MEASURING AND FORECASTING DEMAND

When a company finds an attractive market, it must estimate that market’s current size and future potential carefully. This appendix presents the principles and tools for measuring and forecasting market demand.

To develop effective targeting strategies, and to manage their marketing efforts effectively, companies must be good at both measuring current market demand and forecasting future demand. Overly optimistic estimates of current or future demand can result in costly overcapacity or excess inventories. Underestimating demand can mean missed sales and profit opportunities.

MEASURING CURRENT MARKET DEMAND

Marketers will want to estimate three aspects of current market demand—total market demand, area market demand, and actual sales and market shares.

ESTIMATING TOTAL MARKET DEMAND

The total market demand for a product or service is the total volume that would be bought by a defined consumer group in a defined geographic area in a defined time period in a defined marketing environment under a defined level and mix of industry marketing effort.

Total market demand is not a fixed number, but a function of the stated conditions. For example, next year’s total market demand for ice cream in Canada will depend on how much the makers of Sealtest, Haagen-Dazs, Parlour, President’s Choice, and other brands spend on marketing. It will also depend on many environmental factors, ranging from the level of consumer health concerns to the weather in key market areas. The demand for the premium ice-cream brands will be affected by economic conditions.

FIGURE A2-1 Market demand
Part A of Figure A2-1 shows the relationship between total market demand and various market conditions. The horizontal axis shows different possible levels of industry marketing expenditures in a given time period. The vertical axis shows the resulting demand level. The curve shows the estimated level of market demand at varying levels of industry marketing effort. Some minimum level of sales would occur without any marketing expenditures. Greater marketing expenditures would yield higher levels of demand, first at an increasing rate, and then at a decreasing rate. Marketing efforts above a certain level would not cause much more demand. This upper limit of market demand is called market potential. The industry market forecast shows the expected level of market demand corresponding to the planned level of industry marketing effort in the given environment.

Companies selling in mature, non-expandable markets often take primary demand—total demand for all brands of a given product or service—as given. They concentrate their marketing resources on building selective demand—demand for their brand of the product or service. For example, in North America, where it faces a mature and largely non-expandable total soft drink market, Coca-Cola directs most of its marketing energies toward building consumer preference for Coke, Diet Coke, Sprite, and its other brands. However, in countries such as China or Russia, which are characterized by huge but largely untapped market potential, Coca-Cola attempts to build the primary demand for soft drinks, as well as preference for its own brands.

Companies have developed various practical methods for estimating total market demand. We will illustrate two here. Suppose Warner Communications Company wants to estimate the total annual sales of recorded compact discs. A common way to estimate total market demand is as follows:

$$Q = n \times q \times p$$

where

- $Q$ = total market demand
- $n$ = number of buyers in the market
- $q$ = quantity purchased by an average buyer per year
- $p$ = price of an average unit

Thus, if there are 100 million buyers of compact discs each year, the average buyer buys six discs a year, and the average price is $17, then the total market demand for discs is $10.2$ billion ($= 100,000,000 \times 6 \times 17$).

A variation of this approach is the chain ratio method. This method involves multiplying a base number by a chain of adjusting percentages. For example, suppose Thompson Consumer Electronics (TCE) wants to estimate the market potential for its new RCA Digital Satellite System. This system uses a small 18-inch wide home satellite dish mounted on a rooftop, windowsill, or porch railing to receive digital television signals relayed from two high-power satellites in space. System prices start at $975 for the satellite dish, decoder box, and remote control. Customers can subscribe to more than 150 channels, all with crystal-clear digital quality pictures and CD-quality sound. Initially, TCE will target households in small towns and rural areas where cable TV is limited or lacking. TCE can make a Canadian demand estimate for the RCA Digital Satellite System using a chain of calculations like the following:
Total number of Canadian households

- The percentage of Canadian households located in small towns and rural areas not served well by cable television
- The percentage of these small town and rural households with moderate or heavy television usage
- The percentage of moderate or heavy usage households with enough discretionary income to buy RCA's home satellite dish

This simple chain of calculations would provide only a rough estimate of potential demand. However, more detailed chains involving additional segments and other qualifying factors would yield more accurate and refined estimates.2

**Estimating Area Market Demand**

Companies face the problem of selecting the best sales territories and allocating their marketing budget optimally among these territories. Therefore, they need to estimate the market potential of different cities, provinces, and countries. Two major methods are available: the *market-buildup method*, which is used primarily by business goods firms, and the *market-factor index method*, which is used primarily by consumer goods firms.

