



AMAZON PRODUCT REVIEW ANALYSIS

Digital Music and Musical
Instruments

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Agenda

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- 2 Objectives
- 3 Data Information
- 4 Data Dictionary
- 5 Exploratory Data Analysis (EDA)
- 6 Sentimental Analysis
- 7 Product Rating based Clustering
- 8 Time Series Analysis
- 9 Conclusion

Introduction

- Amazon is an American multinational technology company focusing on e-commerce, cloud computing, online advertising, digital streaming, and artificial intelligence.
- Amazon was founded by Jeff Bezos in 1994.
- Amazon was officially launched in 1995.
- Initially started as an online bookstore but later evolved to sell anything desired by the consumers.

Analysis

OF AMAZON MUSIC REVIEWS

Approach

USING THE BEST APPROACH

Objectives

- To import key insights from the datasets available
- To classify the product based sentiments
- To define Top Brands, Songs enjoyed by the customers by Clustering techniques
- To recommend likable content to the Customers by forecasting

Data Information

Datasets used :

1. Digital Music

- 5-Core Data
- Metadata
- Reviews Data
- 1,69,623 Reviews
- 9,255 Unique Product ID's

2. Musical Instruments

- 5-Core Data
- Metadata
- Reviews Data
- 1,88,725 Reviews
- 10,620 Unique Product ID's

Data Dictionary

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- | | |
|----|--|
| 1 | Overall :: are Product ratings ranging from 1-5 |
| 2 | Verified :: depicts if the Reviewer is a verified Customer or not |
| 3 | ReviewTime :: It contains the information of date on which Review is Published |
| 4 | asin :: It stands for Unique Amazon Standard Identification Number(Product ID) |
| 5 | Title :: Displays the title of the track produced by an artist/brand |
| 6 | Review Text :: It contains Reviews posted by the Customers |
| 7 | Summary :: Summarized version of Review Text |
| 8 | Brand :: It contains the information of all the Brands/Artists |
| 9 | main_cat :: It contains the Information of Main Category |
| 10 | Price :: It contains the Price Information of the Products |

