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Blending Agile Forecasting with an Integrated Business Planning Process

a·gil·i·ty (əˈjilədē/)

noun

Ability to move quickly and easily.
Ability to think and understand quickly.

This chapter describes

- why competent demand forecasting is an essential component of effective demand planning and management practice
- how Agile Forecasting results from integrating predictive database decision support, automated statistical forecast modeling, forecast uncertainty measurement, and ongoing forecast performance evaluation within a firm's business planning processes.

After reading this book, you should be able to

- understand the essential nature of a demand forecasting process ın a consumer demand-driven supply chain environment
- recognize the components of an effıcıent and effective forecastıng work cycle
- engage wıth potentıal forecast users to help define, formulate, execute, evaluate, and support their forecast data requirements and performance metrics
- provide advice on recommendations for forecast data standards, forecast reviews, model checklists, performance measurement activities, and business planning integration.

PEERing into the Future: A Framework for Agile Forecasting in Demand Management

As demand forecasters we must strive to induce needed change—change in the way we deal with data, quantitative and qualitative methods for forecasting, and the uncertainty factor. Change in encouraging planners and managers to rethink their goals for demand forecasting. Motivating them away from how they have always dealt with forecasting: "Hey. forecaster, what are your final numbers?" Getting them to take a different path, a new path. The question is, are we talking to the elephant or the rider?

The Elephant and the Rider Metaphor

The Elephant is the emotional side of motivation, while the Rider is the logical side. Perched atop the Elephant, the Rider holds the reins and seems to be the leader. But the Rider's control is precarious because the Rider is small relative to the Elephant. Anytime the six-ton Elephant and the Rider disagree about which direction to go, the Rider is going to lose. He's completely overmatched.

We have to examine how these two internal motivations play together (or not). The most obvious examples we most can relate to are sticking to a diet, staying on an exercise program, or quitting smoking. We know it is the right thing to do (Rider) but we have a difficult time sticking to it (Elephant).

The Elephant and Rider are the yin and yang of our psyche. The Rider is the planner or manager (getting thin on a diet), while the Elephant is attracted to the short term payoff (enjoying an ice cream cone).

Changes often fail because the Rider simply can't keep the Elephant on the road long enough to reach the destination.

Recall that this book has advocated four key steps in an approach to solving demand forecasting problems. These same steps are key to forming an effective framework for an agile forecasting process.

1. **Prepare:** Define the purpose and role of the job or organization, define the major areas of responsibility, set objectives, and establish indicators of performance.
2. **Execute:** Define short-term goals and action plans, and carry out a plan for each area of responsibility.
3. **Evaluate:** Perform forecast monitoring (define objectives for the forecaster), know what to monitor, develop a measurement plan, develop metrics of forecast accuracy, and develop scores for performance.
4. **Reconcile:** Select the most credible approach, reconcile demand forecasts, support database forecast decision support in the cloud, and get top management involvement.

Prepare

Purpose and Role. What is the purpose of a demand forecasting job or organization? This requires considerable thought. It is difficult to be *agile* unless one knows what it is that needs to be accomplished (see Chapter 1). One role of a forecast manager is to serve as an advisor to a company's senior management and managers of end-user organizations. To fulfill the other part of the role, a forecast manager must manage colleagues and their work. Here is a mission statement:

The responsibility of a demand forecasting organization is to provide top-quality advice—primarily about future demand for a firm's products and services under conditions of uncertainty.

One can spend many hours wrestling with the purpose of the job. In addition, developing meaningful indicators of performance is no easy task and can give rise to many debates. Experience will cause us to reject some indicators and replace them with others that are more relevant. Naturally, both the indicators and attendant levels of performance will change over time as the business evolves.

Major Areas of Responsibility. These are the major areas of responsibility that should be defined in short one- or two-word statements. These might be product, revenue, capacity, or asset management forecasting. But almost all managers share some combination of professional self-development, forecasting staff/ personnel development, and resource management.

