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Qualitative Sales Forecasting

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*During a visit with one manufacturer, we interviewed an analyst who was responsible for generating the sales forecasts used by logistics and production. As we began discussing the sales forecasting process used by his department, he explained that at the beginning of each month, he generated a quantitative forecast for the coming month for each product (SKU) and then examined the forecast to see if it needed to be adjusted. He explained that he made adjustments to each SKU forecast based on his knowledge of each item's behavior, information he obtained from marketing regarding upcoming promotions, and information he obtained from the employees responsible for handling orders from the company's distribution centers. In all, this single employee inspected and qualitatively adjusted between **200 and 300 SKUs each month**! His insights into the business environment surrounding each product dramatically improved the forecasting accuracy for each, but involved an incredible amount of information gathering on his part. Equally important, no one else in the organization seemed to realize the incredible resource to be found in this individual's knowledge, nor what would happen to forecasting accuracy (and production and logistics planning) if he left the company.*

❖ INTRODUCTION

This employee that we interviewed had a wealth of knowledge about the products he was forecasting. He had developed effective cross-functional lines of communication within the organization, enabling him to integrate the knowledge and expertise of other functional areas into his forecasts. However, when you consider the time required, along with the potential for bias inherent in generating forecasts for *several hundred SKUs each month,* you have to wonder if there is not a better way to accomplish this task. The issue is not the fact that subjectivity or judgment is being used in this company's sales forecasting process. The issue is whether or not this judgment is being used efficiently and effectively.

Even when a company employs quantitative analysis techniques in its sales forecasting process, judgment always plays an important role. In fact, decisions as fundamental as how the forecasting process is managed are inherently subjective and judgmental. Because it is important to recognize the role and significance of subjective assessments in the management of the forecasting process, we devoted considerable attention in Chapter 1 to these managerial decisions.

Furthermore, although Chapters 3 and 4 contain detailed discussions of time series and regression forecasting techniques, respectively, judgment is required when deciding which of these quantitative forecasting techniques are to be used. When using a quantitative forecasting technique, judgment is also exercised when deciding what data are to be processed during the quantitative analyses, as well as whether any modifications should be made to the data before the analyses are performed (Hanke & Reitsch, 1995). Likewise, when making a decision about how to measure forecasting accuracy and what to do about forecast error (discussed in Chapter 2), judgment is essential.

However, the discussion in this chapter focuses specifically on the efficient and effective use of qualitative (also called subjective or judgmental) forecasting techniques as procedures that turn the opinions, knowledge, and intuition of experienced people (e.g., salespeople, marketing people, corporate executives, and outside experts) into formal forecasts. When qualitative forecasting techniques are used, these people become the information processors, either supplementing or replacing mathematical models that process the data when quantitative forecasting techniques are used (Makridakis, Wheelwright, & McGee, 1983).

Qualitative forecasting analyses can be used to formulate forecasts for new products for which there are no historical data; to devise or adjust mid- or long-range forecasts for corporate planning; to adjust quantitatively generated product-line forecasts; and/or to adjust patterns (trends) generated by endogenous quantitative techniques (such as time series). When a forecaster uses an endogenous quantitative forecasting technique, there is an implicit assumption that there will be no systematic changes or departures from previously occurring patterns. If there is reason to believe this assumption is no longer valid, qualitative techniques provide the means to adjust the forecasts by tapping the experience and judgment of people knowledgeable about the product(s) being forecast and the environment affecting the forecast. In other words, one could say that qualitative forecasting emphasizes predicting the future, rather than explaining the past (Makridakis & Wheelwright, 1989).

Prior to our discussion of specific qualitative techniques, we provide an overview of the advantages and problems inherent in qualitative forecasting analyses. Following this is a discussion of specific techniques and tools used to accomplish qualitative forecasting.

❖ QUALITATIVE FORECASTING: ADVANTAGES AND PROBLEMS

The discussion in this section examines the advantages to qualitative forecasting, as well as its problems. This discussion is summarized in Table 5.1.

Advantages of Qualitative Forecasting Techniques

The principal, and very significant, advantage of qualitative forecasting techniques is their potential for predicting changes that can occur in sales patterns. Time series quantitative techniques cannot predict changes in sales or demand patterns. Regression cannot predict changes in the relationships between sales and the predictor variables. Predicting the occurrence and nature of these changes can be accomplished by qualitative analyses based on the knowledge and experience of people internal and/or external to the company. This is valuable by itself or as additional information to be utilized to adjust the quantitative forecasts.

Table 5.1   Qualitative Forecasting Technique Advantages and Problems

Advantages	*Problems*
Qualitative forecasting techniques have the ability to predict changes in sales patterns.	The ability to forecast accurately can be reduced when forecasters only consider readily available and/or recently perceived information.
Qualitative forecasting techniques allow decision makers to incorporate rich data sources consisting of their intuition, experience, and expert judgment.	The ability to forecast accurately can be reduced by the forecasters' inability to process large amounts of complex information.
	Accurate forecasts can be difficult to produce when forecasters are overconfident in their ability to forecast accurately.
	The ability to accurately forecast may be significantly reduced by political factors within organizations, as well as political factors between organizations.
	The ability to forecast accurately may be reduced because of the forecasters' tendency to infer relationships or patterns in data when there are no patterns.
	The ability to forecast accurately can be affected by anchoring; that is, forecasters may be influenced by initial forecasts (e.g., those generated by quantitative methods) when making qualitative forecasts.
	Future ability to forecast accurately may be reduced when a forecaster tries to justify, rather than understand, a forecast that proves to be inaccurate.
	Qualitative forecasting techniques encourage inconsistencies in judgment due to moods and/or emotions, as well as the repetitive decision making inherent in generating multiple individual product forecasts.
	Qualitative forecasting techniques are expensive and time intensive.

Adapted from Hogarth and Makridakis (1981).

A second advantage of qualitative forecasting techniques is that they make use of the extremely rich data sources represented by the intuition and judgment of experienced executives, sales employees, marketing people, channel members, and/or outside experts. The more experienced these members of the organization, the more prominently qualitative forecasting should be incorporated into the forecasting process. Quantitative forecasting techniques rarely make use of all of the information contained within the databases used to generate the forecasts. Moreover, there are inherent limitations in the depth of information that can be conveyed by a quantitative data format.

Problems With Qualitative Forecasting Techniques

The problems inherent in qualitative forecasting stem from two sources: the tendency for bias to be introduced into the forecasts, and the fact that qualitative forecasting is relatively expensive. Biased qualitative forecasts occur because of limitations on the forecasters' abilities to acquire and process complex information without being influenced by factors other than those pertinent to their decision. Qualitative forecasting techniques are expensive because they require a lot of managerial and analyst time to complete.

The primary sources of qualitative forecast bias are the forecasters' limited ability to process complex information, as well as a limited ability and/or lack of willingness to acquire information. It is difficult for people to integrate numerous, complex bits of information. People also have a tendency to make use of information that is already available to them, or to which they have been most recently exposed. Consequently, qualitative forecasts are frequently generated without considering all relevant information and/or using only that information that is readily available or has been most recently learned. Providing relevant information and structuring complex information are important steps for reducing this source of bias in qualitatively generated forecasts.

