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DEMAND FORECASTING

Meaning → Demand or sales forecasting means to make prediction about possible demand for any commodity for a particular time period. Demand forecasting is having two words : demand and forecasting. Demand means effective desire for a particular price and time whereas forecasting or fore + casting means prediction for future. Demand forecasting for a particular time period is scientific estimation of sales quantity and value of an organisation. Proper demand forecasting is essential for any organisation for the purpose of planning and managing future events.

Some important definitions of demand forecasting are as follows :

1. In the words of **Philip Kotler,** "The company sales forecast is the expected level of company sales based on a chosen marketing plan and assumed marketing environment."

2. As per **American Marketing Association,** "Demand forecasting is an estimate of sales in dollars or physical units for a specified future period under a proposed marketing plan."

3. In views of **Reymonds Wills,** "Demand forecasting means to predict the company's share in perspective market."

4. According to **Cundiff** and **Still**, "Sales forecasting is an estimate of sales during a specified future period, in which estimate is tied to a proposed marketing plan and which assumes a particular set of uncontrollable and competitive forces."

It is clear from above definitions that demand forecasting means predicting total sales quantity and amount of commodity or service for a particular future period under a proposed marketing programme.

Characteristics : Following characteristics are clear from above discussion of the concept of demand forecasting :

1. It is the prediction for future sales.
2. This forcasting is based on past and present sales experiences and possible future events.
3. It is done for a specific time and price.
4. Forecasting can be done in form of quantity or value of the commodity.
5. Scientific prediction or forecasting is done with reason and intelligence. It does not have any place for mere assumptions and imaginations.
6. Statistical and mathematical techniques can also be used in demand forecasting.
7. Future marketing plans are also considered in future sales forecasting.

8. Demand forecasting can be made for any particular product or for whole product class. For example, Hindustan Unilever Limited can conduct demand forecasting for only 'Rin or Lifebuoy' soap or for all soap brands produced by it.

Objectives Of Demand Forecasting

On the basis of time, demand forecasting is of two types : short-term and long-term forecasting. Objectives for both short-term and long-term demand forecasting are different, which are discussed below :

I. Objectives of Short-term Demand Forecasting : Short-term demand forecasting means to make prediction for future demand with the period of one year or less than one year. It can be weekly, monthly, half-yearly or yearly. Following are its main objectives :

1. Formulation of Production Policy : First objective of demand forecasting is to formulate the production policy of firm on its basis. It coordinates with future demand and supply circumstances through estimation of future demand and enables production on its basis, so that firm may overcome with the problem of over-production or under-production.

2. Regular Availability of Raw Material : Second objective of demand forecasting is to regulate availability of raw material for required production, so that there is regular flow of raw material in production process and the cost of stock is minimum. The level of stock of raw material can be maintained between minimum and maximum levels on the basis of demand forecasting. It enables proper flow of inventory in production process without any shortage or wastage.

3. Adequate Arrangement of Labour : Another aim of forecasting is also to arrange skilled and unskilled labour as per requirement. Thus, it ensures coordination in production process with minimising the events of shortage or excess of labour.

4. Optimum Use of Machines : It is the aim of forecasting to ensure optimum use of firm's machinery and equipments. Total machine capacity of the firm can be utilised with the help of demand forecasting so ultimately, the objective of profit maximisation or loss minimisation may be achieved.

5. Determination of Price Policy : Producers make estimation about strengths or weaknesses of future market through demand forecasting. If there is a possibility of weak state of market, then, businessmen will not increase the prices. On the contrary, if future market is assumed to be strong then, businessmen may take decision about high prices. Hence, demand forecasting is also done with an objective of determining price policy.

6. Setting Sales Target : Different categories of market are analyzed and each of them are forecasted. These categories of forecasting becomes sales target for sellers and agents of different regions and their performance is measured on the basis of these targets.

7. Estimation of Short-term Capital Requirement : We can predict short-term capital requirement of firm on the basis of short-term demand forecasting. Requirement of cash balance depends on level of sales and size of production activities so short-term money can be arranged by making demand forecasting.

