



**NMIMS Global Access**

# **OPERATION MANAGEMENT**

---

**Internal Assignment**

**Name:**

**Date:**

## **Operation Management**

### **Table of Contents**

#### **Question 12**

Introduction2

Concepts and applications2

Conclusion8

#### **Question 29**

Introduction9

Concepts and applications9

Conclusion13

#### **Question 314**

Introduction14

Concepts and applications14

Conclusion18

### **QUESTION 1**

**1. Explain in detail the various types of plant layout concepts that are available in operations management. Give examples on where each of these types can be employed**

## Operation Management

respectively. Briefly explain a layout for a Retail store format, highlighting the good points and bottlenecks, if any.

**Ans: Introduction**

The layout planning determines how all services that occupy space in a facility are best physically organized. This may include a desk, a work room, an office, an employee, a whole office or maybe even a unit. Decision making about the capacity arrangement in a organization are not only made on the construction of a new facility; they are taken when the configuration of resources is modified, such as the addition of a new worker or the relocation of a computer or the introduction of a modification of the operation. Furthermore, layout plans are carried out whenever the facility expands or reduces space.

### Concepts and Applications

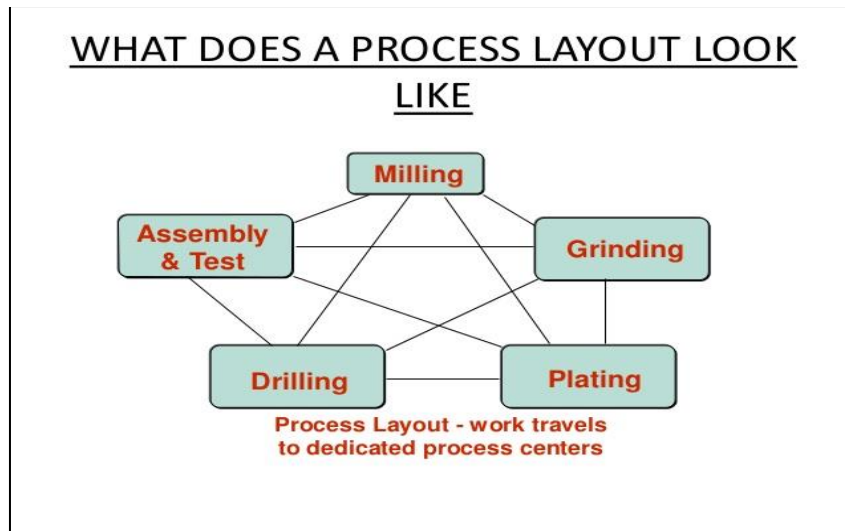
#### Plan layout concept

The plant layout refers to the actual plant structure. The offices, work areas and facilities in the conversion phase are designed. This is a floor plan of the physical structures used in manufacturing. There are 5 types of plan layout concepts that are available at operation management. They are as follows.

##### ❑ Process layout

For batch processing, the architecture of the process is preferred. All machines carrying out related kinds of actions, such as all tyres, grinding machines etc are grouped into the shop and are grouped into specific groups at a single position in the production layout.

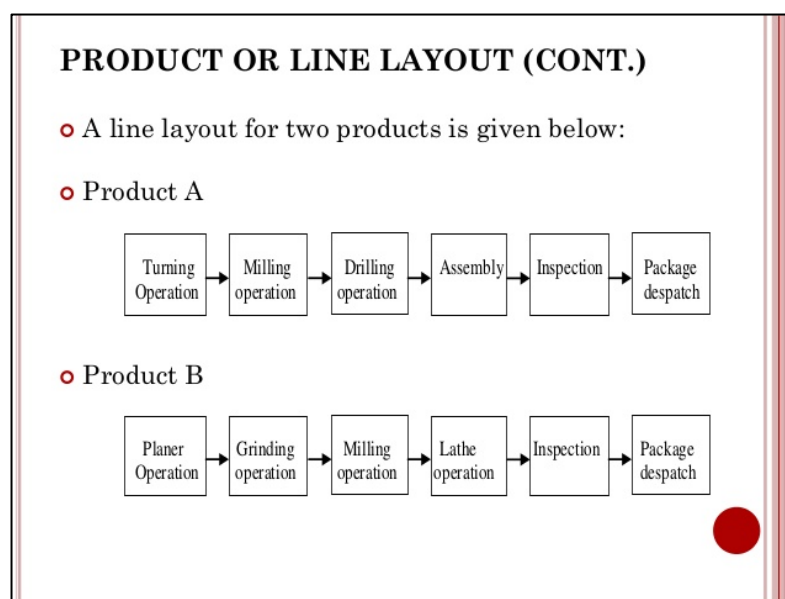
Thus the layout of the installation is grouped according to its functions. The following figure shows a typical layout of the operation (Hitt *et al.* 2016). The flow distances from the commodity to the commodity differ across functional areas. The paths are lengthy, and backtracking is possible.



