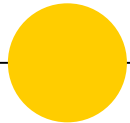


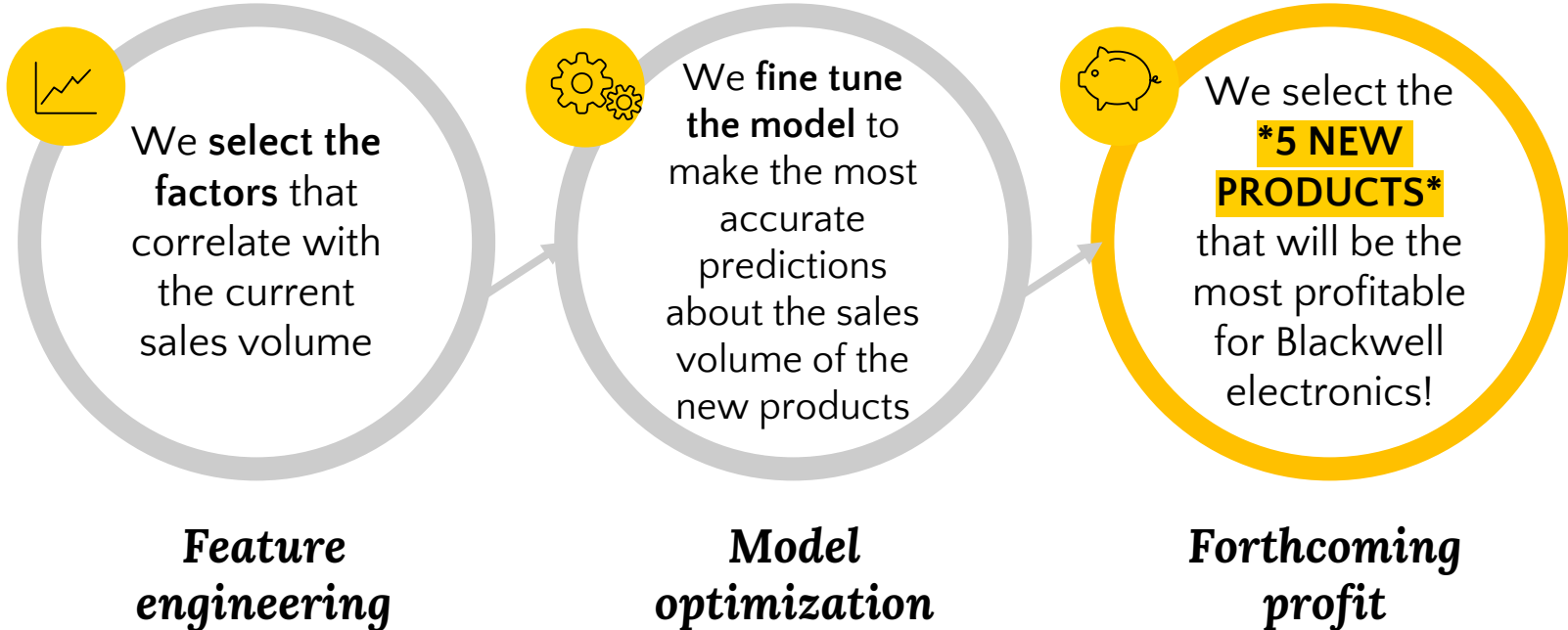
Product Profitability Report



Aurore Paligot for Blackwell electronics
26-09-2018

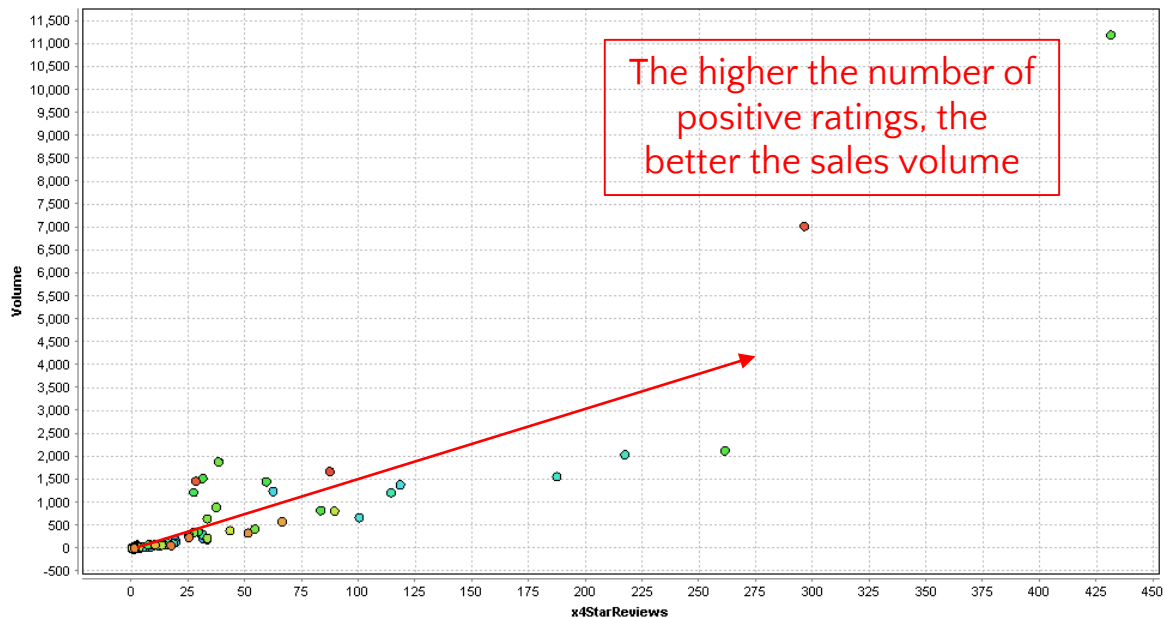


From what we now know about the online sales at Blackwell electronics, we can predict which new products will **sell the best** and be **the most profitable** for the society!





Feature engineering: selection of predictors



The best predictor of the current sales volume is the **4 stars rating!**



Feature engineering: correlation matrix

- Relevant predictors ($>0.85 - <0.95$)
- Collinearity (>0.85)
- Irrelevant predictors ($<0.85 - >0.95$)

Attribut...	Price	x5StarR...	x4StarR...	x3StarR...	x2StarR...	x1StarR...	Positive...	Negativ...	Recom...	Shippin...	Product...	Product...	Product...	ProfitM...	Volume
Price	1	-0.142	-0.165	-0.151	-0.111	-0.084	-0.142	-0.061	0.069	0.417	0.011	0.382	0.294	0.100	-0.142
x5StarRe...	-0.142	1	0.879	0.763	0.487	0.255	0.622	0.309	0.170	-0.188	0.066	-0.143	-0.160	-0.013	1
x4StarRe...	-0.165	0.879	1	0.937	0.679	0.445	0.483	0.533	0.071	-0.195	-0.032	-0.001	-0.086	-0.147	0.879
x3StarRe...	-0.151	0.763	0.937	1	0.861	0.679	0.419	0.684	-0.057	-0.172	-0.049	-0.019	-0.068	-0.129	0.763
x2StarRe...	-0.111	0.487	0.679	0.861	1	0.952	0.309	0.865	-0.198	-0.129	-0.043	-0.066	-0.014	-0.090	0.487
x1StarRe...	-0.084	0.255	0.445	0.679	0.952	1	0.200	0.885	-0.246	-0.096	-0.035	-0.101	0.003	-0.031	0.255
Positive...	-0.142	0.622	0.483	0.419	0.309	0.200	1	0.266	0.233	-0.271	-0.051	-0.339	-0.314	0.424	0.622
Negative...	-0.061	0.309	0.533	0.684	0.865	0.885	0.266	1	-0.188	-0.112	-0.067	-0.097	-0.021	0.042	0.309
