

Proposal for Bezt



Recommendations to improve
Bezt's performance on Amazon

PREPARED BY: TEAM 5

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I pledge on my honor that we have not given or received any unauthorized assistance on this assignment



A close-up photograph of two dogs. On the left, a black dog with large, expressive blue eyes looks directly at the camera. On the right, a light-colored puppy with floppy ears is partially visible, also looking towards the camera. In the foreground, there are two white bowls filled with dog kibble. The black dog's head is positioned over the left bowl, while the puppy's head is over the right bowl.

Agenda

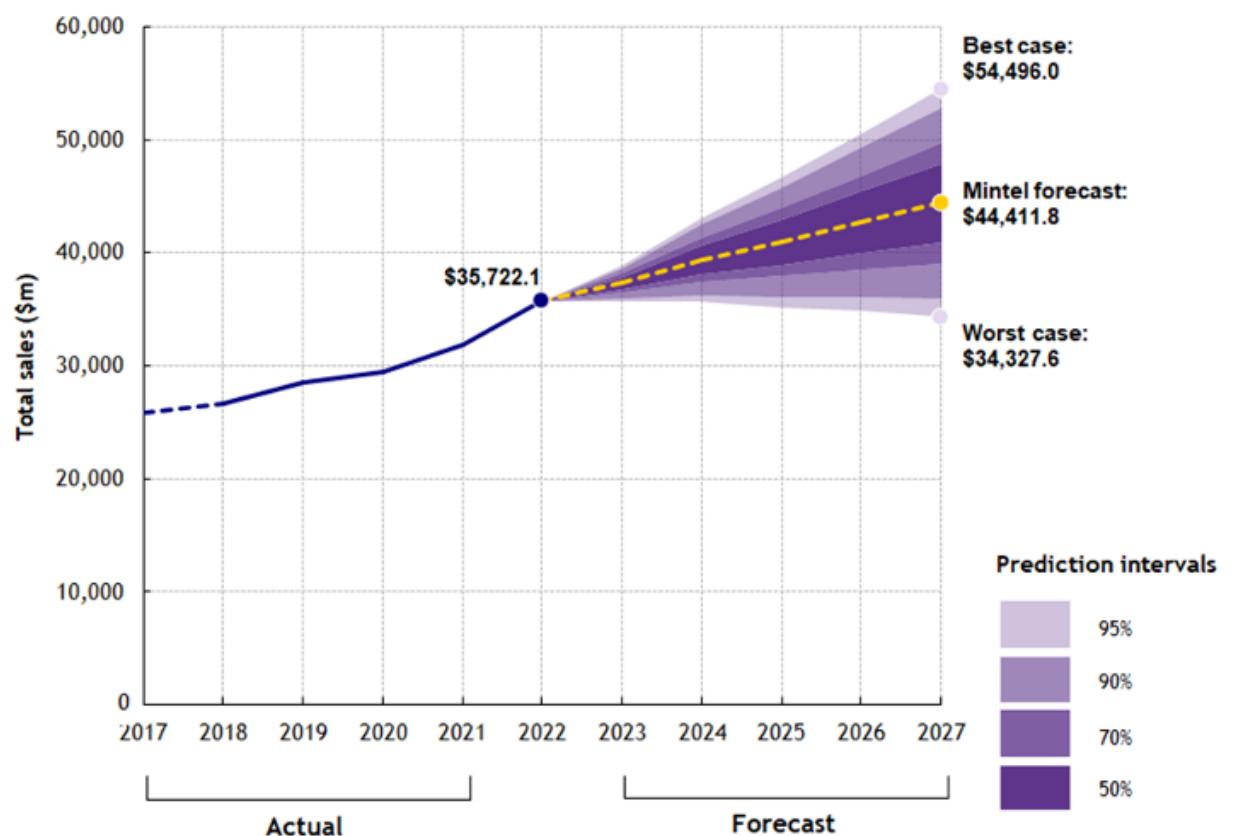
- Pet food Industry
- Industry Analysis
- Brand Analysis
- Consumer Purchase Patterns
- Consumer Analysis
- Effect of Ad Exposure
- Recommendations



Overview: Pet Food Industry

Goal: Bezt is one of the top 2 dog food brands. We aim to study its marketing strategy, brand portfolio, product offerings and target segment to increase revenue and take the number one position in the dog food market.

