8

FORECASTING AND DEMAND PLANNING

The core function of business management is decision-making. Satisfying the needs of the customers is the basis for business activities and in fact, the very existence of the business. Activities aimed at satisfying the needs of customers are predetermined before they are performed. Forecasting refers to predetermining. Forecasts are the basis for long-term planning by managers. The accuracy with which a forecast is made determines the efficiency of the management in fulfilling its goals. An error-free forecast is quite impossible for anyone. To overcome this issue, managers work with the chances with which an event may occur.

The manager foresees or predicts the occurrence of a future event or need of the consumer. Accordingly the manager identifies the need and fulfilling the consumer need becomes the goal of the company. A time-bound series of operational activities are planned to achieve the goal.

Product planning is done following the forecast of the possible demand of a particular product . A product plan includes scheduling the receipt of the inventory, facilitating the production process, designing factory layout, hiring the workforce, storing the stocks of products manufactured or purchased, distribution, and other related activities, until the products are placed in the hands of the final customer.

Forecasting precedes the planning function of the manager. Forecasts of what the consumers will demand help the top-level management to develop long-run strategic plans like the type of products, size, and location of the markets.

LEARNING OUTCOMES

After completing this lesson the Learner

- defines the concept of forecasting and demand planning;
- appraises the need for forecasting and demand planning;
- determines the steps required for effective forecasting;
- draws techniques for Demand forecasting;
- identifies the challenges in forecasting.

8.1 MEANING AND DEFINITION

What will be the demand for the product during the forthcoming week, month, or year? This is the primary question; a business manager is confronted with. To find the answer, the manager predicts the possible sales. The sales estimate is made using its previous data and in the case of a new company, industrial data forms the basis for sales estimate. In simple terms, this estimate of future sales is known as a demand forecast. The prediction is done using previous years' sales data. . The environment is dynamic accurate forecasting is n't possible. A fairly accurate forecast for the products is necessary because the production of goods takes time. Now, the manager decides the right quantities of goods to be manufactured, stored in the warehouse to adjust their supply to markets and earn maximum profits. Right quantities are decided by gathering past information about sales numbers, consumer behavior, market trends, weather conditions, etc. from the sales team, the marketing team, and other stakeholders. Following the decision about the quantity of production, the planners make the necessary arrangement of resources required for production. The company's goal to meet the market demand for the products without overstocking or under stocking helps reduce the cost of holding stocks and increases profitability. The demand planner translates the demand forecast into action plans for operation by all units in the business organization.

1. Definitions

"The Company (Sales) forecast is the expected level of company sales based on a chosen marketing plan and assumed marketing environment."

– Prof. Philip Kotler

"Demand Forecasting may be defined as a process of finding values for demand in future." – Evan J. Douglas

"Demand Forecasting is an estimate of sales during a specified future period based on the proposed marketing plan and a set of particular uncontrollable and competitive forces." – Cundiff and Still

8.2 DEMAND PLANNING

From the above definitions, it is clear that demand forecast refers to making predictions for a sufficiently long period say 18 months to 24 months. The previous data is the basis for demand forecasts. A prudent organization reviews the outcomes of its implementation frequently and makes use of this latest data to predict the changes in the markets for the product. It plans to this effect and ensuresa timely supply of products. The inventory levels are maintained at just sufficient to meet the demand. This helps in avoiding overstocking and understocking. Planning for the continuous implementation of the modified plans from demand forecasting is multiple cross-functional process prepared manually or with the integration of technology is known as Demand Planning. It is a sophisticated process when undertaken manually but it is made easy with the intervention of technology. Demand planning is a continuous process followed by business owners. Customer demands are met with the minimum stocks of inventory and minimum supply chain interruptions

8.3 DIFFERENCE BETWEEN DEMAND FORECASTING AND DEMAND PLANNING

Basis of differentiation	Demand forecasting	Demand Planning
Meaning	It refers to estimating future sales.	It refers to the planning of business operations to reach the estimated sales.
Scope	Usually, Demand Forecasting covers 18 to 24 months and may vary from business to business.	This is adjusting the predictions in tune with the changes in the market conditions.
Duration	Demand forecasting is a plan for along period.	This is usually made for a short period and is based on a market demand review.
Analysis	Demand forecast analyses internal and external data to predict sales.	Demand planning analyses sales data and customer trends
objective	Its objective is to make provision for regular supplies of resources required for production.	Its objective is to minimize excess inventory, reduce supply chain disruptions and meet the customer demand for products.
Basis	It is the basis for demand planning	It is a continuous process adopted by businesses to successfully achieve the estimates of demand forecast.

