Blackwell Electronics'

Predicting Customer Preferences

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Points to review

- Customer Brand Preferences
- Predicting products sales
- Market basket analysis

Process to transform Data into Information.

first

Analyze Data

second

Analyze preferences customers

third

Determine Profitability

last

Final Decisions

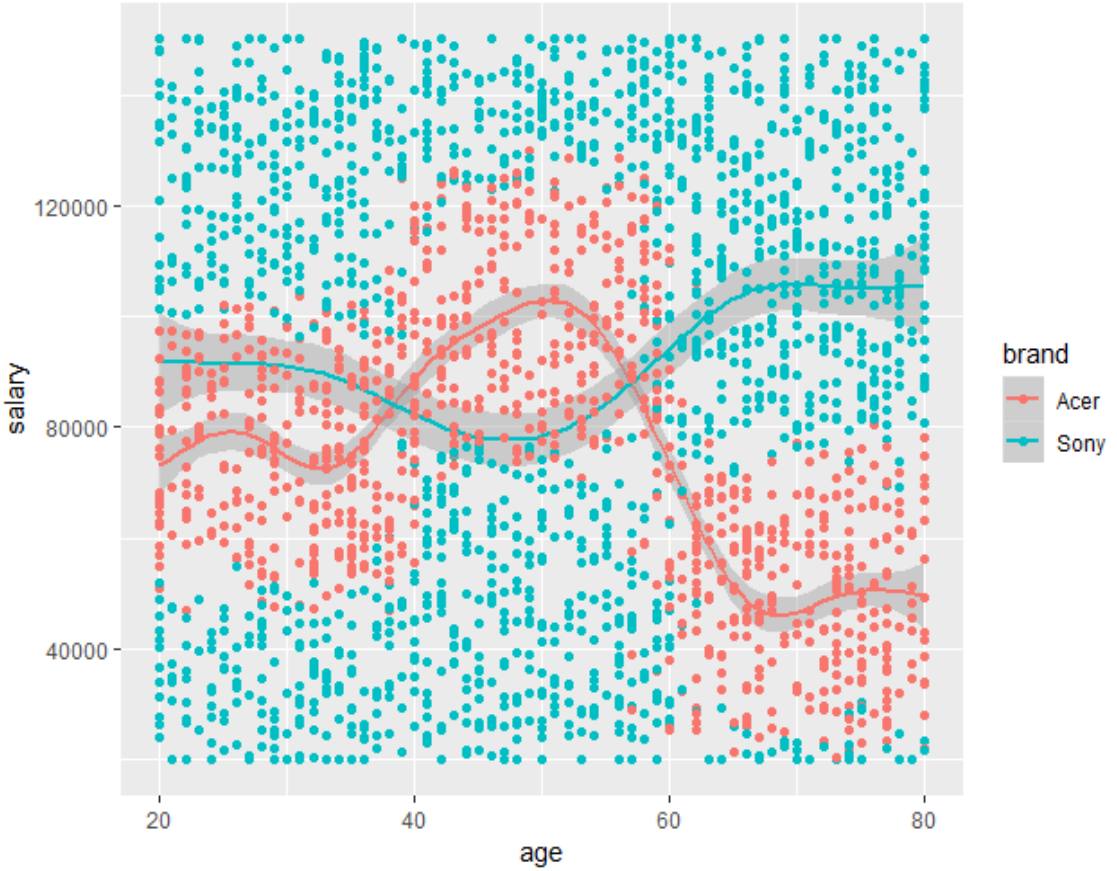
Customer brand preferences

- The data that was given to us for this analysis was performed with stratified sampling,

