
Reddit Sentiment Analysis of Google Products

DSI Project 3
Table 3

Contents

1. **Problem Statement**
2. Google Cloud vs AWS - Sentiment Analysis
3. Google Home vs Amazon Echo - Sentiment Analysis
4. Google Home vs Amazon Echo - Modelling
5. Conclusion

Problem Statement

“Google has tasked us with conducting sentiment analysis for two of their products by benchmarking sentiment on their product subreddits vis-a-vis their main competitor’s subreddits, in order to inform their overall brand strategy.



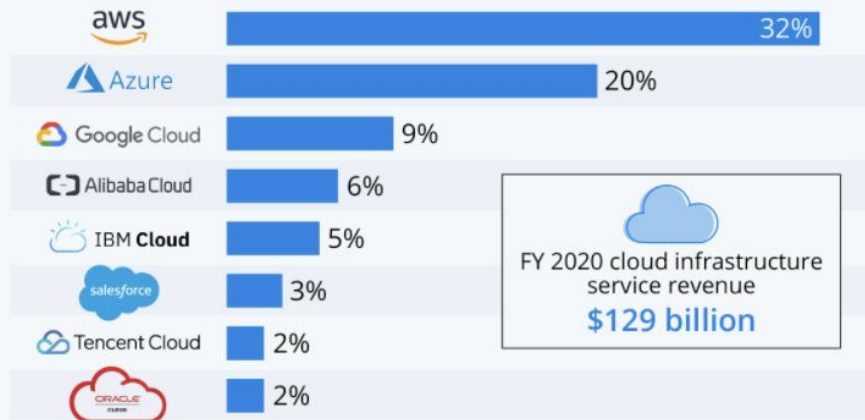
Contents

1. Problem Statement
2. **Google Cloud vs AWS - Sentiment Analysis**
3. Google Home vs Amazon Echo - Sentiment Analysis
4. Google Home vs Amazon Echo - Sentiment Analysis using Logistic Regression Model
5. Conclusion

Google cloud and AWS are fierce competitors in the Cloud technology field

Amazon Leads \$130-Billion Cloud Market

Worldwide market share of leading cloud infrastructure service providers in Q4 2020*

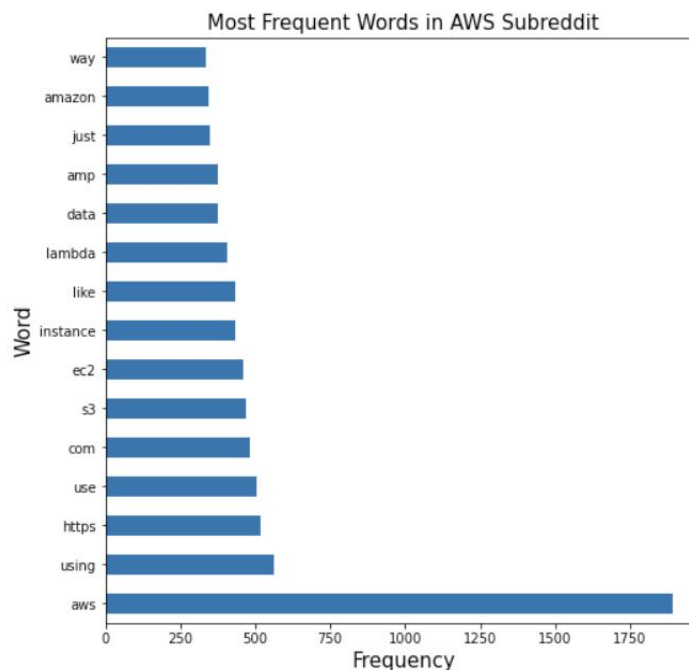
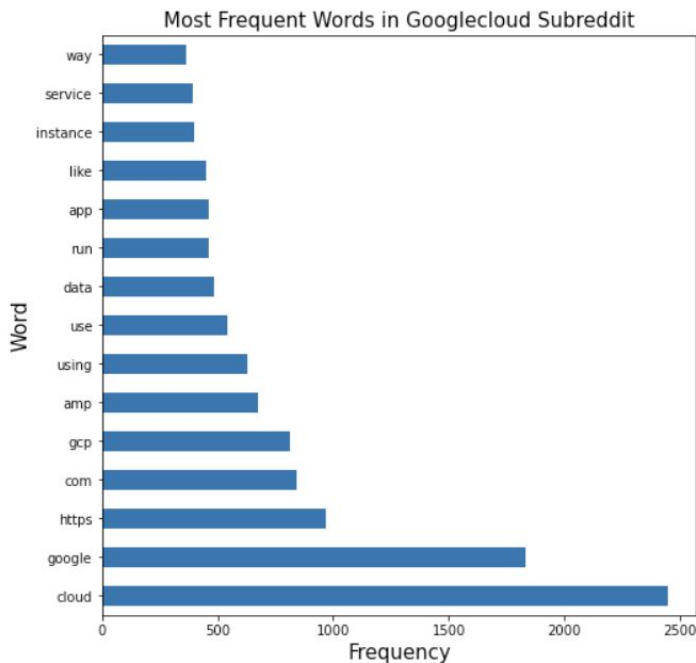


