

# SAS<sup>®</sup> GLOBAL FORUM 2019

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# Analyzing Amazon's Customer Reviews using SAS Text Miner for Devising Product Launch Strategies

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## Abstract

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The digital economy is showing tremendous growth in the 21st century, and it is having a massive impact on the current society. E-commerce is one element of the Internet of Things (IoT), and its worldwide retail sales amounted to 2.3 trillion US dollars. This amount shows the popularity of online shopping, and it indicates an evolution of retailers in this industry. A recent study conducted by GE Capital Retail Bank found that 81% of consumers perform online research before buying products. This indicates that consumers rely heavily on others' opinions and experiences in order to buy a product. Businesses need to understand customers' views of their products and of competitors' products for strategic marketing. E-commerce businesses provide a platform to generate user-experience content through customer reviews, which are vital for a buyer to choose the best product out of numerous similar products available in the market. Companies need to analyze the customers' perspectives through reviews for better business, evaluate customer engagement, and devise strategies for the launch of their products. This paper focuses on analyzing customer reviews primarily on Amazon using Python and SAS® Text Miner. This project determined which product features are given high-ratings or low-ratings, and how the high-rating features of a best-selling product perform compared to a similar product that is sold by a different vendor.



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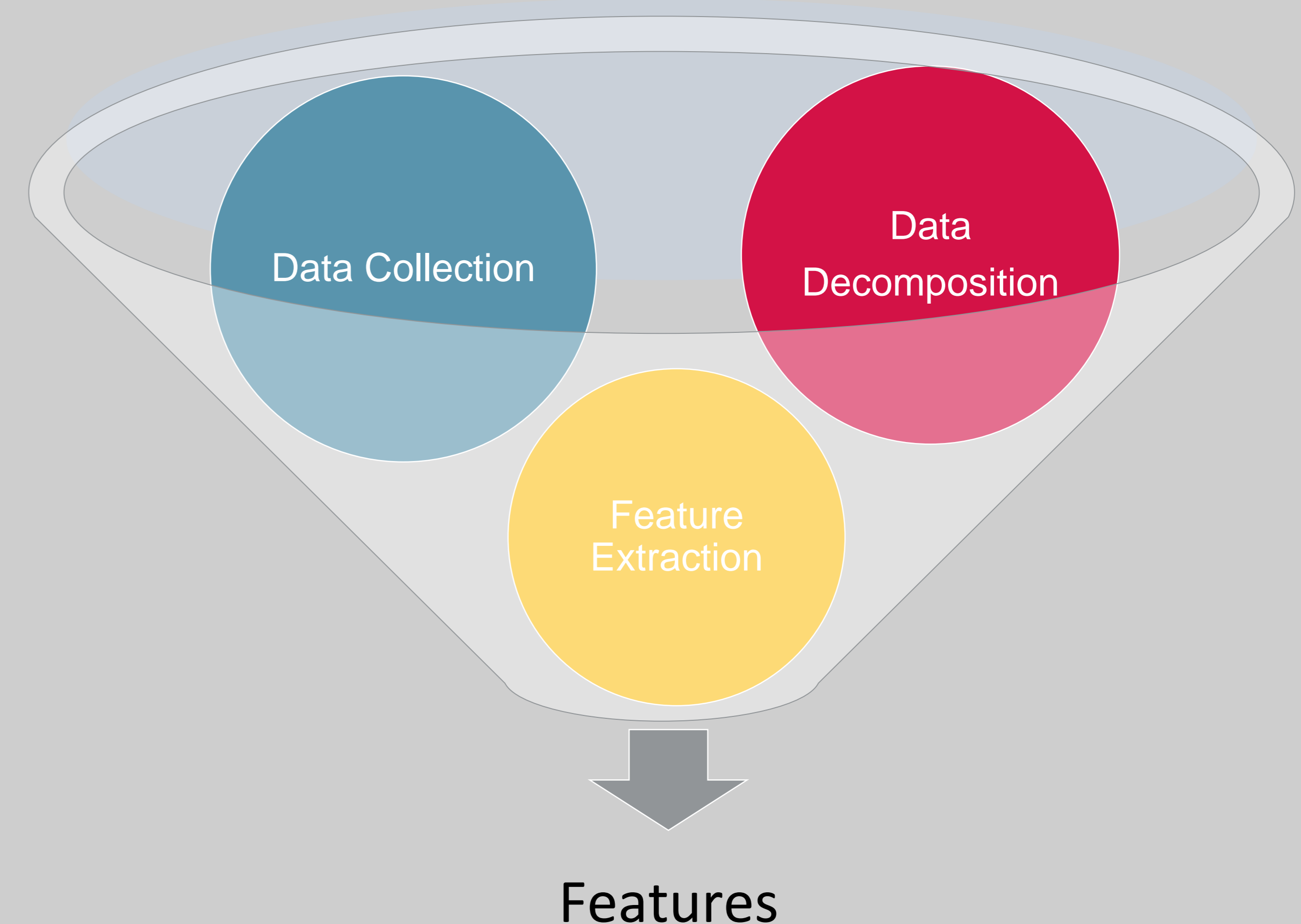
## Introduction