Total US sales and fan chart forecast of pet food, at current prices, 2017-27



Strong sales from inflation

Supply chain shortages, rising production costs/prices, and global events have led to jump in sales

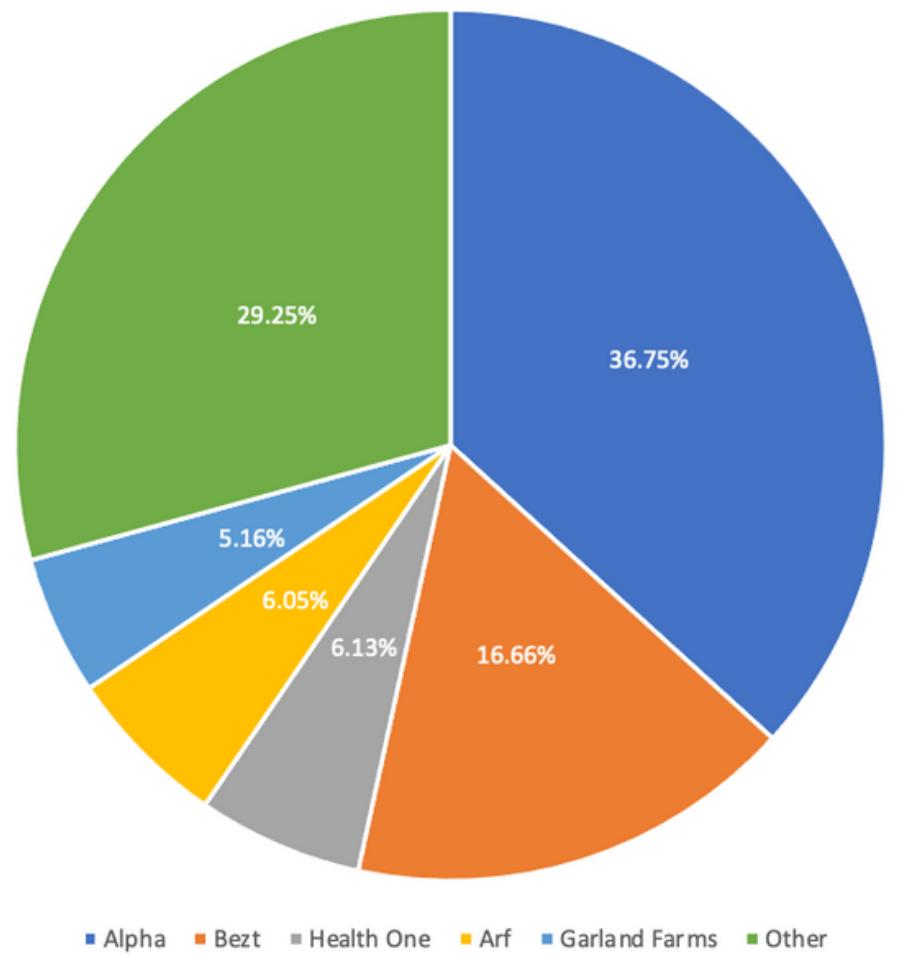
Owners like to pamper

Despite rising costs, owners are opting foods focused on the health and wellness of their pets, called the premiumization of pet food

Both factors potentially lead to a continually growing market

Our Data

- Amazon dog food sales from 1/1/2022–12/31/2022
- 9215 observations with 20 variables describing sales info (ex. sales date, product brand, product name, qty, ad exposure) and customers (ex. age, income, education, Prime membership, gender, marital status) as well as location variables
- 25 brands, 92 distinct products
- 5000 distinct customer IDs