INTEXT QUESTIONS 8.1

1. How is forecasting useful for management in decision making?

   Forecasting helps management in predetermining the needs of the customers. It helps the management in setting goals. The management arranges for all required resources like men, materials, machines, money, and methods. It guides management in planning operational activities and achieving the set goals

2. State whether the following statements are true or false.

   (i) A new Company uses its previous data to forecast data. (False)

   (ii) Avoiding Overstock or Understock position helps in reducing the cost. (True)

   (iii) Demand Planning refers to making necessary alterations to operational plans. (True)

   (iv) Technology simplifies the demand planning process. (True)

8.4 OBJECTIVES OF FORECASTING AND DEMAND PLANNING

Objectives of forecasting and demand planning are

1. **Schedule production**: Forecasting and demand planning helps in preparing schedules of production activities for a certain period.
2. **Purchase of Raw materials**: Demand planning determines the economic quantities of raw materials required for production.
3. **Avoid excess inventory:** Demand planning aims to strike a balance between the demand for the product and the stock of inventory required to meet the market demand. It avoids overstocking of inventory.
4. **Minimize supply chain distortions**: The planners foresee the possible hurdles in the supply chain and determine the optimum level of inventory required after taking into lead time.
5. **Review trends in market demand**: Continuous market study and analysis of data relating to sales, marketing, purchases, supply chain operations, production are made. This helps in understanding the changes in the market demand. These changes are reviewed against their set targets and revised accordingly.

Notes

6. **Better customer satisfaction**: Planning business operations aims to meet the market demand at a right time with the right goods in the right quantities consequently maximizing customer satisfaction.

7. **Increase profitability**: Demand planning focuses on locking funds in inventory taking care to avoid the negative impact of overstocking as well as understocking. Lowering the costs demand planning increases profitability.

8. **Effective coordination: The** demand planning function requires inputs from several departments like sales, marketing, purchases, finance, etc. A close linking of the activities of various departments is necessary and a good demand plan takes care of effective coordination.

INTEXT QUESTIONS 8.2

Fill in the blanks

1. .... are prepared for implementing production activities during a fixed time.
2. .... determines the economic order quantity of raw materials to be purchased.
3. Meeting the needs of the .... is the main aim of demand planning.
4. Supply-chain distortions are taken care of before planning ....

8.5 IMPORTANCE OF FORECASTING AND DEMAND PLANNING

Forecasting and planning are inseparable managerial functions. Planning is based on forecasting. Forecasting is an effective tool for making business decisions. It helps the management in the following ways:

1. **Maintain optimum stock levels:** Both overstocking and understocking are not desirable. Understocking makes the product unavailable for customers to purchase. The business may have to lose customers to the competitors resulting in a loss. Overstocking, on the other hand, leaves the company with the unused inventory. Unnecessary cost is incurred for maintaining and carrying the unused inventory cost is incurred maintaining carrying the unused inventory. Demand planning helps in determining optimum stock levels to meet market demand.

2. **Responsive to customers' needs:** Forecasting and demand planning include a continuous review of market demand. The latest sales data is analyzed, and customers' demands are predicted. Internal operations are planned to meet the estimated market demand for the products. This helps the business to meet the needs of the customers.

3. **Optimum utilization of available facilities:** Forecasting helps in predicting the shift in market demand. The aim of planning process is to design operational activities utilizing the organizational resources. This way optimum utilization of available facilities is ensured.

