

NOTE: This was originally presented as the culmination and final project for the class MGMT 290 at Purdue University in April 2021 by Haris Hasan, James Said, and Simran Suri.

The analysis work presented in slides 5 through 10 was done by Haris Hasan

Company and Purpose of Project

- CooperVision is one of the world's leading contact lens companies, serving eye care professionals and lens wearers in over 130 countries.
- Motto: allow a person to "Live Brightly"
- CooperVision wants to know if there is a connection between different ratings/categories and their sales outcomes
- We think this analysis will help CooperVision to develop solutions and recognize insights about specific keywords/phrases or topics.
- Manually analyzing thousands of comments will help them use a software package to analyze thousands of more comments

Goal: Carry out data analysis of sales data to derive insights

Project Process

- Started by manually going through 800 comments over about 8 weeks, where each comment was rated on a scale of 1-5 in 5 different categories (with one of the categories just being a confidence rating).
- Then, we used Microsoft Azure to send our comments through to look at sentiment analysis and key phrases, and compare the results with what we found in our manual analysis.
- Azure's analysis tended to have more positive and negative sentiments, whereas in our manual analysis we gave more mixed sentiments. Also, we found that Azure identified more key phrases that we did not identify in our analysis, but some of these words may or may not be useful depending on the context that they are used in the comment.
- Finally, we used the sales data to determine the correlation between the sales and dimension scores, and found the correlation coefficient for each of the five categories to reach our conclusions.

Deriving Insights from Sales and Dimension Score Correlation

Task: Seeking connections between the ratings and Sales data by assessing MonthPrior, MonthOf, and MonthAfter separately

Correlation Coefficient: measure of the strength of a linear relationship between two variables

Independent variable	Dependant Variable	Correlation Coefficient
MonthPrior	Account Penetration	0.08
	Account Volatility	0.01
	Account Viability	0.03
	Account Reliance	0.03
	Confidence Rating	0.01

MonthPrior: Total Revenue of the Month Prior to the Observations

Account Penetration has the highest correlation to the sales of the month prior. Perhaps the state of the total revenue in the time leading up to the interaction determines the willingness of higher representatives to be in contact

The other scores may have little correlation because the total revenue gives little insight into dimensions eg. for the volatility, there must be something to compare it to.

Independent variable	Dependant Variable	Correlation Coefficient
MonthOf	Account Penetration	0.07
	Account Volatility	0.01
	Account Viability	0.04
	Account Reliance	0.02
	Confidence Rating	0.03

MonthOf: Total Revenue of the month where the interactions occur

Account Penetration shows another high correlation.

CooperVision can use this to realize that the level of representatives that are in contact offer great insight into their current standing with Total Revenue

Independent variable	Dependant Variable	Correlation Coefficient
MonthAfter	Account Penetration	0.08
	Account Volatility	0
	Account Viability	0.02
	Account Reliance	0.03
	Confidence Rating	0.03

MonthAfter: Total Revenue of the Month After the Observations

Account Penetration once again displays the highest correlation.

CooperVision can know that they should focus on accounts with comments that show high account penetration because the data shows that leads to higher sales

Independent variable	Dependant Variable	Correlation Coefficient
MonthPrior Control	Account Penetration	0.08
	Account Volatility	0.01
	Account Viability	0.03
	Account Reliance	0.03
	Confidence Rating	0.01

Account Penetration has a high correlation with the Total Revenue at any point

MonthOf	Account Penetration	0.07
	Account Volatility	0.01
	Account Viability	0.04
	Account Reliance	0.02
	Confidence Rating	0.03

Account Volatility has a very low correlation with the Total Revenue at any point

MonthAfter Predictive Power	Account Penetration	0.08
	Account Volatility	0
	Account Viability	0.02
	Account Reliance	0.03
	Confidence Rating	0.03

The others vary in the level of correlation and it may be better to judge them relative to a control

Dimension	MonthPrior	MonthOf	MonthAfter
Penetration	0	-1	0
Volatility	0	0	-1
Viability	0	1	-1
Reliance	0	-1	0
Confidence	0	2	2

Key:

-1	Value of the Control Correlation Coefficient - 0.01
0	Value of the Control Correlation Coefficient
1	Value of the Control Correlation Coefficient +0.01
2	Value of the Control Correlation Coefficient +0.02

Positive indicates a greater correlation
Negative indicates a lower correlation

Key Takeaways:

- It is best to consider Account Penetration with respect to the MonthAfter and consider its predictive power and target specific accounts
- Account Viability has an increased correlation in the MonthOf. CooperVision can use this to best identify opportunities to move business into an account by giving greater weightage to their MonthOf Sales specifically.
- Confidence Scores showed an Increased Correlation in the MonthPrior and MonthAfter Sales which is interesting to note but offers little insight to CooperVision as it was determined by us

Additional Thoughts

- Why did the other dimensions have such low correlations?
 - a. Non-Linear relationship between scores and Sales
 - b. Sales could be a cause for the dimensions and not necessarily just a correlation. For example, a change in Sales would be the cause for volatility but the Sales at a particular instance cannot provide correlation (as seen in the data analysis)
- The MonthOf revenue may be mostly due to work done in previous months and account penetration correlated to MonthOf revenue may not mean much. This is seen in its decreased correlation with the MonthOf Sales.
- Why did none of the other dimensions show any relevant correlation?
 - a. These dimensions may not be relevant. Perhaps they were poorly made.
 - b. Perhaps a different dimension may offer more insight.
 - i. Tone of the comment? (Upbeat may indicate promise in Sales)
 - ii. Level of Urgency? (Urgency to restock may indicate more sales)



Conclusion and the Impact of Key Phrases

We will consider Account Penetration as the most important Dimension Score because it demonstrated the greatest Correlation Coefficient in the MonthPrior, MonthOf, and MonthAfter.

Account Penetration: The representative's level of connection to the decision maker.

High Penetration Terms: "Met with Dr, met with doc", "Met with office manager", "met with OM", "Interested", etc.

Accounts with comments that have terms like these should be focused upon by CooperVision because the data shows that it leads to greater Total Sales in the past, present and future.