Product Review Analysis

amazon

Context

Amazon sells multiple products from clothes to electronics to books to movies.

It is essential for the company to understand **how much their customers are satisfied with the products** and what services can be improved.

In summary, **how to improve the customer relationship management tied to their products**

Topics For Introspection

1. What is the review behavior among different categories?
2. What is the relation between the reviews and the helpfulness?
3. Is there a relation between price and reviews?

Details about our dataset

Short brief about the Product datasets:

1. **reviewerID** - ID of the reviewer, e.g. A2SUAM1J3GNN3B
2. **asin** - ID of the product, e.g. 0000013714
3. **reviewerName** - name of the reviewer
4. **helpful** - helpfulness rating of the review, e.g. 2/3
5. **reviewText** - text of the review
6. **overall** - rating of the product
7. summary - summary of the review
8. **unixReviewTime** - time of the review (unix time)
9. **reviewTime** - time of the review (raw)

We have been given Books, Clothes & Jewellery, Electronics and Movies product categories

Short brief about the Metadata dataset:

● **asin** - ID of the product, e.g. 0000031852
● **title** - name of the product
● **price** - price in US dollars (at time of crawl)
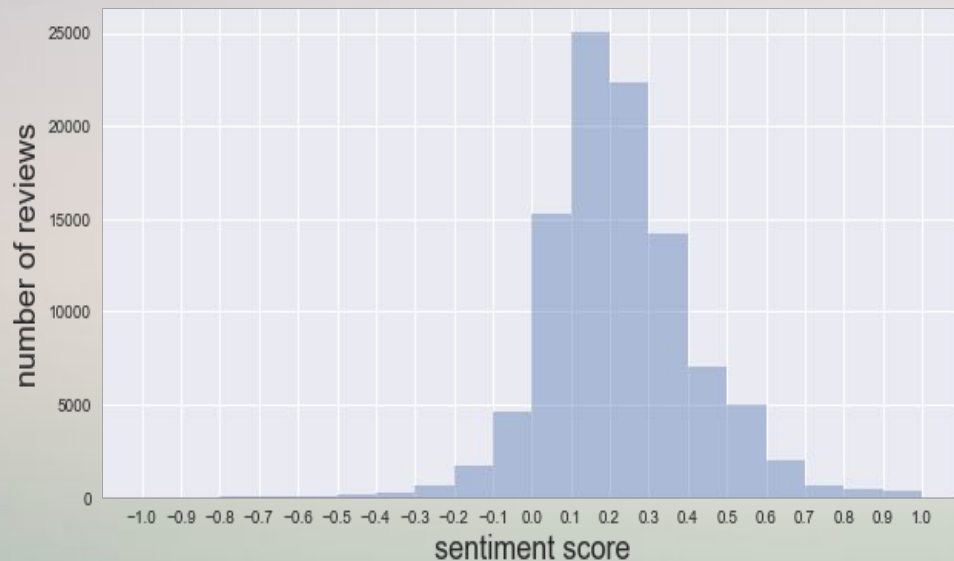● **imUrl** - url of the product image
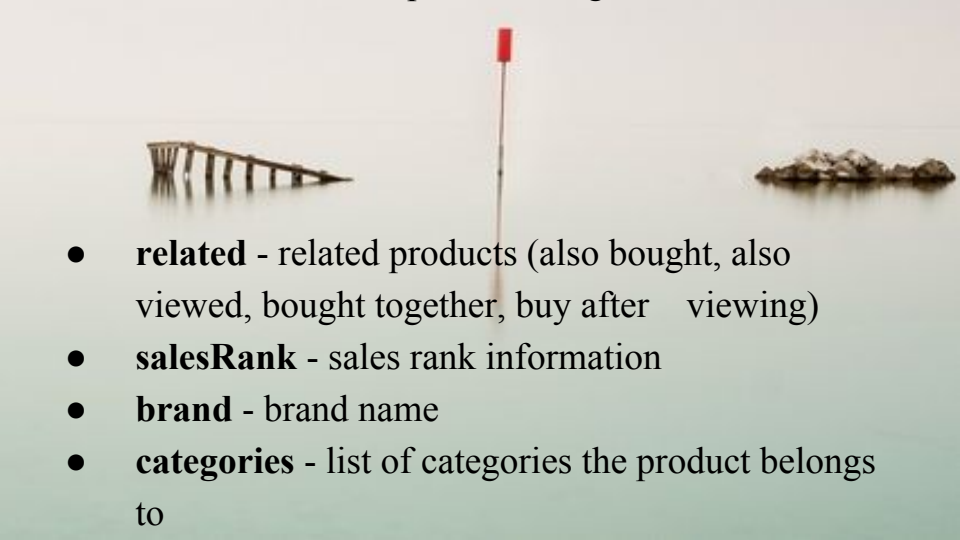
● **related** - related products (also bought, also viewed, bought together, buy after   viewing)
● **salesRank** - sales rank information
● **brand** - brand name
● **categories** - list of categories the product belongs to

