

451 Research Pathfinder Paper

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# The agentic AI imperative

Why a modern voice stack is the foundation for the future of customer experience

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# Table of contents

<b>Executive summary</b>	<b>3</b>
<b>The experience economy: Customers demand a seamless, intelligent experience</b>	<b>3</b>
Figure 1: Voice remains a key customer engagement channel	4
Figure 2: Voice renaissance drivers	4
<b>The high cost of inaction: Why legacy voice infrastructure is a business liability</b>	<b>5</b>
Figure 3: Legacy applications can hinder digital transformation initiatives	5
<b>Unpacking the modern voice technology stack: Connectivity, programmability, intelligence</b>	<b>6</b>
From understanding to acting: How agentic AI will transform customer service	6
Figure 4: Digital channels, conversational technologies and GenAI are changing customer engagement	7
Figure 5: Organizations are steadily advancing their generative AI deployments into production	8
The business imperative: Use cases for a modern, AI-driven voice stack	8
A modern foundation is a nonnegotiable requirement for real-time AI	9
<b>The first step toward an AI-ready future</b>	<b>10</b>
<b>About the author</b>	<b>11</b>

# Executive summary

The customer experience market is entering a “voice renaissance” as consumers increasingly return to voice channels for interactions with businesses. Organizations that seek to capitalize on this trend will need a modern voice communications technology stack to support integration of generative and agentic AI capabilities.

This report highlights the need for businesses to move beyond legacy infrastructure. Rising customer expectations in the experience economy — where differentiation is based on the quality of customer interactions, not just products or price — coupled with the limitations of outdated systems create a significant business liability.

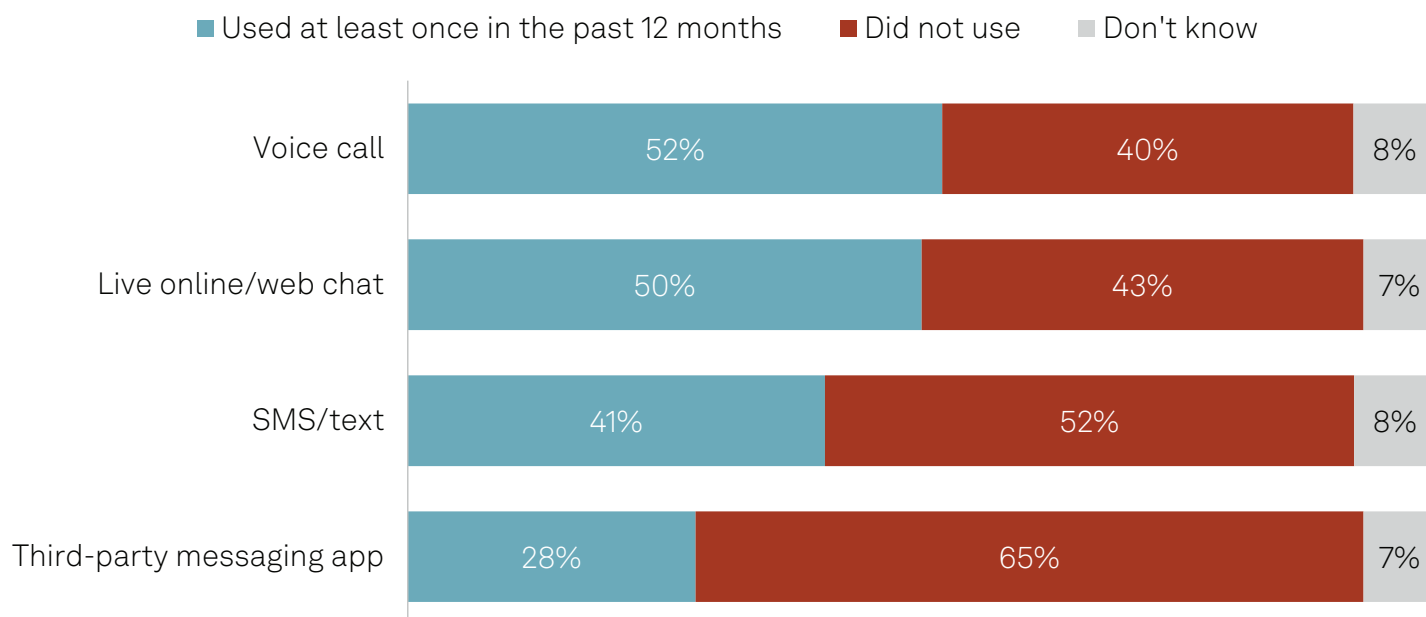
The solution is a modern voice stack built on three pillars: connectivity, programmability and intelligence. This foundation is the prerequisite for deploying agentic AI that can move beyond merely understanding customer intent to actively resolving issues. The first step is foundational: transitioning to a cloud-based, programmable voice infrastructure to de-risk future AI rollouts and unlock the value of the experience economy.

