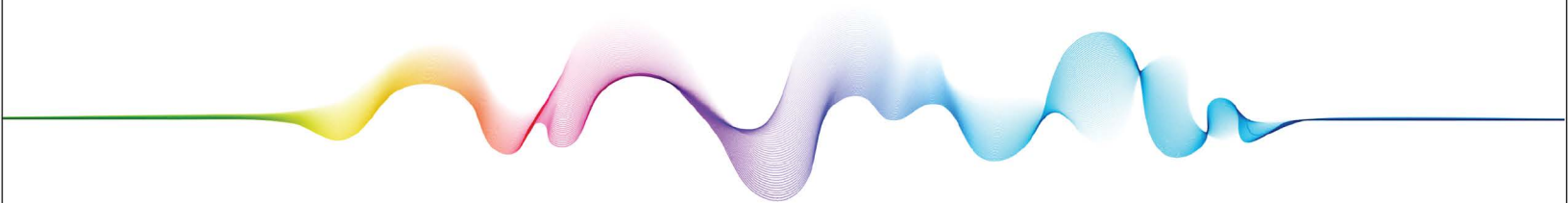


AN OVERVIEW OF ARTIFICIAL INTELLIGENCE (AI) FOR CUSTOMER SERVICE



ARTIFICIAL
INTELLIGENCE



An Overview of Artificial Intelligence (AI) for Customer Service

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This TAG Insights Report on *Artificial Intelligence (AI) for Customer Service* is intended to help companies, managers, practitioners, researchers, investors, and commercial vendors better understand current trends, issues, and market opportunities in this area. A list of representative commercial vendors working in various areas of AI for Customer Service is included. The five specific areas covered in this report include:

1. Smart Help Desk
2. AI-Based Product Support
3. Ai-Assisted Customer Success
4. Personalized Customer Support
5. Smart Customer Crowd Management

This report is intended for general and unrestricted use, but interested readers are encouraged to connect with the TAG research and advisory team for more information on the private [TAG Research as a Service \(RaaS\)](#) community that covers, discusses, and shares information on these topics in more depth and includes a wider range of startups, vendors, and companies.

TAG Taxonomy for AI

Our advisory work at TAG is guided by our TAG AI Taxonomy which includes twenty different market categories, with one hundred associated subcategories – all developed consistent with our research into emerging and existing commercial offerings. Subscribers to TAG Research as a Service (RaaS) have access to the more detailed specifics of the taxonomy and the full set of companies working in each area.

The taxonomy is intended to be interpreted as a market guide for commercial (and in some cases, open source) platform, tools, products, and services. The day-to-day tasks of any practitioners focused on AI will include many considerations such as dealing with regulators, addressing compliance issues, and keeping up with legislation that will not typically be represented in our taxonomy. We focus here on products and services.