Effective qualitative forecasting can also be difficult when forecasters are overconfident in their ability to produce accurate forecasts. Research has shown that confidence in the forecast and the accuracy of that forecast are not always related (Makridakis & Wheelwright, 1989). This result has disturbing implications for the application of qualitative forecasting techniques—just because a forecaster is confident in his/her forecast should not necessarily lend credence to the forecast, unless the forecaster can produce evidence to support it.

Requiring explanations and/or justifications for qualitatively generated or qualitatively adjusted forecasts can help to reduce overconfidence, as can requiring regular comparisons (i.e., accuracy measures) between actual demand and the forecasts.

In our research on forecasting, we have found that political elements within a company, as well as between companies, can significantly affect the ability of forecasters to produce accurate qualitative forecasts. Biased forecasts caused by political elements within organizations are due, in large part, to the tendency for the participants in group decision-making situations to influence each other's thinking, a phenomenon known as "groupthink." Research has shown that the assessments by groups are frequently biased because of a desire on the part of group members to support each other's positions, the influence of strong leaders within groups, and/or a superficial search for information relevant to decision making (Janis & Mann, 1982).

In many companies, there is considerable pressure to make sales forecasts agree with the business plan. Frequently this pressure is manifested by the influence of a strong leader within a consensus forecasting committee. The influence of this leader, along with the tendency of members of the group to support each other's decisions and only a token effort to make objective evaluations of additional information during the decision-making process, all cause qualitative forecasts to be biased in the direction of revenue projections in the company's business plan.

Another political factor within organizations that affects forecasting accuracy concerns the sales forecasts generated by salespeople. When salespeople are required to generate forecasts, the tendency of many organizations to confuse forecasting with setting sales quotas introduces biases into the forecasts. Forecasts generated by salespeople may be biased downward because they view the forecasting activity as an opportunity to make themselves appear effective by setting low sales quotas. Conversely, forecasts generated by salespeople may be biased upward because of their propensity toward optimism (brought on by considering only readily available and/or recent information, as well as overconfidence in their ability to forecast). Salespeople's forecasts will also have an upward bias if they believe, either correctly or incorrectly, that the goods or services that they sell are capacity constrained. The thought process will then be something like "I'm only going to get 80% of what I forecast, so if I forecast 125% of what I think my customers will want, then I'll get all I need." Either form of bias adversely affects the accuracy of the resultant sales forecasts.

Finally, political factors between organizations frequently introduce bias into sales forecasts. These political pressures oftentimes occur between manufacturers and independent distributors within a supply chain. Rather than providing realistic forecasts of future product sales, distributors frequently view forecasting as an opportunity to engage in inventory management at the expense of the manufacturer. When distributors are allowed to provide input to the manufacturer's sales forecasts, distributors will often forecast high, following the logic that if demand is unexpectedly high, the manufacturer will be carrying sufficient inventory (because of the higher forecasts) to cover the distributor's needs. Similar behavior can occur in response to trade promotions offered by manufacturers, when distributors "stock up" on relatively inexpensive inventory, regardless of realistic sales projections. Finally, when manufacturers introduce a new product and distributors are unwilling to take on significant inventory of the new product until they are sure of significant sales demand, the distributor will provide an unrealistically low forecast.

When adjusting forecasts produced by quantitative techniques or when engaging in qualitative analyses of a limited number of data points, forecasters are prone to infer patterns in the data where no patterns really exist. These "false correlations" often result from a tendency to try to find patterns in complex situations, even when none exist. Tracking error that results from applying this supposed pattern is the best way to determine false correlations and discontinue their use.

A significant source of bias when forecasters are qualitatively adjusting quantitatively generated forecasts occurs as a result of a phenomenon known as anchoring. Research by Kahneman and Tversky (1973) suggests that starting values (anchors) significantly affect subsequent predictions. In a forecasting context, quantitatively generated forecasts can act as anchors. The lower the value of the quantitative forecast, the more the forecast will be biased downward; the higher the value of the quantitative forecast, the more the forecast will be biased upward. Overcoming these biases requires forecasters to be aware of and guard against the influence of the anchors by objectively considering all information available to them when qualitatively adjusting quantitatively generated forecasts.

When a forecaster makes a prediction and that prediction proves to be wrong, the forecaster, being human, frequently tries to explain and/or justify the prediction. This reaction often has the unfortunate effect of obscuring the reason for the mistaken prediction, thereby

interfering with attempts to understand and learn from mistakes that were made. Instead of spending time trying to justify inaccurate forecasts, it is better to admit that a mistake was made and try to discover the reason for the mistake so that the inaccurate forecasts will not be repeated. Discovering the reasons that inaccurate forecasts occurred is easier if, at the time a forecast is made, the rationale (i.e., the justification or explanation for the forecast) is recorded. Note that this is an activity that was also suggested in the discussion above on how to counteract overconfidence in qualitative forecasts.

Biased forecasts can be caused by inconsistencies in judgment that occur when large numbers of forecasts are produced or adjusted using qualitative techniques. The repetition inherent in these multiple forecasts encourages boredom, which leads to inconsistent and inaccurate forecasts. In addition, because forecasters are human, their moods and emotions can cause bias when multiple forecasts are generated using qualitative techniques (Makridakis & Wheelwright, 1989). The forecaster in the vignette at the beginning of this chapter risked inaccuracies because of the repetitive nature of his forecasting task. When large numbers of forecasts must be generated frequently (e.g., weekly or monthly forecasts for hundreds of SKUs), quantitative forecasting techniques are more appropriate. Instead of trying to qualitatively adjust for factors, such as promotions and seasonality, for example, the forecasts should be modeled quantitatively.

The final problem with qualitative forecasting techniques is that they are expensive. In general, they require large amounts of time on the part of the participants in the qualitative forecasting process, whether they are internal to the company (e.g., executives, forecasters, salespeople) or external to the company. The expensive, time-intensive nature of qualitative forecasting is another reason (in addition to the bias caused by inconsistencies in judgment that occur in repetitive decision making, discussed above) that qualitative forecasting techniques are unsuitable for generating large numbers of forecasts, such as forecasting products by SKU and by location (SKUL).

❖ SUMMARY: QUALITATIVE TECHNIQUE ADVANTAGES AND PROBLEMS

Despite this rather long discussion of the problems associated with qualitative techniques, keep in mind that qualitative techniques are a

valuable resource for any forecaster. The value of experience and the ability to analyze complex situations as input to sales forecasts should never be discounted. Indeed, every sales forecast involves some degree of qualitative input. The discussion of the problems associated with qualitative techniques was presented here solely for the purpose of helping you make better qualitative forecasts by avoiding some of the common "traps" associated with these techniques. With these traps in mind, we can now move to a discussion of the qualitative techniques available.