The architecture of processes is typically used if the output volume is not enough to explain the architecture of the product. Workers typically use process models due to the variety of products produced and their small volumes of output.

### ❑ Product layout

The manufacturing sequence of the commodity is calculated according to this type of model, machines and supporting services. Where one or more items' output volumes are high, the equipment may be configured to ensure efficient mass transfer and relatively lower costs. Special machinery is used which accomplishes efficiently and simply the necessary task.



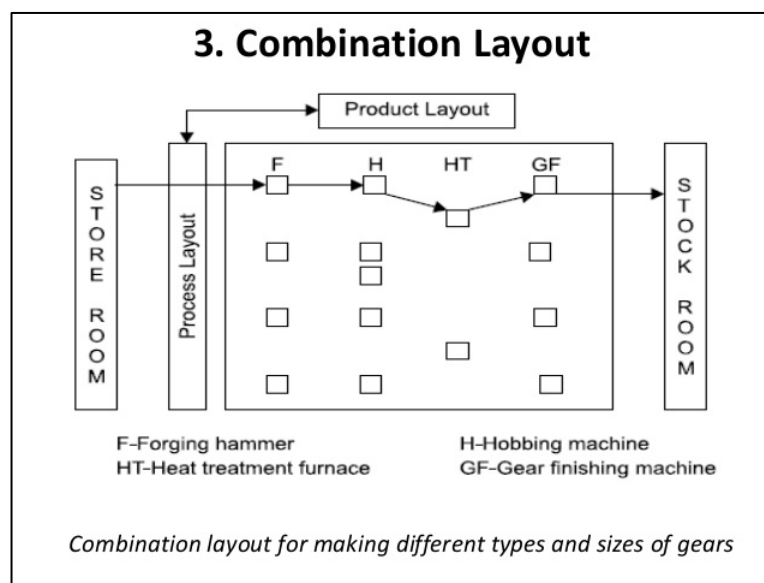
The product layout is chosen when the output volume of a product increases so that it can be represented on a different production line. Machineries are not associated with various

## Operation Management

products in a specific design layout. The output level must also be adequate to ensure that the equipment is used satisfactorily. The following figure shows a typical product layout.

### ❑ Combination layout

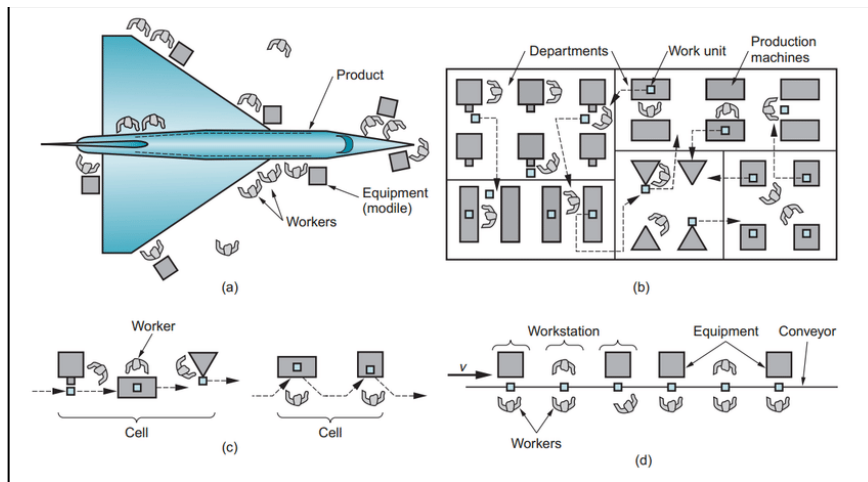
The advantages of both layouts are combined with a combination of process and product layouts. If an object is manufactured in various styles and sizes a hybrid layout is possible. Machines are arranged in a process layout, but then process grouping is organized in order to produce different products of different kinds and sizes. The sequence of operations with the product and size variations remains unchanged. The figure below shows a model combination for the manufacture of various machines (Benjaafar and Hu, 2020).



