Insights & Recommendations for Six Squad

Analysis of Six Squad's Transaction Data & Global Sneaker Store Reviews

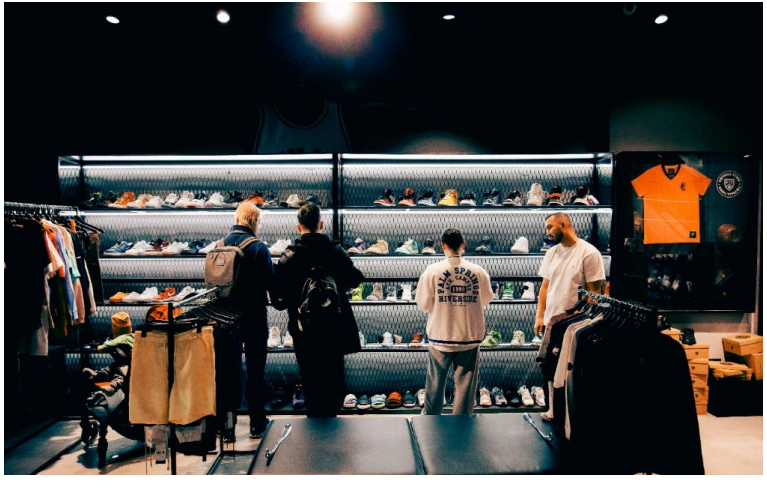
Team 6:
Boyuan Chen
Fahad Alsubaie
Raiymbek Ordabayev
Ruiqi Jiang
Rohit Devanaboina

SIX SQUAD

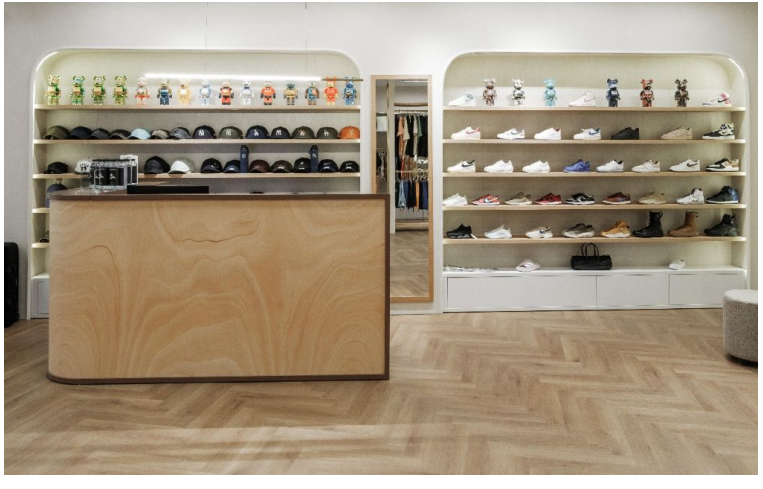
Introduction to Six Squad

- Fast-growing sneaker & streetwear business based in Kazakhstan
- Founded December 2022 (15 months)
- 2 brick-and-mortar stores + website
- $1 Million in Revenue till date

Store #1 (FORUM)