Exploratory Data Analysis through Tableau

- Digital Music
- Musical Instruments

Workflow of review grouping

Data Preprocessing

Feature Reduction, Missing Value treatment

Tokenization and
Vectorization

Text preprocessing, TFIDF, NLP

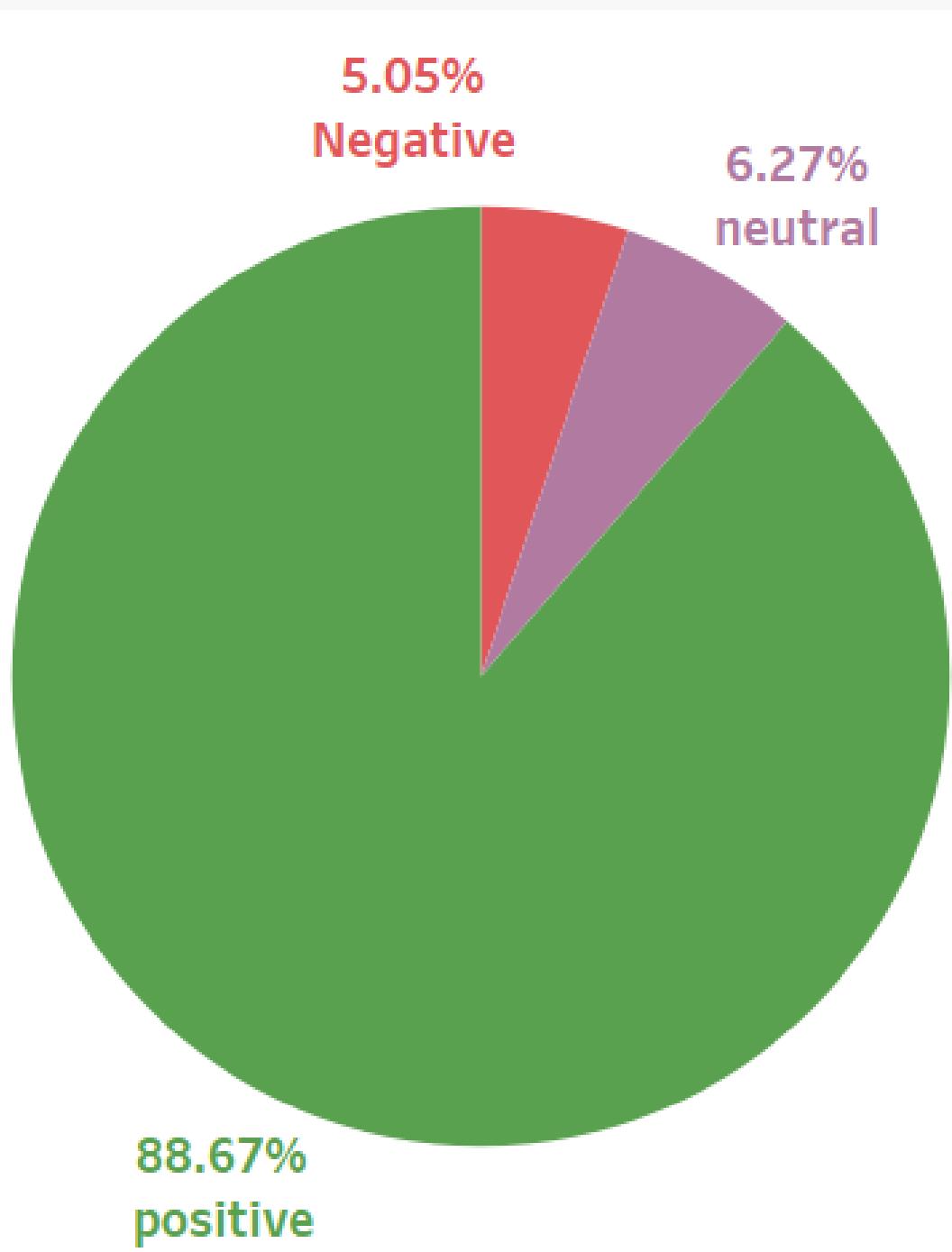
Sentiment intensity
predictor

Textblob based on Decisive words

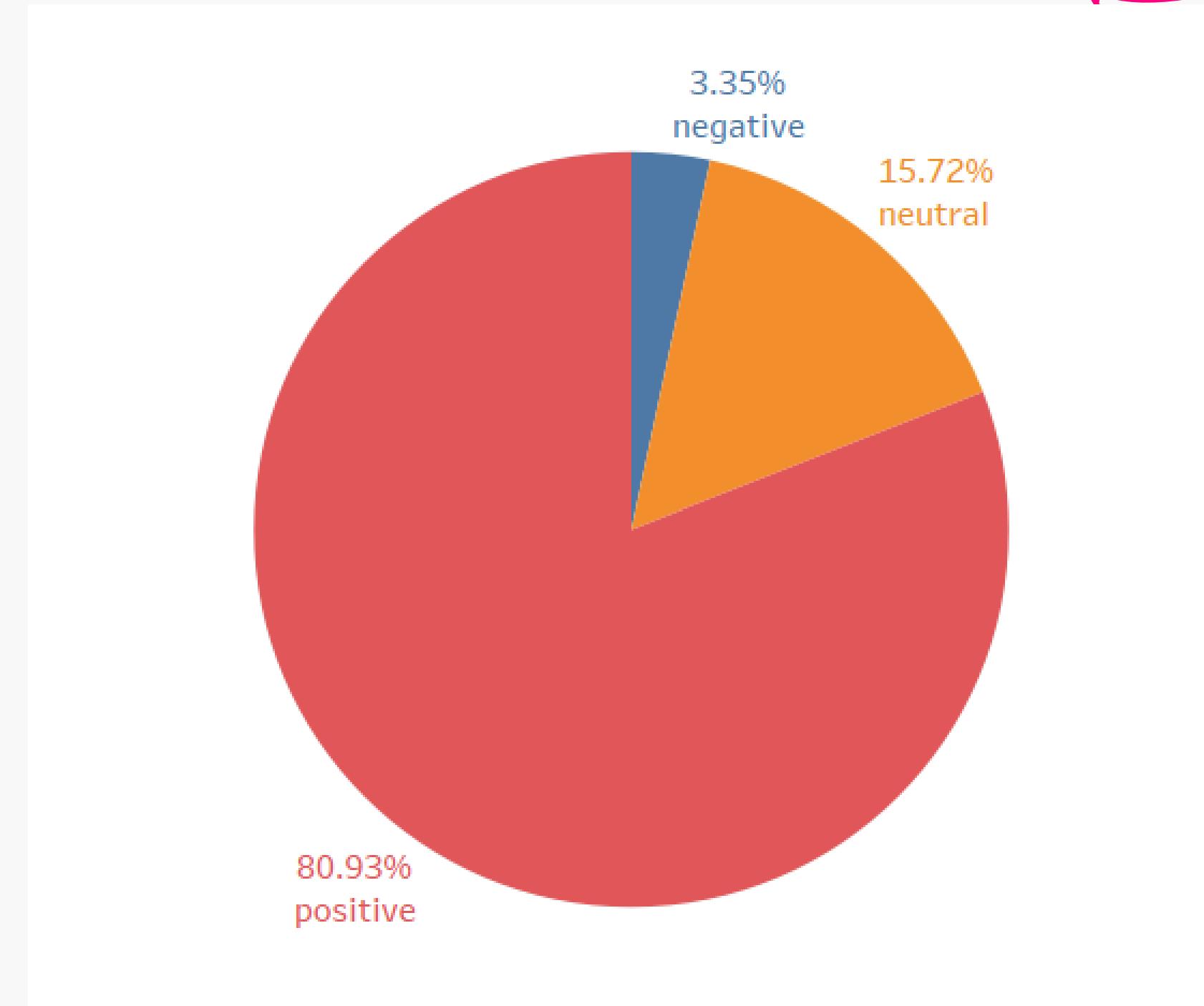
Review categorization

Based on polarity score

Sentimental Analysis

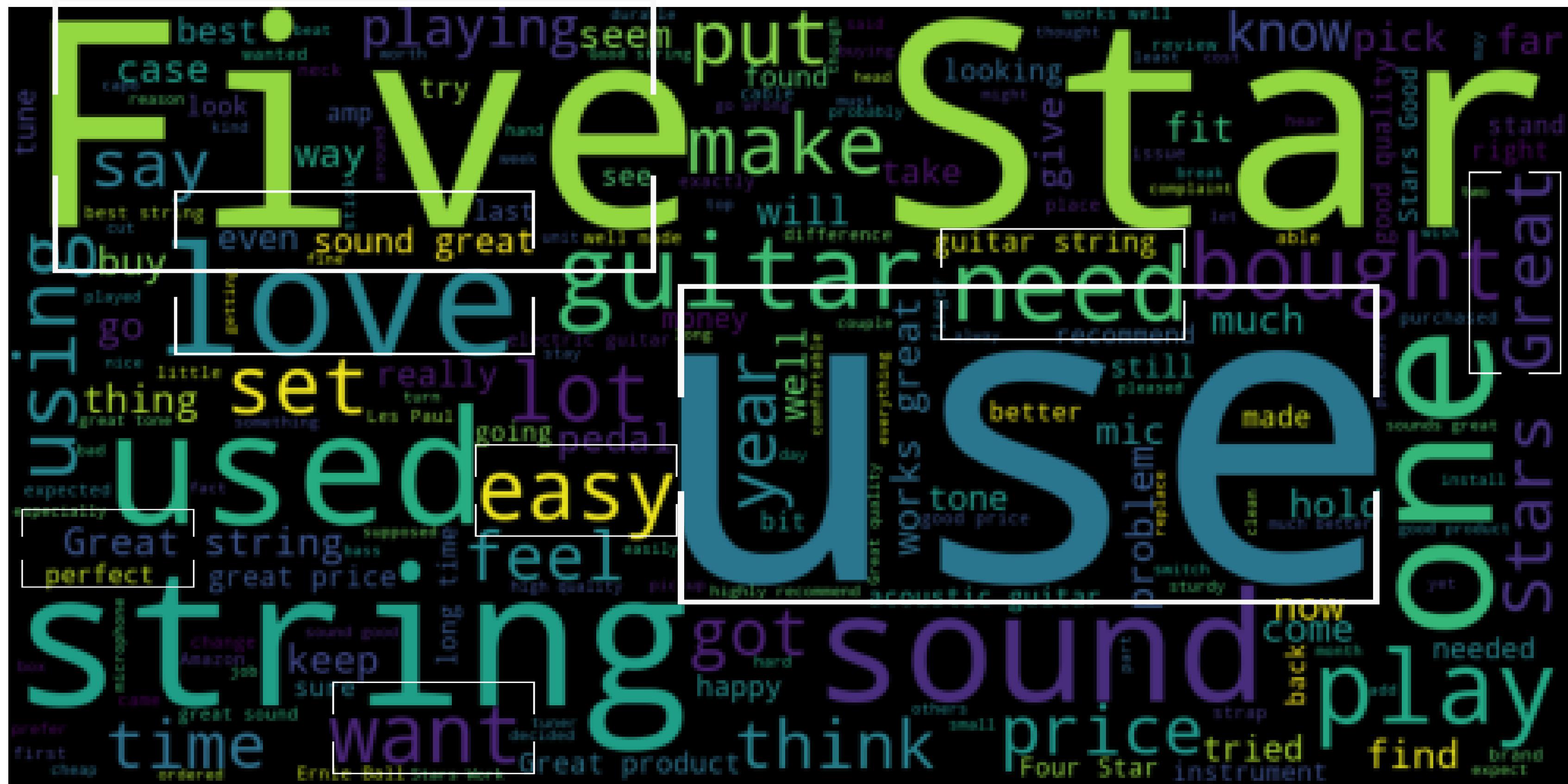


Digital Music



Musical Instruments

Word Cloud Representation of Positive reviews



Analysis of Reviews

Input Review	Decisive words	Polarity Score	Sentiment
Five Stars great album for any fan of iron maiden !	five, star, great,fan	0.8	positive
Five Stars I have always liked the Everly Brothers and this is a wonderful compilation of their music!	five, star, always, like, wonderful, compilation	1	positive
Two Stars I'm really disappointed in the music and would not buy again	two, disappointed, not	-0.75	negative
One Star Terrible CD ... What a big disappointment. Sounds like elevator music, will never play it again!	one, star, terrible ,never	-0.2	negative
It's ok, another, one last concept album...Need to be in a mood to listen to, some songs do stand out ..	last, one, mood, out	0	neutral

Comparison of Classification Algorithms

Classifiers	F1-Score	Accuracy
OneVsRestClassifier (LR)	0.89	91.28%
Multinomial NB	0.73	78.19%
AdaBoost Classifier	0.85	86.32%

Clustering (Based on polarity and ratings)