## The experience economy: Customers demand a seamless, intelligent experience

Businesses face mounting pressure to address a fundamental shift in customer expectations. In 451 Research’s Voice of the Enterprise (VotE): Customer Experience & Commerce, Merchant Study 2025, 91% of surveyed organizations reported a significant (38%) or slight (53%) increase in customer expectations over the past year. Customers expect rich, engaging, seamless experiences, requiring businesses to move from siloed channels to unified, omnichannel journeys; anything less presents a significant risk to customer retention and competitive standing.

In this digital-first world, voice remains an important channel. In our Voice of the Connected User Landscape: Connected Customer, Disruptive Experiences 2025 study, more than half of consumers (52%) reported using a voice call to interact with a brand at least once in the past year — more than live chat (50%), SMS (41%) or third-party messaging apps (28%). This underscores a critical reality: Modernizing the voice stack is not an optional upgrade, but a core requirement for meeting customer expectations.

**Figure 1: Voice remains a key customer engagement channel**







Q. In the past 12 months, how many times have you used the following channels to get more information when interacting with a brand/retailer?

Base: All respondents (n=1,676).

Source: 451 Research's Voice of the Connected User Landscape: Connected Customer, Disruptive Experiences 2025.

The resurgence of voice communications stems from a confluence of market forces. As customers demand more immediate and effective resolutions for complex issues, they are rediscovering voice as the most efficient channel for nuanced conversations. This trend, combined with the failure of earlier, disjointed self-service tools to meet sophisticated needs, has created a clear business imperative to reinvest in the voice channel, but with a modern, intelligent approach.

**Figure 2: Voice renaissance drivers**

	Customer pull 	Technology push 
<b>Reactive drivers</b> 	<p>Service gaps and frustration</p> <ul style="list-style-type: none"> <li>• Failure of impersonal, low-context self-service</li> <li>• Need for nuanced, complex problem-solving</li> <li>• Frustration with channels that lack empathy and efficiency</li> </ul>	<p>Overcoming legacy tech limitations</p> <ul style="list-style-type: none"> <li>• Addressing "chatbot fatigue" with superior conversational AI</li> <li>• Moving beyond scripted, disjointed system logic</li> <li>• Applying advanced intelligence to a high-value channel (voice)</li> </ul>
<b>Proactive drivers</b> 	<p>Evolving customer expectations</p> <ul style="list-style-type: none"> <li>• Demand for seamless, omnichannel experiences</li> <li>• Value placed on immediate and expert interaction</li> <li>• Preference for channels that can handle sophistication and nuance</li> </ul>	<p>Strategic technological opportunities</p> <ul style="list-style-type: none"> <li>• Leveraging agentic AI for complex, autonomous task resolution</li> <li>• Enabling hyper-personalized, context-aware conversations</li> <li>• Creating competitive differentiation through a superior voice experience</li> </ul>

Source: S&P Global Market Intelligence 451 Research.

As illustrated, the modern “voice renaissance” is driven by multiple interrelated factors, including rising customer expectations for seamless, omnichannel journeys and the potential of new technologies such as agentic AI to enable those interactions. For CIOs and IT decision-makers, this highlights a crucial point: The voice channel is no longer a legacy utility to maintain, but a strategic frontier for innovation and competitive differentiation. Ignoring this shift means failing to meet customers on a channel they value and missing the opportunity to build next-generation experiences.

## The high cost of inaction: Why legacy voice infrastructure is a business liability

While customer expectations have soared, many organizations are held back by the very systems meant to connect them with their customers. The limitations inherent in legacy voice infrastructure, such as on-premises private branch exchange (PBX) and public switched telephone network (PSTN) systems, present business liabilities. These rigid systems hinder agility, preclude access to rich data and lack the programmability required for modern AI integration.

This is not a theoretical problem; it is a major roadblock to innovation. For example, 44% of IT decision-maker respondents to 451 Research’s *VotE: Customer Experience & Commerce, Digital Maturity 2024* study, cited “complexity of existing legacy applications” as the main barrier to digital transformation. Attempting to layer advanced capabilities onto a brittle foundation results in poor customer experiences, blocks innovation and widens the competitive gap.

**Figure 3: Legacy applications can hinder digital transformation initiatives**



Q. In your opinion, what are the main barriers to digital transformation? Please select all that apply.

Base: All respondents (n=489).

