping new wearers who may have questions or challenges with inserting, removing or caring for their new contact lenses. |
|  | <p><u>Sanofi’s sleep chatbot</u></p> <ul style="list-style-type: none"> • In 2018, Sanofi, a pharmaceutical company, launched a chatbot called Nina for the French market, to aid patients with mild sleeping disorders. The platform provided 24/7 responsiveness and recommendations such as shifting the colors on the phone display to warmer colors after sunset. |



CASE STUDIES

| Company | Description |
|---|--|
|  | <p><u>Pfizer’s chatbot for product information and customer support service</u></p> <ul style="list-style-type: none"> To address the growing demand for information about Pfizer products, Pfizer launched a first-in-industry solution: medical information chatbots, Medibot (in the U.S.) and Fabi (in Brazil). The creation and deployment of “bots” are the first step in a journey toward utilizing artificial intelligence to meet the growing information needs of customers. |
|  | <p><u>Novo Nordisk's online chatbot, available 24/7 for diabetes questions</u></p> <ul style="list-style-type: none"> The Chatbot Sophia from Novo Nordisk (pharmaceutical company) is available for diabetes patients on the diabetes portal Cornerstones4Care. It answers patients' questions about nutrition, provides information about the disease and offers advice on a healthy lifestyle. Within half a year Sophia conducted 11,000 interviews and answered 27,000 questions. The Danish pharmaceutical company decided to use a chatbot after it noticed increased traffic on the website between 11pm and 1am. With the chatbot, website visitors can now be advised outside business hours. |
|  | <p><u>Ada’s medical chatbot for informed services and personalized healthcare</u></p> <ul style="list-style-type: none"> Ada medical chatbot brings together doctors, scientists, and industry pioneers to improve the quality of personal healthcare. Instead of banking only on a repository of information, Ada compares user queries with thousands of similar cases. It then analyzes its findings against the information available in the medical library to craft a much more relevant and contextual response. <ul style="list-style-type: none"> Pros: Ada puts access in the hands of the users. Cons: Again, limited natural language understanding capabilities negatively impact the user experience. |



CASE STUDIES

| Company | Description |
|--|--|
|  | <p><u>Your.MD for personalized service and patient care</u></p> <ul style="list-style-type: none"> Your.MD also known as Healthily, is a digital healthtech company that uses artificial intelligence to provide users with personalized health information via a chatbot. Designed to help patients find the healthcare information they need to stay healthy; MD offers various features and functions. However, what stands apart from all the other features is its symptom checker. Available on the web and as a stand-alone app, it acts as a personal health assistant allowing users to check symptoms, ask a question, or take a health quiz. <ul style="list-style-type: none"> Pros: The chatbot uses a vast repository of reliable healthcare information to offer relevant answers to all user queries. Cons: Language understanding capabilities are limited in this chatbot, which negatively impacts the experience. |
|  | <p><u>Allianz Worldwide Care launch new AI-powered Symptom Checker as part of their MyHealth app.</u></p> <ul style="list-style-type: none"> Allianz Worldwide Care is the international health division of Allianz Worldwide Partners and specializes in providing international health and life insurance to businesses and private individuals living or working abroad. Allianz Care launched a Symptom Checker feature on their MyHealth app. The AI asks questions about members' medical conditions anonymously and provides a preliminary evaluation of their symptoms to assess whether medical treatment is needed. The Symptom Checker feature has been developed to provide members with instant access to helpful information. Downloads of the app have hit 228,000; while the number of claims submitted using this technology has rose to 750,000. In fact, claim submissions via the app far exceed those of traditional methods such as post and email. The app supports 5 different languages: English, German, French, Spanish and Portuguese. |



CASE STUDIES

| Company | Description |
|--|---|
|  | <p><u>Now Health AI chatbot for customer experience</u></p> <ul style="list-style-type: none">• Now Health International, an insurance provider, launched a Chatbot on Facebook Messenger to complement existing suite of digital tools and enhance the online customer experience. The tool has been developed to provide a simple and fast channel for the customers to get advice on some of the most frequently asked questions.• Members and potential customers can use the chatbot to seek advice on how to get a quote, submitting a claim, and searching for a medical provider within network. The user can choose one of the three functions from the easy-to-use selection buttons, and the chatbot then guides them through the process, step by step. |
|  | <p><u>Aviva India's AI-powered chatbot for customer support service</u></p> <ul style="list-style-type: none">• Aviva India is an Indian life assurance company, and a joint venture between Aviva plc, a British assurance company, and Dabur Group, an Indian conglomerate.• Aviva launched a chatbot named "ALISHA" in partnership with Findability Sciences -- a cognitive and artificial intelligence (AI) solutions company. The chatbot is powered by IBM Watson's Conversation application programming interface (API) and fulfils Aviva's objective of providing meaningful insurance guidance anytime, anywhere.• The chatbot, also called Aviva Life Insurance Self Help Assistant, is a Natural Language Processor (NLP)-powered Conversational Computing Solutions. It can interpret customers' questions and direct the flow of the conversation to guide and assist them. |



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APPENDIX



METHODOLOGY

Valorem Reply Research analyzed data and information from publicly available sources – company websites and company reports, industry reports, analyst reports, government statistics and other third-party sources such as research articles, publications, secondary literature, social media sites, news articles etc..

Data collected are further analyzed and cleaned by removing duplicates and irrelevant information, followed by qualitative analysis to arrive at the findings in the report.

The findings are based on analysis of publicly available information only, and not on information submitted by companies to Valorem Reply.



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