4. **Promotes business growth:** Forecasting is necessary when the business decides to enter new markets, set up branches in new locations. Chances of success in the target market, identifying potential customers, and estimating the level of competition are the significant areas requiring forecast. The business starts assembling necessary resources and talents to gain the confidence of success. Globally reputed partners, help in setting professionals and guide the business to grow internationally.

5. **High return investment:** Forecasting helps in identifying businesses with potential for generating excellent returns. A business identifies whether its investment in launching a new product, developing existing staff, digital marketing strategy, hiring new talent, is worth it or not.

6. **Setting short-term and long-term goals:** Forecasting helps in setting short-term and long-term goals. Goals refer to what the business is striving to achieve. Short-term goals are set to attain long-term goals. Regardless of the size and type of business measurable short-term and long-term goals are set.

7. **Estimate future demand:** Real-time consumer data is obtained from a wide array of sources like sales representatives, online surveys, etc. Future demand for specific products is estimated by leveraging consumer data with sales forecasting models.

8. **Adapt to fast-changing conditions:** Forecasting requires collaboration and coordination of various departments. Active participation in forecasting future events promotes guarantees adaptability to changing conditions.

9. **Formulate plans:** Planning consists of predictions and it is the basis for forecasting. Forecasting helps in gaining insight into measures required for growth and planning accordingly.

INTEXT QUESTIONS 8.3

Relate terms in column A with Column B in a meaningful manner.

Write the numbers against the term in column A against the bracket provided against the related term in Column B

	Column A		Column B	
1.	Demand Forecast	(a)	Sales Representative	( )
2.	Goals	(b)	Consumers	( )
3.	Market Information	(c)	Launching a new product	( )
4.	Feedback	(d)	Business Objective	( )

8.6 TYPES OF FORECASTING AND METHODS OF DEMAND PLANNING

1. Types of forecasting

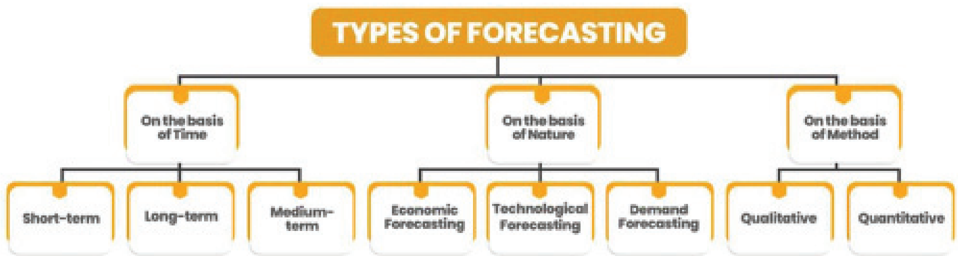


Fig. 8.1: Types of forecasting

A. On the basis of Time

On the basis of time, there are three types of forecasts:

1. **Short-term forecasting:** Short-term forecasting is made for less than 1 year. This is required for preparing current production schedules, purchase of raw materials, and setting inventory levels. The impact of seasonality in sales on production planning, inventory, distribution, and changes in the firms' capacity utilization are the factors considered for short-term forecasting.

2. **Long-term forecasting:** Here the forecasting is made for more than 5 years. For example, capacity expansion, recruitment policy, diversification policies, etc. have long-run implications. Population, competition, technological developments, government policies, etc. are the factors considered under long-term forecasting.

3. **Medium-term forecasting:** The period is usually between 2 to 5 years. Individual firms use medium-term forecasting to plan their activities (either to reduce or increase output) when the industry is subject to the impact of trade cycles. Plans based on medium-term forecasting do not disturb long-term plans.

B. On the basis of Nature

Based on nature, there are three types of forecasting:

1. **Economic forecast:** Predicting the future conditions of the economy is known as economic forecasting. Economic indicators like Gross Domestic Product (GDP), growth rate, inflation, interest rates, industrial production, unemployment rate, etc., are used by business managers to plan future operating activities.

2. **Technological forecast:** Technology refers to the application of systematized knowledge to control or alter the components of the physical environment. Predicting the future characteristics of useful technologies, procedures, and techniques is known as a technological forecast. Changes in technology, timing, and significance play a key role in deciding the functional capacity of the business.

