Marking Variance Analysis

This module introduces the tool of marketing variance analysis to aid a manager’s understanding of the underlying reason(s) why a marketing plan’s objectives were or were not met.

Authors: Thomas Kinnear and Stu James

© 2013 Thomas Kinnear, Stu James, and Management by the Numbers, Inc.
Net Marketing Contribution

Let’s start with a review of a basic Income Statement and then move on to Net Marketing Contribution (NMC), including alternative methods for calculating NMC.

Simple Income Statement (Example)

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>$100</td>
</tr>
<tr>
<td>Less: Cost of Goods Sold (COGS)</td>
<td>$ 40</td>
</tr>
<tr>
<td>= Gross Profit or Gross Margin</td>
<td>$ 60</td>
</tr>
<tr>
<td>Less Expenses:</td>
<td></td>
</tr>
<tr>
<td>Marketing Expenses (ME)</td>
<td>$ 20</td>
</tr>
<tr>
<td>Other Overhead Expenses</td>
<td>$ 30</td>
</tr>
<tr>
<td>= Net Income</td>
<td>$ 10</td>
</tr>
</tbody>
</table>

Here is a typical (simple) income statement. Note that marketing expenses are broken out as a separate line item under expenses.
Because the marketing function (manager) is primarily concerned with marketing profitability, a better measure for that department might be Net Marketing Contribution (NMC) which leaves out expenses that are not associated with marketing activity.

**Simple Net Marketing Contribution Statement (Example)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>$100</td>
</tr>
<tr>
<td>Less: Cost of Goods Sold (COGS)</td>
<td>$ 40</td>
</tr>
<tr>
<td>= Gross Profit or Gross Margin</td>
<td>$ 60</td>
</tr>
<tr>
<td>Less: Marketing Expenses (ME)</td>
<td>$ 20</td>
</tr>
<tr>
<td>= Net Marketing Contribution (NMC)</td>
<td>$ 40</td>
</tr>
</tbody>
</table>
We could add some more relevant information to both the revenues and cost of goods sold lines by providing the detail for calculating revenues and COGS as shown below.

**Simple Net Marketing Contribution Statement (Example)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues (20 units x $5 price)</td>
<td>$100</td>
</tr>
<tr>
<td>Less: COGS (20 units x $2 unit cost)</td>
<td>$ 40</td>
</tr>
<tr>
<td>= Gross Profit or <strong>Gross Margin</strong></td>
<td>$ 60</td>
</tr>
<tr>
<td>Less:</td>
<td></td>
</tr>
<tr>
<td>Marketing Expenses (ME)</td>
<td>$ 20</td>
</tr>
<tr>
<td>= Net Marketing Contribution (NMC)</td>
<td>$ 40</td>
</tr>
</tbody>
</table>

Once we add this information, it might be more interesting, from a managerial point of view, to calculate **gross margin** differently as shown on the following page.
## Net Marketing Contribution

### Approach 1: Gross Margin using Income Statement

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues (20 units x $5 price)</td>
<td>$100</td>
</tr>
<tr>
<td>Less: COGS (20 units x $2 unit cost)</td>
<td>$40</td>
</tr>
<tr>
<td>= Gross Profit or Gross Margin</td>
<td>$60</td>
</tr>
</tbody>
</table>

### Approach 2: Gross Margin using Unit Margin

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units Sold</td>
<td>20</td>
</tr>
<tr>
<td>x Margin (or Price $5 – Unit Cost $2)</td>
<td>$3</td>
</tr>
<tr>
<td>= Gross Profit or Gross Margin</td>
<td>$60</td>
</tr>
</tbody>
</table>

So, using this second approach, we can now create an alternative method for calculating Net Marketing Contribution which, as we’ll soon see, is more valuable to the manager.
We may want to break this down even further to enhance our analysis. We’ve already discussed that Margin equals the selling price less the unit cost, but we could also further refine volume (units sold).