### ❑ Fixed position layout

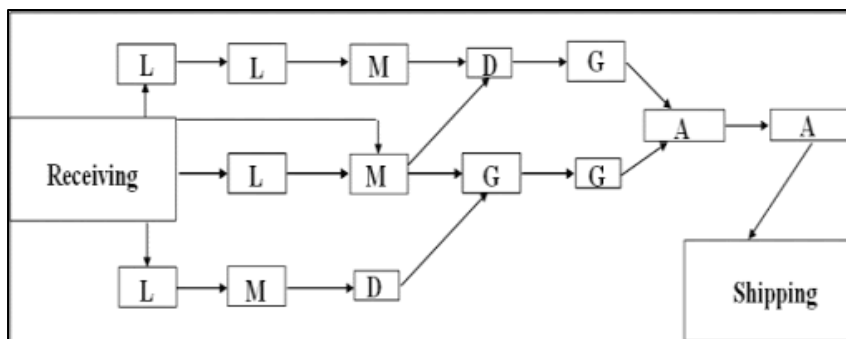
The project style model is also named. The material or key components remains in a fixed position in this type of layout, where machines, equipment, people and other materials are mounted. This method of layout is ideal when one or more pieces of the same heavy goods are made, and the cost of the transport of such parts is quite high if the arrangement contains a large number of heavy parts.

## Operation Management



### ❑ Group technology layout

There is a trend now to incorporate in the manufacturing system an element of flexibility with respect to variations in lot sizes and sequences. All has become important in the grouping of equipment used for the sequence of work on a family of related components or items.



Group technology (GT) is the study and interaction of objects into similarly defined groups. A hybrid of the process layout and a product layout can be developed with GT. To businesses that manufacture various parts in small lots, this technique is highly useful so that they can take advantage of and gain in terms of flow line design.

### Advantages and disadvantages of plant layout concepts

Plant layout concepts	Advantages	Disadvantages
-----------------------	------------	---------------

## Operation Management

<p>Process layout.</p>	<ul style="list-style-type: none"> <li>➤ Machines are best used in process layouts and fewer machines are required.</li> <li>➤ The process layout allows versatility of equipment and personnel.</li> <li>➤ Lower expenditures due to relatively less equipment and lower average cost of equipment.</li> <li>➤ Greater use of production equipment.</li> <li>➤ The distribution of work to machines and workers is highly flexible.</li> <li>➤ This work is demanding and exciting because of its various tasks and varied jobs.</li> <li>➤ The managers are well aware of their departmental duties.</li> </ul>	<ul style="list-style-type: none"> <li>➤ This growing material handling capacity, leading to backtracking and long motion in the transportation of equipment.</li> <li>➤ Unable to mechanize material processing, which increases costs.</li> <li>➤ System time is increased, reducing the turnover of inventories and increasing the inventory of the company.</li> <li>➤ The number of set-ups decreased productivity.</li> <li>➤ The output (time difference between inside and outside in the process) is longer.</li> <li>➤ The work-in-process is linked to space and investment.</li> </ul>
<p>Product layout</p>	<ul style="list-style-type: none"> <li>➤ The product flow in flow lines is clear and logical.</li> <li>➤ The inventory in the process</li> </ul>	<ul style="list-style-type: none"> <li>➤ A failure in a product line of one machine may cause downstream stoppage of machinery.</li> </ul>

