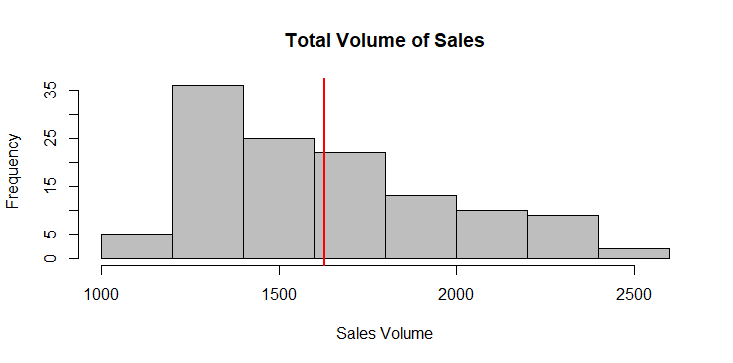
**Homework for a traineeship**

Attached you’ll find Boutique Shampoo Ltd’s data about their sales and investments in various marketing efforts / channels. The CEO of the company would like to better understand how their marketing efforts have contributed to sales in the past.

Your task is to help the CEO. To help you out with what types of questions the CEO is interested in, he has compiled a list of questions he’s hoping to get answers to:

**Part 1: Analysis**

1. What general findings can you draw from the data?



Throughout the duration

Mean: 1628.7998753524578

Minimum sales: 1111.595732

Date: 2016-03-17

Weighted Average Price: 2.864362

Total Value Sales: 4794.402854

Distribution: 82.783344

Rebrand=1

Online: 1763.258353

Price promotion 1 Promotion 2 On pack Promo Offer TV Radio all: 0

Maximum: 2467.5259149999997

Date: 2014-11-09

Weighted Average Price: 1.943

Total Value Sales: 4794.402854

Distribution: 82.020342

Price Promotion 1=1

Online: 6640.961683

Price Promotion 2 On pack Promo Offer Rebrand TV Radio all: 0

Total Volume Sales Total Value Sales Weighted Average Price \

count 122.000000 122.000000 122.000000

mean 1628.799875 4350.896685 2.695347

std 335.608798 746.067798 0.210792

min 1111.595732 3054.612143 1.900000

25% 1365.589168 3713.018794 2.516825

50% 1554.412937 4289.496309 2.796325

75% 1851.502682 4921.003343 2.839346

max 2467.525915 5951.355128 2.882145

Distribution Price Promotion 1 Price Promotion 2 \

count 122.000000 122.000000 122.000000

mean 82.641944 0.049180 0.049180

std 0.490281 0.217136 0.217136

min 81.460823 0.000000 0.000000

25% 82.279704 0.000000 0.000000

50% 82.678995 0.000000 0.000000

75% 82.957492 0.000000 0.000000

max 84.088608 1.000000 1.000000

On pack Promo Offer Rebrand TV Radio Press \

count 122.000000 122.000000 122.000000 122.000000 122.000000

mean 0.024590 0.819672 28.204918 3.598361 9.535058

std 0.155511 0.386046 45.500148 15.582709 21.186633

min 0.000000 0.000000 0.000000 0.000000 0.000000

25% 0.000000 1.000000 0.000000 0.000000 0.000000

50% 0.000000 1.000000 0.000000 0.000000 0.000000

75% 0.000000 1.000000 75.000000 0.000000 0.000000

max 1.000000 1.000000 141.000000 99.000000 84.000000

Outdoor Online

count 122.000000 122.000000

mean 5.000000 4824.105067

std 22.452889 2645.920524

min 0.000000 244.976765

25% 0.000000 2501.475318

50% 0.000000 5546.549066

75% 0.000000 6807.064157

max 125.000000 9618.343983

2014

Min sales:: 2014-12-06

Max sales= 2014-11-09

Total Volume Sales Total Value Sales Weighted Average Price \

count 34.000000 34.000000 34.000000

mean 1840.813726 4460.347812 2.433949

std 381.348450 897.222423 0.185211

min 1221.330851 3054.612143 1.900000

25% 1434.464368 3507.591427 2.409587

50% 1903.083504 4563.994139 2.451890

75% 2195.774260 5139.043873 2.502435

max 2467.525915 5951.355128 2.694000

Distribution Price Promotion 1 Price Promotion 2 \

count 34.000000 34.000000 34.0

mean 82.401006 0.088235 0.0