For forecast managers, the key areas of responsibility are likely to include forecast evaluation, measurement, monitoring, presentation, and forecaster appraisal and professional development. Forecaster performance appraisal/development is equally important, but the methods for achieving success in this area are not restricted to forecast managers. (The traditional management literature covers this topic adequately, and it is beyond the scope of this book.)

Set Objectives. Once one has determined the purpose and areas of responsibility of a forecasting discipline, the next step is to develop a long-range objective for each area of responsibility. These objectives should be general enough to have lasting significance, and they should contain an indication of the goal that the actual work should accomplish. Some examples are to

- improve the accuracy of X
- improve the productivity of X
- reduce the cost of X
- improve technical and managerial skills
- improve the credibility of the demand forecasting organization
- ensure the continuing relevance of X

Such objectives are important because they provide the managerial direction and focus that team members can embrace and strive to achieve. Demand forecasters can see how their activities are related to the achievement of organizational objectives. What is implicit in all of these objectives is a striving for improvement that can be translated into actual tasks.

Establish Indicators of Performance. How to define the indicators of performance for the organization? How will the organization know it is making progress toward the achievement of its objectives? What will be the yardsticks? For certain forecasts, one indicator might be the absolute percentage deviation between estimate and actual. For personnel development, indicators might be the demonstrated ability of a demand forecaster to use a new technique in effectively forecasting demand for a new product or service.

Without an understanding of purpose and indicators of performance, we will find it difficult to manage effectively.

Execute

Define Short-Term Goals and Action Plan. With indicators of performance in place, we can turn to the second major step of the Agile Forecasting process: executing a specific short-term goal and action plan for the next 6 to 12 months. If the goal is to improve the accuracy of a forecast item, a reasonable goal may be to improve the accuracy to within a given percentage, say 5 to 20%, depending on the item to be forecast. For professional development, the goal may be to assume responsibility for forecasting new revenues within the next 6 months.

Carry Out a Plan for Each Area of Responsibility. With areas of responsibility clearly stated, the forecast manager must establish specific activities that can lead to measurable results for the demand forecasting staff. Because results are evaluated, the action plan needs to be achievable and carried out in reasonable time frames (weeks or months, rather than years).

Evaluate

Develop Objectives for the Demand Forecaster. At the center of the agile demand forecaster's role are the analysis and actions that compose the evaluative process. A primary objective of forecast monitoring is to prevent surprising the company with news about unforeseen exceptions to a forecast. The firm should have sufficient time to evaluate alternative courses of action and not be forced to react to unpredicted yet predictable events. A second objective of monitoring is to predict accurately a change in the direction of growth. This involves predicting the turning points in the business cycle and the demand for the firm's products. Quite often forecasters find it difficult to predict a downturn in demand and instead call for an upturn too soon (see Chapter 7).

It is easy to see why few managers in business find the exercise of managerial control as challenging as the demand forecaster does. Demand forecasters are responsible for a function whose primary output is wholly related to the future environment. Unable to change the environment, the forecaster must instead be prepared to make revisions when it is evident that an original forecast or goal cannot be met with stated precision. In effect, the forecaster is changing some predetermined goal in order to more accurately predict expected performance.

Managerial control is a process that measures current performance, based on available information, and guides performance toward a predetermined goal.

The process of forecast monitoring provides the demand forecaster with an early indication that such changes in forecasts may be required. Through experience, an agile demand forecaster will develop an

improved ability to anticipate change and to advise management so that the firm will have time to adjust operations to changing conditions. This, of course, is a valuable attribute in any forecaster.

At a more demanding level, the objectives of monitoring are to predict changes in the rate of growth, to predict the level of growth and to minimize the impact of forecast changes. The ability to predict any speeding up or slowing down of growth with uncertainty measurement helps management to decide on the proper timing of company plans and programs. Accurate predictions of the level of growth—the forecast numbers themselves—allow management to make sizing decisions about investment in facilities, numbers of employees, and appropriate financing arrangements. Last, it is necessary to minimize the internal disruption that results from changing forecasts too frequently. The demand forecaster could, after all, change a forecast every month so that the final forecast and the actual data are almost identical. However, this does not serve the needs of the firm. Using prediction limits, the demand forecaster must endeavor to minimize the need to override forecasts. The more carefully thought out and thoroughly researched the initial forecast is, the less likely the need for it to be revised or overridden.

