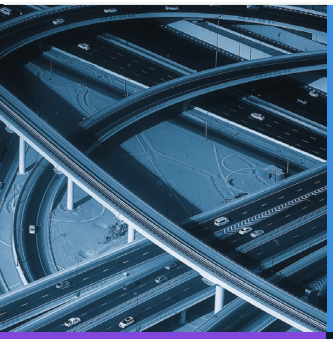
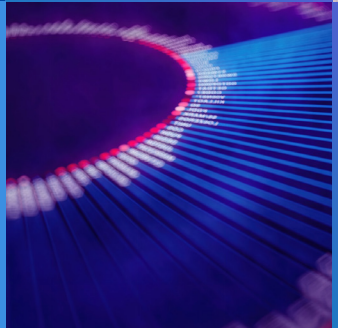
ARMADA

WHITE PAPER

From Visibility to Control:

Closing the Supply Chain Data Gap





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The Expensive Lesson Most Foodservice Brands Learn the Hard Way

Most supply chain technology stories have the same difficult chapter.

The operations team identified a gap — visibility into inventory, forecasting for promotions, coordination across a sprawling network of suppliers, distributors, and distribution centers. They evaluated vendors. They chose a software product. They invested real time and real capital to implement it. Then, months or sometimes years later, they found themselves stuck.

Not because the technology was fundamentally flawed. Because the data underneath it was.

Incomplete and outdated item master records. Inventory counts that didn't match physical inventory. Supplier data arriving in different formats, at different intervals, with different definitions of the same fields. Analysts spending their hours reconciling and fixing what the platform was supposed to produce automatically. Forecasts that were directionally useful at best — and misleading during the moments that mattered most, like a major LTO launch where regional demand could swing 40% or more in a single week.

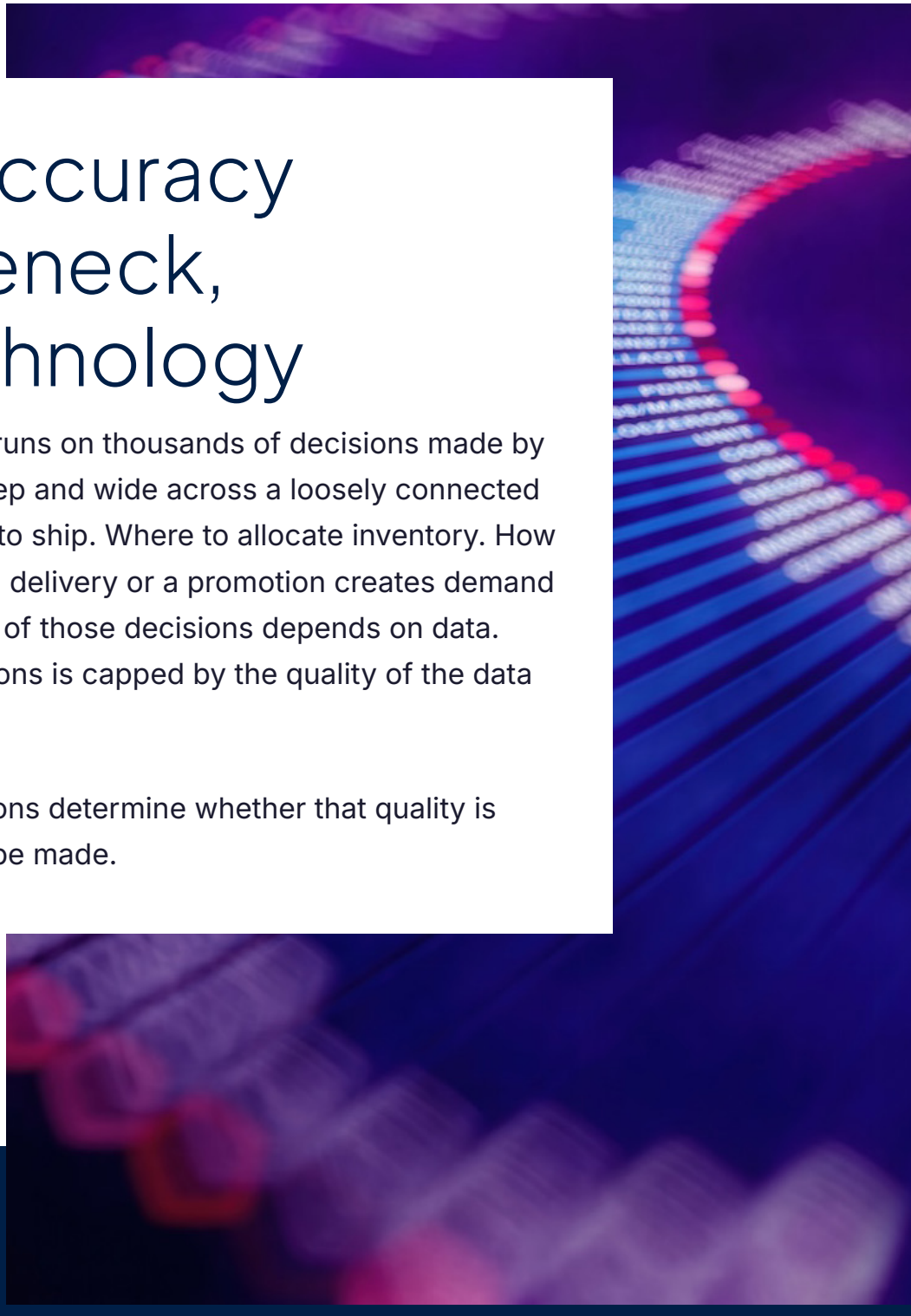
> **The technology worked. The data didn't.**
> And without clean, integrated, governed data, the platform couldn't do what it promised.

