Sales Forecasting

Programme Educational Objectives

- *Our program will create graduates who:*
- *1.Will be recognized as a creative and an enterprising team leader.*
- *2.Will be a flexible, adaptable and an ethical individual.*
- *3.Will have a holistic approach to problem solving in the dynamic business environment.*

Sales and Distribution Management Course Outcomes

- CO1- Given a situation of Festival, student manager will be able to identify appropriate Sales Forecasting method to be adopted by a company.
- CO2- Given a situation of opening a new outlet, student manager will be able to draft a sales plan.
- CO3- Given a situation of Selling products / services, student manager should be able to explain Personal Selling Process.

- CO4-Given a criteria of newly launched company, student manager should be able to design an effective Sales Compensation Plan for Sales Executive.
- CO5-Given a criteria of distribution channel of a company, student manager should be able to outline different levels of Marketing channel used by the company.
- CO6-Given a situation, student manager should be able to explain the process of Reverse Logistics.

Sales Research

- Sales Research is the identification and measurement of all those variables which individually and in combination have an effect on sales.
- It encompasses the marketing studies pertaining to **sales forecasting, market potentials, market share analysis, and determination of market characteristics and sales analysis**.

Sales Forecasting

- Sales forecasting is the process of **estimating future sales**.
- A sales forecast is an **estimation of sales volume that a company can expect to attain within the plan period**. A sales forecast is not just a sales predicting.
- Sales forecasting is the determination of a firm's share in the market under a specified future. Thus sales forecasting **shows the probable volume of sales.**
- "Sales forecast is an estimate of sales during a specified future period, whose estimate is tied to a proposed marketing plan and which assumes a particular state of uncontrollable and competitive forces." —Candiff and Still

Sales Forecasting

- According to **A**merican **M**arketing **A**ssociation, “Sales forecast is an estimate of Sales, in monetary or physical units, for a specified future period under a proposed business plan or programme and under an assumed set of economic and other forces outside the unit for which the forecast is made.”

Sales Forecasting

- Accurate sales forecasts enable companies **to make informed business decisions** and predict short-term and long-term performance.
- Companies can base their forecasts **on past sales data, industry-wide comparisons, and economic trends.**
- It is easier for established companies **to predict future sales based on years of past business data.** Newly founded companies have to base their forecasts on less-verified information, such as market research and competitive intelligence to forecast their future business.

Sales Forecasting

- Sales forecasting gives insight into how a company should **manage its workforce, cash flow, and resources.**
- In addition to helping a company **allocate its internal resources effectively, predictive sales data is important for businesses when looking to acquire investment capital.**

Sales forecasting allows companies to:

- ***Predict achievable sales revenue;***
- ***Efficiently allocate resources;***
- ***Plan for future growth***

Terms used in Sales Forecasting

- **Market Potential –** It is the best possible (or maximum) estimated sales of a given period or service for the **entire industry** in a given market for a specific period of time.
- **Market Forecast –** It is the **expected industry sales of a given product or service** at one specific level of industry marketing expenditure, in a given market, for a specific period of time.

Terms used in Sales Forecasting

- **Sales Potential** (Or Company sales potential)–
  It is the best possible (or maximum) **estimated sales of a given period or service for a company** in a given geographic area for a specific period of time. It is also defined as the maximum share (or %) of market potential that is expected to be achieved by a co.
- **Sales Forecast** – It is the expected **company sales of a given product or service under a proposed marketing plan**, in a given market, for a specific period of time. There is a relationship betw. The co's sales forecast and proposed marketing expenditure (or marketing plan)

Terms used in Sales Forecasting

- **Sales Budget-** It is the estimate of **expected sales volume in units or revenues from the co's products and services and the selling expenses**. It is used for making purchasing, production, manpower and cash flow decisions.
- **Sales Quota –** It is a **sales goal set for a marketing unit for a specific period of time**. The marketing unit may be a salesperson, a branch, a region, a dealer or a distributor. A co. Mgmt. sets sales quotas on the basis of the co. sales forecast.