## Operation Management

	<p>is smaller.</p> <ul style="list-style-type: none"> <li>➤ Time is less than performance.</li> <li>➤ Fixed processing rates for products.</li> <li>➤ It is possible to simplify development, planning and implementation systems.</li> <li>➤ Less work and provisional storage capacity is consumed.</li> <li>➤ The cost of handling materials has been minimized by mechanized handling and flow systems.</li> <li>➤ Great line alignment to remove bottlenecks and idles.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Major modifications to the design of a product may be necessary.</li> <li>➤ The bottleneck machine determines the line output.</li> <li>➤ Investments in machinery are comparatively small.</li> <li>➤ Flexibility is lacking. A product modification can need to be changed by the manufacturer.</li> </ul>
<p>Fixed position layout</p>	<ul style="list-style-type: none"> <li>➤ Helps work extension and improves operators' skills.</li> <li>➤ The staff associate with a company they are involved in and proud of doing their job.</li> <li>➤ This form of layout provides greater versatility. Investment in capital architecture is less.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Typically a small work-in - progress material is involved.</li> <li>➤ The use of labor and machinery seems to be weak.</li> <li>➤ The cost of running machinery is high.</li> </ul>



## Operation Management

<p>Group technology layout</p>	<p>Group layout can be improved</p> <ul style="list-style-type: none"> <li>➤ Standardization and streamlining of elements.</li> <li>➤ Estimate efficiency.</li> <li>➤ Efficient operation and performance of the computer.</li> <li>➤ Support to the company.</li> </ul> <p>This can diminish</p> <ul style="list-style-type: none"> <li>➤ Overall processing times and paperwork.</li> <li>➤ Progressive work and movement of work.</li> <li>➤ Price complete.</li> </ul>	<ul style="list-style-type: none"> <li>➤ In general, implementing costs are high. It is because external experts are always necessary because internal GT skills are extremely limited. It takes a long time to set up and tedious debugging.</li> <li>➤ Not suitable for a wide range of items: may not fit a manufacturer with a wide range of goods.</li> <li>➤ The company's entire development can not be put underneath the GT and therefore GT will co-exist with traditional layouts.</li> <li>➤ Not suitable for all implementations: too many GT codes are available and no GT code is suitable for all applications.</li> </ul>
--------------------------------	--	--

### Conclusion

Planning the layout is also essential for other reasons. Face-to - face contact between employees is critical in many working environments, such as in the workplace. Proper layout design can be vital for better team work, enhanced data flows and improve coordination. Advantages and disadvantages of all the layout strategies are given along with, which will be greater for the General store and how.

**QUESTION 2**

**2. List down briefly the various inventory management techniques prevalent in the industry. Discuss how some of these techniques would be applicable to a General Store in effective management of their inventories; i.e grocery supplies, etc (assume several inventories of your choice).**

**Ans: Introduction**

The basic aspect of sustainability is inventory management. The remainder of the supply chain strategy will be applied until the inventory is structured correctly. Otherwise, the business will be at risk of a long list of mistakes such as wrongly-shipments, supplies, excessive stocks, miscommunication, etc. In this question it is asked about the best possible inventory management techniques for the General Store for effective management of their inventories. The concepts and the application of the concepts over the business is discussed.

**Concepts and Applications**

**Inventory Management**

Below are some inventory management procedures which are very vital for any business and how they can be effective for a General store is also explained.