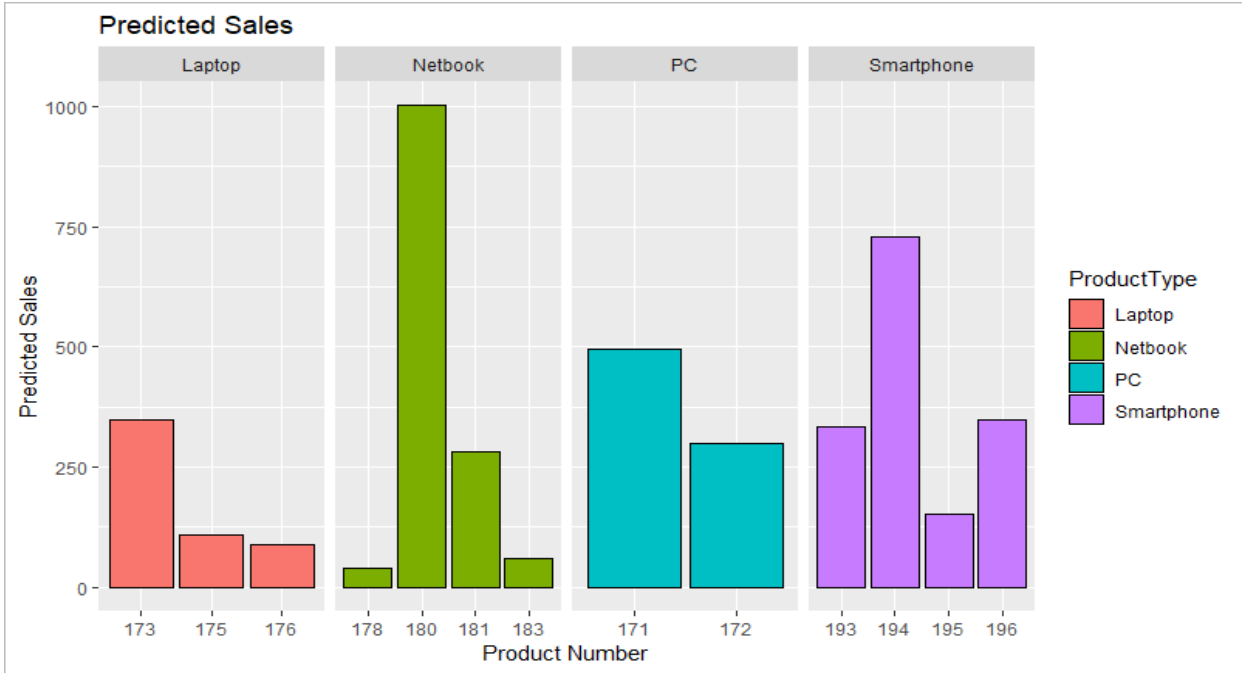
- The strata or groups are formed based on members' shared attributes, for example, the salary.

Customer brand preferences

- The elderly customers with a low salary tend to choose Acer over Sony as their preferred brand.
- Regardless the age, all these customers with a salary higher than 120k USD per year tend to chose Sony Over Acer.