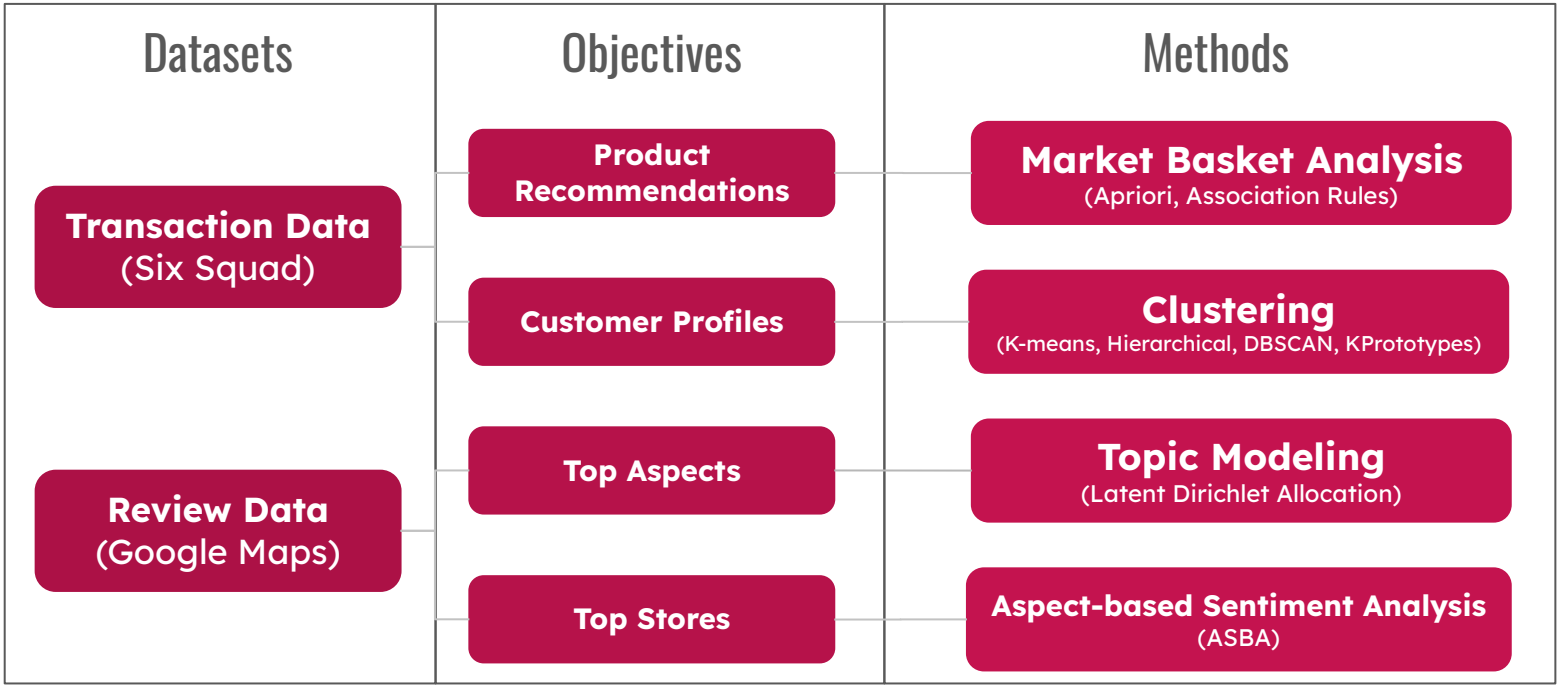


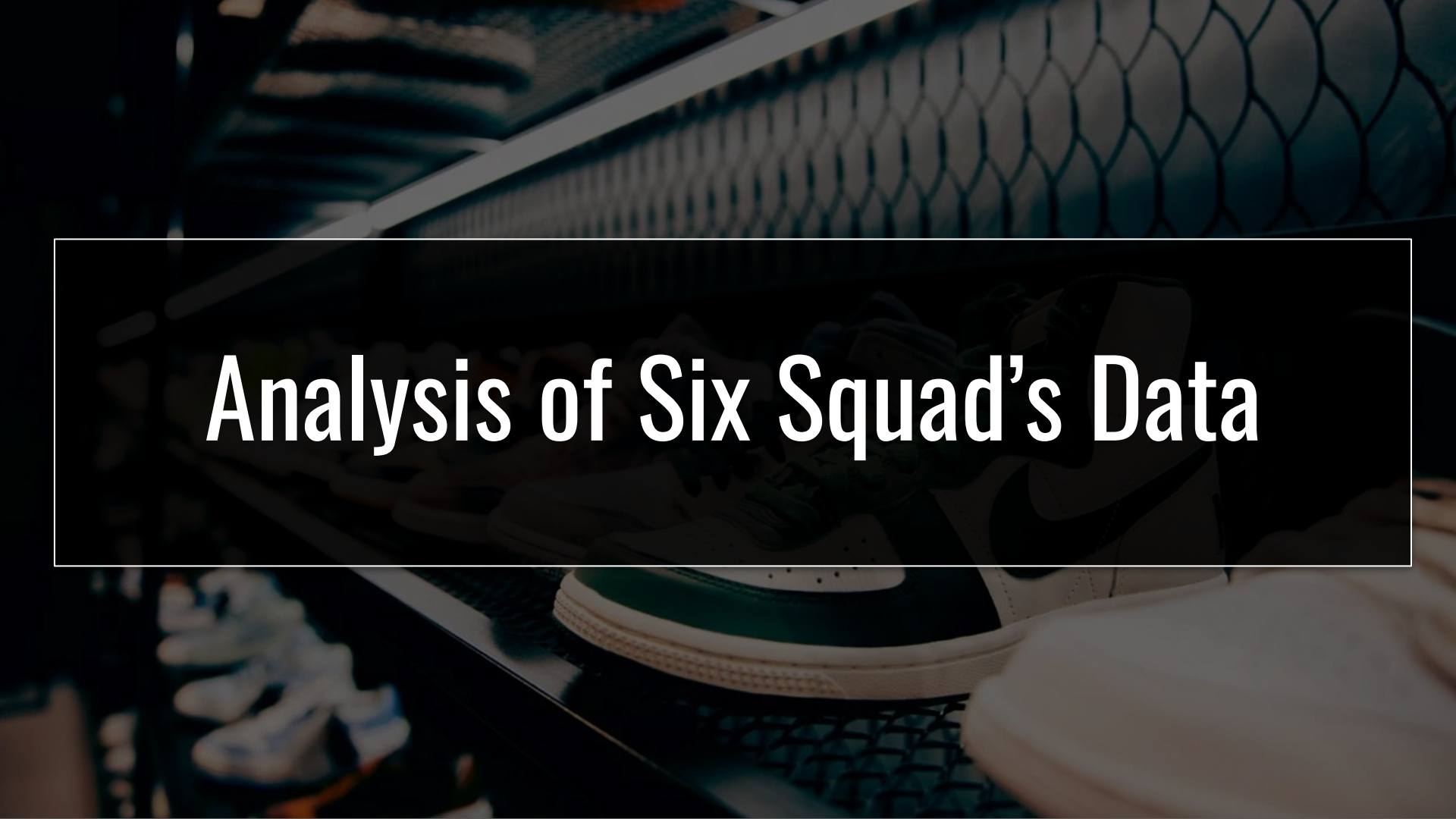
Store #2 (Dostyk Plaza)



Methodology

Objective: Combine company-specific insights from transaction data with global insights from top sneaker store reviews, to develop business development recommendations for Six Squad.





Analysis of Six Squad's Data

Market Basket Analysis

Approach: We aim to derive insightful analyses that investigate customer preferences and shopping patterns, After performing the pre process steps, we performed our analysis in 1,082 products and 4,545 transactions. have divided this analysis into three parts:

1. Product Level: to identifying the most purchased items by our customers and uncovering association rules. To be used in any future promotions or discounts.

2. Evaluated the timing differences between weekdays and weekends: To capture any variances in customer behavior.

3. Category level, instead of product level, this will help us in modifying our store layout to enhance customer exposure to our products.

Market Basket Analysis

Results:

1. (WMNS AIR JORDAN 1 LOW) with a support of 0.023 %, which means it was purchased around 105 times.

2. Weekends shows different consumer behavior compared to weekdays, not only a difference in the frequency of purchases but also in their preferences.Which suggesting different shopping habits and patterns.

3. The most common category in our store is Sneakers with support of 0.39, and T-shirts it is became as the second common category with support of 0.24