❖ QUALITATIVE TECHNIQUES AND TOOLS

In this section, we discuss several qualitative forecasting techniques using the judgment, knowledge, and intuition of experienced people to produce sales forecasts. The techniques discussed solicit expert evaluations via the jury of executive opinion; the Delphi method; and sales force composites. In addition, the information in this section includes a number of tools that enhance qualitative forecasting decisions by reducing the effects of the biases discussed in the last section that can affect the accuracy of qualitative forecasts. The tools discussed are market research (using both primary and secondary data) and decision analysis.

Expert Evaluation Techniques

Expert evaluations use the experience of people, such as executives, salespeople, marketing people, distributors, or outside experts, who are familiar with a product line or a group of products, to generate sales forecasts. The techniques in this section generally involve combining inputs from multiple sources, that is, groups of executives, salespeople, marketing people, distributors, or other outside experts. The advantage of soliciting contributions from more than one person, of course, is that it can offset biases introduced into a forecast when the forecast is produced by one person.

Jury of Executive Opinion. When executives from various corporate functions involved in forecasting sales (e.g., finance, marketing, sales, production, and logistics) meet to generate forecasts, is the meeting is termed a jury of executive opinion. The jury of executive opinion is one of the most familiar and frequently used of all forecasting techniques

(Mentzer & Kahn, 1995). It is a relatively simple forecasting technique to implement, and it is quite valuable when changes in existing demand patterns are anticipated or when there is no historical demand data available for quantitative forecasting analyses (e.g., new product forecasts). It also has the advantage of making use of the rich data represented by the intuition and judgment of experienced executives.

For example, a retailer with which we have worked makes extensive and very successful use of a jury of executive opinion for some of the long-term forecasts required for corporate planning. By using this technique, the company is able to tap the expertise of a number of its top-level managers who have had extensive experience in the industry.

Another example illustrating the use of a jury of executive opinion is a company whose personnel we interviewed in the benchmark studies. In this company, a jury of executive opinion meets monthly to produce and update the product-line level, quarterly sales forecasts. In addition to the jury's regular members, the group periodically solicits input from an economist employed by the company, who functions as a consultant to the sales forecasting process.

In our research on sales forecasting, we have found that one of the most widespread uses of a jury of executive opinion is in a consensus forecasting process. In fact, this technique forms the backbone of a consensus process, consisting as it does of representatives from multiple functional areas (e.g., marketing, finance, sales, production, and logistics). In many cases, quantitative sales forecasts are generated, and the consensus forecasting committee meets to decide whether and how much to adjust the quantitative forecasts. Frequently these consensus forecasting committees are also responsible for generating qualitative forecasts for new products. The effective use of the jury of executive opinion technique depends on the degree to which the organization is able to overcome the sources of bias inherent in individual and, particularly, group decision making. To the extent that these pressures constrain the decision-making process, biased forecasts will result.

The most frequent source of bias in a consensus forecasting context is political pressures within the company, usually in the form of influence exerted by the member of the jury whose department is the most powerful within the culture of the company (Hanke & Reitsch, 1995). Because of this influence, the contributions from other members of the jury carry relatively less weight in the final forecasts. In many companies, the most powerful member of the jury is from finance, and the influence of this member tends to constrain the forecasts so that they

are biased in the direction of the revenue projections of the business plan. Qualitative forecasts that originate from these committees (e.g., new product forecasts) can also be influenced by these same pressures so that they are significantly biased in the direction of agreement with revenue projections.

In one manufacturer whose personnel we interviewed during phase three of the benchmark studies, the consensus forecasting committee meetings, although ostensibly for the purpose of arriving at a consensus forecast among marketing, finance, and operations, were, in reality, merely a formality. The forecast had been qualitatively adjusted and arrived at by marketing and finance prior to the consensus forecasting meeting. Furthermore, because of significant influence by the finance member of the forecasting committee, and a desire on the part of the rest of the committee to support the forecast presented by finance, the committee did not conduct an objective search for information to facilitate its decisions; rather, the committee simply accepted the sales forecast presented by finance.

In order to mitigate this source of bias, it is important for a company to understand the interaction between the business plan and the sales forecasts. Sales forecasting and business planning are separate but interdependent processes. Properly administered, sales forecasting can be used to facilitate business planning, but this outcome cannot occur if sales forecasts are forced to agree with independently generated revenue targets in the business plan (for more information on the interaction between sales forecasting and business planning, see the discussion in Chapter 1 under "Forecasting Versus Planning"and in Chapter 8 under "Approach").

Another way to decrease the bias that group decision making introduces into the jury of executive opinion is by making selected, relevant background information available to the executives that comprise the jury. This information may consist of, for example, relevant economic data (e.g., leading and/or simultaneous indicators); information on industry trends; information on production and/or distribution constraints within the company; the results of market research, such as focus groups; or information on forecast accuracy. Making this information accessible reduces the tendency of individuals in the group to depend entirely on their own available and/or recently experienced information sources, and it makes it less likely that the group decision-making process proceeds with only a token effort to objectively evaluate additional information that is important to the decision-making process.

An important caveat to the use of the jury of executive opinion is that the technique is not appropriate for short-term (i.e., daily, weekly, or monthly) forecasts of individual product items or product item-location combinations (i.e., SKUs or SKULs). A jury of executive opinion, by its very nature, requires valuable executive time; therefore, the most efficient use of this technique is to forecast monthly, quarterly, and/or yearly sales predictions for groups of products, that is, product lines. Using a jury of executive opinion for low-level, short-term forecasts encourages bias because of the repetitive nature of these forecasts and is a waste of costly executive time.

Companies using a jury of executive opinion in their forecasting process should also be aware that this technique tends to disperse responsibility for forecasting accuracy. We have found that unless companies using a jury of executive opinion are relatively sophisticated in managing their forecasting process, members of the jury are neither evaluated, nor rewarded, for forecasting accuracy. When no one has responsibility for forecast accuracy, inaccurate forecasts inevitably result. Companies that use a jury of executive opinion successfully do so, in part, because they both evaluate and reward members of their consensus forecasting committee for forecasting accuracy.

Another procedure that can be used to assign responsibility for accurate forecasts when using a jury of executive opinion is to require written justification for qualitative adjustments to quantitative forecasts. When this documentation is required, it not only has the effect of assigning responsibility for accurate forecasting, but it also makes it easier to perform post hoc analyses, that is, if forecasts prove to be inaccurate, the documentation makes it easier to determine the reasons for the inaccuracies. One company with which we have worked has detailed notes taken at every jury meeting, thus documenting the logic behind each adjustment to the sales forecasts.

Delphi Method. When the Delphi method is used for forecasting, the input of experts, either internal or external to a company, is solicited and proceeds as follows:

1. Each member of the panel of experts who is chosen to participate writes an answer to the question being investigated (e.g., a forecast for product or industry sales) and all the reasoning behind this forecast.

2. The answers of the panel are summarized and returned to the members of the panel, but without the identification of which expert came up with each forecast.

3. After reading the summary of replies, each member of the panel either maintains his or her forecast or reevaluates the initial forecast and submits the new forecast (and the reasoning behind changing his or her forecast) in writing.

The answers are summarized and returned to panel members as many times as necessary to narrow the range of forecast.