Source: 451 Research’s *Voice of the Enterprise: Customer Experience & Commerce, Digital Maturity 2024*.

# Unpacking the modern voice technology stack: Connectivity, programmability, intelligence

The path forward requires moving from “why you must change” to “what you must change to.” The modern business communications technology stack is augmented with advanced capabilities, including programmable voice, omnichannel experiences and agentic AI support. Agentic AI can provide more comprehensive and engaging customer experiences through capabilities such as customer self-service and automation of support processes across the customer journey.

The solution is a modern voice technology stack defined by three essential pillars:

- **Connectivity.** This refers to a cloud-native infrastructure that unifies all communication channels. It breaks down silos and provides the foundation for a true omnichannel customer journey, with context and data flowing seamlessly between interactions.
- **Programmability.** This is the key to customization and integration. By treating voice as another API-driven service, a programmable stack allows businesses to embed communication workflows directly into their applications and business processes, creating unique and efficient customer experiences.
- **Intelligence.** This is the AI-readiness layer, designed to expose data streams and provide control points for AI. Critically, this includes the capacity for real-time analytics, which provide actionable insights to improve engagement and resolution rates in the moment. This allows for dynamic interventions, such as identifying a customer’s rising frustration and triggering a supervisor alert, a capability that relies on a high-performance, low-latency foundation.

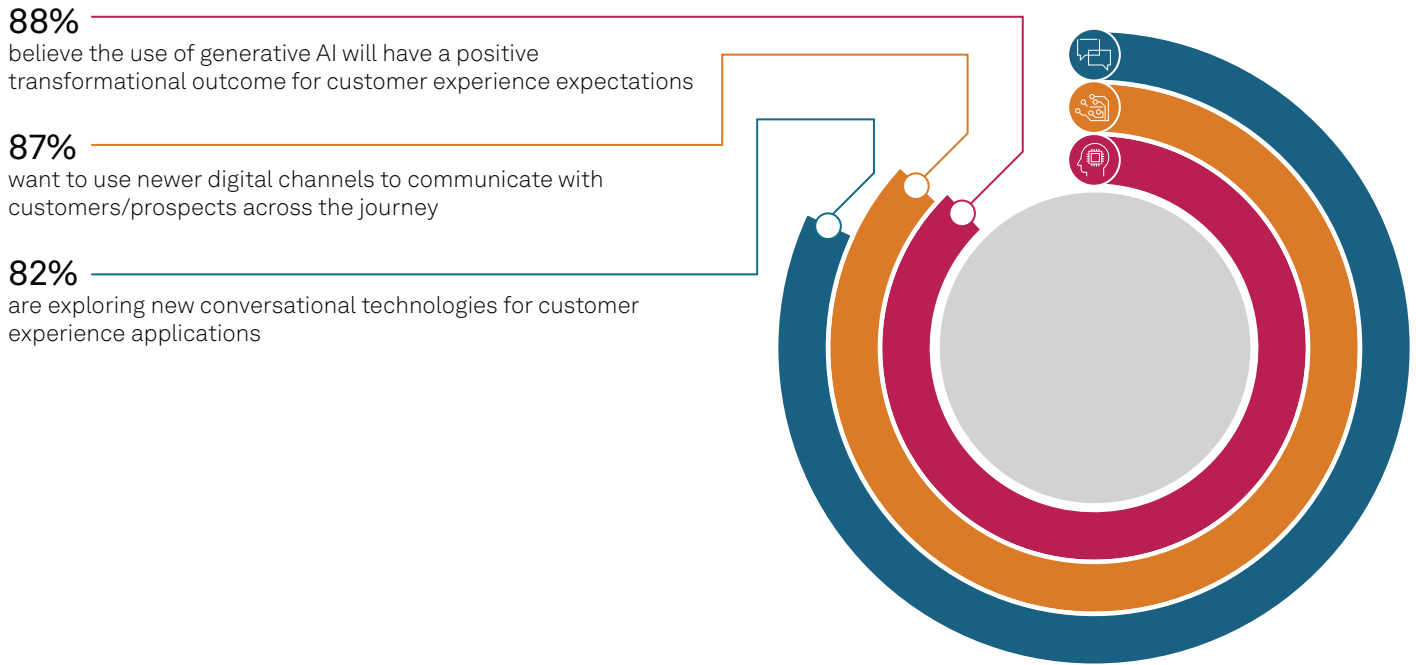
## From understanding to acting: How agentic AI will transform customer service

A modern voice stack unlocks the next frontier of customer service: agentic AI. This marks a crucial evolution from conversational AI, which focuses on understanding intent, to agentic AI, which is designed to act. While a chatbot might understand that a customer wants to change their flight, an AI agent can access the booking system, find an alternative, and confirm the change on the customer’s behalf without human intervention.