This pattern is more common than most technology vendors will acknowledge during the sales cycle. In foodservice, the supply chain includes hundreds of independent suppliers, dozens of distribution centers, and thousands of SKUs with short shelf lives and strict handling requirements. The complexity of the foodservice supply chain makes data management harder than in most other industries. The more complex the network, the more expensive the gaps.

The consequences show up on the balance sheet: stockouts during high-profile promotions. Excess inventory sitting in DCs after a menu change. Elevated freight costs because nobody has a unified picture of what's actually in the network. Manual audit work that should have been automated quarters ago. Margin erosion that accumulates whether or not anyone is tracking it.

This paper makes one straightforward argument: data strategy is the prerequisite. Not for one capability, but for all of them — visibility, AI, automation, and the operational agility that supply chain technology is supposed to deliver. And it offers a practical framework for building that foundation with the mix of people, process, and technology appropriate for your organization.

The final section describes a tech-enabled, service-led approach to creating a flexible, scalable data foundation for visibility, orchestration, and supply chain optimization. This approach has been used successfully by some of the largest, most recognized restaurant brands.



Why Data Accuracy Is the Bottleneck, Not the Technology

The foodservice supply chain runs on thousands of decisions made by hundreds of people spread deep and wide across a loosely connected network. What to order. When to ship. Where to allocate inventory. How to respond when a DC shorts a delivery or a promotion creates demand nobody anticipated. Every one of those decisions depends on data. And the quality of those decisions is capped by the quality of the data behind them.

Three foundational data functions determine whether that quality is there when decisions need to be made.

The Three Data Functions Every Supply Chain Depends On

DATA GOVERNANCE

Data governance defines the rules of the road: who owns which data, how it is accessed and shared, what standards it must meet, how exceptions are handled, and how the data model evolves as the business changes. Without governance, every system in the supply chain operates on its own definitions. An item that is "active" in one system is "discontinued" in another. A supplier location has three different names depending on which feed you read. The data exists, but it cannot be trusted or combined reliably.

Governance is not a technology. It is a discipline. Technology can enforce governance rules at scale, but someone has to define what the rules are, maintain them over time, and make judgment calls when the business changes in ways the rules do not cover. Organizations that treat governance as an after-thought pay for it in forecast errors and manual reconciliation hours.

MASTER DATA MANAGEMENT

Master data management ensures that the foundational records of the supply chain — items, suppliers, locations, customers, contracts — are complete, accurate, and consistently defined and maintained. It is the connective tissue between the governance rules and the operational data flowing through the network.

In foodservice, master data failures are common and expensive. An incomplete item master produces inaccurate forecasts. Outdated supplier records generate discrepancies that take analyst hours to resolve. Missing contract terms create pricing errors that erode margin quietly across thousands of transactions. The gap between what the master data says and what is actually true about the supply chain is where most operational problems originate.