TAG Artificial Intelligence (AI) Taxonomy V0.0

1 Agriculture and Farming 1.1 Precision Agriculture 1.2 Intelligent Predictive Maintenance 1.3 Advanced Yield Management 1.4 AI-Based Disease and Pest Control 1.5 Intelligent Livestock Monitoring	6 Conversational AI 6.1 AI Chat Interfaces 6.2 AI Bots 6.3 Intelligent Text Analysis 6.4 Virtual Assistants 6.5 AI-Based Search	11 Entertainment 11.1 AI-Based Sports Analysis 11.2 AI Support for On-Line Dating 11.3 AI-Generated Multimedia Content 11.4 AI-Based On-Line Gaming 11.5 AI Support for Gambling	16 Manufacturing 16.1 AI-Based Predictive Maintenance 16.2 Advanced 3D Printing 16.3 Smart Robotic Assembly 16.4 AI-Based Factory Operations 16.5 AI-Assisted Product Design
2 Autonomous Vehicles 2.1 Intelligent Fleet Management 2.2 Smart Manufacturing and Design 2.3 AI-Assisted Mobility Services 2.4 AI-Based Delivery Services 2.5 Next Generation Ride Sharing	7 Core Technology 7.1 AI and Machine Learning Algorithms 7.2 Natural Language Processing 7.3 AI Software Platforms and Tools 7.4 Intelligent Computing Devices 7.5 Smart AR/VR Devices	12 Finance 12.1 Intelligent Fintech 12.2 AI-Based Insurance Business 12.3 Smart Investment Support 12.4 AI-Assisted Loan Reviews 12.5 AI-Based Credit Process	17 Marketing and Sales 17.1 AI-Assisted Advertising 17.2 Intelligent Support for Sales 17.3 AI-Based Marketing 17.4 Smart Social Media Marketing 17.5 Advanced Predictive Modeling
3 Biotechnology 3.1 AI-Assisted Drug Discovery 3.2 Personalized Medicine 3.3 Intelligent Medical Diagnostics 3.4 AI-Based Health Analytics 3.5 Intelligent Clinical Trial Support	8 Customer Service 8.1 Smart Help Desk 8.2 AI-Based Product Support 8.3 AI-Assisted Customer Success 8.4 Personalized Customer Support 8.5 Smart Customer Crowd Management	13 Human Resources 13.1 Intelligent Career Support 13.2 AI-Based Personal Coaching 13.3 AI-Based Performance Reviews 13.4 Smart Recruiting and Workforce 13.5 AI-Based Compensation Management	18 Military and Security 18.1 Advanced Surveillance 18.2 AI for Cybersecurity 18.3 AI-Based Law Enforcement 18.4 AI Support for Warfighter 18.5 AI-Based Weapons and Deep Fakes
4 Business Operations 4.1 Smart Supply Chain Optimization 4.2 Intelligent Inventory Optimization 4.3 AI-Based Demand Forecasting 4.4 Intelligent Quality Control 4.5 Smart Contracts	9 Data Analysis 9.1 AI-Based Predictive Modeling 9.2 AI-Based Business Intelligence 9.3 AI-Based Data Normalization 9.4 Intelligent Big Data Analytics 9.5 Smart Simulated Data Generation	14 Information Technology 14.1 AI-Based IT Support 14.2 AI-Based IT Design 14.3 Advanced AI-Based Search 14.4 AI-Powered Apps 14.5 AI-Generated Websites	19 Software Process 19.1 AI-Based Coding Support 19.2 Smart Software Lifecycle Support 19.3 AI-Based Software Quality 19.4 AI-Based Test Case Generation 19.5 Intelligent Software Test and Analysis
5 Commerce 5.1 AI Support for Retail 5.2 AI Support for Warehousing 5.3 Intelligent Product Exchanges 5.4 Smart Auctions 5.5 AI-Based Professional Services	10 Education 10.1 AI-Based Remote Learning 10.2 AI-Based Remote Teaching 10.3 Smart Tailored Education 10.4 Smart Learning Management 10.5 AI-Based Standardized Testing	15 Machines 15.1 Next Generation Robots 15.2 Computer Vision 15.3 Computer Speech 15.4 Autonomous Internet of Things 15.5 Agricultural Robots	20 Transportation 20.1 AI-Based Transportation Logistics 20.2 Personalized Transportation 20.3 Smart Mapping Tools 20.4 AI-Based Flight Operations 20.5 AI-Based Rail Operations

Figure 1. TAG AI Taxonomy

Overview of AI for Customer Care

The following emerging global commercial opportunities involving AI for Customer Care are covered in this report, including the listing of several viable commercial entities providing solutions on the market today:

- Smart Help Desks utilize AI to automate responses to frequently asked questions and routine inquiries, enhancing response time and availability. They can also escalate complex issues to human agents by analyzing the context and urgency of customer queries, ensuring personalized attention where necessary.
- AI-Based Product Support systems analyze product usage data and customer interactions to provide tailored troubleshooting solutions and proactive maintenance tips. This reduces downtime and improves customer satisfaction by addressing potential issues before they become significant problems.
- AI-Assisted Customer Success tools predict customer needs and satisfaction levels using data analytics, helping businesses to proactively engage with customers to optimize

their experience and success with a product or service. This often leads to increased customer retention and loyalty.

