MKT-680 Marketing Analytics

Final Project

# Background

Eddie’s, a department store chain of over 100 locations across Canada, sells over 100 thousand products in 38 divisions covering over 900 product lines. After a sales slump due to the global financial crisis in 2008, Canadian real estate industry growth powered the Canadian economic turnaround in 2009 benefitting all sectors. While Eddie’s revenue in 2009 grew to nearly $7 billion from about $5 billion in 2008, it still is significantly below those of 2006 and 2007.

# Problem

Keen at controlling cost in all areas of spending, including marketing, Eddie’s CMO hired you as a consultant to evaluate its marketing spend in 2008 and 2009. Your task is to determine which marketing vehicles were effective in generating incremental revenue and profit and which did not. You are expected to provide the following metrics:

1. ROI for each marketing vehicle
2. For marketing vehicles that were directed at Division or Line level, provide the ROIs for these vehicles by Division and Line
3. Promo discount ROI for each Division and Line

Based on the above metrics, you are also expected to make recommendations on:

1. For which marketing vehicles should spend be increased or decreased?
2. For which Divisions and Lines should spend on each marketing vehicle be increased or decreased?
3. For which Divisions and Lines should discounts be continued or discontinued?

# Available Data

You are provided national sales data summary by week for the top 299 Lines covering 85% of revenue. You are also provided marketing activities by vehicle. Note that some vehicles apply to the total store and others are assigned by Division or Lines. The file [Final](https://drive.google.com/file/d/1HhXrw0TUegz8RLJ-W8avfWBfCSn36gB2/view?usp=sharing) Project.xlsx contains two tabs:

1. Sales, Digital & Print Data

* Division – product division number
* Line – product line number
* Week Ending – week as identified by the Saturday
* Cost of Goods – cost of goods sold for the given Division-Line and Week
* Revenue – revenue on goods sold for the given Division-Line and Week
* Sales Volume – units of goods sold for the given Division-Line and Week
* Unit Cost – cost per unit of the given Division-Line in the Week
* Unit Price – list price per unit of the given Division-Line in the Week
* Discounted Unit Price – price per unit of the given Division-Line in the Week net of discounts
* Banner Ad – number of impressions of digital banner ads served for the given Division-Line in the Week
* Paid Search – number of impressions of paid search ads served for the given Division-Line in the Week
* Flyer – pages in the Week’s Flyer allocated to the given Division-Line
* Newspaper – pages in the Week’s Sunday Newspaper allocated to the given Division-Line

1. Radio & TV Data
   * Promotional Division TV – GRPs for TV promotional advertising applicable to all Lines in the Division for the given Week
   * Promotional Division Radio – GRPs for Radio promotional advertising applicable to all Lines in the Division for the given Week
   * Branding Store TV – GRPs for TV branding advertising applicable to all Division and Lines for the given Week
   * Branding Store Radio – GRPs for Radio branding advertising applicable to all Division and Lines for the given Week

The following GRP conversion to Reach have been provided by the media buyers:

* TV:
* Radio:

Functions to convert Impressions to Reach were not provided for Digital vehicles, so diminishing return functions like log or square-root should be tested.

Finally, the following cost data were provided:

* TV: $1,000 per GRP applies to both promo and branding
* Radio: $300 per GRP applies to both promo and branding
* Flyer: $50,000 per 4 pages or less (total pages across lines in each week)
* Newspaper: $40,000 per ½ page or less (total pages across lines in each week)
* Banner Ads: $2.50 per thousand impressions
* Paid Search Ads: $9.50 per thousand impressions

# Reports

Project written reports are due on April 25, 2018 at 12pm. Reports are expected to include:

* Model specification: dependent variables and independent variables with definitions and description of transformations
* Model diagnostics
* Metrics required by the client
* Recommendations to answer client questions with justification using model results

# Grading

You are expected to develop a marketing mix model with application of the following concepts:

* GRP to Reach transformation
* Adstock of branding marketing vehicles
* Seasonality
* Holidays (Valentine’s, Easter, Mother’s Day, Father’s Day, Black Friday, Pre-Christmas, Christmas and Post-Christmas)
* Computation of DueTos and ROIs

Projects will be graded according to the following criteria

* Correct application/execution of chosen technique (40%)
* Robustness of solution (20%)
* Integration of domain knowledge/practicality into solution (20%)
* Report completeness and clarity of explanation (20%)