

# Assignment 3: Promotions Management

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# 1 Promotional event planning

Below are three pages (tables) from a spreadsheet tool developed by Booz Allen Hamilton. The tool helps a manufacturer to plan a promotion calendar.

The product under consideration is used for baking. The demand for this product peaks during holiday periods. The first spreadsheet, “Brand Summary,” lists the basic marketing facts for this product including the list price for a case (regular retail price per case), variable contribution margin VCM (gross margin), and the base (regular) price.

The “Promotion Calendar” spreadsheet lists historical and planned values for promotional activities. For example, in the week of Nov 13, 22 percent of Jewel stores (to be precise: percent ACV) had this product on feature and display, and 83 percent on feature alone. The “Projected %ACV” columns show five planned events for the next year. For example, event 3 is a 60 percent display and feature promotion with a promoted price of \$1.99 in the first two weeks of April. It is important to note that the columns “Display” through “TPR” are mutually exclusive and the promoted price applies to all merchandising activities.

The “Event Summary” spreadsheet provides some analysis of the profitability of these five events. In order to understand this spreadsheet, note that:

- Incremental Contribution = Incremental Consumed Cases  $\times$  VCM
- Variable Cost (consumed) = Total Consumed Cases  $\times$  Off-Invoice (\$4.20)
- Fixed Payment Cost = MDF (market development funds for this event)
- Forward Buy Cost = Forward Buy Cases  $\times$  Off-Invoice
- ROI =  $100 \times \text{Event Gross Contribution} / \text{Event Cost}$

**Note:** This approach differs slightly from the approach we discussed in class. In particular, in the Booz Allen Hamilton approach the incremental contribution is calculated using the original, non-promoted VCM, but the variable cost also includes the reduced margin on the incremental units sold. Hence, the event gross contribution will be unaffected, but the ROI will be different because the denominator (the event cost) will also include the “cost” incurred on the incremental units sold.

Address the following issues:

1. Is there evidence for strong seasonal demand for this product, based on the figures presented in the “Event” sheet?
2. Expressed as a percentage of base sales, does event 1 or event 2 produce a greater incremental sales response?
3. Discuss the profitability results for these five events. Which events are most profitable and why? What can you learn from this analysis about what sorts of promotional events are most profitable?
4. Recalculate the profitability for event 1 and 2 assuming that retailers will engage in 4 weeks rather than 2 weeks of forward buying.
5. Optional question: Compare the approach to calculating the ROI that we took in class with the Booz Allen Hamilton approach taken here (the difference was explained above). Is one of the approaches better than the other, and why?

**Note:** To avoid any confusion, I recommend that you ignore the “Percent of Total Cases” row in the Event sheet. Furthermore, ignore the TPR column in “Projected %ACV” in the Calendar sheet (this column does not correctly reflect the planned price reductions).

Brand Summary - CHICAGO - JEWEL				
	Mfr. Brand 14 oz.	Competitor 1 14 oz.	Private Label 14 oz.	All Other 14 oz.
Case Pack	24	24	24	24
Pre-Trade VCM	20.00			
Equiv. Factor	1.00	1.00	1.00	1.00
List Price	42.00			
Price Adjustment	0.00			
Net List Price	42.00			
Percent of Business	100%	100%	100%	100%
Distribution	100%	0%	100%	19%
IRI Distribution	100%	0%	100%	19%
Retail Shelf Price	2.31		1.65	1.92
IRI Base Price	2.31		1.65	1.92

Figure 1: Brand Summary

Current Year Deal Information & Summary					
Primary Brand 14 oz.; CHICAGO - JEWEL					
Event Structure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Event ID Number	1	2	3	4	5
Off-Invoice per case	4.20	4.20	4.20	4.20	4.20
Billback per case					
MDF (per case)					
MDF (lump sum)	2,500	2,500	3,500	2,500	2,500
Weeks Forward Buy	2.0	2.0	3.0	3.0	3.0
<b>Cases</b>					
Base Cases	728	1,360	239	449	333
Incremental Cons. Cases	401	944	278	63	602
Total Consumed Cases	1,129	2,303	517	512	935
Prev. Year Cons. Cases	2,136	3,215	762	469	422
Forward Buy Cases	229	229	344	344	344
Total Purchased Cases	1,358	2,533	861	856	1,279
Percent of Total Cases	14%	25%	9%	9%	13%
<b>Merchandising</b>					
Prop. Wks. w/ Merch.	2.4	1.8	1.2	0.9	2.3
Hist. Wks. w/ Merch.	2.0	0.8	1.1	0.0	0.0
<b>Mfr. Promotion P&amp;L</b>					
Incremental Contribution	8,019	18,874	5,562	1,254	12,035
Variable Cost (consumed)	4,740	9,674	2,173	2,151	3,927
Fixed Payment Cost	2,500	2,500	3,500	2,500	2,500
Forward Buy Cost	962	962	1,444	1,444	1,444
Event Cost	8,202	13,137	7,116	6,095	7,871
Event Gross Contribution	(183)	5,737	(1,554)	(4,841)	4,163
ROI	-2%	44%	-22%	-79%	53%