* includes platform as a service (PaaS) and infrastructure as a service (IaaS) as well as hosted private cloud services

Source: Statista

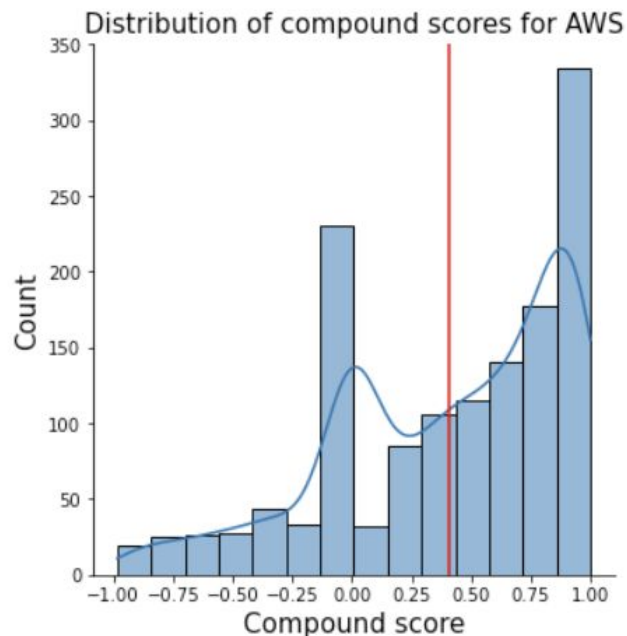
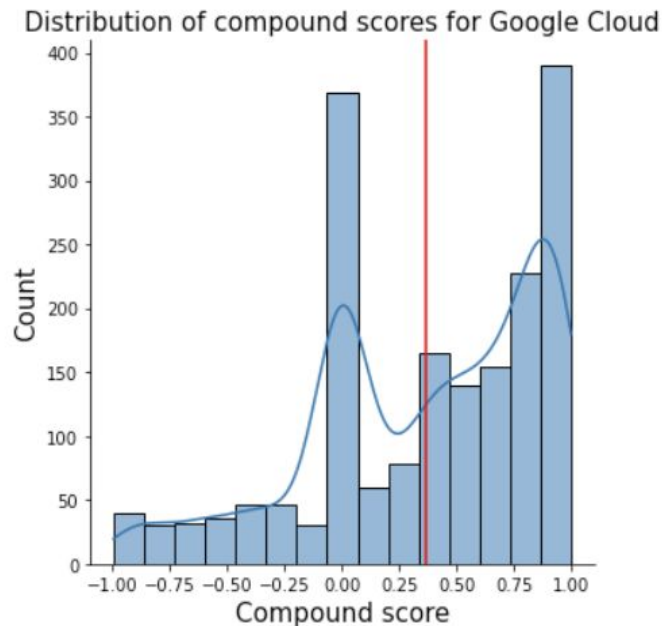
- In 2020, Google Cloud revenue amounted to USD \$13 billion
- Accounts for 7.2 percent of Google's total revenues
- AWS continues to be the leading provider of Cloud technology
- As more companies embrace Cloud, room for Google to increase market share

Overlapping of commonly used words observed for both subreddits



- Words like “way”, “instance”, “data”, “like” were added to our list of stopwords as they appeared in both subreddits

Sentiments of both subreddits are largely similar



- Both subreddits follow a similar distribution with clustering around scores of 0.00 (i.e. neutral) and 1.00 (i.e. positive)
- Mean compound scores for Google Cloud and AWS are 0.37 and 0.41 respectively

Contents

1. Problem Statement
2. Google Cloud vs AWS - Sentiment Analysis
- 3. Google Home vs Amazon Echo - Sentiment Analysis**
4. Google Home vs Amazon Echo - Sentiment Analysis using Logistic Regression Model
5. Conclusion