DATA COLLECTION AND ANALYTICS

With governance standards in place and master data clean, the third function is collecting operational data from across the network — distributor feeds, DC inventory positions, shipment status, POS signals, supplier order confirmations — and making it available for analysis and decision-making in a consistent, timely format. Different software platforms support this function to varying degrees. Some collect broadly but normalize poorly. Some normalize well but cover a limited set of partners. The quality of what gets collected, and how reliably it reflects reality, is what separates a useful analytics layer from an expensive reporting tool.

The Core Operational Functions That Live or Die on Data Quality

Demand Forecasting

A forecast is only as accurate as the inputs feeding it: historical order data, POS data from restaurants, promotional calendars, market signals. When those inputs are incomplete, delayed, or inconsistent across sources, the forecast degrades. In foodservice, a single limited-time offer can swing demand for a product by 40% or more across a region. Even small inaccuracies compound quickly.

The cost shows up at the promotional window, when there is no time to recover. The DC runs short. The operator calls. The brand absorbs it in expedited freight, emergency substitutions, and service level penalties. Poor forecast data does not announce itself in advance. It announces itself when the restaurant runs out.

Inventory Optimization

Organizations trying to balance product availability against carrying costs need accurate, timely visibility into what is sitting at each node in the network. In practice, many brands are working with inventory data that is hours or days old, reported in different formats by different distributors, and reconciled manually by internal teams. The result is a permanent oscillation between too much stock and too little.

The gap between what the system shows and what is physically in the DC is where stockouts are born. By the time a discrepancy surfaces through manual reconciliation, the window to act has often already closed.

Supply Planning

Effective supply planning requires a single, reliable view of demand signals, supplier commitments, shipping plans, and inventory positions across the network. When those inputs are fragmented — sitting in separate systems, updated at different intervals, formatted to different standards — planners spend their time collecting and reconciling data rather than making decisions. The planning cycle slows. The lead time required to respond to changes grows. The organization's ability to absorb disruptions without cost degrades accordingly.

Transportation Management

Without integrated signals from demand, inventory, and order data, transportation decisions are made with incomplete information. The result is inefficient loads, unnecessary expedited shipments to fix avoidable inventory issues, and freight costs that stay stubbornly high. Premium freight is often the most visible and measurable symptom of a data problem that started much earlier in the process. Detailed shipping and transportation data — load status, carrier performance, routing decisions — is one of the areas where supply chain data platforms vary most significantly in what they actually collect and make usable.

Pricing and Contract Management

Clean, current contract data — pricing terms, volume commitments, rebate structures, approved substitutions — is the foundation of accurate cost management and supplier accountability. When that data is fragmented, outdated, or manually maintained in spreadsheets, discrepancies compound quietly across thousands of transactions. Margin leakage from pricing errors and missed contract terms rarely surfaces until a financial review, by which point months of value have already eroded.

AI Readiness

AI and machine learning models require clean, structured, consistently formatted data as input. The quality of the model is a direct function of the quality of the data it is trained on. An anomaly detection model trained on dirty historical data learns the wrong patterns. A demand forecasting model that has never seen your promotional demand history will not catch the signals that matter.

Organizations that have not built a reliable data foundation are not ready for AI, regardless of what the platform vendor promises in the sales cycle. The gap between having an AI-powered dashboard and having AI that reliably informs operational decisions is almost always a data quality gap, not a technology gap.

> **You can't automate a process that runs on bad data.** You'll just automate the errors faster.

What Happens When the Data Foundation Is Weak

These costs are chronically underestimated in planning and only visible in retrospect.

- **Stockouts and write-offs surface** on the balance sheet and in operator satisfaction surveys. They are downstream effects of data problems that started much earlier in the chain.
- **Elevated freight costs from expedited shipments** to fix avoidable inventory issues — the most visible symptom of a data problem that originated upstream.
- **Slow decision cycles.** When teams spend hours or days collecting and reconciling data from multiple organizations before they can act, they are losing time that compounds across every planning period.
- **AI and automation that cannot deliver** on their promise. Organizations that skip the data foundation stage are not just underperforming today. They are falling behind on the capabilities that will define competitive positioning over the next five years.

The Shift Toward Predictive Visibility and Autonomous Supply Chains

The industry is moving toward a model where supply chain decisions are informed by predictive signals from every node in the network: IoT sensors in distribution centers, real-time shipment and product tracking, AI-generated alerts and autonomous responses when demand, inventory, and supply data pinpoint an emerging shortage.

