



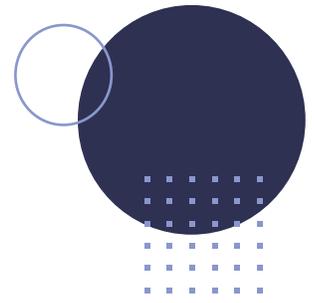
Whitepaper

The \$100,000 Problem Hiding in Your Drive-Thru Headset

Why Speech Intelligibility is the Real Driver of QSR Profitability



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Introduction: The Overlooked Link Between Sound and Sales

In the quick-service restaurant (QSR) industry, technology is advancing at an unprecedented rate. Restaurants are investing heavily in AI-driven ordering, data analytics, loyalty platforms and advanced kitchen management systems in the quest for speed, efficiency and better guest experiences. But while these exciting innovations promise transformation, **many QSRs can be tempted to overlook more basic, yet mission-critical investments. One such investment is drive-thru audio.**

Every drive-thru transaction begins with a conversation. A customer speaks into a microphone. An employee responds through a headset. That exchange — simple and brief, often under two minutes long — is the essence of the QSR experience. It sets the tone for the interaction and determines how quickly and accurately the order is processed. When the audio is crisp and understandable, orders move quickly, employees stay focused and customers leave satisfied. But when the audio is garbled, distorted or buried in background noise, **the consequences ripple throughout the operation: slower service, more order errors, rising frustration on both sides of the speaker post, and ultimately, lost revenue.**

AI Doesn't Solve Poor Audio, It Amplifies It

The drive-thru has emerged as a top area of AI-powered investment for restaurants. Brands are pouring millions into automated voice systems designed to streamline labor, increase speed, boost efficiency and free up crew during non-peak hours. **But AI is only as good as the data it receives.** If the system is fed muffled or unintelligible speech, it will make split-second decisions based on bad inputs — leading to wrong orders, delays and guest dissatisfaction. In other words, AI drive-thru technology relies on quality audio. **And if audio quality is poor, this investment doesn't solve it — it amplifies it.**

Before investing in AI, operators should ask a more foundational question: **is my drive-thru actually capable of capturing clear, accurate speech?** Too often, the answer is no. Many operators aren't even testing their audio for clarity. And the result is predictable: expensive systems that underperform, frustrated crews who don't trust their tools and customers who won't return.



Every dollar in your drive-thru starts with that conversation. If customers can't hear you — or you can't hear them — you're leaving money on the table. **Quick-service restaurants make nearly two-thirds of their revenue from the drive-thru.**¹

That means every second, every word and every order taken through a headset directly impacts the bottom line. Unfortunately, many operators are still relying on outdated audio systems that were never designed to perform in today's complex, high-noise environments. Wind, rain, vehicle engines and traffic noise all interfere with sound quality — and most systems simply aren't built to maintain clarity through the chaos. The result is slower service, avoidable mistakes and a poor customer experience.

Modeling based on typical drive-thru order volumes and industry error rates shows that **unintelligible communication can cost a single location tens of thousands of dollars annually** — and for high-volume operators, the figure can exceed \$100,000 per store per year.^{2,3} This is the silent cost of poor audio. But, it's avoidable.

In this whitepaper we'll explore why speech intelligibility is the linchpin of modern drive-thru performance, how it impacts service metrics and profitability, and why solving this issue first is the key to unlocking the true potential of advanced technologies like AI. We'll also show how PAR Clear delivers a measurable difference — offering unmatched clarity, proven reliability and the confidence to serve not only faster and more accurately, but more intelligently than ever before.

At PAR, we believe that speech clarity is not just a feature — it's a foundation.

That's why we put our audio system, PAR Clear™, through rigorous independent testing in real-world noise conditions. Because when every second counts and every word matters, communication becomes more than simply a function of operations — it's a competitive advantage.



The Real Cost of Unclear Communication

Quick-service restaurants have always been defined by speed. Today, with mobile ordering, loyalty platforms, delivery integration and AI-driven menus, that speed must be delivered with consistency, even in the midst of complexity. No matter how advanced the tech stack, a poor headset system can cause that entire chain of communication to come undone.

Every time a customer has to repeat themselves, every time a team member mishears an order and every time background noise drowns out a response, seconds are lost. **Those seconds add up.** During peak periods, a two- or three-second delay per vehicle can reduce total car count, cut into revenue and increase frustration for both the team member and guest.