Objectives of Sales Forecasting

- **To set the sales target** – The primary purpose of sales forecasting is **to establish sales performance goals for the organization.** To get the real and accurate picture of sales, forecasting should be first made for small region and then for large territories.
- **To maintain inventory** – An accurate sales forecasting helps in **estimating the amount of raw materials required for future goals**. It helps in keeping the inventory up for peak periods.
- **To regulate manpower requirement** – Appropriate manpower is required for continuous production. A good manpower policy is needed to prevent the shortage of manpower.
- **To decide plant capacity** – On the basis of sales forecasting the organization **can plan the plant with output of desired capacity.**
- **To predict expenses** – It helps in **predicting the expenses and planning budget.** It is also useful in preparing credit policy of the company. It is also required for uninterrupted supply of input resources.

Factors affecting Sales Forecasting

- **General Economic Condition: -**

General economic trend- **inflation or deflation,** Past behavior of market, national income, disposable personal income, consuming habits of the customers etc.,

- **Consumers: -**

The **size of population** by its composition- customers by age, sex, type, economic condition, And **trend of fashions, religious habits, social group influences etc.,**

Factors affecting Sales Forecasting

- **Industrial Behaviours (Competitions):-**

As such, the **pricing policy, design, advanced technological improvements, promotional activities etc., of similar industries** must be carefully observed.

Unstable conditions — Industrial unrest, government control through rules and regulations, improper availability of raw materials etc., directly affect the production, sales and profits.

Factors affecting Sales Forecasting

- **Changes within Firm:-**

Future sales are greatly affected by the **changes in pricing, advertising policy, quality of products** etc.

Period:-

The required information must be collected on the basis of period — **Short run, Medium run or Long run forecasts.**

Importance of Sales Forecasting

Importance of Sales Forecasting

1. **Regular supply is facilitated-** Supply and demand for the products can easily be adjusted, by overcoming temporary demand, in the light of the anticipated estimate;
2. A good **Inventory control** is advantageously benefited by avoiding the weakness of under stocking and overstocking.
3. **Allocation and reallocation of sales territories** are facilitated.
4. It is a forward planner as all other **requirements of raw materials, labour, plant layout, financial needs, warehousing, transport facility etc.,** depend in accordance with the sales volume expected in advance.