This is the right direction. But it presupposes a clean data foundation. Predictive signals from ten different sources, arriving in ten different formats, without a common data layer to normalize and contextualize them, do not produce predictive insight. They produce noise at higher speed.

The organizations that are best positioned to make the transition to autonomous supply chain operations are the ones that solved the data problem first. They have the governance, the integration layer, and the quality assurance processes to inform their dashboards and AI. The ones that don't have a stable data foundation are now grappling with execution challenges that manifest in firefighting rather than optimization.

Two Traditional Ways to Build a Data Foundation

There is no single right approach that is ideal for every organization. The two traditional models rely on building internal capacity and using general-purpose technology, or purchasing a software platform. Each has genuine strengths and honest limitations. Today there is a third way that offers the best of build and buy, with a unique model to ensure you have the people, processes, and technology for your unique circumstances.

First, a clear-eyed look at the two traditional options.

OPTION 1

Building Your Own Data Foundation | Ownership-first model

What It Looks Like

The organization staffs an internal data governance and analytics function, and uses general-purpose tools and technology for master data management, data collection, data quality management, and analytics to support procurement, supply management, inventory, and logistics teams.

Where It Works

Internal teams carry deep institutional knowledge of products, suppliers, systems, and operational requirements. The data model and reporting can be wholly customized to the business. When it works, it creates long-term stability and tight integration between data operations and business strategy. This model is strongest for large enterprises with mature supply chain processes, significant IT resources, and the executive sponsorship to sustain a multi-year capability build.

Where It Falls Short

Building an internal data team and technology foundation requires specialized talent in a competitive market. Data engineers, governance specialists, system architects, and supply chain data analysts are expensive to hire and hard to retain. Ramp time is significant, especially if building the capacity from scratch. Organizations that need cleaner data now — not in eighteen months — may not be able to wait.

There is also a risk in relying on highly customized systems. Over time, as years of incremental changes accumulate, it becomes harder to evolve and accommodate new data types from new sources. In short, customized systems may become brittle and inflexible.

There is also a fragmentation risk. Without executive-level support and a clear mandate, data governance teams often become advisory rather than authoritative. They publish standards. Teams ignore them. The governance function exists on paper but does not change how data actually flows through the organization.

OPTION 2

Buying a Platform | Speed-to-value model

What It Looks Like

The organization selects a software visibility platform that promises a foundation for network data collection and reporting to support key supply chain functions.

Where It Works

Speed to value is the promise of the buy approach, especially for organizations that already have well-defined data governance processes and teams in place. A software provider may bring specialized tools and advanced data quality capabilities that an internal team would need years to develop. They also bring network infrastructure — pre-built integrations across suppliers and DC partners that can eliminate months of custom integration work. They can reuse integration connectors that already work, which has real operational value that is difficult to replicate quickly internally.

Where It Falls Short

Pre-built software may limit your flexibility. You may need to map your current data to the vendor's data model, and the vendor's model may not include all of the data types and sources you need — detailed shipping and transportation data, for example. Your ability to innovate and incorporate new data sources, such as real-time IoT data, may be hostage to your software vendor's product innovation roadmap.

Equally important, software alone is not enough to ensure clean, consistent data. Technology does not eliminate the need for process and people to make it work. Partner data management is real work. Clear SLAs, defined escalation paths, and an internal point of contact who understands both the data landscape and the business context are all required to keep the relationship productive.

Technology alone cannot fix systemic organizational or process problems. A platform configured against an incomplete data model will automate the wrong standards. AI-based anomaly detection trained on dirty historical data will learn the wrong patterns. Automation amplifies whatever it is built on, good or bad.

Every automated system still requires human oversight, governance, and ownership. Someone has to define what "clean" means. Someone has to update the rules when the business changes. Technology reduces manual labor. It does not replace the judgment that makes the system trustworthy.

A Third Way:
The Armada Hybrid Model

The limitations of build and buy are not a reason to accept underperformance. They point toward a model that delivers what both options promise without the structural failure modes of either.

Armada Profitable Response Orchestration®, PRO, takes a hybrid approach, combining technology, supply chain engineering, and expert services. PRO provides the flexibility of the build strategy, with the speed and automation of purchased software. It is designed specifically for foodservice organizations that need a clean data foundation now, not in eighteen months, and cannot afford to sacrifice operational performance to adapt to a vendor's rigid data model.

