SITUATION ANALYSIS

The Situation Analysis will help your company understand the current market conditions and how the industry will evolve over the next eight years. There are five parts:

- Perceptual Map
- Industry Demand Analysis
- Capacity Analysis
- Margin Analysis
- Consumer Report

Tip: An interactive version of the “SITUATION ANALYSIS” is available in the Online Manager Guide.

The analysis can be done as a group or you can assign the parts to individuals and then report your findings to the rest of the company. These exercises require *The Foundation FastTrack* industry newsletter. The *FastTrack* is available from two locations:

- Login to the website and click the Reports link;
- From Foundation.xls, click Last Year’s Reports in the menu bar.

Tip: The *FastTrack* displays “Last Years Results,” for example, the *FastTrack* available at the start of Round 2 will display the results for Round 1. The *FastTrack* available at the start of Round 1 displays the results for Round 0, when all companies have equal standing (if you access the report from the website, use the Round 0 *FastTrack* to complete the Situation Analysis).

PERCEPTUAL MAP

The Research & Development Department can use the Perceptual Map exercise to plan revision and invention projects that meet customers’ shifting size and performance expectations. The Marketing Department can use the results during forecasting as they compare competing products and when determining prices (in general, better positioned products can command higher prices).

Both segments have a set of circles. The smaller, inner fine cut circles have a radius of 2.5 units. They represent the heart of the segments where demand is strong. In addition, each inner circle has an ideal spot, a location where demand is strongest. The larger outer rough cut circles have a radius of 4.0 units. They represent the outer fringe of the segments, where demand is weakest.

IDEAL SPOTS

Customer positioning preferences are reported in the Buying Criteria boxes in *The Foundation FastTrack’s Market Segment Analyses*. These locations, or ideal spots, drift with the segments. The Buying Criteria report the preferred size and performance for each segment as of December 31 of the previous year. The importance of positioning varies between the segments. Positioning is more important to High Tech customers than Low Tech customers.

Within each segment, the ideal spot is at a location relative to the center of the circle. These locations, or offsets, appear in Table 1 on page 2. For example, Low Tech customers prefer products at the exact center of the Low Tech circle (the offsets for performance and size are both 0.0). The center of the Low Tech segment in Figure 1 on page 2 has a size of 15.2 and a performance of 4.8. Mark that approximate location on Figure 1 with a pen or pencil. Use Table 1 to determine the approximate ideal spot location for the High Tech segment and mark it on Figure 1.
PLOTTING SEGMENT CENTERS FOR EACH YEAR

You want to know where the segment circles will be in future years. Use Form 1 to record the segment circle centers for each round (that is, each simulated year).

Table 7.2 shows the yearly drift rates for each segment. For example, the Low Tech segment ends Round 0 (that is, last year) with a performance of 4.8 and a size of 15.2. To these coordinates, add the performance coordinate drift rate of +0.5 (customers want better performing products) and subtract the size coordinate drift rate of -0.5 (customers want smaller products).

The result, at the end of Round 1 the center of the Low Tech segment circle will have a performance of 5.3 (add 0.5) and a size of 14.7 (subtract 0.5).

Tip: Products that are within 2.5 units of the segment center fall inside the smaller fine cut circle where demand is higher.

Tip: The information in Form 1 will reflect the segment centers at the end of the round. Therefore, the Round 0 positions can be seen as the Round 1 starting positions, Round 2 centers can be seen as the Round 3 starting position, etc. Segments drift a little each month.

Table 7.1

<table>
<thead>
<tr>
<th>Segment</th>
<th>Performance</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Tech</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>High Tech</td>
<td>+1.4</td>
<td>-1.4</td>
</tr>
</tbody>
</table>

Table 7.2

<table>
<thead>
<tr>
<th>Segment</th>
<th>Performance</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Tech</td>
<td>+0.5</td>
<td>-0.5</td>
</tr>
<tr>
<td>High Tech</td>
<td>+0.7</td>
<td>-0.7</td>
</tr>
</tbody>
</table>
INDUSTRY DEMAND ANALYSIS

The Industry Demand Analysis will help the Marketing and Production Departments anticipate future demand. Marketing can take the total demand for each segment and divide that by the number of products competing in the segment. This will provide a starting point for a sales forecast (see the Online Manager Guide for a detailed discussion of forecasting). Production can use the results when making capacity buy and sell decisions.