- Personalized Customer Support involves AI analyzing a customer's past interactions and preferences to tailor support interactions. This makes support more efficient and relevant, enhancing the customers' experience by making them feel recognized and valued.
- AI in Smart Customer Crowd Management analyzes real-time data to manage and predict customer service traffic, optimizing staff allocation and response strategies during peak periods. This application improves service efficiency and ensures a smoother customer experience during high-demand situations.

Focus Area: Smart Help Desk

Commercial technology solutions that utilize AI for smart help desks have gained prominence in recent years. These systems employ artificial intelligence, particularly natural language processing (NLP) and machine learning, to enhance the efficiency and effectiveness of customer support operations. AI-powered smart help desks can handle a wide range of customer queries and issues. They can analyze and understand the natural language used by customers, enabling more human-like interactions. Key functionalities include:

1. Automated Ticket Routing: AI can categorize and route incoming customer queries to the appropriate support teams or agents, reducing the need for manual triage.
2. Knowledge Base Integration: AI-driven help desks often integrate with knowledge bases and frequently asked questions (FAQs) to provide quick and accurate responses to common customer inquiries.
3. Sentiment Analysis: Some solutions employ sentiment analysis to gauge customer emotions and adjust responses, accordingly, improving customer satisfaction.
4. Self-Service Options: AI chatbots and virtual assistants can guide customers through self-help processes, reducing the workload on human agents.

Prospects in the commercial market for AI-powered smart help desks are promising. Businesses across various industries recognize the potential to improve customer support efficiency, reduce response times, and provide consistent service. As AI technologies continue to advance, smart help desk solutions are expected to become even more adept at handling complex customer queries and delivering personalized experiences. Companies should carefully assess their specific needs, available AI capabilities, and integration options when considering these solutions. However, it's essential to remain mindful of data privacy and security considerations, ensuring that AI-based interactions are both technically sound and ethically responsible.

Focus Area: AI-Based Product Support

Commercial technology solutions that offer AI-based product support have witnessed significant growth, driven by advancements in artificial intelligence (AI) and machine learning. These solutions are designed to assist customers in resolving issues, setting up, configuring, or

troubleshooting products, whether they are physical devices or software applications. AI-based product support systems employ a range of technical components and methodologies:

1. **Natural Language Processing (NLP):** NLP is a core component that enables these solutions to understand and respond to customer inquiries in a conversational manner.
2. **Knowledge Bases:** These solutions are often integrated with extensive knowledge bases that contain information about the products, troubleshooting guides, and frequently asked questions (FAQs).
3. **Machine Learning Algorithms:** These algorithms help the system adapt and learn from interactions, providing increasingly accurate and relevant responses over time.
4. **Data Integration:** Integration with customer data, purchase history, and product usage information enables more personalized and context-aware support.

The commercial market for AI-based product support solutions holds considerable potential. Companies from various sectors, such as electronics, software, and consumer goods, are looking to enhance their customer support capabilities, reduce response times, and improve customer satisfaction. As AI technologies evolve, these solutions are likely to become more sophisticated, offering better problem-solving abilities and personalization.

However, successful implementation requires a thorough understanding of the specific product support needs and a robust data strategy to ensure that AI systems can access and analyze relevant information effectively. Data privacy and security are also critical considerations in this space, making responsible technical implementation a priority.