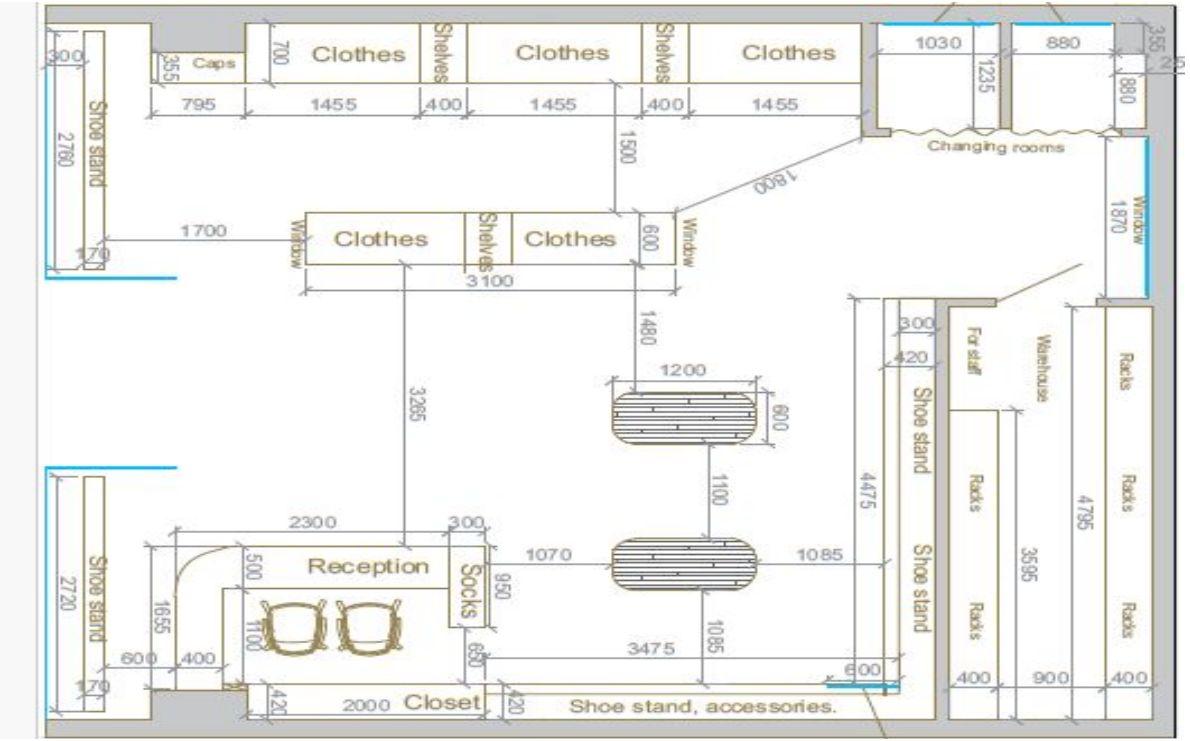
Categories	
Antecedents	**Consequents**
Trousers	Hoodie
Trousers	Sneakers, T-shirts
Trousers	T-shirts
Short	T-shirts

Market Basket Analysis

Layout Changes;

1. Move the changing room from one side to the other (switching with the warehouse section)
2. Move the highlighted shoes stand to the cloths side.
3. Relocate caps section next to the cashier counter

These changes are proposed that our customers who intend to purchase outfits will also be exposed to the sneakers on their way to the changing room (the outfits + sneakers pair have a very high lift)

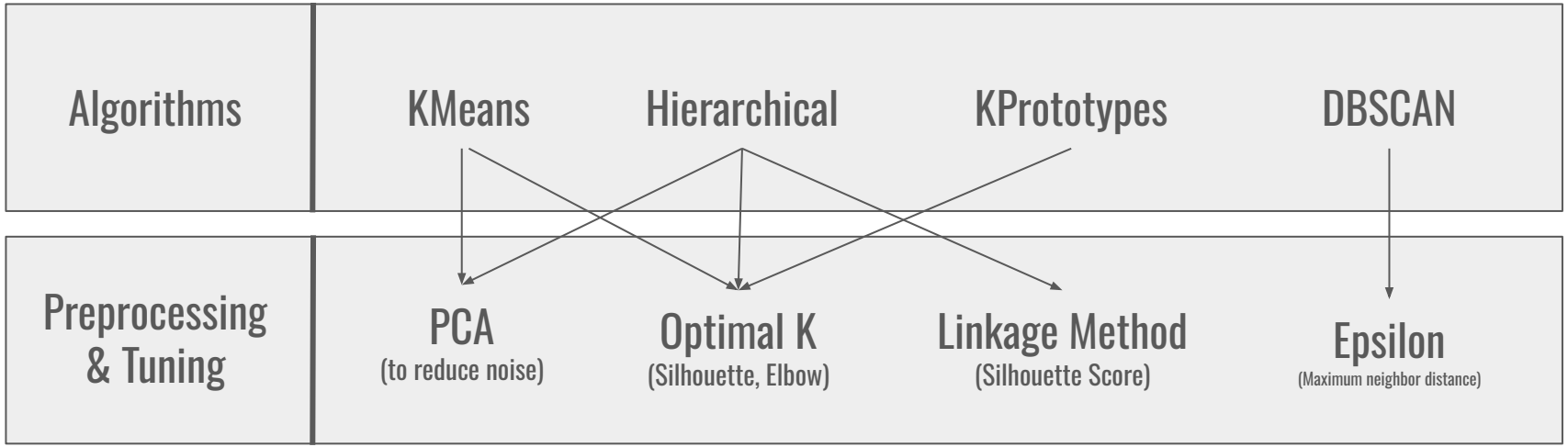


Clustering

Goal: To identify distinct customer segments within Six Squad's loyalty program, based on purchase history