An appropriate use of the Delphi method is for the prediction of mid- to long-term company sales levels or long-term industry sales levels. When this technique is used within a company, it can be thought of as a kind of "virtual" jury of executive opinion, because the executives do not meet face to face. The purpose of this distance is to allow each member to use his or her reasoning to develop a forecast, without the influence of strong personalities or the fact that the "boss" has a pet forecast.

The Delphi method also reduces the effects of groupthink on the decision-making process. Since the participants do not meet face to face, the bias that occurs because of a desire on the part of group members to support each other's positions or the influence of a strong leader within the group is minimized. Removing this source of bias enables conflicting ideas to survive long enough to be examined, thus allowing a range of scenarios to emerge from the process and an outcome that is more legitimate, particularly when long-term sales forecasts are being made.

Problems with this method of qualitative forecasting focus on its tendency to be unreliable, that is, the outcomes can be highly dependent on the composition and expertise of panel members. To some extent this source of bias is the result of group members not being willing/able to seek out information other than what is readily available and/or recently perceived. Supplying panel members with relevant information (e.g., economic or industry indicators) can reduce this source of bias. In addition to this bias, the Delphi method is very time consuming and thus expensive. Such a technique is most appropriate for long-term, strategic-level forecasts rather than short-term, operational ones.

Sales Force Composite. The sales force composite is a qualitative forecasting method that uses the knowledge and experience of a company's

salespeople, its sales management, and/or channel members to produce sales forecasts. The grass roots approach to a sales force composite accumulates sales forecasts for the regions, products, and/or customers of individual salespeople. The sales management approach seeks sales forecasts from sales executives and is essentially a jury of executive opinion, albeit consisting of a narrower range of executives (i.e., only sales executives or only sales and marketing executives). The distributor approach to the sales force composite solicits the sales predictions of independent distributors of a company's products.

To give a sense of how salespeople actually forecast in business organizations, the Appendix at the end of this chapter provides a summary of a recent survey of forecasting practices by salespeople. Key findings from this reported survey include:

- Almost 82% of salespeople surveyed participate in forecasting.
- At the same time, only 14% of salespeople receive training in forecasting.
- Almost half (more than 47%) of salespeople report that they have either no, little, or some knowledge of what happens to their forecasts after they are submitted.
- Only 16% of salespeople have access to forecasting software to assist them in their forecasting tasks.
- Less than half of the salespeople believe that the quality of their forecasts affects their performance evaluations.

The picture painted from this survey is that while an overwhelming majority of salespeople are responsible for forecasting, there is a considerable gap between the expectations that companies have for them and the resources that companies provide them to excel at this critical task.

Despite this gap, there are important advantages to the sales force composite forecasting technique. It has the potential for incorporating the expertise of people who are closest to the customer. In addition, the technique places forecasting responsibility on those who have both the ability to directly affect product sales and the potential to experience the impact (in the form of their customers' displeasure, for example) of forecasting errors.

There are two general situations that call for the salespeople to participate in a company's forecasting efforts. The first is when salespeople manage ongoing streams of product flow to their customers, be they end-use customers or channel partner customers. In these

situations, salespeople are the most natural sources of information regarding changes to patterns of demand. For example, a candy company may have a sales team assigned to a large mass-merchandiser customer. This company may have been given prime end-of-aisle display space during the week before Halloween over the previous several years. Forecasters for this candy company will need to know if they will again have this prime end-of-aisle display space next Halloween, because if they do not, the forecast will need significant adjustment. This information has to come from the sales team.

The second situation is when salespeople work with large project or proposal-based sales. In this case, accurate forecasts require the intelligence that salespeople have concerning the likelihood of securing large orders. For example, a computer company that sells large mainframes needs a prediction of the likelihood of winning a large contract from a major customer. If such a win is likely, then the computer company needs to adequately plan for the increased demand. The salespeople are in the best position to assess that likelihood.

Although salespeople provide critical input to many forecasting processes, companies are frequently frustrated by the quality of the input that salespeople provide. There are, however, a number of things that companies can do to improve the quality of salesforce input to the forecasting process (Moon & Mentzer, 1999). The first, and perhaps most important, change that companies can make to enhance salesforce forecasting is to **make it part of their jobs**. At many companies with whom we have worked, salespeople make comments like, "Why should I spend my time forecasting? I've been hired to sell, not to forecast!" However, salespeople are responsible for three main activities: to sell products and services, to build and maintain relationships with their customers, and to provide market intelligence back to their companies. One of the most important forms of market intelligence is intelligence concerning future demand—in other words, forecasts. While most sales executives would agree that these are the critical tasks they expect salespeople to perform, in many cases, salespeople are measured and rewarded for only one of those tasks: selling and generating revenue. As we emphasized in Chapter 2, **what gets measured gets rewarded, and what gets rewarded gets done**. Thus, if salespeople are not measured and rewarded for forecasting performance, they will not perceive it as part of their jobs.

How can companies make forecasting a recognized part of a salesperson's job? A first step should be to explicitly emphasize forecasting

responsibilities in a salesperson's formal job description. But beyond that, forecasting must be included in the performance evaluation process and compensation strategy for the salesforce. Companies should adopt some of the performance measurement strategies discussed in Chapter 2, and these measures should be applied to salesforce forecasts. We are by no means suggesting that forecast accuracy should be the primary measure for salesperson success or failure. However, it should be a part of a "balanced scorecard" for members of the salesforce, and forecasting performance should receive enough weight on that scorecard that it gets the attention and effort needed to do a good job.

In addition, salespeople must receive training to enhance their forecasting skills. Training is a normal part of most salespeople's jobs, yet that training seldom includes forecasting training. Topics for sales-force training should include the role of quantitative forecasting, how forecasts are used by other functions in the company, and how to work with customers to convince them that accurate forecasts are in the best interests of all parties in the supply chain. In addition to training, sales-people must receive feedback on their performance. Salespeople can-not possibly improve their performance unless they know whether their forecasts tend to be high or low, and by how much. Such feedback is a critical part of helping salespeople recognize how important fore-casting is to their organization.

Another important emphasis area for a company to enhance salesperson forecasting effectiveness is to **minimize "game-playing."** Game-playing can result in bias from either an upward or downward direction. Upward bias most frequently occurs when salespeople per-ceive that supply of goods and services may be limited, and they inten-tionally inflate forecasts to ensure receiving adequate supply for their customers. Downward bias most frequently occurs when salespeople perceive that forecasts influence quotas. Companies can minimize both of these types of bias. First, it is critical to constantly measure forecast accuracy so that either form of bias is identified. When such measure-ment occurs and feedback is given, then bias can, over time, be reduced. Second, it is critical to separate forecasts from quotas in the minds of salespeople. This can be done in a variety of ways. One way is to encourage salespeople to forecast in physical units (the most useful type of forecast for downstream planning purposes) while quotas are assigned in dollars, points, or some other unit. Another way is to assign quotas quarterly, or annually, but to make forecasting a normal part of a salesperson's monthly, or in some cases weekly, job assignment.