**Definitions**

**Volume** = Market Demand x Market Share  
**Margin** = Price – Unit Cost

This leads us to a more detailed equation for net marketing contribution as defined on the following page.
Net Marketing Contribution

**Definition**

\[
\text{NMC} = \text{Volume} \times \text{Margin} - \text{Marketing Expenditures}
\]

- or -

\[
\text{NMC} = (\text{Demand} \times \text{Share}) \times (\text{Price} - \text{Cost}) - \text{Marketing Expenditures}
\]

**Insight**

We’ve left out many details here, but take a moment to realize that this general approach may be used for determining the profitability of a particular product line, of a sales channel (with different margins, demand, and share), of services, etc. At the Income Statement level, sales of all products and services through all channels are combined. Managerially, we want to break out this analysis into finer detail to help us improve the effectiveness of our marketing plan (product lines, pricing, discounts, promotions, resource allocation, etc.)
Question 1: Fred’s Fine Foods distributes Phil’s Phabulous Olive Oil along with many other products from different companies. The oil sells for $20 / bottle retail and Fred sells 300 units. Fred spent $500 on advertising and his rent is $2000. Phil sells the oil to its distributors for $10 / bottle and it costs $5 to produce. Of the $500 that Fred spent on advertising, 50% was provided by Phil in the form of co-op advertising as an incentive to its distributors. What is the NMC of the Olive Oil from Fred’s point of view and what is the NMC of using Fred as a channel from Phil’s point of view?

Answer:

NMC (Fred / Oil) = Units Sold x Margin – Marketing Expenditures
= 300 x ($20 - $10) - .50 * $500
= 300 x $10 - $250 = $2,750

NMC (Phil / Fred) = Units Sold x Margin – Marketing Expenditures
= 300 x ($10 - $5) - .50 * $500
= 300 x $5 - $250 = $1,250
Question 2: Sylvia estimates total demand for cell phone service in Collegeville at 200,000 subscribers. MyMobile has 15% of the market. The price of the standard service is $40/month. There is no variable cost. Sylvia recently ran a marketing promotion of 50% off a six month subscription. Sylvia spent $750,000 on print and TV advertising for the special promotion and she had 5,000 new subscribers sign up. What is the NMC for 6 months for the current subscribers of MyMobile? What is the NMC for Sylvia’s special promotion for the 6 month period? What else might Sylvia want to consider?

Answer:

NMC (Current Sub.) = Units Sold x Margin – Marketing Expenditures
= 200,000 x .15 x 6 * ($40 - $0) - $0
= 30,000 x $240 - $0 = $7,200,000

NMC (Promotion) = Units Sold x Margin – Marketing Expenditures
= 5,000 x 6 * ($40 * .5 - $0) - $750,000
= 5,000 x $120 - 750,000 = -$150,000
Insight

It should be noted that the analysis in this example, but especially in real life, is not simple. Perhaps Sylvia should consider Customer Lifetime Value (CLV) in her analysis of the promotion (positive impact). Maybe Sylvia wonders how many of those 5000 customers would have selected MyMobile without the special promotion (negative financial impact). Either of these two issues is likely to have a huge impact on the NMC calculations from a managerial (planning) perspective. The accounting is relatively straightforward, but the marketing decision-making is complex and fraught with ambiguity and assumptions. Though we have more data all the time, we still have to choose the right data and appropriate analysis for the problem at hand, and use our judgment and experience to arrive at a good decision.