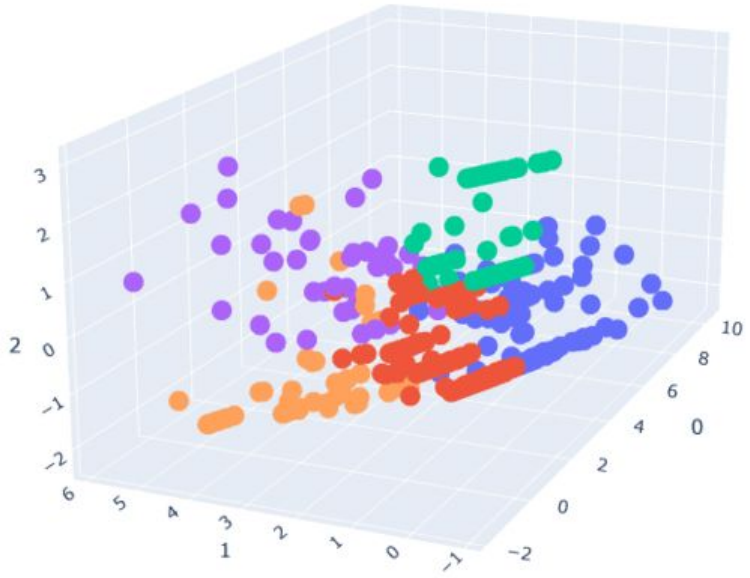
Success Metrics: Cluster Quality (Silhouette Score) & Interpretability (Business Application)

Approach: Iteratively test clustering algorithms + preprocessing techniques



Clustering - Results

Best Clustering: KMeans w/ K=5 & PCA



Clusters visualized using PCA

Clustering - Customer Profiles

by Sales and Visits

Whales

Shop rarely, but spend big

Average Metrics:

- ~10% of loyalty program
- $550 spend per visit
- 1-2 lifetime visits
- 3-4 products per visit

Value: High

Strategy: Attract to store via luxury products, and cross-sell using rules from Market Basket Analysis.

Frequent Shoppers

More visits, more sales

Average Metrics:

- ~5% of loyalty program
- $250 spend per visit
- 5 lifetime visits
- ~2 products per visit

Value: High

Strategy: Promote moderately-priced products, focusing on new stock & collaborations.

Occasional Shoppers

Few visits, more sales

Average Metrics:

- ~70% of loyalty program
- $200 spend per visit
- 1-2 lifetime visits
- 1-2 products per visit

Value: Medium (due to size)

Strategy: Promote new, lower cost items, such as accessories & collectibles.

Special Categories

Collaboration Hunters

Only buys brand collabs

Average Metrics:

- **80%** items purchased are brand collaborations
- ~10% of loyalty program
- $230 spend per visit
- 1-2 lifetime visits

Value: Medium (potentially High)

Strategy: Give exclusive access to new collabs for at a premium. Adopt a celebrity/status ad strategy.

Bargain Hunters

Only buy items on sale

Average Metrics:

- **33%** discount on prices
- ~5% of loyalty program
- $160 spend per visit
- 1-2 lifetime visits
- 1-2 products per visit

Value: Low

Strategy: Use this segment to liquidate old stock. Adopt “flash sales” ad strategy.

Analysis of Global Sneaker Store Reviews

NLP - Introduction

Data Collection: Web scrape reviews from Google Maps into separate csv files.