3. **Demand forecast:** It tries to understand and predict customer demand. Demand forecasting helps the business to decide about the optimum level of supplies required to meet the market demand effectively. It also helps in production planning, inventory management, and assessing future capacity.

C. On the basis of the method used

Based on the methods used, there are two types of forecasting:

1. **Qualitative forecasting:** The method of making predictions using experts' judgments. Experts identify and analyze the relationship between existing knowledge of past operations and the potential for future operations. This method is typically made used to predict financial requirements, marketing campaigning strategies, recruiting new staff, inventory levels, etc.

   The following are the popular Qualitative forecasting methods used:

   (a) **Delphi Method:** Opinion Information is collected by questioning a panel of experts individually. Experts' opinions are analyzed to make a sensible prediction.

   (b) **Jury of Executive opinion: Experts' judgments** in sales, finance, purchases, production, etc., are considered to forecast.

(c) **Market research:** This is used to evaluate the company's products by introducing them to potential customers. Companies' decisions are based on the reaction of the participants in market research.

(d) **Consumer surveys:** Business firms elicit information from consumers by serving questionnaires through e-mail, interviews, mobile phones, etc., This information helps in predicting future experiences of the existing customers'

2. **Quantitative forecasting:** Using past data to make future predictions is referred to as quantitative forecasting. They involved mathematical calculations and helped the business identify trends in sales and investments.

   The following are the popular methods used in quantitative forecasting:

   (a) **Moving Average method:** This method forecasts long-term trends by calculating averages. Sets of data in 3-year, 4- years, or 5- years are grouped to find moving averages.

   (b) **Naive method:** It is straight forward forecast method. Past data is presumed to give the same result. Hence predictions are made without accounting for any changes occurring in the future. It is used to test the accuracy of other methods.

   (c) **Drift method:** This is a variation of the naive method. It allows the forecasts to increase or decrease over time. The extent of changes observed over time is known as drift. This can also be understood as the average change observed in the historical data.

8.7 DEMAND PLANNING METHODS

The Push method and Pull methods are the two popularly used in demand planning.

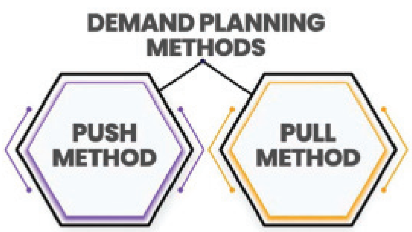


Fig. 8.2: Demand Planning Methods

1. **Push method:** The main concern of business enterprises is designing and manufacturing products to meet customer needs. Demand planning under the push method assumes that the manufacturing of innovative products

automatically creates demand in the market. This method was most popular during the 20th century. Manufactured products were made available in the markets. Marketing strategies focused on convincing customers to accept the products. If the strategy worked out, the company created demand otherwise it failed. In reality, most of the time, the demand exceeded the supply, or supply exceeded demand. In the former case, the business ran out of stocks of supplies. Thus, they were missing sales opportunities. In contrast to this, in the latter case when supply exceeded demand, the business was left with stocks unsold. Huge amounts were locked in inventory. A perfect balance between inventory and market demand was a rare phenomenon.

2. **Pull method:** 21st century global competition directly connects success to efficiency. This in turn is reflected in management's competency to take accurate and timely decisions. Business operational plans are based on customer demand estimates. This process is known as the pull method. The efficiency of Management depends on accurate demand forecasting and appropriate operational planning.

INTEXT QUESTIONS 8.4

1. On the basis of the method used to forecast identify the two types of forecasting.
2. List the various types of forecasting.

8.8 DETERMINANTS OF FORECASTING AND DEMAND PLANNING

Planning depends on affective forecasting. Forecasts based on mere guesswork, lead to failures. The accuracy of forecasts depends on the factors considered for the purpose. These factors are known as the determinants. The determinants of forecasting and demand planning are classified into those connected to consumers, suppliers, industry, and miscellaneous factors.

