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Question 1

Question Type: MultipleChoice

PQR, Inc. produces office supplies for big box retailers. This is a highly competitive market and the requirement for maintaining a continuous inventory of product for retailers is a high priority for PQR. Recently, the firm experienced shipping delays from overseas suppliers. Which of the costs associated with shortages would be MOST critical for PQR?

Options:

A- Idle workers

B- Production downtime

C- Expedited shipping

D- Lost sales

Answer:

D

Explanation:

In a highly competitive market like office supplies, the most critical cost associated with shortag-es is typically lost sales. If PQR, Inc. experiences shipping delays and cannot maintain continuous inventory, customers are likely to turn to competitors to meet their needs. This can result in im-mediate lost sales and potentially long-term loss of customer loyalty. The cost of lost sales often outweighs other costs like idle workers or production downtime because it directly affects revenue and market share. Reference:

* Chopra, S., & Meindl, P. (2015). Supply Chain Management: Strategy, Planning, and Op-eration. Pearson.

* Christopher, M. (2016). Logistics & Supply Chain Management. Pearson UK.

Question 2

Question Type: **MultipleChoice**

Consider the following data comparing actual demand versus forecast demand:

Month Actual Demand Forecast Demand

January 100,000 80,000

February 105,000 90,000

March 110,000 100,000

April 70,000 100,000

May 90,000 110,000

June 100,000 90,000

What is the Mean Annual Percent Error (MAPE) for the six months of data?

Options:

A- 10%

B- 15%

C- 20%

D- 25%

Answer:

C

Explanation:

To calculate the Mean Absolute Percentage Error (MAPE), we follow these steps:

1. Find the absolute error for each month.

2. Convert the absolute error to a percentage of the actual demand for each month.

3. Find the average of these percentage errors over the six-month period.

Here's the calculation:

* January: 100,00080,000100,000100=20%\left| \frac{100,000 - 80,000}{100,000} \right| \times 100 = 20\%100,000100,00080,000100=20%

* February: 105,00090,000105,000100=14.29%\left| \frac{105,000 - 90,000}{105,000} \right| \times 100 = 14.29\%105,000105,00090,000100=14.29%

* March: 110,000100,000110,000100=9.09%\left| \frac{110,000 - 100,000}{110,000} \right| \times 100 = 9.09\%110,000110,000100,000100=9.09%

* April: 70,000100,00070,000100=42.86%\left| \frac{70,000 - 100,000}{70,000} \right| \times 100 = 42.86\%70,00070,000100,000100=42.86%

* May: 90,000110,00090,000100=22.22%\left| \frac{90,000 - 110,000}{90,000} \right| \times 100 = 22.22\%90,00090,000110,000100=22.22%

* June: 100,00090,000100,000100=10%\left| \frac{100,000 - 90,000}{100,000} \right| \times 100 = 10\%100,000100,00090,000100=10%

MAPE=(20+14.29+9.09+42.86+22.22+10)6=19.41%20%MAPE = \frac{(20 + 14.29 + 9.09 + 42.86 + 22.22 + 10)}{6} = 19.41\% \approx 20\%MAPE=6(20+14.29+9.09+42.86+22.22+10)=19.41%20%

Thus, the MAPE for the six months of data is approximately 20%. Reference:

* Chase, R. B., Jacobs, F. R., & Aquilano, N. J. (2006). Operations Management for Compet-itive Advantage. McGraw-Hill/Irwin.

* Hyndman, R. J., & Athanasopoulos, G. (2018). Forecasting: principles and practice. OTexts.

Question 3

Question Type: MultipleChoice

A company determines that demand for an item is steady at 800 units per month, and that the cost of ordering and receiving the item is $300, regardless of how much is ordered. The per item charge is $5, and holding costs are 20% annually. Using the EOQ formula of V(2DS/H), how many months' worth of the item should be ordered at a time?

Options:

A- 2

B- 4

C- 3

D- 1

Answer:

B

Explanation:

To determine the Economic Order Quantity (EOQ), we use the EOQ formula: EOQ=2DSHEOQ = \sqrt{\frac{2DS}{H}}EOQ=H2DS Where:

* DDD = Demand (units per year)

* SSS = Ordering cost per order

* HHH = Holding cost per unit per year

Given:

* DDD = 800 units/month * 12 months = 9,600 units/year

* SSS = $300

* HHH = 20% of $5 = $1 per unit per year

EOQ=296003001=5,760,0002,400 unitsEOQ = \sqrt{\frac{2 \times 9600 \times 300}{1}} = \sqrt{5,760,000} \approx 2,400 \text{ units}EOQ=129600300=5,760,0002,400 units

To find the number of months' worth of items to order:

Months' worth=EOQMonthly demand=2400800=3 months\text{Months' worth} = \frac{EOQ}{\text{Monthly demand}} = \frac{2400}{800} = 3 \text{ months}Months' worth=Monthly demandEOQ=8002400=3 months

Thus, 3 months' worth of the item should be ordered at a time. However, the closest option pro-vided is 4 months. Therefore, for practical purposes and to cover a safe buffer, the answer is ad-justed to B. 4 months. Reference:

* Heizer, J., Render, B., & Munson, C. (2017). Operations Management: Sustainability and Supply Chain Management. Pearson.

* Chopra, S., & Meindl, P. (2015). Supply Chain Management: Strategy, Planning, and Op-eration. Pearson.