Opportunities for GenAI enhancement are evident throughout the customer experience. Consequently, practically all categories in this space are subject to disruption. Predictive and generative AI can be applied pre-call to route a call to the right agent with the right skill set at the right time. During a call, the technology can provide co-pilot capabilities to guide agents with recommended responses; post-call, it can provide interaction summaries. GenAI can also support the deployment of virtual agents to scale customer engagement.

This transformation is powered by the convergence of several key technological trends. The proliferation of digital channels has fragmented the customer journey, while the maturation of conversational technologies and the recent explosion in generative AI capabilities have created the tools to unify it. The result is a new customer engagement landscape where AI can serve as an intelligent orchestration layer, managing interactions and data flow across what were once disconnected silos.

## Figure 4: Digital channels, conversational technologies and GenAI are changing customer engagement



Q. On a scale of 0-10, where 0 is “totally disagree” and 10 is “totally agree,” how strongly do you agree or disagree with each of the following statements?

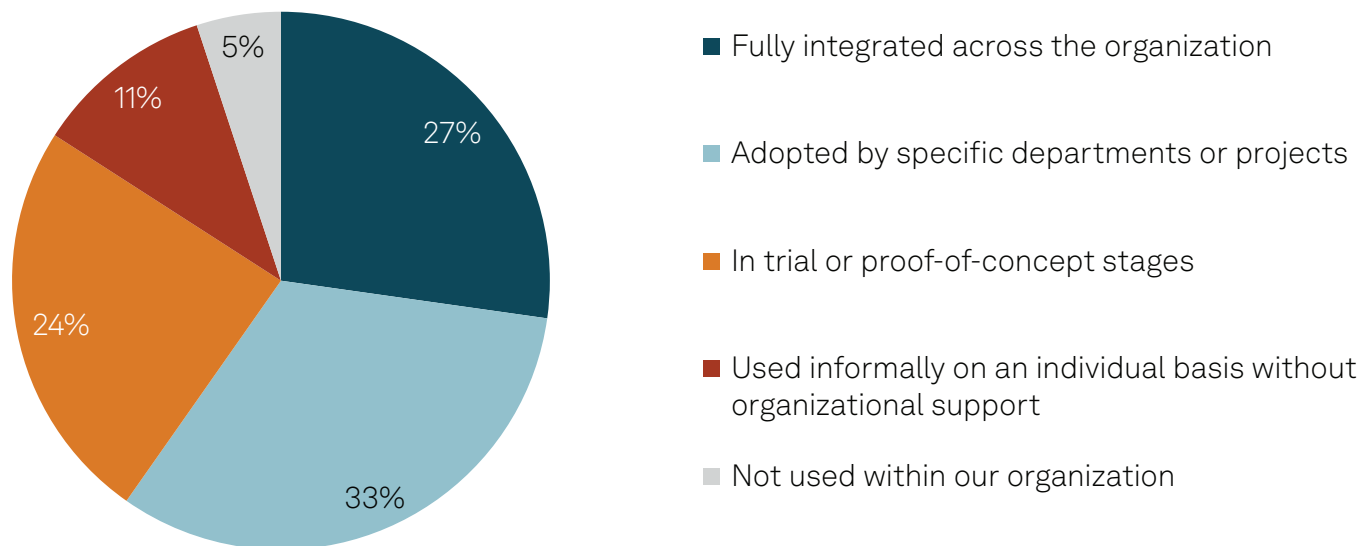
Base: All respondents (n=224).

Source: 451 Research’s Voice of the Enterprise: Customer Experience & Commerce, Digital Maturity 2024.

The graphic above highlights key aspects of this new ecosystem: widespread AI integration, broad use of multiple digital channels, and adoption of modern conversational technologies. For IT leaders, this illustrates that deploying effective AI is not about buying a single “GenAI product.” It is about building architecture where digital channels, communications platforms and AI models can work in concert. This integrated model enables advanced use cases that drive business value, and it depends on a modern, programmable, intelligent voice stack as its foundation.

This shift will not happen in the distant future; the market is moving now. In our *VotE: AI & Machine Learning, Use Cases 2025* study, 60% of surveyed organizations reported that they have GenAI deployments in production or plan to deploy in the next year. In the same survey, 27% of respondents reported that generative AI is fully integrated across their organization, while an additional 33% said it has been adopted by specific departments or projects. For customer service, key goals are to enhance self-service, enable intelligent automation and deliver proactive call deflection, transforming the contact center from a cost center to a value driver.