Figure 2: Event Summary

**Manufacturer Brand 14 oz.; CHICAGO - JEWEL**

Week Ending	Historical %ACV				Projected %ACV				Base Price	Promo Price	
	Display	Fea+ Dis	Feature	TPR	Deal	Display	Fea+ Dis	Feature			TPR
Jan 2	24%	0%	0%	5%		0%	0%	0%	0%	2.31	2.31
Jan 9	0%	0%	0%	6%		0%	0%	0%	0%	2.31	2.31
Jan 16	0%	0%	0%	6%		0%	0%	0%	0%	2.31	2.31
Jan 23	0%	0%	0%	6%		0%	0%	0%	0%	2.31	2.31
Jan 30	0%	0%	0%	6%		0%	0%	0%	0%	2.31	2.31
Feb 6	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Feb 13	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Feb 20	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Feb 27	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Mar 6	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Mar 13	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Mar 20	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Mar 27	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Apr 3	0%	76%	24%	0%	3	0%	60%	0%	0%	2.31	1.99
Apr 10	5%	0%	0%	60%	3	0%	60%	0%	0%	2.31	1.99
Apr 17	1%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Apr 24	1%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
May 1	1%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
May 8	1%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
May 15	0%	0%	0%	1%		0%	0%	0%	0%	2.31	2.31
May 22	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
May 29	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Jun 5	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Jun 12	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Jun 19	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Jun 26	0%	0%	0%	0%	4	30%	0%	0%	0%	2.31	2.25
Jul 3	0%	0%	0%	0%	4	30%	0%	0%	0%	2.31	2.25
Jul 10	0%	0%	0%	0%	4	30%	0%	0%	0%	2.31	2.25
Jul 17	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Jul 24	0%	0%	0%	0%	5	75%	0%	0%	0%	2.31	1.99
Jul 31	0%	0%	0%	0%	5	75%	0%	0%	0%	2.31	1.99
Aug 7	0%	0%	0%	0%	5	75%	0%	0%	0%	2.31	1.99
Aug 14	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Aug 21	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Aug 28	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Sep 4	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Sep 11	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Sep 18	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Sep 25	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Oct 2	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Oct 9	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Oct 16	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Oct 23	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Oct 30	0%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Nov 6	5%	0%	0%	0%		0%	0%	0%	0%	2.31	2.31
Nov 13	0%	22%	83%	0%	1	0%	0%	80%	10%	2.31	1.99
Nov 20	48%	0%	0%	32%	1	0%	0%	80%	10%	2.31	1.99
Nov 27	47%	0%	0%	32%	1	0%	0%	80%	10%	2.31	1.99
Dec 4	18%	0%	0%	32%		0%	0%	0%	0%	2.31	2.31
Dec 11	13%	0%	0%	27%	2	60%	0%	0%	0%	2.31	2.19
Dec 19	37%	0%	0%	32%	2	60%	0%	0%	0%	2.31	2.19
Dec 26	32%	0%	0%	32%	2	60%	0%	0%	0%	2.31	2.19

Figure 3: Promotion calendar

## 2 Estimating lift factors and promotion ROI analysis

In this part of the assignment, we analyze the effectiveness and ROI of different promotions for Hellman's 32 oz Mayonnaise. The analysis is based on account level data at Jewel-Osco and Dominick's Finer Foods in Chicago.

Use the table (data frame) `hellmans_df` in the file `Hellmans.RData`.

`hellmans_DF` contains the following variables:

- `account`
- `product`
- `week`
- `units`
- `dollars`
- `feature_pctacv`
- `display_pctacv`

1. Create a `price` variable for Hellman's 32oz mayo. Then, although not strictly necessary (because the estimated coefficients will scale in a linear regression), you should divide the feature and display columns (variables) by 100.

Examine the feature and display variables. Provide summary statistics (number of observations, mean, standard deviation) and histograms of these variables, separately for both accounts. To what extent do these two promotional instruments differ?

Calculate the correlations between `feature_pctacv`, `display_pctacv`, and `price` (use the `cor` function in R). Comment on your findings. Do the correlations indicate a potential problem for your regression analysis to be performed below?

2. Estimate the log-linear demand model separately for each account, using `price` as the only explanatory variable. Then add the feature and display variables.

Comment on the difference between the two regressions in terms of goodness of fit, and the price elasticity estimates. Is the change in price elasticity estimates as expected? What is the reason for this change? Are the coefficient estimates similar for both accounts?

3. Consider the following three promotions:

- (a) 15% TPR
- (b) 15% TPR, 70% display
- (c) 15% TPR, 70% display, 100% feature

Calculate the lift factors for each promotion for both accounts, based on the regression estimates in 2. Set estimates that are not statistically significant = 0.

4. Perform an ROI analysis of the three promotions, (a), (b), and (c), separately for the two retail accounts, Dominick's and Jewel-Osco. The promotions last for one week. Your analysis should follow the approach that we took in class, not the version of this approach taken by Booz Allen Hamilton in the first part of the assignment.

**Note.** Perform the analysis using units, not cases of Hellman's mayo.

You will need the following data for your analysis:

- The regular price of the product at both accounts is \$1.20.
- The VCM for Hellman's is \$0.55 per unit.

- The manufacturer fully pays for the shelf price reduction. E.g., if the shelf price is reduced from \$1.20 to \$1.00, the manufacturer pays for this TPR through a \$0.20 per unit (off-invoice) allowance.
- The fixed cost (MDF) for the promotion involving display only is \$3,000 at Dominick's and \$5,000 at Jewel-Osco. The fixed cost for the promotion including feature and display is \$4,500 at Dominick's and \$6,800 at Jewel-Osco.

In order to estimate baseline sales, use the regression estimates and the regular price, and predict sales for display and feature = 0.

Using these data, and the lift factors found in 3, you can then fill in the cells in the blueprint of a spreadsheet below, for each of the three promotions at both accounts.

Consider both:

- No stockpiling (purchase acceleration)
- The case where 20 percent of the incremental units as predicted by the event lift are due to stockpiling (purchase acceleration), and hence not truly incremental

<b>Units</b>
Baseline units
Incremental units
Total units
% incremental units purchase acceleration
Incremental units purchase acceleration
Incremental units net of purchase acceleration
<b>Manufacturer promotion P&amp;L</b>
Incremental contribution
Variable cost
Fixed payment cost
Event cost
Event gross contribution
<b>ROI</b>