std 0.428499 0.287902 0.0

min 81.460823 0.000000 0.0

25% 82.069440 0.000000 0.0

50% 82.408786 0.000000 0.0

75% 82.700170 0.000000 0.0

max 83.247920 1.000000 0.0

On pack Promo Offer Rebrand TV Radio Press \

count 34.000000 34.000000 34.000000 34.000000 34.000000

mean 0.088235 0.352941 35.882353 5.882353 22.772856

std 0.287902 0.485071 48.718589 20.438770 28.296105

min 0.000000 0.000000 0.000000 0.000000 0.000000

25% 0.000000 0.000000 0.000000 0.000000 0.000000

50% 0.000000 0.000000 0.000000 0.000000 0.000000

75% 0.000000 1.000000 80.000000 0.000000 47.589607

max 1.000000 1.000000 141.000000 99.000000 68.048512

Outdoor Online

count 34.000000 34.000000

mean 15.588235 5054.228999

std 38.686085 2685.978907

min 0.000000 254.284445

25% 0.000000 3195.492525

50% 0.000000 4557.320777

75% 0.000000 7208.499720

max 125.000000 9618.343983

2015

Max\_Date: 2015-08-20

Min date : 2015-04-23

Total Volume Sales Total Value Sales Weighted Average Price \

count 53.000000 53.000000 53.000000

mean 1587.938516 4360.415246 2.760190

std 282.885529 648.521387 0.127026

min 1122.304993 3150.324113 2.238000

25% 1389.922180 3882.807403 2.772935

50% 1554.375675 4308.666859 2.796077

75% 1766.431618 4886.934005 2.820933

max 2279.634148 5841.412259 2.859214

Distribution Price Promotion 1 Price Promotion 2 \

count 53.000000 53.000000 53.000000

mean 82.756761 0.056604 0.075472

std 0.473679 0.233295 0.266679

min 81.723030 0.000000 0.000000

25% 82.497248 0.000000 0.000000

50% 82.744053 0.000000 0.000000

75% 83.016230 0.000000 0.000000

max 84.068288 1.000000 1.000000

On pack Promo Offer Rebrand TV Radio Press Outdoor \

count 53.0 53.0 53.000000 53.0 53.000000 53.000000

mean 0.0 1.0 23.245283 0.0 7.339623 1.509434

std 0.0 0.0 42.193194 0.0 18.859749 10.988845

min 0.0 1.0 0.000000 0.0 0.000000 0.000000

25% 0.0 1.0 0.000000 0.0 0.000000 0.000000

50% 0.0 1.0 0.000000 0.0 0.000000 0.000000

75% 0.0 1.0 23.000000 0.0 0.000000 0.000000

max 0.0 1.0 141.000000 0.0 84.000000 80.000000

Online

count 53.000000

mean 4511.047920

std 2533.349791

min 254.284445

25% 2469.841069

50% 5756.194318

75% 5939.690836

max 8220.239099

2016

Max sales vol date: 2016-01-09

Min sales vol date: 2016-03-17

Total Volume Sales Total Value Sales Weighted Average Price \

count 35.000000 35.000000 35.000000

mean 1484.719335 4230.158912 2.851085

std 261.496100 727.463914 0.017525

min 1111.595732 3184.012132 2.821198

25% 1283.804340 3668.809145 2.836597

50% 1381.048948 3944.639081 2.854212

75% 1709.491769 4860.136905 2.863859

max 2015.786003 5693.934482 2.882145

Distribution Price Promotion 1 Price Promotion 2 \

count 35.000000 35.0 35.000000

mean 82.702132 0.0 0.057143

std 0.501754 0.0 0.235504

min 81.576766 0.0 0.000000

25% 82.490640 0.0 0.000000

50% 82.730123 0.0 0.000000

75% 82.969102 0.0 0.000000

max 84.088608 0.0 1.000000

On pack Promo Offer Rebrand TV Radio Press Outdoor \

count 35.0 35.0 35.000000 35.000000 35.0 35.0

mean 0.0 1.0 28.257143 6.828571 0.0 0.0