You will need the Segment Analysis pages (pages 5 - 6) of The Foundation FastTrack. To analyze the demand for each segment, find the demand at the start of the simulation (Round 0), then calculate demand for Rounds 1 through 8.

At the top of each Segment Analysis page you will find a box called Statistics. Copy the Total Industry Unit Demand number into the Round 0 column of Form 2. Next, for both segments, multiply the Round 0 demand by the growth rate and add the result to the Round 0 demand. This will give you a close approximation of Round 1 demand. Repeat this process for all eight rounds and enter the information in Form 2.

Tip: If you prefer, you can use the following shortcut. First, convert the growth rate percentage to a decimal:

Low Tech Segment Growth Rate = 10.0% = 0.1

Add 1 to the decimal:

1 + 0.1 = 1.1

Multiply the Round 0 Low Tech demand by 1.1. This will give you a close approximation of Total Industry Demand for Round 1. Multiplying the Round 1 demand by 1.1 will give the Round 2 Total Industry Unit Demand, etc. Repeat the process for both segments for all eight rounds and enter the information in Form 2.

CAPACITY ANALYSIS

The Industry Demand Analysis indicates the sensor market is growing. The Capacity Analysis will help the Production and Finance Departments anticipate the cost of adding capacity and automation.

Enter the name of your company’s product in the Product Name column of Form 3 on page 4. You will find this information in the Production Analysis, page 4 of The Foundation FastTrack. The name of your product starts with the first letter of your company’s name. If you are not yet assigned to a company, or if you are playing the Footrace version of the simulation, use the Andrews Company information.

Next, find the First Shift Capacity in the Capacity Next Round column of the Production Analysis. This number (in thousands) indicates the amount of sensors that can be built over the course of a year using a single, eight-hour shift. In Form 3, enter the Capacity Next Round into the column under First Shift Capacity, Company.
Multiply the First Shift Capacity, Company by the number of active companies in your simulation (Page 1 of the FastTrack displays each company name). This indicates the amount of sensors that can be built by the entire industry using a single shift over the course of a year. Place the result in the First Shift Capacity, Industry column.

Production schedules that exceed the First Shift Capacity require hiring a second shift. Multiply the First Shift Capacity, Company by 2 and place the result in the First & Second Shift, Company column. Multiply the First Shift Capacity, Industry and place the result in the First & Second Shift, Industry column.

Copy the value for Automation Next Round from the Production Analysis into the Automation Level column. Use the formulas below to calculate the Cost to Double Capacity and the Cost to Raise Automation to 10.0.

\[
\text{Cost to Double Capacity} = \text{First Shift Capacity} \times (6 + (4 \times \text{Automation Level}))
\]

\[
\text{Cost to Increase Automation to 10.0} = \text{First Shift Capacity} \times (4 \times (10 - \text{Automation Level})]
\]

### MARGIN ANALYSIS

Healthy margins, the difference between a product’s manufacturing cost and its price, are critical to company success. The Margin Analysis will help the Research & Development Department understand the cost of material, and the Production Department understand the effect automation has on labor costs. It will also demonstrate to the Marketing Department the importance of adequate pricing, and to the Finance Department the upper limits of profitability.

Enter the name of your company’s product in the Product Name column in the Form 4. You will find this information in the Production Analysis, page 4 of The Foundation FastTrack. The name of your product starts with the first letter of your company’s name. If you are not yet assigned to a company, or if you are playing the Footrace version of the simulation, use the Andrews Company information.