**Market-Buildup Method**

The *market-buildup method* calls for identifying all the potential buyers in each market and estimating their potential purchases. Suppose a manufacturer of mining instruments developed an instrument that can be used in the field to test the actual proportion of gold content in gold-bearing ores. By using it, miners would not waste their time digging deposits of ore containing too little gold to be commercially profitable. The manufacturer wants to price the instrument at $1000. It sees each mine as buying one or more instruments, depending on the mine’s size. The company wants to determine the market potential for this instrument in each mining province or territory. It would hire a salesperson to cover each area that has a market potential of over $300 000. The company wants to start by finding the market potential in the Northwest Territories.

To estimate the market potential in the N.W.T., the manufacturer can consult the Standard Industrial Classification (SIC) developed by Statistics Canada. The SIC is the government’s coding system that classifies industries, for purposes of data collection and reporting, according to the product produced or operation performed. Each major industrial group is assigned a two-digit code—metal mining bears the code number 06. Within metal mining are further breakdowns into four-digit SIC numbers (the gold category has the code number 0611).

Next, the manufacturer can turn to the *Financial Post Survey of Mines* to determine the number of gold-mining operations in each territory and province, their locations within the territory and province, and the number of employees, annual sales, and net worth. Using the data on the N.W.T., the company can prepare a market potential estimate.

An examination of the SIC data reveals that the N.W.T. has 220 gold mines. It is projected that large mines have the potential to purchase four instruments each, while small mines will purchase only one instrument. Fifty percent of the mining operations are large mines. Therefore, the total market for potential instrument sales in the N.W.T. equals \((220 \times .50 \times 4) + (220 \times .50 \times 1)\) 550 instruments. Since each instrument sells for $1000, the market equals $550 000. Thus, the company would need to hire two salespeople to cover the N.W.T.

**Market-Factor Index Method**

Consumer goods companies also have to estimate area market potentials. Consider the following example: A manufacturer of men’s dress shirts wishes to evaluate its
MEASURING AND FORECASTING DEMAND

sales performance relative to market potential in several major market areas, starting with Vancouver. It estimates total national potential for dress shirts at about $200 million per year. The company’s current nationwide sales are $14 million, about a seven percent share of the total potential market. Its sales in the Vancouver metropolitan area are $1,200,000. It wants to know whether its share of the Vancouver market is higher or lower than its national seven percent market share. To determine this, the company first needs to calculate market potential in the Vancouver area.

A common method for calculating area market potential is the **market-factor index method**, which identifies market factors that correlate with market potential and combines them into a weighted index. An excellent example of this method is the **market rating index**, which is published each year by *The Financial Post* in its *Canadian Markets* publication. This survey estimates the market rating for each province and metropolitan area of Canada. The market rating index is based on two factors: the area’s share of Canada’s population, and retail sales. The market rating index (MRI) for a specific area is given by

\[
\text{MRI} = \frac{\text{percentage of national retail sales in the area}}{\text{percentage of national population in the area}}.
\]

Using this index, the shirt manufacturer looks up the Vancouver metropolitan area and finds that this market has 5.77 percent of the nation’s population, and 7.03 percent of the nation’s retail sales. Thus, the market rating index for Vancouver is

\[
\text{MRI} = \frac{7.03}{5.77} = 122
\]

Vancouver has a market rating index that is 22 percent higher than the national average. Because the total national potential is $200 million nationally each year, total potential in Vancouver equals $200 million \times 1.22 \times 0.0577 = $14,078,000. Thus, the company’s sales in Vancouver of $1,200,000 amount to a $1,200,000 \div $14,078,000 = 8.5 \text{ percent share of area market potential. Comparing this with its seven percent national share, the company appears to be doing better in Vancouver than in other areas of Canada.}

The weights used in the buying power index are somewhat arbitrary. They apply mainly to consumer goods that are neither low-priced staples nor high-priced luxury goods. Other weights can be used. Also, the manufacturer would want to adjust the market potential for additional factors, such as level of competition in the market, local promotion costs, seasonal changes in demand, and unique local market characteristics.

Many companies compute additional area demand measures. Marketers now can refine province-by-province and city-by-city measures down to census tracts or postal codes. Census tracts are small areas about the size of a neighbourhood, and postal code areas (designated by Canada Post) can be used to identify particular streets, neighbourhoods, or communities within larger cities.

**ESTIMATING ACTUAL SALES AND MARKET SHARES**

Besides estimating total and area demand, a company will want to know the actual industry sales in its market. Thus, it must identify its competitors and estimate their sales.

