TRANSFORM YOUR BUSINESS WITH AI CHATBOTS

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TRANSFORM YOUR BUSINESS WITH AI CHATBOTS.
Innovation and Competitive Advantage through Conversational AI.

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How AI Chatbots Can Transform Your Business

FOREWORD

The inspiration to write this book stems from the early difficulties we experienced in exploring the practical uses of artificial intelligence (AI) and cognitive computing, and our passion for creating a technology ecosystem to support it in Mexico and Latin America. In the early 2000s, there was neither reference material nor clarity in regard to which platforms and technologies would be appropriate for transitioning to the “cloud” and implementing AI technologies. No specific technical information existed in English or Spanish for the interfaces and functionalities of the platforms we needed to use. Over the years, we witnessed the evolution of cloud computing and AI technologies, and helped create the technology foundation in Mexico and Latin America to speed up their adoption and use, which is critical to the future.

As technology plays an increasingly important role in all forms of commerce and communications, the ability of enterprises to use AI and Cloud Computing is key. We will need to meet new challenges with more powerful analysis and processing tools, which have already changed how the world does business. Mexico is becoming a leading country in Information Technology services and digital transformation, not only for Mexico and Latin America, but also for the United States and Canada. It has been a hard and exciting journey. We offer this guide as a resource to others who face similar challenges when embracing our increasingly digital world.

WHAT IS A CHATBOT?

Chatbots, also known as conversational AI or Virtual Assistants, are computer programs that use Artificial Intelligence to simulate and process human conversations, written or spoken. Customers use chatbots to interact with companies as if they were communicating with a person—except that chatbots are available to talk any time, every day of the year.

Chatbots use different kinds of technologies based in the cloud, taking advantage of all the benefits they bring to simulate human conversations. They use Artificial Intelligence and Natural Language Processing (NLP) to understand and respond to every interaction, analyze data, and even learn in an autonomous way.

Chatbots can answer basic questions or FAQs with a one-line answer or keep up a conversation with context-based replies.

A virtual assistant can analyze and learn from each interaction in order to self-evolve and master increasingly effective personalized responses.

Once a chatbot has been properly trained it can respond to any type of inquiry through a wide variety of communication vehicles: enterprise applications, websites, social networks, and even instant messaging applications like WhatsApp, Facebook Messenger, or Telegram.

Food companies such as Domino`s use chatbots to help customers order a pizza and get it delivered, while retail companies such as Sephora have chatbots that can even help customers choose the right foundation for their skin tone.

But exactly how versatile are chatbots? So versatile, in fact, that chatbot technology may be implemented in any company, regardless of how it typically interacts with its customers and employees. Chatbots give the same advantage to sectors as varied as banking, tourism, e-commerce, marketing, and hotels—to name just a few.

GLOBAL OVERVIEW OF CHATBOTS

The use of chatbots has exploded worldwide as consumers flock to communicate, entertain and shop online. Companies have rushed to adopt technologies that enable them to serve their customers more quickly, efficiently and with increasing scale; support innovation and competitive advantage; and maintain long-term relationships with 24/7 responsiveness.

Artificial Intelligence has become part of everyday life, automating and revolutionizing a wide range of services and industries. In a study conducted by The Economist, 75% of executives at companies said that they will implement artificial intelligence in the next three years **[1]**. Meanwhile, 46% were more concerned about competition generated by AI-based companies than by companies not using AI. According to a 2018 global survey by McKinsey & Company, 47% of companies around the world have successfully implemented at least one AI tool in their operations **[2]**. And that is just the start.

AI technologies are everywhere: in telephones, computers — and notably, in Netflix's recommendations. According to a global survey published by HubSpot, 63% of people use AI-powered technologies without knowing it **[3]**. And an increasing number of people are more than comfortable interacting with AI, particularly in areas such as customer service or sales.

Chatbots communicate with audiences in two ways: voice and text. They provide an efficient and cost-effective way for organizations to manage communications across all platforms and channels while acquiring and aggregating data to analyze and optimize operations and communications. Thanks to the integration of chatbots with messaging apps, today users can interact with organizations just by sending a text as they would to any friend anytime day or night and get instant answers without using the internet or making a call. With messaging apps becoming more ubiquitous globally, chatbots are now the most common way for users to communicate and interact with companies and their customer service centers.

With chatbots, companies can learn more about their visitors by aggregating and understanding responses which indicate important attitudes, behaviors and beliefs. Chatbots can have conversations in natural language - the same one customers use - adapting and learning from the many ways people ask questions. Analyzing interactions provides the best results, enabling companies to optimize their interactions. This analysis also results in “training the chatbot” to be ever more effective. The training process helps companies improve customer experiences and offer better service. Likewise, visitor satisfaction increases when people solve problems faster as they find the right products, purchase them, and check their shipping progress.

According to McKinsey & Company, an AI-powered chatbot is one of the most successful digital tools a company can use to transform its customer experience **[4]**.

Clearly, companies not responding to advances in digital technology risk customer attrition—a blueprint for failure.

Consumer needs are changing quickly, with an emphasis on faster service and instant response. According to consultant Wunderman, 56% of millennials have switched from one company to another because of dissatisfaction with customer service, with 52% of telephone inquiries ending in hang ups before concerns are solved [5].

But there are digital solutions to these problems. Companies in the financial, retail, and customer service sector—even a company's human resources department—can effectively use conversational AI to improve interactions. Around the world, diverse companies have discovered the tremendous benefits of using a virtual assistant.

Chatbots can be tailored to any sector, are cost-effective, and are easy to implement. In 2016, Facebook Messenger announced that it had more than 30,000 chatbots available worldwide on its platform [6]. By 2018, it announced the creation of 300,000 more [7].

From the first appearance of a conventional AI bot, in 1966, chatbots have been increasingly upgraded and improved. Today they can keep up a fluent, natural conversation and carry out a variety of tasks without human mediation. AI bots can order home-delivery food, book a hotel room, purchase movie tickets, receive invitations, do shopping—even tell jokes, like Apple's Siri.

CHATBOTS: A REVOLUTIONARY ADVANCEMENT IN BUSINESS PROCESSES

Conversational AI and Messaging Apps

Platforms that enable instant messaging between users are known as “chat applications” or “social messaging apps.” The most popular apps worldwide include WhatsApp, Facebook Messenger, WeChat, Telegram, and Twitter. Integrating a number of functions including audio and visual messaging, visual libraries and contact databases, are the evolution of SMS or Text Messaging.

Messaging apps are often integrated into other applications such as Slack, Instagram and TikTok. Messaging may not be the primary function of the application, but the message feature makes it easier for people to collaborate, schedule appointments and share information, so messages have become one of the most important communication channels in the world. According to TechCrunch, WhatsApp delivers about 100 billion messages per day **[8]**.

In addition to the best-known messaging apps, many others are used worldwide, creating a challenge for companies seeking to provide consistent messaging across all channels. Not only is consistency a problem, but reliable information about sales, offers, and availability is a challenge, as is the ability to aggregate and analyze the data that results from interactions in these platforms.

Human Resources

Chatbots have revolutionized the two most important processes in Human Resources: personnel recruitment and training. When there is a need to advertise a job vacancy, a customized chatbot algorithm can be the first contact with potential candidates. It will collect information, ask further questions, process data received, and filter the best candidates. This streamlined process reduces stress on the recruitment team without losing information that's crucial to a successful hire.