Next, enter the product’s price, material cost, and labor cost. Calculate the Contribution Margin:

\[
\text{Contribution Margin} = \text{Price} - (\text{Material Cost} + \text{Labor Cost})
\]

Calculate the Margin Percentage:

\[
\text{Margin Percentage} = \frac{\text{Contribution Margin}}{\text{Price}}
\]

Enter these numbers into Form 4.
MARGIN POTENTIAL

Use Form 5 to determine the margin potential. Go to the Buying Criteria on the Segment Analysis pages of The Foundation FastTrack to find the maximum permitted price and the minimum acceptable Mean Time Between Failure (MTBF) for both segments (lowering the MTBF decreases material cost). Determine the minimum Material Cost per segment using this equation (see Table 4 for an example):

\[
\text{Minimum Material Cost} = (\$0.0003 \times \text{Minimum Acceptable MTBF}) + \text{Trailing Edge Positioning Cost in Table 3}
\]

Determine the minimum Labor Cost for each segment ($11.20 is a rough estimate of the labor cost. It is used solely to illustrate the Margin Potential concept):

\[
\text{Minimum Labor Cost} = [\$11.20 - (1.12 \times \text{Automation Ratings below})] + 1.12
\]
- Low Tech Automation: 10.0
- High Tech Automation: 6.0

Find the Contribution Margin dollars and Contribution Margin percent:

\[
\begin{align*}
\text{Contribution Margin} & = \text{Price} - (\text{Material Cost} + \text{Labor Cost}) \\
\text{Margin Percentage} & = \frac{\text{Contribution Margin}}{\text{Price}}
\end{align*}
\]

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**Table 3 Material Positioning Component Costs**

<table>
<thead>
<tr>
<th></th>
<th>Trailing Edge</th>
<th>Leading Edge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Tech</td>
<td>$1.50</td>
<td>$8.50</td>
</tr>
<tr>
<td>High Tech</td>
<td>$4.00</td>
<td>$11.00</td>
</tr>
</tbody>
</table>

**Table 4 Minimum Material Costs For The High Tech Segment**

<table>
<thead>
<tr>
<th>Component Cost</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Reliability Component Cost</td>
<td>$0.0003 x 17,000 = $5.10</td>
</tr>
<tr>
<td>Trailing Edge Positioning Component Cost</td>
<td>$4.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$9.10</strong></td>
</tr>
</tbody>
</table>
CONSUMER REPORT

The Consumer Report will help the Research & Development Department understand the need to design quality products and the Marketing Department the importance of adequate pricing, sales budget and promotion budget decisions.

You will need *The Foundation FastTrack* Market Segment Analyses Buying Criteria and the Production Analysis. Enter your answers in Form 6, using a G for Good, F for Fair and P for Poor.

Price: Award a Good if your product’s price is in the bottom third of the expected price range, Fair if it is in the middle third and Poor if it is in the top third. You can find the price in the Production Analysis.

Reliability: Award a Good if the MTBF specification is in the top third of the range, Fair if it is in the middle third and Poor if it is in the bottom third.

Age: Award a Good if the age on December 31 is within 0.5 years of the ideal age, Fair if the age is 0.6 to 1 year and Poor if the age is beyond 1 year.

Positioning: Award a Good if your product is within 0.5 units of the segment’s ideal spot, Fair if it is 0.6 to 1.5 units away and Poor if it is beyond 1.5 units.

Awareness: Award a Good if your product’s awareness exceeds 80%, Fair if it is 50% to 80% and Poor if it is below 50%.

Accessibility: Award a Good if your product’s accessibility exceeds 80%, Fair if it is 50% to 80% and Poor if it is below 50%.

In the Overall row, give your products a Good only if the top two attributes in the Buying Criteria rate Good, and if the awareness and accessibility ratings are at least Fair.

Form 6

<table>
<thead>
<tr>
<th>Low Tech</th>
<th>High Tech</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>Price</td>
</tr>
<tr>
<td>Reliability</td>
<td>Reliability</td>
</tr>
<tr>
<td>Age</td>
<td>Age</td>
</tr>
<tr>
<td>Positioning</td>
<td>Positioning</td>
</tr>
<tr>
<td>Awareness</td>
<td>Awareness</td>
</tr>
<tr>
<td>Accessibility</td>
<td>Accessibility</td>
</tr>
<tr>
<td>Overall</td>
<td>Overall</td>
</tr>
</tbody>
</table>