Industry Level: Revenue and Sales

Totals

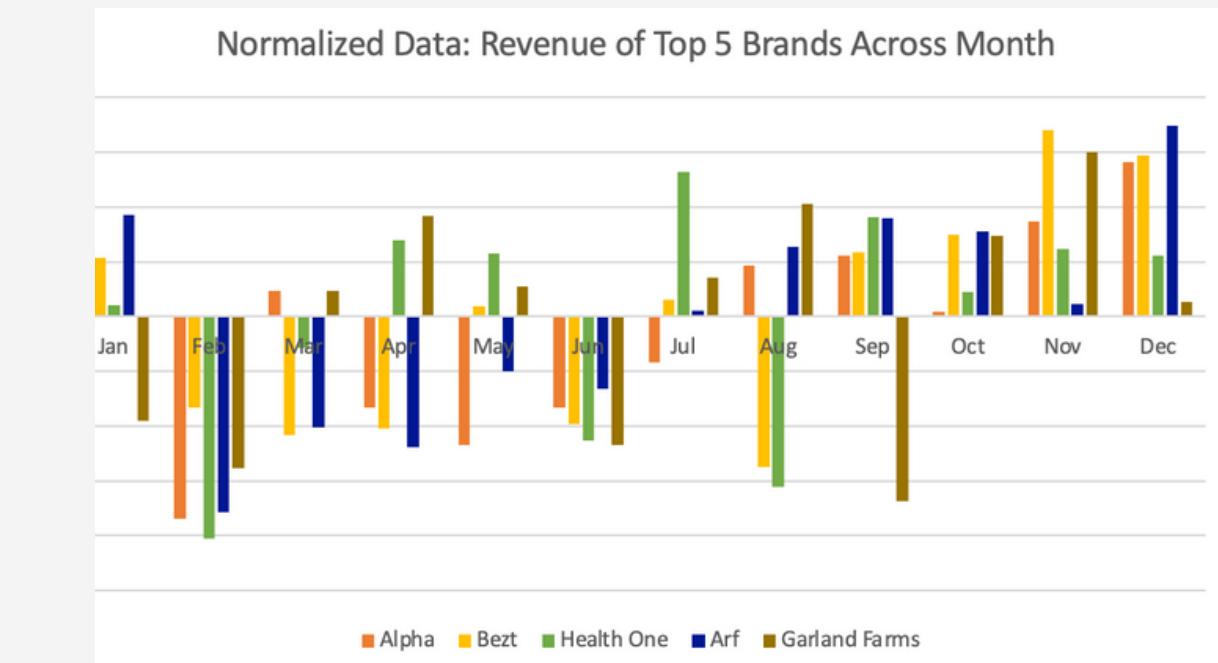
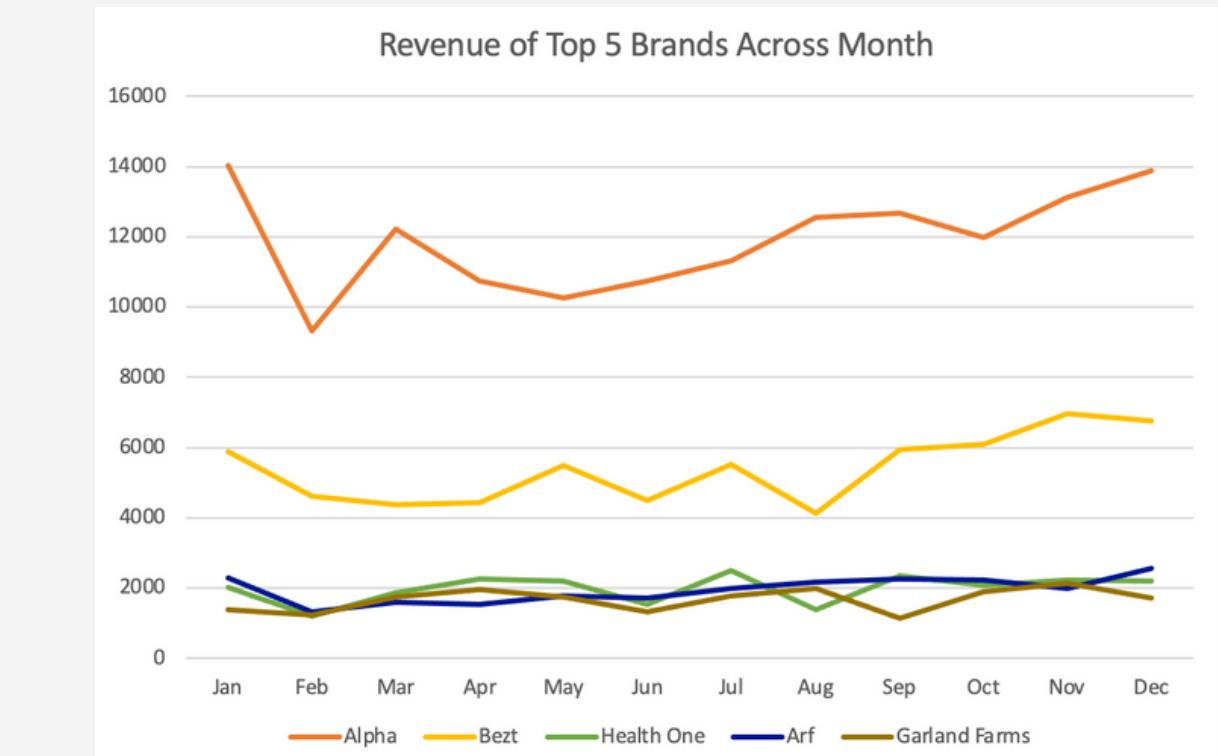
- Industry Yearly Revenue: \$388,613.10

Alpha leads the pack, Bezt follows behind

- Alpha has 36.75% market share
- Bezt has 16.66% market share

Brands saw revenue drops in beginning, up towards year end

- Alpha and Bezt trended high among the top 5
- February was hardest month for all top 5
- All performing above average by end of year



