Case Study:
Fortune 500 Specialty Retailer

Using advanced analytics to make informed pricing decisions and drive profitable sales

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CHALLENGE

How can a company measure the impact of price changes on the sales of all product lines?

In a competitive, price-sensitive market, the best way to drive increased sales and increase market share is often to reduce prices.

Our client conducted an experiment to analyze the impact of reducing the price of a product line on the sales of that product line. However, sales of individual items often have complex relationships: the sale of one item can directly (or indirectly) lead to the sale of another.

Understanding the relationships between sales of different items and product lines can reveal the true impact of price reductions.

Our client needed to know which items are frequently purchased together (a "market basket") to measure the true increase in sales that are driven by price reductions.

APPROACH

Collaboration and iteration

The Axis Data Science Team worked closely with the client's pricing subject matter experts and business leaders to identify specific items and product lines which could drive the most value.

Using the client's data, Axis performed several market basket analyses across SKUs, product lines, and customer types; after each analysis, the Axis team reviewed their findings with the business and used their feedback to drill down into even more granular, actionable analysis.

After creating reports on existing pricing strategies, the Axis team created a dashboard that permitted business users to review market basket analysis themselves, allowing them to plan more intelligent, targeted pricing and A/B testing.

PERSONA

Director of Pricing

Business Goals:

1. Assess impact of pricing experiment by understanding impact on sales of all SKUs
2. Identify frequently-purchased combinations of items which may be bundled to increase sales
3. Identify differences in item combinations across distinct customer types

SOLUTION

A visual dashboard and Excel data allowing the business to analyze and explore sales relationships in the current pricing experiment and plan future experiments

Market Basket Analysis

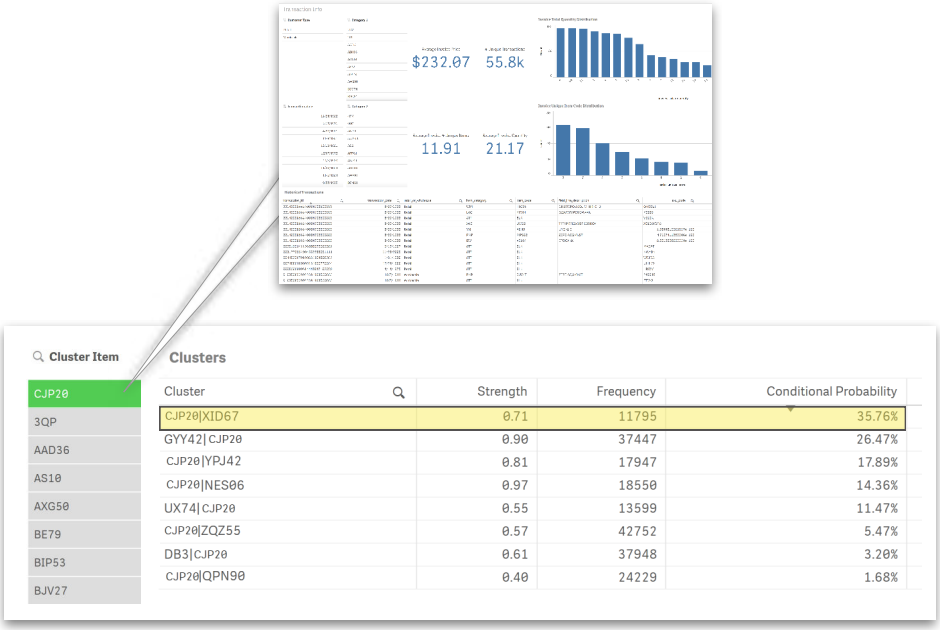
Cluster	Anchor Item	Associated Item	Cluster_Frequency	Support	Confidence	Lift	Assoc. Item Frequency	Anchor Frequency
HTZ|ZUQ	HTZ	ZUQ	44682	0.089364	0.6554	7.13	45986	68174
MVR|YLY	MVR	YLY	35805	0.07161	0.5424	3.89	69715	66013
EHF|HTT	EHF	HTT	6386	0.012772	0.1291	1.99	32481	49468
XRR|JVH	XRR	JVH	11315	0.02263	0.5494	5.48	50110	20597
OCX|CNV	OCX	CNV	25291	0.050582	0.6413	6.34	50550	39439
AGI|EVA	AGI	EVA	29819	0.059638	0.5359	8.87	30223	55643
MYN|IFG	MYN	IFG	34636	0.069272	0.5141	4.63	55468	67370
RKJ|TDO	RKJ	TDO	25543	0.051086	0.6860	5.76	59533	37236
BZF|TAW	BZF	TAW	42333	0.084666	0.6773	5.39	62782	62504
YCK|UYE	YCK	UYE	22761	0.045522	0.3697	4.30	42952	61569
DDN|LFL	DDN	LFL	34691	0.069382	0.6332	5.32	59515	54787
LKF|QTX	LKF	QTX	28528	0.057056	0.4692	7.00	33536	60803
OXH|DYL	OXH	DYL	19410	0.03882	0.4253	4.35	48893	45634
BDS|UGC	BDS	UGC	20152	0.040304	0.3063	5.94	25763	65796
YJS|WCT	YJS	WCT	20885	0.04177	0.2907	2.99	48537	71849
ZQJ|RPY	ZQJ	RPY	36581	0.073162	0.7047	6.43	54773	51911
LLU|PWS	LLU	PWS	25610	0.05122	0.4464	5.80	38499	57368
TFE|ZLV	TFE	ZLV	42208	0.084416	0.9875	9.81	50346	42741
DMR|SAQ	DMR	SAQ	26842	0.053684	0.5583	4.46	62558	48078
WYH|HWC	WYH	HWC	33263	0.066526	0.6312	4.77	66153	52696
UYB|ABY	UYB	ABY	25858	0.051716	0.5156	4.12	62635	50148
KLN|RSX	KLN	RSX	6679	0.013358	0.2076	4.56	22781	32170
BKU|MSI	BKU	MSI	47184	0.094368	0.7000	7.34	47689	67404
QXK|XAY	QXK	XAY	23312	0.046624	0.7020	4.95	70946	33206
DCH|YHG	DCH	YHG	40156	0.080312	0.9593	8.42	56962	41861
VTE|OKZ	VTE	OKZ	3481	0.006962	0.0568	8.10	3505	61283
YDT|YEX	YDT	YEX	43037	0.086074	0.8917	6.75	66095	48266
BVC|ISE	BVC	ISE	3859	0.007718	0.0708	0.82	43407	54490
YEI|JWX	YEI	JWX	17030	0.03406	0.2279	2.84	40143	74737
VQG|QPJ	VQG	QPJ	34113	0.068226	0.9530	7.24	65787	35797
VKZ|RFK	VKZ	RFK	6509	0.013018	0.1904	2.97	32086	34187
FWK|ANX	FWK	ANX	7363	0.014726	0.6803	38.84	8757	10823