Importance of Sales Forecasting

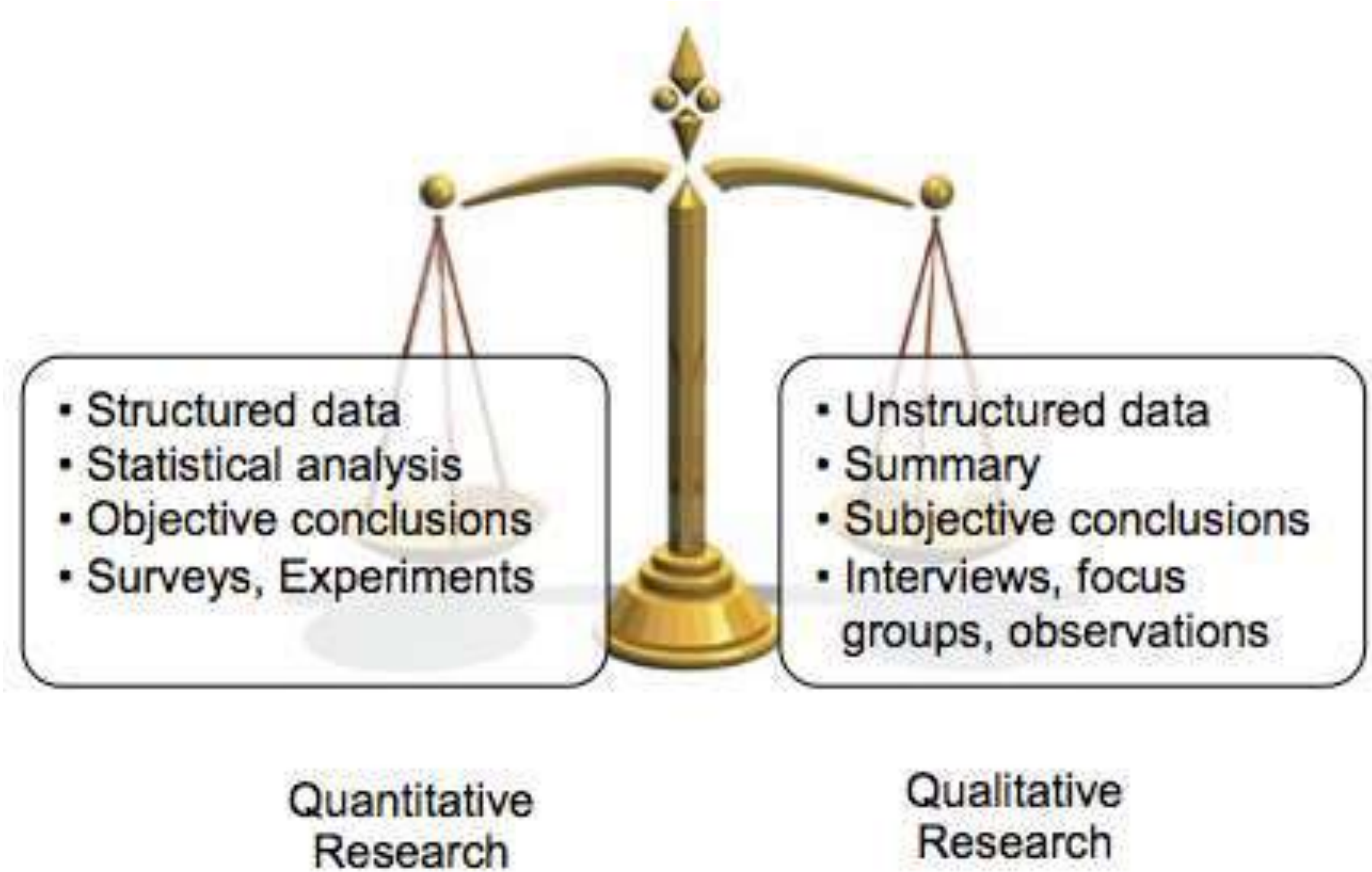
5. **Sales opportunities** are searched out on the basis of forecast;
6. **Advertisement programmes** are beneficially adjusted with full advantage to the firm.
7. It is an indicator to the department of finance as **to how much and when finance is needed**; and it helps to overcome difficult situations.
8. It is a **measuring rod by which the efficiency of the sales personnel or the sales department**, as a whole, can be measured.

Importance of Sales Forecasting

9. **Sales personnel and sales quotas** are also regularized-increasing or decreasing-by knowing the sales volume, in advance.
10. It **regularizes productions** through the vision of sales forecast and avoids overtime at high premium rates. It also reduces idle time in manufacturing.

Sales Forecasting Methods

Qualitative Methods	Quantitative Methods
• Executive opinion	• Moving averages
• Delphi method	• Decomposition
• Salesforce composite	• Naïve / Ratio method
• Survey of buyers' intentions	• Regression analysis
• Test marketing	• Econometric analysis


• Structured data
• Statistical analysis
• Objective conclusions
• Surveys, Experiments
• Unstructured data
• Summary
• Subjective conclusions
• Interviews, focus groups, observations
Quantitative Research
Qualitative Research

Qualitative Research Method.

- It aims to gain an in-depth insight into what individuals think, feel or do.
- These methods focus on exploring the **'why' and 'how'** reasons behind customers behaviours and decisions. It is designed to reveal the behaviours and perceptions that drive a target audience in reference to specific topics or issues.
- It is carried out on small samples of the population. For example, you may be interested in researching a segmented group of your target audience such as a particular **buyer persona** or age group (e.g. Travel enthuastists, females in the 20-25 age bracket.) The most common methods used are that of an in-depth interview or a focus group.