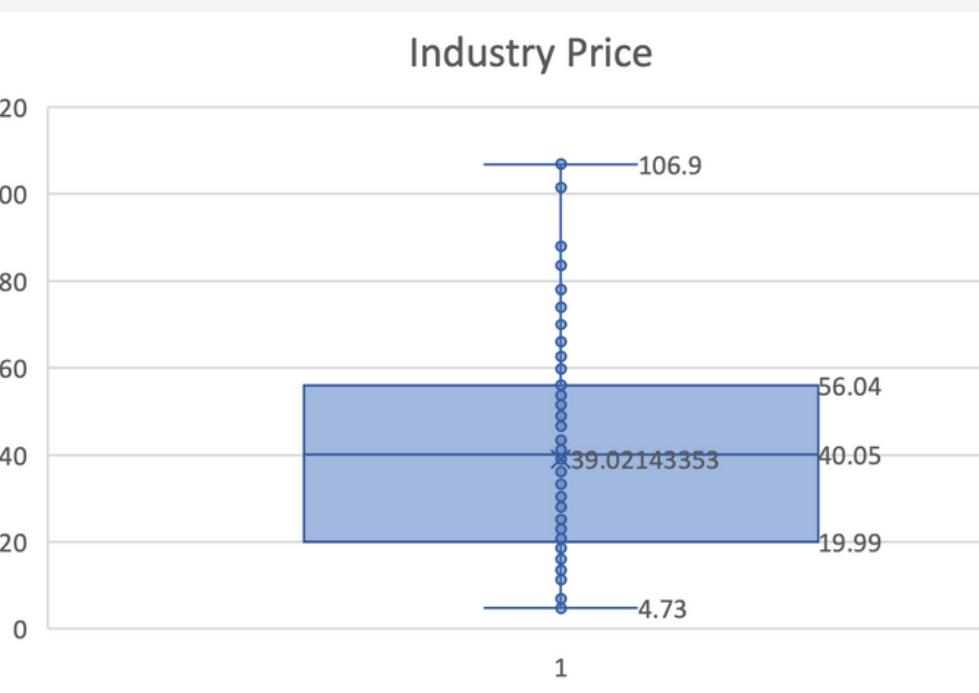


Industry Level: Price and Ads

Price has \$102.17 Range

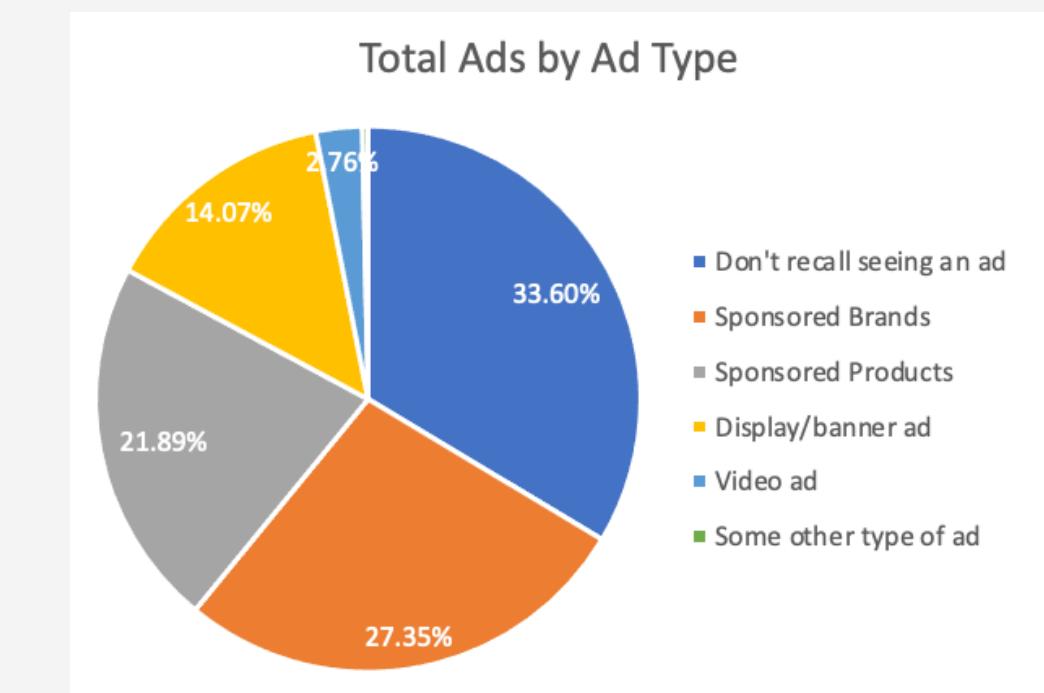
- Highest Price: Perro: \$106.90
- Lowest Price: Sports Choice: \$18.80
- Mean: \$39.02
- Alpha and Bezt are around industry average price

Price	
Mean	39.0214335
Median	40.05
Mode	41.12
Minimum	4.73
Maximum	106.9
Range	102.17
Q1	19.99
Q3	56.04
IQR	36.05



Ads seem hard to remember

- Most common: don't recall ad
- Sponsored Brands is most remembered ad
- Alpha and Bezt are most common ads across all types





Industry Level: Customer Base

Who is buying dog food?

- Most revenue-producing customers are 35–44 year olds who are married, make \$100,000 or more a year, college graduates, and who are Prime members
- Gender is evenly spread
- Top 5 revenue-producing states include Texas, California, Florida, New York, and Ohio

No of times purchased	% of customer that purchase n no of times		
	Industry Level	Alpha	Bezt
1	87%	78%	87%
2	11%	17%	11%
3	2%	4%	2%
4	0%	1%	0%
5	0%	0%	0%
6	0%	0%	0%
Total no of customers	9215	2832	1601

How much dog food are they buying?