<b>Inventory managements</b>	<b>Analysis</b>
<b>Economic order quantity</b>	The economic quantity of the order or EOQ is a formula for the optimal purchase order quantity for an inventory that contains a variety of parameters, such as gross manufacturing costs, demand levels and other considerations.  It can be a good technique for a General store as the ultimate aim of

## Operation Management

	<p>EOQ is to reduce the costs involved. In order to reduce purchasing, the formulation defines the highest range of product items. The calculation even takes account of the amount of units in the production and storage of the cost structure. In most businesses, this helps unlock linked funds in stock.</p>
<b>Minimum order quantity</b>	<p>On the manufacturer hand, the smallest volume of stock the retailer is prepared to sell is the minimum order quantity (MOQ). When retailers can not afford the MOQ of a company, it will not be offered to retailers by the manufacturer. eg, inventory items of a General store that are more costly to manufacture generally have a lower MOQ than cheaper goods that are simpler and cheaper to manufacture.</p>
<b>ABC analysis</b>	<p>This categorization approach divides topics into three groups in order to classify items that have a direct effect on the product total costs.</p> <ul style="list-style-type: none"><li><input type="checkbox"/> Category A is the most valuable product that makes the most revenue.</li><li><input type="checkbox"/> Category B is the most and least desirable item somewhere in between.</li><li><input type="checkbox"/> Category C refers to small transactions that are critical to overall income but do not matter to the organization individually.</li></ul>
<b>Just-in-time inventory management</b>	<p>Just-in-time (JIT) inventory management is a mechanism that arranges suppliers' ordering of raw materials directly with respect to manufacturing schedules. JIT is an ideal way to minimize inventory cost. Rather of buying unnecessarily and risking dead stocks, a General store can obtain the inventory as required. Dead stocks is an inventory that was never used or used until it was withdrawn from</p>

## Operation Management

	sale classification by consumers.
<b>Safety stock inventory</b>	Managing stocks is an additional stock which is purchased over and above planned needs. This strategy is used to avoid shortages usually due to incorrect forecasts or unexpected consumer demand shifts. This can genuinely help in managing the inventory of a general store.
<b>FIFO and LIFO</b>	LIFO and FIFO are ways of estimating inventory costs. FIFO or First In, first out which means that the older stock is first being sold. FIFO is an outstanding way of preserving fresh stocks. The newest inventory is usually sold first by LIFO, or Last-in, first-out. LIFO helps stop a poor inventory (Gunasekaran <i>et al.</i> 2018).
<b>Reorder point formula</b>	The reorganization point system is an inventory management technique focused on the purchasing and distribution cycles of a business that differ per product. Normally, a rearrange point is greater in lead-time than just an inventory levels number.
<b>Batch tracking</b>	Batch Tracking is an approach for reducing the quality control inventory, where people can assemble and monitor stocks of similar characteristics. This system allows to detect product expiry or trace damaged products back to its original lots like grocery supplies and all in a General store.
<b>Consignment inventory</b>	People are exactly right when they talk of the local shopping now. Shipment stock is a commercial arrangement where a consignor (seller or wholesaler) offers to supply the distribution products without the consignor paying directly for the product to a store (e.g.

## Operation Management

	<p>the favorite consignment shop). The consignor who sells the stock already has the products, and only when they are sold will the consignee pay for those.</p>
<b>Perpetual inventory management</b>	<p>Everlasting inventory management merely counts inventory when it comes. It is the most important form of inventory management which can be manually reported on pen and paper or on a computer.</p>
<b>Dropshipping</b>	<p>Dropshipping is a form of stock management that does not hold items that are sold in stock in a store. If a shop sells, they buy the item from a third party and then have it shipped to the customer rather than pick it from their own stock. The seller never sees the commodity itself as interacting.</p>
<b>Lean Manufacturing</b>	<p>Lean is a wide range of management practices applicable to any company practice. The goal is to increase productivity by removing garbage from everyday business as well as any non-value - adding practices.</p>
<b>Six Sigma</b>	<p>Six Sigma is a teaching service that offers businesses with resources to boost their business performance (increase revenue) and lower over-inventory production.</p>
<b>Lean Six Sigma</b>	<p>Lean Six Sigma strengthens Six Sigma's resources, but concentrates more on growing word optimization and corporate flow.</p>
<b>Demand</b>	<p>Application forecasting will become a popular retailer inventory</p>

## Operation Management

<b>forecasting</b>	management technique. The demand forecast is based on actual sales patterns to estimate the current consumer demand projection. In fact, this is an evaluation of the goods and services a company plans to buy from consumers. And this can be effective for the inventory management of a General store.
<b>Cross-docking</b>	Cross-docking is an inventory management method by which an arriving truck discharges products straight to outbound trucks for JIT delivery. Between delivery services there is little or no storage.
<b>Bulk shipments</b>	Bulk shipments are a cost-effective shipping option when delivering the product all at once.