**Figure 5: Organizations are steadily advancing their generative AI deployments into production**



Q. Please select the appropriate level of usage for each AI type - generative AI.  
Base: All respondents (n=1,006).  
Source: 451 Research's Voice of the Enterprise: AI & Machine Learning, Use Cases 2025.

## The business imperative: Use cases for a modern, AI-driven voice stack

A modern, AI-driven voice stack delivers tangible business value. 451 Research survey data confirms that customer service is a leading application area for AI and machine learning use cases, with data-driven organizations prioritizing capabilities such as intelligent customer routing and customer service/support recommendations.

Examples include:

- **Automated call deflection.** Agentic AI can identify a caller's intent (e.g., "Where is my order?"). It can then check the order status in the customer relationship management system and proactively send a shipping update link via SMS, deflecting the call and resolving the issue without consuming agent resources.
- **Intelligent self-service.** The voice platform can authenticate the identity of a customer calling to change a flight. An AI agent can then directly access the booking system to find and confirm a new flight based on the customer's spoken request, completing a complex transaction in seconds, at any time of day.
- **Real-time agent augmentation (co-pilot).** During a live call, an AI co-pilot can assist the human agent by processing the conversation in real time. It can automatically surface relevant knowledge base articles, provide step-by-step guidance for complex processes, and monitor customer sentiment to suggest de-escalation tactics, dramatically improving agent efficiency and first-call resolution rates.

- **Proactive engagement and retention.** An AI agent can monitor CRM data to identify business opportunities, such as contracts nearing renewal. It can then initiate a personalized, automated outbound call to the customer, offering a loyalty discount or scheduling a follow-up with a specialist. This transforms the contact center from a reactive cost center into a proactive revenue and retention engine.

The use cases listed above highlight the relevance of a modern, AI-driven voice stack. Real-time agent augmentation is impossible on a legacy stack because it requires sub-second latency for voice-to-text transcription, natural language processing and data retrieval from a knowledge base or CRM — capabilities that depend on the intelligence and connectivity pillars previously outlined.

## A modern foundation is a nonnegotiable requirement for real-time AI

CIOs and IT decision-makers must understand that capabilities such as real-time agent co-pilots are not simple software features that can be layered onto any system. They are incompatible with a legacy voice stack. A major reason for this is latency.

Real-time augmentation requires that chains of events be executed at sub-second speed: Voice audio must be streamed, transcribed to text and processed by an NLP engine; it must then trigger data retrieval from a CRM or knowledge base, with the result displayed on the agent's screen. Even a brief delay will render the insight useless because the conversation will have moved on.

Legacy PBX and PSTN systems are closed “black boxes” that were not designed for modern, AI-enabled communications. They lack the native ability to stream media for external processing and do not support modern APIs to integrate with cloud services at speed. These technical limitations are likely to manifest in poor customer experience, such as:

- **Delayed compliance alerts.** AI may flag compliance issues after the agent has already spoken, failing to prevent data-privacy risks.
- **Missed sales opportunities.** A cross-sell suggestion for a relevant product may appear on-screen only after the agent has concluded the call.
- **Clunky customer interactions.** The agent may be forced to create awkward pauses while waiting for the system to catch up, which can ruin conversational flow and erode customer confidence.

In contrast, a modern, cloud-native voice platform built on a high-performance network foundation provides the low-latency connectivity and API-driven intelligence necessary to make real-time AI a reality, transforming agents from support staff into empowered, data-driven experts.

# The first step toward an AI-ready future

Decision-makers are peppered with pitches for technologies that promise to “revolutionize” the contact center. Technologies such as agentic AI have emerged as key enablers for delivering the self-service and automation capabilities that customers and businesses want. However, there is a widespread pitfall: attempting to layer these advanced AI solutions onto a legacy foundation.

The conclusion is clear. The first step is foundational: moving to a cloud-based, programmable voice infrastructure. This strategic move de-risks future AI rollouts, unlocks the capabilities of agentic AI and ensures organizations can meet the rising demands of the experience economy. The future of customer engagement will be built on this foundation, and the time to lay the groundwork is now.

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Raúl Castañón-Martínez is a senior research analyst in the 451 Research technology research group within S&P Global Market Intelligence. He contributes to both the Customer Experience & Commerce and Workforce Productivity & Collaboration channels, focusing on business communications and collaboration and the digitization of the employee and customer experiences.

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## About this paper

A Pathfinder paper navigates decision-makers through the issues surrounding a specific technology or business case, explores the business value of adoption, and recommends the range of considerations and concrete next steps in the decision-making process.

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