FORECASTING METHODS

Factors to consider while selecting.

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The selection of a method depends on factors like:

- context of the forecast
- relevance and availability of historical data,
- degree of accuracy desirable
- time period to be forecast
- cost/ benefit (or value) of the forecast to the company, and
- time available for making the analysis.
- the stage of the product's life cycle for which it is making the forecast.

Manager, Forecaster & Choice of Methods

- *What is the purpose of the forecast—how is it to be used?*

1. This determines the accuracy and power required of the techniques, and hence governs selection.
2. Deciding whether to enter a business may require only a rather gross estimate of the size of the market, whereas a forecast made for budgeting purposes should be quite accurate.
3. The appropriate techniques differ accordingly.

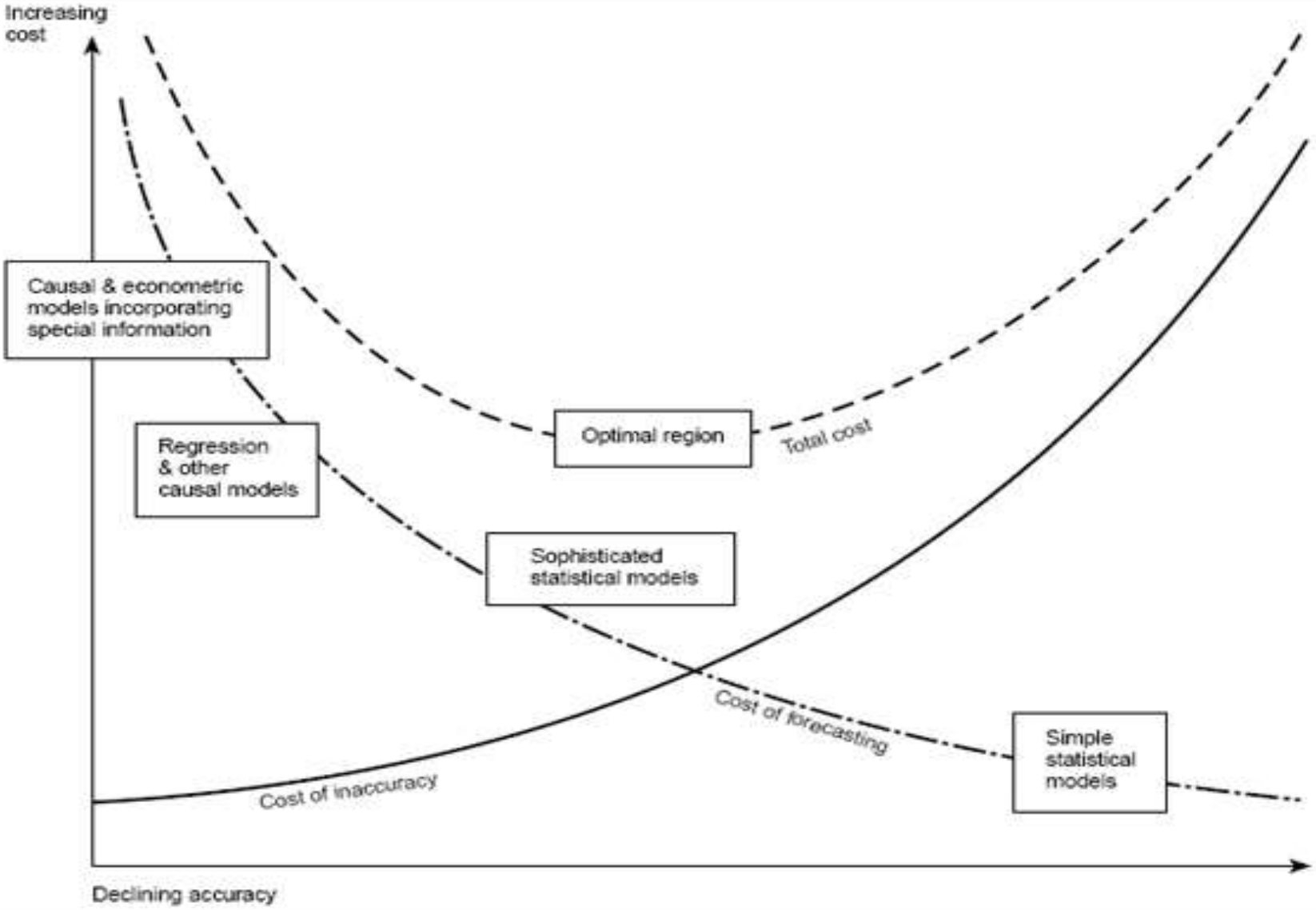
- Techniques vary in their costs, as well as in scope and accuracy.
- The manager must fix the level of inaccuracy he or she can tolerate—in other words, decide how his or her decision will vary, depending on the range of accuracy of the forecast.
- This allows the forecaster to trade off cost against the value of accuracy in choosing a technique