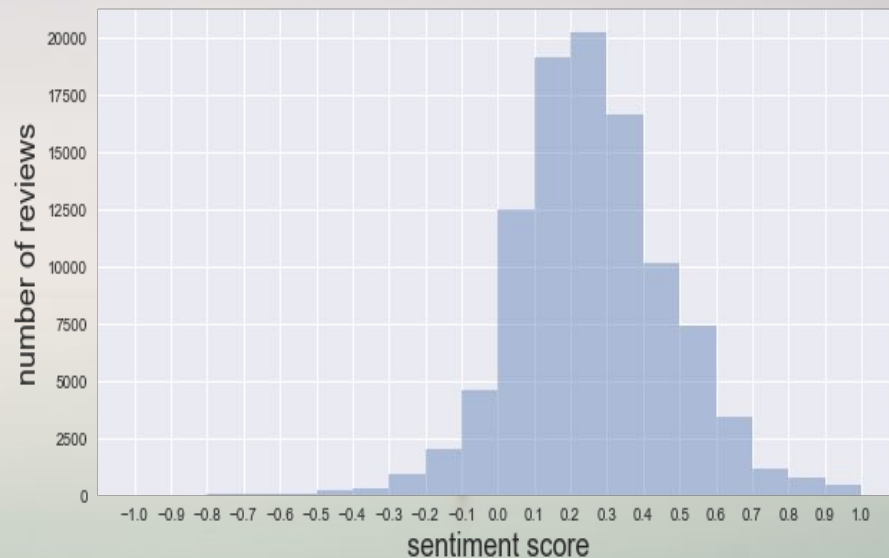What is the behaviour among different categories ?