II: Objectives of Long-term Demand Forecasting : Long-term demand forecasting refers to study about future sales for period more the one year. Objective of long-term demand forecasting are as below :

1. Plant Capacity Planning : Main long-term aim of demand forecasting is to ensure plant capacity according to forecasted demand. If the capacity of plant is not sufficient, new plans for extension of required plants can be made.

2. Arrangement of Efficient Man Power : Unskilled labour can be employed in short-term also, but for the purpose of availing skilled and appropriate labour it is a long-term process. Sufficient time and money is required for their recruitment and training. Through long-term demand forecasting this process of getting required efficient man power can be done.

3. Forecasting of Long-term Financial Requirement : Long-term financial requirement of organisations can only be predicted through demand forecasting. Along with identifying requirements about future, proper steps for obtaining them can also be taken through demand forecasting.

Factors Involved In Demand Forecasting

It is necessary to consider following factors while forecasting the demand :

1. Duration : First of all, firm has to decide the duration for forecasting. It may be short-term (upto one year) or long-term or very long-term.

2. Level : Forecasting can be done at three levels-macro, industry and firm. Macro level includes forecasting for whole economy whereas at industry level forecasting is done only for particular industry. At firm level, demand forecasting is done for a particular firm.

3. Area : Area of demand forecasting may be general or specific. For instance, if forecasting about edible oil is to make, it is general forecasting where as if forecasting only for groundnut oil is to be done, if is specific forecasting.

4. State of Goods : Method of demand forecasting is selected according to the state of subject matter. Forecasting methods of existing or popular commodities is different from new products. It is suitable for a businessman to choose method, according to the state of goods and resources.

5. Classification of Goods : It is necessary for purity of demand forecasting that commodities are classified into categories of consumer products, durable consumer products and perishable products according to their nature. According to that the elements will be decided for forecasting.

6. Specific Element : It is necessary to consider the state of competition, risk element, social power etc. of the market. For example, demand forecasting of ladies garment is mostly affected by social conventions while for childs normally by colour.

Methods of Demand Forecasting

Demand forecasting for old or existing products is a general and frequent process. Some of important methods or techniques, used for forcasting the sales of existing products are as below :

1. Survey of Buyers' Intentions : In this method, consumer surveys are conducted to gather information about their future plans for purchase. Consumers of existing products are asked about their intention of quantity to purchase. This method is most popular and based on the assumption that buyers are the mirror of social demand. It is mainly done is two forms : 1. Census Method, and 2. Sample Method.

In **census method** all the potential customers are contacted and asked about their future plans for purchasing the products. All the information are gathered and added and possible demand of a product is forecasted.

In **sample method** only a few selected representative consumers are chosen and demand for product is forecasted on the basis of opinion of such representatives. This method is widely used as it is easy where number of consumer is very large.

Merits : (1) This method is very easy and simple.

(2) As these information are based on direct opinion of customers, these are comparatively near to the reality.

(3) It is best for short-term forecasting.

Demerits : (1) This method is not suitable for long-term forecasting as taste, interest, fashion and preferences of customers change according to the length of the time.

(2) Census method involves time, money and efforts in large quantity and on the other hand, in sample method there is fear of error in selecting the samples.

(3) Mostly customers do not give proper information about their intentions.

2. Sales Force Composite : Salesmen are directly connected with the customers, hence, have greater access about demand of the product. In this method of forecasting, salesmen are asked about demand and probable sales of the product. Responses of all salesmen are gathered together which is summarised for demand forecasting. These predictions are rechecked also, as some salesmen may be of pessimistic or optimistic nature. In other words, in this method preference is given to responses of the sellers, sales representatives, sales managers, and dealers because they have immediate and direct approach to the customers.

Merits : (1) This method is easy and less expensive because it does not involve use of statistical techniques and survey.

(2) Predictions in this method are near to the reality as these are based on salesmen's responses.

(3) Quota for every salesmen is decided in proper way through this method.

(4) Salesperson's experiences and opinions are obtained which is helpful in policy making for future.

Demerits : (1) This method may be biased due to the opinions of salesperson.

(2) Possibility of overestimation or underestimation by salesperson exist so the final result may be affected.

(3) If quota of salesperson is decided on the basis of these estimates, they may intentionally underestimate.