Fig. 8.3: Determinants of Forecasting and demand planning

A: Determinants of consumer demand.

1. Number of consumers anticipated.
2. Nature of goods demanded by consumers.
3. Consumers' purchasing power.
4. Income elasticities.
5. Consumer tastes and preferences

B: Determinants of supply

1. Current level of sales.
2. Current stocks of goods.
3. Market Trends.
4. The current position of the product in the Product life cycle.

C. Determinants of industrial demand

1. Price elasticity
2. Nature and size of competitors.
3. Structure and form of Market competition
4. Price levels prevailing in the market.

D. Miscellaneous factor

1. Economic environment
2. Government policies
3. Taxation
4. International business environment.

INTEXT QUESTIONS 8.5

1. Imagine yourself as a business manager. Now you want to know what factors influence (a class 12 student) the purchases of a mobile phone (you are about to launch new mobile in the market).

   Write here the Factors identified:

   ....

   ....

Notes

8.9 STEPS FOR SUCCESSFUL DEMAND PLANNING

Demand planning is a cross-functional process. It requires analysis of sales and market trends data. The ability of the business to meet customer demand most efficiently is possible through demand planning. Demand planning is a multi-step process. The size and scope of the business define the extent of forecasting.

Steps for Successful Demand Planning

Fig. 8.4: Steps for successful Demand planning

The major steps followed for successful demand planning include:

1. **Defining the roles and responsibilities:** The demand planning team consists of members leading various functions in the organization. The prime function is to clearly define their roles and responsibilities.

2. **Identify relevant data:** The members of the demand planning team identify the relevant data from internal sources to develop an accurate forecast.

3. **Forecast with external data:** Latest Data relating to sales, delivery time taken by suppliers and distributors, customers' current purchasing habits are crucial inputs for effective forecasting and demand planning. External data includes general economic conditions that may impact sales.

4. **Develop a forecasting model**: Developing forecasting models by integrating statistical models helps to predict demand for products, product lines, or

specific customers. Excel sheets are used by most businesses. Excel sheets are time-consuming, require more manual work, and are susceptible to errors. Now demand planning software requires low human efforts. They claim faster and error-free data analysis.

5. **Review of demand forecast:** The demand forecast developed is now reviewed with various stakeholders. The impact of recent data on the predictions made is checked. All factors that may distort the overall forecast are removed. The alignment of the demand forecast to the company's financial forecast is also checked.

6. **Compare forecast with inventory levels:** Once the demand forecast is made, the current inventory stock levels are assessed and compared with the requirements of the demand forecast. The gap between the available stock and the predicted quantities is filled. Vendors for the supply of stocks are identified and their ability to supply the right quantities at right time is ensured.

7. **Measuring results:** Finally, the key performance indicators are identified. These indicators help in measuring the effectiveness of the demand planning and the target set by the management. The accuracy of sales forecasts, setting inventory stock levels, lead time, etc. are measured to determine their effectiveness. The continuous review of performance helps in making necessary adjustments to the targets set.

INTEXT QUESTIONS 8.6

State whether the following statements are true or false

1. Defining the roles and responsibilities of the team member is the prime function of demand planning. ( )
2. Data from internal sources do not help in demand planning. ( )
3. General Economic conditions impact business sales. ( )
4. Demand planning software requires more human efforts. ( )
5. Key performance indicators help in measuring the effectiveness of demand planning. ( )

8.10 DEMAND FORECASTING TECHNIQUES-STATISTICAL AND JUDGEMENT

There are different methods of forecasts. There are two broad categories of forecasting techniques including statistical and judgement. Statistical forecasting techniques use real-time data. They are known as Quantitative techniques. Judgments of experts, the public, consumers, etc., are interpreted to predict future events. These are Qualitative techniques. The objective of each of these is to provide accurate forecasting. However, there is no single method that is universally applicable. A combination of methods is used to make the forecasts more reliable. Now let us understand the following methods of forecasting.