Predicting products sales

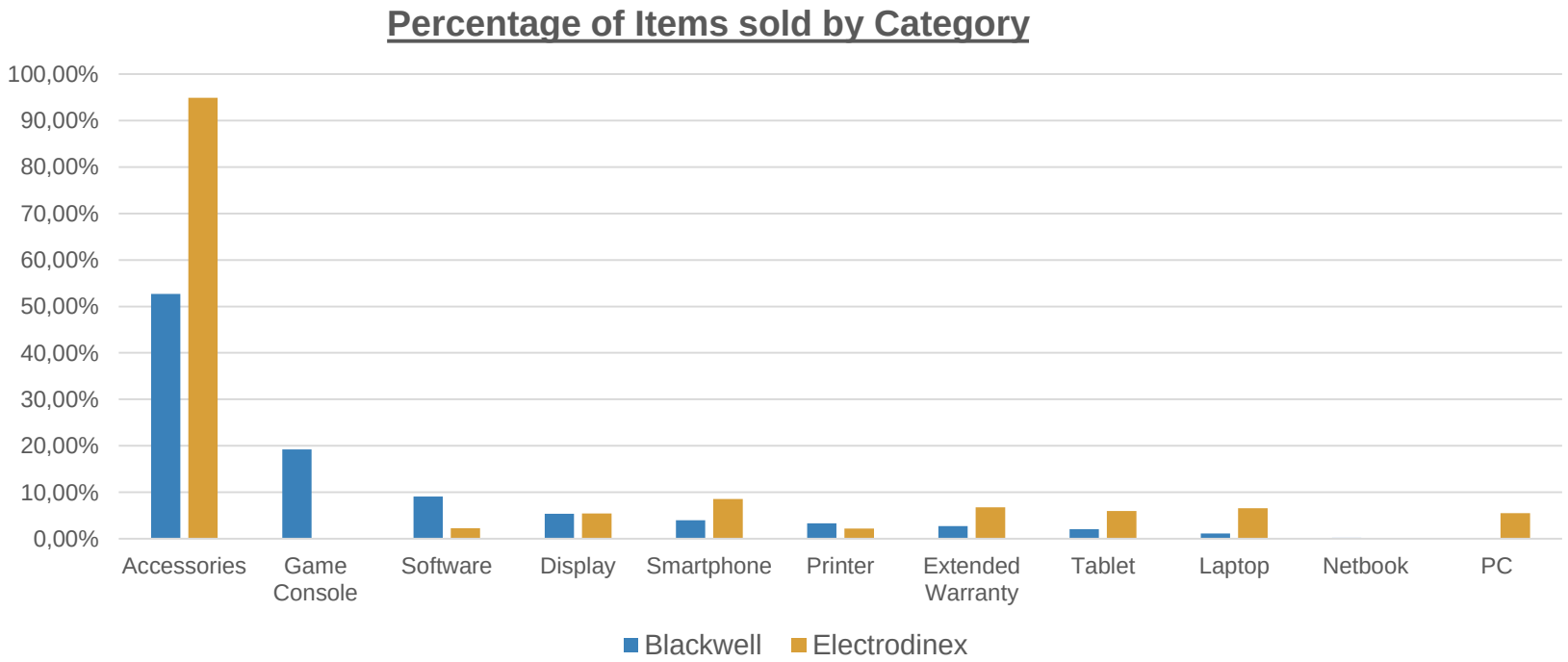


Market basket analysis

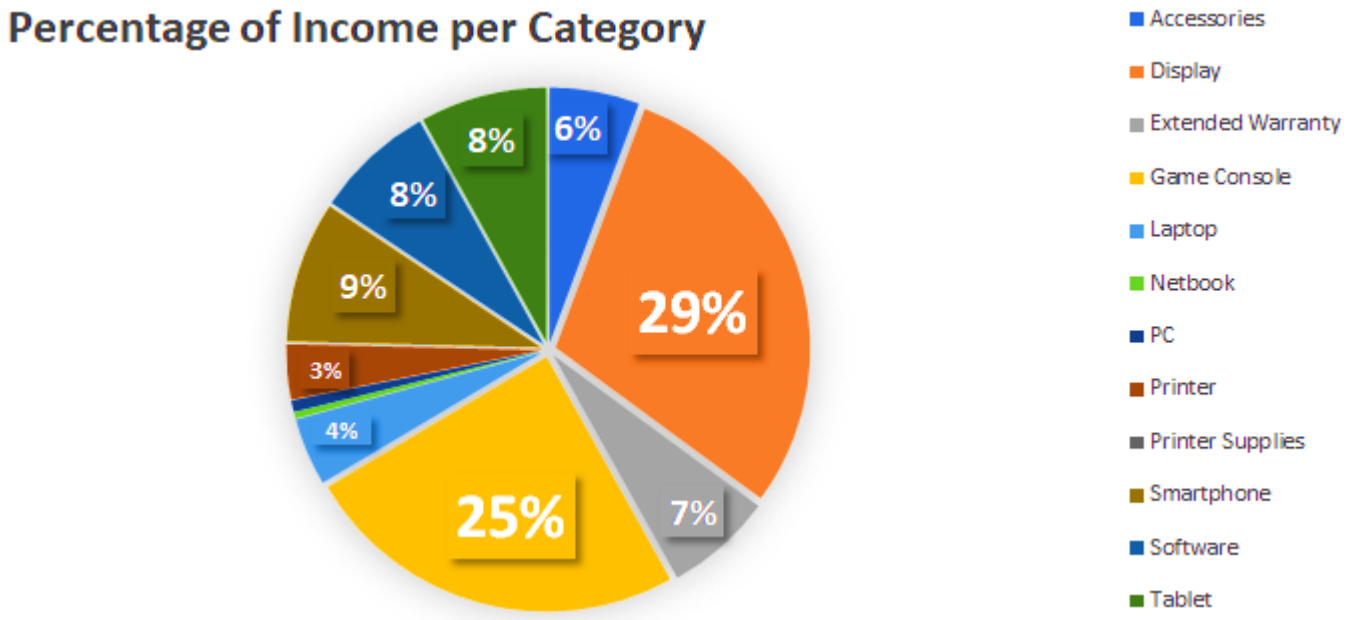
Electronidex

Blackwell Electronics

Blackwell - Electronidex

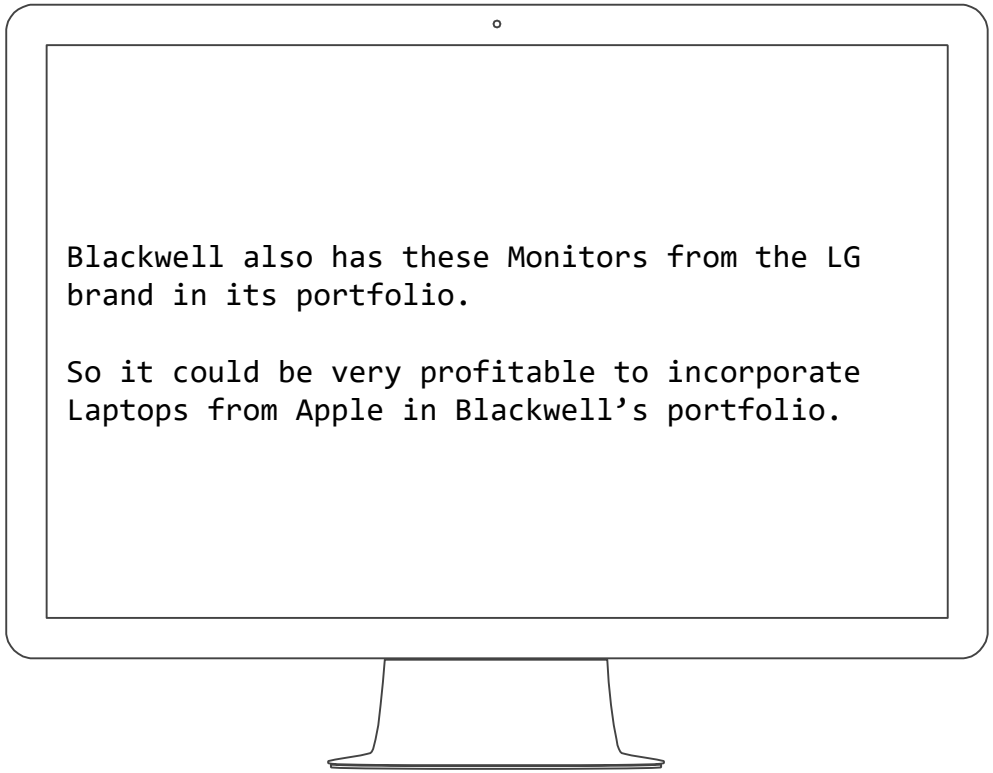


Blackwell - Electronidex



Apple Laptops

A very high percentage of Electronidex's customers tend to purchase Monitors from the LG brand when they purchase brand new or second hand Apple Laptops.



