CASE STUDY

Electronics Manufacturing

Supply Chain Intelligence

Component shortages were killing delivery commitments. AI made them predictable - and preventable.

EMS & PCB assembly manufacturer · 2 plants · 1,200+ component SKUs · Consumer electronics & industrial clients

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1. Overview

This electronics manufacturing services company assembled PCBs and sub-assemblies for consumer electronics brands and industrial OEMs. Their component base exceeded 1,200 active SKUs - including long-lead ICs and specialty connectors with lead times of 26+ weeks. Their planning team of four used MRP outputs and manually maintained Excel trackers to manage this complexity.

A global IC shortage - affecting a microcontroller used across 34 product lines - caused a cascading delivery failure hitting 8 customers simultaneously. Total delayed revenue in that quarter: ₹2.4 crore. The shortage had been developing in the broader market for 16 weeks. Their system had no way to detect it until internal stock ran out.

2. Key Results

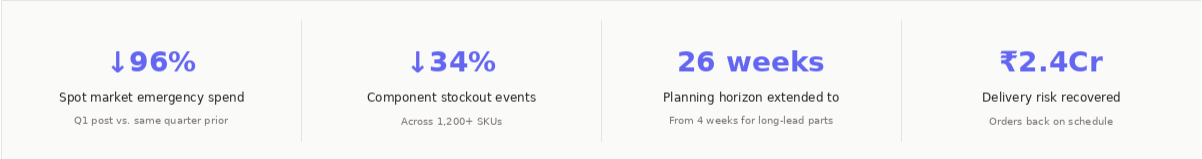

Figure 1: Key outcomes - first quarter post-deployment

3. Challenges

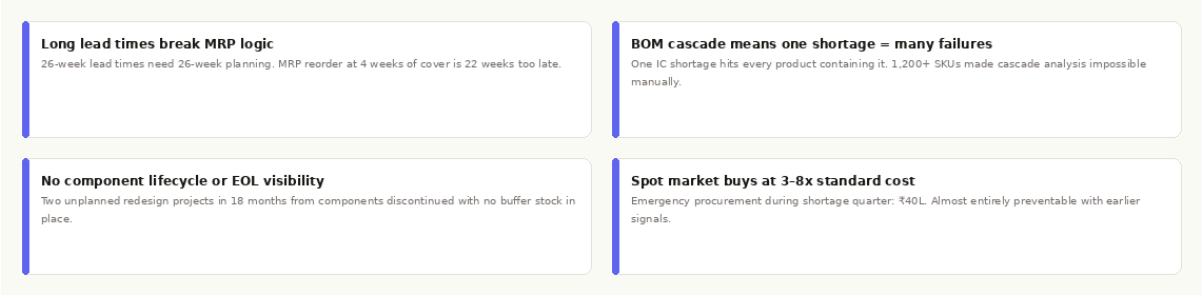

Figure 2: Four core challenges in electronics component supply chain management

Long Lead Times Make Standard MRP Useless

MRP is designed for short-to-medium lead times. When a component has a 26-week lead time, an MRP reorder signal fired at 4 weeks of stock cover is already 22 weeks too late. Their planning horizon was structurally mismatched with their supply reality.

BOM Complexity Means One Shortage Cascades Everywhere

A single component shortage doesn't affect one product - it affects every product containing that component. With 1,200+ active SKUs, manually working out the cascade scope of a shortage took hours and was often incomplete. Teams only understood the full impact after the delivery failures had already begun.

No Visibility into Component Lifecycle or Obsolescence

Electronics components are frequently discontinued. Without tracking component lifecycle status, the company had already faced two unplanned product redesign projects in 18 months when components were discontinued with no alternative or buffer stock in place.

Spot Market Buys at 3–8x Standard Price

Emergency procurement from spot distributors during the IC shortage quarter cost ₹40 lakh - at 3x to 8x contracted prices. This was almost entirely avoidable with even 6 weeks of additional forward visibility on the supply risk.

4. Our Solution

We connected to their ERP and integrated a component lead time database tracking published lead times and supply signals across major component categories. Our BOM explosion engine mapped every component to every finished product containing it - giving the planning team, for the first time, a complete component-to-product impact map queryable in real time.

Modules Deployed

Component Demand Forecasting	**BOM Dependency Mapping**	**Long-Lead Procurement Planning**
Supplier Risk Tracking	**Dead Stock & EOL Detection**	**AI Assistant**

Implementation Timeline

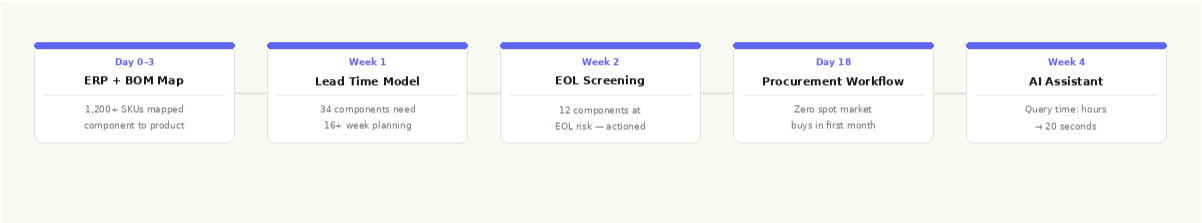

Figure 3: Implementation from BOM mapping to zero spot-market emergency buys

Key Capabilities

- **Planning horizon:** Long-lead planning horizon extended to 26 weeks for ICs and specialty components - matched to actual lead time, not MRP defaults
- **Cascade visibility:** BOM cascade analysis: AI instantly maps a component shortage to every finished goods SKU affected - query takes 20 seconds

- **EOL protection:** Component lifecycle monitoring: EOL signals tracked 12–18 months ahead so alternatives can be qualified before discontinuation hits
- **Supplier intelligence:** Supplier risk scoring: on-time delivery rate, lead time variance, and stock availability tracked per vendor continuously
- **AI chatbot:** AI Assistant: 'What products are affected if IC-2041 goes on allocation?' - answered in seconds, not hours

5. Results - Before & After

Area	Before	With Innovacio
Planning horizon — long-lead ICs	4 weeks (standard MRP)	26 weeks — matched to actual lead time
BOM cascade impact analysis	Hours of manual lookup	Instant — AI maps component to all affected SKUs
Spot market emergency spend	₹40L+ in shortage quarter	₹1.6L in Q1 post-deployment
EOL component early warning	Zero — found at discontinuation notice	12–18 months ahead for all active components
Component stockout events	18 events in 12 months	12 events — severity down significantly
On-time customer delivery	71% in the shortage quarter	89% and recovering

Figure 4: Six key operational metrics - before and after deployment

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> The BOM cascade view alone was worth the entire deployment. When we had a shortage of one IC, I used to spend three hours manually working out which customer orders were affected. Now I ask the AI assistant and I have the answer in 20 seconds.

- Priya Nair, Head of Supply Chain Planning · Vericom Electronics

6. See It in Your Operation

We connect to your ERP and show you - in 30 minutes - your current component risk profile, long-lead SKU exposure, and BOM cascade map. No commitment, no setup required.

Innovacio Technologies AI in Supply Chain	**Book a Free Discovery Call** 30 minutes · No commitment · Your data	Phone Email Web	+91 90072 71601 hello@innovaciotech.com innovaciotech.com