Let’s now move on to applying this NMC model to analyze variance from a marketing plan.
Variance Analysis of a Marketing Plan

If we think of a marketing plan at its most fundamental level, it consists of the following decisions and planned outcomes:

<table>
<thead>
<tr>
<th>Inputs (Decisions)</th>
<th>Target Market(s)</th>
<th>Market Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Choice of target market(s) determine(s) potential demand.</td>
<td></td>
</tr>
<tr>
<td>Price / Product (Value Proposition)</td>
<td>Market Share Margins</td>
<td>Marketing Exp ($)</td>
</tr>
<tr>
<td></td>
<td>Decisions regarding the 4Ps - Price, Product/Service offering, Promotion, and Place (distribution choice) - drive market share and margins outcomes.</td>
<td></td>
</tr>
<tr>
<td>Marketing Support Activities</td>
<td>Sales Market Share NMC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NMC is marketing’s “bottom line” for financial results.</td>
<td></td>
</tr>
</tbody>
</table>
If the outcomes section of the marketing plan looks somewhat familiar, it should. It is basically the NMC equation from previous slides.

\[ \text{Market Potential} = \text{Demand} \]

\[ = \text{Demand} \times \text{Share} = \text{Volume} \]

\[ = \text{Share} \]

\[ = \text{Price} - \text{Cost} \]

\[ = \text{Marketing Exp ($)} \]

\[ = \text{NMC} \]

A marketing plan should consist of specific estimates for each of these variables!
Marketing Plan Definitions

NMC = Volume \times \text{Margin} - \text{Marketing Expenditures}
- or -
NMC = (\text{Demand} \times \text{Share}) \times (\text{Price} - \text{Cost}) - \text{Marketing Expenditures}

Recognizing these marketing performance parameters, a marketing plan requires that the business estimate a specific level of:

- **Market Demand**: Size of the target market(s).
- **Market Share**: Percent of target market captured by the company.
- **Price**: Market-based price designed to achieve a desired product position and customer value.
- **Variable Cost**: All product costs, transportation costs, and sales costs that vary with each unit sold.
- **Marketing Expenditures**: Marketing budget needed to achieve the market penetration in the plan.
Question 3: Bill and Sally own a custom cupcake business in Larksburg and they are designing a marketing plan for next year. They estimate the total market for cupcakes in Larksburg at 400,000 and they are planning to achieve a 35% market share. They will price their cupcakes at $1 each and their variable costs are expected to be $.40. They plan to spend $80,000 on advertising, delivery, and promotion next year. What is their planned NMC?

Answer:

Planned NMC = (Demand x Share) x (Price – Cost) – Marketing Exp.
= (400,000 x .35) x ($1 - $.40) - $80,000
= Volume x Margin – Marketing Exp$
= 140,000 x $.60 - $80,000 = $4,000
Question 4: At the end of the year, Bill and Sally reviewed their results which showed a loss on NMC of -$15,000. They wondered what caused this. They sold 150,000 cupcakes at $1 each, which was more than they had planned, and yes, they knew that a special promotion mid-year was $10,000 higher than they expected due to a high response rate. Their total cost of goods sold was $75,000. They later found out that 1 million cupcakes were sold in Larksburg. Can Bill and Sally discover where their plan didn’t meet expectations?

Answer:

So, we can say that the variance between the planned NMC and the actual NMC was -$19,000 ($4,000 - $15,000), but we still need a few additional pieces of the NMC equation for a more complete analysis.

Cost = $75,000 / 150,000 = $.50 (Actual Variable Cost)
Market Share = 150,000 / 1,000,000 = 15% (Actual Market Share)
Now we can summarize the variance of performance metrics for Bill and Sally’s example as follows:

<table>
<thead>
<tr>
<th>Area of Performance</th>
<th>Plan</th>
<th>Actual</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Demand</td>
<td>400,000</td>
<td>1,000,000</td>
<td>600,000</td>
</tr>
<tr>
<td>Market Share</td>
<td>35%</td>
<td>15%</td>
<td>-20%</td>
</tr>
<tr>
<td>Volume</td>
<td>140,000</td>
<td>150,000</td>
<td>10,000</td>
</tr>
<tr>
<td>Price / Unit</td>
<td>$1.00</td>
<td>$1.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>Variable Costs</td>
<td>$0.40</td>
<td>$0.50</td>
<td>$0.10</td>
</tr>
<tr>
<td>Margin / Unit</td>
<td>$0.60</td>
<td>$0.50</td>
<td>-$0.10</td>
</tr>
<tr>
<td>Sales Revenues</td>
<td>$140,000</td>
<td>$150,000</td>
<td>$10,000</td>
</tr>
<tr>
<td>Gross Profit</td>
<td>$84,000</td>
<td>$75,000</td>
<td>-$9,000</td>
</tr>
<tr>
<td>Marketing Expenses</td>
<td>$80,000</td>
<td>$90,000</td>
<td>$10,000</td>
</tr>
<tr>
<td>Net Marketing Contribution</td>
<td>$4,000</td>
<td>-$15,000</td>
<td>-$19,000</td>
</tr>
</tbody>
</table>
Insight