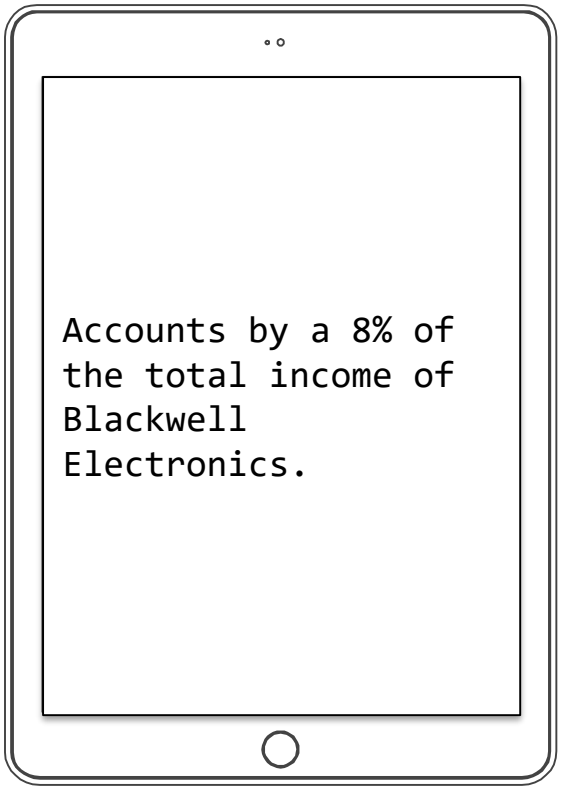
Apple
Warranty

- The Smartphone category represents around the 10% of Blackwell's income, however the Apple Smartphones only accounts for less than the 0,5 % out of this 10%

Apple Tablets

It was also detected that those customers who buy Apple Tablets also tend to buy some accessories during the same transaction.

- The acquisition of Apple Tablets to be offered to Blackwell's clients would boost the sales of a category that provides a high margin of profit .



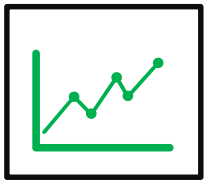
Total percentage for each order's state.

Conclusions and Recommendations

Increase the details in the Blackwell's Data-warehouse (subcategories)

Know Electronidex's margin of profit for each product.

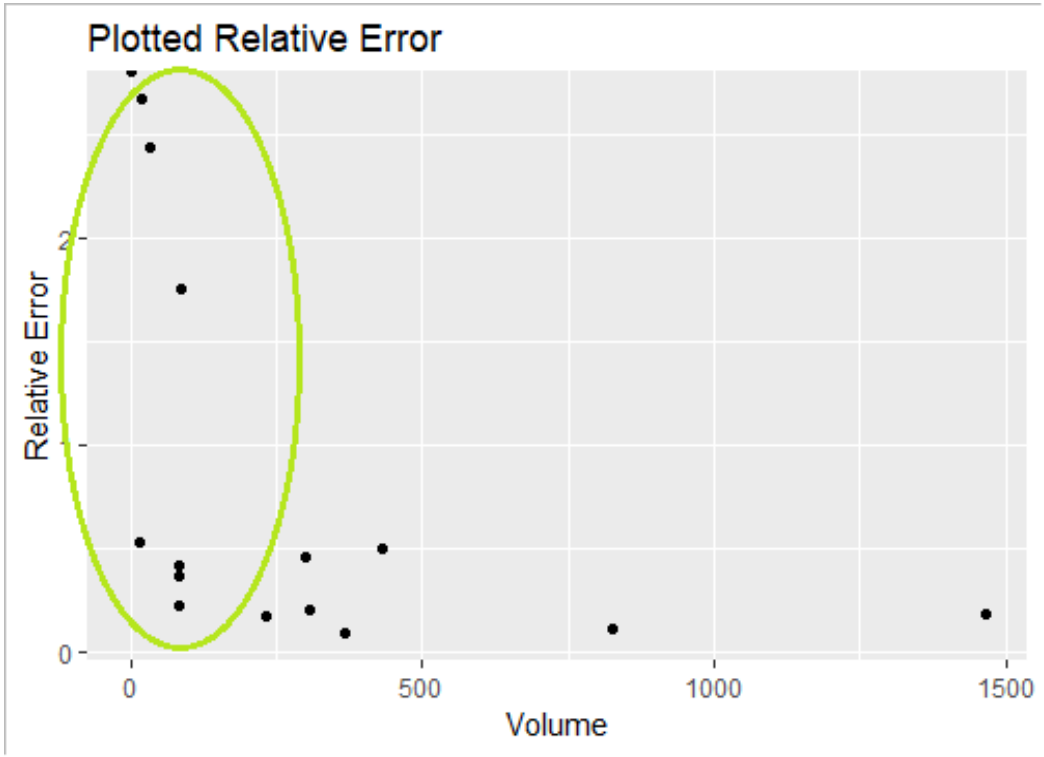
Work with a bigger sample of Completed Transactions (20%)