Another key strategy for enhancing the effectiveness of salespeople's forecasting efforts is to **keep it simple.** One observation that we have made after working with dozens of companies and their salesforces is that salespeople are generally not very good at forecasting. However, they can be *very* good at adjusting forecasts. The best way for a company to "keep it simple" for their salespeople is to provide those salespeople with an initial forecast, generated through statistical models, which they can then adjust. What we have seen in world-class forecasting companies is a process whereby time series and regression models are employed to generate quantitative forecasts, which are then provided to the sales staff for them to review, often with their customers, and make adjustments based on what they know about expected changes to previous demand patterns. When salespeople are ineffective is when they are given a "blank piece of paper" and expected to generate initial forecasts on their own. Whenever possible, companies should use salespeople as adjusters, not forecasters.

A final strategy that companies can use to enhance salesperson effectiveness is to **keep it focused**. By this, we mean that for most salespeople, the "80/20" rule is a reality along two dimensions: customers and products. In other words, 20% of a salesperson's customers generate 80% of his or her business. Similarly, 20% of a salesperson's product portfolio generates 80% of his or her business. When either or both of these concentration principles are in effect, then those salespeople should be forecasting only those 20% of customers, or 20% of products, that generate the bulk of their business. If a salesperson has 100 total customers, and 100 products in his or her portfolio, then that salesperson would theoretically be responsible for 10,000 forecasts. But when a company "keeps it focused," then that salesperson might only pay attention to his or her top 20 customers, and top 20 products, resulting in a forecasting workload of (at most) 400 forecasts per month. Such a process has several advantages. First, when salespeople perceive that the magnitude of the forecasting job is enormous, they are likely to resist and do a poor job on all forecasts. Second, salespeople are likely to have very limited information on those 80% of customers and/or products that do not generate significant revenue. When they are forced to provide forecasts in those situations where they have limited information, they are likely to turn in forecasts that are simply not very good. The bottom line is that salespeople should forecast *only* those customer/product combinations where they can really add value. In one chemical company that has participated in the audit research, the

goal is for salespeople to look at, and think about, around 10% of the customer/product combinations for which they are responsible. For this company, salespeople do not see the forecasting task as onerous, and they provide excellent insights that enhance the overall accuracy and effectiveness of forecasts.

The bottom line concerning sales force composite forecasting is that when companies use some of these strategies to enhance the effectiveness of salespeople's forecasts, those companies can increase accuracy by as much as 50%. Remember, a forecast is a best guess about what customers will demand in future time periods, and no one is closer to customers than salespeople. If companies **make it part of their jobs, minimize game playing, keep it simple, and keep it focused**, then salespeople can greatly enhance the overall forecasting process.

Supply Chain Partner Forecasting. In many situations, salespeople participate in the forecasting process through their interaction with a company's supply chain partners. Many manufacturers never directly experience end-user demand and rely on supply chain partners both to satisfy end-user demand and to provide forecasting information about anticipated future end-user demand. Enlightened supply chain partners realize that effective supply chain management requires a clear understanding of demand; in other words, accurate forecasts are critical. However, even though such accurate forecasts greatly enhance the overall effectiveness of the supply chain, political pressures between organizations can lead to inventory game playing between manufacturers and distributors. In some cases, distributors fail to view the participation in the sales forecasting process with the manufacturer as an opportunity to enhance supply chain performance by accurately forecasting future sales. Instead, they view forecasting as an opportunity to manage their inventory, either increasing distributor inventory in response to trade promotions, increasing manufacturer inventory as a distributor "safety stock," or avoiding "pipeline" inventory for new products. When distributors take this attitude, they undermine, and make a mockery, of the sales forecasting process. Manufacturers possessing a certain level of sophistication in their sales forecasting process realize that conventional supply chains (i.e., those consisting of independent organizations) are, in general, characterized by manifestations of power and conflict (Keith, Jackson, & Crosby, 1990; Gaski, 1984), such as inventory game playing, and take this into account by qualitatively adjusting the forecasts they receive from supply chain members.

In order to reduce the unreliability of distributor-generated sales forecasts, manufacturers should recognize the effects of trade promotions on this process. We have found that trade promotions can play havoc with the sales forecasting process, creating promotion-driven "seasonality" in historical sales data when distributors increase their inventories in response to periodic price promotions from manufacturers, rather than anticipated increases in consumer demand.

One possibility for reducing the forecasting error that is caused by trade promotions is to include the effects of these promotions within quantitative forecasting models. Using another approach, many consumer packaged goods manufacturers have begun to embrace the concept of "everyday low prices" (EDLP), which eliminates trade promotions, along with the problems these promotions cause for the sales forecasting process.

A related approach to managing the reliability of distributor-generated sales forecasts is the vendor-managed and co-managed inventory relationships many manufacturers and distributors are developing. In these relationships, manufacturers and distributors alter the nature of their relationship from the conflict-ridden, competitive relationship characteristic of a conventional channel to what are essentially strategic alliances (Stern, El-Ansary, & Coughlan, 1996). Generally, the cooperation and collaboration that characterize these altered supply chain structures extend to the forecasting process, thereby reducing the political pressures that introduce bias into the forecasts.

When distributors deliberately under-forecast demand because they do not want to assume liability for new product inventories, it is, to a large extent, simply another manifestation of the competitive nature of conventional supply chain relationships. This situation can be mitigated to some extent by improved product research and development on the part of the manufacturer. In one manufacturer whose personnel we interviewed, new product ideas come exclusively from upper management, and there is little or no market research undertaken before introducing the products. Skepticism of independent distributors regarding new product introductions causes distributors to deliberately underforecast sales for this manufacturer's new products until sales convinces them that the product concept is sound. Contrast this with a similar manufacturer that conducts extensive new product research and shares the results with its distributors. The result is more confidence in the supply chain in new products and more informed forecasts of their demand.

Both manufacturers and supply chain members must adopt a supply chain mentality. Organizations that adopt such a mentality acknowledge that overall supply chain performance depends on a free flow of information concerning future demand. Such information helps to reduce inventory across the supply chain and allows suppliers, manufacturers, and retailers to be more responsive to the needs of end consumers. Point-of-sale data can be used by manufacturers to quantitatively model end-user demand, and sharing such data is one way that supply chain partners can help the entire supply chain to forecast effectively. Further, when supply chain partners commit to working collaboratively with manufacturers by providing qualitative information about their future marketing and promotional plans, then manufacturers can more effectively predict demand fluctuations, have adequate inventory available during peak demand, and minimize overall supply chain inventories during slack periods.

❖ MARKET RESEARCH TOOLS FOR QUALITATIVE FORECASTING

The information obtained through market research efforts can, in many cases, enhance qualitative forecasts. For example, assume a jury of executive opinion is attempting to formulate a long-range forecast to guide corporate capacity and budget planning. One possibility is to simply extend or extrapolate the sales trends for the company's product lines, which were derived using quantitative techniques such as time series analyses. Remember from Chapter 3 ("Time Series Forecasting Techniques") that sales trends are continuing patterns of sales increases or decreases and that those patterns can take the form of either straight lines or curves.