(4) It is useful for short-term forecasting only and does not apply on long-term forecasting.

3. Experts' Opinion Or Delphi Method : In this method, opinion of outside experts are taken in place of buyers and salespersons. Different experts opinions are taken and general consensus is developed through which future demand is estimated. Group discussion is done in group of experts and every expert gives his opinion about product demand. Delphi method was propounded in late 1940 at Rand Corporation of USA by Olaf Helmer, Dalcey and Gordan in the area of technological forecasting. Delphi technique can be used for cross checking information of forecasts.

Merits : (1) This method is based on experts' experiences and professional knowledge.

(2) Firms don't have to arrange the data collection.

(3) Results about demand forecasting are obtained easily and fastly.

(4) This method is also suitable for new products because past information and data are not available.

Demerits : (1) Being costly, small firms can not take advantage of it.

(2) Experts being theoretical and professionists may give result which is lacking practicality.

(3) Confidientiality of result through this method can not be secured and information may not be exclusive to the speicfilc firm.

4. Group Excutive Judgement : In this method, forecasting is done on the basis of experiences and knowledge of organizational officers group. For this, a seminar is arranged where all the officers jointly forecast demand after group discussion and interactive session.

Merits : (1) This method is fast and easy.

(2) Advantage of firms experienced officers is taken in this method.

(3) This method can be used where past data and information are not available.

Demerits : (1) Responsibility of impurity or wrong forecasting can not be decided for any specific officer.

(2) Forecasting may be biased as these are based on personal opinion and thinking of officers and less on facts.

5. Economic Indicators Method : In this method, some, specific economic indicators are used for demand forecasting. For this, economic factors affecting demand of goods are considered. These economic indicators are different for different commodities, like;

1. For building materials (like cement, bricks etc.) - accepted plans of houses by Development Authority.

2. For consumer products (like flour, sugar, oil) - individual income of people.

3. For agricultural equipments (like tractor, thrasher, pumping set) - income of agriculturists & farmers.

4. For demand of petrol and parts of cars - registration of car by RTO.

5. For demand of television - number of families in country.

These economic indicators' data can be obtained form different institutions such as Central Statistical Organisation, Development Authorities, Population Department, RTO etc.

Here we can understand it with an example: no. of cars registered can be known by RTO and if 20% rise has been in any city is one year, it can be forecasted that demand of petrol will rise by 20%.

Merits : (1) This method is easy and less expensive.

(2) Forecasting results are more authentic as they are based on facts and logic.

Demerits : (1) It is difficult to identify the economic factors relating to different commodities and extent of relationship.

(2) This method is not appropriate for forecasting of new product because there is no past data.

6. Market Test Method : In this method, actual sales of commodity is made for a period of time in any selected sample of the market and on the basis of results obtained, forecasting for whole year and total market is made.

Merits : (1) This method is also authentic as it is based on actual results.

(2) It is suitable method for new product.

Demerits : (1) This method involves more time and labour.

(2) To state behaviour of whole market on basis of a small part of market may be false.

7. Statistical Method : Various statistical tools are used for obtaining accurate demand forecasting. This method belives that history repeats itself. In this method, quantitative relationships are gained by using statistical techniques on basis of past actual sales data. Some of main tools used in demand forecasting are : average, diagram method, correlation, regression, extrapolation, interpolation and time series analysis. In this method, future trend of demand are projected through statistical application of past years' data relating to sales and present circumstances.

Merits : (1) This method is based on statistical tools and not mere on assumptions hence are more authentic.

(2) Outcomes in this method are not affected by personal bias.

(3) This method is scientific and cheaper.

(4) Predictions can be made fastly.

Demerits : (1) This method is highly complicated due to having mathematical approach.

(2) Can not be used in new products forecasting because past data are not available for new products.

(3) Finding proper past data is a difficult task.

(4) This method assumes that future trends would be like past but it is not necessary in real life.