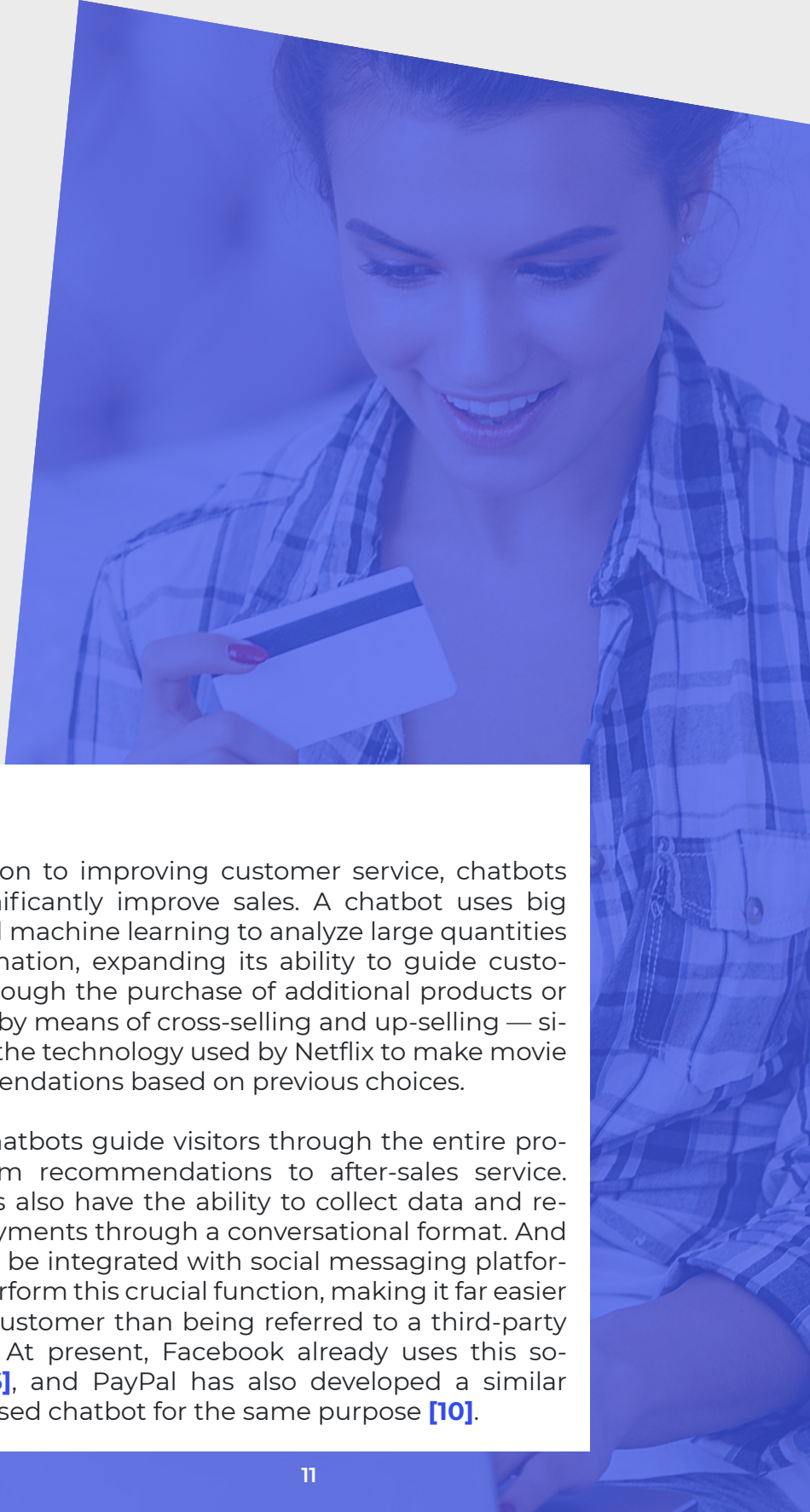
As for personnel training, well-programmed chatbots can handle teaching just about any topic. A chatbot can act as a tutor to reinforce the teaching process, making any learning experience more dynamic and personalized. In fact, one of the major advantages in using a chatbot to train personnel is its ability to adapt to the specific needs of a particular user. The added benefit? A chatbot is available 24/7 to support an employee's success.

Customer Service

When a customer clicks on your website, it's as if they enter your store. For a company with an online presence, customer engagement and quick feedback are key to success. Chatbots are an ideal tool, having the ability to respond at any time to customer inquiries—particularly those which are repetitive—saving time, effort, and costs. No wonder so many companies use chatbots on their websites and in their social networks to resolve inquiries quickly and effectively.

Chatbots are also a valuable ally of contact centers, extending their capacity to serve more customers at once while driving down costs and learning more about their customers. To customers, the benefits are obvious: instant responses to their inquiries, as well as a personalized service that smooths and improves their journey.

It's no surprise, then, that the growing need for chatbots is such that the research firm Gartner predicts that by the time this book is published, 25% of customer service centers will be operated by AI-powered agents **[9]**.



Sales

In addition to improving customer service, chatbots can significantly improve sales. A chatbot uses big data and machine learning to analyze large quantities of information, expanding its ability to guide customers through the purchase of additional products or services by means of cross-selling and up-selling — similar to the technology used by Netflix to make movie recommendations based on previous choices.

Some chatbots guide visitors through the entire process from recommendations to after-sales service. Chatbots also have the ability to collect data and receive payments through a conversational format. And they can be integrated with social messaging platforms to perform this crucial function, making it far easier for the customer than being referred to a third-party website. At present, Facebook already uses this solution **[6]**, and PayPal has also developed a similar Slack-based chatbot for the same purpose **[10]**.