std 0.0 0.0 47.370469 20.556215 0.0 0.0

min 0.0 1.0 0.000000 0.000000 0.0 0.0

25% 0.0 1.0 0.000000 0.000000 0.0 0.0

50% 0.0 1.0 0.000000 0.000000 0.0 0.0

75% 0.0 1.0 75.000000 0.000000 0.0 0.0

max 0.0 1.0 141.000000 89.000000 0.0 0.0

Online

count 35.000000

mean 5074.614069

std 2797.637805

min 244.976765

25% 3105.904755

50% 5503.162875

75% 6915.745395

max 9618.343983



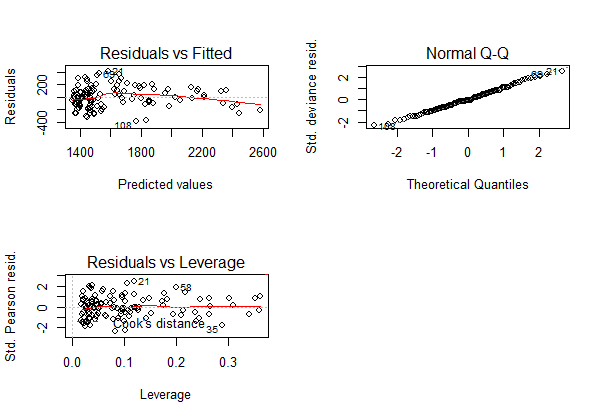
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Total Volume Sales | Total Value Sales | Weighted Average Price | Distribution | Price Promotion 1 | Price Promotion 2 | On pack Promo Offer | Rebrand | TV | Radio | Press | Outdoor | Online |
| count | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| mean | 1484.719 | 4230.159 | 2.851085 | 82.70213 | 0 | 0.057143 | 0 | 1 | 28.25714 | 6.828571 | 0 | 0 | 5074.614 |
| std | 261.4961 | 727.4639 | 0.017525 | 0.501754 | 0 | 0.235504 | 0 | 0 | 47.37047 | 20.55622 | 0 | 0 | 2797.638 |
| min | 1111.596 | 3184.012 | 2.821198 | 81.57677 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 244.9768 |
| 25% | 1283.804 | 3668.809 | 2.836597 | 82.49064 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3105.905 |
| 50% | 1381.049 | 3944.639 | 2.854212 | 82.73012 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5503.163 |
| 75% | 1709.492 | 4860.137 | 2.863859 | 82.9691 | 0 | 0 | 0 | 1 | 75 | 0 | 0 | 0 | 6915.745 |
| max | 2015.786 | 5693.934 | 2.882145 | 84.08861 | 0 | 1 | 0 | 1 | 141 | 89 | 0 | 0 | 9618.344 |

2.       How much do various marketing efforts / channels contribute to sales? I.e.

a.       based on the data, how much sales would they still get if they cut off all marketing for a while (baseline sales)?

b.       What portion of sales can be attributed to TV campaigns, radio and other marketing activities? Please quantify the contribution by channel

3.       How certain are you about the results of your analysis?



Coefficient of determination is 75%

4.       What other data you might want to incorporate in your analysis if you were to do it again to better explain the composition of factors affecting their sales?

Please be prepared to explain the analysis methods you’ve used to come to the conclusions in person, however you don’t need to go into too much detail in the presentation. Remember that the CEO is not a math expert - he likes simple explanations and visual representations such as bar graphs that are easy to understand.

**Part 2: Conclusions, recommendations, additional findings**

5.       What conclusions would you draw from the data?

6.       What recommendations would you give to the CEO of Boutique Shampoo regarding their marketing efforts?

Your answer / presentation should be no longer than 10 slides. Please provide your answers in English and explain what you’ve done and why. Please avoid math jargon as much as possible since the CEO is not a math expert.

Please return your findings by 10 am on Tuesday Jan 30th to [arto.hasu@dentsuaegis.com](mailto:arto.hasu@dentsuaegis.com) .