1. **Historical analogy method: This** is a quantitative approach. This method examines similarities from the historical data of other businesses. Future forecasts are made by projecting the analogy of the past data. This theory assumes that all business cycles are not uniform in duration. Hence, it encourages the use of historical data without making any projections into the future. It selects specific previous situations which are similar to the present event and a time-series analysis is made to identify those events which happened in the previous situation that will continue to happen in the present situation also.

   Example: The sales results of similar products are used to forecast the likely sales of a new product. To forecast the demand for iPhone 6 phone covers, the sale of iPhone-6 will be taken as the base. Similarly, the forecast for the demand for iPhone-6 phones maybe based on the sale of the iPhone 5.

2. **Survey method:** This is a Judgement based technique. Descriptive research makes vivid use of information collected from the survey. Surveys are classified into two types. Census and sample surveys methods. Observations, interviews, questionnaires, opinionnaire, case study methods are used to collect data. The survey method is used to collect both qualitative and quantitative information.

   For example:

   Opinion polls are used to collect information on specific topics like which party is most preferred by a large population.

   A field survey is yet another method used to gather data from a relatively large size of population.

3. **Business barometer:** A barometer is used to measure a particular phenomenon. Index numbers are used to measure the state of an economy

over two or more years. Gross National Product, employment, wholesale price index, consumer price index, are some of the important indicators used for business forecasting.

4. **Exponential smoothing: Under** this approach, a moving average is used for forecasting. Exponential smoothing assigns lower weights to the earliest data in the time series. The reason is that the earliest demand is less relevant for future demand forecasting.

5. **Extrapolation technique:** Under this technique, the analyst plots previous years' data relating to the population and chooses the best fit curve. The analyst uses the curve to project future value. This procedure is used, when access to detailed data is not available.

6. **Lead lag analysis:** Important economic and statistical indicators are used to predict the value or direction of other variables. Example: Sales forecast, the level of money supply in an economy indicates the future level of consumer spending. The money supply is the lead indicator. This technique helps in identifying business turning points.

7. **Regression analysis:** This is a statistical technique used to quantify the relationship between two variables. It helps in estimating or predicting the unknown value of one variable from the known value of another variable. This is known as regression. Regression reveals the average relationship between two or more variables and helps in making estimations.

   Example: Revenue from sales depends on advertisement expenditure and the income of the people.

8. **Time series analysis:** This is an integral part of financial analysis. Time series analysis involves the decomposition of historical series into its various components like trends, seasonal variances, cyclical variations, etc., separating the components of time series, the variation of a particular situation at the subject and a study can be known over a period and future projection can be made.

9. **Input-output analysis:** A forecast of output is based on the given input when the relationship between input and output is known. Input requirements can be predicted based on the final output with a given input-output relationship. This technique assumes the various sectors of the economy operate under well-established interrelationships.

   Example: Countries' coal requirements are predicted on the basis of their usage rate in the industry, transport, household, and other sectors.

INTEXT QUESTIONS 8.7

Multiple choice questions. Choose the right option to fill the blanks in the following questions:

1. Historical Analogy method is .... approach.
   (a) Quantitative (b) Qualitative
   (c) Both (a) and (b) (d) None
2. Moving average is used for forecasting in the .... method.
   (a) Survey method (b) Exponential
   (c) Extrapolation (d) All the above
3. .... technique is used to quantify the relationship between two variables.
   (a) Time Series Analysis (b) Field Survey
   (c) Opinion Poll (d) Regression analysis
4. .... is used to measure the state of an economy between 2 or more years.
   (a) Index numbers (b) Forecasting
   (c) Time Series (d) None

8.11 CHALLENGES IN FORECASTING

Some of the common challenges in forecasting demand are:

1. **Forecast accuracy**: Forecast error is a measure for checking the accuracy of forecasting. Forecast error is the difference between the actual and the forecast for a given period. There is a low assertiveness of forecast.
2. **Regular Demand:** Demand for certain goods is not consistent and results in high variation in demand patterns. These products cell irregularly. Their sales are high during peak seasons and low during the off season.