Collaboration and Reporting

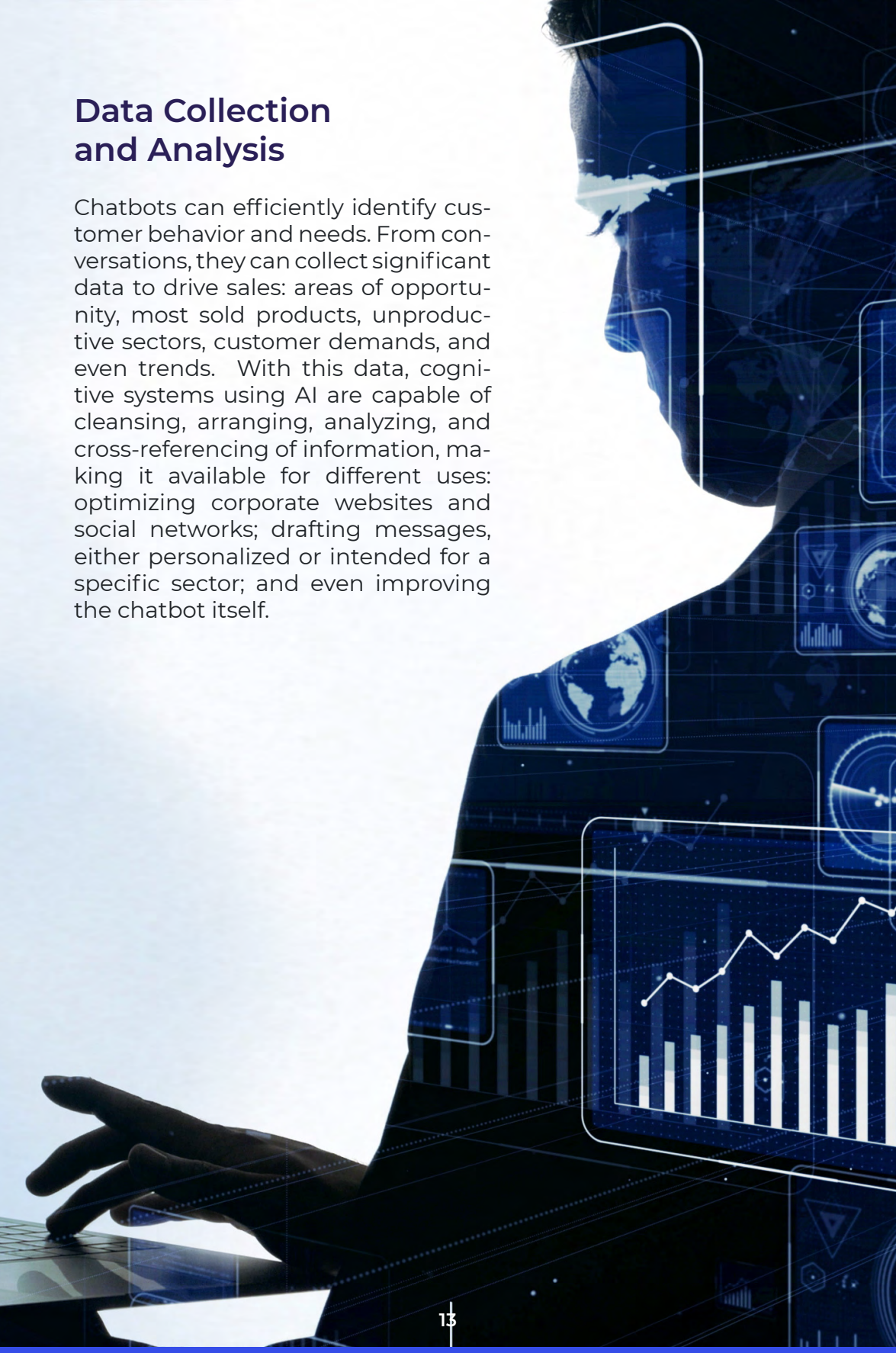
A majority of companies use messaging services and similar tools to facilitate collaboration among employees. A chatbot can be incorporated into these services to automate important, but time-consuming, processes. For instance, a chatbot integrated into WhatsApp can compile daily equipment upgrades, integrate them into a report and send it to a manager. Additionally, it can send reminder notifications of meeting times or deadlines.

Many companies have a rudimentary chatbot as a result of messaging services, like Microsoft Teams, providing some basic chatbot functionality. By creating basic questions and answers, a non-technical person can create chatbot functionality in a few clicks. However these simple chatbots do not connect to back end systems and since multiple teams within an organization might create chatbots for siloed use, this can cause confusion for the user as to which chatbot to use for different tasks.

One solution for this problem is to have a 'super chatbot' for all specialized chatbots. In this scenario the super chatbot manages and learns to redirect conversations to specialized chatbots which provide the accurate answer. This way the end user only sees one unified chatbot for every inquiry. This also allows for a better user experience and the company may have multiple specialized chatbots running in the background, either for each business unit or customer type.

Data Collection and Analysis

Chatbots can efficiently identify customer behavior and needs. From conversations, they can collect significant data to drive sales: areas of opportunity, most sold products, unproductive sectors, customer demands, and even trends. With this data, cognitive systems using AI are capable of cleansing, arranging, analyzing, and cross-referencing of information, making it available for different uses: optimizing corporate websites and social networks; drafting messages, either personalized or intended for a specific sector; and even improving the chatbot itself.



HOW CHATBOTS IMPACT VARIOUS INDUSTRIES

AI has transformed a wide variety of industries by providing significant savings of time and money. Going forward, AI will result in a doubling of economic growth rates in twelve developed countries by 2035, boosting labor productivity by nearly 40%, according to Accenture research **[11]**.

The global chatbot market, in particular, is projected to grow from $2.6B in 2019 to $9.4B by 2024 in response to technological advances and customer demand for 24/7 assistance, according to the specialized site Market and Markets **[12]**.

Businesses facing increasing competition have an urgent need for AI technology.

In order to compete effectively, companies must provide top quality customer service. More companies than ever are adopting this technology to quickly handle complaints, sell products and services, and provide a more personalized customer experience.

In the legal industry, chatbots have been assisting in the resolution of legal issues. Docubot, for example, helps consumers generate legal documents **[13]**; Lexi provides legal assistance to users [13]; and Legalibot, developed by Legaliboo, is the first chatbot in the world capable of generating customized contracts through Facebook Messenger **[14]**.

AI-powered virtual agents are not meant to replace the human workforce, but to transform it. This translates into more efficient processes with a lower error range. Human agents freed from spending all day answering the same questions and dealing with frustrated customers are less stressed, leading to a lower rate of attrition.

And there is much room for growth. According to a study conducted by NDS Cognitive Labs, the four industries that will undergo the most significant changes thanks to artificial intelligence and chatbots are retail, financial services, marketing and advertising, and tourism.

Retail

Retail stands to gain tremendous benefits from the use of virtual assistants. Customers have enthusiastically taken to the technology, with chatbots capable of resolving their concerns quickly and effectively, as well as suggesting products based on purchase intent. An example: if a chatbot is told that the customer plans a romantic dinner, it will deliver appropriate suggestions of products to purchase, such as wines, gifts, and flower arrangements.

Customers find even more benefits in the virtual assistant's ability to deliver answers to questions on any day, at any time, about everything from product availability to promotions and discounts. Enterprises benefit from an ability to serve customers almost limitlessly and scale efficiently and cost-effectively.

Financial Services

Financial institutions have relied on technology for decades, though legacy issues such as sunk costs in data centers and real concerns about regulation and cybersecurity have slowed wider adoption. But with today's AI advances, there are already signs of significant transformation. Chatbots now give banks the ability to respond to more than 90% of user inquiries while reducing interactions with call centers by more than 30%.

Process optimization, loan risk calculation, as well as personalized recommendations of financial products lead to better customer service—a huge advantage that the financial sector is now reaping from AI-based chatbots. Banks such as HSBC have already embedded AI-powered chatbots and Big Data into processes ranging from the offering of new products to the approval of a loan in real time.

Marketing and Advertising

The use of artificial intelligence and chatbots led to “contextual advertising,” which is the practice of showing users an ad based on their internet and social media browsing habits. Contextual advertising uses an analysis of web browsing searches to display related ads that improve relevance and increase conversion.

This technology is really helpful when a company implements per-personalized advertising campaigns. Knowing exactly what the customer wants or needs and offering it in the precise moment they need it is just an example of the benefits of chatbots. The ability to analyze the needs of your customers from data extracted from direct conversations, meaning direct source is really valuable.

Tourism

The travel industry, for example - transportation, hotels and attractions - needs to quickly navigate through changing customer demands to provide information about flight bookings and flight status. Chatbots connected to WhatsApp or Facebook Messenger give the travel industry an opportunity to reinvent the passenger experience, as well as to develop new channels for customer interaction.

A chatbot can act like a travel “concierge” to help customers make hotel and flight reservations, among other common tasks. But it may also serve as a cultural promoter, directing visitors to local attractions, restaurants, and shopping. Museums can use chatbots to interact with visitors by giving a detailed description of an exhibition, providing context about the creators of the works, the dates of shows, and information about the museum itself. Chatbots can also be used to track the movement of public transit like buses and trains and respond with natural language to how questions are asked, regardless of the many ways they may be posed.