Recom...	0.069	0.170	0.071	-0.057	-0.198	-0.246	0.233	-0.188	1	-0.126	0.090	0.011	-0.044	0.096	0.170
Shipping...	0.417	-0.188	-0.195	-0.172	-0.129	-0.096	-0.271	-0.112	-0.126	1	0.066	0.692	0.700	-0.079	-0.188
Product...	0.011	0.066	-0.032	-0.049	-0.043	-0.035	-0.051	-0.067	0.090	0.066	1	-0.006	0.025	-0.207	0.066
Product...	0.382	-0.143	-0.001	-0.019	-0.066	-0.101	-0.339	-0.097	0.011	0.692	-0.006	1	0.567	-0.291	-0.143
Product...	0.294	-0.160	-0.086	-0.068	-0.014	0.003	-0.314	-0.021	-0.044	0.700	0.025	0.567	1	-0.288	-0.160
ProfitMar...	0.100	-0.013	-0.147	-0.129	-0.090	-0.031	0.424	0.042	0.096	-0.079	-0.207	-0.291	-0.288	1	-0.013
Volume	-0.142	1	0.879	0.763	0.487	0.255	0.622	0.309	0.170	-0.188	0.066	-0.143	-0.160	-0.013	1

<0.85 >0.95 $>0.85 - <0.95$ <0.85



Model optimization

The best model to predict the sales volume runs with a **KNN classifier**.

We runned several tests with:

- Linear regression
- KNN
- SVM
- Gradient boosted trees

Model settings in Rapid Miner:

- k: 4
- weighted vote:
- measure types: NumericalMeasures
- numerical measure: EuclideanDistance

Model settings in Rapid Miner

RSME	R ²
709.827	0.822

Model metrics

Profit

Products

223.198 \$

Product 187 – Price: 199 \$
PSV: 5.608 – PM: 0,20



174.575 \$

Product 171 – Price: 699 \$
PSV: 999 – PM: 0,25



58.811 \$

Product 186 – Price: 629 \$
PSV: 935 – PM: 0,10



30.527 \$

Product 180 – Price: 329 \$
PSV: 1.031 – PM: 0,09



22.634 \$

Product 199 – Price: 249 \$
PSV: 1.006 – PM: 0,09



PSV / Predicted Sales Volume
PM / Profit Margins

509.747,155 \$

Whoa! That's a big number, aren't you happy?