Sentiment Comparison

Sentiment distribution Books
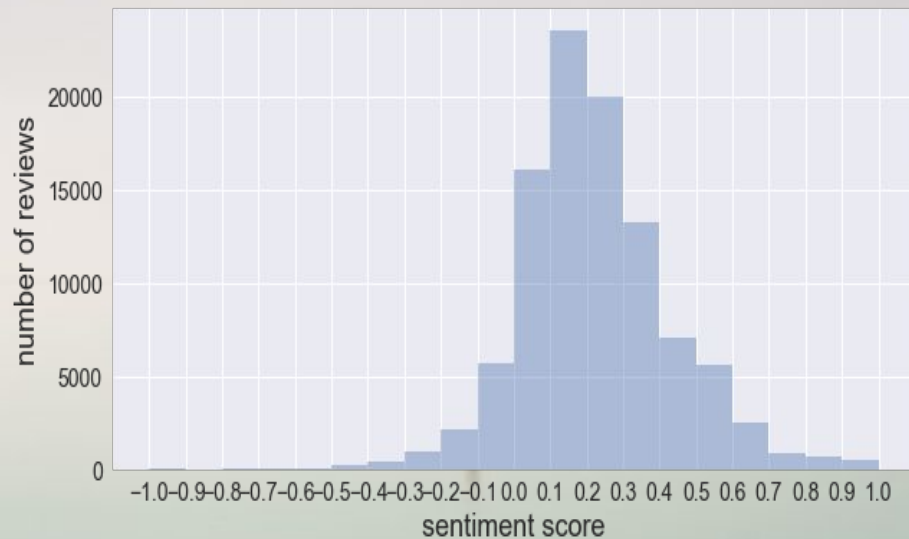

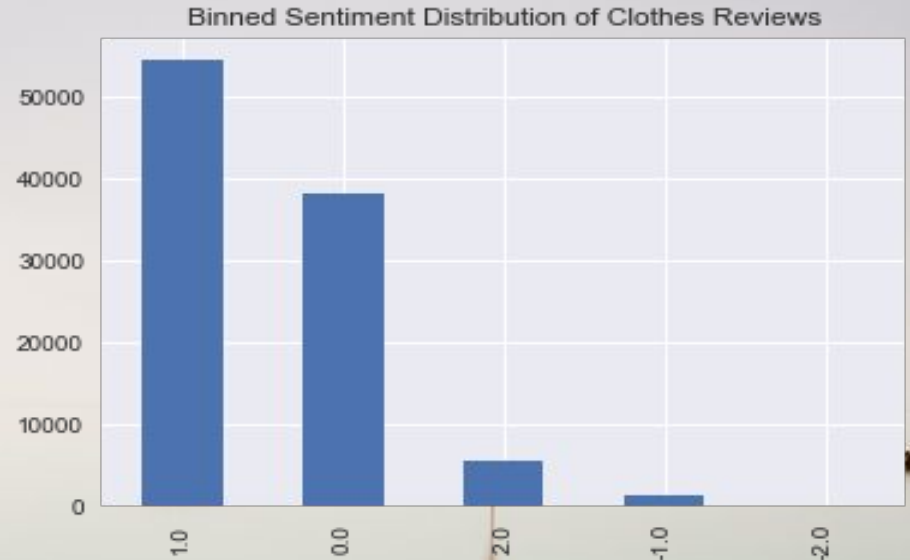Sentiment distribution Clothes/Jewellery

Sentiment Comparison

Sentiment distribution Electronics
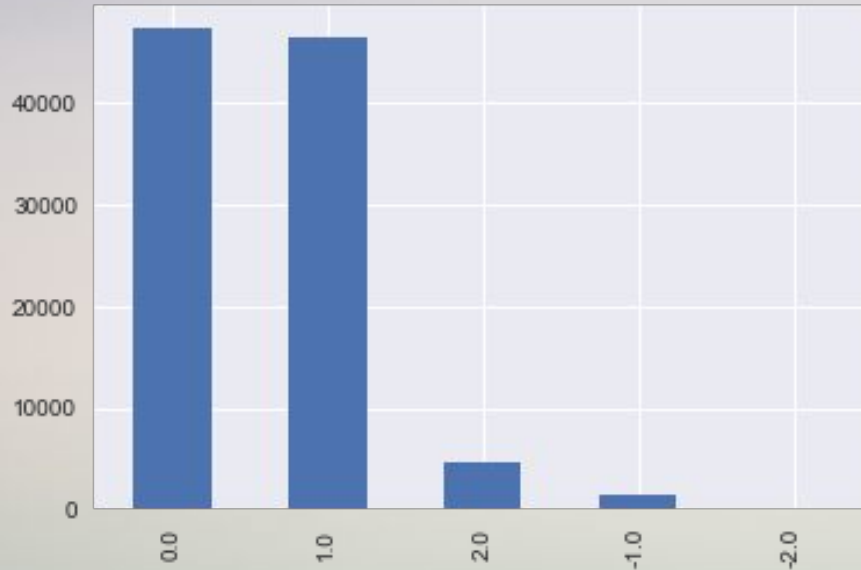

Sentiment distribution Movies

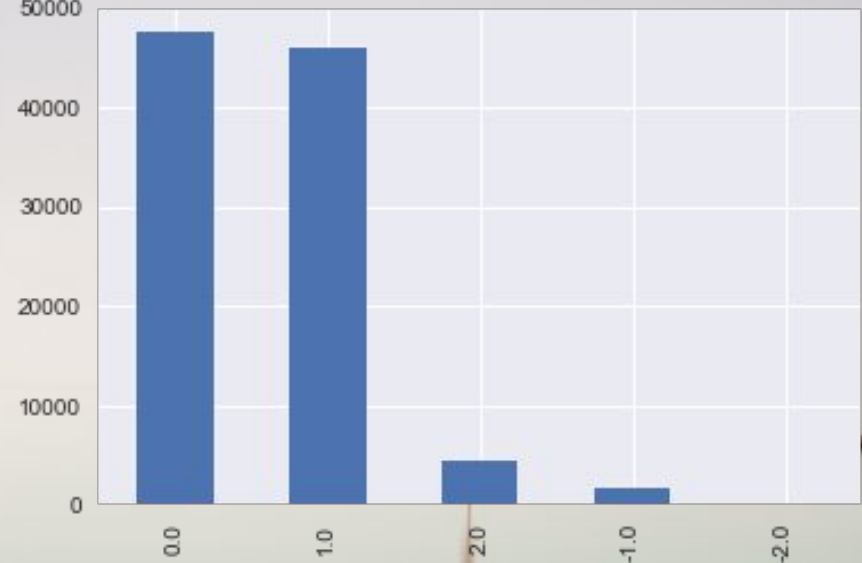# Binned Sentiment Comparison

Binned Sentiment Comparison

Binned Sentiment Distribution of Electronics Reviews

Binned Sentiment Distribution of Movies Reviews
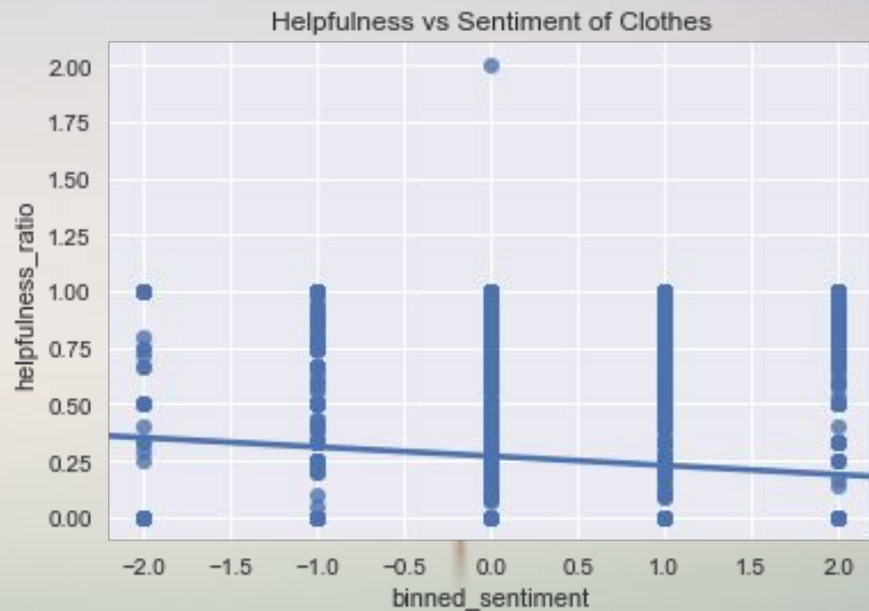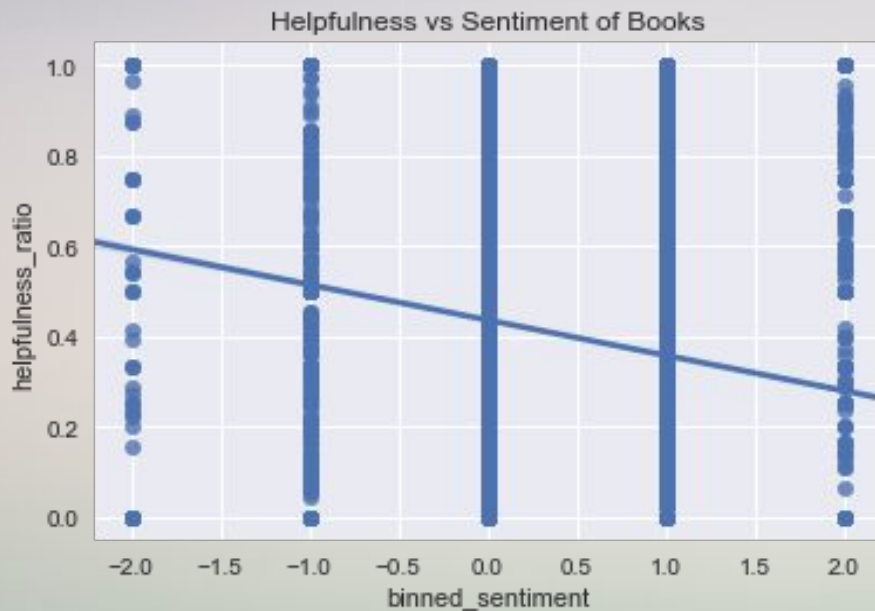
Conclusion