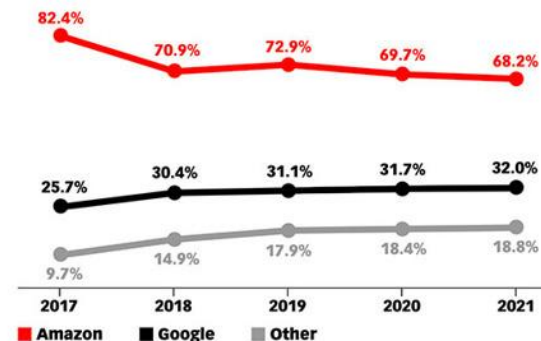
Main competitor for Google Home is Amazon Echo, which has higher US market share in the smart speaker market



	GOOGLE HOME	AMAZON ECHO
Price	\$129	\$99.99
Dimensions	5.62 x 3.79 x 3.79 in.	5.9 x 3.5 x 3.5 in.
Speaker size	2 x 2-in. drivers, dual 2-in. radiators	2.5-in. woofer, 0.6-in. tweeter
Digital assistant	Google Assistant	Amazon Alexa
Connectivity	Wi-Fi (802.11 b/g/n/ac) Bluetooth	Wi-Fi (802.11 a/b/g/n) Bluetooth

Source: BusinessInsider

US Smart Speaker Users, by Brand, 2017-2021
% of smart speaker users



Note: individuals of any age who use a smart speaker at least once per month; users of each device are not mutually exclusive with speaker users of different brands

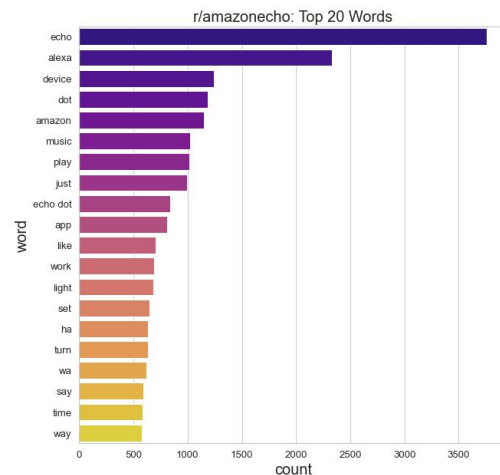
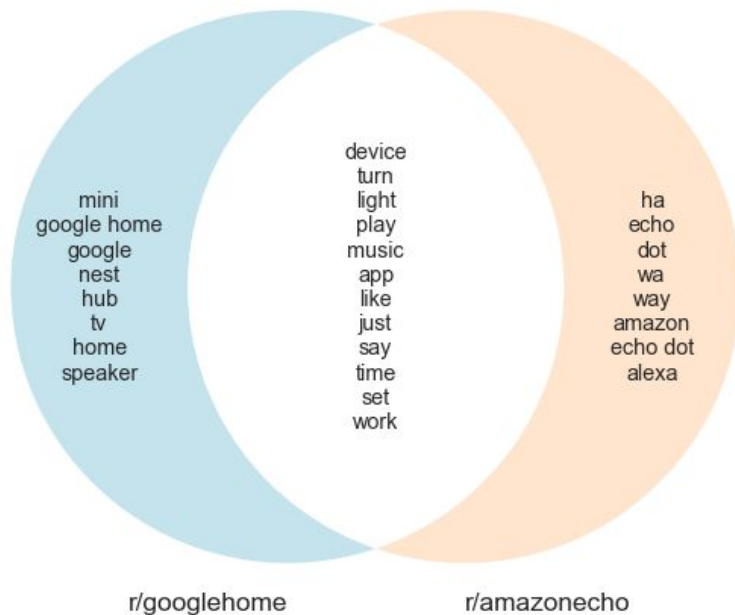
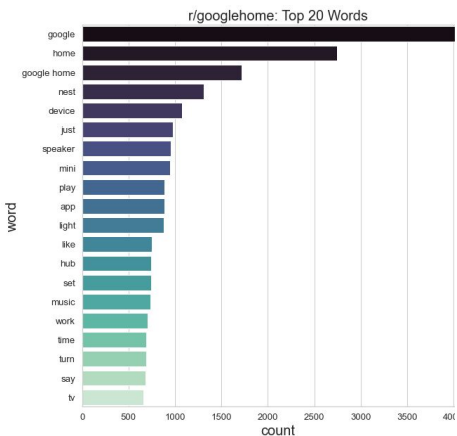
Source: eMarketer, Nov 2019