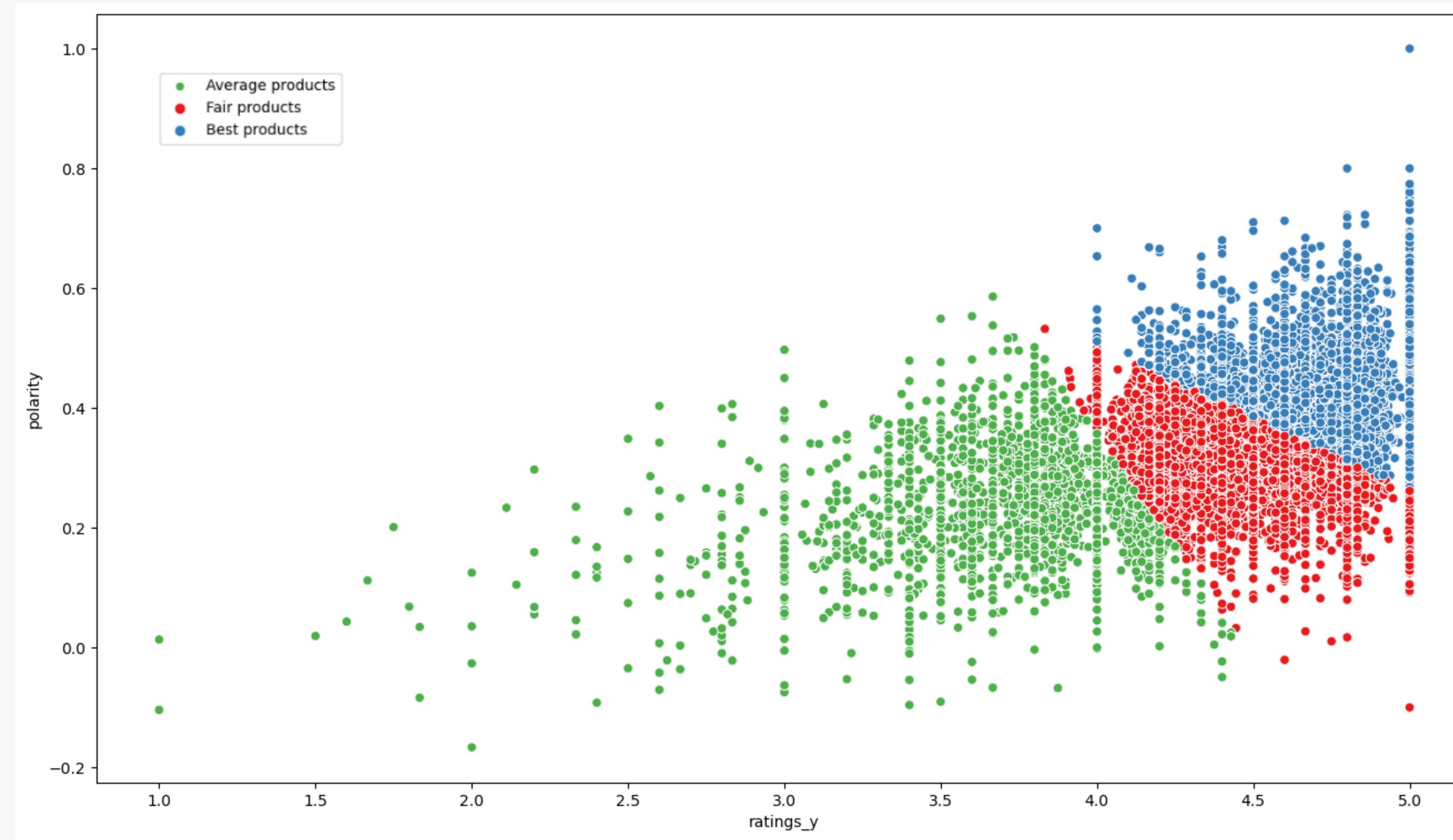
Digital Music

Algorithms	Silhouette Score	Number of Clusters Formed
Hierarchical	0.383586	3
KMeans	0.419931	3