Focus Area: AI-Assisted Customer Success

Commercial technology solutions that offer AI-assisted customer success are gaining traction as companies seek to proactively manage customer relationships and enhance retention rates. These solutions leverage artificial intelligence (AI) to analyze customer data, predict behavior, and provide actionable insights to support customer success strategies. Key technical components and methodologies involved in AI-assisted customer success solutions include:

1. **Data Analytics:** These solutions use advanced data analytics techniques to process and analyze large datasets, including customer interactions, purchase history, and engagement metrics.
2. **Machine Learning Models:** Machine learning algorithms are employed to detect patterns and trends in customer behavior, allowing for predictive modeling and personalized recommendations.
3. **Predictive Analytics:** By employing predictive analytics, these solutions can anticipate potential issues or churn risks, helping companies take proactive measures to retain customers.
4. **Customer Segmentation:** AI can assist in segmenting customers based on their behavior and preferences, enabling tailored approaches to customer success.

The commercial market for AI-assisted customer success is promising. Businesses across various industries, especially in the software-as-a-service (SaaS) sector, are increasingly focusing on customer retention and expansion. AI-driven solutions offer the technical capability to analyze vast amounts of customer data and provide valuable insights to enhance customer success strategies.

However, implementing these solutions requires a robust data infrastructure, data privacy compliance, and skilled data scientists and analysts. Companies must also consider ethical and fairness aspects to ensure that AI is used in a responsible and customer-centric manner, while maintaining compliance with regulations such as GDPR and CCPA.

Focus Area: Personalized Customer Support

Commercial AI technology solutions that offer AI-based personalized customer support are gaining momentum in the market. These solutions are designed to deliver tailored assistance and services to individual customers, enhancing their experience and satisfaction. Technical components and methodologies integral to AI-based personalized customer support include:

1. **Data Collection and Integration:** These solutions gather and integrate customer data from various sources, such as CRM systems, website interactions, and purchase history, to build a comprehensive customer profile.
2. **Machine Learning Models:** Machine learning algorithms are employed to analyze customer data and generate personalized recommendations, responses, and actions.
3. **Natural Language Processing (NLP):** NLP techniques enable the system to understand and respond to customer inquiries in a conversational and context-aware manner.
4. **Content Personalization:** AI is used to customize content, product recommendations, and communication channels for each customer, based on their preferences and behavior.

The commercial market for AI-based personalized customer support holds significant potential. Companies across diverse industries aim to deliver superior customer experiences by tailoring their interactions with each individual. AI-driven solutions offer the technical capabilities to process large volumes of customer data and provide personalized support at scale. However, implementation requires a robust data infrastructure, data privacy compliance, and expertise in machine learning and NLP. Additionally, responsible AI use, ethical considerations, and transparency are crucial aspects to address, ensuring that AI-driven personalization respects customer privacy and regulatory requirements.

Focus Area: Smart Customer Crowd Management

Commercial AI technology solutions that focus on smart customer crowd management utilize artificial intelligence to optimize the flow of customers, visitors, or users in various settings, such as retail stores, transportation hubs, and event venues. These solutions employ technical components and methodologies to efficiently manage crowd dynamics:

1. **Data Analytics:** AI-based crowd management relies on data analytics to collect and process information from sensors, cameras, and mobile devices. This data is then used to monitor crowd size, movement patterns, and density.
2. **Machine Learning Algorithms:** Machine learning models are employed to predict crowd behavior and anticipate peak hours, allowing for proactive resource allocation and traffic control.
3. **Real-Time Decision Making:** These systems make real-time decisions based on incoming data, directing customers to less crowded areas, optimizing queue management, and enhancing the overall customer experience.
4. **IoT Integration:** IoT devices and sensors are integrated with AI systems to collect data on temperature, humidity, and air quality, contributing to more informed crowd management.

The commercial market for smart customer crowd management using AI holds significant potential, particularly in sectors such as transportation, hospitality, and retail. Businesses aim to optimize crowd management to reduce congestion, improve customer satisfaction, and maximize operational efficiency.

However, successful implementation requires a robust data infrastructure, IoT integration, and expertise in data analytics and machine learning. Additionally, companies must address data privacy and security concerns and ensure responsible AI usage while complying with relevant regulations.