CASE STUDIES

Below, we share some success stories of how some of our clients have implemented virtual assistants with our help.

Business Case: Banking and Financial Services

Growing competition in the financial sector has forced a paradigm change. Constant innovation and new fintech competitors have revolutionized products and services. As a result, the sector has been forced to innovate and implement new solutions systematically to serve customers, the bank's profitability, and work culture.

Customer service interactions are demanding and are often a source of frustration for customers and staff alike. In addition, running a contact center is expensive, with the average phone interaction costing between $10 USD and $50 USD, with an average attrition rate of 40% for customer service employees. Even though banks dedicate considerable resources to customer service, many still struggle to solve inquiries quickly and effectively, resulting in low customer satisfaction and high employee turnover.

AI-powered chatbots have become a key differentiator for financial institutions. An AI-powered chatbot enables interactions in real time and resolves common issues faster by providing answers to thousands of customer questions, saving time and resources and greatly reducing costs. Additionally, they improve marketing efforts by enabling personalization, cross-selling, up-selling, and consistency in omnichannel marketing.

NDS Cognitive Labs worked with a global bank and two leading financial institutions based in Mexico to develop an innovative AI-powered virtual assistant that provided customers with fast, helpful answers. As a result, the time to address common inquiries was reduced by 90%, going from 15 minutes to less than two minutes.

Problem Description

A bank serving millions of customers in Mexico had a contact center team of fifty people dedicated to fielding inquiries. They were required to handle thousands of calls per month, but lacked the human resources to do it. This was stressful for the agents who spent all day on the phone, answering the same questions and dealing with frustrated customers. In addition, with constant personnel turnover, the team couldn't meet its KPIs. The unhappy result was customer frustration and long wait times.

The bank needed a solution to resolve issues, reduce response times, process a large quantity of data, and increase customer satisfaction.

Problem Analysis

Our team of data scientists and engineers analyzed more than one year of customer requests: 150,000 customer-bank and contact-center interactions, including emails, calls and chat messages.

Interactions were transcribed for analysis. Our proprietary algorithms deciphered how users initiate interactions and form questions and found a way to interpret their sentiments when interacting with agents. The most common customer needs fell into three categories: 1) product information, 2) troubleshooting, and 3) branch and ATM location information.

Solution Design

We prioritized the goals for the virtual assistant based on what would be most useful to customers and the bank, and what could differentiate the bank's chatbot from other virtual agents.

We defined how the chatbot should look and modeled the solution, defining the flow of information. We started with simple questions and moved on to more complex inquiries.

We identified the opportunity to create "The Financial Contact Center Chatbot" (FCCC) solution, an automated virtual agent that would act as the customer's first point of call, guiding inquiries, producing information, and solving challenges. Designed to aid the support team, the FCCC would work effectively with human agents, helping analyze and route customer interactions.

For each inquiry received, the chatbot would be able to identify the user's mood, analyze the interaction, learn from how the question is asked, and run the processes required to either resolve the issue or route it to a specialist. It would then produce an analysis of the interaction to streamline the process in the future, and it would learn from interactions to expand its capabilities over time.

Development and Implementation

Having defined and modeled the scope, we moved on to intent modeling (user interaction modeling) to direct the chatbot on its path to resolving customer situations and needs.

A basic need was to access the bank's wide catalog of products, connected to specific information about pricing, benefits, and the purchase process.

We also needed to troubleshoot issues with online banking, which was by far the most complex problem tackled. We analyzed problems customers actually experienced and then designed protocols for the chatbot to follow for each situation. Important issues included access to online bank accounts, wire transfers, and mobile application failures.

Finally, customers wanted information about the bank's physical locations. We defined three different processes: 1) the branches, 2) ATMs, and 3) ATMs available on weekends (only open on Saturdays and Sundays). If the customer shared their location, a recommendation of the closest location was generated, or results based on a nearby zip code or desired tourist attraction could be generated.

Once the chatbot was trained with topics and programmed to respond to a vast and diverse array of customer questions, we performed the first test. We engaged the bank's support team and call center first, asking employees to test it without any kind of guide.

Next, we analyzed the results. We identified what was successful and what failed. When we identified words or inquiries the chatbot initially misunderstood, we developed new methods to enable it to successfully respond.

We then performed a second test with the bank's support teams. This time, we had more than 1,000 answers to about 1,400 different questions. After two days, our client confirmed that it operated perfectly and greenlit the full implementation.

We integrated the chatbot seamlessly with the bank's website in record time so it could be enabled for the general public. Customers clicked on the "chat" button to access a messaging interface. On typing their questions or requests, they received a response from the virtual assistant in less than two seconds. To make the consumer experience even more engaging, we embedded multimedia and geographical integrations into the interface.

Results and Continuous Improvement

The number of requests handled simultaneously increased from fifty to more than 25,000. The time to resolve customer service issues decreased from an average of ten minutes to only two, an 80% reduction. With the implementation of the chatbot, the number of users served daily increased from 1,750 to more than 25,750 **[15]**.

The virtual assistant constantly increases its customer service capacity, answering 1,000 different questions at the start, to more than 1,400 currently. It initially responded to an average of 100,000 monthly inquiries, which increased to more than 750,000 in 2020 due to global pandemic inquiries after only three months – the equivalent of more than one year of interactions with the previous processes **[16]**.

As an added benefit, the bank's support teams now use it as a resource for training new employees and integrating them into the team.

Today, the chatbot continues to learn and expand its abilities. We continuously prepare reports on its performance to not only reveal common words customers use, most often asked questions, and most common time of use, but also to list issues that the chatbot was unable to solve to be included in future iterations. The data analysis enables continuous improvement in functionality and even greater customer satisfaction and business benefits.

Business Case: Manufacturing

Capabilities in manufacturing have radically changed as a result of AI and the Internet of Things (IoT). Today, organizations can digitally monitor the status and performance of individual machines in real time. But there's more!

We've described how AI-powered chatbots can help different industries with customer inquiries, sales and service, but now imagine a chatbot that works as a business-to-business supply chain communications tool.

One of the largest steel manufacturing companies in Mexico, with thousands of purchase orders every month, identified a communication problem in its sales pipeline between the company, its sales representatives, and clients. The company turned to NDS Cognitive Labs to determine how to use an AI chatbot for sales and after-sales services. The goal was to streamline the inquiry resolution process and minimize unnecessary procedures.

We created a chatbot that focused on interactions between sales representatives and clients. The chatbot tracked purchase orders and provided their status, showing real-time geolocation maps and customer account details.

This virtual assistant delivered instant answers, handling more than 2,000 inquiries a month. With the assistance of the chatbot, the company satisfied clients and freed support agents so they could move from operational duties to more strategic ones, enabling faster and more effective interactions.

Problem Description

By the time we came on board, the company had already identified its needs. This accelerated our design and development process, and we were able to focus on using the chatbot to smooth bumps in final sales and after-sales processes, freeing up the sales force to focus on adding new business.

Each of the company's sales representatives maintains a large portfolio of clients who constantly place orders throughout the year. Tracking client purchase orders is complicated because inquiries must pass through several departments to be resolved.

The company's clients already had a web portal where they could check on order-related matters. But it was common for clients to forget their passwords, lock themselves out of their account, and turn to their sales rep for help – a major burden on support agents

Sales reps had to route customer inquiries to different support teams within the company, depending on the nature of the question. The communication channel between the sales representatives and the clients was mostly through instant messaging platforms like WhatsApp, making it difficult to track results in real time, or maintain a record of customer problems and inquiries.