Simply extending a sales trend is fine, as long as we are sure that the pattern will not change. But what if there are changes? How can we forecast these? Remember that an advantage of qualitative forecasting techniques is their ability to forecast changes in existing patterns. Using these techniques, trend extensions may be made with the benefit of input from individuals or groups of people with the knowledge and expertise to correctly modify existing trends. Providing additional information obtained through marketing research enhances these decisions.

Information obtained from market research can be provided to a jury of executive opinion; to members of a panel participating in the Delphi method; to salespeople, sales managers, or independent

distributors participating in a sales composite technique; that is, to anyone involved in qualitative forecasting. Market research can be conducted using primary data, secondary data, or a combination of primary and secondary data. A company collects primary data for a specific purpose, such as focus groups conducted specifically to obtain information on the demand for a new product. Secondary data have been previously collected, either by the company using the data or by some other source, for example, syndicated volume tracking data collected by A.C. Neilson (Malhotra, 1996).

Market Research Using Primary Data. If a company has sufficient resources to undertake market research, it can conduct surveys to obtain primary data. These data can provide information on antici-pated product demand or anticipated economic activity to assist in qualitative mid-range (e.g., monthly or quarterly) or long-range (e.g., 1 year to 5 years) product or industry sales forecasts, or for qualitative adjustments to short-range product forecasts. For example, a company could survey (using face-to-face interviews, telephone surveys, or mail survey methodology) a sample of its business/institutional customers to obtain information on anticipated purchases of new or existing products. A manufacturer could use this methodology to systemati-cally secure sales forecasts from independent distributors. A company could survey a sample of households or consumers to obtain infor-mation on purchase intentions for new or existing products. Still another example of using surveys involves a company surveying a sample of economic experts for forecasts of national economic activity or economic activity within an industry.

Another means for obtaining primary data that contribute to the forecasting process is to conduct focus groups. Focus groups are small groups of people (seven to ten), gathered together to exchange ideas on a specific topic. This methodology requires a moderator to conduct the focus groups and is relatively time consuming (Krueger, 1994). However, focus groups can be an effective method of gathering infor-mation to aid in qualitative forecasts, particularly for new products. Focus groups can be used to solicit new product ideas, as well as to obtain feedback on products that are in the development process. One manufacturer with whom we have worked uses focus groups very effectively as an adjunct to its new product forecasting process. The focus groups consist of potential users of new products that are under consideration, and they give excellent insights into adoption rates and patterns for new products.

Market Research Using Secondary Data. An alternative to a company gathering specific data for the purpose of enhancing qualitative forecasting decisions is the use of secondary data, that is, data that has been gathered previously, either within a company or by sources external to the company. For example, instead of conducting its own surveys when attempting to forecast changes in sales trends, a company can obtain information from surveys conducted by external sources, two of which are detailed below.

- A survey of household/consumer attitudes and anticipated purchases (CABP) is conducted regularly by the Survey Research Center at the University of Michigan.
- Surveys on anticipated inventory levels are conducted by the Office of Business Economics of the Securities and Exchange Commission (Granger, 1980).

Another source of secondary data is tracking data in the form of leading and/or simultaneous (coincident) indicators. Economic indicators for the United States are available monthly in the *Business Conditions Digest,* published by the U.S. Department of Commerce (Granger, 1980). When trying to forecast changes or turning points in a company's product sales, knowledge of the behavior of business cycles in the aggregate economy is a valuable input. Of course, the rationale underlying leading indicators, for example, is that some sectors of the economy will expand ahead of others, thus signaling changes in the overall level of economic activity (Granger, 1980). Consequently, it is important that each company possesses and maintains a sufficient level of intelligence and expertise with respect to its own industry. This will enable the company to recognize which indicators are leading and which indicators are coincident for its industry, thereby providing information pertinent to the company's forecasting decisions.

During the benchmark studies, we observed that a characteristic of companies with highly sophisticated forecasting processes was their ability to conduct ongoing analyses of their business and industry. This ability to successfully analyze their business resulted from selecting employees who possessed (or could acquire) expertise in both analysis tools and knowledge about the company and the industry. In addition, upper management was willing to support the business analysis process with systems (e.g., hardware and software) and continuous training. An ongoing program of business analysis is the only way to

understand not only which economic indicators are pertinent to a company but also, for example, the effects of trade and consumer promotions and price elasticity of demand for a company's products (including the effects of competitors' price changes).

Keeping in mind that it is up to you to decide which indicators are leading for your particular industry, common leading economic indicators include:

- Average work week (production and manufacturing workers)
- New manufacturing orders
- Durable goods orders
- Construction contracts
- Plant and equipment purchases
- Capital appropriations
- Business population
- After-tax corporate profits
- Stock price indices
- Level and changes in business inventories
- Consumer spending
- Growth in durable goods industries
- Growth in capital equipment industries
- Level and changes in money supplies (e.g., M1, M2)
- Bond prices

The rationale underlying simultaneous or coincident indicators is that these statistics will roughly correspond to changes in aggregate economic trends, essentially serving to confirm that a change in trend, anticipated on the basis of leading indicators, is actually occurring. As with leading indicators, the ability of these statistics to contribute to qualitative forecasting decisions depends on how well a company understands which simultaneous indicators are significant for it and its industry. Some examples of simultaneous indicators:

- Unemployment rate
- Index of help-wanted advertising in newspapers
- Index of industrial production
- Gross Domestic Product
- Personal income
- Retail sales
- Index of wholesale prices

The secondary data sources discussed in this section are appropriate for enhancing long-term forecasting (e.g., 1 to 5 years). There are, however, a number of syndicated services that regularly make available secondary data in the form of consumer point-of-sale data (i.e., volume tracking data) for a subscription fee. The information provided by these services can serve as an appropriate input to mid-range forecasts (e.g., monthly or quarterly). Sources of syndicated volume tracking data include A.C. Neilson (National Scan Track); the Newspaper Advertising Bureau (NABSCAN); and Tele-Research, Inc. (TRIM) (Malhotra, 1996). Several of the consumer package goods manufacturers that we have worked with use these syndicated data sources, along with information from independent distributors, to estimate market share and existing product inventories, respectively. This information is valuable in producing qualitative forecasts of product line demand for the coming month and/or quarter.

## ❖ DECISION ANALYSIS TOOLS FOR QUALITATIVE FORECASTING

The purpose of using the tools of decision analysis is to structure the qualitative forecasting decision process in such a way that participants are required to examine and state the assumptions used in their decisions. The discipline and structure imposed by these decision tools minimizes bias in qualitative forecasting by (1) diminishing overconfidence in the forecasters' ability to forecast accurately; (2) forcing them to seek out and consider information that is relevant to the forecasting decisions; and (3) enhancing their ability to process large amounts of complex information. The tools discussed in this section include decision tree diagrams and simulation.

Decision Tree Diagrams. The advantage of decision tree diagrams is that they enable participants to visualize the context of a complex decision, thereby reducing biases that occur because of limitations on forecasters' abilities to process complex information. Constructing the diagrams forces decision makers to consider all alternatives and to assign probabilities to each alternative, based on their experience and knowledge of their company and industry. When combined with a statistical concept known as Bayesian analysis, the estimates of probabilities for future events in decision tree diagrams can be revised based on experience, judgment, and/or additional information, such as that gained from market research (Granger, 1980).