Industry’s trade associations often collect and publish total industry sales, although not individual company sales. In this way, each company can evaluate its performance against the industry as a whole. Suppose the company’s sales are increasing at a rate of five percent a year and industry sales are increasing at 10 percent. This company actually is losing its relative standing in the industry.

Another way to estimate sales is to buy reports from marketing research firms that audit total sales and brand sales. For example, A.C. Nielsen, IRI, and other marketing research firms use scanner data to audit the retail sales of various
product categories in supermarkets and drugstores, and they sell this information to interested companies. A company can obtain data on total product category sales as well as brand sales. It can compare its performance with that of the total industry or any particular competitor to see whether it is gaining or losing in its relative standing.³

**FORECASTING FUTURE DEMAND**

Forecasting is the art of estimating future demand by anticipating what buyers are likely to do under a given set of future conditions. Very few products or services lend themselves to easy forecasting. Those that do generally involve a product with steady sales, or sales growth, in a stable competitive situation. But most markets do not have stable total and company demand, so good forecasting becomes a key factor in company success. Poor forecasting can lead to overly large inventories, costly price markdowns, or lost sales due to items being out of stock.

Companies commonly use a three-stage procedure to arrive at a sales forecast. First they make an environmental forecast, followed by an industry forecast, followed by a company sales forecast. The environmental forecast calls for projecting inflation, unemployment, interest rates, consumer spending and saving, business investment, government expenditures, net exports, and other environmental events important to the company. The result is a forecast of gross domestic product, which is used along with other indicators to forecast industry sales. Then the company prepares its sales forecast by assuming that it will win a certain share of industry sales.

Companies use several specific techniques to forecast their sales. Table A2-1 lists many of these techniques.⁴ All forecasts are built on one of three information bases: what people say, what people do, or what people have done. The first basis—what people say—involves surveying the opinions of buyers or those close to them, such as salespeople or outside experts. It includes three methods: surveys of buyer intentions, composites of sales-force opinions, and expert opinion. Building a forecast on what people do involves putting the product into a test market to assess buyer response. The final basis—what people have done—involves analysing records of past buying behaviour or using time-series analysis or statistical demand analysis.

**SURVEY OF BUYERS’ INTENTIONS**

One way to forecast what buyers will do is to ask them directly. This suggests that the forecaster should survey buyers. Surveys are especially valuable if the buyers have clearly formed intentions, will carry them out, and can describe them to interviewers. However, this is sometimes not the case, and marketers must be careful when using consumer survey data to make forecasts.

Several research organizations conduct periodic surveys of consumer buying intentions. These organizations ask questions such as the following:

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**TABLE A2-1 Common Sales Forecasting Techniques**

<table>
<thead>
<tr>
<th>Based on:</th>
<th>Methods</th>
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</thead>
<tbody>
<tr>
<td>What people say</td>
<td>Surveys of buyers’ intentions</td>
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<tr>
<td></td>
<td>Composite sales force opinions</td>
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<tr>
<td></td>
<td>Expert opinion</td>
</tr>
<tr>
<td>What people do</td>
<td>Test markets</td>
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<tr>
<td>What people have done</td>
<td>Time-series analysis</td>
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<tr>
<td></td>
<td>Leading indicators</td>
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<tr>
<td></td>
<td>Statistical demand analysis</td>
</tr>
</tbody>
</table>

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**Do you intend to buy a car within the next six months?**

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<th>0</th>
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<th>.2</th>
<th>.3</th>
<th>.4</th>
<th>.5</th>
<th>.6</th>
<th>.7</th>
<th>.8</th>
<th>.9</th>
<th>1.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>No chance</td>
<td></td>
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<td>Fair chance</td>
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<td>Good chance</td>
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<td>Strong chance</td>
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<td>For certain</td>
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³ Forecasts of total sales can be compared with other estimates of total demand provided by government agencies or trade associations.
This is called a purchase probability scale. In addition, the various surveys ask about the consumer's present and future personal finances, and his or her expectations about the economy. The various bits of information are combined into a consumer sentiment measure (Survey Research Center of the University of Michigan) or a consumer confidence measure (Sindlinger and Company). Consumer durable goods companies subscribe to these indexes to help them anticipate major shifts in consumer buying intentions so that they can adjust their production and marketing plans accordingly.

For business buying, various agencies and consulting firms carry out intention surveys about plant, equipment, and materials purchases.

