Chapter 1

NEED

Gripe: *You can't forecast this business.*

Stop! Before you read this book, let's make sure it'll be helpful. After all, it's going to take some of your time to read it, and you'll probably have to expend some mental energy to do so. If the book won't help, that's not a good investment of those resources.

This book will probably be helpful if you:

1. are the president, chief executive, or general manager of a business that makes products and you see a major gulf between your Sales & Marketing folks and those in Operations.

2. work in Sales & Marketing, and continually get beat up for bad forecasts.

3. work in Operations and feel that the sales forecasts you get are really awful.

4. are a field salesperson who just doesn't understand why you need to go through this agony called forecasting.

5. believe that, with better forecasts, your company could do a better job of shipping customer orders quickly, complete, and on time.

6. believe that, with better forecasts, your company could do a much better job of anticipating financial surprises.

7. are considering buying new forecasting software.

On the other hand, this book won't be highly helpful if your current forecasting processes are very good, or if you work in a high-tech company where a large percentage of your forecasting challenge is with new products and end-of-life issues with existing products. Nor will it help you if you're convinced that the key to forecasting excellence lies in advanced statistics and superior forecasting software — or if you work in non-manufacturing industries such as banking, retailing, insurance, or the airlines.

Gripes About Forecasting

Here's a group of people we'd like you to meet, along with some of their favorite comments about forecasting. These folks, incidentally, are all employees of the World Wide Widget Works.

Sam Mason, VP Sales & Marketing: ***"You can't forecast this business."***

Len Davis, Director of Logistics and Materials: ***"If only we could get an accurate forecast, it would solve most of our problems."***

Paula Morgan, Product Line Manager: ***"How does Len know the forecasts aren't accurate? I doubt if he's looked at one in years. I think he ought to concentrate on eliminating all these backorders instead of griping about our forecasts. Besides, forecasting's not in my job description; I'm staying out of that game."***

Paul Shaw, Production Scheduler: ***"We need more detail in our forecasts."***

Irene Schmidt, Director of Information Services: ***"Our forecasting software gives us everything we need."***

Vic O'Connor, VP Operations: ***"The forecasts are awful. It's no wonder we have trouble shipping on time. But I'm not optimistic that it'll get better. We start lots of stuff around here, but don't finish much. Why should better forecasting be any different?"***

Carol Fox, CFO: ***"We're happy with our forecasting; we've been doing it this way for over ten years."***

Fran Adams, Forecast Analyst: ***"Making forecasts is a waste of time around here; nobody ever reads them, especially Operations. And now, that dingbat Paul Shaw in Scheduling wants us to give him even more detail. Hello?!"***

Dave Palermo, Division President: ***"When I was in Sales, I used to say that we know the forecasts are going to be wrong, so why bother with them? But now something tells me that better forecasting might help."***

Don't be misled by their words. This is a good bunch of people: They're hardworking and successful. They love to make their customers happy and to give their competitors fits. But . . . they do seem to have a problem with this forecasting stuff. They're not working well together. Words like divisive, contentious, and adversarial come to mind.

Why Bother with Forecasting?

Well, if this forecasting stuff causes us to be unhappy with each other, maybe we should just skip it. So, first let's address one of the president's comments: "The forecasts are going to be wrong, so why bother?" Maybe he's right. Maybe his company, or some others, might not need to go through this forecasting agony. After all, it is time consuming. It doesn't directly add value to the product. And, oh yeah, it's going to be wrong. Here are some characteristics of a company that might be able to get by without forecasting:

- Their customer order fulfillment times are longer than their total procurement and production lead time. In other words, after they get the customers' orders, they can buy the material, make the product, and ship it — and that timing is just fine with the customers. And . . .

- They can add or reduce capacity very quickly and economically. They can turn on a dime — increasing or decreasing their output — and they can do this for virtually no cost and with no negative impact on people's lives. And . . .

- The owners of the business do not require forward financial planning. This can happen when the company's stock is closely held and not publicly traded.

Is your company like this? No? Then you might want to keep reading because just about every other kind of company needs to forecast. Here are three reasons why.

1. Ship Quick

Almost every company has to ship customer orders quicker than the cumulative lead time[1] for its products. For products that we call "make-to-stock," this is a way of life; they must complete the product and put it into finished goods inventory before the customer orders arrive. For make-to-order companies, this means that material must be bought and frequently production must begin prior to the customer order.

Now some of you might be thinking: Wait a minute. We have that situation but we don't do any forecasting. Our response: oh yes you do. Someone, somewhere within your company is forecasting (and we'll bet that the word "forecasting" is not in their job description). Sometimes these "forecasters" are in Purchasing. They need to commit for purchased materials far ahead of customer order receipt. They are predicting (forecasting) future needs for purchased items. Typically these predictions are based heavily or totally on past history.