The tree diagram in Figure 5.1 illustrates these concepts. This tree diagram helps analysts focus their forecast of sales of a new product. Suppose that for national sales of a new product, analysts can only forecast (without any additional information) a 50–50 probability of high sales versus low sales. However, suppose that, based on past experience with other new products, forecasters know that when the results of market research (e.g., surveys of prospective customers) have forecast success for a product, 80% of the time high sales actually do occur. On the other hand, when a new product has been introduced in the past and market research forecast product failure, 85% of the time low sales, in fact, occurred.

Using Bayesian analysis, the probabilities of both high and low product sales for national introduction of the new product can be revised from their former (and uninformative) 50–50 probabilities. As Figure 5.1 indicates, the probability of market research indicating

Figure 5.1   Decision Tree Diagram
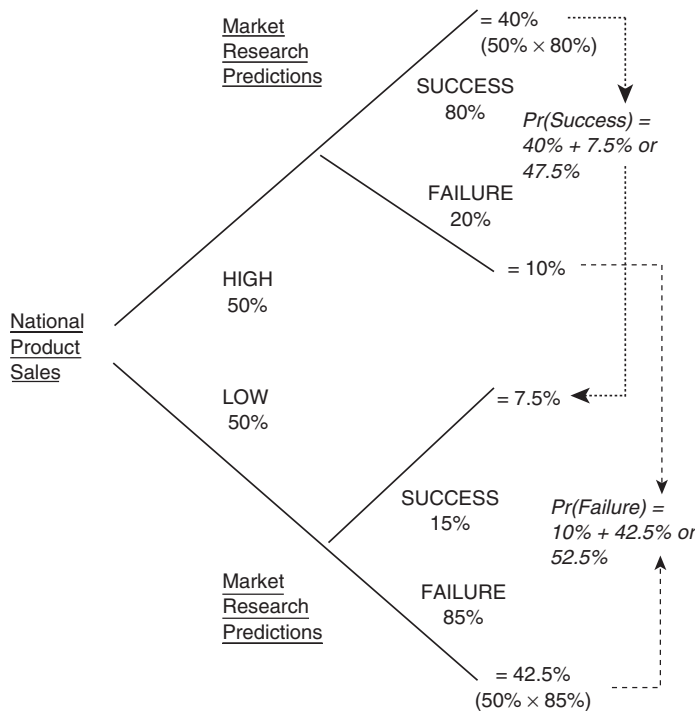
product success (*Pr(Success)*) is the sum of 40% (the probability of market research forecasting product success when national sales will, in fact, be high) and 7.5% (the probability of market research forecasting product success when national sales will, in fact, be low), or 47.5%. On the other hand, the probability of market research indicating product failure (*Pr(Failure)*) is the sum of 10% (the probability of market research forecasting product failure when national sales will, in fact, be high) and 42.5% (the probability of market research forecasting product failure when national sales will, in fact, be low), or 52.5%. From these forecasts, the probabilities of both high and low national sales can be revised as indicated below:

- The probability of high national sales when market research forecasts success is 84%, that is,

$$\text{Pr(High Sales/Success)} = 40\%/47.5\% = 84\%$$

- The probability of low national sales when market research forecasts failure is 81%, that is,

$$\text{Pr(Low Sales/Failure)} = 42.5\%/52.5\% = 81\%$$
$$\text{(Hanke \& Reitsch, 1995).}$$

Thus, through this decision analysis, we have improved our ability to forecast success in our new product introductions if we heed the input from market research.

Simulations. Another decision analysis tool that can be used in the qualitative forecasting decision process is simulation. Like decision tree diagrams, simulation requires forecasters to structure their decision making by examining and stating their assumptions. Essentially, simulation demands that the system under investigation be defined, enabling that system to be manipulated so that "what-if" analyses can be performed to explore alternatives (Pritsker, 1986). For example, forecasters predicting sales for a new product could use simulation to explore alternative outcomes based on the probabilities of various economic conditions occurring. Simulation software is currently available that greatly facilitates the use of this decision tool, requiring, for example, that the user merely create a graphical diagram of system

components (similar to what is done for a decision tree diagram) (Pritsker, Sigal, & Hammesfahr, 1989).

However, simulations do not necessarily need to involve the computer or complex software. One consumer products company simulates the introduction of new products by giving them away at a test mall. Subjects are given a free sample of the product, asked to try it, and told they will be sent a short questionnaire to complete. Several days later, each subject receives the questionnaire asking what he or she thought of the product. The subject also receives a form to order more of the new product. Various prices are tried with different subjects to see how likely customers are to order more of the product. In this way, the company can simulate new customers' price sensitivity and, thus, forecast new product sales at various introductory price levels.

❖ SUMMARY

This chapter has focused on the use of qualitative forecasting techniques that turn the opinions of experienced people into formal forecasts. The information presented included an overview of the advantages inherent in qualitative forecasting analyses, with the discussion of problems focusing on the sources of bias that cause inaccuracies in qualitative forecasts. Qualitative forecasting techniques that were discussed as methods for tapping the knowledge and intuition of experts included: the jury of executive opinion, the Delphi method, the sales force composite, and supply chain partner forecasting. In addition, we presented a number of tools that are important adjuncts to the qualitative forecasting process, primarily because of their ability to enhance qualitative forecasting decisions through the reduction of the effects of the biases that can affect the accuracy of qualitative forecasts.

Chapter 6 discusses the systems (hardware and software) that surround the forecasting process we use to efficiently and effectively conduct the business of developing and using sales forecasts.

APPENDIX

In order to gain a more complete understanding of how salespeople actually forecast in business organizations, the authors conducted a survey to explore salesperson forecasting practices. The primary objective of the research was to supplement the extensive qualitative research that has been conducted through working with a large number of companies, and to offer some generalizations and a "state of practice" view of salesperson forecasting. To accomplish this objective, a survey of salespeople was conducted across a variety of industries and sales settings. A sample of 1,024 salespeople was taken from a commercially purchased mailing list. Each of the salespeople in this sample indicated that he or she was involved in selling products and/or services to companies (in other words, *not* retail sales or sales to individuals). From this initial mailing, 382 salespeople returned a postcard indicating they were appropriate respondents and expressing willingness to complete the survey. The survey was mailed to these individuals, and 262 completed surveys were returned from business-to-business salespeople (a response rate of 68.6%). The survey was developed to collect information regarding the salesperson's role in sales forecasting, the level of satisfaction with and seriousness placed on the forecasting process, and the presence of situational variables that impact forecasting performance. In addition, demographic data were collected to further explore possible patterns among variables.

Results indicate that, among the 262 respondents, 214, or almost 82%, have forecasting responsibilities. This is consistent with the evidence accumulated through years of working with dozens of organizations, the vast majority of which use their salespeople to assist in their forecasting efforts. The remaining results reported in this Appendix pertain only to those 214 respondents who reported that they are engaged in the forecasting process.