### Conclusion

Inventory management helps to save money and enables users to meet the needs of clients. In other words, it allows for effective operating cost management. The foundation of the company understands what they have in their warehouse and how to handle the supply chain correctly. The best inventory management concepts are given in the answer for getting a concept about the inventory management of the General Store. Inventory management is indeed a vital thing to look upon as no business can further proceed without a proper inventory management.

### **QUESTION 3**

**3. A prominent caterer is planning to open up a mid sized multi cuisine restaurant. Considering his expertise and knowledge in the food and beverages services, he is confident of getting into a full fledged restaurant operation. You are required to suggest the team on the following points:**

**a. Suggest a site location for the restaurant, assuming it to be Metro city (you can assume a city of your choice). Give your reasons for the same.**

**b. What strategy would the restaurant adopt for an Aggregate Operation Plan of resources given a time frame of a year?**

**Ans: a. Introduction**

The number of food operations grew, from 155,000 about 40 years ago to close to 960,000 today, as more and more people continue to buy and buy home prepared meals. But your food service company still has space on the market. Rising demographic and lifestyles fuel the growth of food-service companies. Time or ability to cook is not open to busy customers. Without the trouble of cooking, they want the taste of fresh bread. Nonetheless, the growing rise of to-go operations illustrates some obvious developments in the restaurant industry. Working parents and elderly people are demanding more and more comfort in the purchase of their food.

#### **Concepts and Applications**

There is no overarching appeal to any single food service project. It is because many young companies find it difficult to embrace, but in fact you can never catch up with 100% of the market. When you're just out to please, you don't please anyone. Instead, concentrate on the 5 to 10 percent of the market, and ignore the rest. The best possible place to open up a restaurant is Hyderabad. The reasons are down below.

- **Sales volume**

Hyderabad is a city region. The demand for restaurants is truly high as it is a tourist spot also. The sales volume is high due to the increased demand.

## Operation Management

- **Potential customers**

Hyderabad is a place in which there is no scarcity of potential customers. Consider how convenient the company would be for consumers. Consider whether or not close companies would produce foot traffic for you if you depend on heavy pedestrian traffic ( Schniederjans et al. 2018). If it is a startup or an established business, it doesn't matter. The needs of restaurants are high right now in the markets of Hyderabad. Though there are optimum numbers of restaurants, due to the large number of customer base the business won't go down.

- **Rent paying capacity**

You will see just how much revenue you expect to earn, and use this knowledge to determine what rent you can afford to pay. Once you've carried out an income and sales forecast over your first year of service. The rent paying capacity won't be a big headache, just because of the huge need of food and a good customer base.

- **Zone to dine**

This is where you make the majority of your money so that when you plan your dining room you do not cut corners. Visit your area's restaurants and evaluate the environment. Look at the diners. Do they react to the decor positively? Is it easy or do people switch in their seats during their meals? Note what's fine and what's wrong. Hyderabad won't disappoint you.

- **Place of production**

Far too often inefficient nature of the processing area in a restaurant – the result is a poorly structured cuisine and less than high-quality service. But Hyderabad has plenty of production areas. Choose your menu, as each item in the production area will be decided. There is a room for receiving, processing , food planning, cooking, baking, washing sink, manufacturing aisles, trash storage, staff facilities, a small office space, where you can execute day-to-day management activities (Holweg *et al.* 2018).

## Conclusion

Hyderabad, a city full of joy can heartily accept a new restaurant. The best place to proceed for the future. Keeping in head all the aspect, considering all the measures, the restraurant should be opened and can definitely achieve all they want.