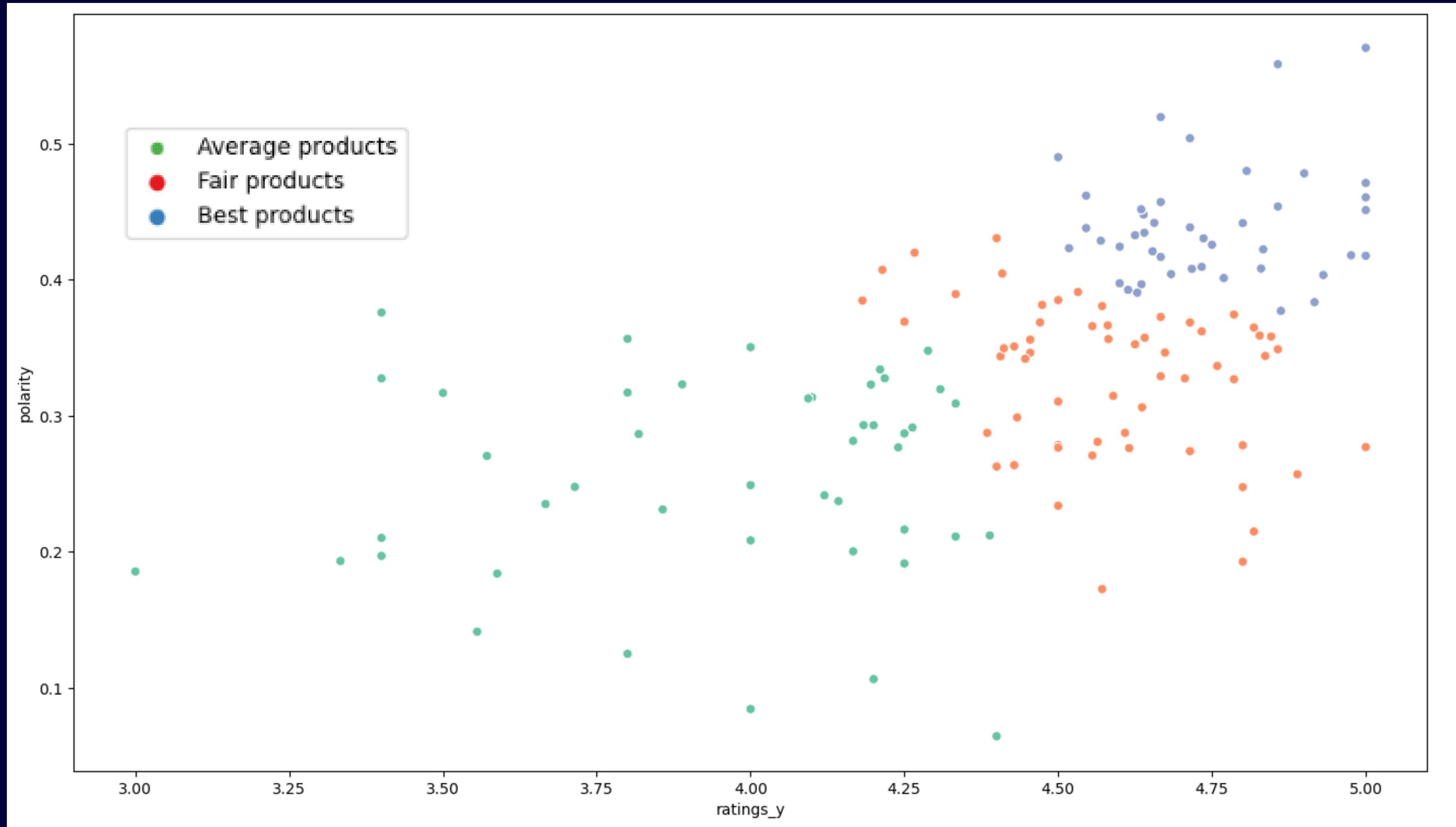
Musical Instruments

Algorithms	Silhouette Score	Number of Clusters Formed
Hierarchical	0.378	3
KMeans	0.388090	3

Clusters formed by KMeans



Clusters formed by Hierarchical method



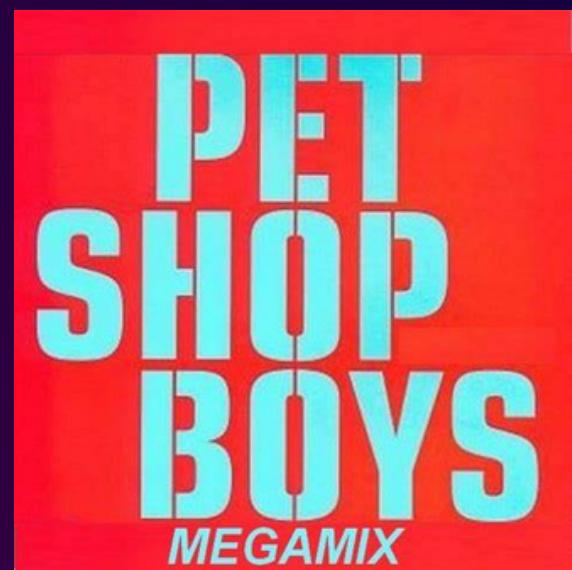
Digital Music Brands in Unique Clusters(KMeans)

Clusters Formed	Brands/Artists	Insights
Average	Pet Shop Boys Peabo Bryson Deep Purple	These artists have lower ratings and lower polarity score as well, not recommendable
Good	Katy Perry Maroon 5 Michael Jackson	These respective artists have fair ratings but polarity score is fairly low, need few checkups before recommendation
Best	Pink Floyd Yes The Killers	These artists have the best feedback and ratings, very much recommendable