DEMAND FORECASTING METHODS FOR NEW PRODUCTS

Forecasting task for a new product is relatively difficult than old products because experiences, information and data of previous year are not available in relation to new item. New product is unfamiliar to both firm and customers and competitive advantages are not known. Following methods are used in the process of demand forecasting of new products :

1. Evolutionary Method : Any new product is next developmental step of an existing product. For example, the Coloured television is next developmental stage of Black & White television. If demand of Coloured television is to be forecasted, it has to be done on the basis of demand trends of existing Black & White television. In same way, demand for mobile phones can be forecasted on basis of land-line telephone connections. This method is useful where new product is an advanced form of existing product.

2. Substitute Method : Under this method, demand for substitute of goods is forecasted for predicting demand trend of any new product. New products demand can be forecasted by comparing its quality and price with substitute goods. For example, we can make forecasting of demand of ball point pen on basis of demand of fountain pen or coffee demand can be forecasted on the basis of demand.

3. Opinion Polling Method : In this method, prospective customers are contacted and their responses is taken by giving them demonstration about product regarding its features and advantages, eventually prediction about future demand of new product is made. This method is also called 'Survey of Buyers' Intentions' because buyers direct views are surveyed. Demand forecasting of new engineering equipments and machineries are done through this method. But, making samples of product, getting customers response about product and identifying buyers intentions about purchase is a difficult task.

4. Market Test Method : In this method, new product is actually sold in a small part of market for some time and forecasting of demand for whole year for whole market is projected throught outcomes derived. While using this method selection of sample market should be carefully done.

5. Experts' Opinion Method : In this method, the opinion of external experts and specialists is gathered for demand forecasting. Specialists are provided necessary information about product and opinion is taken regarding possible demand of such product. Some organisations take help of specific agencies also which may charge the fee for such services. Though it is a simple method but quality of demand forecasting depends on ability and experiences of the specialists.

Above methods of demand forecasting are not competitors to each other but most of the institutions use them together.

CRITERIA OF IDEAL DEMAND FORECASTING SYSTEM

Best method of demand forecasting should involve the following qualities or characteristics :

1. Accuracy : An appropriate demand forecasting method should have quality of high level of purity. Results of prediction should be maximum connected to reality. Error in prediction leads to loss in business.

2. Simplicity : Method of demand forecasting should be simple. If technique is difficult and complex there would always be possibility of errors. In addition to this, when information is collected by outsiders, it would not be easy to generate outcomes due to complex method.

3. Economy : Expenses on forecasting should be less then the profit derived from such outcome. Quantity of expenditure should not be beyond the capacity of businessman. It is not appropriate to spend lot of money for getting very-very accurate results.

4. Quickness : Method should be such that quick and meaningful result may be acquired. If forecasting process involves long time, businessman may miss chance of gaining profit.

5. Reliability : Forecasting process should be such on which management may rely and could understand. Forecasting outcomes are basis for future planning of organisation and if forecasting is not reliable, decision making process would also be affected.

6. Flexibility : Forecasting method should be flexible enough to accept coordination with the changing requirement of firm. It is necessary for a good method to be able to adjust with changing needs and requirements.

IMPORTANCE OF DEMAND FORECASTING

Success or failure of every business enterprise depends on demand forecasting to a large extant. In present complex product system, demand forecasting is very important tool for management. In brief, we can explain importance of demand forecasting as below :

1. Basis for establishment of firm : Demand forecasting is the basis on which entrepreneurs take courage for establishment of new firm. Entrepreneurs take decision, to establish that firm to produce goods and services whose demand is expected to rise in the future period.

2. Decision regarding size of plant : Size of plant for production of goods is also related to demand forecasting. If there is a possibility of rise in future demand, plans for expansion of plant size is taken to meet the future requirements.

3. Production Planning : Decisions regarding production such as when, how much, where, how are also dependent on demand forecasting. Maximum profit for business is only possible when production is done according to demand and situation like over-production or under-production are avoided.

4. Availability of production resources : Raw material, labour, machinery, capital etc. are necessary for production. Demand forecasting is helpful in arranging the required resources and shortage or wastage of resources are also checked by it.

5. Helpful in appropriate price policy formulation : Demand forecasting is very helpful in deciding an appropriate price policy. Since forward projections about market condition can be made through demand forecasting thus, coordination of demand and supply call be maintained to combat the situations of sudden rise or fall in prices. This way reputation of company can also be established by adopting constant price policy.

