OM4 –Sales and operations planning

Module I

Operations Planning and Control

Operational planning and control are based on forecasts of future demand for the output of the system. Even with the best possible forecasting and the most finely tuned operations system, demand cannot always be met with existing system capacity in a given time period. Operational planning and control decisions involve scheduling and control of human resources, materials, and financial input to produce the desired quantity and quality of output most efficiently. Operational planning and control are based on forecasts of future demand for the output of the system.

Process of Operations planning and control

1. **Setting objectives**-so that you know what is to be achieved by your plans and by when allocating tasks and responsibilities-who is to be involved with the new product and service and how they are to be involved

2. **Scheduling**-work patterns, process scheduling, supply and demand scheduling

3. **Assessing resource requirements**-people and their skills, money (budgets), time, raw materials, plant and equipment, capacity

4. **Monitoring and evaluating performance**-the control part, involving control activities, measures and control techniques.

Objectives of Operations Planning and Control

The objectives of production planning and control can vary from one business to another, but some general objectives include the following:

- Regulation of inventory management

- Optimum utilization of production process and resources

- Organization of the production schedules, typically with the help of dynamic production scheduling software

- To make sure the right quality and quantity of equipment, raw materials and more are available during production times

- To ensure capacity utilization is aligned with forecast demand.

Benefits of Operational Planning and Control

The benefits of production planning and control include:

- Improved organization for regular and timely delivery

- Better supplier communication for raw materials procurement 3.Reduced investment in inventory.

- Reduced production cost by increasing efficiency 5.Smooth flow of all production processes.

- Reduced waste of resources.

- Production cost savings that improve the bottom line.

Forecasting

Forecasting is the process of making predictions of the future based on past and present data. This is most commonly by analysis of trends. A commonplace example might be estimation of some variable of interest at some specified future date.

Apart from planning for uncertainties, forecasting helps operations management to envision future market demands, change in customer trends and preferences and availability of resources. It serves as a pillar for planning business operations. Forecasting is critical for the success of a business plan. Faulty or inefficient forecasting may lead to failures while a plan is executed.

Need for Forecasting

Forecasting is a fundamental aspect of operations management in business, providing insights that are crucial for effective decision-making, resource allocation, and overall strategic planning

1. Strategic Planning:

Forecasting is essential for strategic planning in operations management. It helps organizations anticipate future demands, market trends, and technological changes, allowing them to align their operational strategies accordingly.

2. Demand Management:

Forecasting assists in predicting future demand for products and services. This is crucial for inventory management, production planning, and ensuring that the right amount of resources is allocated to meet customer needs.

3. Resource Allocation:

Efficient allocation of resources such as raw materials, labor, and equipment is critical for operational success. Forecasting provides insights into the expected demand and helps allocate resources optimally to prevent shortages or overstock situations.

4. Production Planning:

In operations management, forecasting is instrumental in determining production schedules. It helps in deciding when and how much to produce, ensuring a balance between supply and demand and preventing underutilization or overutilization of production facilities.

5. Financial Management:

Accurate forecasting supports financial planning and budgeting. It allows organizations to estimate revenue, costs, and profitability, enabling better financial decision-making and resource allocation.

6. Inventory Management:

Forecasting plays a crucial role in managing inventory levels efficiently. It helps

organizations maintain an optimal balance between carrying costs and stockouts by predicting the demand for products.

7. Quality Control:

Through forecasting, organizations can anticipate variations in demand and plan for quality control measures accordingly. It ensures that quality standards are maintained even during peak demand periods.

8. Risk Mitigation:

Forecasting helps in identifying potential risks and uncertainties in the market. By understanding the potential challenges, operations managers can develop contingency plans to mitigate risks and ensure business continuity.

9. Customer Satisfaction:

Meeting customer expectations is vital for the success of any business. Forecasting enables organizations to align their operations with customer demands, ensuring timely delivery and better customer satisfaction.

10. Competitive Advantage:

Organizations that effectively use forecasting gain a competitive advantage by being proactive in the market

Forecasting Horizons

Long term forecasting: It tends to be completed at high levels in the organization. The time frame is generally considered longer than 2 years into the future. Detailed knowledge about the products and markets are required due to the high degree of uncertainty. This is commonly the case with new products entering the market, emerging new technologies and opening new facilities. Often no historical data is available.

Medium term forecasting: It tends to be several months up to 2 years into the future and is referred to as intermediate term. Both quantitative and qualitative forecasting may be used in this time frame.

Short term forecasting: It is daily up to months in the future. These forecasts are used for operational decision making such as inventory planning, ordering and scheduling of the workforce. Usually quantitative methods such as time series analysis are used in this time frame

Very Short-Term or Real-Time Forecasting:

This type of forecasting involves predicting events or outcomes that are imminent or occurring in real-time. Real-time forecasts are crucial for decision-making in dynamic and fast-paced environments, such as financial trading, supply chain management, and emergency response.

Seasonal Forecasting:

Seasonal forecasting focuses on predicting patterns and trends that repeat over specific periods, such as seasons, quarters, or months. These forecasts are essential for industries and businesses affected by seasonal variations, such as retail, agriculture, and tourism.

