CASE STUDY

Automotive Aftermarket & Spare Parts

Automotive Supply Chain Intelligence

10,000+ spare part SKUs. Most stocked by gut feel. ₹1.8 crore in dead stock. 23 emergency escalations in 6 months. All four problems systematically solved.

Automotive aftermarket distributor · Multi-brand spare parts · 10,000+ active SKUs · Pan-India service network

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1. Overview

An automotive aftermarket distributor managing spare parts for 12 vehicle brands across a pan-India service network held 10,000+ active component SKUs ranging from high-velocity commodity wear parts (brake pads, filters, belts) to ultra-slow-moving critical spares (specialty ECU components, rare gasket sets) that might sell twice a year. Their demand planning used a single ERP reorder formula applied uniformly across all 10,000 SKUs - an approach that was systematically wrong for 95% of the portfolio, which exhibited intermittent demand patterns that standard algorithms cannot handle.

In one 6-month period: 23 emergency escalations from service centres whose customer vehicles were off the road because the right part was not in stock. Simultaneously, ₹1.8 crore in inventory had not moved in 90+ days across their warehouse and depot network. The two problems had the same root cause - one planning formula applied to demand profiles that required fundamentally different treatment.

2. Key Results

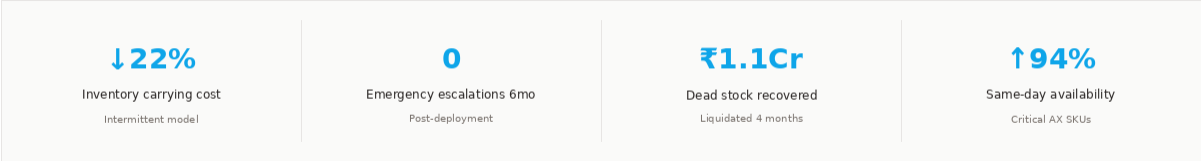

Figure 1: Key outcomes - 6 months post-deployment

3. Challenges

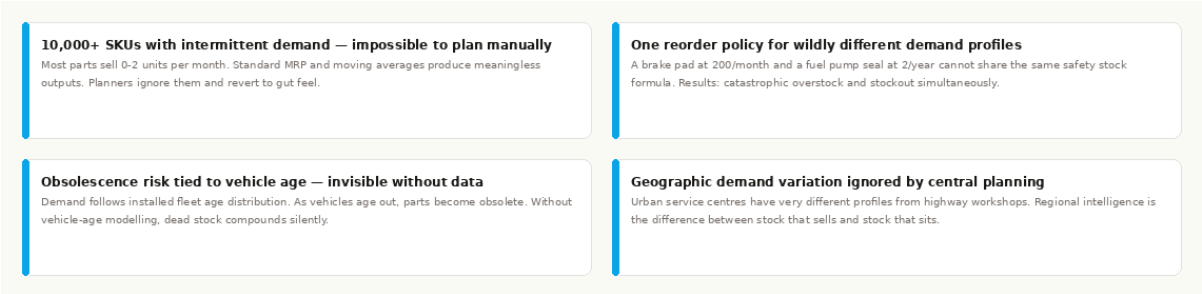

Figure 2: Four planning challenges in automotive aftermarket distribution

10,000+ SKUs With Intermittent Demand - Standard Algorithms Fail

Most spare parts sell 0, 1, or 2 units per month. Standard moving average and MRP models assume a continuous demand stream and produce meaningless forecast outputs for intermittent patterns. Planners learn to ignore the system recommendations and revert to gut feel - which produces the same wrong answer every cycle.

One Reorder Policy for Wildly Different Demand Profiles

A brake pad selling 200 units per month and a specialty rear suspension bush selling 2 units per year cannot share the same safety stock formula. The formula systematically overstocks the slow-mover (dead stock) and understocks the fast-mover (emergency escalation). Both problems - simultaneously - at every planning cycle.