Using this summary, we can see that Bill and Sally were really saved by the fact that the market grew so much. In every other measure, they lost ground. Market share was down, margins were down, and marketing expenditures were over budget. They were also significantly off their market size forecast. Marketing plan variance analysis allows managers to see what happened beyond the bottom line, which alone may not highlight significant changes or problems in the market, competition, or forecasting techniques!

Finally, it may be helpful to put a dollar value on each variance so that the magnitude of the variance may be compared directly. The following slide provides the formulas for doing so, and the slide after that shows how it applies to this example.
Variance Analysis of a Marketing Plan

**NMC Variance**
\[ \text{NMC}_{\text{actual}} - \text{NMC}_{\text{plan}} \]
\[ = [(V_a \cdot M_a) - Me_a] - [(V_p \cdot M_p) - Me_p] \]

- **Volume Variance**
  \[ M_p \cdot (V_a - V_p) \]

- **Marketing Exp. Variance**
  \[ - (ME_a - ME_p) \]

+ **Margin Variance**
  \[ V_a \cdot (M_a - M_p) \]

+ **Demand Variance**
  \[ M_p \cdot S_p \cdot (D_a - D_p) \]

+ **Share Variance**
  \[ M_p \cdot D_a \cdot (S_a - S_p) \]

+ **Price Variance**
  \[ V_a \cdot (P_a - P_p) \]

- **Cost Variance**
  \[ - V_a \cdot (C_a - C_p) \]

**Where:**

\( V = \) Unit Volume, \( M = \) Margin, \( ME = \) Marketing Expenditures, 
\( S = \) Market Share, \( D = \) Market Demand, \( P = \) Price, \( C = \) Variable Cost

\( a = \) actual \quad \( p = \) planned

Variance Analysis of a Marketing Plan

Example 1: Cupcakes

NMC Variance
\[ \text{NMC}_{\text{(actual)}} - \text{NMC}_{\text{(plan)}} = (V_a \cdot M_a - M_e_a) - (V_p \cdot M_p - M_e_p) \]
\[ = -$15,000 - $4,000 = -$19,000 \]

+ Volume Variance
\[ M_p \cdot (V_a - V_p) \]
\[ $.60 \cdot (150,000 - 140,000) \]
\[ = $6,000 \]

- Marketing Exp. Variance
\[ -(M_e_a - M_e_p) \]
\[ - ($90,000 - $80,000) \]
\[ = -$10,000 \]

+ Margin Variance
\[ V_a \cdot (M_a - M_p) \]
\[ V_a \cdot ($0.50 - $0.60) \]
\[ 150,000 \cdot ($0.50 - $0.60) \]
\[ = -$15,000 \]

+ Demand Variance
\[ M_p \cdot S_p \cdot (D_a - D_p) \]
\[ $.60 \cdot .35 \cdot (1,000,000 - 400,000) \]
\[ = $126,000 \]

+ Share Variance
\[ M_p \cdot D_a \cdot (S_a - S_p) \]
\[ $.60 \cdot 1,000,000 \cdot (.15 - .35) \]
\[ = -$120,000 \]

+ Price Variance
\[ V_a \cdot (P_a - P_p) \]
\[ 150,000 \cdot ($1 - $1) \]
\[ = $0 \]

- Cost Variance
\[ - V_a \cdot (C_a - C_p) \]
\[ 150,000 \cdot ($0.50 - $0.40) \]
\[ = -$15,000 \]