Cyclical Forecasting:

Cyclical forecasting involves predicting fluctuations or cycles in economic or market conditions that occur over longer periods, typically several years. Cyclical forecasts are essential for industries and businesses sensitive to economic cycles, such as construction, automotive, and consumer durables.

Trend Forecasting:

Trend forecasting involves identifying and projecting long-term trends in consumer behavior, technology adoption, demographic shifts, and other

Stages of Forecasting

Forecasting typically involves several stages or steps to generate accurate predictions or estimates. While specific methodologies may vary depending on the context and purpose of the forecast, here are the general stages involved in the forecasting process

1. **Identify the Problem**

Defining the problem can seem simple at first because it looks like you are simply asking how the market will react to a new product, or how the company's sales will look like in a few months. Even more so if you have a good forecasting tool for small business.

However, this step is quite tricky because there aren't actually any tools that can help here. It requires you to know who the forecast is directed too, how the market works, and what your customer base and competition are.

You should spend some time evaluating these issues together with the people who will be responsible for maintaining databases and gathering the data.

2. **Collect Information**

We say information here, and not data, because data may not be available yet if for example the forecast is aimed at a new product. Having said this, the information comes essentially in two ways: the knowledge gathered by experts and actual data.

If no data is yet available, the information must come from the judgments made by experts in the area. If the forecast is based solely on judgment and no actual data, we are in the field of qualitative forecasting.

If data is available on the subject, a model is used to analyze the data and predict future values. This is called quantitative forecasting. A good example is predicting the sales for a given product in order to replenish stocks accordingly. This can even be done on a daily basis if you use a good forecasting tool for small business.

3. **Perform a Preliminary Analysis**

An early analysis of the data may tell you right away if the data is usable or not.It may also reveal patterns or trends that can then be helpful, for example, in choosing the model that best fits it.

Another thing that can be done here is to check for redundant data and cut it down or make some educated assumptions. By reducing the amount of data toanalyze you can greatly simplify the entire process.

4.Choose the Forecasting Model

Once all the information is collected and treated, you may then choose the model you think will give you the best prediction possible. There is not one single model that works best in all situations, it all depends on the availabilityand nature of the available data.

Sources of Data

There are numerous sources of data that can be utilized for forecasting across various domains. The choice of data sources depends on the specific context of the forecasting problem and the availability of relevant information. Here are some common sources of data:

Collecting good data is the foundation on which you gather evidence and make sense of it. Decide what data you need when you design your project, then you can gather the right information from the start, and throughout the project.

There are two general types of data – quantitative and qualitative and both are equally important. You use both types to demonstrate effectiveness, importance or value.

Quantitative Data

Quantitative data is information that you can measure. It's numbers –something you can count. Because it's countable it can be reliable evidence. Examples include:

How many people took part?

How much did it cost?

How long did it run for?

Average attendance at each programme session?

Qualitative Data

Qualitative data is information about qualities, you can't count it. That is, it's information about how people feel about something. Examples include:

Sharing what people like about a programme.

How they think it could be improved.

What difference it has made to their lives.

Whether they would recommend the programme to others.

Sources of Primary Data in Operations Management:

1. Surveys and Questionnaires: Direct methods involving structured questions to collect information from respondents.

Characteristics: Targeted responses, specific to research needs, can be distributed widely.

2. Interviews: In-depth conversations with individuals or groups to gather detailed insights.

Characteristics: Provides qualitative data, allows for probing, and is useful for complex topics.

3. Observations: Systematic recording of behaviors, processes, or events.

Characteristics: Real-time data collection, minimizes respondent bias, suitable for non-verbal information.

4. Experiments: Controlled tests to observe the impact of specific variables.

Characteristics: Provides causal relationships, allows for manipulation of variables for analysis.

5. Focus Groups: Discussions with a small group of individuals to explore opinions and perceptions.

Characteristics: Facilitates group dynamics, generates diverse insights, and explores collective opinions.

6. Site Visits: Direct visits to operational sites for data collection.

Characteristics: Provides firsthand understanding, useful for contextual observations.

Sources of Secondary Data in Operations Management:

1. **Internal Records:** Data generated within the organization, such as sales reports, production logs, and financial statements.

Characteristics: Readily available, cost-effective, but may be limited in scope.

2. **External Reports:** Data obtained from external sources like industry reports, market analyses, and competitor information.

Characteristics: Provides a broader perspective but may lack organization-specific relevance.

3. **Published Literature:** Information from books, articles, and academic journals.

Characteristics: Offers theoretical foundations and insights from existing research but may not be organization-specific.

4. **Government Publications:** Data from official government reports, statistics, and publications.

Characteristics: Reliable and authoritative but may have a time lag or lack granularity.

5. **Online Databases:** Information obtained from online platforms, databases, and repositories.

Characteristics: Offers a wide range of data but may require access and incur costs.

6. **Industry Conferences and Seminars:** Insights gathered from presentations, discussions, and materials shared at industry events.

Characteristics: Provides current and industry-relevant information but may lack

depth.

7. **Trade Associations:** Data provided by industry-specific organizations and associations.

Characteristics: Tailored to the industry, often reliable, but may have a specific focus.

8. **Social Media and Online Platforms:** Data extracted from social media, forums, and online discussions.

Characteristics: Offers real-time insights into public opinions and trends but may lack reliability and structure.