6. Proper sales policy : Marketing managers become more cautious and careful by demand forecasting and can make prior arrangements to combat the market risks. This demand forcasting is helpful in appointment of advertisers and sellers also.

7. Helpful in sales control : Demand forecasting enables managemant to identify the market areas where more control is needed. Managers can modify their execution through effective marketing planning in areas. The premises of marketing, sales planning and control are based on sales forecasting.

Limitations Of Demand Forecasting

Demand forecasting has following main limitations :

1. Change in Fashion : Change in fashion is natural scenario of development of civilization. In today's modern world, rule of demand forecasting is applicable for a very short period. **Morane** has rightly said in England that economic forecasting is true only for next six hours like weather forecasting, beyond it they are void.

2. Uneconomical : Forecasting involves collection of various types of data and information and their analysis. This process is very expensive and small businessman can not afford it. They consider it as luxurious expenses.

3. Consumers' Psychology : Demand forecasting largely depends on psychological state of consumers. To make prediction and collect information about consumers' thinning is a difficult task. Consumers may think and express differently, even it is also possible that they are not sure about their own opinions so psychological elements prove to be a complex problem in demand forecasting

4. Lack of Efficient Experts : Demand forecasting should be done by experts but, in general, there is lack of eligible and experienced experts. There is a possibility of errorfull prediction if demand forecasting is done by inefficient persons.

5. Lack of Past sales data : Past sales data are very important for demand forecasting but to collect these data according to requirement is a difficult task. In fact, in case of new products past sales data are not available.

Steps Of Demand Forecasting

To explain steps of demand forecasting is a difficult task because the conditions are different for every business. Henee, to present well accepted process to all is not easy, still following steps are generally accepted for demand forecasting porcess :

1. Determination of Objective : First step of demand forecasting process is to determine its objective. This is done, by long term or short term objective, for whole industry or any particular firm. Clarity of objective enables simplicity of planning of forecasting. Money, time and labour is invested in forecasting process according to its objective.

2. Selection of Appropriate Method : Various methods for both new and existing products' demand forecasting are available. Businessmen have to select appropriate method according to the pre-determined time, money and labour.

3. To identify the Demand Determinants : Demand for any product is affected by various elements. Some of these elements are controllable and some are uncontrollable. For instance, advertisement expenses are controllable by the vendor but he has no control on consumers' income. A forecaster should describe these elements by identifying these.

4. Collection and Analysis of Data : Next step is the collection of required consumers' data through primary or secondary sources. For collection of data market should be divided into small segments. Market trend can be traced by sum of data collected from different field of market. After this, tabulation and analysis of data is done by statistical methods.

5. Study of Activities of Competitors : Demand for any entreprise is greatly affected by competitor's activities. Hence, cautious managers must have information about strategies and activities of competitors. Only then, accurate predictions about future sales & trends are possible.

6. To Prepare Preliminary Demand Estimates : After above stages, preliminary demand estimates can be prepared by using appropriate methods. Preliminary demand estimates act as basis for final demand forecasting.

7. Evaluation and Adjustments of Demand Forecasting : The process of demand forecasting does not end by making preliminary demand forecasting. It should be evaluated periodically. This evaluation can be made monthly, quarterly, half yearly or yearly. Adjustments are made in demand forecasting according to changing situations and then final demand forecasting is presented.

Factors Affecting Demand Forecasting

Demand forecasting of any commodity is affected by different factors but these factors are mainly dependent on nature of commodity. Commodities are of two types : consumer and capital. We can briefly explain factors of both types of commodities which affect demand forecasting, as below.

(a) Consumer Goods : Consumer goods are those which are bought by consumers for direct consumption purpose. Analysis of consumer goods can be done by classifying it into two categories.

I. Non-durable Consumer Goods : Non-durable consumer goods are those which are used for only once consumption like, milk, curd etc. Factors affecting demand forecasting of these type of goods are :

i. Consumers income,
ii. Price of commodity,
iii. Price of substitute or complimentary goods,
iv. Standard of living,
v. Population, and
vi. Weather, etc.