   Example: Demand for umbrellas, air conditioners, resorts, etc.,
3. **Regional forecast**: A business may have its distribution centers spread over a wide geographical area. To forecast demand, the manager is confronted with the issue, of whether he must decide to take into account the overall demand or make a proportional distribution to demand centers.

4. **Forecast demand for new products:** The lack of historical data makes it difficult to forecast demand patterns for the new product.

5. **Relevant data from other areas:** If the forecast includes much information from other areas like marketing, finance, purchasing, transportation, etc., then integration of all data herculean task.

6. **Huge variety of products:** Inventory level balance is a big challenge when the company e deals with a huge variety of products. They require several scheduling tools, spreadsheets, and inventory level balances.

7. **Technological challenges:** Lack of resources to acquire new technology, organizational resistance to change, the complexity of the tools prevent the use of new technology.

INTEXT QUESTIONS 8.8

A restaurant set up on a college campus wishes to know which will be most demanded among breakfast recipes 1. Idli Sambar, 2. Chola Puri, 3. Noodles, 4. Vada, 5. Fried-rice, any other.

The owner wants you to Justify your choice.

Try to list the factors posing a challenge in the process of identifying the dish that will be most preferred and why?

8.12 REQUIREMENTS IDLE DEMAND PLANNING

1. **Accurate data:** Demand planning is a complex process and draws inputs from demand forecasting. The effectiveness of planning depends on the accuracy of the data used to forecast.

2. **Stakeholders accountability:** The accuracy of data depends on the stakeholders' accountability to provide correct and relevant data.

3. **Statistical modeling:** Data from various departments is pulled into the process of statistical analyses to check data and forecast reliability.

4. **Accurate inventory data:** Effective demand planning requires accurate inventory level data.

5. **Collaboration with Supply Chain participants:** Through collaborations information relating to external factors can be gathered and used in planning demand.

6. **Internal Coordination: Effective** demand planning can be ensured with the active coordination of sales, marketing, finance, HR, and production departments. Demand planning can be evolved with the integration of marketing, promotional, and pricing tools.

7. **Integration of Advanced Technology:** Manual effort in complying with the complex demand planning consumes more time, lacks speed and accuracy. By making an intelligent inclusion of appropriate technology meaning software, large data can be easily analyzed with accuracy.

8. **Software preferences:** Software should automate the tasks. Tasks include statistical analysis for forecasting, tracking key performance indicators, and calculating optimum stock levels. Interpret results and adjust planned targets.

WHAT YOU HAVE LEARNT

- Forecasting precedes the planning function. The focus of the forecast is on the emerging needs of consumers.
- Operational activities are planned accordingly. A product plan includes scheduling the receipt of inventory, designing factory layout, hiring people, storing stocks of products, selling and distribution processes to place the product in the hands of consumers.
- Accuracy in forecasting bridges the impact of the time gap between forecasting and the actual distribution of manufactured products to the consumers.
- Aligning inventory levels to the production requirements and satisfying the consumers' demand for products is known as demand planning.
- The scope of demand forecasting is quite large compared to demand planning.
- Internal and external are analyzed to predict sales while the availability of internal resources is mapped to meet the predicted sales.

- Demand forecasting is the base for demand planning.
- Demand planning continuous process of reviewing the outcomes of operational activities and the achievement of the planned targets.
- Objectives of forecasting and demand planning
- Preparing production schedules, purchasing raw materials, avoiding excess inventory levels, minimizing supply chain distortions, adapting to the changes in the market demand, ensuring effective coordination, better customer satisfaction, and increasing profitability.
- Importance of forecasting and demand planning

  Demand planning helps in maintaining required stock levels to overcome the demerits of overstocking and understocking, being responsive to the customer's needs to gain an edge over the competitors, opening opportunities for business growth, providing high returns on Investments, setting short-term and long-goals, assess the future demand and formulate plans.
- Types of forecasting: Forecasting techniques are classified on the basis of time, nature, and method.