Moreover, miscommunication leads to errors — orders that need to be remade, refunded or comped. On average, as many as 16% of orders in quick service and fast casual restaurants have problems severe enough for customers to both notice and report the issue. According to various industry research, each incorrect order can cost a store anywhere from \$3 to \$6 when factoring in wasted food, labor to reprepare the item and guest appeasement.⁴ For a high-volume store processing hundreds of orders per day, **a 1% error rate could easily result in thousands of dollars in lost profitability per month.**

And that's assuming the customer still returns. In reality, repeated drive-thru issues — like getting the wrong order, having to yell over static, or waiting while a confused interaction holds up the lane — can drive guests away and over to competitors.

The bigger picture is this: **audio clarity doesn't just affect one part of the guest journey.** It affects everything. It determines how fast you move the line. It shapes how employees perform their jobs. It influences how customers perceive your brand. And increasingly, it affects how well your digital systems — from kitchen displays to AI voice engines — function in real-world conditions.



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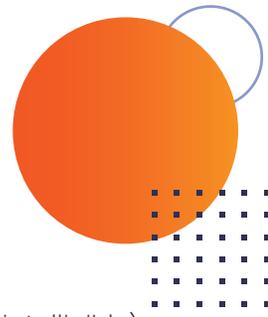


Thousands

of dollars per month can be lost for a high-volume store with hundreds of orders per day.



The Speech Intelligibility Standard: Why Speech Transmission Index Testing Matters



To truly understand what separates a high-performing audio system from an inferior one, we must go beyond subjective claims and turn to objective science. That's where Speech Transmission Index (STI) testing becomes essential. **STI is an internationally accepted, standardized method (IEC 60268-16) for measuring how intelligible speech remains after passing through a communication system.** It is widely used in critical communication environments such as emergency paging systems, public address infrastructure, aircraft communication and, increasingly, customer-facing technologies like QSR headsets.

The index ranges from 0.0 (completely unintelligible) to 1.0 (perfect clarity). Ratings above 0.75 are considered "excellent," while scores between 0.45 and 0.60 are considered "acceptable" for environments with moderate background noise. **What makes STI particularly valuable is its objectivity and repeatability** – it removes human perception and bias from the equation and produces data that can be compared across different systems, brands and conditions.



In the context of QSRs, STI testing is uniquely important because it replicates real-world drive-thru conditions. It not only evaluates clarity in silence, but also how well systems perform when layered with environmental noise – car engines, weather interference, cross-traffic chatter and distorted mic angles. These are exactly the challenges employees face every day. If a headset system performs well in quiet but fails when noise is introduced, it doesn't solve the operator's problem. STI captures this nuance.

Moreover, in today's market – where many vendors claim "crystal clear" or "AI-ready" audio – STI is a way to cut through the noise (literally and figuratively). It holds audio systems to a consistent benchmark and exposes weak design, poor signal processing or inflated marketing claims. For brands considering AI-driven ordering, it's a necessary safeguard. After all, voice-based AI can only function properly if it's fed understandable, high-quality speech data. Without that foundation, the AI's decisions become unreliable – causing errors, slowdowns and guest frustration.

Simply put: if a QSR headset can't perform under standardized sound testing, it shouldn't be trusted in your drive-thru lane.

Sound Testing in Practice: PAR Holds Up to STI Standards

Orfield Laboratories, an acoustics testing and research facility known for its rigorous, standards-based evaluations, recently assessed the PAR Clear Drive-Thru Headset against STI standards. The goal was to measure the system's intelligibility across a variety of real-world drive-thru scenarios, including background noise, off-axis talkers and multiple elevations.



Unlike internal vendor testing or marketing-driven audio comparisons, this study was conducted using IEC 60268-16 protocols in a controlled acoustic environment. And importantly, noise cancellation features were disabled during testing. This was a deliberate choice, designed to demonstrate the system's core performance before digital enhancements — a truer test of a system's integrity.

- In quiet conditions, PAR Clear delivered an **STI of 0.97** — nearly perfect speech intelligibility, equivalent to standing in the same room as the speaker.
- Under moderate noise (simulated car engines or heavy rain), the system maintained **STI scores in the mid-0.60s**, which is categorized as “highly intelligible” even in adverse environments.
- In worst-case scenarios — such as combined background noise and off-axis speech — PAR Clear still achieved **STI scores in the 0.45-0.50 range**. Notably, even these lower scores exceeded the minimum thresholds required by the strictest QSR drive-thru audio standards.

