

Irish Retail Analytics & Demand Forecasting Dashboard

1. Executive Summary

This project delivers an end-to-end **Retail Analytics & Demand Forecasting solution** built for the Irish retail sector.

It combines **Power BI, DAX, data modelling**, and a full **Business Analyst layer** to provide a single decision-making system that covers:

- Sales performance
- Demand behaviour
- Inventory risk
- Price sensitivity
- Promotional impact
- Inflation-adjusted performance
- Market context (CPI trends, retail index)

The system is built to mimic a real analytics environment that an Irish retailer like **Tesco, Dunnes, Musgraves, Lidl, or Primark** would use.

2. Business Problem

Irish retailers struggle with:

- Fragmented reporting across stores, products, and time periods
- Slow/fast moving inventory not being identified in time
- No unified view of price sensitivity or promotion effectiveness
- Inflation masking the true business performance
- Lack of automated insights for decision-makers

Retail leaders need a **single source of truth** that highlights what is happening, why it's happening, and what needs to be done next.

3. Project Objectives

- Build a dynamic BI solution that provides sales and demand insights across time
- Identify slow-moving and high-demand products for inventory optimisation
- Analyse price elasticity and promotional uplift
- Integrate CPI so performance is evaluated in real economic terms

- Produce actionable insights for retail operations, pricing, and supply chain
 - Deliver professional BA documentation (BRD, requirements, user stories)
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4. Stakeholders

| Stakeholder | Goal | Value From Dashboard |
|----------------------|-------------------------|--|
| Retail Ops Manager | Performance tracking | High-level KPIs, store insights |
| Supply Chain Manager | Stock planning | Slow/high movers, rolling demand |
| Pricing Manager | Price optimisation | Elasticity, price vs demand |
| Category Manager | Promo planning | Promo uplift, spikes |
| Finance Analyst | Economic interpretation | CPI comparison, inflation-adjusted sales |
| BI Manager | Governance | Model efficiency, quality measures |

5. Data Sources Used

- M5 Retail Dataset (Sales, Stores, Items)
- Sell Prices Dataset
- Calendar Table
- Irish CPI Dataset (CSO)
- Irish Retail Index (CSO – RSM08)

6. Solution Overview

Page 1 — Sales Performance Overview

- Total Units Sold, Revenue KPIs
- YOY trends and seasonality
- Category/store breakdown
- Item-level insights

Page 2 — Demand & Inventory Insights

- Rolling 7D & 30D demand
- Slow-moving vs high-demand segmentation
- Store–Item heatmaps
- Inventory alerts

Page 3 — Pricing & Promotions Analytics

- Price vs demand correlations
- Promo uplift analysis
- Category sensitivity differences
- Seasonal price-demand behaviour

Page 4 — Irish Macroeconomic Context

- CPI vs Sales trend
 - Inflation-adjusted sales
 - Retail Index KPI (context marker)
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7. Key Insights Generated

1. **Demand moves in waves, not straight lines.**
Rolling demand revealed clear peaks and troughs, proving that retail forecasting must be pattern-based.
 2. **Huge performance gaps between stores.**
Some locations sold 11M+ units; others less than half. A one-size strategy cannot work.
 3. **Slow-moving products leak silent losses.**
Some items sold as little as 0.03 units/day — strong indicator of overstock risk.
 4. **Promotional events radically change demand.**
Certain promotions drove >200K unit spikes.
 5. **Inflation changed the entire story.**
After adjusting for CPI, several “growth years” flattened or dropped — proving inflation was boosting revenue, not true demand.
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8. Business Value Delivered

- Smarter replenishment
 - Better pricing strategy
 - Data-backed promotional planning
 - True performance evaluation (inflation-adjusted)
 - Clear narrative for leadership
 - Foundation for forecasting models
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9. User Stories

Story 1 - Sales Overview

“As a Retail Operations Manager, I want a dashboard showing sales trends so I can identify strong and weak periods.”

Story 2 - Inventory Health

“As a Supply Chain Manager, I want to view slow/high movers so I can optimise stock levels.”

Story 3 - Pricing Intelligence

“As a Pricing Analyst, I want price-demand insights so I can adjust pricing strategy effectively.”

Story 4 - Economic Context

“As a Finance Analyst, I want inflation-adjusted metrics so I can interpret performance accurately.”

10. Conclusion

This project demonstrates not only technical BI ability but also **business understanding, analytical thinking, and end-to-end BA execution.**

It mirrors the type of multi-stakeholder project expected in retail organisations across Ireland.