Companies and Contributions

The companies listed below emerged as part of our research at TAG. Our goal in listing these fine firms is to provide a starting point for buyers, advocates, stakeholders, and researchers trying to make sense of the commercial landscape for companies using AI technology to support customer care.

Smart Help Desk Vendors

1. [Aivo](#): Aivo offers a conversational AI platform that can be used for customer support and engagement.
2. [ChatGPT \(OpenAI\)](#): OpenAI's ChatGPT can be integrated into help desk systems to provide AI-driven responses and support.
3. [Drift](#): Drift provides AI-powered chatbots for conversational marketing and customer support.
4. [Freshworks Freddy AI](#): Freshworks offers Freddy AI, an AI chatbot designed to improve customer support and engagement.
5. [IBM Watson](#): IBM's AI, Watson, offers AI-driven chatbots and virtual agents for smart help desk support.
6. [Inbenta](#): Inbenta specializes in natural language processing and AI to improve self-service support and chatbot interactions.

7. [Intercom](#): Intercom integrates AI and chatbots into their messaging platform to assist with customer support.
8. [Salesforce Einstein](#): Salesforce Einstein provides AI-powered solutions to enhance customer support and service.
9. [ServiceNow Virtual Agent](#): ServiceNow's Virtual Agent leverages AI to automate help desk interactions and resolve issues.
10. [Zendesk](#): Zendesk utilizes AI to automate and streamline customer service processes for businesses.

AI-Based Product Support Vendors

1. [Gorgias](#): Gorgias provides AI-driven e-commerce solutions for customer and product support.
2. [Helpshift](#): Helpshift specializes in AI-powered customer support solutions, including support for products.
3. [Zoho Desk](#): Zoho Desk integrates AI for customer support, which can extend to product-related inquiries.

AI-Assisted Customer Success Vendors

1. [Chargify](#): Chargify utilizes AI to help businesses manage subscription-based customer relationships and improve customer success.
2. [ChurnZero](#): ChurnZero specializes in customer success software with AI capabilities to reduce churn and improve customer satisfaction.
3. [Custify](#): Custify offers customer success software that leverages AI to automate and enhance customer success operations.
4. [Gainsight](#): Gainsight offers AI-driven customer success solutions to help businesses optimize customer relationships and retention.
5. [Medallia](#): Medallia provides an AI-powered customer success platform to optimize customer relationships and revenue.
6. [Planhat](#): Planhat's platform uses AI for customer success management, helping businesses grow their customer relationships.
7. [Totango](#): Totango provides AI-powered customer success management software to improve customer engagement and reduce churn.

Personalized Customer Support Vendors

1. [Ada](#): Ada offers an AI-powered chatbot and automation platform for personalized customer support.
2. [Genesys](#): Genesys offers AI-driven customer support solutions for personalization.
3. [Elevio](#): Elevio provides an AI-powered knowledge base and personalized support tools for businesses.
4. [Freshworks](#): Freshdesk, by Freshworks, incorporates AI to provide personalized customer support solutions.
5. [HappyFox](#): HappyFox uses AI to enhance personalized customer support and help desk operations.

6. [Kustomer](#): Kustomer provides a customer service platform that utilizes AI to offer personalized support experiences.
7. [Pypestream](#): Pypestream uses AI for personalized customer support and chatbot interactions.
8. [UJET](#): UJET offers a commercial AI-driven support platform for personalized customer interactions.

Smart Customer Crowd Management Vendors

1. [Genesys](#): Genesys offers customer experience and contact center solutions with AI features that can be used for customer interaction management.
2. [Intradiem](#): Intradiem offers AI-driven solutions for workforce and customer service management.
3. [Talkdesk](#): Talkdesk provides a cloud contact center platform with AI capabilities that can assist with customer interactions, including crowd management.

About TAG

TAG is a trusted next generation research and advisory company that utilizes an AI-powered SaaS platform to deliver on-demand insights, guidance, and recommendations to enterprise teams, government agencies, and commercial vendors in cybersecurity, artificial intelligence, and climate science/sustainability.

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