The rapid evolution of online market sale helps customers to find the good product, based on online reviews in e-commerce websites like Amazon. These reviews suggest to determine high and low rating features of any individual product and thereby provide access to compare high rating features of a bestselling product with that of other similar products available in the market. It is often important for any business to understand the customer opinion about a product. The reviews from e-commerce websites help companies to determine the customer engagement and plan strategies for future products to gain better business value. Textual data in the form of reviews from Amazon have been gathered to extract the features of a product.

## Objective

- Understand customer opinion about a product
- Help companies to determine the customer engagement
- Plan strategies for future products to gain better business value
- Help customers to find best product out of numerous products

## Methodology



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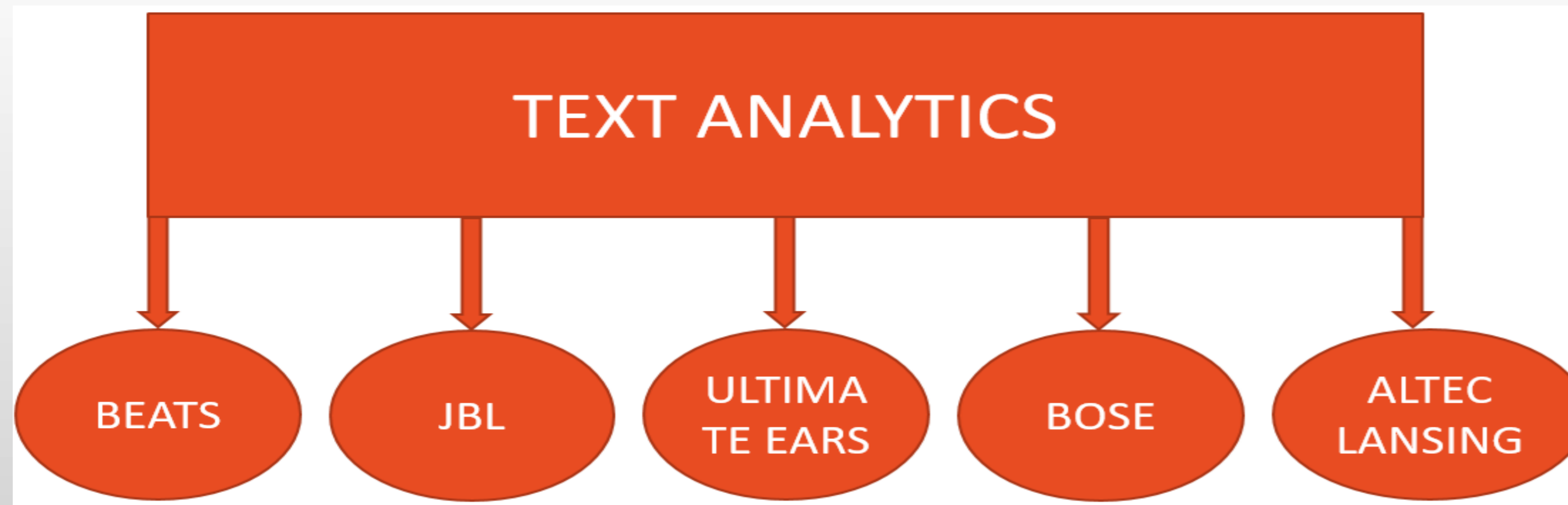
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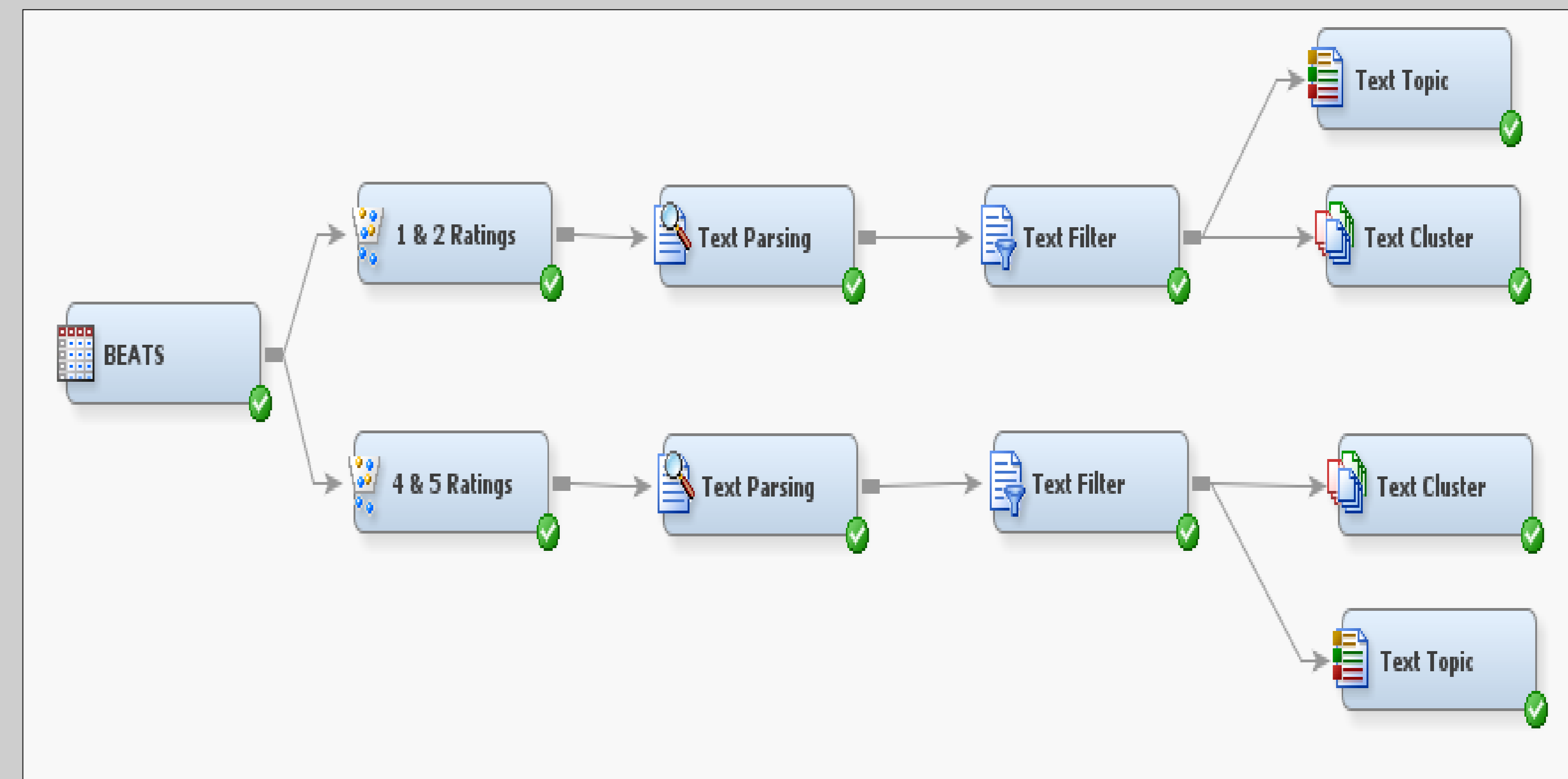
# amazon reviews



## Data Collection

- ASIN code is used for extracting reviews from Amazon
- Data Dictionary has Author, Header, Posted Date, User Rating, Comment
- Filter Node helps to separate the comments