What does this mean for restaurant operators? It means that even under peak traffic, in bad weather, with a soft-spoken guest in a noisy vehicle, a system like PAR Clear can still enable effective drive-thru communication. **That level of consistency is what distinguishes operational excellence from everyday dysfunction.**



How AI is Raising the Stakes for Drive-Thru Audio

As QSR brands begin to experiment with voice-based AI ordering, the importance of speech intelligibility is growing exponentially. AI systems, like human order-takers, rely on audio inputs to interpret customer intent. But unlike humans, AI has no context clues, no visual cues and no emotional intelligence to help it guess what the speaker meant. It only hears what it hears.

This creates a unique vulnerability: if the audio feed is distorted, clipped or buried in background noise, the AI will simply get it wrong. And when that happens, it doesn't just slow down service — it undermines the credibility of the entire digital experience. Guests may forgive a human misunderstanding. **They won't extend the same patience to an AI agent.**

Many QSRs underestimate this dynamic. They invest heavily in AI software, conversational interfaces and backend integrations without first evaluating the audio pipeline feeding those systems. But without high-fidelity, consistently understandable input, the AI's ability to perform is fundamentally compromised.

PAR Clear, however, addresses this challenge head-on. By capturing full-spectrum, wideband audio with minimal distortion — even before noise cancellation is applied — it ensures that every word is captured cleanly, whether by a crew member or a machine. That makes it not just compatible with AI, but a foundational enabler of AI readiness. It's no exaggeration to say that clear audio is the difference between a successful automation rollout and a public-facing disaster.

Unlike humans, who can guess what the speaker really means, AI lacks:

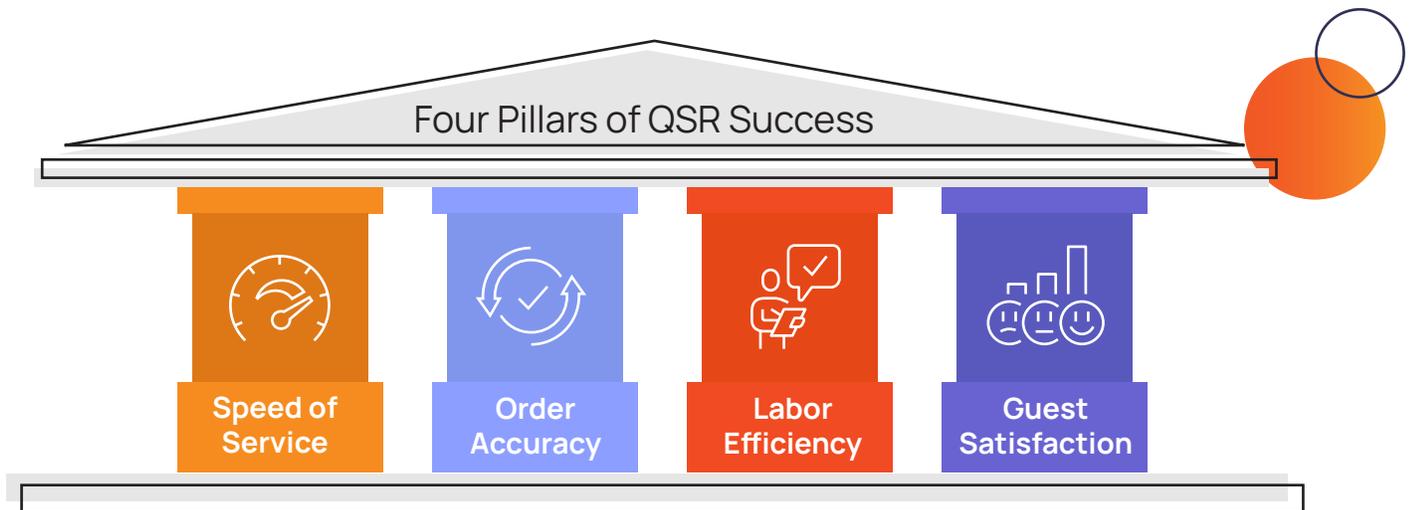
- Context clues
- Visual cues
- Emotional intelligence

It only hears what it hears.



From Improved Audio to Exceptional Outcomes: Turning Clarity into Performance

While improved audio may begin with clearer conversations, the downstream impact reaches every corner of restaurant operations. **Speech intelligibility has a measurable influence on the four pillars of QSR success: speed of service, order accuracy, labor efficiency and guest satisfaction.** When all four improve together, restaurants see higher throughput, better reviews and stronger financial performance.



Let's begin with speed. **In the drive-thru, even a few seconds saved per transaction can yield significant financial upside.** Consider a location that averages 60 cars per hour during peak periods. If clearer communication reduces interaction time by 5-10 seconds per vehicle, that store could serve an additional 6 to 10 cars per hour. Over the course of a month, that could add up to thousands of additional transactions – and tens of thousands of dollars in incremental revenue. Crucially, this acceleration doesn't require more staff or infrastructure. It simply comes from removing the friction of misheard speech.