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www.eMarketer.com

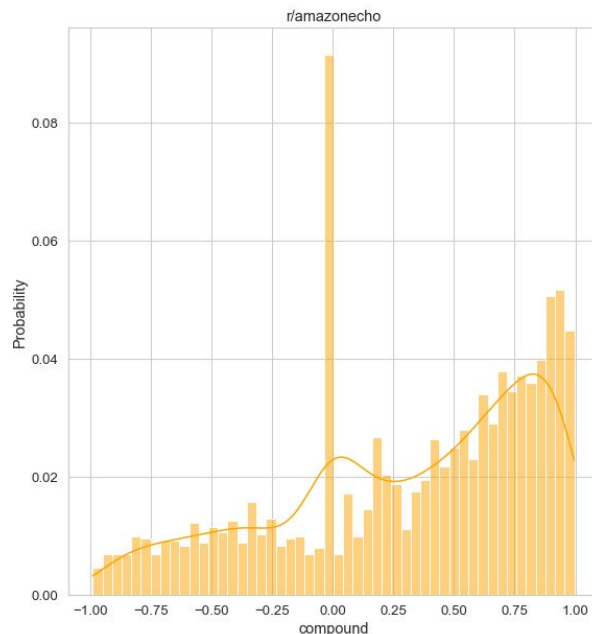
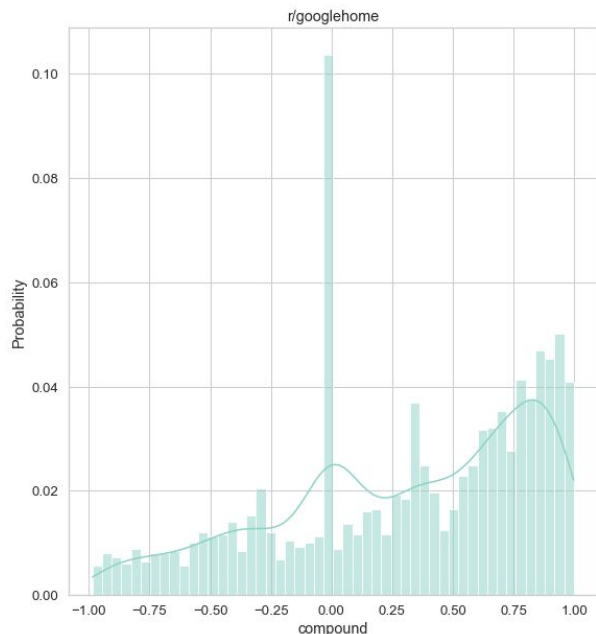
The most commonly used words of each subreddit consist of brand names and words related to personal assistants

Most Common Words in Subreddit



Sentiment across both subreddits was very similar, with r/amazonecho slightly more positive

Probability of Compound Sentiment Score



Compound Score: 0.80

"I just want to say I love the color of my new mini. I wish I got another in the aqua color"

Compound Score: -0.17

"Nest App (Android) Getting Worse? | Hi, I have had some nest cameras for a while now and have used the app for the entire time. As of the past few months scrubbing through video is awful...wondering if I am the only one, or are other people experiencing this? Thanks."

r/googlehome Mean Compound Score:

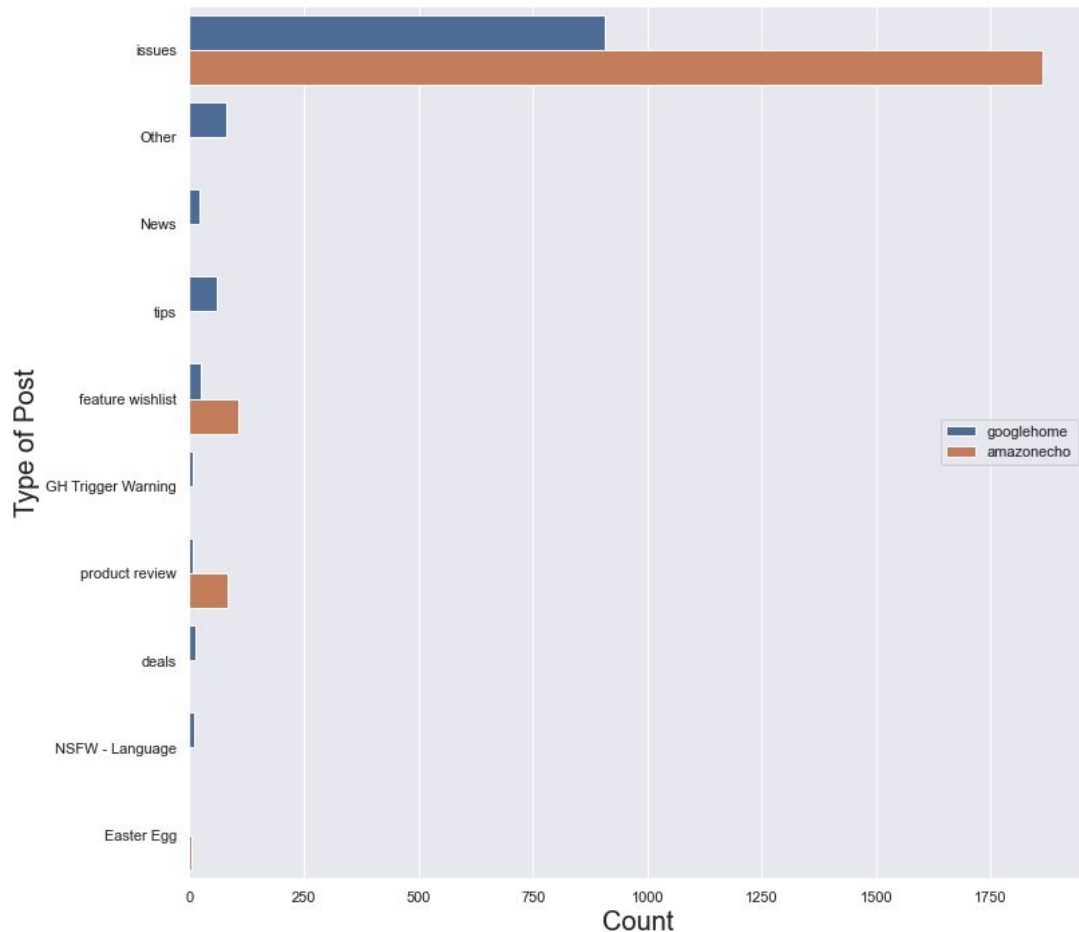
0.301

r/amazonecho Mean Compound Score:

0.309



Count of Post Topic Type per Subreddits



Analyzing topics discussed

- Frequency distribution of topics
- Majority were 'issues'
- Subreddits mainly used for troubleshooting

Were the respective customer support sites mentioned?



31 out of 2968 posts

Compound Score: -0.073

*"Google I PAY YOU MONEY for service - phone, storage, YouTube Red, etc. When I have a problem I need a way to contact someone - not a link to a f*** worthless article that doesn't answer my issue! Google support you are absolutely terrible"*