- For example, in production and inventory control, increased accuracy is likely to lead to lower safety stocks.
- Here the manager and forecaster must weigh the cost of a more sophisticated and more expensive technique against potential savings in inventory costs.

- Exhibit I shows how cost and accuracy increase with sophistication and charts this against the corresponding cost of forecasting errors, given some general assumptions.

- The most sophisticated technique that can be economically justified is one that falls in the region where the sum of the two costs is minimal.

Exhibit I **Cost of Forecasting Versus Cost of Inaccuracy For a Medium-Range Forecast, Given Data Availability**



- Once the manager has defined the purpose of the forecast, the forecaster can advise the manager on how often it could usefully be produced.

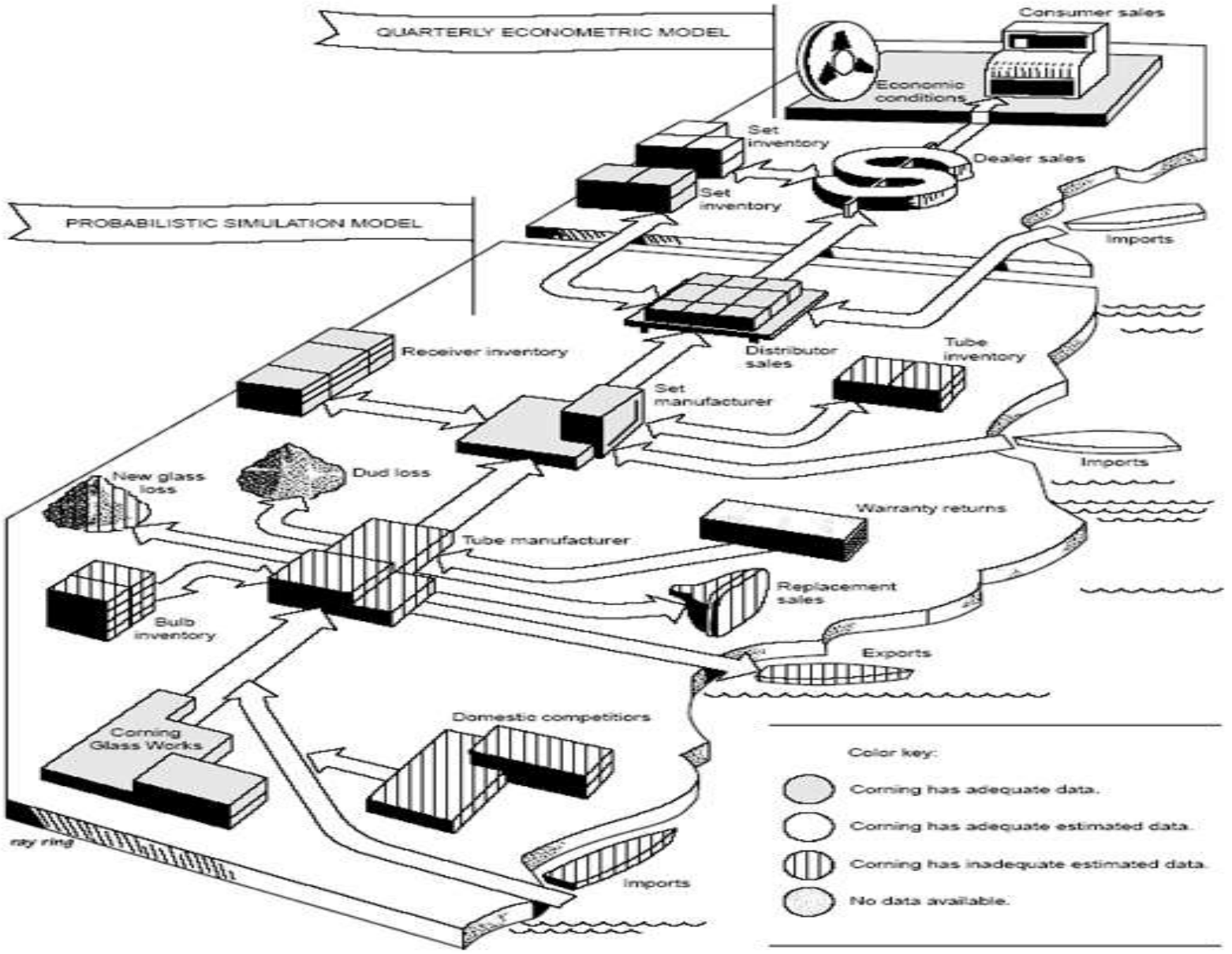
- From a strategic point of view, they should discuss whether the decision to be made on the basis of the forecast can be changed later, if they find the forecast was inaccurate.

