Sample Answers to In-Text Questions

# Chapter 13: Demand Forecasting Methods

# Discussion Questions

1. Give some examples of a company’s operational planning activities that require demand forecasts.

Answer: Examples will vary. Almost all activities require some type of forecasting.

2. When is it appropriate to use qualitative forecasting methods?

Answer: Qualitative methods are most appropriate when historical data, or linear trends are not available.

3. Discuss the qualitative forecasting technique of a historical life-cycle analysis.

Answer: This is a technique that might be used to forecast a new product that has no history. It ties past history of another similar product to predict the new product activity during its various life cycles.

4. What is a time series and the rationale for forecasting based on a time series analysis?

Answer: A time series is past historical data. It assumes that the product demand will be a function of some past demand. The trick is to figure out the current trends, and seasonality.

5. Discuss briefly the various components of a time series.

Answer: Components include the trend, seasonality, cyclical variations, and any random or irregular variations in demand.

6. What are the advantages of the simple exponential smoothing method of forecasting over the moving average technique?

Answer: You need less data. You only need the latest observation of demand, so it is data efficient. It is a simple and easy formula; you just need to estimate the amount of trend for a smoothing factor.

7. In exponential smoothing, what is the rationale for choosing a low versus a high value of α?

Answer: You would use a low alpha factor, if the change or trend is estimated to be small.

8. Under what circumstances is the trend-adjusted exponential smoothing method of forecasting superior to a linear trend analysis?

Answer: It is better to use in the short term, and when demand is not trending too much.

9. What is the difference between the linear trend equation and the linear regression equation for a causal model?

Answer: the linear trend equation plots the slope of the trend line. Linear regression analysis models the relationship between a dependent variable and one or more dependent variables.

10. In a multiple linear regression model with two independent variables, how would you interpret the regression coefficients b1 and b2?

Answer: Each regression coefficient represents the amount by which *y* changes for a unit change in *x*i, assuming all other independent variables are held constant.

11. In what ways is the MAPE superior to the other forecasting error measures discussed in this supplement?

Answer: The MAPE, since it gives the percentage error is better because it gives a common measure, and the percentage is easier to conceptualize the relative size of the error, than the others.

12. Which forecasting technique would be best for each of the following scenarios:

a. The demand for Valentine’s Day greeting cards?

b. The demand for ice cream during a year?

c. The demand for a new solar-powered car?

d. The demand for services in a beauty salon during a week?

Answer: Answers and examples will vary, based on the detailed examples picked.

## CRITICAL THINKING EXERCISE

The hotel industry is highly competitive. For most companies, margins are low because of high overhead costs, which means that they have to be cost conscious and focus on keeping their rooms occupied. To get maximum competitive advantage, forecasting is essential to improving a hotel’s future performance.

a. What types of forecasts do hotels need?

b. What demand forecasting methods would you use for estimating room occupancy?

c. What challenges do hotels face when developing accurate room occupancy forecasts?

Answer: Examples will vary.