Approximately 86.4% of the respondents are employed by the company for which they sell products or services, and 13.1% are independent manufacturer representatives. Among the industries represented, 47.1% sell consumer goods, 37.1% sell industrial products, 8.2% sell consumer services, and 7.7% sell industrial services. The majority of companies are manufacturers (56.9%), followed by transportation and distribution companies (10.5%), wholesalers (8.1%), retailers (4.8%), and the remaining 19.6% are from other industries (e.g., advertising, health care, publishing, market research, telecommunications, and finance). The typical firm included in the survey has sales volume

ranging from less than $10.0 million to more than $5.0 billion, with an average sales volume between $201 million and $500 million. The number of employees ranges from less than 100 to more than 1,000, with the majority of companies (52.9%) having less than 100 employees (see Table 5.2).

A typical respondent is male (83.6%), has an average age of 35 to 44, has been employed in sales for an average of 10 to 15 years, and has a college degree with an educational background in business (see Table 5.2). Of the respondents, 46% are compensated with a combination of salary and bonus, followed by 15.3% who are compensated with straight commission, 12.8% with salary and commission plus bonus, 12.2% with salary plus commission, and 10.8% with straight salary.

Forecasting Responsibilities

The number of hours spent per month on the forecasting process ranges from zero (n = 2) to 100 (n = 1), with an average of 3.0 hours per month (see Table 5.3). A total of 11.7% of respondents forecast on a weekly basis, 46.3% of respondents forecast on a monthly basis, 29.9% forecast on a quarterly basis, and 46.3% forecast annually. The most common time horizon for which respondents are asked to forecast is 1 year (62.1%), followed by a quarterly horizon (42.1%), and a monthly horizon (33.2%), with all other horizons forecast by fewer than 10.0% of the respondents (see Table 5.3). Results indicate that 71.0% of respondents forecast dollars, 53.0% forecast units, and 10.7% indicated that they forecast "other" volumes, such as weight, price per pound, market share, product mix, orders, shipments, call volume, FTEs, referrals, board square footage, profit, and company product equivalents. The most common level at which forecasts are created is the customer level (68.2%), followed by product level (54.2%), SKU (23.8%), and SKUL (7.0%). For those forecasting at the customer level, 70.5% treat some customers differently than others in the forecasting process, and 29.5% treat all customers the same. Similarly, 70.0% of respondents indicated that they treat some products differently than others, while 30.0% treat all products the same.

Regarding resources provided for forecasting by their companies, 65.0% of respondents are given account or territory buying history, 15.9% have access to a forecasting computer program, and 14.0% have received formal forecasting training. In response to a question asking what resources respondents use in the forecasting process, 90.7% indicated they use sales history, 86.9% use their own judgment, 79.4% use

Table 5.2   Sample Descriptive Statistics

Annual Sales in Dollars	Frequency	Percent	Number of Employees	Frequency	Percent
< $10M	35	16.9	Under 100	35	16.9
$11M–$50M	30	14.5	1001–5000	30	14.5
$51M–$100M	16	7.7	5001–10,000	16	7.7
$101–$200	16	7.7	> 10,000	16	7.7
$201M–$500M	22	10.6	Total	22	10.6
$500M–$1B	24	11.6			
$1B–$5B	33	15.9			
> $5B	31	15.0			
Total	207	100.0			

Age	Frequency	Percent	Years Employed in Sales	Frequency	Percent
18 to 34	35	16.5	5 or less	21	9.8
35 to 44	96	45.1	6 to 9	20	9.3
45 to 54	50	23.5	10 to 15	72	33.8
55 or over	32	15.1	16 to 20	43	20.2
Total	213	100.0	21 or More	57	26.8
			Total	213	100.0

Level of Education	Frequency	Percent	Educational Background	Frequency	Percent
HS to Some College	35	17.1	Business	126	59.7
College Grad	119	58.0	Engineering/ Tech	23	10.9
Grad School	51	24.9	Liberal Arts	39	18.5
Total	205	100.0	Other	23	10.9
			Total	211	100.0

information resulting from conversations with customers concerning future buying, and 40.7% use general market research provided by their employer, such as industry trends and economic forecasts. A total of 13.6% of respondents use time series, 4.7% use regression, and 84.6% indicated they do not use quantitative forecasting techniques.

Table 5.3   Forecasting Descriptive Statistics

Hours Spent Per Month of Forecasting	Frequency	Percent	Forecasting Horizon[a]	Frequency	Percent
1 hour or less	45	21.0	Weekly Horizon	14	6.5
1.1 to 2.0 hours	46	21.5	Monthly Horizon	71	33.2
2.1 to 3.0 hours	22	10.3	Quarterly Horizon	90	42.1
3.1 to 4.0 hours	27	12.6	1-Year Horizon	133	62.1
4.1 to 5.0 hours	13	6.1	2-Year Horizon	11	5.1
5.1 to 10.0 hours	28	13.1	5-Year Horizon	9	4.2
10.1 to 20.0 hours	11	5.1	Other Horizon	26	12.1
20.1 or more hours	22	10.3			
Total	214	100.0			

a. Note: There are multiple responses.

Forecasting Environment Within Company

More than 12% of respondents indicated that they have "very little" to "no" knowledge of what is done with their forecasts after they are submitted, 35.2% have "some knowledge," 28.2% have "lots of knowledge," and 23.9% have "extensive knowledge." While 76.5% of respondents receive feedback on the accuracy of their forecasts, only 59.4% believe the feedback is adequate. A total of 43.7% of respondents indicated that forecast quality impacts their performance evaluations, and 24.4% indicated that forecast quality is tied to their compensation.

Respondents were asked how seriously they regarded their fore-casting responsibilities, as well as how seriously others in the organi-zation regarded the forecasts the respondents provided, measured on a 5-point Likert-type scale ranging from "Not at all seriously" to "Extremely seriously." Results show that the level of seriousness placed on the forecasts by the respondents is strikingly similar to that of the organization for which they provide the forecasts, with most responses being "fairly seriously" (37.3% and 35.3%, respectively) to "quite seriously" (35.8% and 35.3%, respectively; see Table 5.4). In terms of the overall forecasting process, 24.3% of respondents are "extremely satisfied" to "quite satisfied," 44.8% are "satisfied," and 31.0% are "somewhat dissatisfied" to "extremely dissatisfied" (see Table 5.5).

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Table 5.4   Level of Seriousness Placed in the Forecast

	Extremely Seriously	*Quite Seriously*	*Fairly Seriously*	*Not very Seriously*	*Not at all Seriously*
How seriously do you take your forecasting responsibilities?	17.5%	35.8%	37.3%	8.5%	0.9%
How seriously are your forecasts taken by others in the organization?	19.8%	35.3%	35.3%	8.2%	1.4%

Table 5.5   Level of Satisfaction with Forecasting Process

	Extremely Satisfied	*Quite Satisfied*	*Satisfied*	*Somewhat Dissatisfied*	*Extremely Dissatisfied*
How satisfied are you with the forecasting process?	1.9%	22.4%	44.8%	26.7%	4.3%

Results indicate that there is considerable involvement of the sales force in sales forecasting, but there is also considerable room for improvement in many companies.