Executive Opinion Method.

- It is also termed as **‘top-down’** approach.
- It includes **getting the views of top executives of the company regarding future sales**.
- The sales forecast are made either by taking the average of all the executives’ individual opinion or through discussions among the executives.
- **Advantages** – Forecasting can be done quickly and easily.
- **Disadvantages** – Unscientific, Subjective, difficult to break down the forecast into subunits (like regions, branches) of the organization.

Delphi Method

- The difference between this method & Executive Opinion method is that **the members of expert panel do not meet or discuss in a committee.**
- The procedure includes selection of panel of experts from within and outside the organisation.
- The basic belief here is that experts, without any pressure or influence will develop a more accurate prediction of the future.
- **Useful for technology, new product and industry sales forecas**t but difficulty in getting a panel of experts.

Sales force Composite Method

- It is also termed as ‘**bottom-up**’ approach.
- This method involves each salesperson making a product-by-product forecast for their particular sales territory.
- Thus individual forecasts are built up to produce a company forecast; this is sometimes termed a `**grass-roots**’ approach.
- **Each salesperson’s forecast must be agreed with the manager**, and divisional manager where appropriate, and eventually the sales manager agrees the final composite forecast.

Survey of Buyer's Intention

- It also termed as '**Market research**'
- It includes asking existing and potential customers about their likely purchase of the co's product and services for the forecast period.
- Example – Do you intend to buy a T.V. in next 6 months?
- The customers also asked other questions, such as product quality, features, price and service. The information collected from buyers help the co. to make effective decisions not only in the sales and marketing areas, but also on production, research and development.
- Useful in forecasting sales for industrial products, consumer durables, and new products.

Test Marketing Method

- **Test marketing** is a tool used by companies to provide insight into the probable market success of a new product, or effectiveness of a marketing campaign. Test marketing can be used by a business to evaluate factors such as the performance of the product, customer satisfaction or acceptance of the product, the required level of material support for the full launch, and distribution requirements for a full launch.
- Major methods used for consumer-product market testing include;

1. Full-blown Test Markets
2. Controlled Test Marketing
3. Simulated Test Marketing


What is Test Marketing?
Standard Test Market
Full marketing campaign in a small number of representative cities.
Controlled Test Market
A few stores that have agreed to carry new products for a fee.
Simulated Test Market
Test in a simulated shopping environment to a sample of consumers.

Test Marketing Method

- **Full-blown Test markets:** It consists of the co. choosing a few (2-6) representatives cities, in which full promotion campaign is introduced, similar to what would be done in national marketing. The duration of test market varies from a few months to one year, depending on the repurchase period of the new product.

A) If the test market show high trial and repurchase rates, the new product should be launched nationally;

B) If they show a high trial rate and a low purchase rate, the new product should be redesigned or dropped;

C) If they show a low trial rate and a high repurchase rate, the product is acceptable.

D) If both trial and repurchase rates are low, the new product should be left permanently.

Test Marketing Method

Controlled Test Marketing: The co. with the new product hires a research firm and gets a panel of stores at specified geographic locations.

- The research firm delivers the new product to the panel of stores, arranges promotions of the stores, and measures the sales of the new product.
- They also interviews sample consumers to get their perceptions on the new product.
- But both Full blown test markets and controlled test marketing expose the new product to the competitors.

Test Marketing Method

- **Simulated Test Marketing:** Here, customers are exposed to a **simulated market** situation to gauge the consumer's reactions to a product, service or **marketing** mix variations.
- In this method, 30-40 consumers (or shoppers) are selected, based on their brand familiarity and preferences in a particular product category, such as babycare and soft drink products.
- These consumers are shown commercials or print advertisements of well known products and also the new product,
- Then they are given small amount of money and asked to buy any items in a store.

