Tracking Inflation Trends in Australian Retail through Data Analytics

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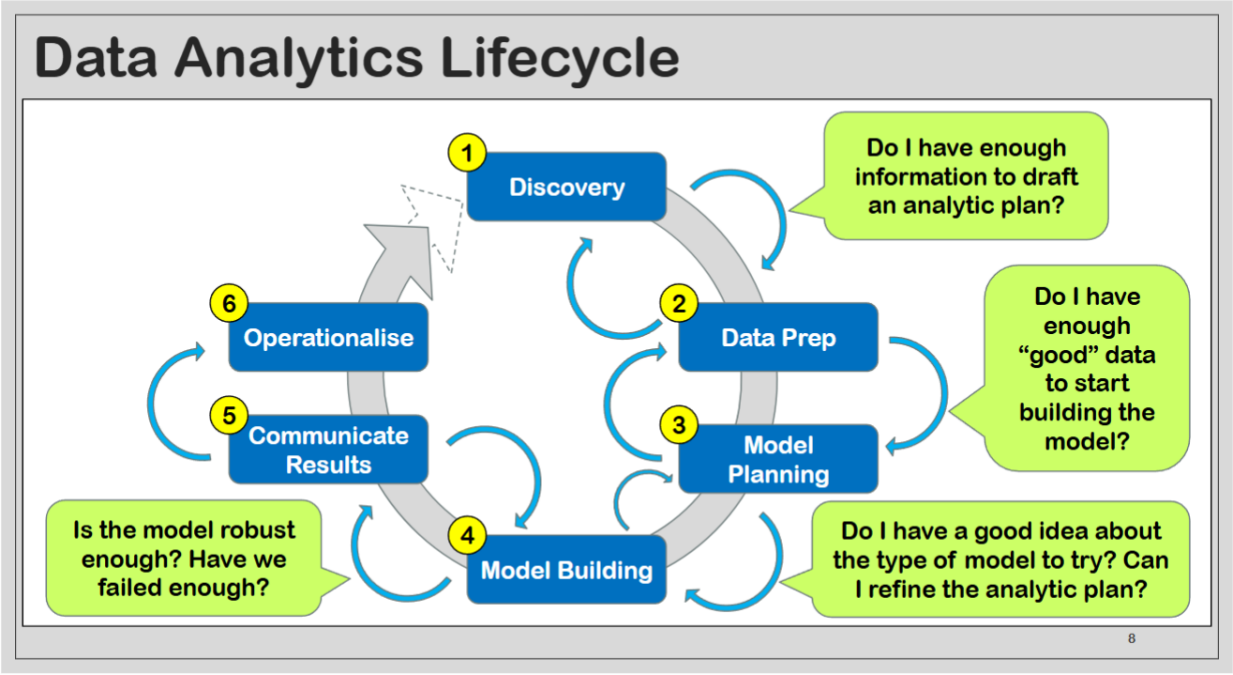
I. Project abstract

This project aims to explore inflation trends across major Australian retail chains like Coles, Woolworths, and ALDI by applying data analytics techniques within a structured lifecycle. Specifically, we will examine how the prices of essential consumer goods (e.g., eggs, chocolate, dairy) have changed over recent years and identify whether these changes align with or deviate from official inflation rates.

II. Timeline in 6-week frame

In order to deliver this project within the allowed timeframe, we need to conduct a brief work list on how we distribute the time for each part of the project, this project will be based on the data analytic life cycle lectured by Dr Pei Wei Tsai in the unit code COS10022. For now we will only be focusing from stage 1 Discovery to stage 4 Model building due to this project is more oriented in academic research rather than a business application but my aim of this project would also to give an answer to the problems that business are having trouble with. Since we will go back and forth between the stages so the timeframe for each stage will be estimated to keep the flexibility of the project



https://mkhernandez.wordpress.com/2018/12/01/data-analytics-lifecycle/

1. **Phase 1: Discovery (estimated time from a few days to 1 week):** During the Discovery phase, we will define the problem scope and identify key product categories and data sources, including publicly available retail price catalogs, government CPI reports, and crowdsourced data.
2. **Phase 2: Data Preparation (estimated time about 1 week):** In the Data Preparation phase, we will clean, transform, and structure the data for analysis, ensuring consistency across stores and time frames.

3. **Phase 3, 4: Model Planning and Model Building (estimated time about 2 – 4 week):** In Model Planning, we will explore suitable statistical methods (e.g., time-series decomposition, smoothing, and exploratory data visualization) and machine learning techniques such as K-means clustering to group products with similar inflation patterns, and Naive Bayes for basic trend classification. Model Building will involve implementing and evaluating these methods to uncover insights into category-specific inflation and its variability across retailers.

III. Acknowledgement and resources

To make this idea possible I want to thank for my friend Robi giving me great insights and example on the topic, I also want to credit Dr Pei Wei Tsai for the data analytic life cycle lectures and Dr David Richard for recommending me to Professor Andriy Pototskyy.