Order accuracy is another key area of impact. **Incorrect orders are a persistent problem in the QSR world, costing time, ingredients and goodwill.** But many mistakes trace back to the moment the order was taken – when a word was misheard, a special request was missed or the customer had to speak over engine noise.

With the right drive-thru headset system, those mistakes are dramatically reduced. Because the audio is full-bandwidth and highly understandable, order-takers can hear subtle distinctions and process requests more confidently. Over time, the reduction in refunds, remakes and negative reviews becomes a meaningful cost-saving measure – and a reputational asset.



Labor is also affected. **Employees who don't have to constantly ask customers to repeat themselves, or guess at distorted speech, are more focused and less fatigued.** This lowers stress levels, reduces training time and improves overall morale. In a high-turnover industry where staffing is a constant challenge, anything that makes the frontline job easier and more consistent is a competitive advantage. PAR Clear contributes to this by delivering predictable, reliable audio quality that staff can depend on – regardless of who's wearing the headset or what's happening outside.



Finally, there is the customer experience. **In today's crowded QSR landscape, guest expectations are higher than ever. They want fast, frictionless service.** They want to feel heard – literally and figuratively. And they want technology that works seamlessly. When a customer can place

an order quickly, receive accurate confirmation and move through the drive-thru without confusion, their perception of the brand improves. That positive impression leads to more repeat visits, higher order values and better reviews. **And it all begins with a simple but powerful premise: can they hear you clearly?**

A Clear Difference: A System Designed for the Real World

Many headset manufacturers promise better audio. But PAR Clear is one of the only systems to deliver lab-proven intelligibility, engineered resilience and seamless technology integration – all in one package designed specifically for QSR environments. **It's not just about making the order clearer. It's about enabling a better operation.**

What's more, **PAR Clear is a truly modern platform.** Its IP-based architecture allows for remote updates, real-time diagnostics and seamless integrations with existing restaurant systems. Whether you're deploying voice-based AI, integrating with a digital drive-thru timer or syncing headset usage with POS timestamps, **PAR Clear is designed to be part of the larger operational ecosystem.** This makes it a strategic investment – not just a replacement for an aging headset system, but a foundational layer for smarter, faster and more scalable drive-thru operations.

It's also backed by the expertise of PAR Technology, a trusted partner in restaurant innovation for over 40 years. With a long history in POS, kitchen systems and customer engagement platforms, PAR understands the full operational picture – and builds its products to align with real operator needs. **That means better support, more thoughtful design and a roadmap that evolves with the industry.**

What Makes PAR Clear Different

- From a hardware standpoint, PAR Clear is built for **durability and usability.**
- **The all-in-one headset** design eliminates cords, belt packs and failure points.
- Materials are **heat-and grease-resistant**, standing up to the daily wear and tear of a fast-paced kitchen.
- Components like the **antenna and display unit are decoupled, allowing for flexible installation** that maximizes coverage and reduces dropouts.
- The system operates on DECT 6.0, a **secure wireless protocol that avoids interference from Wi-Fi or Bluetooth** and ensures a stable signal throughout the entire lot – even in multi-lane setups or large drive-thru footprints.



Conclusion: Reimagining Drive-Thru Excellence, One Word at a Time

In a time when QSR operators are flooded with complex technologies, from AI engines to third-party delivery tools, it's easy to underestimate the power of simplicity. But at the heart of every great drive-thru experience is a basic interaction: a customer speaks, and a restaurant listens. When that moment is muddled, delayed or distorted, everything downstream suffers. **When it's crystal clear, the entire operation benefits.**

If your audio system is holding back your throughput, frustrating your team or compromising your AI roadmap, it's time to address the problem at the source. PAR Clear can help. PAR Clear isn't just a clearer headset – it's a smarter system, built for the future of restaurant communication. With independently verified performance, real-world durability and future-ready integrations, it allows restaurants to unlock speed, accuracy and satisfaction from the very first word.

No matter how advanced your operation becomes, it still begins with a conversation. **And with PAR Clear, that conversation has never sounded better.**

1. <https://www.orba.com/fast-food-restaurants-are-you-making-the-most-of-your-drive-through/>. | 2. <https://www.intouchinsight.com/resources/studies/drive-thru/> | 3. <https://www.qsrmagazine.com/reports/the-2023-qsr-drive-thru-report/> | 4. <https://www.marketforce.com/blog/the-cost-of-inaccuracy>



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