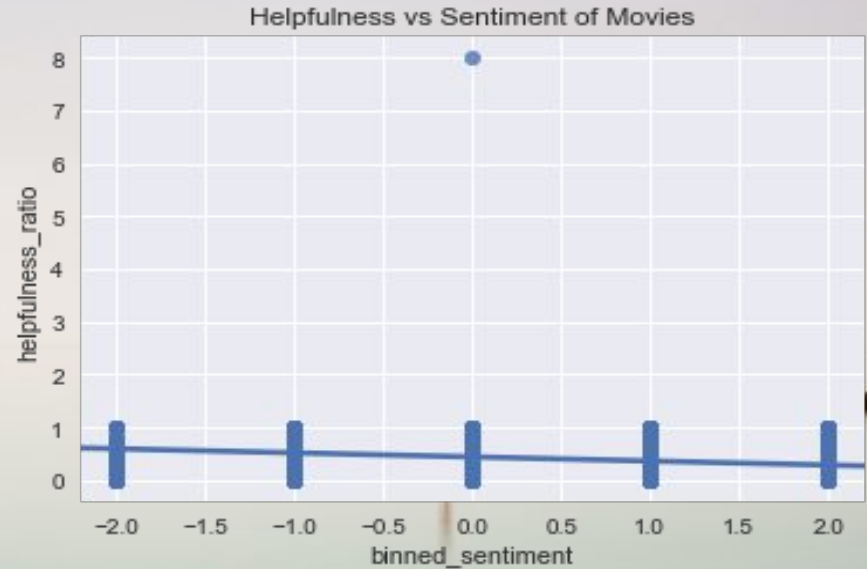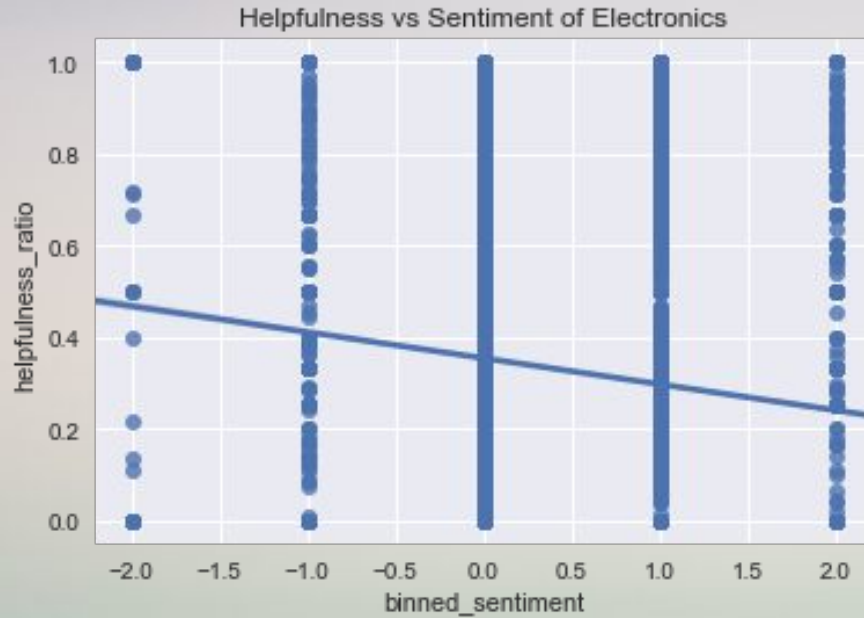After performing statistical tests, we can point out that the sentiment for different products is extremely different.