- If it *can* be changed, they should then discuss the usefulness of installing a system to track the accuracy of the forecast and the kind of tracking system that is appropriate.

What are the dynamics and components of the system for which the forecast will be made?

- This clarifies the relationships of interacting variables.
- Generally, the manager and the forecaster must review a flow chart that shows the relative positions of the different elements of the distribution system, sales system, production system, or whatever is being studied.

Exhibit II **Flow Chart of TV Distribution System**



- Exhibit II displays these elements for the system through which CGW's major component for color TV sets—the bulb—flows to the consumer.
- Note the points where inventories are required or maintained in this manufacturing and distribution system—these are the *pipeline elements*, which exert important effects throughout the flow system and hence are of critical interest to the forecaster.

- All the elements in dark gray directly affect forecasting procedure to some extent, and the color key suggests the nature of CGW's data at each point, again a prime determinant of technique selection since different techniques require different kinds of inputs.

- Where data are unavailable or costly to obtain, the range of forecasting choices is limited.

- The flow chart should also show which parts of the system are under the control of the company doing the forecasting.
- In Exhibit II, this is merely the volume of glass panels and funnels supplied by Corning to the tube manufacturers.
- In the part of the system where the company has total control, management tends to be tuned in to the various cause-and-effect relationships,
- and hence can frequently use forecasting techniques that take causal factors explicitly into account.

- The flow chart has special value for the forecaster where causal prediction methods are called for because it enables him or her to conjecture about the possible variations in sales levels caused by inventories and the like, and

- to determine which factors must be considered by the technique to provide the executive with a forecast of acceptable accuracy.

- Once these factors and their relationships have been clarified, the forecaster can build a causal model of the system which captures both the facts and the logic of the situation—which is, after all, the basis of sophisticated forecasting.

How important is the past in estimating the future?

- Significant changes in the system—new products, new competitive strategies, and so forth—diminish the similarity of past and future.
- Over the short term, recent changes are unlikely to cause overall patterns to alter, but over the long term their effects are likely to increase.
- The executive and the forecaster must discuss these fully.