Unravelling Item Demand and Sales: Envisioning and Predicting Future Trends

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By Graham Meadon, Pedro Azpurua, Henry Leighton, Akif Hasan

# **Overview**

In the ever-evolving realm of e-commerce, a crucial aspect of achieving success in online retail lies in comprehending and accurately predicting item demand and sales with utmost precision. To address this requirement in the market, our project focuses on utilising multilayered datasets with a combined emphasis on adopting machine learning principles. Our aim is to reveal intricate patterns defining consumer behaviours and preferences, while harnessing the impact of external factors, such as reserve bank interest rates and consumer price index, on these dynamics. This will lead to the development of robust predictive measures.

Our research revolves around enhancing business efficiency, with a particular emphasis on shaping the future of retail through data-driven insights and predictive analytics. By harnessing the power of these advanced techniques, we aim to empower businesses to make informed decisions, optimise operations, and seize strategic opportunities, ultimately resulting in sustainable growth.

# **Goals**

Our analysis of these systems aims to solve three key problems notorious within the e-commerce and retail domain.

# Develop predictive models to anticipate demand fluctuations, optimizing inventory management and reducing stockouts for increased efficiency and cost savings in e-commerce and retail.

# Understand external factors' influence on sales, leading to resilient and sustainable growth strategies with robust predictive measures.

# Identify and analyze seasonal demand patterns using machine learning algorithms for different product categories.

# Optimize back stock ordering by integrating average suburb data, minimizing excess inventory in low-demand areas and ensuring sufficient stock in high-demand regions for improved inventory management efficiency.

# **Datasource**

# <https://www.kaggle.com/competitions/demand-forecasting-kernels-only/data>

* <https://www.kaggle.com/code/knightbearr/analysis-shopping-cart-data-knightbearr/notebook>
* RBA Interest Rate
* Cost of Living CPI

# **Github**

https://github.com/Akif23Hasan/Project\_4\_Group-1\_DemandForecasting-MachineLearning