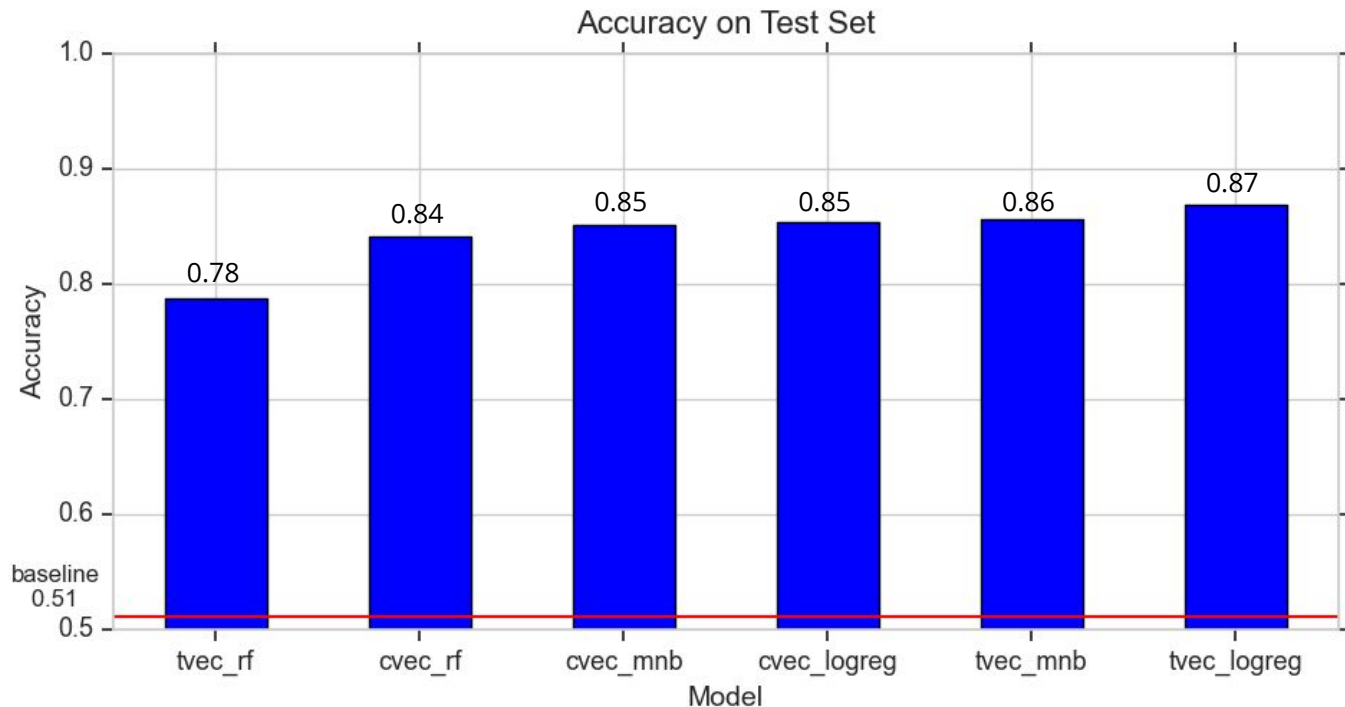
Compound Score: - 1.04

"Google support is a perpetual loop and spin to avoid human contact. I actually had a rep hang up on me. No other major company works like this."

Contents

1. Problem Statement
2. Google Cloud vs AWS - Sentiment Analysis
3. Google Home vs Amazon Echo - Sentiment Analysis
4. **Google Home vs Amazon Echo - Sentiment Analysis using Logistic Regression Model**
5. Conclusion

Logistic Regression model was selected as the best performing model based on accuracy score. Examined feature importance of this model to draw inference on sentiment



Y-target:

- Amazon Echo

Observations:

- TfidfVectorizer yielded best scores with all models
- Ultimately Logistic Regression with TfidfVectorizer did the best

More positive sentiment for r/amazonecho compared to r/googlehome

- Examined feature importance of Logistic Regression model
- Positive words tend to predict r/amazonecho
- Negative words tend to predict r/googlehome

Sentiment	Words	Coefficients
Positive	'good'	0.24
	'great'	0.55
	'best'	0.16
	'happy'	0.11
	'love'	0.51
Negative	'bad'	-0.39
	'terrible'	0.09
	'horrible'	0.08
	'issue'	-0.11
	'problem'	0.11

	coef
nest	-6.544811
mini	-6.092967
assistant	-4.294799
hub	-3.599369
chromecast	-3.220855
speaker	-2.715176
hey	-2.525673
gh	-2.374119
nest hub	-2.172065
max	-2.023757
youtube music	-1.881740
lenovo	-1.852987
cast	-1.804694
app	-1.796699
ge	-1.679399
nest mini	-1.632600
ok	-1.522185
nest audio	-1.439015
smart	-1.366795
youtube	-1.317705

	coef
alexa	11.539101
dot	7.519150
skill	3.208561
gen	3.113916
studio	2.933709
alexa app	2.663119
prime	1.855174
4th	1.835845
bud	1.573177
ring	1.526353
zigbee	1.507047
4th gen	1.503479
ask alexa	1.490101
screen	1.461304
cube	1.448377
alexa play	1.407310
auto	1.399702
flex	1.379938
say alexa	1.367021
want	1.316330

Contents

1. Problem Statement
2. Google Cloud vs AWS - Sentiment Analysis
3. Google Home vs Amazon Echo - Sentiment Analysis
4. Google Home vs Amazon Echo - Sentiment Analysis using Logistic Regression Model
5. **Conclusion**

Conclusion

Main Findings

- Posts on subreddits mainly relate to troubleshooting issues
- Sentiment on Reddit is slightly more positive for AWS compared to Google Cloud
- Sentiment on Reddit is slightly more positive for Amazon Echo compared to Google Home

Recommendation

We recommend for Google to improve its after sales service and troubleshooting support for Google Cloud and Google Home, to improve its overall brand image

Questions?