Part Obsolescence Risk Tied to Vehicle Age - Invisible Without Data

As vehicles age out of the active fleet, demand for their parts declines. Parts for vehicles that are being discontinued from active service become dead stock regardless of how accurately they were historically forecasted. Without vehicle-age distribution data informing the demand model, obsolescence creates silent dead stock accumulation.

Geographic Demand Variation Ignored by Central Planning

Urban service centres in metros have very different demand profiles from highway service stations and semi-urban workshops. Wear part consumption rates differ by vehicle mix, usage patterns, and road conditions. National average demand applied to all locations produces the wrong quantities in the wrong depots for every location.

4. Our Solution

The core solution was deploying Croston's method - an algorithm designed specifically for intermittent demand - across all 10,000+ SKUs. Standard algorithms fail on intermittent patterns; Croston's method handles them correctly. We combined this with machine-age-weighted demand modelling (accounting for how wear part consumption changes as the installed vehicle fleet ages) and regional demand profiles built per depot from historical sell-through data at the location level.

Modules Deployed

Intermittent Demand Forecasting (Croston)	**Vehicle-Age Demand Weighting**	**ABC-XYZ SKU Classification**
Multi-Depot Regional Stock Balancing	**Dead Stock & Obsolescence Detection**	**AI Assistant**

Implementation Timeline

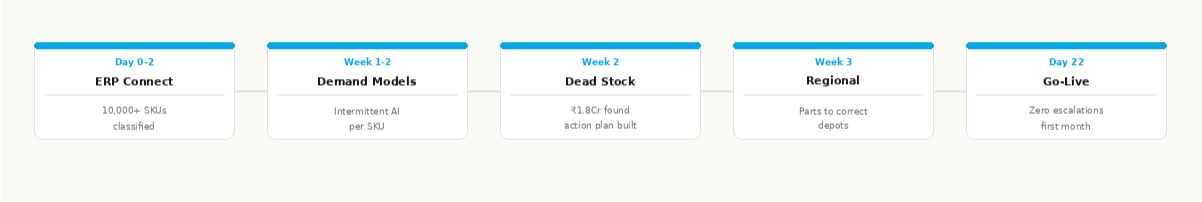

Figure 3: All 10,000+ SKUs classified by week 1. Zero escalations from month 2.

Key Capabilities

- **Intermittent demand AI:** Croston's method for intermittent demand - the correct algorithm for spare parts with 0–2 units/month selling patterns
- **Vehicle intelligence:** Vehicle-age demand weighting - wear part consumption modelled against the age distribution of the installed fleet per region
- **SKU classification:** ABC-XYZ SKU classification - 10,000+ SKUs categorised by revenue value and demand variability with differentiated stocking policies
- **Regional intelligence:** Regional stock balancing - inter-depot transfer recommendations based on regional demand profiles, not national averages
- **AI chatbot:** AI Assistant: 'Which parts for the Swift diesel are likely to become dead stock in the next 12 months?' - vehicle-age intelligence applied

5. Results - Before & After

Area	Before	With Innovacio
Emergency stockouts	23 in 6 months machine downtime	0 in following 6 months
Safety stock method	Single formula 10,000+ SKUs	Intermittent demand AI per SKU
Dead stock	₹1.8Cr+ at any time	₹1.1Cr recovered ongoing
Carrying cost	Standard over-stocked	↓22% right-sized per part
Regional allocation	National average wrong for all	Region-specific 340 rebalanced
Part obsolescence risk	Found at write-off — too late	Vehicle-age model flags early

Figure 4: Six operational metrics - before and after deployment

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> We had 23 emergency calls from service centres in one 6-month period. Vehicles off the road, customers waiting, service contracts at risk - because we didn't have the right part. In the following 6 months: zero. The AI knows which parts to stock, where to stock them, and when to order more. We didn't change anything else.

- Anshul Sharma, Head of Parts Operations · AutoParts Direct

6. See It in Your Operation

We classify your spare part SKU portfolio and show you your current dead stock, intermittent demand risk, and regional imbalances - in a 30-minute call on your ERP data.

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