Test Marketing Method

- Then, they are interviewed to find reasons for buying or not buying, and later after usage of the new product, satisfaction levels and repurchase intentions.
- Thus new products are not exposed to competitors.

Industrial product Test Marketing

Alpha testing: In this method, a group of target audience is selected from the employees of the company. Alpha testing is less expensive when compared to any other form of testing. Another advantage of selecting the internal employees as a target group is that the chances of leakage of new product idea are less likely. But the disadvantage can be that the company may not be able to get a true picture of the potential customer's views.

Beta testing: Beta testing is carried out at the customer site. This type of test is usually carried out for machines and tools to be used in the business operations of the customer. Customer's insights regarding the product and its functionality can be gained through this test. But there is always a chance of the competitor learning about the firm's new product.

Gamma testing: Gamma testing is carried out on a long-term basis, where the customer uses the product extensively. Gamma testing is often used in pharmaceutical industry.

Another method used for introducing a new industrial product is participating in the industry trade shows.

Quantitative Research Method

- It uses statistical and mathematical methods in order to research a larger sample group of the population.
- It asks individuals for their opinions in a more structured way than that of qualitative research.. This is done so that the data produced will provide solid and definitive results.
- The most common forms of quantitative research used in marketing are **customer surveys and questionnaires.** Usually, these surveys are carried out either online, over the phone, via post or face-to-face.
- In general, customer surveys and questionnaires follow a **more structured layout than** that of qualitative methods.

Qualitative & Quantitative Research Method.

- **Qualitative research** is an in-depth exploration of what people think, feel or do and, crucially, why. If you want to know why your customers behave as they do and what barriers there may be to their changing that behaviour, you would use QR to explore those issues. It does not give statistically robust findings.
- **Quantitative research** provides a measure of how many people think, feel or behave in a certain way and uses statistical analysis to determine the results. If you want to know how many of your customers support a change in a product or service - and how strongly they support it - so that you can determine whether you have a business case for making that change - you would use quantitative research.

Qualitative & Quantitative Research Method.

- It is advised that a business should **always use a mixture of qualitative and quantitative methods** when researching their customers and the performance of their products and services.
- A recommended approach to market research is to start off by going straight to the source and conducting qualitative research. This will provide your business with actual information and data straight from your target audience.
- Following this, the business can then use quantitative methods in order to test the insights that they have been provided with.

Moving Average Method

- A co. forecast by calculating the average co. sales for previous years.

Three Month Moving Average Forecast

Period	Actual Demand (000's)	Forecast (000's)
January	45	
February	60	
March	72	
April	58	59
May	40	63
June		57

- Sales forecast for next year

= Actual Sales for past 3 years/No. of years.

Exponential Smoothing Method

- By using this method, the sales forecaster can allow sales in certain periods to influence the sales forecast more than sales in other periods.
- Sales forecast for this year =

(L)(Actual Sales this year) + (1-L) (this year's sales forecast);

Where (L) is a smoothing constant.

For instance, a smoothing constant (L) with a high value of 0.7 or 0.8 allows most recent periods of actual sales to influence sales forecast more than sales in earlier periods, whereas a smoothing constant with a low value of 0.2 or 0.3 allows earlier period of actual sales to influence forecasted sales more than sales in recent periods.

Exponential Smoothing Method

Year	Acutal Sales	3 Year
2001	862	858
2002	948	852
2003	956	880
2004		922

To calculate the forecasted sales for the year 2004 by using exponential smoothing method. The sales forecast for the year 2004 would be

0.2*956 + 0.8*880= Rs. 895. (Low Value)

0.8*956 + 0.2*880= Rs. 940.8 (High value)

Adv. – A)Useful method when sales data have a trend or a seasonal pattern. B)Immediate response to a upturn or downturn in sales.