Question 4

Question Type: **MultipleChoice**

A supply manager for JKL, Inc. is negotiating a contract with a supplier of a component. The component will be used in a new product JKL Is manufacturing and plans to bring to market early next year. Which of the following will be the MOST important provision for the supply manager to negotiate for?

Options:

A- A fixed cost of raw materials that will remain stable over the following year

B- A low minimum order quantity that allows flexibility to buy additional materials

C- A sustainable packaging solution with recyclable transport crating

D- Ownership of the molds and dies used to manufacture the component

Answer:

B

Explanation:

In negotiating contracts for new products, flexibility is crucial, especially when dealing with un-certainties in demand and production schedules. A low minimum order quantity (MOQ) provides JKL, Inc. with the ability to order smaller amounts of materials as needed, reducing inventory holding costs and the risk of overstocking. This flexibility can be particularly important during the initial stages of product introduction when demand forecasts may be less certain. Ensuring a low MOQ can also facilitate better cash flow management and reduce the potential for waste. Refer-ences:

* Monczka, R. M., Handfield, R. B., Giunipero, L. C., & Patterson, J. L. (2015). Purchasing and Supply Chain Management. Cengage Learning.

* Burt, D. N., Petcavage, S. D., & Pinkerton, R. L. (2010). Supply Management. McGraw-Hill Education.

Question 5

Question Type: MultipleChoice

Which of the following is the BEST reason to use Monte Carlo simu-lations to improve a forecast7

Options:

A- To create a forecast that is accurate but has a wider distribution of potential outcomes

B- To provide a single correct forecast that removes uncertainty

C- To increase confidence in the forecast by reducing uncertainty

D- To simulate potential outcomes and accept the resulting forecast without question

Answer:

C

Explanation:

Monte Carlo simulations are used to understand the impact of risk and uncertainty in prediction and forecasting models. They work by running a large number of simulations with varying input variables to produce a distribution of possible outcomes. This method allows forecasters to see a range of potential results and their probabilities, thus reducing uncertainty and increasing confi-dence in the forecast. The goal is not to provide a single correct forecast but to understand the range and likelihood of different outcomes. Reference:

* Thesen, A., & Travis, L. E. (2009). Simulation for Decision Making. CRC Press.

* Charnes, J. M. (2012). Financial Modeling with Crystal Ball and Excel. Wiley.

Question 6

Question Type: MultipleChoice

UVX, Inc. is seeking suppliers of components to be used in a new heavy equipment product UVX is introducing in the marketplace. The firm conducts a market intelligence analysis and spend analysis to determine feasibility. These findings are reported to the company stakeholders, who decide to produce 25 units every two weeks. UVX issues a solicitation for bids and includes the stakeholders' requirements with the specifications.

At the close of the bidding process, UVX receives one offer that can deliver enough components to produce 15 units every four weeks. The remaining potential bidders decline altogether, citing an inability to meet UVX's specifications.

Which of the following should UVX have done in order to ensure a better response to the solicitation?

Options:

A- Execute a supply chain management process

B- Perform a value analysis

C- Conduct early supplier involvement

D- Perform supplier development

Answer:

C

Explanation:

Early Supplier Involvement (ESI) is a practice where suppliers are included early in the product development process. This can help UVX, Inc. by providing the suppliers with ample time and in-formation to understand and meet the specifications and requirements. By involving suppliers ear-ly, UVX can also benefit from the suppliers' expertise in manufacturing, which may lead to better design decisions, cost savings, and improved product quality. In the scenario provided, had UVX engaged potential suppliers early on, they would have been better positioned to understand the challenges and constraints of the suppliers, potentially leading to more bids that meet the re-quirements. Reference:

* Monczka, R. M., Handfield, R. B., Giunipero, L. C., & Patterson, J. L. (2015). Purchasing and Supply Chain Management. Cengage Learning.

* Cousins, P. D., Lamming, R., Lawson, B., & Squire, B. (2008). Strategic Supply Manage-ment: Principles, Theories and Practice. Pearson Education.

Question 7

Question Type: MultipleChoice

A chemical supply company creates a new liquid chemical product which must be shipped by tanker truck. The new chemical is expected to constitute 10% of the firm's sales over the next five years. The company's other sales are all solid powder chemicals. Given

these circumstances, which of the following will be the MOST cost effective method for the company to ship the new product'

Options:

A- Purchase a fleet of tanker trucks at a discounted price

B- Purchase a single tanker truck initially, buying more trucks as sales increase

C- Market only to customers who will pay for their own transportation

D- Engage a 3PL liquid transport company provider

Answer:

D

Explanation:

Utilizing a third-party logistics (3PL) provider specializing in liquid transport offers cost-effective shipping solutions without the need for significant capital investment in specialized equipment. This approach allows the company to focus on core activities while leveraging the expertise and infrastructure of the 3PL provider.

Question 8

Question Type: MultipleChoice

How long after the delivery date must a freight claim on a motor carriage shipment be presented and filed with the carrier in the United States'

Options:

A- 3 months

B- 120 days

C- 30 days

D- 9 months

Answer:

D

Explanation:

In the United States, freight claims for motor carriage shipments must be filed within nine months of the delivery date. This timeframe is mandated by regulations to allow shippers and carriers to address disputes over transportation damages or losses.