Google Chrome extension used:  Instant Data Scraper

Data schema:

Personal profile	Review	Number of likes	Store name	Region
Local Guide 路 527 reviews 路 3,916 photos	I don't know	1	Flight Clu	New York

Data Pre-processing: 1. Use Regex to remove all non-alphanumeric characters ;

2. Feature engineering - Turn 'Personal profile' into three separate columns;

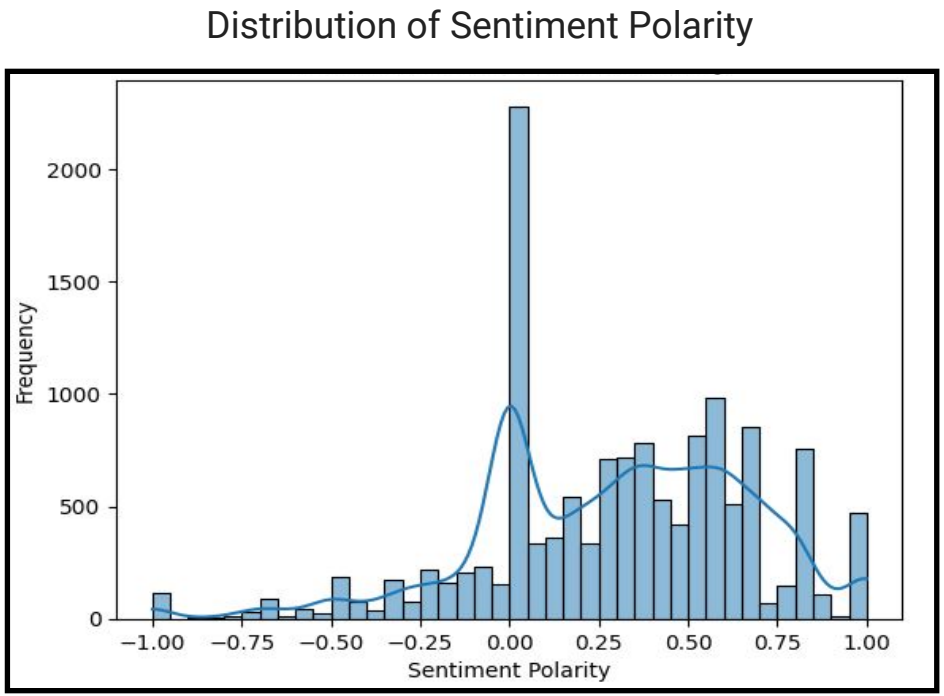
3. Tokenize reviews, normalize words, and reduce them into their root forms.

Approach: 1. Use **TextBlob** for an initial polarity overview;

2. Employ **Latent Dirichlet Allocation (LDA)** for topic modeling;

3. Apply **BERT-base-uncased model** for Aspect-Based Sentiment Analysis (ASBA).

NLP - Sentiment Polarity



- A majority of reviews are neutral or positive.
- This ensures a clear identification of positive aspects.

NLP - Latent Dirichlet Allocation (LDA)

Goal: to find the sneaker stores with highest customer satisfaction across different aspects.

Our Solution: Aspect Based Sentiment Analysis paired with LDA

Can calculate the sentiment score from different aspects, but need to predefine the aspects

Can help with extracting topics from reviews and help us define aspects

LDA Model: how many topics we need - using coherence score as a metric

LDA Output: the algo has identified the optimal no. of topic = 5

Topic 1: 0.047*"good" + 0.027*"shoe" + 0.024*"service" + 0.023*"stadium" + 0.022*"price" + ...

Topic 2: 0.040*"sneaker" + 0.037*"store" + 0.032*"shoe" + 0.019*"place" + 0.013*"best" + ...

Topic 3: 0.029*"order" + 0.022*"shoe" + 0.022*"pair" + 0.020*"day" + 0.019*"ordered" + ...

Topic 4: 0.021*"store" + 0.020*"staff" + 0.019*"nice" + 0.016*"customer" + 0.014*"time" + ...

Topic 5: 0.110*"great" + 0.064*"service" + 0.033*"staff" + 0.030*"good" + 0.030*"customer" + ...