[1] This refers to the total time required to procure the material and produce the product.

Other folks who forecast (even though it's not in their job description) work in areas like Production Planning and Scheduling. Frequently they need to commit jobs into production prior to customer order receipt, and they do this based on some kind of a prediction — a forecast — also usually based on past history.

Let's raise several questions: One, are these the best people to do the forecasting and, two, is past history always the best basis for the forecast? Answers: no and no. Stay tuned for the reasons why.

2. Change Capacity

In some companies, increasing or decreasing capacity can be difficult and costly. In other companies, it's less so. But very few manufacturing organizations can sharply change their output rates with no cost or effort. For most companies to change capacity cost-effectively with no negative impact on product quality, advanced planning and very controlled implementation are required. What enables this to happen is forecasting sufficiently far into the future.

How far is "sufficiently?" Well, it depends. If a capacity increase will involve mainly people rather than equipment and will require more than merely overtime, the labor market can be a key factor. If the jobs call for low skills with little training, and if there are people looking for jobs, the forecast would need to go out a number of weeks or months into the future. This is necessary to cover the lead time needed to hire and train new people. On the other hand, if the labor market is tight, and if the jobs are highly skilled with long training times, the forecast may need to be in quarters or years — perhaps the same as capital equipment.

On the flip side — a decrease in capacity and hence, workforce — one might feel that not as much advance notice would be needed. All that needs be done is to have a layoff, right? Again, if it's a tight labor market, looking farther forward may be very desirable in order to avoid a layoff that's followed shortly by a rehire. Also, if the decrease could be planned in advance, might it be possible to reduce the workforce via attrition and thus avoid a large layoff, which is typically difficult and disruptive to the people affected and their families, and costly to the company?

If new equipment is involved in a capacity change, then a longer forecast horizon is normally required — often quarters or years. Here also, the "heads-up" that can come from a good forecasting process can be invaluable, giving engineering and manufacturing people the time to do a proper job of developing specifications, getting quotes, evaluating alternatives, and making the right selection.

3. Financial Planning

If your company is publicly traded, you are required to do financial planning: projecting income, expenses, profits, investments, cash flow, asset levels, and so on. Even if your company is not publicly traded, you need to do a good job of financial planning in order to run the business responsibly.

Well, financial planning is all about the future. As such, it requires a forecast. And, invariably, that forecast is forthcoming — even from the folks who say: "You can't forecast this business." They may grumble, but they do the forecasting. Why is this?

We think there are several reasons, one being that the annual budgeting cycle is so deeply ingrained in most companies' business processes that people simply accept the fact that it has to be done. Another is that the forecasts used in the budgeting process are most often in dollars — and dollars tend to be easier to forecast than units. Third, the CFO in most companies has lots of clout; he or she can make the forecast happen.

A summary of the different uses for forecasts is shown in Figure 1-1.

Figure 1-1

USES FOR FORECASTS

Use	Unit of Measure	Forecast Horizon
Financial planning	Dollars	Current and future fiscal years
Sales planning	Units/dollars	Weeks, months, quarters
Capacity planning	Units/hours	Months, quarters, years
Advanced procurement	Units	Weeks, months, quarters
Master scheduling	Units	Weeks, months

Too Much Forecasting?

It's true that many companies don't forecast enough. However, your friendly authors believe that many companies forecast too much. Too much detail, too far out into the future. For example, there is some sentiment within the World Wide Widgets operations group for forecasts 12 months into the future by individual end item[2]. The question to ask is "why." Are you going to release production orders into the plant 12 months ahead of time? If the production lead time is three weeks, why do you need 12 months of end item detail in the forecast?

Operations might respond by saying they need that much forward visibility for long-range procurement. Our response here would be, "Okay. We're not quarreling with the need for a 12-month or longer horizon. But why do you need end item detail? Within a given product family — medium widgets, for example — there are materials and components common to all products in that family, and others that are unique to only some products. Might it not be better to forecast overall volume for the medium widget family (covering the common components) and then use percentages to reflect the unique items?"

We believe this is the way to go, and in Chapter 5 we'll get into the details of how to construct and use planning bills of materials — and thereby not have to wade through enormous amounts of detail. Forecasting is work; it consumes time and brain power. Let's not do any more of it than is necessary to get the job done[3].

Now for a couple of definitions.

Volume Forecast: A forecast by product grouping such as families, classes, and so forth. Also called the aggregate forecast or the product group forecast, it is used for sales planning, for capacity planning at the plants and suppliers, and for financial analysis and projections.

Mix Forecast: A forecast by individual product. Sometimes called the detailed forecast. It is used for short-term scheduling for plants and suppliers, (and may be required for certain long lead time, unique purchased items).