Comparision of albums by price in unique clusters

Digital Music

Average albums



Pet Shop Boys- \$24.165

Average price - \$26.95

Good albums



Michael Jackson - \$15.22

Average price - \$19.20

Best albums



Pink Floyd - \$12.93

Average price - \$12.67

Comparision of albums by price in unique clusters

Musical Instruments

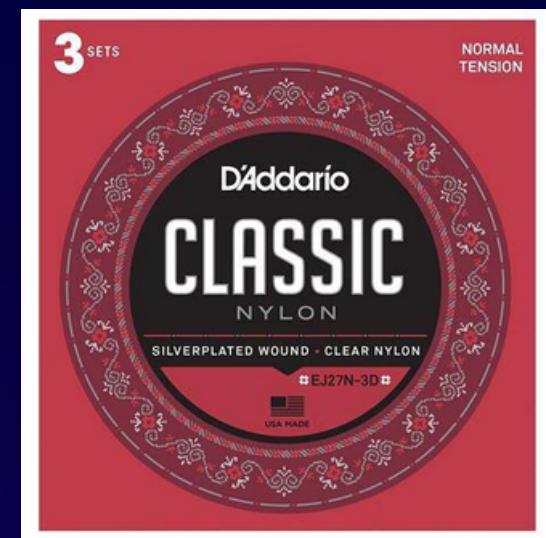
Average albums



wmm - \$15.99

Average price (album) - \$21.81

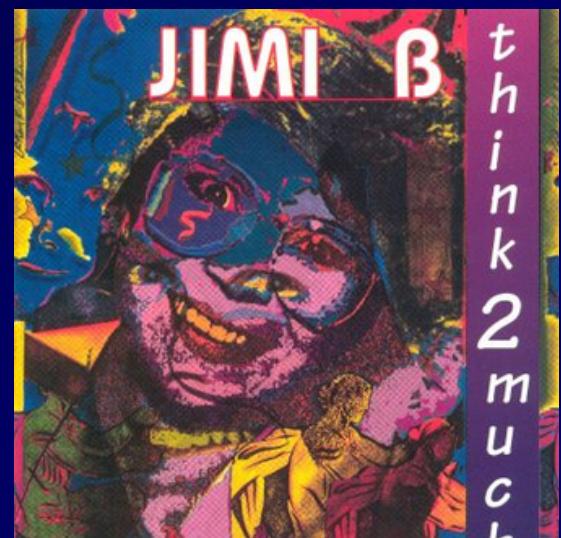
Good albums



D'Addario - \$20.68

Average price - \$20.16

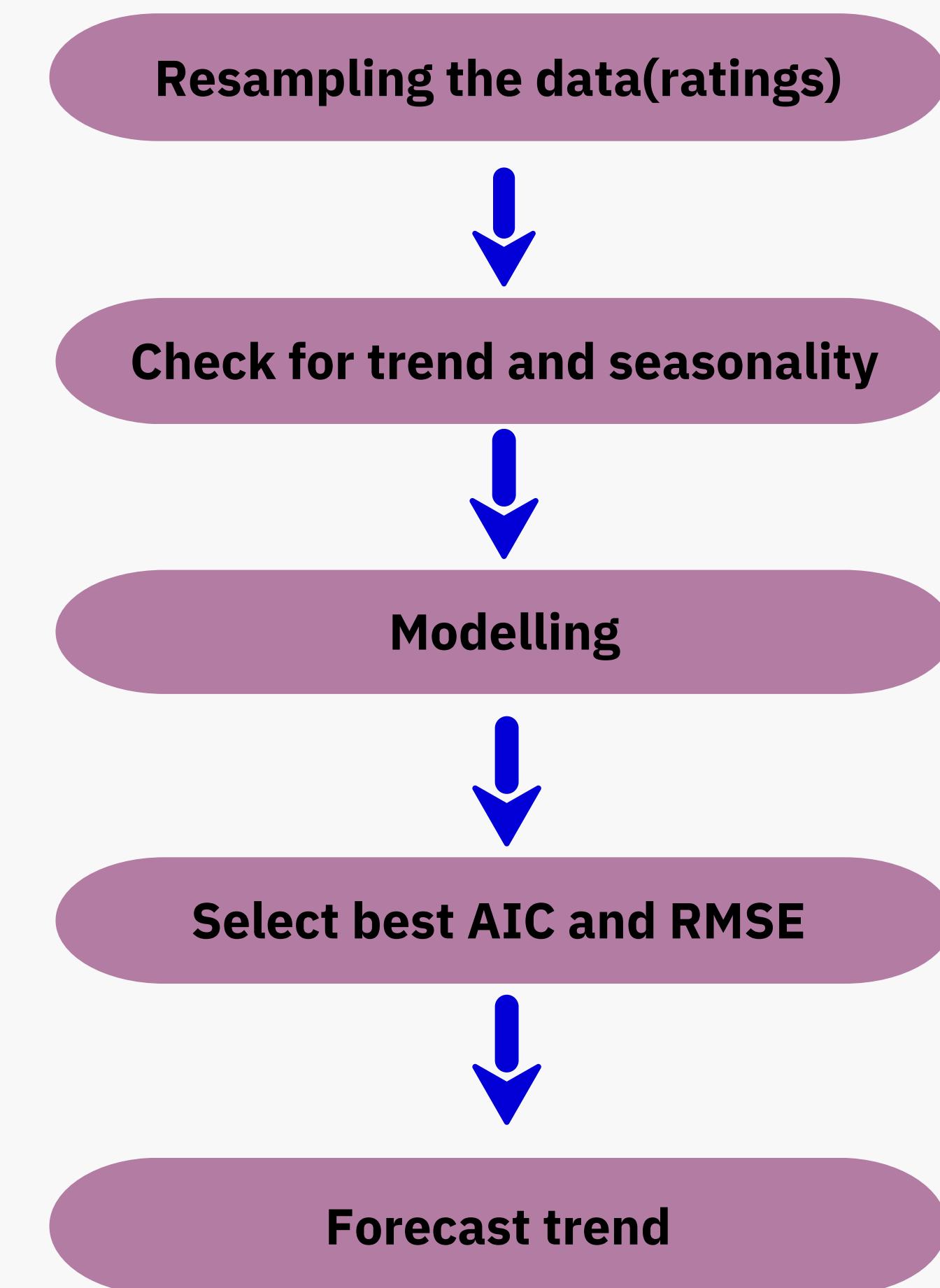
Best albums



Behringer- \$12.93

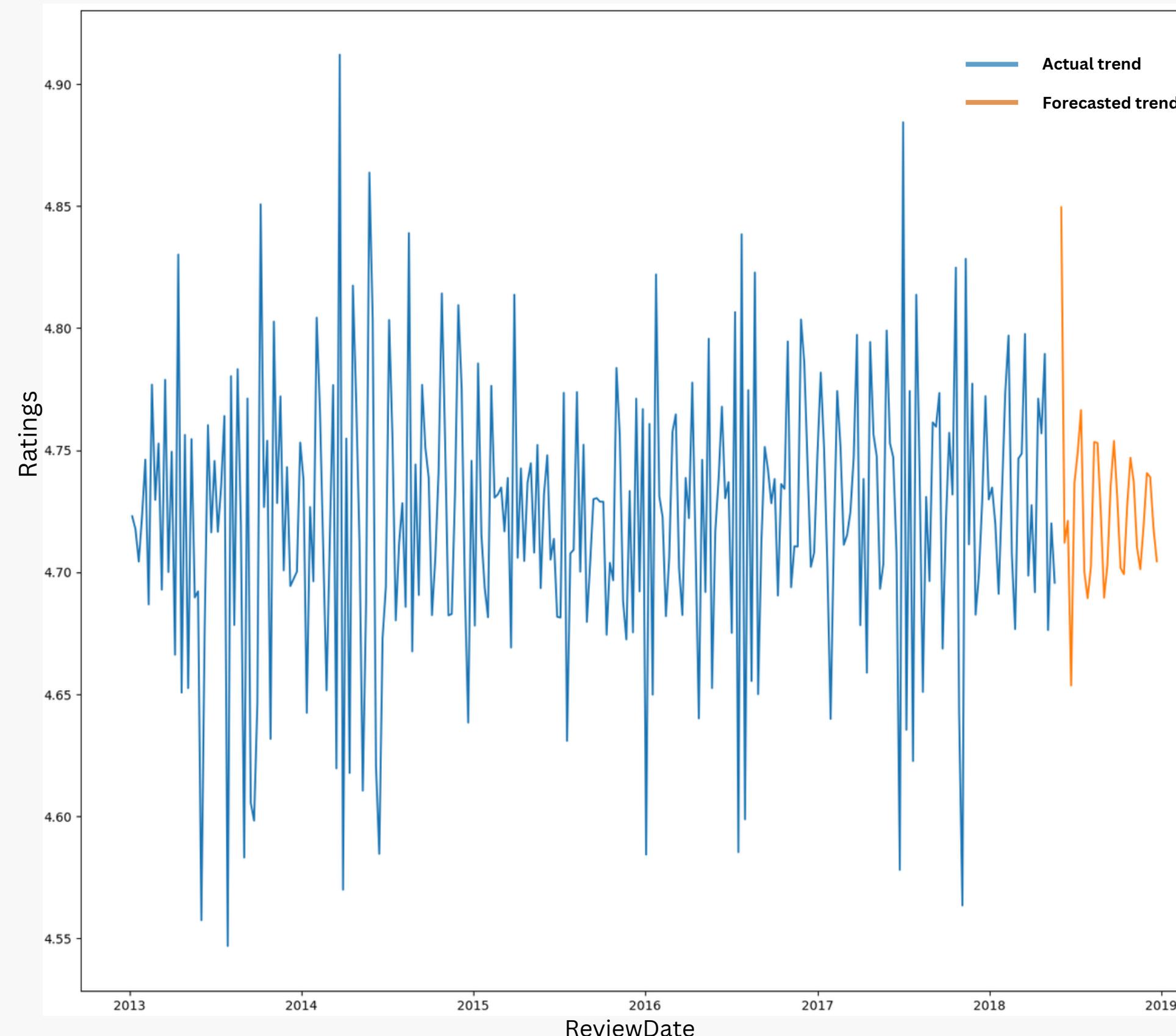
Average price - \$20.25

Workflow of Product rating forecasting