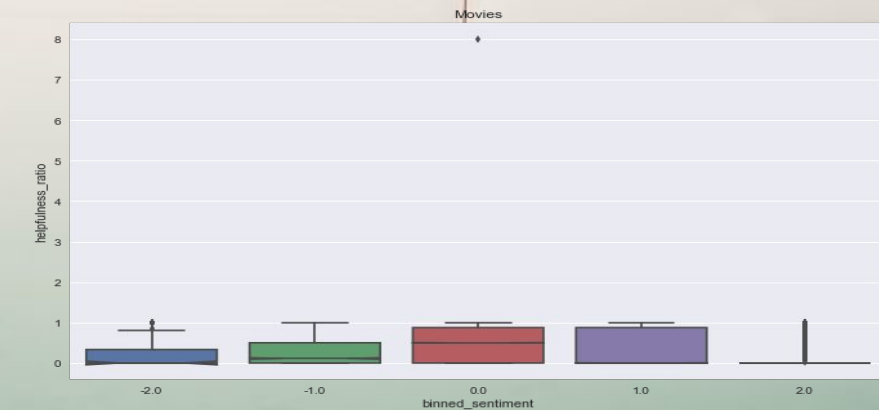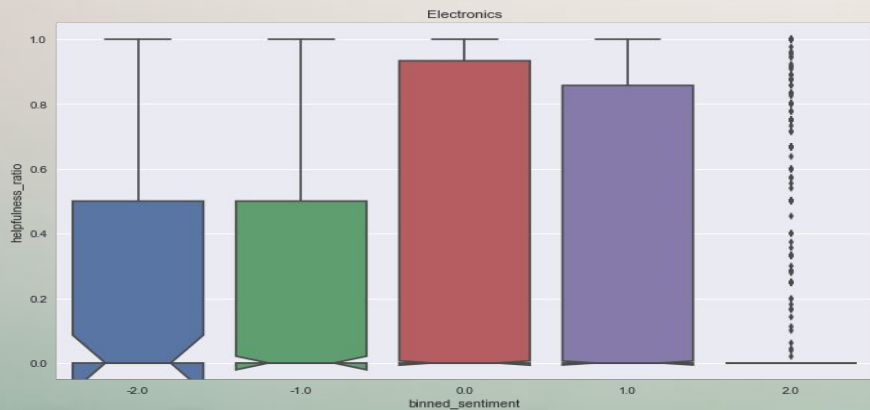What is the Relation between Reviews and Helpfulness ?

Relation of Helpfulness Ratio to Sentiment

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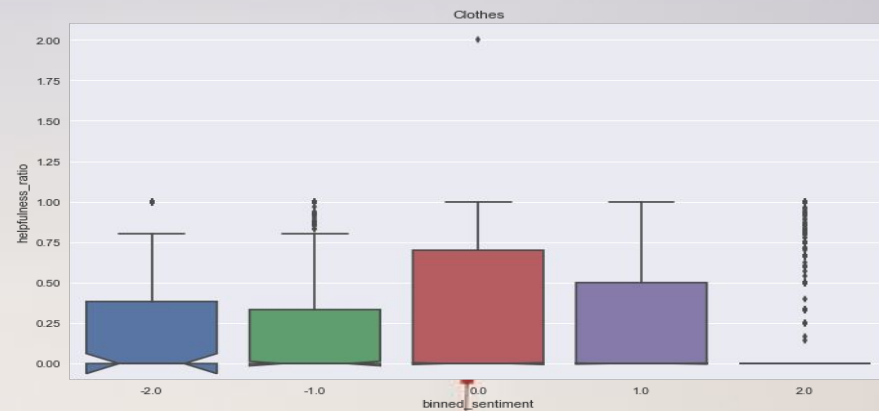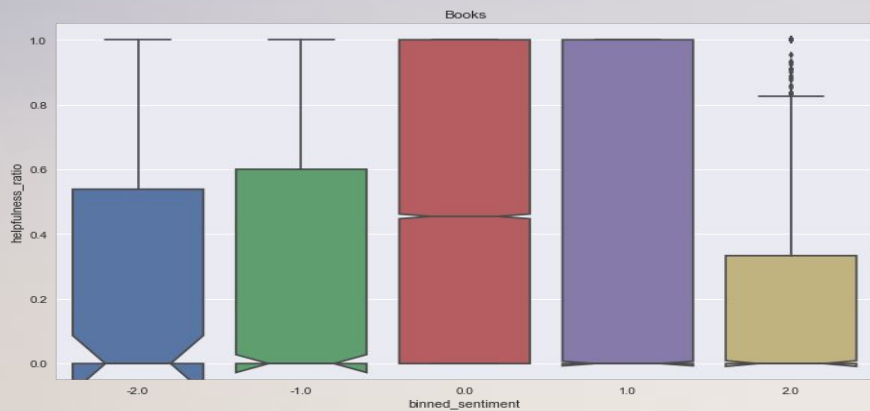
Conclusion

After performing statistical tests, we can point out that there is a high correlation between Helpfulness Ratio and Sentiment Scores for each categories.

Also there is significant difference in helpfulness ratio score between each groups.

What is the Relation between Price and Reviews ?

