Predictive planning: driving operational logistics excellence

For decades, logistics has been the invisible engine of the building materials industry, essential yet often undervalued. Despite advances in automation and digitalisation, however, a significant portion of logistics planning in our sector remains reactive. Predictive planning powered by AI offers a compelling alternative, enabling logistics managers to see tomorrow's challenges today and prepare for them intelligently.

■ *by **INFORM GmbH**, Germany*

Operational excellence in building materials logistics with AI

Every day, dispatchers across cement, ready-mix and aggregates operations face an intricate balancing act: matching hundreds of orders, vehicles and delivery windows while navigating unpredictable variables like traffic, driver availability and production delays. Trucks are dispatched on the fly, bottlenecks are addressed as they emerge and valuable resources are wasted in the daily scramble to keep up with demand.

The challenge: the hidden costs of reactive dispatching

This reactive mode of operation, often called "firefighting logistics", does not just cause stress for dispatchers, it hides enormous inefficiencies across the supply chain. Studies and simulations from INFORM's cement and concrete industry projects consistently reveal that inefficient dispatching can add 15-25 per cent to total logistics costs, often without anyone realising where that loss originates.

"In short, predictive planning transforms logistics from a reactive cost centre into a strategic enabler of service excellence."

Manual dispatching is, by nature, reactive. Decisions are made under pressure, with limited visibility into future demand or capacity. A last-minute customer request, a delayed truck at the plant, or an unexpected driver absence can easily cascade into scheduling chaos.

For most logistics teams, this pattern is all too familiar:

- **high dispatcher stress** – Every morning starts in crisis mode.
- **inefficient truck utilisation** – Some vehicles sit idle while others are overbooked.
- **unpredictable delivery performance** – Customers receive inconsistent service quality.
- **limited transparency** – Management has little foresight into tomorrow's bottlenecks.

Each of these pain points chips away at profitability and service levels. Worse, they reinforce one another in a feedback loop that locks organisations into reactive habits. The dispatch process becomes an

exercise in firefighting rather than strategy.

Yet these inefficiencies often stem from one fundamental issue: lack of forward visibility. When planners cannot see what is coming, they cannot prepare. And that is exactly where the next generation of logistics intelligence starts: with predictive pre-planning.

The turning point: predictive planning

The pre-planning phase, ie what happens before the first truck leaves the yard, has traditionally been overlooked. But it is here that the biggest performance gains can be unlocked.

When supported by proper AI tools, predictive planning uses upcoming order data, production schedules and fleet availability to simulate multiple future scenarios, evaluating them for cost, resource utilisation and delivery reliability before execution begins. Instead of dispatchers reacting to disruptions, AI systems forecast where and when those disruptions might occur, suggesting proactive adjustments.

In practical terms, that means:

- The system analyses all orders planned for tomorrow, alongside truck capacity, driver shifts, and plant throughput.
- It generates and evaluates millions of potential allocation scenarios within seconds, far beyond what even the most experienced dispatcher could manually consider.
- It selects the optimal vehicle-order combination by intelligently matching each order with the best available truck across the network, not just within a single plant ("alternative sourcing"). This allows trucks to be flexibly assigned to different plants as conditions change, maximising efficiency while respecting all constraints (eg, time windows, distances, driver regulations).

This process gives dispatchers a data-backed starting plan each morning, one that already accounts for known challenges. Rather than beginning the day with a blank screen, they begin with a well-optimised baseline. From there, the dispatcher's role shifts from problem-solver to strategy executor.

At INFORM, this capability is part of what the company calls AI-powered pre-planning, a core pillar of its hybrid AI approach that combines mathematical algorithms and AI methods, ensuring that the dispatch process is proactive, not reactive.

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From data to decisions

Predictive planning powered by AI processes operational data that is relevant for logistics, such as master data and the order book from the enterprise resource planning system. These inputs feed into an intelligent optimisation engine that continuously updates as conditions change. The system identifies potential conflicts in advance – for example, if too many deliveries are clustered in one time slot or if truck availability will be tight due to maintenance schedules.