- 87% of the customers buy dog food once
- Alpha's customers are more likely to repurchase than the industrial standard
- 30% of the total customers are likely to buy Alpha or switch over and remain with the brand versus only 18% of the total customers are likely to buy Bezt or switch over and remain with the brand



Market Share

Alpha
37%

Arf
6%

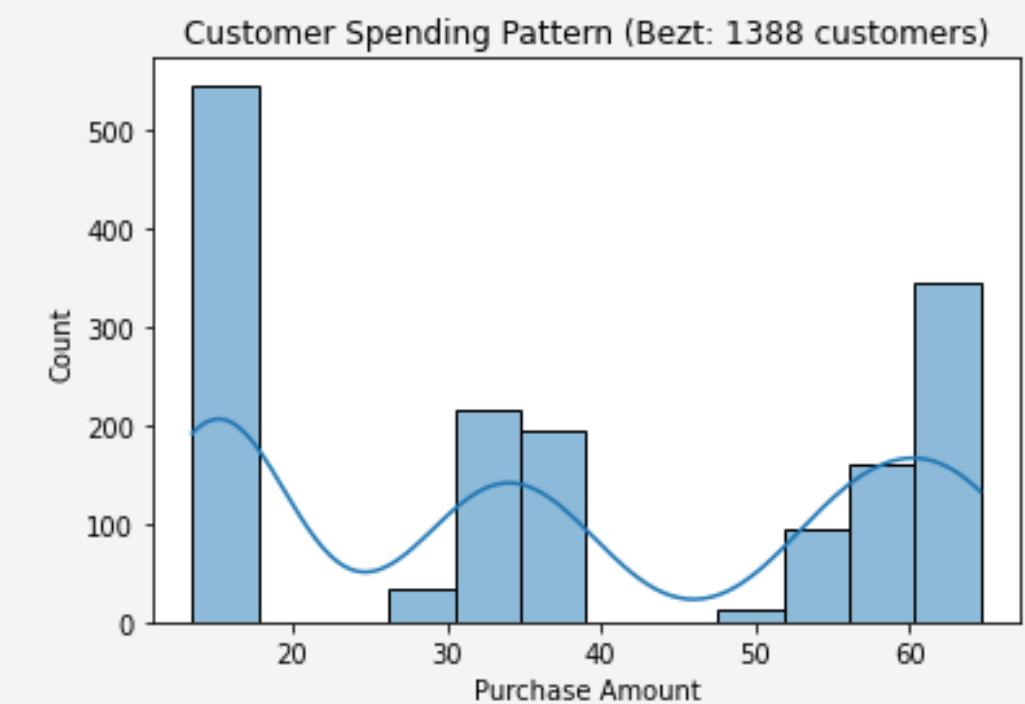
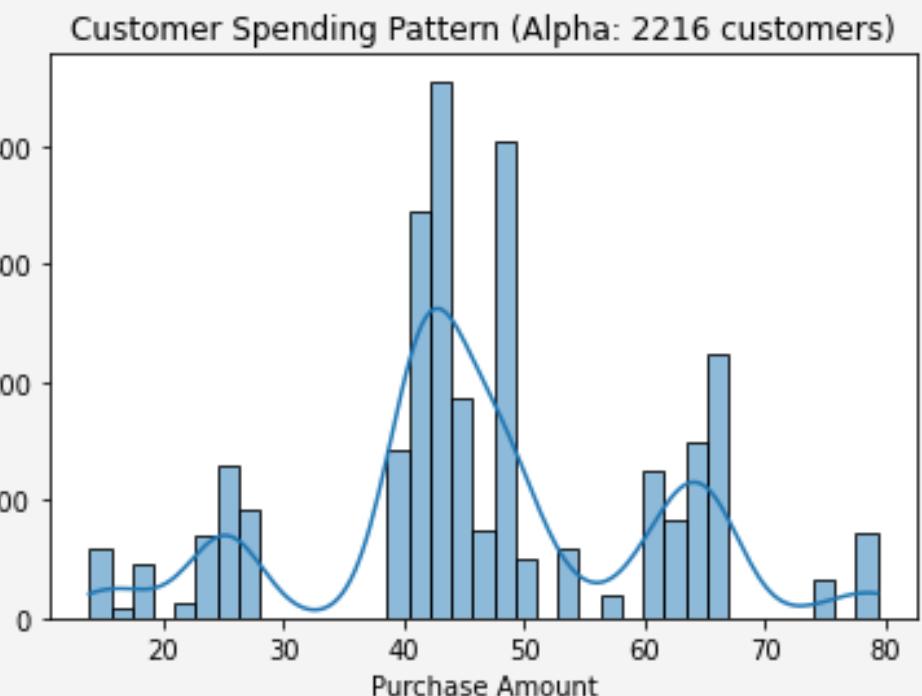
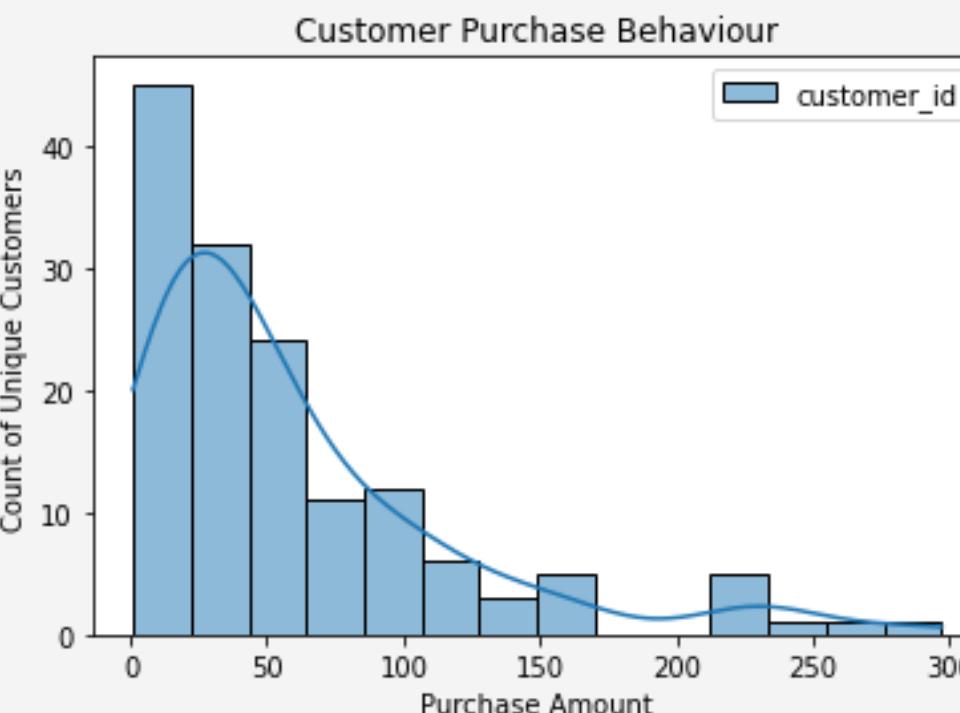
Bezt
17%