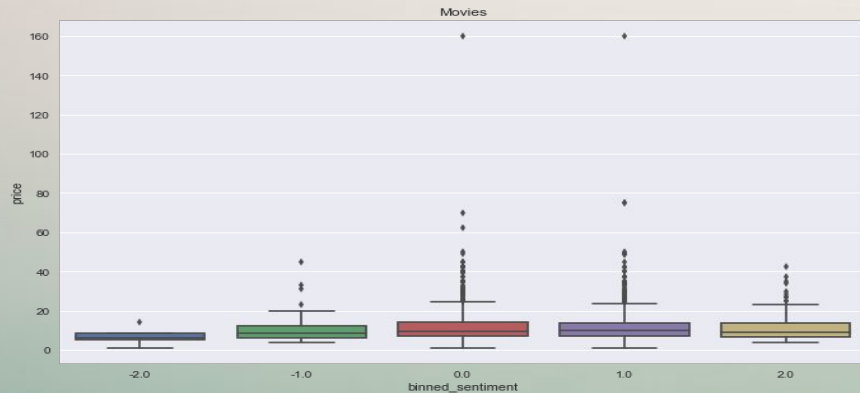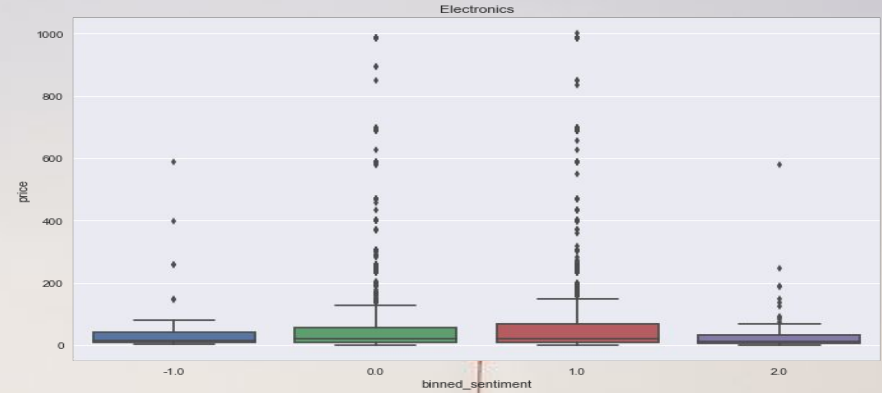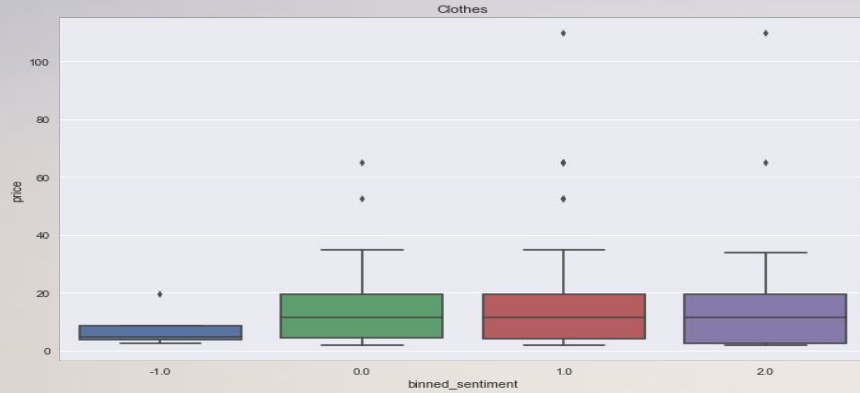# Relation between price and reviews