Aspects:

1. Customer Service
2. Price
3. Product

NLP - Aspect Based Sentiment Analysis

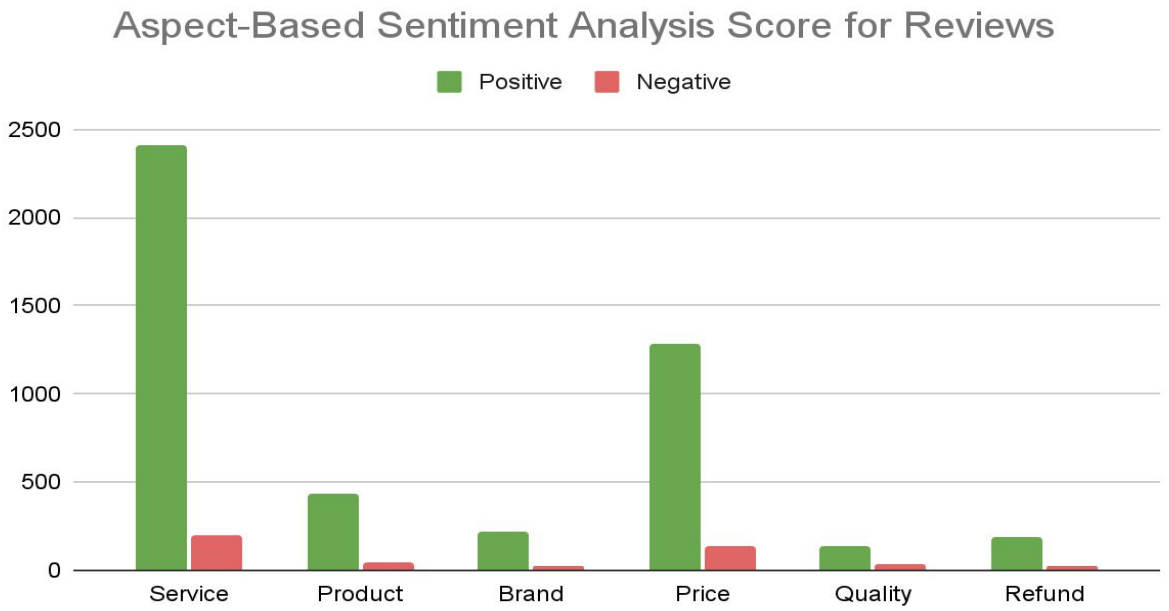
Modify the aspect pool: extra online research

Aspect Based Sentiment Analysis: calculate sentiment for each review from 6 aspects

Pre-trained Model: BERT from Google

Aspects:

- Service
- Product
- Brand
- Price
- Quality
- Refund



NLP - Aspect Based Sentiment Analysis & Business Insights

Now, we have sentiment score for each review of different aspects. We evaluate the customer satisfaction for each store in different aspects by averaging the sentiment score for the shop in these aspects like this:

```
Store: Kicks Lab.
 - Aspect: service, Average Sentiment: Positive (0.90)
 - Aspect: product, Average Sentiment: Positive (0.91)
 - Aspect: price, Average Sentiment: Positive (0.88)
 - Aspect: quality, Average Sentiment: Positive (0.70)
 - Aspect: brand, Average Sentiment: Positive (0.80)
 - Aspect: refund, Average Sentiment: Negative (0.40)
```

Sorting: the top 3 stores for each aspects

Service	Legacy Sneaker Boutique (0.96), On Flagship Store London Regent Street (0.96), Footpatrol London (0.96)
Product	District One (0.97), Origins NYC (0.94), Presented by (0.93)
Brand	Stadium Goods (0.97), Footpatrol London (0.96), Flight Club (0.92)
Price	On Flagship Store London Regent Street (0.96), Kith Manhattan (0.92), Stadium Goods (0.92)
Product	On Flagship Store London Regent Street (0.93), HypeClub (0.88), size? (0.86)
Refund	Onitsuka Tiger Ginza Store (0.94), Stadium Goods (0.92), ABC-MART GRAND STAGE Ginza (0.91)

Challenges

Transaction Data:

- Data Collection: Merging required data from different SQL tables
- MBA: Translating insights into layout (practical application)
- Clustering: Testing different algorithms & tuning methods

Text Data:

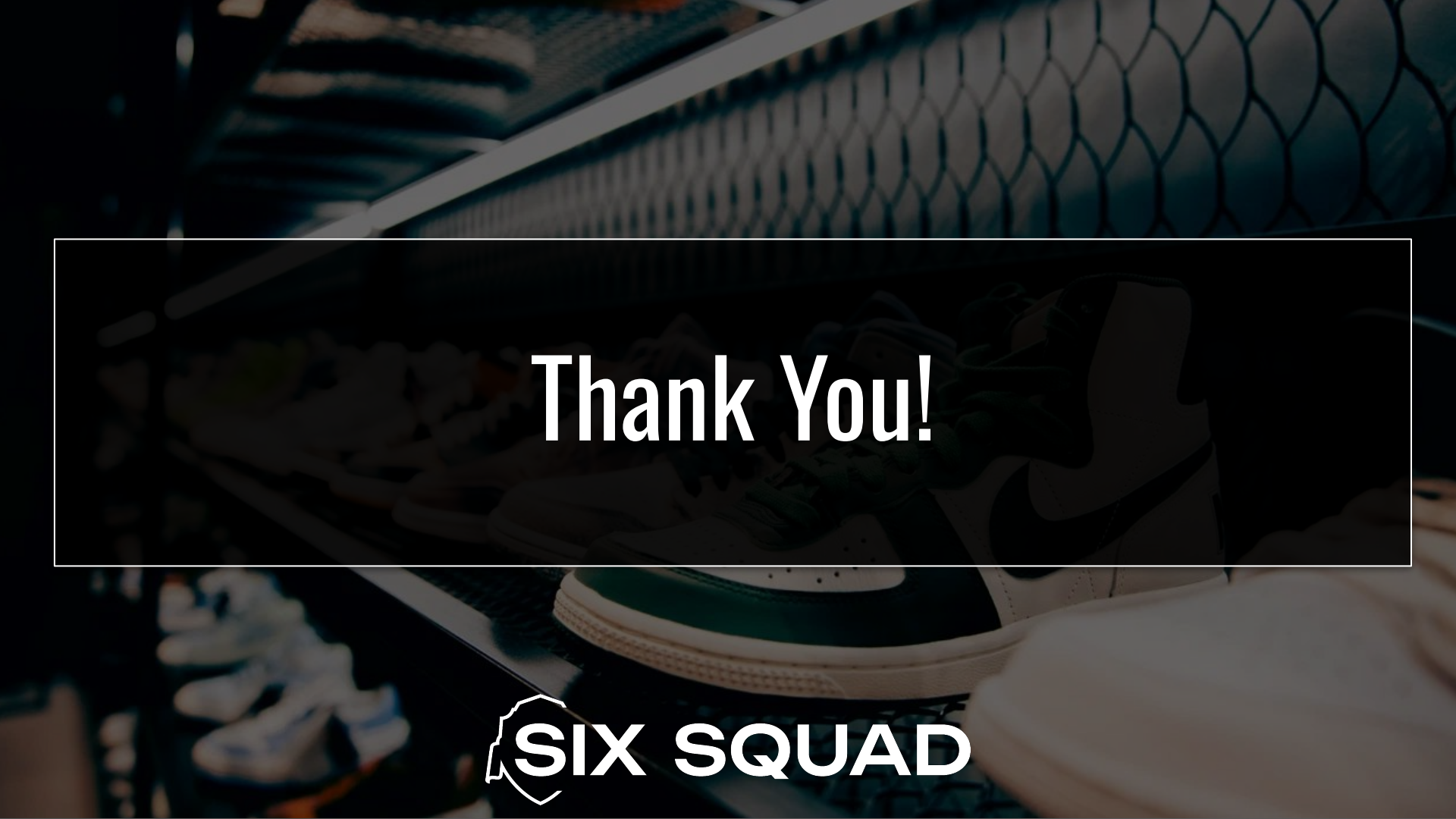
- Data collection: Scraping reviews from Google Maps
- ASBA: Had to learn from scratch, was compute-intensive

Recommendations & Future Work

Method	Recommendation
Market Basket Analysis	Merchandize products in a more effective way and implement layout changes
Clustering	Personalized marketing/sales strategy for each customer profile
Aspect-based Sentiment Analysis	Shadow the top rated stores for different aspects recommended by ASBA to learn and improve customer experience

Future Work:

- Market Basket Analysis based on product characteristics (size, color, discount)
- Cluster customers based on product preferences (Brand & Gender)
- Cluster stores by attributes (brand diversity, price, customer service)
- Use different pre-trained model to predict the sentiment score


Thank You!
SIX SQUAD