Measuring the Return on Marketing Investment

E. Craig Stacey, Ph.D.

The Center for Measurable Marketing at NYU Stern
Outline
Measuring the Return on Marketing Investment

1. The Need for Marketing Accountability
2. A Framework for Marketing Productivity
3. Marketing Mix Modeling and Marketing Planning
4. MMM: Econometric Time-Series Analysis
5. Model Estimation
6. MMM for Today’s Media Landscape
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“Half the money I spend on advertising is wasted; the trouble is I don’t know which half.”

- John Wanamaker
Corporate marketing is the last bastion of unaccountable spending in corporate America.”

- Eric Schmidt
2008 – 2010 Research Priorities

1. The Need for Marketing Accountability

1. Accountability and ROI of Marketing Expenditures
2. Understanding Consumer/Customer Behavior
3. New Approaches to Generating Customer Insights
4. Innovation
5. Marketing Strategy
6. New Media

www.msi.org
2010 – 2012 Research Priorities

1. The Need for Marketing Accountability

“Marketing Management and Practice in an Evolving Landscape”

1. Delivering Value through Enhanced Media and Channels
2. Managing Brands in a Transformed Marketplace
3. Allocating Resources to Marketing Activities
4. Leveraging Research Tools and New Sources of Data

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Research Priorities

1. The Need for Marketing Accountability

- Measure marketing performance and integrate into business process
- Develop metrics and methods for existing and emerging communication channels
- Measure and manage brand equity
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“Metrics for Making Marketing Matter”

2. A Framework for Marketing Accountability

**FIGURE 1**
Marketing Productivity Chain

<table>
<thead>
<tr>
<th>Company Viewpoint</th>
<th>Level</th>
<th>Who Cares?</th>
</tr>
</thead>
<tbody>
<tr>
<td>We do stuff.</td>
<td>Marketing actions</td>
<td>Customers</td>
</tr>
<tr>
<td>Customers do stuff.</td>
<td>Customer reaction</td>
<td>Advertising and promotions specialists</td>
</tr>
<tr>
<td>Stuff happens.</td>
<td>Product-market impact</td>
<td>Product managers and chief marketing officer</td>
</tr>
<tr>
<td>Accounting happens.</td>
<td>Financial outcomes</td>
<td>Chief marketing officer and chief financial officer</td>
</tr>
<tr>
<td>Wealth is affected.</td>
<td>Firm value</td>
<td>Chief financial officer and chief executive officer</td>
</tr>
</tbody>
</table>

*Lehmann (2004)*

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2. A Framework for Marketing Accountability

Marketing Capabilities

Marketing Activities (Inputs)

Individual (Customer) level attitudes and behaviors

(Aggresive) Product-market outcomes

Financial results (Performance)

Expectations of future performance (Valuation)


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Framework for Marketing Performance Measurement

2. A Framework for Marketing Accountability

What marketers and competitors do
- Advertising
- Price
- Promotions
- Distribution

What customers think & feel
- Awareness
- Consideration
- Liking

What customers do
- Brand purchases

Direct Effect
Feedback Effect

Adapted from Lehmann and Reibstein (2006)
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Advertising Campaign Testing

2. A Framework for Marketing Accountability

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Brand Health Tracking

2. A Framework for Marketing Accountability

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Marketing Mix Modeling

2. A Framework for Marketing Accountability

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3. Marketing Mix Modeling and Marketing Planning

• ... are representations of marketing systems that are useful for understanding the behavior of markets and for predicting the impact of marketing actions.

• ... describe the relationship between performance measures, such as sales or market share, and controllable variables, such as price and distribution.

• ... are designed to aid managers in planning and forecasting.
Maximize Return on Marketing

3. Marketing Mix Modeling and Marketing Planning

Marketing ROI

Marketing Expenditure

Marketing Support

Incremental Contribution

Incremental Volume

Costs

Margins

Model

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Dimensions of Marketing Planning

3. Marketing Mix Modeling and Marketing Planning

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Types of Marketing Planning

3. Marketing Mix Modeling and Marketing Planning

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Marketing Mix Planning

3. Marketing Mix Modeling and Marketing Planning

TRADEMARK

BRAND

PACK/SIZE

ACCOUNT

DMA

MARKET

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Model Design

4. MMM: Econometric Time-Series Analysis

- Model objectives
- Selection of variables
- Relations among variables
- Data sources
- Functional form
Objectives Specified in Model

4. MMM: Econometric Time-Series Analysis

- Sales
- Market Share
- Traffic, Average check size, …
- Awareness, purchase intent, …
Selection of Variables

Examples of dependent variables:
sales, market share, brand choice, awareness, attitudes, trial rates ...