Conclusion

After performing statistical tests, we can point out that there is a very low correlation between Price of product and Sentiment Scores for each categories.
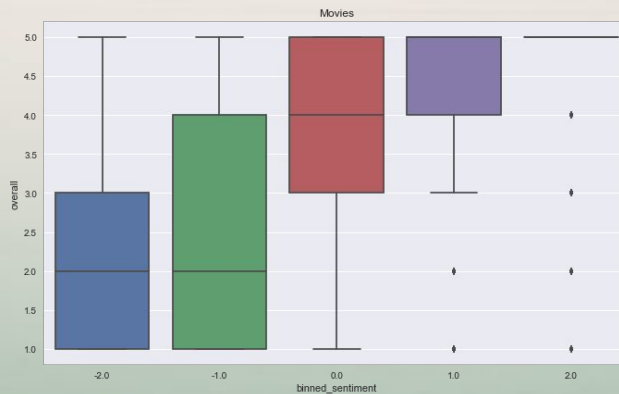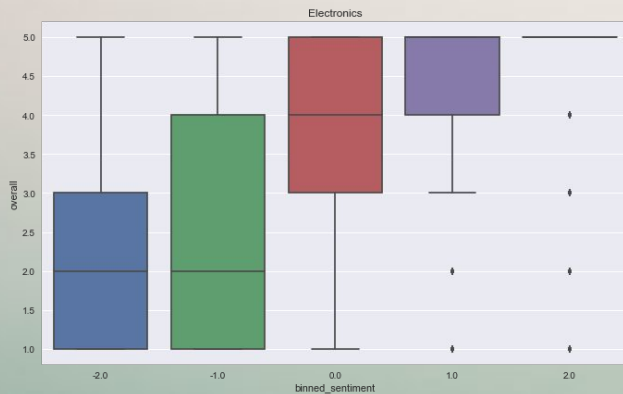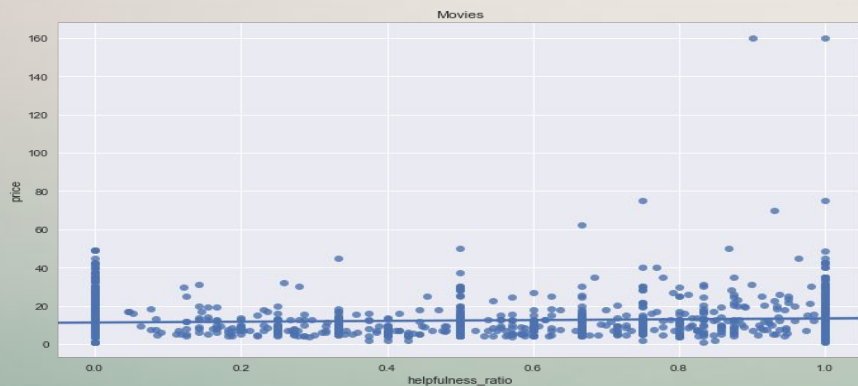
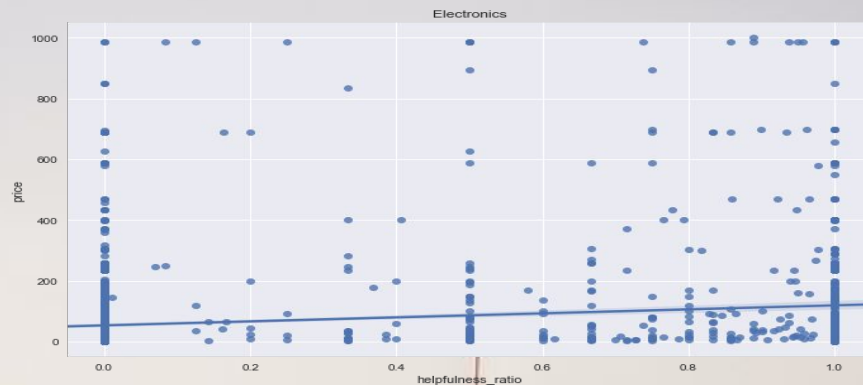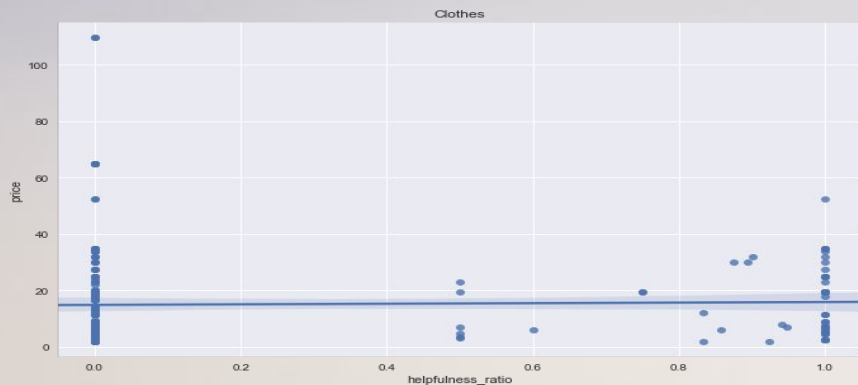Additional Relationships and insights ?

Relation between price and reviews
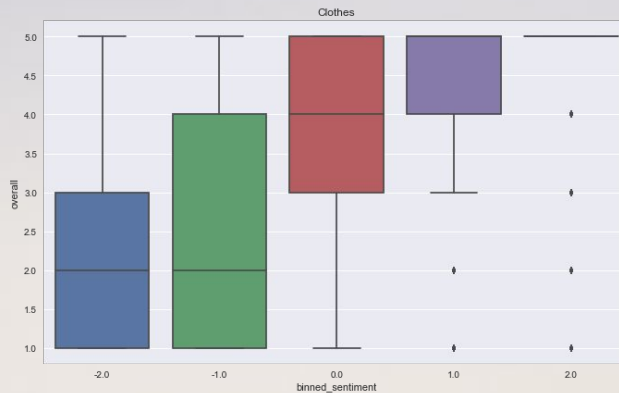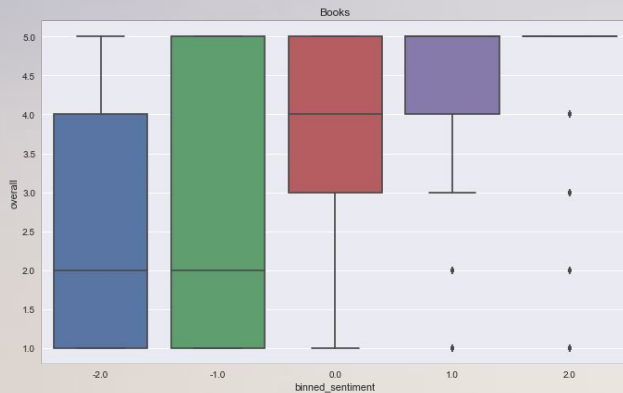
After performing statistical tests we find that there is high correlation between sentiment and overall rating
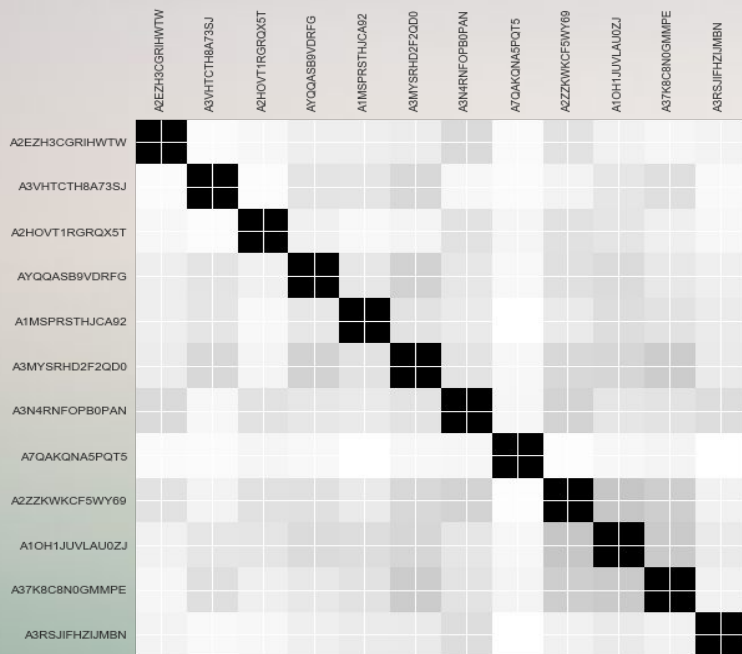
Relation between price and helpfulness ratio