Planners can run "what-if" analyses:

- How many trucks do I need, and where should they be positioned to meet my on-time performance targets?
- How will additional orders impact on-time performance and logistics unit costs?
- How will alternative sourcing influence plant utilisation and logistics costs?
- What is the impact of positioning trucks at different plants for full or partial days?
- Can we maintain service levels with current resources under peak demand?
- How would profit margins change if we reduce the fleet by five per cent?

By simulating multiple configurations before execution, the organisation can choose the most resilient and cost-effective plan before the first truck is loaded.

From chaos to control: the measurable impact

The difference between reactive dispatching and predictive planning can be profound. In one INFORM project with a major European ready-mix producer, AI-driven optimisation improved truck productivity by 24.5 per cent. The resulting cost reduction exceeded EUR2m (US$2,328,112) annually, all without adding a single vehicle. The full results of this case study were published ICR's August 2025 issue.

Across similar case studies, five key performance improvements emerge:

1. **higher fleet utilisation** – Trucks spend less time idle or travelling empty, increasing the return on every asset.
2. **improved delivery reliability** – On-time ratios rise significantly when predictive planning eliminates scheduling conflicts before they occur.
3. **lower dispatcher stress** – Planners begin each day with a clear, optimised baseline rather than a blank canvas.
4. **greater transparency** – Management gains early insight into tomorrow's workload, capacity needs, and potential risks.
5. **Customer satisfaction** – Reliable delivery slots and proactive communication lead to stronger customer trust and loyalty.

In short, predictive planning transforms logistics from a reactive cost centre into a strategic enabler of service excellence.

Beyond efficiency: enabling new business models

Predictive planning also unlocks new business opportunities. With full visibility into future demand and resource availability, producers can explore advanced pricing and capacity models, for example dynamic delivery pricing.

Rather than charging flat rates, producers can adjust prices based on demand peaks and troughs. Higher prices during busy periods help flatten order spikes; lower prices during quiet periods encourage smoother utilisation. Over time, this leads to more balanced demand and better asset use, benefitting both the producer and the customer. When executed well, it may even preserve overall revenue, as the decrease in logistics

Enabling new business models with AI

unit costs can compensate for any price reductions.

Such strategies are only viable when order and dispatch data are tightly integrated. Predictive planning provides exactly that foundation.

People first: empowering dispatchers with AI

A common misconception is that AI will replace human planners. In reality, AI enhances them. Predictive planning does not remove human decision-making, it amplifies it.

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For experienced dispatchers, it becomes a second set of eyes, surfacing patterns they might miss under time pressure. For newer team members, it flattens the learning curve, turning complex logistics into manageable workflows.

By shifting routine calculations and constraint handling to AI, dispatchers can focus on what humans do best: communication, judgement and customer relationships. The outcome is not just better logistics, it is a happier, more confident workforce.

Data-driven proof: why predictive planning becomes the new standard

The best way to understand the value of predictive planning is to test it. INFORM encourages logistics teams to run real-world comparisons, feeding their own operational data into an AI-based optimiser to see the difference side by side.

In almost every case, the results speak for themselves: more deliveries completed with fewer trucks, lower logistic unit costs and smoother operations.

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The message is clear: predictive planning is no longer optional. In an industry defined by tight margins, it represents one of the most effective and sustainable levers for competitiveness.

The road to operational excellence

Cement, aggregate and concrete logistics will always involve uncertainty. But with predictive planning, uncertainty no longer equals chaos. By transforming how dispatchers prepare, decide and execute, predictive planning powered by AI enables organisations to move from firefighting to foresight, from reacting to anticipating.

The result is not just better logistics. It is operational excellence, achieved through intelligence, simulation and the courage to plan smarter. ■