Examples of explanatory variables:
marketing mix activities, macroeconomic factors ...
A Simple Model

4. MMM: Econometric Time-Series Analysis

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\[ Y \text{ (Sales Level)} \]

\( a \) (sales level when advertising = 0)

\[ X \text{ (Advertising)} \]

\( b \) (slope of the sales line)

\[ 1 \]
Response Function

4. MMM: Econometric Time-Series Analysis

Sales Response

Current Sales

Max

Response Function

Min

Current Effort

Effort Level

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Data Sources

• Dependent and Independent Variables
• Internal vs. Syndicated
• Levels of Aggregation
Multiplicative Models

$$S_i = \exp(\alpha_i) \prod_{h=1}^{H} x_{hi}^{\beta_h} \epsilon_i$$
4. MMM: Econometric Time-Series Analysis

\[ Q = e^{B_0} X^{B_1} \]

\( (0 < B_1 < 1) \)
Multiplicative model

- Only highest order interaction
- Constant elasticity model
- Log-log model

Most widely used sales response function

- Cobb-Douglas Production Function (1928)
\[ \ln Q = B_0 + B_1 \ln X_1 \]  
(Linear in logs)
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How Modeling Works

5. Model Estimation

Fit a model…

to minimize the errors…

Calculate contributions…

…over the year

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Example Model

5. Model Estimation

Sales Volume

R² – 0.92
MAPE – 4.4%

Sales Volume
Fitted Model
Example Model Decomposition

5. Model Estimation

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Traditional mix modeling does not work for integrated online measurement

6. MMM for Today’s Media Landscape

- Treating online marketing (especially digital media) as just another direct driver of sales leads to misattribution of sales to drivers and ultimately bad mix decisions
- Even the best of today’s commonly used approaches have failed to keep up with today’s challenges
- The following picture simply no longer holds true:

A far more complex marketplace exists in which online activity acts as an outcome of offline marketing, as well as a driver of sales.
A new approach is needed to manage complexity of the new media paradigm

6. MMM for Today’s Media Landscape

- SALES
- Paid Media
- Owned Media
- Earned Media
- Trade
- Coupon
- Organic Search

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How Marketing Influences Sales
As well as feedback effects

6. MMM for Today’s Media Landscape

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How Marketing Influences Sales
Marketing drives customers both directly and indirectly

6. MMM for Today’s Media Landscape

Direct Impact

TV

In-Store

It’s amazing what soup can do

Radio

Print

Online Display

Sales

Google

Facebook

Campbell’s Kitchen

Campbell’s Condensed Chicken Noodle Soup

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Drivers to Sales
Immediate, Persistent, and Indirect

6. MMM for Today’s Media Landscape

<table>
<thead>
<tr>
<th></th>
<th>In-Store</th>
<th>TV</th>
<th>Facebook</th>
<th>Twitter</th>
<th>Online Display</th>
<th>Print</th>
<th>Radio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grocery Sales (000)</td>
<td>86,910</td>
<td>42,244</td>
<td>28,418</td>
<td>9,938</td>
<td>8,660</td>
<td>1,203</td>
<td>602</td>
</tr>
<tr>
<td>Indirect</td>
<td>1.0%</td>
<td>0.8%</td>
<td>0.5%</td>
<td>2.0%</td>
<td>0.3%</td>
<td>0.5%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Persistent</td>
<td>1.0%</td>
<td>1.2%</td>
<td>4.5%</td>
<td>2.0%</td>
<td>0.1%</td>
<td>0.3%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Immediate</td>
<td>10.0%</td>
<td>7.8%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>2.8%</td>
<td>1.2%</td>
<td>0.5%</td>
</tr>
</tbody>
</table>
Knowing what consumers say matters
Level of conversation activity (and sentiment) is typically monitored
Context of conversations matters: Went to store/made a purchase
Context of conversations matters: Store/brand advertisements

6. MMM for Today's Media Landscape
Context of conversations matters: I love store/brand

6. MMM for Today's Media Landscape

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Drivers of offline store traffic

6. MMM for Today’s Media Landscape

- Natural Search
- Online Traffic
- Paid Media
- Earned Media
- Baseline

- Ads
- Went/Purchased
- Love
So what can businesses do?

6. MMM for Today’s Media Landscape

• Track the content, not just volume and valence of social interaction, and relate to marketing and sales

• Move beyond observer role by targeting paid marketing to stimulate specific social interactions

• Encourage virtuous circle of social interactions leading to purchase, which further induces social interactions about purchase (e.g. Kohls Facebook)
References