Problem Analysis

Our analysts received records of interactions between clients and sales representatives, and between sales representatives and the company's support teams. These included conversations through WhatsApp, Microsoft Teams, the client's proprietary platform, and emails.

This data gave us an understanding of client needs and specifically how they made inquiries. This enabled us to train the chatbot and define the exact processes to be addressed that would be of greatest value to clients and the company.

Solution Design

The design of initial functions for the new chatbot was based on an analysis of the inquiry data and an agreed upon working plan — with steadfast focus on the user experience.

Inquiries were classified into eight main categories: purchase order status inquiries, entry profile, order location, order production cycle, dispatched units, customer credit information, billing particulars, and other more complex issues for handling by a live agent.

In addition, our virtual agent needed to include a security integration for clients who had forgotten their ID and password or who got locked out of the system.

The plan was to create a virtual sales and after-sales agent that would work for both clients and sales representatives to solve almost any possible inquiry. We integrated different AI tools to enable the chatbot to analyze conversations and respond to them in natural language, regardless of how they were asked. We then designed the ideal virtual agent, bearing in mind the look and feel of the user interface, the workflow to be structured for every inquiry, and the technological tools that would be included. Both sales reps and clients found it convenient to make inquiries through WhatsApp, so our virtual assistant was integrated into this application.

Development and Implementation

Our team of engineers developed the chatbot in two parts: one focused on the creation of the virtual assistant and the other one on designing the platform interface. We started by integrating the first functionalities that our client needed, based on a work plan and agreed-upon schedule.

First, our chatbot needed to be capable of handling inquiries into the status of orders: the purchase order process and its current status, along with a possible integration of estimated delivery time. We also needed an entry profile consisting of a dashboard with products and quantities to be delivered to the client within a given time frame.

While we mapped the status of each order, we also needed to include the particulars of the deliveries including dates, maps, destination, carriers, quantities, place of origin, and permits. We designed the location responses to include a map and the image of a virtual truck traveling in real time.

Credit line information included relevant dates and amounts, and billing information showed details like document numbers, amounts, dates, and invoices due and overdue. If the chatbot couldn't respond to an inquiry, it would generate a file and route it to the appropriate human agent.

Finally, the chatbot included security and action protocols so that it could make safety verifications when a user was locked out or forgot their digital ID. It helped users access the platform more easily and with less frustration.

We implemented the chatbot in the client's web portal. Once logged in, clients found their order information and had to simply type their inquiries into the chat interface and the assistant would recognize the need and deliver the appropriate response.

Results and Continuous Improvement

The results far surpassed our client's expectations. Today, an average of 2,000 interactions per month occur through various integrations with messaging platforms and the company's customer web portal.

Presently, the chatbot answers more than half of the company's client inquiries. The chatbot easily integrates with instant messaging platforms such as WhatsApp and Microsoft Teams, providing a natural interaction with clients on their preferred platform, as if they were chatting with their sales agent. In the next few months, all interactions will be routed to the chatbot, allowing sales reps to focus 100% on sales, leaving after-sales client inquiries to the chatbot.

The company reported a drop in the length of interactions as they no longer are routed to different people and departments. They are handled instantly, thanks to the chatbot's automation and its connection to the rest of the company's technical infrastructure. The volume of inquiries needing to be handled by support teams has also been reduced, enabling them to create new value for the company.

According to the work plan, additional functions are being gradually added. The chatbot now includes eight functionalities, with a new function planned every two months. The existing functions continue to be improved, and the chatbot continues to learn from how users make inquiries. In the near future, the chatbot will respond to all inbound inquiries, which will contribute to an even greater efficiency and effectiveness and make the chatbot an even more robust time and money-saving tool.

Business Case: Retail

A new generation of customers prefers to shop online, where markets and competition are not just local or national, but international as well. Customers can now choose to buy from big companies or small—even from an individual person selling online. Organizations must adapt to this trend or risk losing sales and market share.

With competition and costs in mind, one of the biggest retail companies in Mexico collaborated with NDS Cognitive Labs to successfully incorporate a virtual agent into its website.

While most retailers operate a variety of customer service centers, all share similar difficulties, as well as high operational costs. Our client was intrigued by the customer service capacity a sales chatbot agent could provide, as well as the resulting cost reduction it could achieve at its customer service center. Once it was up and running, the number of inquiries the virtual agent handled increased from an average of 11 per hour to more than 300 once the process was automated with the chatbot. Response time was cut from seven minutes to 1.7 minutes.

One of the challenges addressed was to accommodate huge spikes in activity during special sales—like Black Friday or Cyber Monday. The increased capacity of the chatbot not only boosted sales, but also delivered significant savings on both personnel recruitment and training costs. During just one of these special sales, the chatbot responded to more than 82,000 inquiries, delivering standardized responses instantly to customers.

In addition, the chatbot freed contact center agents from time-consuming and repetitive tasks which had caused unacceptably high personnel turnover. The chatbot also stemmed the attrition rate, for even more cost savings.

Problem Description

Our client's goal was to significantly increase over-the-phone and online sales. It faced a high cost of staff recruitment and intensive training to provide customer service during special sales. Approximately every two months, the company runs limited-time promotions such as a Mother's Day sale with various discounts, featured items, and gift items. Inevitably, these sales generate large demand peaks, creating the need to employ and train new personnel solely for an event lasting an average of four days but sometimes as little as a weekend or even a few hours. This makes the sale process extremely expensive.

The company offered a variety of phone and online promotions, different from those offered at its physical stores. One of the most important goals was to increase sales within a given period of time. But its customer service center provided simultaneous support for other services as well such as credit cards, collections, billing, order tracking, and scheduling product maintenance—making it impossible to concentrate on sales. Specialized department agents would often receive calls from customers having unrelated needs. These had to be routed elsewhere, losing time and goodwill.

Problem Analysis

Our team was challenged because our client had no call record data, hadn't analyzed customer needs, and didn't have metrics indicating how customer needs were met. Rising to the challenge, our analysts conducted fieldwork to establish this baseline of information.

The fieldwork consisted of gathering customer service information from managers including a list of the issues or categories they considered most important. With this information, we held feedback sessions and meetings with the agents to pinpoint the most common issues they faced, as well as the way in which customers made their inquiries.

The analysis included listening to calls, transcribing them to text, and combining the transcripts with chat data. From these records, we identified the most-requested issues related to purchases made online, over the phone, or at stores: Product searches; questions about purchases; returns; exchanges; product warranties; store credit cards; and billing.

Solution Design

After gaining an understanding of the customer's needs, we designed an AI solution in collaboration with our client. We determined that our chatbot would be the first point of interaction between the customer service center and its users. It had to be versatile and capable of responding to a variety of questions no matter how they were framed and routing them to appropriate agents.

We began with the basic questions required to design a chatbot. In what ways should our virtual agent be useful to customers and our clients? What technological tools should it include? What technologies and innovation should it incorporate in order to make it different from other virtual agents? What needs must it meet?

We knew that the chatbot needed to be capable of self-learning and gradual enhancement in order to function optimally. To achieve this it would need a variety of technology tools such as machine learning, big data, advanced data analytics, and sentiment analysis, as well as integrations with different platforms.

We developed workflows to be followed by the chatbot when an inquiry was received. The chatbot would respond to general questions about products, returns, exchanges, product warranties, and billing, and track purchases made online, over the phone, or at stores. In the event that it wasn't capable of answering a question, it would route the customer to a human agent to handle the specific issue, incorporating an analysis of customer feelings, which aided the agent in providing a fast and efficient solution.