Know What to Monitor. There should be a difference between what a demand forecaster monitors and what the manager monitors. Demand forecasters monitor a predictive database that consists of time series, cross-sectional data, and assumptions for customer/geographic segments and product groupings. They are primarily interested in the numerical accuracy of the forecasts, reliable uncertainty measurement, and the credibility of the forecast assumptions.

The manager monitors an enterprise database that is both more general and more selective. Included in this database are the exceptional cases that demand forecasters uncover as a result of their detailed monitoring. The manager is primarily concerned with the implications of the difference between the initial forecast and the evolving reality for the business for which the forecast is made. The manager should know more about that business and generally be more aware of the significance of forecast changes on business performance than need be the demand forecaster.

The specific items that demand forecasters select to monitor will naturally depend on their areas of responsibility. The indicators that are established in the organization's business plans are natural candidates for monitoring. With the items to be monitored selected, the demand forecaster should

- Consider monitoring composites, or groups of items. Composites often serve as indicators of overall forecast quality and are frequently used as a basis for decision making. They are resistant to individual deviations that may be measurement aberrations and not *managerially* significant. For example, a forecast of total revenues might be on target, although forecasts of revenues accruing from the sales of a product to residential or business users may need to be adjusted.
- Compare the sum of the components of a forecast to the whole helps to ensure that there is a reasonable relationship between the more stable aggregate forecast and the more volatile bottom-up forecast of many small components. For example, the sum of the individual product forecasts should be compared to a total product-line forecast. In this way, the forecaster can be assured that both upward and downward revisions in the component parts are being made to keep them in reasonable agreement with the total forecast.
- Monitor ratios or relationships between different items. The ratio of a given geographic area's sales to the total corporate sales is an example of this approach. Another example is the ratio of sales to disposable personal income.
- Monitor time relationships. It may be appropriate to monitor changes or percentage changes over time. The use of seasonally adjusted annual rates is an example, as is the ratio of first quarter to total annual sales.

- Consider monitoring both on a period basis and on a cumulative basis. The sum of the actuals since the beginning of the year should be compared with the sum of the forecasts. This has the advantage of smoothing out irregular, random, month-to-month variations.
- Monitor external factors (drivers of demand). These are the basic key assumptions about business conditions or the economic outlook. Corporate policy assumptions also need to be monitored.
- Monitor user needs. It is possible that budgetary or organizational changes, new or discontinued products, or changes in management will cause changes in the forecast user's needs. Because demand forecasting is an advisory function, demand forecasters need to monitor user needs to be certain that the forecasting service being provided is consistent with evolving business needs. Questionnaires or periodic discussions with users will indicate whether such changes have occurred.
- Monitor similar forecasts in several geographic locations. This will help determine whether a pattern is developing elsewhere that may impact the company or area in the near future. Do any geographic areas of the market generally lead or lag the market as a whole? The forecaster may discover that his or her geographic area is not the only market area with weak or strong demand; a national pattern may be emerging that needs to be tracked.

The items to be monitored should relate to the purposes and objectives of the organization.

Develop a Measurement Plan. A major aspect of forecast process improvement is forecast measurement or results analysis. For any forecaster, improvement in organizational or staff effectiveness depends on measurement. A demand forecaster will find it useful to establish a forecast measurement plan to provide indications of overall performance that can be reviewed with upper management. A properly developed plan will show performance trends and highlight trouble areas.

The measurement plan will provide managers with a tool to assist in evaluating both forecasts and forecasters. When a measurement plan exists, demand forecasters know that they have to explain forecasts that miss the mark. This forces demand forecasters to structure and quantify their assumptions so that there will be documented reasons to explain deviations from forecasts and actuals.

The goal of a measurement plan is to develop meaningful ways of measuring the performance of the demand forecasting organization.

The complete chapter can be found in

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