Decomposition Method

In this method the co's previous periods sales data is broken down into four major components, such as **Trend, Cycle, Seasonal and Erratic events.**

- **Trend** – A growth of 3% in sales due to the development in technology, capital formation and population
- **Erratic Events-** Unstable political, terrorist activities are expected to reduce sales by 5%.
- **Cyclic component –** A 10% reduction in sales is expected due to a recession in demand.
- **Seasonal Component –** A 15% increase in sales in 3rd quarter due to festive season.

Decomposition Method

Sales in 2003 was Rs. 956 In order to forecast sales for 2004 ----

- Trend – 2004 sales will be (956*1.03)= 985
- Erratic – (985*0.95)= 936
- Cyclic – (936*0.90)= 842

Annual sales forecast for 2004 is 842, quarterly would be 842/4 = 210

Seasonal (210*1.15) = 242 for 3rd quarter & consistent sales forecast of Rs. 200 (842-242/3) each for other three quarters.

Naïve/Ratio Method

- It is a time series method of forecasting, which is based on the assumption that what happened in the immediate past will continue to happen in the immediate future.
- Sales forecast for next year =

Actual sales of this year * Actual sales C.Y/L.Y

2004- ?, 2003- 956, 2002 – 948

2004 = 956*956/948= 964

Regression Analysis

- It is a statistical forecasting method that is used to predict sales, called as dependent variable Ý.
- The co. then identifies causal (Cause and effect) relationship between the company sales and the independent variables (or factors), which influence the sales.
- **Simple (or linear)regression** – if there is only one independent variable (x), say promotional expenditure .
- **Multiple regression analysis** – The co. sales are influenced by several independent variables, such as Price, Promotional expenditure, and Population.

Regression Analysis

- The availability of computer software packages such as Statistical Analysis System (SAS), Statistical Package for the Social Sciences (SPSS) has increased the usage of regression analsysis.
- **Advantages:-** a)High forecasting accuracy, if relationship between variables are stable, b) objective method, and c)can predict turning points of the co's sales.
- **Disadvantage:-** a) Technically complex. b)can be expensive and time consuming. C)use of computer and software packages are essential.

Econometric Analysis

- In this method, many regression equations are built to forecast industry sales, general economic conditions, or future events.
- To find out which factors or variable influence sales and the relationship between sales and these factors as well as the interrelationships between the factors, develop a no. of regression equations representing these relationships.
- **Adv. –** Accurate forecast of economic conditions and industry sales are possible.
- **Dis. –** Large volume of data is required representing the various factors.

Exponential Smoothing Method

Month	1	2	3	4	5
Demand ('00s)	13	17	19	23	24

- Use a two month moving average to generate a forecast for demand in month 6.
- Apply exponential smoothing with a smoothing constant of 0.9 to generate a forecast for demand for demand in month 6.

Exponential Smoothing Method

- The two month moving average for months two to five is given by:
- $m_2 = (13 + 17)/2 = 15.0$
- $m_3 = (17 + 19)/2 = 18.0$
- $m_4 = (19 + 23)/2 = 21.0$
- $m_5 = (23 + 24)/2 = 23.5$
- The forecast for month six is just the moving average for the month before that i.e. the moving average for month 5= $m_5 = 2350$.

Exponential Smoothing Method

- Applying exponential smoothing with a smoothing constant of 0.9 we get:
- $M_1 = Y_1 = 13$
  $M_2 = 0.9Y_2 + 0.1M_1 = 0.9(17) + 0.1(13) = 16.60$
  $M_3 = 0.9Y_3 + 0.1M_2 = 0.9(19) + 0.1(16.60) = 18.76$
  $M_4 = 0.9Y_4 + 0.1M_3 = 0.9(23) + 0.1(18.76) = 22.58$
  $M_5 = 0.9Y_5 + 0.1M_4 = 0.9(24) + 0.1(22.58) = 23.86$
- As before the forecast for month six is just the average for month 5= $M_5 = 2386$