The Armada Hybrid Model

Your data standards, backed by our team

The data model is configured to your operation with internal ownership. Armada's data analysts working alongside your team to define and maintain your standards.

The network is already connected

300-plus pre-built integrations across the foodservice DC and distributor network — built, validated, and maintained. No months of custom integration work. No starting from scratch.

Technology and services that scale with your operation

PRO's platform automates the routine, monitors data quality continuously, and surfaces prescriptive recommendations — not just alerts. Armada supplements your team with data, engineering and orchestration services.

Why the Hybrid Model Produces Better Outcomes

The most effective strategies in foodservice supply chains combine internal governance, external network expertise, best-in-breed technology, and expert services in a layered model. Each component makes the others more effective.

Internal capability defines the standards and provides the business context. Armada's data analysts, supply chain engineers, and orchestrators provide additional bandwidth, specialized expertise, and cross-network intelligence that internal teams cannot build quickly on their own. And PRO's platform automates the routine work, enables real-time monitoring at scale, and builds the structured, consistent data environment that AI and autonomous decision-making require to be reliable.

> Internal teams set the standards.
> Armada provides the network and platform infrastructure.
> Technology automates the execution.
> **Each layer makes the others more effective.**

This is not a theoretical framework. It is the model producing measurable results at some of the most operationally complex foodservice brands in the country — brands that have moved past the "buy a platform and hope" approach. The organizations running this model are seeing forecast accuracy improvements of 10–30%, service level improvements of 15–25%, and expedited freight reductions in the same range. Not because they bought better software in isolation, but because the data underneath the software is accurate, integrated, and governed consistently.

99.98%
fill rate
LTO items

10–30%
improvement
forecast accuracy

15–25%
improvements
service level

Four Factors That Should Drive Your Decision

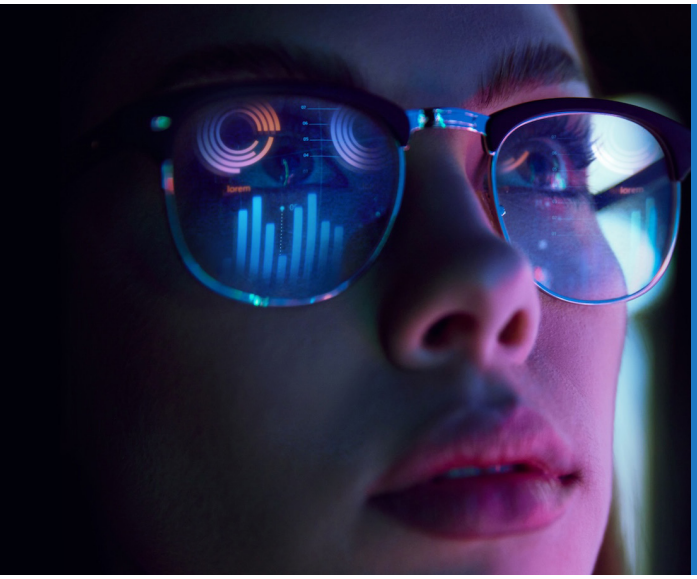
Current data maturity. How clean is the data today? If the organization is starting from fragmented, inconsistent master data, the foundation needs repair before automation. Armada's engineering-led approach provides expert services to help bridge this gap without requiring an internal data team build first.

Internal skill availability. Specialized data talent is scarce and expensive. Organizations that cannot staff a full internal governance function on a realistic timeline benefit most from Armada's managed model, where platform expertise and network operations are part of the engagement from day one.

Budget and timeline. Internal capability building is a multi-year investment. Armada's pre-built integrations and managed platform can produce measurable data quality improvement within weeks. That matters when a promotional season or platform renewal is approaching.

Long-term strategic goals. Organizations planning to deploy AI-driven demand sensing, predictive inventory optimization, or autonomous replenishment need a higher standard of data quality. The target state should inform the investment now, not after the AI initiative has already underperformed.

RELATED READING



How Bojangles Built a Supply Chain Data Foundation That Performs Under Promotional Pressure

See how Armada's managed platform model surfaced hidden gaps in LTO readiness across 800+ locations — and what changed when the full hybrid approach was in place.