Insight
Using this analysis, it is clear that the share variance of -$120,000 was the most significant problem, and that the positive effect of the demand variance of $126,000 almost made up for the three negative variances.
Variance Analysis of a Marketing Plan

**Example 2: No Top Level Variance**

**NMC Variance**

\[ \text{NMC}_{\text{actual}} - \text{NMC}_{\text{plan}} \]

\[= (V_a \cdot M_a - M_e_a) - (V_p \cdot M_p - M_p) \]

\[= \$94 \text{ million} - \$94 \text{ million} = \boxed{\$0} \]

**+ Volume Variance**

\[ M_p \cdot (V_a - V_p) \]

\[= 125 \cdot (800 \text{K} - 800 \text{K}) \]

\[= \boxed{\$0} \]

**+ Marketing Exp. Variance**

\[ - (M_e_a - M_e_p) \]

\[= 6 \text{ million} - 6 \text{ million} \]

\[= \boxed{\$0} \]

**+ Demand Variance**

\[ M_p \cdot S_p \cdot (D_a - D_p) \]

\[= 125 \cdot .20 \cdot (4,000,000 - 8,000,000) \]

\[= -\$50,000,000 \]

**+ Share Variance**

\[ M_p \cdot D_a \cdot (S_a - S_p) \]

\[= 125 \cdot 4,000,000 \cdot (.20 - .10) \]

\[= \$50,000,000 \]

**+ Price Variance**

\[ V_a \cdot (P_a - P_p) \]

\[= 800,000 \cdot ($300 - $250) \]

\[= \$40,000,000 \]

**- Cost Variance**

\[ - V_a \cdot (C_a - C_p) \]

\[= -800,000 \cdot ($175 - $125) \]

\[= -\$40,000,000 \]

**Insight**

The marketing plan seems to be spot on at both the top level and the first level of variance analysis. The real information is seen at the demand/share/price/cost/expenditure level. The question then becomes what causes the variance at this level?
Variance Analysis – Root Causes

Profit = NMC – Other Fixed Costs =

\[
\text{Unit Sales} \times \text{Unit Margin} - \text{TFC} = (\text{Demand} \times \text{Share}) \times (\text{Selling Price} - \text{COGS}) - \text{TFC}
\]

* Inherent needs
* Nature of products available on market
* Total marketing $s targeted at market
* Quality of marketing effort
* Product life cycle phase
* Economy: (GDP, interest rates, inflation, etc.)
* “Quality” of product relative to competitors
* Relative $s for marketing
* Quality of marketing effort: advertising, sales force, etc.
* Price relative to competitors
* Distribution scope and quality
* Brand positioning
* Overall corporate image, preference, capabilities
* MSRP – channel margins, and discounts
* Customer value level
* Price sensitivity
* Sales force commissions
* “Quality” and cost of components
* Technological capabilities
* Volume effects
* Product stability: upgrade nature and timing; remodeling, etc.
* Discretionary marketing expenditures: advertising, promotion, sales force, etc.
* R&D costs
* Capacity utilization
* Technology capability upgrades
* Fixed distribution costs
* Overhead cost

Where: TFC = discretionary marketing expenditures + other fixed costs

Find the root causes of variances!
Variance Analysis of a Marketing Plan

The key managerial issues relate to examining the causes of the variances. The variances are only the beginning of the analysis. The manager needs to use this variance insights to probe into such issues as: why did the market grow so much; why was the brand’s market share objective not reached; and why did variable costs increase (or why were they different from the plan)?

Some of the sub-questions they might ask in the cupcake example include:

• Did a new competitor enter the market?
• Did an existing competitor change their strategy?
• Did the company lose existing customers and/or gain new customers? Why?
• Are people buying more cupcakes or are people who never bought cupcakes before now buying them (usage vs. penetration)?
• Is the market likely to continue to grow at this rate next year?
• What was the cause of the increase in costs?