Author	Comment Header	Posted Date	User_rating	Comment
Genao	JBL Charge 3 along with Spotify's pla	14-Jun-16	5	JBL is in it, to win it. I own the JBL Xtreme, the Charge 2+ and now the Charge 3. If I
AlexF1	UE Boom 2 vs. JBL Charge 3	5-Feb-17	5	I wanted to get a portable travel speaker in addition to my home Sonos setup. Good
Mike	I RECEIVED A COUNTERFEIT.	9-Jul-17	1	The box looked legit however upon opening, the inside box contents was crushed. I
Braeden D	The Only Charge 3 Review You Will E	17-Aug-17	5	While I am seasoned in writing Amazon reviews to help my fellow millennial shoppe
GP	Fantastic speaker!	26-Jun-16	5	This is a fantastic speaker. JBL has truly hit a home run with this one. I have a charg
Amazon C	Best in its Class	6-Jul-16	5	I did a lot more research that I probably should've before buying the JBL Charge 3, b
Blasphem	This speaker is a better deal than the	18-Dec-17	5	A bit bulky, but worth it. This speaker is a better deal than the UE Boom 2. I've had b
MindSeed	This is my Baby	16-Nov-16	5	I'm here to help... I bought this at a Sprint store and let me give you my honest opin
Paul S	Fantastic Customer Service	12-Nov-17	5	The main reason I am writing this review is because of JBL/HKs fantastic customer s
PWH	Cheap quality.	21-Feb-18	1	Bought them as a gift exactly 90 days ago for a Christmas present for my girlfriend.
C-Low	Bose better step up their game...	31-Jul-17	5	I really like this speaker, but I have to say i wish it was louder. I was torn between th
John What	Using this to Watch Movies? Sound C	28-Dec-17	5	I've done exhaustive research here on Amazon and watched tons of review videos c
KCW	The JBL Charge 3 has a nice balanced	11-Aug-17	4	The JBL Charge 3 has a nice balanced sound to it. I cannot attest to whether the wa
Djtonydx	Engineering brilliance	4-Jan-18	5	First, a bit about the situation that this product is being used in. I am a Sanitation W
glenn	BUYERS BEWARE: NO RETURNS afte	17-Oct-17	1	Yes, only 1 star. Buyers beware: After 30 days, there are no returns. We bought 3 ur
Gavaronec	Another excellent product from JBL	19-Jan-18	5	I got this for my son for Christmas and I wonder who listens to it more, me or him. I
J.P.M.	It sounds very good. Not quite "grea	1-Nov-16	5	I just received this today. I hit the power button on the top, then the bluetooth butt
Annabelle	sounds great, better than I expected	15-Aug-16	5	If you're looking for a great speaker, buy this one. The speaker sounds great, better
Ryan	LOVE this speaker!	11-Aug-17	5	This speaker is wonderfull! It is a breeze to connect, and I'm no audiophile, but I thin
Warren	Great, Loud speaker for construction	6-Jul-18	5	I recently switched tool brands as I work in the HVAC trade and I didn't want a tool
The Nelson	Would be great but...	26-Feb-18	3	Sounds awesome. Deep bass, good mid/hi. Used in my garage, at the neighborhood
Nick	Absolutely incredible speaker. Large	25-Jul-18	5	SOUND: I bought two and I can't believe how awesome they sound. I had the origin
S. Davis	Wonderful speaker!!!	1-Jun-18	5	Used my Christmas money to purchase this after reading many reviews... Decided c
C. Rogers	Werks pretty guhd. Heavy bass for a	12-Jun-18	4	Werks pretty guhd. Heavy bass for all you base heads. It does distort for most song





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Text Parsing

Text Filter

Text Topic/Cluster

## Text Parsing

- 'Abbr', 'Aux', 'Conj', 'Det', 'Interj', 'Num', 'Part', 'Prep', 'Pron', 'Prop' parts of speech have been ignored.
- 'Num', 'Punct' types of attributes have been ignored.

## Text Filter

- 'Abbr', 'Aux', 'Conj', 'Det', 'Interj', 'Num', 'Part', 'Prep', 'Pron', 'Prop' parts of speech have been ignored.
- 'Num', 'Punct' types of attributes have been ignored.