Read the Bojangles Case Study
armada.net/bojangles

A Practical Blueprint for Getting Started

Organizations that have successfully built a data foundation share a common sequencing pattern. It is not complicated, but it requires discipline and a willingness to do the unglamorous work before investing in advanced capabilities.

1.

AUDIT THE CURRENT STATE HONESTLY

Before investing in any new capability, understand what you are working with. Map the data flows across your supply chain: where data originates, how it moves between organizations, where it is stored, who touches it, and where it breaks down. A useful audit is not a technology inventory. It is a failure mode analysis.

Start with these four questions:

- Where do our inventory counts differ from physical inventory, and by how much?
- How many SKUs in our item master have outdated, incomplete or conflicting records?
- What percentage of analyst time goes to data reconciliation rather than decision support?
- When was the last time our forecast was wrong in a way that cost us during a promotional window?

Armada's network data assessment surfaces these gaps quickly — before a platform implementation begins rather than after it underperforms.

2.
DEFINE YOUR DATA STANDARDS BEFORE YOU AUTOMATE

This is the step most organizations skip, and it is the one that causes the most expensive failures downstream. Deploying a data management platform without clear standards for what constitutes a clean, complete, accurate record is like building a quality control system without defining the specifications.

At minimum, define:

- The master data model for your key entities: items, suppliers, locations, contracts
- Acceptable formats, update frequencies, and quality thresholds for data from each network partner
- The process for exceptions and changes: who approves changes, how standards evolve as the business changes, and what happens when a partner's feed goes out of spec

Armada works with client teams to build these standards as part of the PRO onboarding process — so the platform is configured to your operation, not a generic template.

3.
FIX THE FOUNDATION BEFORE ADDING LAYERS

Once standards are defined, invest in getting the foundational data right. This is where Armada's network operations team delivers the fastest return. The initial cleanup, reconciliation of conflicting records across organizations, and establishment of reliable integration feeds from key partners is work that requires specialized data operations expertise and scalable processes — not years of internal hiring.

Focus on the data that supports your immediate operational priorities. Clean the item master. Reconcile distributor inventory data. Establish reliable, automated feeds from your most critical partners. Get the foundation solid enough to support accurate reporting before turning on more advanced capabilities.

4.
LAYER IN TECHNOLOGY AND ADVANCED CAPABILITIES

With a clean data foundation and clear standards in place, technology investments deliver returns much faster. Automated monitoring catches data quality issues before they compound. Analytics platforms produce insights from inputs that teams can trust. AI models trained on clean historical data generate forecasts and recommendations that are genuinely useful.

This is where PRO's architecture delivers its full value. The platform collects and governs the data foundation. PRO Pulse provides real-time network awareness and proactive risk response. PRO Peak adds demand scenario modeling and full LTO lifecycle management. Organizations running the full model have achieved 2x–5x ROI on their supply chain technology investment.

SEE IT IN PRACTICE

Request a PRO Pilot: Live on Your Supply Chain Data in 30 Days

No migration. No IT lift. No commitment until you've seen PRO running on your actual network data.

Request Pilot Access →
solutions.armada.net/ArmadaPROpilot

5.
MEASURE THE VALUE AND KEEP IMPROVING

Data strategy is not a project with a completion date. Establish KPIs for data quality: completeness, accuracy, timeliness, consistency. Track them with the same rigor you apply to fill rates, on-time delivery, and inventory turns.

Armada's Value Scorecard provides a continuous view of the operational and financial value being generated by the platform — stockout events prevented, freight costs reduced, promotional execution performance, analyst hours reclaimed. The business case for the investment is a running measure, not a one-time calculation.