Health
One
6%

Garland
Farms
5%

Consumer Purchase Patterns

- Number of repeat customers: 2602
- Percentage of repeat customers: 52.04%
- Number of repeat Bezt customers: 177
- Percentage of repeat Bezt customers: 12.75%
- Average number of purchases per customer: 1.15



- Frequency of purchases of "Bezt" branded products: 0.17
 - 17 out of every 100 products purchased is a Bezt product
- Repeat purchase rate for "Bezt" products: 22%



Dog Food Market: Customer Segment

Variables used to segment the market

Price of products purchased

Purchases driven by advertisements

Demographics: Marital Status/ Age / Income Level

Distinct products purchased

Distinct brands purchased

Prime membership held or not

1 Brand / Product loyal segment

- 54% of the market
 - Product loyal, buy only one kind of product
 - Brand loyal, purchase the same brand repeatedly
 - Comparatively prefer Alpha less(27%)
 - Comparatively more sales driven by sponsored products (27% sales)
-

2 Experimentative

- 46% of the market
- Buy 2-3 different products in a year
- Buy 2-3 different brands in a year
- Comparatively prefer Alpha more (37%)
- Comparatively less sales driven by sponsored products (27% sales)
- About 17% of both the segments buy Bezt products
- Highest product loyalty seen by both segments for Bezt Natural Adult Small Breed Dry Dog Food (about 3.2%)



Diving deeper into Alpha vs Bezt

Variables	Alpha	Bezt
Revenue	\$142,810.77	\$64,733.63
Price	Avg price: \$46.53 (\$13.83-\$79.31)	Avg. Price: \$37.47 (\$13.51-\$64.58)
% of Total Ads	31%	17%
Best Product	Alpha Natural Healthy Weight Formula Adult Dry Dog Food & Wet Dog Food	Bezt Natural Adult Small Breed Dry Dog Food
Product cycle	77.5 day	74 days



Bezt's market

We found 3 segments among Bezt's customers:

Segment 1 (15%)

- Non-prime members (82% of customers are non-prime)
- Majority married or in a relationship (60%)
- Influenced to a greater extent by Sponsored brand ads compared to other segments
- Do not have a preference for high or low cost products

Segment 2 (43%)

- Prime Members (85% of customers are prime)
- High brand loyalty (purchased Bezt atleast twice)
- Majority married or in a relationship (85%)
- Prefer higher priced products

Segment 3 (42%)

- Prime members (85% of the customers are prime)
- Majority single (65%)
- More educated than other segments
- Prefer lower cost products

Top product choices similar in all clusters: Most preferred choice is Natural Adult Small Breed Dry Dog Food , followed by Natural Adult Healthy Weight Chicken and Brown Rice Dry Dog Food and Natural Adult Fish and Brown Rice Dry Dog Food



The Effect of Ad Exposure

3 Key Performance Indicators for this section:
1) Revenue 2) New-to-brand Rate 3) Upsell

Ad Exp	Avg. Revenue	Avg. Upsell	New-to-Brand
Display/banner ad	43.66	-0.41	0.88
Don't recall seeing an ad	41.78	-0.09	0.87
Some other type of ad	52.26	25.65	0.97
Sponsored Brands	41.83	0.07	0.87
Sponsored Products	41.94	0.83	0.87
Video ad	43.23	-0.69	0.86