There is a high correlation between price and helpfulness ratio.

Potential Business Plans

User Similarity based on Reviewes

Finds similar users based on similar reviewed products.


```python
s pd.set_option('display.max_colwidth', -1)
metadata_electronics.loc[metadata_electronics['reviewerID']=='A37K8C8N0GMMPE']['reviewText'].reset_index()
```

	index	reviewText
0	518	I like this cooler with a really big fan that covers alot. Its raised up and steady. I have a HP HDX18 size laptop and have found almost impossible to find one to fit. The extra slot for usb is nice too. The only reason I gave it 4 stars is because I would like more Fan air to really circulate the air. When I play Games on the laptop it gets so hot. I did buy a Mini fan to add during game times and I just love it. I wear headphones so the extra mini fan isnt too loud. the cooler itself so very very quiet

```python
metadata_electronics.loc[metadata_electronics['reviewerID']=='A1OH1JUVLAU0ZJ']['reviewText'].reset_index()
```

	index	reviewText
0	517	Love this fan ! Thinking of buying another one just in case something happens to mine down the road. Have had it for a long time now and it really keeps my computer cool ! I have a 15.6 in Toshiba Laptop and I'm on it from morning to night with the fan going. The only time it's off is when I leave the house for a couple hours or go to bed.

Recommendation Based on Products Bought

Recommendation Based on Products Bought

```
In [148]: pd.set_option('display.max_colwidth', -1)
          metadata_combined_all_electronics.loc[metadata_combined_all_electronics['reviewerID']=='A36VW5CH311KDL']
```

7]	I use a D80 and had previously used an 18-105. I also use a 50 1.8, a Tamron 90 2.8 macro, and a Nikon 80-200 2.8 zoom. The 18-105 kind of put me off the cheaper Nikon zooms, but after reading reviews I purchased the 16-85, and I'm glad I did. As a newer lens, it has all the new optical technology, and the VR is an outstanding	5.0	Great lens	1239926400	04 17, 2009	3387589	{}	http://ecx.images-amazon.com/images/I/516wPz9GtEL._SX300_.jpg	[['Electronics', 'Camera & Photo', 'Lenses', 'Camera Lenses', 'Digital Camera	Nikon 16-85mm f/3.5-5.6G AF-S DX ED VR Nikkor Wide-Angle Telephoto Zoom Lens for Nikon DSLR

```
In [149]:
          metadata_combined_all_electronics.loc[metadata_combined_all_electronics['asin']=='B0013DCOZC']
```

]	This little camera even with its quarks, like slow write SD card times, is amazing. The image quality of the Foveon sensor is great, with the sensor being full scale shooting raw at iso 400 gives almost noise free images, even at 800 with a properly exposed image the noise is not too great. This is a wonderful camera to add to a DSLR collection for those everyday, carry everywhere shots. It's size and handling make it a super street camera. The Dp1 even with it's auto features it is not a beginner or PTBS machine, it does require a bit of thought and understanding to make it work for the photographer. I do recommend getting either the Sigma or a Voigtlander view finder, the lens hood and an extra battery.	4.0	Quarky little Dp1	1213660800	06 17, 2008	3393137	{'Camera & Photo': 14053}	http://ecx.images-amazon.com/images/I/4114oJ1F2PL._SX300_.jpg	[['Electronics' 'Camera & Photo' 'Digital Cameras' 'Digital SLR Cameras']

Business Actionables

Proposals

1. Sentiment analysis helps us to understand and have a descriptive opinionated review about the product. **We can categorize based on different entities which items are marked bad and which are doing good.**

2. Since helpfulness is highly correlated to sentimental scores, we can make users feel more confident about the reviews that have been posted. (Proposal: **A review campaign to provide helpfulness scores for each products bought already by an user**)

3. Since there is high correlation between price and helpfulness ratio, we can take it into a consideration as a confidence parameter or click to buy option. **The better this score, the higher we can sell the item**.

4. User similarity based on reviews can help you identify and **segment different customers** on **specific products**.
 We can see if customers are happy or angry with product A and
 Improve the customer service relationship management, This can tackle churn

5. Finally, recommendation based on products can be proposed. In order to do this, we can see Which products are having good helpfulness scores or positive ratings and contextually propose Similar items for the users.