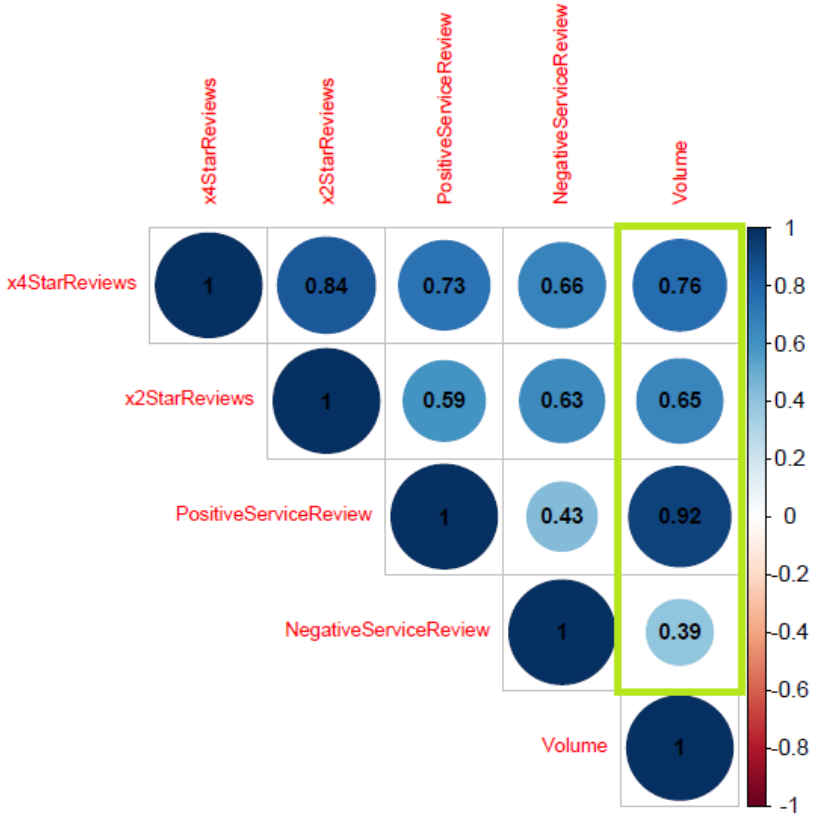
More sales on high profitable products -> Increase on NET INCOME

Thanks!