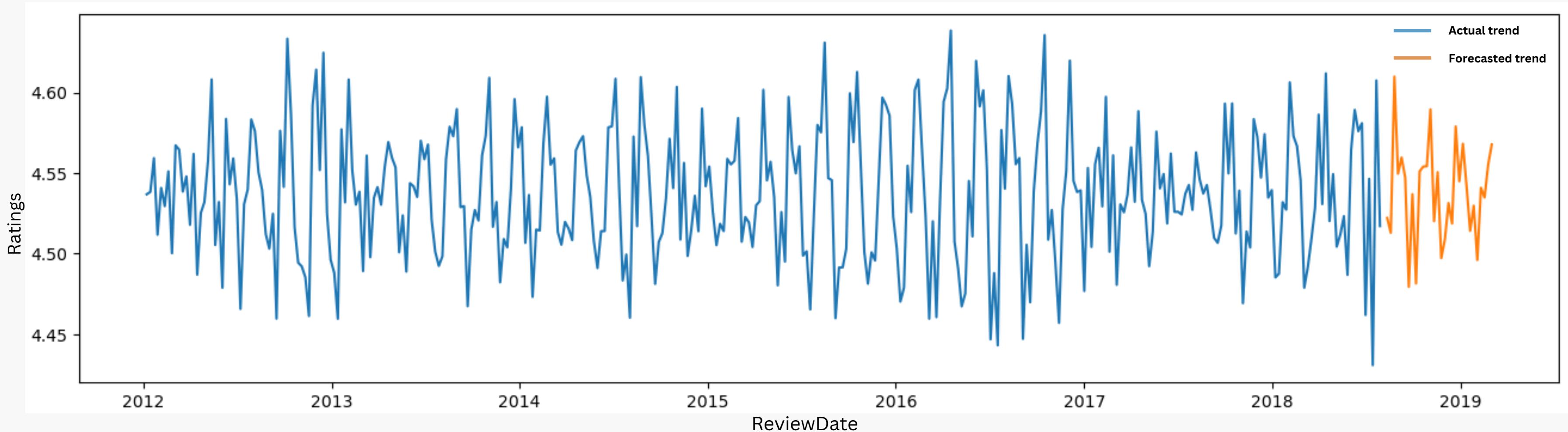
Forecasting positively reviewed brand/instrument in Musical instruments

Brand/instrument- D'Addario

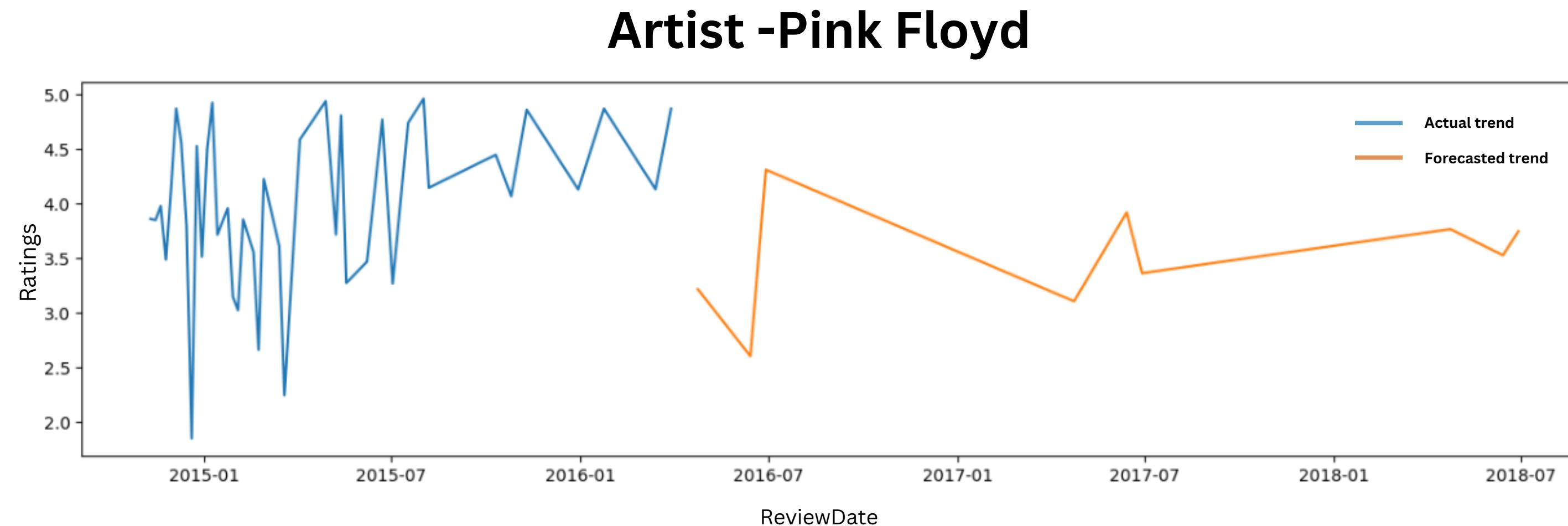


Forecasting negatively reviewed brand in Musical Instruments

Brand/Instrument -Fender



Forecasting positively reviewed Artist in Digital Music



Conclusions

- The average product ratings for the both categories combined is 4.6 for 5 which is a good rating overall.
- After observing the sentiments of reviews, it is concluded that most of the reviews are positive for both categories.
- More than 86% of Reviewers are verified customers, hence the reviews are genuine and trustworthy.
- By Clustering, it is found out that brands like **Pink Floyd**, **Yes** and **The Killers** are the top 3 preferred artists with an average selling price of 12.67\$.
- For both the categories, 2014-2016 has seen the peak sales.

- Price of positively reviewed artists are comparatively lesser than negative products, this depicts customers find them good as they are cheap and best.
- In Musical instruments, all the top 4 products belong to **D'Addario** brand.
- **Pink Floyd** and **Fender** artists can be recommended for future marketing purposes.
- **D'Addario** has a negative forecast, so it can be given a vital check as it is a top performing product gone descent.
- Over time, customer expectations have increased which has resulted in a decline of positive reviews.

Thank You