**COMPOSITE OF SALES-FORCE OPINIONS**

When buyer interviewing is impractical, the company may base its sales forecasts on information provided by the sales force. The company typically asks its salespeople to estimate sales by product for their individual territories. It then adds up the individual estimates to arrive at an overall sales forecast.

Few companies use their sales force's estimates without some adjustments. Salespeople are biased observers. They may be naturally pessimistic or optimistic, or they may go to one extreme or another because of recent sales setbacks or successes. Furthermore, they are often unaware of larger economic developments and they do not always know how their company’s marketing plans will affect future sales in their territories. They may underestimate demand so that the company will set a low sales quota. They may not have the time to prepare careful estimates or may not consider it worthwhile.

Assuming these biases can be countered, a number of benefits can be gained by involving the sales force in forecasting. Salespeople may have better insights into developing trends than any other group. After participating in the forecasting process, the salespeople may have greater confidence in their quotas and more incentive to achieve them. Also, such “grassroots” forecasting provides estimates broken down by product, territory, customer, and salesperson.

**EXPERT OPINION**

Companies can also obtain forecasts by turning to experts. Experts include dealers, distributors, suppliers, marketing consultants, and trade associations. Thus, auto companies survey their dealers periodically for their forecasts of short-term demand. Dealer estimates, however, are subject to the same strengths and weaknesses as salesforce estimates.

Many companies buy economic and industry forecasts from well-known firms such as Andersen Consulting. These forecasting specialists are in a better position than the company to prepare economic forecasts because they have more data available and more forecasting expertise.

Expert opinion is often captured in a number of academic journals, including the Canadian Business Review, which publishes information on economic conditions and indicators that affect Canadian business. For example, it was recently projected that Canada’s exports to the United States would continue to perform well given predictions that the U.S. economy would remain strong, and not be threatened by interest rate increases. Canada’s export success was attributed to its mix of exports as well as the low dollar.

Occasionally companies will invite a special group of experts to prepare a forecast. The experts may be asked to exchange views and develop a group estimate (group discussion method). Or they may be asked to supply their estimates individually, with the company analyst combining them into a single estimate.
Finally, they may supply individual estimates and assumptions that are reviewed by a company analyst, revised, and followed by further rounds of estimation (called the Delphi method).

Experts can provide good insights upon which to base forecasts, but they can also be wrong. For example, in 1943, IBM Chairman Thomas J. Watson predicted, “I think there’s a world market for about five computers.” And in 1946, Daryl F. Zanuck, head of 20th Century-Fox, made this pronouncement: “TV won’t be able to hold on to any market it captures after the first six months. People will soon get tired of staring at a plywood box every night.” In 1981, Bill Gates, founder of Microsoft, proclaimed “640 K ought to be enough for anybody.” Thus, where possible, the company should substantiate experts’ opinions with estimates obtained using other methods.

**TEST MARKETING**

Where buyers do not plan their purchases carefully or where experts are not available or reliable, the company may want to conduct a direct test market. A direct test market is especially useful in forecasting new-product sales or established-product sales in a new distribution channel or territory. Test marketing is discussed in Chapter 9.

**PAST-SALES ANALYSIS**

Sales forecasts can be developed on the basis of past sales. Time-series analysis consists of breaking down past time series into four components (trend, cycle, seasonal, and erratic) and projecting these components into the future. Exponential smoothing consists of projecting the next period’s sales by combining an average of past sales and the most recent sales, giving more weight to the latter. Statistical demand analysis consists of measuring the impact level of each of a set of causal factors (e.g., income, marketing expenditures, price) on the sales level. Finally, econometric analysis consists of building sets of equations that describe a system and proceeding to statistically fit the parameters.

**LEADING INDICATORS**

Many companies try to forecast their sales by finding one or more leading indicators—other time series that change in the same direction but in advance of company sales. For example, a plumbing supply company might find that its sales lag behind the housing starts index by about four months. The housing starts index would then be a useful leading indicator. The Department of Industry Trade and Commerce regularly performs economic and statistical analysis of many important leading indicators. You can access these reports on the Department’s website (strategis.ic.gc.ca/sc_ecnmy/engdoc/homepage.html?categories=e_eco). The U.S. Bureau of Economic Research has identified 12 of the best leading indicators. Canadian firms competing in U.S. markets can use these values to forecast sales by reviewing the *Survey of Current Business* (see www.bea.doc.gov/bea/pubs.htm).
Key Terms

Forecasting          Market-factor index method          Selective demand
Leading indicators   Market potential                  Time-series analysis
Market-buildup method Primary demand                Total market demand

References