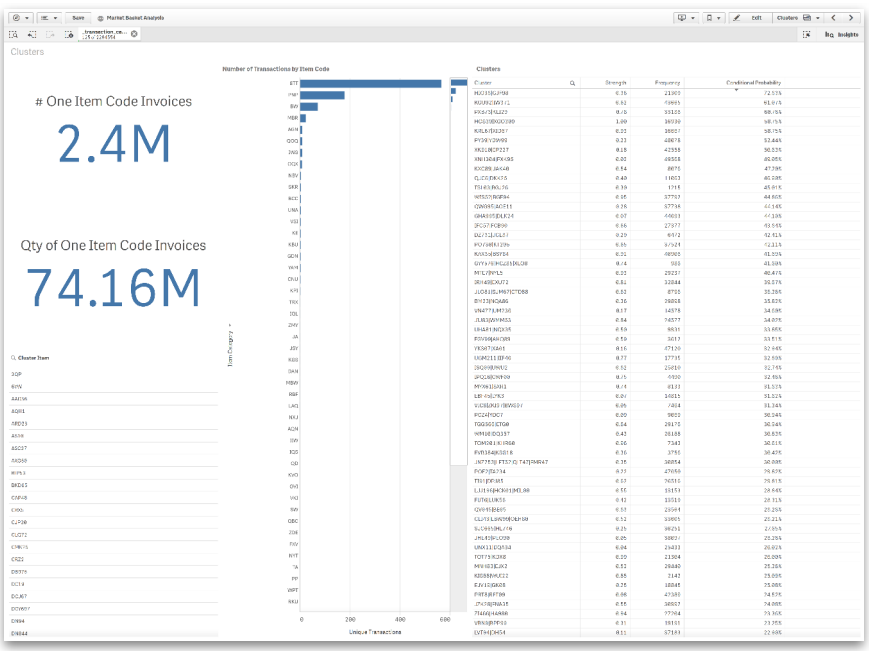
A spreadsheet presents statistics for items purchased together (a “basket”), enabling the business to assess whether targeted price reductions increased sales. For example, here we can see here that 98.75% of the time that Item TFE was purchased, ZLV was also purchased.

Cluster View

Here we show the clusters of frequently-purchased item groups and the directional relationships between them. Users can filter clusters and drill down to easily uncover common patterns.

For example, selecting item CJP20 reveals products frequently bought with it; since XID67 is purchased 35% of the time that CJP20 is purchased, lowering the price of CJP20 may drive sales of XID67.





Transaction View

The Transaction View ties the calculated clusters back to the original invoices, allowing detailed, ad hoc analysis of customer purchasing patterns.

Filtering by customer type allows for even finer-grained analysis. By understanding the individual transactions that contribute to the clusters, the business can proactively identify consumer needs and plan future promotions to maximize revenue.

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