## Text Cluster

40 as the maximum number of clusters and 15 as the number of descriptive terms to describe clusters using Expectation-Maximization Cluster Algorithm

Cluster ID	Descriptive Terms	Feature
1	+pill +big +charge +device +music +phone portable +little +size bass battery, +speaker +volume +listen +easy	Easy to carry-Portability
2	+perfect +pair +amaze +play +song +device +waterproof awesome +pool easily highly +small +boy +recommend +easy	Awesome Waterproof

## Text Topic

Number of Multi-Term Topics has been set to 20

Topic ID	Topic	Feature
1	+Charge, +Charger, +Purchase, +Port, +Disappoint	Charge Port is not good
2	+nice, +sound, +bass, bass, +clear	Good Bass
3	+good, good sound, good product, good quality, +sound	Sound Quality is good



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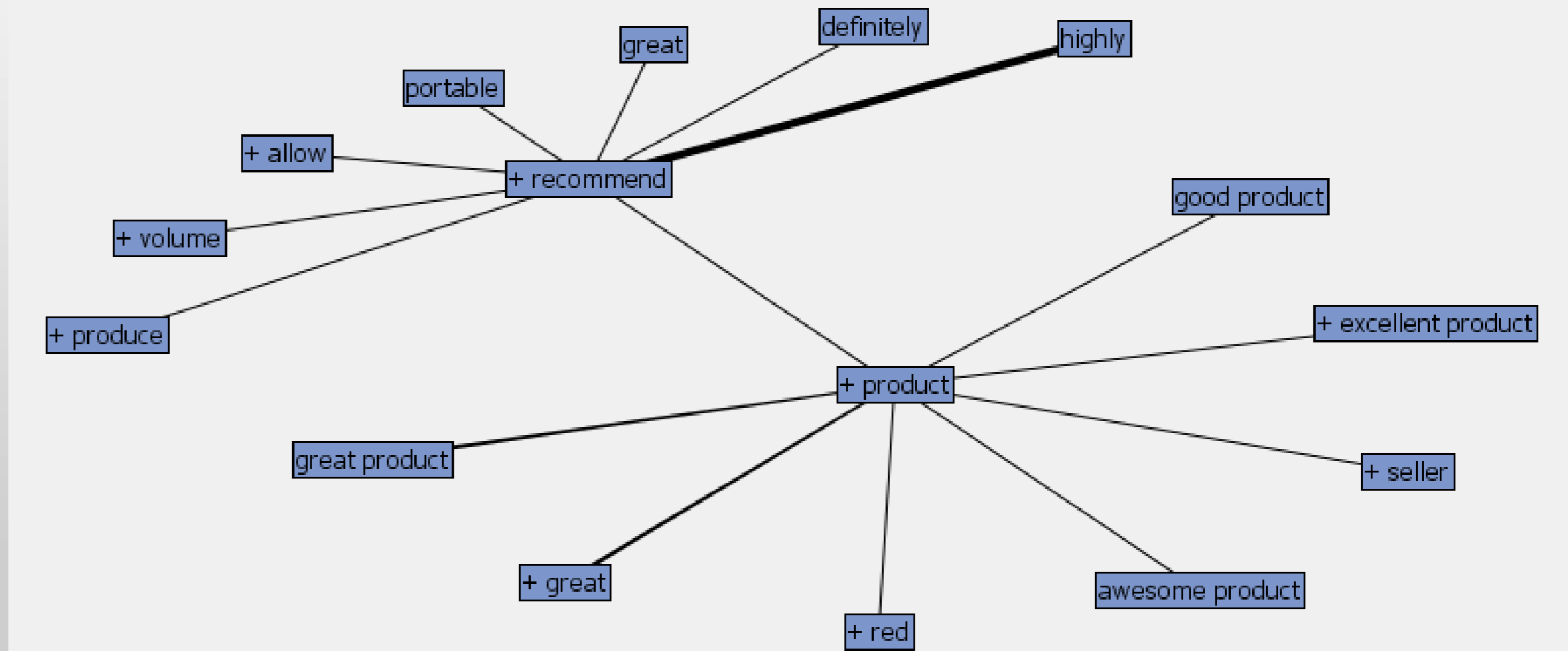