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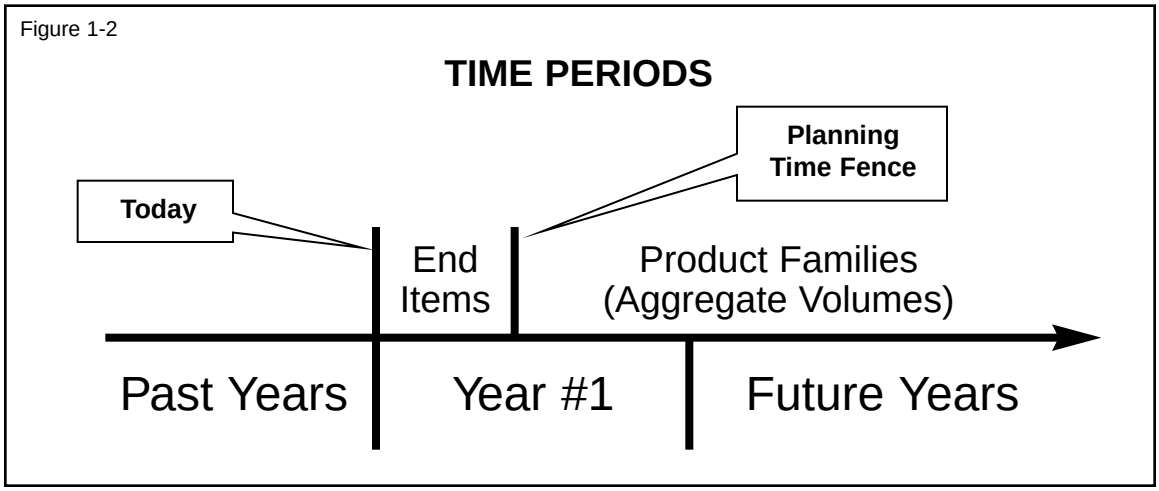
[2] Sometimes referred to as a "stockkeeping unit." (SKU). A more rigorous use of SKU is that it includes location: An end item at a given location is an SKU.

[3] One company we know with good statistical forecasting software will let the detailed, mix forecast run out into the future for a year or more. They spend virtually no time on the details out beyond the Planning Time Fence, but rather use the detail to aggregate up to the volume level. We think that's okay; the issue is how one spends one's time. We'll have more to say on this in Chapters 3 and 6.

Please check Figure 1-2, which depicts the relationship of volume versus mix forecasts. Please note that the mix forecast goes out only to a point called the Planning Time Fence. This is the point in the future inside of which detailed planning and scheduling must be present, and typically is based on the cumulative lead time for manufacturing and purchasing. (For a more complete explanation of the Planning Time Fence, please see Appendix A.)

Figure 1-2



One Set of Numbers

During the time period when both the volume forecast and the mix forecast exist, i.e., inside the Planning Time Fence, they *must* agree. The sum of the detailed mix forecast must equal the aggregate volume forecast. This is one example of operating with one set of forecast numbers.

The reverse — operating with more than one set of numbers — can happen in companies where Sales is a totally different organization from Marketing. Sales makes a sales forecast and so does Marketing. The problem is, they don't agree. So which forecast should Operations use? We don't know.

We've also seen companies where some Finance & Accounting folks do sales forecasting, typically as part of the annual budgeting and financial planning cycle. And, of course, the odds are quite high that this forecast doesn't agree with the others. So which forecast should Operations use? We don't know.

We do know what the company should do: Get rid of the multiple forecasts, assign accountability for forecasting, and insist on only one set of numbers with which to run the business. Once the forecast is agreed upon, once it becomes what some people call the

consensus forecast, then all parties must use it. It's no longer legitimate to get the forecast and then "apply judgement" to it, i.e., make it something different.

Oh my goodness, we've used the "a" word: accountability. Yes, there does need to be accountability for this important forecasting activity, and we'll get into that in the next chapter.

Gripes and Tips

Let's return to the item with which we began this chapter, the gripe. It said: "You can't forecast this business." We'll see a number of these gripes — negative comments about forecasting — throughout the book, and we'll try to respond to them with tips and often by citing various principles of forecasting. Here's the first:

> **Principle #1: Sales forecasting is being done in virtually every company that produces and sells products, either formally or by default. The challenge is to do it well, better than the competition.**

You not only can forecast the business; you must. You have no choice. So if you have to do it, why not do it very well, better than the competition?

If you need more encouragement, please take a look at our next principle, which we hinted at in the Introduction:

> **Principle #2: Better forecasts enable companies to give higher customer service (order fill), to lower the inventories, to run the plants better, to work more cooperatively with suppliers, and — last but certainly not least — *to sell more product.***

A listing of all the forecasting principles identified in this book is contained in Chapter 9.