Product	Total Income
1. Apple MacBook Pro 15 "Core i7 Touch Bar 29Ghz | RAM 16GB | 512GB PCIe SSD | 560 4GB Radeon Pro Space Gray.	79.019 $
2. Apple MacBook Pro 15 "Core i7 Touch Bar 28GHz | RAM 16GB | 256GB PCIe SSD | 555 2GB Radeon Pro Space Gray.	69.214 $
3. Apple iMac 27 "Core i7 Retina 5K 42GHz | 64GB | 1TB SSD.	45.654 $
4. Apple Macbook Pro 13 "Core i7 Touch Bar 35GHz | 16GB | 512GB SSD Space Gray.	42.793 $
5. Apple MacBook Air 13 "Core i5 18GHz | 8GB RAM | 256GB SSD.	41.793 $
6. Apple MacBook Pro 13 "Core i5 3.1GHz Touch Bar | 16GB | 512GB SSD Space Gray.	37.533 $
7. Apple iPhone 64GB Space Gray X.	37.427 $
8. Apple MacBook Pro 13 "Core i5 Touch Bar 31GHz | 16GB | 256GB SSD Space Gray.	33.640 $
9. Apple Macbook Pro 15 "Core i7 Touch Bar 31GHz | 16GB | 1TB SSD | 560 4GB Radeon Pro Space Gray.	33.519 $
10. Samsung 850 EVO SSD Disk 500GB.	32.814 $