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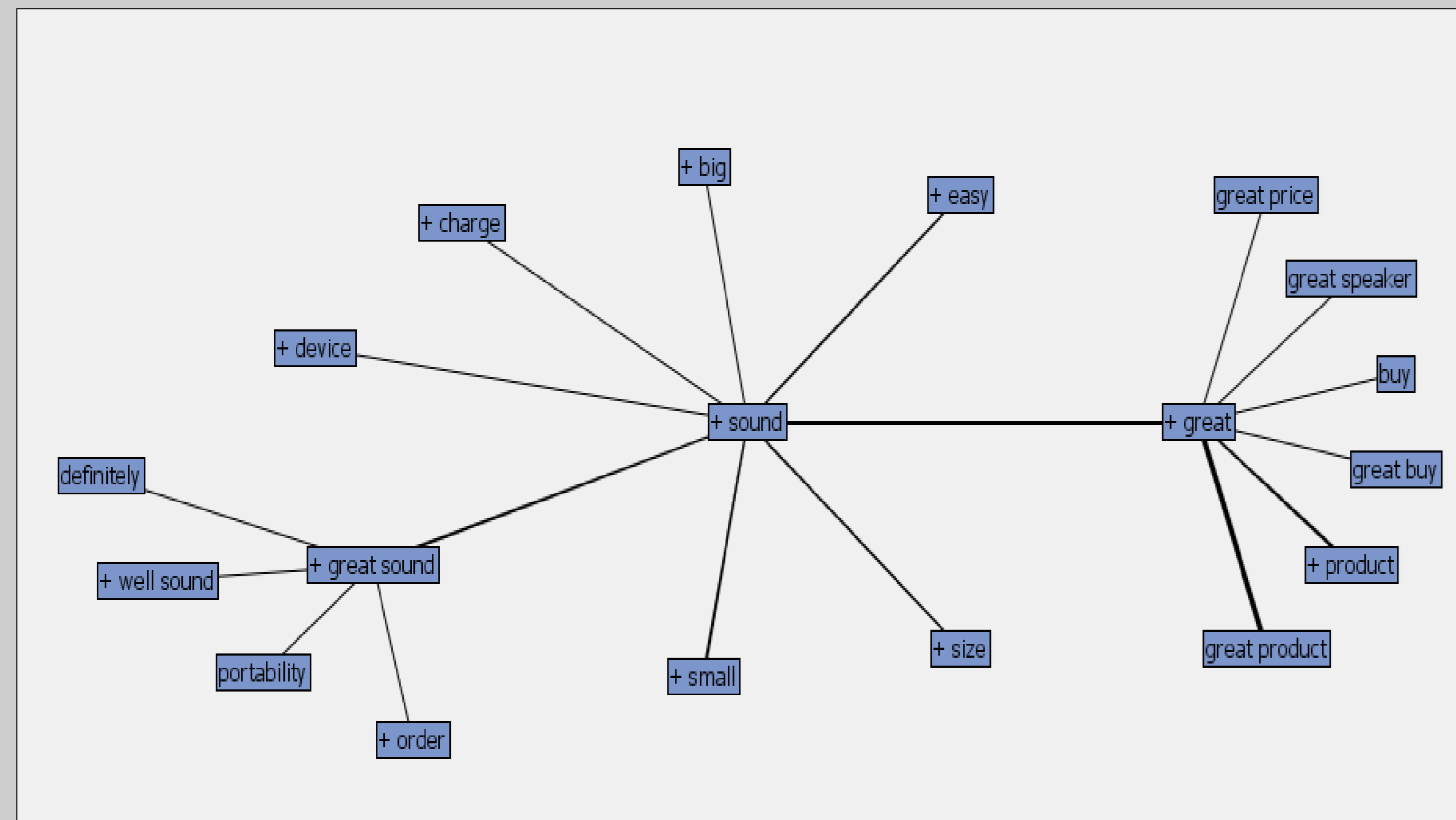
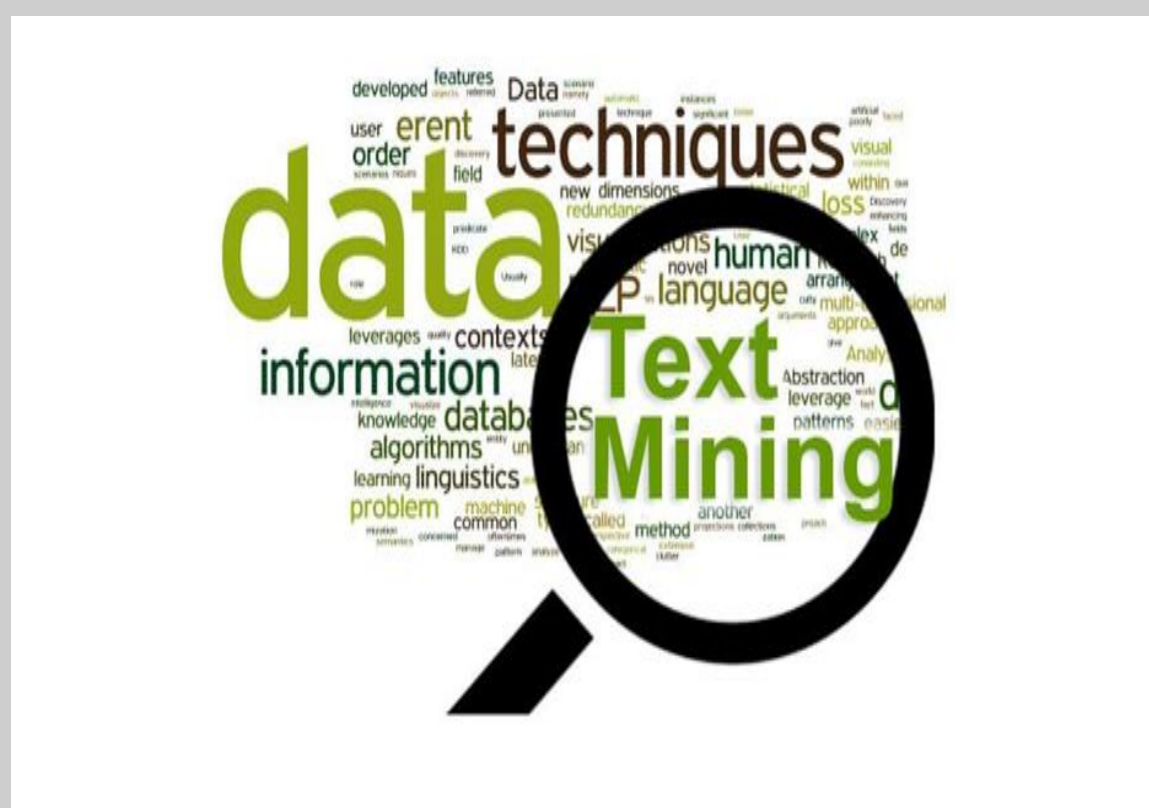


## Concept Link Diagram for word PRODUCT

Concept link diagram in adjacent figure shows word PRODUCT is highly associated with words GREAT, RECOMMENDED, EXCELLENT, AWESOME. It tells that particular speaker is a good product and reviewers highly recommend this product to other customers.



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## Concept Link Diagram for word SOUND

Concept link diagram in adjacent figure shows word SOUND is strongly associated with word GREAT, indicates that particular speaker is a great product with the good sound quality feature.



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## Conclusion

Product	High Rating Features	Low Rating Features	Average Rating	Price
Beats	Portability, Sound Quality	Charge Port , Battery	3.6	170
JBL	Waterproof, Sound Quality, Battery life, Charger	Bluetooth	4.5	149
Ultimate Ears	Waterproof, Sound Quality, Bass, Battery life	Charger, Bluetooth, Product Component	4	146
Bose	Sound Quality, Bass	Battery, Bluetooth	4.4	160
Altec Lansing	Sound Quality, Battery life	Noise, Product Component	3.9	160

This feature analysis helps retailers and companies to understand customer expectations to create future products that meet the needs of their customers and gain business value. Additionally, this analysis prototype also benefits the amazon retailers to constantly view and evaluate the customer’s reviews and increase their brand loyalty by following the above recommendations.

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