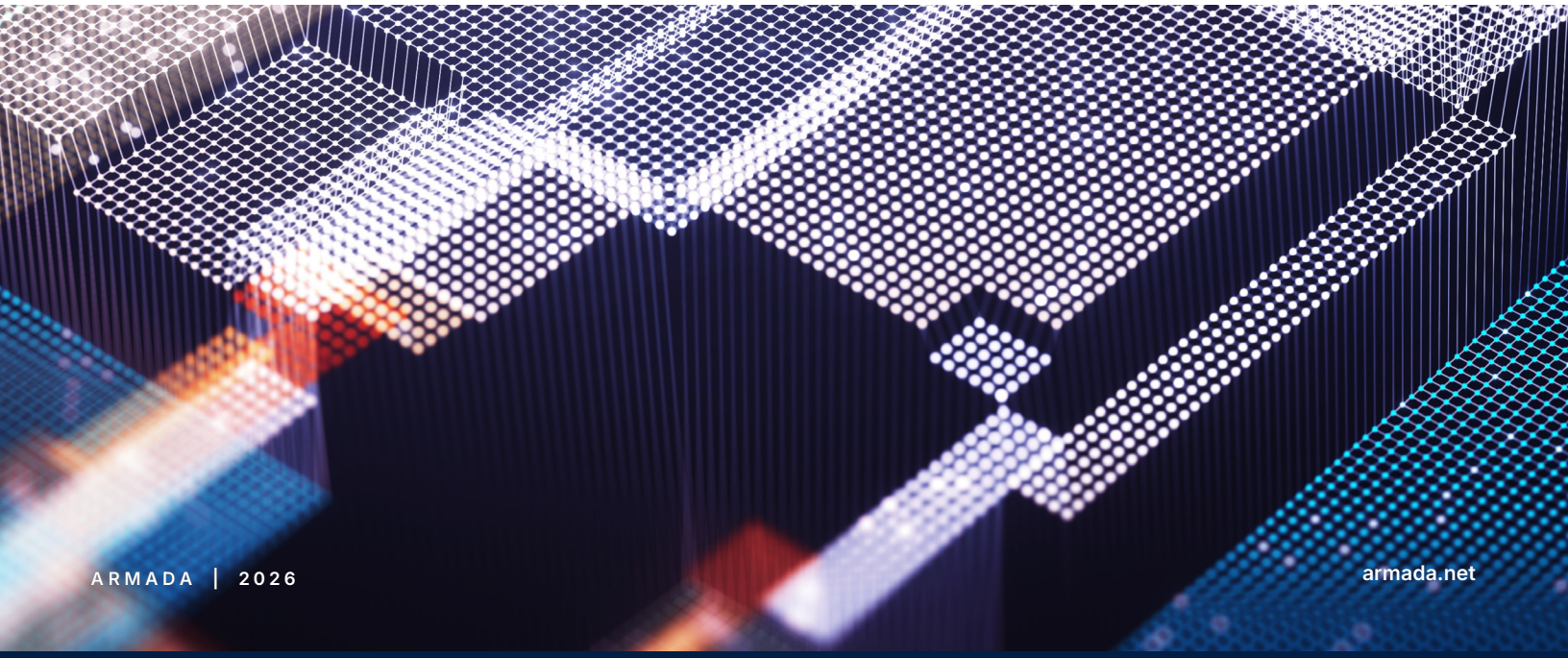
The Window Is Not Enough

The foodservice industry is investing heavily in supply chain technology. Visibility platforms. AI-powered analytics. Digital control towers. Demand sensing and scenario planning tools. The direction is right. The capabilities are real. For the organizations that build the right foundation and choose the right model, the payoff is significant: fewer stockouts, lower carrying costs, faster response to disruptions, better promotional execution, and the operational agility to compete in a market that keeps getting more complex.

But the investment only delivers its intended return when the data is ready for it.

The brands that will lead over the next several years are not the ones spending the most on technology. They are the ones building disciplined, scalable, well-governed data foundations that make the technology actually work — combining internal expertise with network-scale integration and operational accountability in a single relationship.

> The gap between a window into your supply chain and a room to operate from is not a technology gap. **It is a model gap. And it is closeable.**



About Armada

Armada works with some of the most operationally complex foodservice brands in the country — including Bojangles, Darden, and Chick-fil-A — to build the data foundation, operational visibility, and decision-making capability their supply chains require.

Through the PRO platform, Armada combines a purpose-built supply chain data architecture, 300-plus pre-built network partner integrations, AI-powered prescriptive analytics, and embedded supply chain expertise in a single managed engagement. The platform is configured to each client's specific operation — not a generic template — maintained by Armada's team, and designed to grow from foundational data governance to full autonomous supply chain orchestration.

The brands running the full PRO model are achieving 2x–5x ROI on their supply chain technology investment. Not because they bought better software, but because the data underneath the software is finally accurate, integrated, and governed well enough to act on.

Visit armada.net
or
contact your Armada representative to request a PRO pilot or schedule a network data assessment.

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