Findings and Recommendation:

- On the industry level, 'some other types of ads' might be able to bring **higher revenues**, to **attract more customers**, and encourage buying **products with higher prices**.
- According to ANOVA testing, we suggest Bezt **select types of ads carefully** when being aimed at **raising the revenue**. Different ads have significantly different impacts on the indicator. ($|F| > 2$)
- The exposure of the ads **does not** seem to have **significantly different effect** on attracting new customers and driving them to buy more expensive products. But with a more precise scope (regression models), we can check if they really influence the KPIs.

```
1 # rev ~ ad_exp
2 model_rev = ols("rev ~ C(ad_exp)", df).fit()
3 res_rev = anova_lm(model_rev, typ=1)
4 print(res_rev)
```

	df	sum_sq	mean_sq	F	PR(>F)
C(ad_exp)	5.0	7.154463e+03	1430.892696	2.264682	0.045422
Residual	9209.0	5.818516e+06	631.829339	NaN	NaN

```
1 # ntb ~ ad_exp
2 model_ntb = ols("ntb ~ C(ad_exp)", df).fit()
3 res_ntb = anova_lm(model_ntb, typ=1)
4 print(res_ntb)
```

	df	sum_sq	mean_sq	F	PR(>F)
C(ad_exp)	5.0	0.405824	0.081165	0.714887	0.612172
Residual	9209.0	1045.544908	0.113535	NaN	NaN

```
1 # upsell ~ ad_exp
2 model_upsell = ols("price_diff_wb ~ C(ad_exp)", df).fit()
3 res_upsell = anova_lm(model_upsell, typ=1)
4 print(res_upsell)
```

	df	sum_sq	mean_sq	F	PR(>F)
C(ad_exp)	5.0	872.240897	174.448179	0.562333	0.72896
Residual	1197.0	371336.076197	310.222286	NaN	NaN



The Effect of Ad Exposure

Regression Analysis

```
# Bezt
df_brand_bezt = df2[df2['product_brand'] == 'Bezt']
exog_vars = ['ma_ind', 'edu_ind', 'income_level', 'natural2', 'prime', 'ad_exp_Display/banner ad', 'ad_exp_Some other type of ad',
             'ad_exp_Sponsored Brands', 'ad_exp_Sponsored Products',
             'ad_exp_Video ad']
exog = sm.add_constant(df_brand_bezt[exog_vars])

mod = PooledOLS(df_brand_bezt.rev, exog)
pooledOLS_res = mod.fit(cov_type='clustered', cluster_entity=True)

print(pooledOLS_res)
```

```
PooledOLS Estimation Summary
=====
Dep. Variable:          rev    R-squared:       0.1009
Estimator:            PooledOLS  R-squared (Between):   0.1050
No. Observations:      1601    R-squared (Within):    0.0971
Date:                 Fri, Mar 10 2023 R-squared (Overall):  0.1009
Time:                  20:18:19   Log-likelihood:     -7261.3
Cov. Estimator:        Clustered
Entities:                   365    F-statistic:           17.842
Avg Obs:                    4.3863  P-value:             0.0000
Min Obs:                     0.0000  Distribution:        F(10,1590)
Max Obs:                     13.000  F-statistic (robust): 153.57
                                  P-value:             0.0000
                                  Distribution:        F(10,1590)
Time periods:                  5000
Avg Obs:                      0.3202
Min Obs:                       0.0000
Max Obs:                      6.0000
```

```
Parameter Estimates
=====
Parameter  Std. Err.    T-stat  P-value  Lower CI  Upper CI
const          13.425  2.2487   5.9701  0.0000   9.0143  17.8
ma_ind         0.4426  1.1313   0.3912  0.6957  -1.7764  2.66
edu_ind        -0.0857 1.1398  -0.0752  0.9401  -2.3214  2.15
income_level    0.2307  0.3598   0.6411  0.5215  -0.4751  0.93
natural2        27.238  0.7355   37.032  0.0000  25.795  28.6
prime           0.5315  1.3691   0.3882  0.6979  -2.1541  3.21
ad_exp_Display/banner ad  1.6566  1.9470   0.8509  0.3950  -2.1624  5.47
ad_exp_Some other type of ad  11.706  4.5491   2.5732  0.0102  2.7828  20.6
ad_exp_Sponsored Brands  -0.2805 1.3528  -0.2073  0.8358  -2.9340  2.37
ad_exp_Sponsored Products  1.7601  1.4346   1.2268  0.2201  -1.0539  4.57
ad_exp_Video ad           0.4654  3.3875   0.1374  0.8908  -6.1791  7.10
```