II. Durable Consumer Goods : Durable goods are those which consumer use for more then one time like, refrigerator, car, furniture, television etc. Main determinants of demand for these commodities are :

i. Consumers' income,
ii. Special facilities (like-electricity for television, road for cars etc.),
iii. Number of families,
iv. Credit facility for consumers,
v. Possibility of price change,
vi. Repair and maintenance facilities, and
vii. Culture and climate etc.

(b) Producer or Capital Goods : Producers' goods are those which producers bought for purpose to be used as raw material or input in production process. For instance, for carpenter, wood is a producer good which is used to make furniture. Factors affecting demand forecasting of capital goods are :

i. Number of industries which use such goods,
ii. Profitability of industries using such goods,
iii. Level of labour rates,
iv. Possibilities of growth of industries using such goods,
v. General economic circumstances,
vi. Government policy, and
vii. Growth expenditure etc.

Example : 1

Forecast the trend of demand for the next five years—

Year	2007	2008	2009	2010	2011
Demand (In 000 ₹)	120	140	120	150	170

Computation of Trend Values of Demand

Year	**Demand (In 000 ₹)**	**Time Deviations from the year 2009**	**Square of Time Deviations**	**Product of Time Deviations and Demand**
	(Y)	(X)	(X^2)	(XY)
2007	120	-2	4	-240
2008	140	-1	1	-140
2009	120	0	0	0
2010	150	+ 1	1	+ 150
2011	170	+ 2	4	+ 340
n = 5	$\Sigma Y = 700$	$\Sigma X = 0$	$\Sigma X^2 = 10$	$\Sigma XY = 10$

Regression Equation of Y on X : y = a + bx

Here, a (Constant Variable) $= \frac{\Sigma y}{n} = \frac{700}{5} = 140$

b (Rate of Growth) $= \frac{\Sigma xy}{x^2} = \frac{110}{10} = 11$

Hence, the Regresion Equation is Y = 140 + 11X

With the help of this equation, we can find out the trend value for the next five years as follows—

year 2012 = 140 + 11 (3) = 173 (in 000 ₹)
year 2013 = 140 + 11 (4) = 184 (in 000 ₹)
year 2014 = 140 + 11 (5) = 195 (in 000 ₹)
year 2015 = 140 + 11 (6) = 206 (in 000 ₹)
year 2016 = 140 + 11 (7) = 217 (in 000 ₹)

Example : 2

From the following results of an investigation for the demand of coloured television in Varanasi, find out the estimated demand in the year 2014 :

Year	2004	2005	2006	2007	2008	2009
Demand (In Lakh ₹)	24.0	27.6	25.2	31.8	29.4	34.0

Solution :

Computation of Trend Values of Coloured Television's Demand

Year	**Demand of Coloured Television (In Lakhs ₹)**	**Time Deviations from the Middle of the years 2006 and 2007 assuming .5 year = 1 year**	**Square of Deviations**	**Product of Time Deviations (X) and Demand (Y)**
	(Y)	(X)	(X^2)	(XY)
2004	24.0	- 5	25	- 120.0
2005	27.6	- 3	9	- 82.8
2006	25.2	- 1	1	- 25.2
2007	31.8	+ 1	1	+ 31.8
2008	29.4	+ 3	9	+ 88.2
2009	34.0	+ 5	25	+ 170.0
n = 6	Σ y = 172	Σ x = 0	$\Sigma x^2 = 70$	Σ xy = +62.0

Regression Equation of Y on X : y = a + bx

Here, a (Constant Variable) $= \frac{\Sigma Y}{n} = \frac{172}{6} = 28.67$

b (Rate of Growth) $= \frac{\Sigma XY}{x^2} = \frac{62}{70} = 0.89$

Hence, the Regresion equation is Y = 28.67 + 0.89X
Estimated demand for the year 2014 =
Y 2014 = 28.67 + 0.89 x 15
= 28.67 + 13.35
= 42.02 (In Lakhs ₹)

Example : 3

Find the trend values and forecast the sales for the year 2015 in the following series :

Year	2006	2007	2008	2009	2010
Demand (In ₹)	107	110	114	114	115

Solution :