Development and Implementation

Once we understood the business and had completed the design, we proceeded to development. We started by preparing the virtual assistant's training, as well as designing its graphic user interface. This design would be implemented seamlessly on our client's website.

Functionalities were incorporated in stages. First, we provided the chatbot with most frequently asked questions, the customer service center structure, and procedures or workflows to be followed depending on a customer's inquiry.

Next, we implemented purchase tracking whether orders were placed online, over the phone, or at stores. Tracking was based on a purchase order number or customer number, enabling the chatbot to deliver the status in real-time.

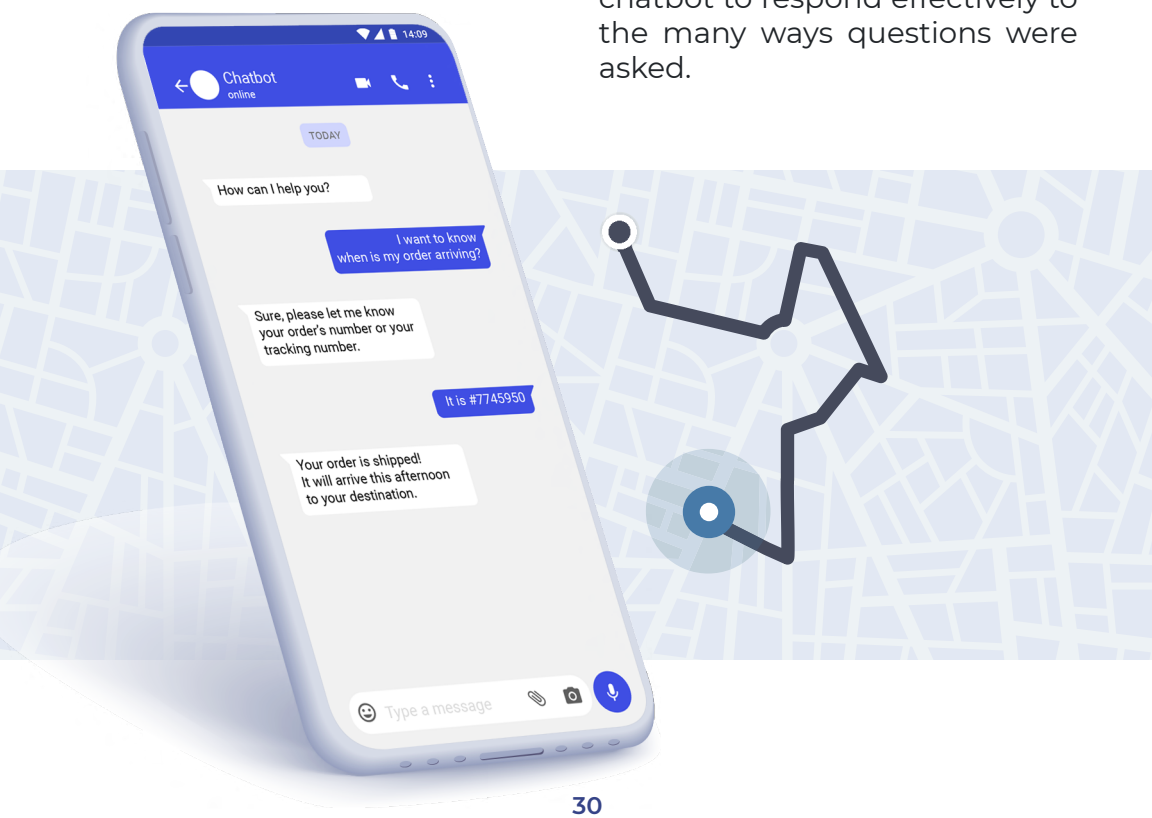
We implemented procedures for answering queries about product availability, returns, exchanges, and product warranties. This set of solutions demanded an individual internal workflow for each category in order for the chatbot to deliver a correct response.

Searching products turned out to be more complex than expected, since customers asked for products in many different ways, including by product name, category, product line, description, brand, or even by product number (SKU). The chatbot was trained to deliver regardless of the manner in which the question was asked.

The location of our client's physical stores was another important functionality. Our chatbot delivered the requested store's location with a map or by listing addresses, by zip code, tourist attractions, or, if authorized by the customer, delivering the location closest to their current location.

Finally, we devised a way for the chatbot to provide updated information about special sales and promotions, offering these to customers automatically when appropriate.

Integrating the chatbot into our client's website was accomplished seamlessly. It was gradually released to customers to analyze how they asked their questions in real time, which trained the chatbot to respond effectively to the many ways questions were asked.



Results and Continuous Improvement

In the first three months of activity, we achieved excellent results. The chatbot received more than 690,000 inquiries, reducing the average service resolution time from 7 minutes to 1.7 minutes—a 75% improvement.

We also identified that 30% of the inquiries—more than 207,000—were made outside customer service center office hours. Of these, around 72,000 were made with the intention of acquiring a store credit card. Without the chatbot, these customers would not have had the expanded opportunity to purchase products with a highly profitable solution.

The ability to increase customer service capacity exponentially caught our client's attention. Initially, a customer representative could answer 11 inquiries per hour; this number became nearly unlimited after the implementation of the chatbot. During critical purchasing spikes such as Christmas and special sales, the chatbot handled thousands of interactions. This enabled a greater number of customers to be served by the contact center at an extremely low cost since no new personnel were needed.

The chatbot continues to grow and learn, constantly increasing its breadth and capability to solve customer concerns, regardless of how questions are worded or the complexity of the issues involved.

Implementation of Conversational AI for the fashion retail industry

The retail industry has reinvented itself over the past two decades as a result of economic crises and the emergence of e-commerce competitors like Amazon and eBay. E-commerce has rapidly become the preferred channel for all generations, but especially for millennials and GenZ who were born into online shopping. One of the most difficult retail challenges is translating the attention a customer expects in a physical store to the online environment.

One of our clients addressed this challenge by using call centers and an e-commerce platform. As consumer behavior evolved, however, opportunities to improve the customer experience emerged. One was to reduce the time a customer spent on a call, which was typically from six to 49 minutes. Even when shopping online, a call was necessary when clarification was needed, and maintaining call center service is expensive.

Human agents require complicated and expensive training due to high turnover rates and constant changes in prices, clearance sales, and other offers. As a human-operated service, each agent can only serve one client at a time, making service difficult to scale.

Solution Design

To overcome these challenges, NDS Cognitive Labs developed and implemented a Conversational AI "Proof of Concept" solution to show our client how the chatbot could serve all customers who visited the e-commerce site.

For the Proof of Concept, we implemented a chatbot in the online store. It was capable of answering more than 200 different types of complex questions related to topics including the retailer's credit card promotions, location of stores, order follow-up, new product lines, and seasonal offers.

Development and Implementation

A critical challenge was AI bias, which refers to how the Conversational AI understands the ways people express themselves. For example, one person could say "I am looking for a pair of jeans for work", while another could say "I need some pants for the office". The AI tool must understand the variances and provide clear, updated information which is critically important for completing a sale. To address this, our team vigorously trained the Conversational AI chatbot on the different product categories and connected it with the search function inside the ecommerce website to create a better customer experience.

Results and Continuous Improvement

The Conversational AI can find specific products including those on clearance and seasonal products and respond to questions about trends and brands, regardless of how the questions are asked.