Zooming-in on brands

Revenue (Bezt) ~ X

'NTB' (Bezt) ~ X

'Upsell' (Alpha) ~ X

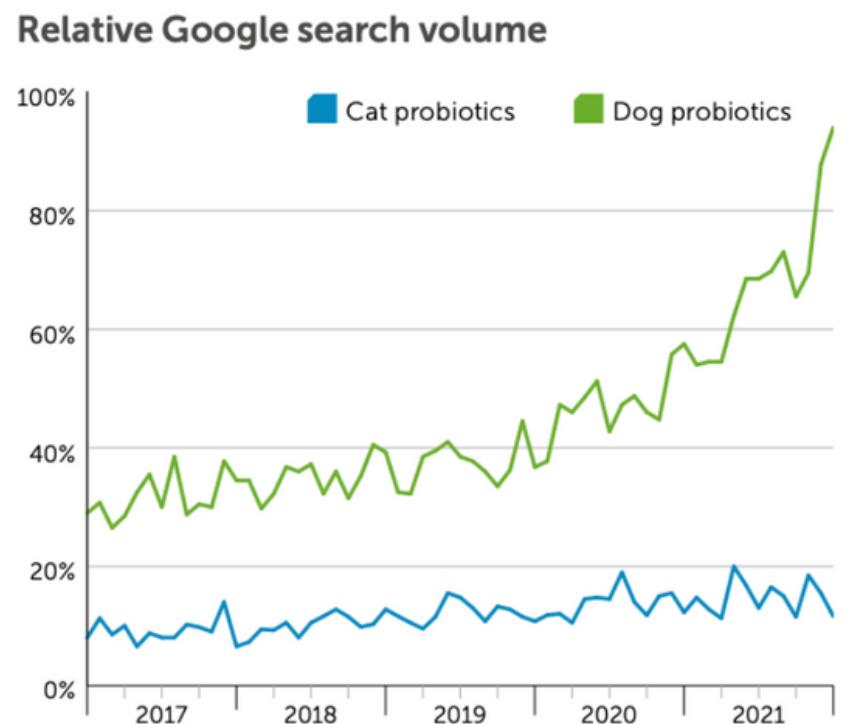
Key Findings and Recommendation based on the models:

- One notable thing is **some other type of ads** impose a **significantly positive** effect on **Bezt's revenue**. If Bezt selects other types of ads, the revenue will increase about 11.71 dollar for each order, holding other factors constant.
- Some other types of ads** also have **significantly positive** effect on the new-to-brand rate. Along with the first finding, we highly recommend Bezt choose other types of ads.
- Be cautious about **video ads** if we want to attract more customers to gain a higher market share, especially in some early-stage campaigns. They **discourage** new customers to choose Bezt.
- The indicator 'Upsell' is insensitive to ad exposure in this section.
- The limit of this study is we do not exactly know what the investworthy 'some other types of ads' are. That might be addressed in our further reports or studies.



Recommendation: Bezt should make Probiotics products

- Currently, Alpha and Ruby are the only two brands that sell Probiotics dog food. Alpha is leading with 80.94% market share whereas Ruby has 19%
- There is a **positive correlation** between probiotics and revenue.
- Customers in Segment 2 prefer high quality products and would be inclined to buy Probiotics products ranged between 40\$–80\$. (In reference to Bezt's Market slide)
- According to GlobalPETS report, the demand for Probiotics has tripled in last 3 years.
- Consumers are now paying more attention to the digestive health of their pets.
- To further understand the effect of probiotics, we plan to do market survey to test our hypothesis



Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	39.177	1.1136	35.181	0.0000	36.994	41.360
ma_ind	0.3883	0.5076	0.7651	0.4443	-0.6066	1.3832
edu_ind	0.2559	0.5502	0.4651	0.6419	-0.8225	1.3343
income_level	0.0588	0.1724	0.3408	0.7333	-0.2792	0.3967
natural2	2.7767	0.5571	4.9842	0.0000	1.6846	3.8687
probiotic	23.611	1.4571	16.204	0.0000	20.755	26.468



Recommendation: Location wise purchase and Upselling possibilities

FL, VA, AL, IL are the 4 states with potential for Bezt to deliver more sales based on the total dog food consumption

Bezt is significantly losing out to other brands in FL in terms of market share

VT, DE, NH, SC and NM are the states where Bezt should improve against Alpha directly

In terms of Dollar amount, TX, CA, FL should become the prime focus of Bezt to increase revenue

It is considerably easy for Bezt to become the market leader in MA, AZ, IA, AK and AR, where there is less than 10% Revenue difference between Alpha and Bezt

Top States by Revenue

State	Bezt Revenue	Total Revenue %	Alpha Revenue
TX	11%	11%	11%
CA	11%	11%	11%
FL	8%	9%	10%
NY	6%	5%	6%
OH	4%	4%	4%
VA	3%	4%	4%
PA	3%	3%	3%
AL	2%	3%	3%
GA	3%	3%	3%
NC	3%	3%	3%
DC	3%	3%	2%
IL	2%	3%	2%



Work Cited

1. Mintel Report- Pet Food US 2022
- 2.<https://www.marketsandmarkets.com/Market-Reports/probiotics-animal-feed-market-85832335.html>
- 3.<https://globalpetindustry.com/article/trend-alert-probiotics-dogs-and-cats>