Calculation of Trend Values

Year	Sales (₹ in Lakhs)	Time Deviation form Middle year 2008	Square of Time Devia-tions	Product of time Deviation and sales	Trend Value (y = a + bx)
	(Y)	(X)	(X^2)	(XY)	
2006	107	– 2	4	– 214	112 + (2 x - 2) = 108
2007	110	– 1	1	– 110	112 + (2 x - 1) = 110
2008	114	0	0	0	112 + (2 x 0) = 112
2009	114	+ 1	1	+ 114	112 + (2 x 1) = 114
2010	115	+ 2	4	+ 230	112 + (2 x 2) = 116
N = 5	Σy = 560	Σ x = 0	$\Sigma x^2 = 10$	Σ xy = 20	

Adverage (a) $= \frac{\Sigma Y}{N} = \frac{560}{5} = 112$

Rate of Growth (b) $= \frac{\Sigma xy}{x^2} = \frac{20}{10} = 2$

Sales Forecast for the year 2015
Y = a + bx = 112 + (2 x 7) = ₹ 126 Lakhs.

Example : 4

With the help of the following data forecast the sales for 2010 :

Year	2004	2005	2006	2007	2008	2009
Demand (In 000 ₹)	10	12	15	16	18	19

Solution :

Calculation of Trend Value

Year	Sales (₹ in Lakhs)	Time Deviation form Middle year 2006	Square of Time Devia-tions	Product of time Deviation and sales	Trend Value (y = a + bx)
	(y)	(x)	(x^2)	(xy)	
2004	10	- 2.5	6.25	- 25.0	15 - (2.5 x 1.83) = 10.43
2005	12	- 1.5	2.25	- 18.0	15 - (1.5 x 1.83) = 12.26
2006	15	- 0.5	0.25	- 7.5	15 - (.5 x 1.83) = 14.09
2007	16	+ 0.5	0.25	+ 8.0	15 + (.5 x 1.83) = 15.92
2008	18	+ 1.5	2.25	+ 27.0	15 + (1.5 x 1.83) = 17.75
2009	19	+ 2.5	6.25	+ 47.5	15 + (2.5 x 1.83) = 19.58
N = 6	Σy = 90		17.50	+ 32.0	

2. Adverage (a) $= \frac{\Sigma y}{N} = \frac{90}{6} = 15$

Rate of Growth (b) $= \frac{\Sigma xy}{x^2} = \frac{32}{17.5} = +1.83$

Sales Forecast for year 2010

$$y = a + bx = 15 + (3.5 \times 1.83) = ₹\ 21.41 \text{ Lakhs.}$$

Essay Type Questions

1. Briefly describe the concept and different methods of demand forecasting.
2. Discuss the objectives of short-term and log-term demand forecasting. What are the criteria of good forecasting system ?
3. Examine the importance of demand forecasting. What are the methods of demand forecasting of new product ?
4. Explain, in brief, the various steps of demand forecasting. Also mention the importance and limitations of demand forecasting.
5. Why demand forecasting is needed in modern age of large enterprises ? Discuss the main criteria of good forecasting technique. What factors are taken into consideration while estimating a firm's sale ?
6. As an expert of Managerial Economics, what methods would you adopt for demand forecasting ? Briefly discuss the criteria and steps of a good forecasting system.
7. What is the meaning of demand forecasting ? What are the factors involved in it ? Explain the short-term and long-term objectives of demand forecasting.

Short Type Questions

1. Write the meaning and characteristics of demand forecasting.
2. What are the attributes of a good demand forecasting method ?
3. Enlist the purposes of demand forecasting, both short-term and long-term.
4. How the survey of buyers' intentions and economic indicators methods are used to forecast the demand ?
5. How can you forecast the demand for a newly established business concern ?
6. Briefly explain the limitations of demand forecasting.
7. Describe the steps of demand forecasting.
8. Discuss the utility of demand forecasting.

Objective Questions

1. Which of the following is clearly the objective of long-term demand forecasting ?
   (a) Regular availability of raw material
   (b) Determination of price policy
   (c) Arrangement of efficient men power
   (d) Formulation of production Policy
2. Statistical methods of demand forecasting can not be applied for ....
   (a) New Products (b) Old Products
   (c) New and Old Products (c) Neither New Products nor Old Products

Ans. 1. (c), 2. (a)