We added additional features based on machine learning to enable the chatbot to advise customers about products for specific occasions such as shopping for a romantic dinner. The chatbot recommends related products such as a bottle of wine, candles, and chocolates.

The AI-powered chatbot also helps clients explore product features, in-store and online availability, and even the restock date - updated in real time. Now clients learn much more without having to contact customer service, which significantly enhances the shopping experience.

The chatbot is also trained to help customers learn about promotions and whether the item they were looking for is eligible for a discount. For example, a customer could ask, “Which coffee maker is on sale?”

The chatbot also delivers financial products such as store credit cards, insurance, and extended guarantees. It is able to gather the information required to qualify for these services. If customers wanted more credit, a quick digital analysis suggests personalized offerings based on the customer’s credit score and history.

The AI chatbot also lets customers trace their orders in real-time or locate the closest store based on location, ZIP code or nearby tourist attractions.

Combining AI-powered chatbots with advanced analytics enables constant learning and improvement, which is key to success. When a chatbot is programmed with technologies such as Machine Learning and Data Analytics, it constantly upgrades itself based on its experience with conversations. The result is satisfied customers, greater loyalty, and increased sales conversion, at a lower cost.

PREPARING YOUR ORGANIZATION FOR THE IMPLEMENTATION OF A CHATBOT

With the rise of cognitive computing technologies, traditional customer service techniques are becoming obsolete. According to data collected by Salesforce, currently 24% of companies engaged in customer service are already using chatbots. Over the coming 18 months, that number is expected to increase to 34% **[17]**.

We have described some chatbot use cases and success stories but there is plenty of room for growth. Many companies want to bet on automation but don't know how to get started. Here we help you focus on the questions you should ask to evaluate how you can benefit from AI technologies.

We often provide recommendations to companies before they implement their chatbot. To start, we ask three basic questions:

What is your purpose in implementing a chatbot?

Once you understand how an AI chatbot can be used, the next step is to explore implementation ideas. What types of processes can be automated? What capabilities would you like to add? How can this tool enhance the communication and delivery of your existing products and services?

The most important thing is to determine which specific processes can use cognitive computing to deliver added value to your company. As with any other solution, start with the goal.

Some of these might include managing your digital platforms or offering a unified customer journey. You might consider how a chatbot might help you gather and analyze critical data, or how to use it to create greater efficiency in omnichannel communications.

What processes could a chatbot make more efficient?

Instead of trying to integrate chatbot technology into all company processes, or expecting too many functionalities from the start, identify where it can have the greatest impact. Which processes take the longest, with the largest number of people or sub-processes involved? Documented processes are very useful at the time of designing and developing chatbots. This makes implementation easier, saves time and delivers benefits quickly. One goal could be to allow employees to focus on more complex issues, rather than waste time on routine procedures.

Many companies were created before digitization became common, and these companies are now racing to join the digital age. Chatbots can provide a great leap forward in capabilities. A virtual assistant can also help lay the foundation for the implementation of other cognitive computing tools.

Do you have established data or procedures?

Before implementing a chatbot, it's best if you already have historical data about the conversations you need automated, as well as identified needs for both you and your customers. The data analysis can then be carried out quickly and simply, focusing on an understanding of the way your customers form questions based on their experience.

We also recommend that a company defines processes to be followed in response to an inquiry. This will serve as the basis of the workflow that the Chatbot will follow for its response. We can support companies on this part of their digital transformation journey based on our extensive experience.

The process prior to adopting chatbot technology is quite simple. It doesn't require a full-time commitment and provides enormous benefits for relatively little effort—regardless of the industry, sector, and/or company department.

In a global market, where companies need to be nimble to transform and improve customer service, chatbots are powerful drivers of customer satisfaction, operational excellence, cost savings, and marketing success.

GLOSSARY OF TERMS

Agent: a person who represents an entity through interactions with customers or other stakeholders.

Artificial Intelligence (AI): technologies that enable computers to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, or translation between languages.

Artificial Intelligence-powered (AI-powered): a computer or other device that uses Artificial Intelligence as the base of its functions and capabilities.

Attrition rate: The loss of customers or employees over a period of time. Often reflected as a percentage compared to the total customer base or workforce.

Automation: Automation refers to the ability of making a process function with the minimum possible human interaction. Allows the computer services to interact between each other automatically to deliver results in less time, saving human resources.

Big Data: Extremely large data sets that are difficult or impossible to process without computers.

Chatbot Training: The actions that improve the capabilities of a Virtual Assistant, including answering increasingly complex questions with updated information, increased functionality and integrations with other apps.

Cloud Computing: Storing and accessing data, programs and applications over the internet instead of on hardware.

Collaboration Apps: Technology platforms designed to enable interactions and iterations between team members. Examples include: Slack, Microsoft Teams

Conversational AI (Virtual Assistant / Chatbot / AI bot / Virtual Agent): A computer program that uses artificial intelligence to simulate, process and respond to written or spoken human language. It takes advantage of AI, Machine Learning, Big Data and Data Analytics.

Conversations: Interactions between stakeholders and companies and other entities, often governed by Conversational AI.

Data Analytics / Data Analysis: The process of inspecting, cleansing, transforming and modelling data with the goal of discovering useful information, finding or creating conclusions and supporting decision-making.

Databases: Structured sets of data.

Experience: In the context of chatbots, an experience is when the virtual assistant delivers satisfying interactions with customers.

FAQ (Frequently Asked Questions): Questions normally posed about products and services. They are often included, along with standard answers, as a first phase of chatbot implementation.

Financial Contact Center Chatbot (FCCC): Chatbot specifically designed to support financial companies, proprietary technology created by NDS Cognitive Labs.

Fintech: A combination of “finance” and “technology,” Fintech includes financial services delivered to customers through the use of technology, for example an app, software or web service.

Graphic User Interface: Mechanism that enables users to interact with a computer through graphics, text or voice commands.

Hybrid Cloud Infrastructure: Refers to a mixed computing, storage, and services environment made up of on-premises infrastructure and private and public cloud services.

Implementation: The process of putting technology or a project into action.

Interactions: Communication between stakeholders by any means, including digitally.

Interface: The point of interaction between a computer and another entity.

Intent: Goal or purpose-driven interaction designed to address expressed stakeholder needs.

KPIs (Key Performance Indicators): Metrics used to gauge the success of an initiative that are specific and measurable in a specific period of time. In this context, may include number of calls per day, users handled per week, average call duration, etc.

Machine Learning (ML): Computer systems that are able to learn and adapt without explicit human instruction based on algorithms and statistical models that analyze and draw inferences from patterns in data.

Natural Language Processing (NLP): A branch of artificial intelligence that helps computers understand, interpret and manipulate human language. NLP draws from many disciplines, including computer science and computational linguistics to fill the gap between human communication and computer understanding.

Omnichannel: An integrated and unified strategy that seamlessly works across multiple communication channels.

Platforms: Types of computer systems based on configurations of hardware and software (e.g., a desktop running Microsoft Windows, or a messenger app).

Proof of Concept (PoC): A working prototype of a product or service created to demonstrate effectiveness.

Sentiment Analysis: Refers to the use of Natural Language Processing (NLP), text analysis, data analytics and computational linguistics to identify, extract, quantify, study and determine whether the sentiments of a visitor are positive, negative or neutral.

SKU (Stock Keeping Unit): A scannable barcode, usually printed on labels that allows companies to track products automatically across the supply chain from inventory to product delivery.

Social media: Technology platforms designed for interaction between people, en tities and technologies. Examples include WhatsApp, Facebook Messenger, WeChat, Twitter, Instagram, TikTok, Telegram.