  The push method and pull method are the popular demand planning methods.
- Consumers, suppliers, and the industrial sector are the major determinants of forecasting and demand planning.
- Successful demand planning inverse 7 steps viz., defining roles and responsibilities of the team members, identifying relevant data, making use of external data for forecasting, developing models by integrating statistical and technological tools, reviewing the demand plans, comparing the forecast with inventory levels and measuring results.
- Demand forecasting techniques include the historical analogy method, survey method, business barometer, exponential smoothing, extrapolation techniques, regression analysis, time series analysis, lead-lag analysis, and input-output analysis.
- Accuracy in forecasting, erratic demand, assessing the demand for new products, impact of regional variations on the forecast, large product range and different inventory levels to be maintained, and advances in technology pose challenges in forecasting and demand planning.
- Good Demand planning requires accurate data, accountability on the part of the data provider, an appropriate statistical model, internal coordination, integration of software Technologies.

TERMINAL EXERCISE

1. What do you mean by forecasting?
2. Define demand forecasting.
3. What do you mean by short-term forecasting?
4. Write a brief note on Delphi Method.
5. Explain Regression analysis.
6. Explain Demand Planning.
7. Explain the importance of forecasting and demand planning.
8. Discuss challenges in forecasting
9. What do you understand by Qualitative and Quantitative forecasting?
10. Write about the following:
    (a) Demand Forecasting
    (b) Historical Analogy method of forecasting.
    (c) Technological forecast.
    (d) Quantitative method of forecasting.
    (e) Components of determinants of consumer demand.
11. Distinguish between Demand forecasting and Demand planning.
12. Explain the Objectives of forecasting and demand planning.
13. Discuss in detail the various types of forecasting.
14. What do you mean by Demand Planning? Explain methods of demand planning.
15. Explain the steps for successful demand planning.

ANSWER TO INTEXT QUESTION

8.1

1. Forecasting helps management in predetermining the needs of the customers. It helps the management in setting goals. The management arranges for all required resources like men, materials, machines, money, and methods. It

guides management in planning operational activities and achieving the set goals

2. (i) False (ii) True (iii) True (iv) True

8.2

1. Production schedules
2. Demand planning
3. Customers
4. Operational activities.

8.3

1. (c) 2. (d) 3. (a) 4. (b)

8.4

1. Qualitative forecasting and 2. Quantitative forecasting.
2. Short-term, medium-term, long-term, economic forecasting, technological, demand forecasting, ualitative and quantitative.

8.5

Hint: Refer to Determinants of consumer demand.

8.6

1. True 2. False 3. True 4. False

8.7

1. (a) 2. (b) 3. (d) 4. (c)

8.8

Hint: Challenges in forecasting

GLOSSARY

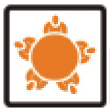
- **Forecasting**: A technique of using historical data how to make predictions about future trends.
- **Demand planning**: A Cross-functional process that helps businesses to meet customers' demands while minimizing excess inventory and avoiding supply chain distortions

Notes

- **Production schedule**: Refers to the manufacturing process where all Production activities are planned for a time period.
- **Qualitative forecasting**: Refers to making predictions using expert judgement.
- **Quantitative forecasting**: To make predictions using past data.
- **Economic environment**: Refers to all external economic factors that influence the buying habits of consumers and the performance of a company.
- Government policies: Declaration of government plan and intentions relating to a particular cause.
- International business environment: refers to all environmental factors in which international companies run their businesses.

Suggested Reading

- Prof. Chaman L Jain (Author), Jack Malehorn (Author), (2012) Fundamentals of Demand Planning and Forecasting HYPERLINK "about:blank" \hJanuary 1, 2012. HYPERLINK "about:blank"
- HYPERLINK "about:blank" \hStephen Kolassa Enno Siemsen, (2015) Demand Forecasting for Managers. HYPERLINK "about:blank" \h
- John T. Mentzer, (2001) Supply Chain Management
- Sunil Chopra, Peter Meindl (2008) Supply chain Management



ACTIVITY

Your father wishes to gift you a mobile (worth Rs. 8000/-) on your birthday. He asks which mobile is of your choice.

Identify and list the factors you will consider to tell your father about your preference. Note the Worth is fixed.

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