## Operation Management

### b.Introduction

Some of the most difficult aspects of operating the manufacturing business is how much is to be made, where and when supplies are to be ordered. If the item fails to meet orders, purchaser confidence destroys, but over-supply is dangerous for a number of reasons. As a corporate executive, consider the different approaches to find the best way to plan and manage your growth. Every business needs to follow and maintain a strategy for an Aggregate Operation Plan of resources given a time frame of a year. As per the question, the restaurant should maintain the chase strategy for an Aggregate Operation Plan of resources given a time frame of a year.

### Chase strategy

The great benefit of a chasing approach is that the inventory can be kept at the lowest possible cost, and the savings for certain businesses are important. Many businesses that embrace the principle of just-in-time output use a policy in pursuit in aggregate preparation. Options for increasing or decreasing the ability to satisfy market demand include:

#### ❑ Hire or lay off

Organizations may maintain a balance between skills and demand by adding additional staff as needed or laying off staff not currently necessary to meet demand.

#### ❑ Overtime

If employees are requested or expected to work extra hours a day or one additional day a week, employers may be able to offer temporary capacity increases without the added cost of adding other staff.

#### ❑ Part-time or casual labor

Through utilizing temporary staff or seasonal workers (staff who are considered regular but only work on a call-up basis , usually without full time benefits).

#### ❑ Inventory

## **Operation Management**

The stock of finished products can be developed in slow demand times and then used throughout peak times. It requires no hiring of new employees, no seasonal or seasonal jobs and no overtime.

### **❑ Subcontracting**

Industries are also willing to sell a product or service to their clients of the contracting company through another supplier or service provider. Additional capacity is partially gained by subcontractors to an external source (Anand. and Gray, 2017).

### **❑ Cross-training**

Cross-trained personnel could carry out tasks in different operations , allowing flexibility in the planning of resources.

### **❑ Other methods**

While various sizes and uses of the workforce are well known, there are also many, emerging applications in business, such as product development / backlogging and subscription services. Such methods include the exchange and the discovery of interesting and important tasks by workers in times of slackness with counter-cyclical businesses.

## **HYBRID STRATEGY**

Most businesses find it advantageous to use the degree and pursuit approach in conjunction ( Meredith and Shafer 2019). A mixture strategy (sometimes referred to as a hybrid or mixed strategy) may be defined to help accomplish organizational goals and policies and to cost less than one of the pure and separately used approaches. A Level-Chase approach takes an intermediate course and the main points are:

- Construction of inventories in anticipation of rising demand and using reverse orders for peak rates. Minimize inventories of finished products by keeping up with changes in demand.
- The related demand varies from one point to another, or from another.
- Employees lay off during downtimes

## **Operation Management**

- Growing or hiring temporary employees covering short-term peaks Allocate employees during downtimes to routine maintenance

## **Conclusion**

The restaurant should maintain the chase strategy for an Aggregate Operation Plan of resources given a time frame of a year as, chase strategy requires matching demand and time for time. This could lead to a large number of workers being hired, fired or laid off; inefficient and miserable jobs; growing inventory carrying costs; labour issues; and the misuse of equipment and facilities. This also ensures that the organization has a lot of flexibility.

### References

Hitt, M.A., Xu, K. and Carnes, C.M., 2016. Resource based theory in operations management research. *Journal of Operations Management*, 41, pp.77-94.

Benjaafar, S. and Hu, M., 2020. Operations management in the age of the sharing economy: what is old and what is new?. *Manufacturing & Service Operations Management*, 22(1), pp.93-101.

Gunasekaran, A., Dubey, R., Fosso Wamba, S., Papadopoulos, T., Hazen, B.T. and Ngai, E.W., 2018. Bridging humanitarian operations management and organisational theory.

Holweg, M., Davies, J., De Meyer, A., Lawson, B. and Schmenner, R.W., 2018. *Process theory: The principles of operations management*. Oxford University Press.

Anand, G. and Gray, J.V., 2017. Strategy and organization research in operations management. *Journal of Operations Management*, 53, pp.1-8.

Schniederjans, M., Schniederjans, D. and Cao, R.Q., 2018. Topics in lean supply chain management. World Scientific.

Meredith, J.R. and Shafer, S.M., 2019. Operations and supply chain management for MBAs. John Wiley & Sons.