Structured data: Data that is highly organized and formatted to be easily searcha ble. Structured data is formed by a tabular format with a relationship between the different rows and columns. Excel files or SQL databases are examples.

Unstructured data: Information that comes with no predefined data model or any predefined manner. Typically in text format, it contains data such as numbers, dates, names, facts, etc.

User: For the purpose of this book, the people that interact with the Conversational AI are referred to as “users, visitors, customers, or final users.”

ABOUT THE AUTHORS

Gustavo R. Parés Arce

CEO, NDS Cognitive Labs

An international technology expert and global educator, Gustavo Parés leads NDS Cognitive Labs as founding partner and CEO, designing and implementing digital transformation, cloud computing and conversational AI solutions, advising clients and teaching students in North and South America, Europe, South Korea and India.

With a Masters Degree in Business Administration from the Tecnológico de Monterrey, a Bachelor's Degree in Administrative Computing Systems, certificates in Management and Leadership from MIT and advanced studies at Harvard and Stanford, Parés is an accomplished technologist, university professor and student of innovation, with a lifelong passion for translating digital capabilities into human solutions.

Parés is a world-renowned thought leader who is published widely in his field, contributing to Forbes, e-Banking News, The Standard CIO, InformationWeek, TechCrunch and MIT. As a speaker, he has participated in dozens of international conferences including Ingram Micro ONE in Washington D.C., the Ingram Micro Cloud Summit in Miami, Fast Start IBM Cloud Panel in New Orleans, numerous Google Summits, and Fintech conferences. Under his direction, NDS was nominated for 2019's Best of Nearshore Entrepreneur Award in New York City.

As a significant contributor to the growth of the technology industry in Latin America, he is Vice President of the Global Information Technology Management Association (GITMA), and acts as a mentor in the Enlace program where he advises high-value entrepreneurs at his alma mater, the Tecnológico de Monterrey.

In 2018, along with Ricardo Parés, his brother and partner in NDS Cognitive Labs, he was named Entrepreneur of the Year by San Francisco's Nexus Illuminate Awards, recognizing him among America's most outstanding technology and service industry entrepreneurs. In 2013, he was recognized by the Tecnológico de Monterrey with its award for Technology Professor of the year.

In his spare time Gustavo enjoys water sports with his wife and two children, mentoring promising new talent, and a competitive game of tennis.

Ricardo L. Parés
COO, NDS Cognitive Labs

Ricardo Parés is a serial entrepreneur focused on business, sales and marketing, and a passionate innovator of superior customer experiences for some of the world's largest companies including Unilever, Levis, Audi, Sepomex, Televisa and Toyota.

A global speaker and media contributor on the topics of Data Science and Customer Experience, Parés is well known for thought leadership, continuous innovation and expertise in emerging technologies such as 3D Ads and Immersive Customer Experiences. His numerous speaking engagements include events, conferences and panels in the United States, Canada, India, Mexico and Europe. In Atlantic City, New Jersey and in South Korea, he spoke about Global Sourcing Opportunities at the 10th and 11th Annual International Smart Sourcing Conferences. At Open Innovation BBVA in Mexico City in 2019, he focused on the Future of Data Science for the Financial industry.

Parés has been featured in Entrepreneur magazine, and frequently contributes to books about digital transformation technologies. Together with his brother Gustavo, Parés co-authored the best-selling ebook about the Chatbot revolution, titled The New Paradigm in Customer Service. Recently, Ricardo contributed to World IT Project, Global Issues in Information Technology, outlining the organizational, technological and individual issues of IT employees across 37 countries.

Some of Parés' additional entrepreneurial ventures include Dog Nanny and Mumbii, where as a Founding Partner, he brought together his love of animals with his belief in their ethical treatment to provide improved care for pets. These ventures attracted the support of global brands such as Mini Cooper, Hoover, Royal Canin, and Adaptil.

In 2018, along with Gustavo Parés, his brother and partner in NDS Cognitive Labs, he was named Entrepreneur of the Year by San Francisco's Nexus Illuminate Awards, recognizing him among America's most outstanding technology and service industry entrepreneurs.

Ricardo mentors and coaches entrepreneurs in organizational issues at the business online academy Victoria 147 and holds a Bachelor's Degree in Business Administration from the Universidad Iberoamericana.

NDS COGNITIVE LABS®

ABOUT NDS COGNITIVE LABS

NDS Cognitive Labs rapidly and affordably implements sophisticated conversational AI, cloud, and outstaffing solutions for start-up, mid-market and enterprise companies seeking competitive advantage, resilience, and growth. Delivering essential innovation and a collaborative team experience, we offer three flexible implementation models, from complete development and implementation services to Outstaffing and Global In-House Centers, drawing from our exclusive access to 13,000 highly skilled technology professionals.

Co-located in Mexico and the United States and serving North America, South America, Europe and India with highly skilled technology teams trained in U.S. and global standards, we are aligned with top global technology platform companies including IBM (Gold Partner) Amazon, Microsoft, Google and LivePerson among others.

For nearly two decades NDS Cognitive Labs has led the development of cognitive computing and technology innovation in Mexico. A founder of the first cognitive computer association in Latin America, we drive the growth and development of technology talent through teaching and affiliations with four of Mexico's leading technology Universities including Monterrey Institute of Technology, National Autonomous University of Mexico, Universidad Iberoamericana, and Instituto Politécnico Nacional.

In addition to our efforts to advance technology throughout the world, we're proud to support the Teletón Foundation's Children's Rehabilitation and Inclusion Centers where we contributed a chatbot to answer questions about donations, conditions, disabilities, locations and more. From the moment we entered the world of technology, we have worked to revolutionize its ecosystem in both Mexico and the world. Some examples:

Cognitive Computing

NDS Cognitive Labs is a founder of the first Ibero-American Association focused on research, innovation and implementation excellence in cognitive computing for daily, academic and business use. Through publications, conferences and business events, we seek to increase the number of technology professionals, researchers and cognitive computing technology experts.

For further information, please visit:
http://computocognitivo.com/

NDS CÓMPUTO COGNITIVO

Fuga de Cerebros

With our proprietary platform of more than 13,000 highly-skilled technologists trained in U.S. and global standards, companies have access to pre-screened candidates, English language proficiency, corporate culture alignment, collaboration capabilities and soft skills.

For further information, please visit:
https://fugadecerebros.mx/

Fuga de cerebros®

En Cinco

To boost the technology sector in Mexico, NDS Cognitive Labs created an educational initiative consisting of high-quality five-minute video content presented on our website and YouTube. These informative videos include topics related to innovation, entrepreneurship, personal image, and more.

For further information, please visit:
http://en5.mx/

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Gustavo R. Parés Arce

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Ricardo L. Parés Arce

I would like to thank my parents, who raised me by example and knew how to effectively combine discipline and love, a difficult task which I now understand, as a father myself, how challenging it may be.

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Gustavo and Ricardo Parés continue to strengthen their standing as leading thought leaders in cognitive-based solutions for organizations seeking to leverage digital technologies. Their newest contribution, **"Transform Your Business with AI Chatbots"**, provides practical guidance that is rich with real-world insight. Learning about the transformative power of chatbots is one thing, but putting this knowledge to work is often where organizations run into obstacles. This book helps leaders get around those barriers while keeping them focused on the core issues that help businesses succeed in a hyper-competitive digital commercial environment.

-Kirk Laughlin, Managing Director, Nearshore Americas

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