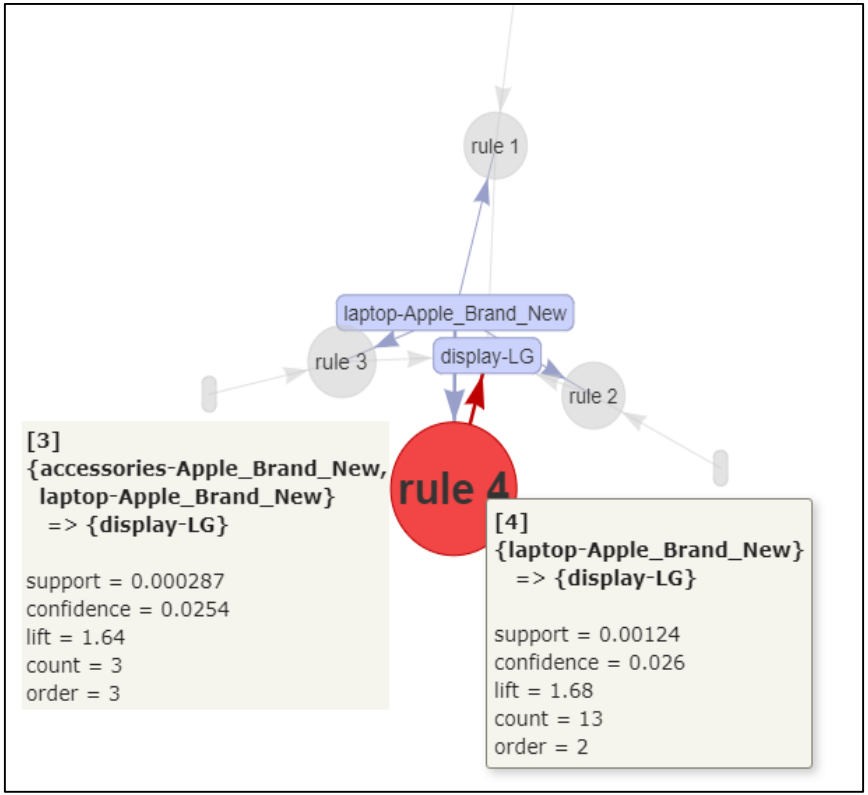


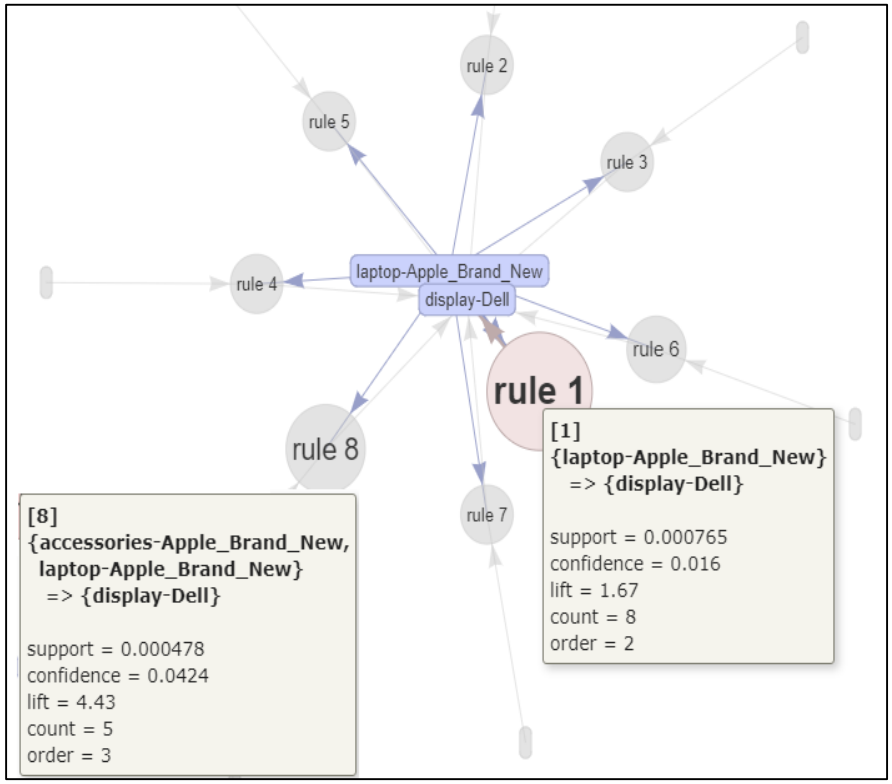
As can be seen in the chart above, as the sales volume increases, the relative errors tend to be lower. which means that the model created performs better with product types which present a very high volume. However, as can be seen in the chart, most of the products analysed (76 % of the product types studied) are located within the green circle zone, which is a zone where the model created perform poorly.


x4StarReviews
x2StarReviews
PositiveServiceReview
NegativeServiceReview
Volume
x4StarReviews
x2StarReviews
PositiveServiceReview
NegativeServiceReview
Volume
1
0.84
0.73
0.66
0.76
1
0.59
0.63
0.65
1
0.43
0.92
1
0.39
1
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1

	svmRadial	svmLinear	knn	rf	lm
RMSE	195.1220728	114.4883250	249.5535854	148.867246	163.1889292
Rsquared	0.8208938	0.9456245	0.5832999	0.895738	0.9324662
MAE	117.6445339	87.0412738	195.2533333	62.610951	119.2202335

As can be seen in the results above, the SMV-Linear and the Random Forest algorithms were the best performers. The SMV-Linear was chosen to make the sales prediction per category even though it had worst Mean Absolute Error than the Random Forest (meaning that the average error on the predictions was higher) because we considered that the gain on how well the model explained the data (R-squared) was worth the trade-off as we got an acceptable level of confidence and a tolerable level of error.

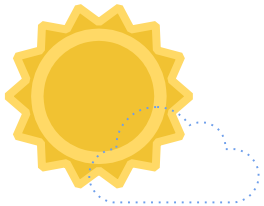

rule 1
laptop-Apple_Brand_New
rule 3
display-LG
rule 2
rule 4
[3]
{accessories-Apple_Brand_New,
laptop-Apple_Brand_New}
=> {display-LG}
support = 0.000287
confidence = 0.0254
lift = 1.64
count = 3
order = 3
[4]
{laptop-Apple_Brand_New}
=> {display-LG}
support = 0.00124
confidence = 0.026
lift = 1.68
count = 13
order = 2


rule 2
rule 5
rule 3
rule 4
laptop-Apple_Brand_New
display-Dell
rule 6
rule 1
rule 8
rule 7
[1]
{laptop-Apple_Brand_New}
=> {display-Dell}
support = 0.000765
confidence = 0.016
lift = 1.67
count = 8
order = 2
[8]
{accessories-Apple_Brand_New,
laptop-Apple_Brand_New}
=> {display-Dell}
support = 0.000478
confidence = 0.0424
lift = 4.43
count = 5
order = 3

SlidesCarnival icons are editable shapes.

This means that you can:

- Resize them without losing quality.
- Change fill color and opacity.
- Change line color, width and style.

Isn't that nice? :)

Examples: