**LSCM MODULE 5 UNIT 5.2**

**CRITERIA / FACTORS CONSIDERED FOR THE BEST WAREHOUSE LOCATION**

Choosing an accurate location for the warehouse is one of the most critical decisions to make. Need to have a proper plan with all the right pointers for choosing a location. This can make a difference in the efficiency of the company. The right location can fetch all the positive aspects that can make the company credible, understandable, and profitable. Purchasing a suitable warehouse for the company is one of the major decisions and choosing a warehouse location for it can effectively enhance the company’s ability to serve its customers better.

Deciding the location for a particular warehouse is a major task that is directly proportional to the success of the organization. Warehouse location means the location that is most suited for the company that will add up to their benefit. This location is carefully chosen by taking all the required criteria into context. Certain factors are to be kept in mind while making the monumental “warehouse location decisions”. The most suitable location is those that maintain an integral balance between its convenience and a price rate that is reasonable. There are many factors affecting warehouse location but there are certain critical pointers that one should always consider:

1. Rent, Rates & Taxes
2. Workforce availability, Labour Skills & Costs
3. Roads, Highways & Traffic flow
4. Proximity to Airport, Railway Stations & Ports
5. Markets & Local Environment Factors
6. Building availability & utility Costs
7. Supply Chain Logistics

When choosing the best warehouse location, consider the location of supply chain partners. Strategic site selection helps boost efficiencies and reduce costs and delivery times. This helps attract more potential partners to the business. If goods are importing from international suppliers or shipping goods overseas, the warehouse site should be accessible to nearby ports.

1. Storage Requirements

If the business are of handling hazardous, flammable materials or food products, make sure the warehouse meets the strict storage and firefighting requirements. Chosen location should be able to handle the unique needs. Also, ascertain environmental concerns. Are there ponds, streams, and other water resources in close proximity? Answering these questions helps prevent disaster in the future.

1. Customer base and zoning

While considering this factor you need to determine the intensity of the operations that are going to be conducted in the organization and what future it holds. If your organization requires light assembly, then you can ahead with choosing a location with much lesser intensive use. However, some other factor that can also affect the zoning is noise levels, emissions, and outdoor storage availability. These elements also target the districts that you will consider for conducting future operations.

1. Rules and Regulations

Before you go on buying the warehouse, you should be aware of all the rules and regulations along with the legal aspects prevalent in that particular area. Many areas do not allow the storage of certain items. It is always recommended to avoid the goods that are not allowed to avoid any future problems. You should abide by the rules and regulations of the area if you want to conduct a hassle-free and successful business in that particular area.

1. Access to the Latest Technology

Technology is critical in a warehouse environment for a number of reasons. First, it helps to automate and streamline warehousing operations, which can boost efficiency and productivity. Additionally, technology can help to improve accuracy and reduce errors in the supply chain processes. And finally, technology can help to improve communication and collaboration within the warehouse, which can further improve efficiency and productivity. Warehousing companies in Gurgaon and in other developed regions employ ultra-modern technologies and software solutions to deliver extraordinary results with fewer to no errors. This also helps businesses to track and manage their inventory levels, delivery times, and labor costs.

When choosing a warehousing facility, it is important to consider the technology that is available. A warehouse with an outdated or insufficient technology infrastructure will likely be less organized, systematic, and productive than a warehousing facility with a state-of-the-art technology infrastructure. So be sure to ask about the technology capabilities of any warehouse you are considering before making a decision.

1. The Layout of the Warehouse

There are several considerations to take into account when choosing a warehouse location. Among them, size and layout are two of the most important. The size of the warehousing facility should be based on the needs of the business. If business has a lot of inventory, then it needs a larger space. If it has a smaller operation, then get by with a smaller space. However, it is important to consider future growth when choosing a warehousing location. Not possible to move again in a few years because business outgrew your space. The layout of the warehouse indeed essential. There are many different storage options, and the best one for the business will depend on the business specific needs. Make sure that the layout is efficient, well-designed, and organized.

**Conclusion**

Choosing a warehouse location is a very important aspect of any business. The warehouse is the integral part where the flow business is determined. When you are selecting the location, you need to make sure that you are considering all the critical aspects of the location that are mentioned above. The location can make a huge difference in your business. It can make your business the most successful as well as can drive it towards failure. If the warehouse is not sufficient or suited enough then the business may not see the light of success. As the warehouse is the most critical aspect of every business venture, it is important to decide upon its elements carefully and with full consideration of all its plausible factors. Choosing the most suited location for the warehouse cannot guarantee success, but it can go as far as to reduce the chances of failures.

**WAREHOUSE LAYOUT**

A warehouse layout is the planned design of a warehouse to streamline overall operations. The right layout should help to improve the flow of production and distribution. In other words Warehouse Layout refers to both the physical structure of your warehouse and the many components within it. Proper warehouse layout ensures that workers have enough space to operate at maximum capacity. Additionally, optimal warehouse layout leads to smoother inventory flow and less wasted time.

Warehouse layout options to consider include U-shaped, I-shaped and L-shaped patterns. A U-shaped warehouse product flow is the most common type of layout. A warehouse layout design is the floor plan of your warehouse that’s created at scale. It also clearly outlines the functional areas of your warehouse, their purposes, and any free space. The warehouse layout design you use depends on your products’ needs and the amount of anticipated monthly product volume. The objective of warehouse layout is to find the optimum trade-off between handling cost and costs associated with warehouse space. Consequently, management’s task is to maximize the utilization of the total “cube” of the warehouse—that is, utilize its full volume while maintaining low material handling costs.

**PRINCIPLES TO CONSIDER WHILE DESIGNING YOUR WAREHOUSE LAYOUT**

There are several basic principles that apply to warehouse layout design and running an effective distribution center operation. Without the proper layout and design of your distribution center, no matter the square footage, you will face capacity issues, decreased productivity, and storage inadequacies.

1. Budget Considerations

Before starting with the design of your warehouse layout, it is essential to assess all your business requirements, review associated budgets, and then plan the layout accordingly. During this process, you might come across some layout designs that are more comprehensive and expensive than others, but it is recommended that you consider the most suitable and cost-efficient solution for your warehouse.

1. Space Available

Effectively utilizing the warehouse space available can help improve inventory visibility, reduce travel time, and increase overall operational efficiency. When designing your warehouse layout, it is crucial to allocate maximum space to storage and inventory processing purposes while minimizing space for office areas, empty pallets, charging stations, etc. Additionally, how you decide to allocate space will impact shelving designs, installation capacity, and placement of goods inside your facility.

1. Flow

Ensuring the uninterrupted flow of goods, personnel, and equipment is vital to consider in the design layout for the smooth functioning of your warehouse. You can avoid inefficient routes and disruptions by strategically planning your warehouse layout design so as to facilitate each operation in a sequential manner.

1. Accessibility

While planning your warehouse layout, it is crucial to ensure easy accessibility to all the areas and products in your facility. The layout should be designed in a way that makes it easy for personnel to navigate throughout the facility while conveniently locating and picking items without having to move other products. As a result, your productivity can be enhanced and orders can be fulfilled at a faster rate.

1. Equipment

The use of different types of equipment in your warehouse, such as lifting & packing tools, pallet racks, or conveyors, can influence the layout design. By identifying the equipment needed, you can evaluate and design the most suitable layout according to your requirements and boost the productivity of your facility.

1. Throughput

Throughput in a warehouse refers to the number of products that are processed and moved through various warehouse processes such as receiving, putaway, storage, picking, packing, and shipping. By collecting and analyzing this data, you can design a layout to ensure an efficient flow of goods and accommodate the necessary equipment for your warehouse.

1. Personnel

Knowing the number of people required, their current levels of training and shift timings, and other related factors can help you design your warehouse layout in a way that doesn’t limit your workforce’s productivity. Also, the layout must be planned in a manner that can safely accommodate new employees and their needs in the future.

1. Authority Guidelines

While designing your warehouse layout, it is critical to comply with the guidelines provided by the local authorities. Abiding by these guidelines not only ensures the safety of your workers, equipment, or other valuable assets but also helps you avoid fines and legal problems for your business.

Selecting the most suitable warehouse layout design for your facility is crucial to ensure the optimal utilization of resources.

**MATERIAL HANDLING**

Simply put, Material handling, often called material movement, material handling is the short-distance movement of goods either within a building or between a building and a transportation vehicle. It includes activities such as loading and unloading trucks, placing individual items on pallets to make unit loads, retrieving products from shelves to be shipped out, and much, much more.

Material handling takes place throughout the supply chain. Raw materials must be received before they can be used to manufacture finished products, which then need to be moved and prepared for shipment. They are consolidated into units and loaded onto trucks for transportation. Once they arrive at warehouses, they must be unloaded, processed and placed on racks for storage. And finally, when they are needed, they must be taken out of storage and prepared for distribution.

Material handling can be used across industries, but is typically utilized in warehousing, where goods need to be securely stored, retrieved, and shipped.

Material handling equipment utilizes manual, semi-automated, and automated equipment to assist the movement and storage of materials within the warehouse.

Material handling is a systematic and scientific method of moving, packing and storing of material in appropriate and suitable location. The main objectives of material handling are as follows:

It should be able determine appropriate distance to be covered.

Facilitate the reduction in material damage as to improve quality.

Reducing overall manufacturing time by designing efficient material movement

Improve material flow control

Creation and encouragement of safe and hazard-free work condition

Improve productivity and efficiency

Better utilization of time and equipment

**IMPORTANCE OF MATERIAL HANDLING**

Materials need to be handled carefully at every step of the supply chain to make sure they arrive at their destinations intact. A material handling system should be put in place to optimize the movement of goods and materials around manufacturing and storage facilities.

A well-designed material handling system can improve customer service, lower costs and reduce the risk of accidents and damage. With a material handling system in place, products will be easier to find, orders will be filled more accurately, and there will be fewer worker accidents and injuries.

**BENEFITS OF MATERIAL HANDLING**

An effective material handling system allows your company to have the necessary stock in smaller spaces where possible, reduce time spent on internal operations (such us transport and picking), control inventory in real-time, reduce operational costs and optimize the overall flow of goods in your facility.

1. Prevents Workplace Accidents

With materials handling systems and the proper equipment, employees aren’t required to lift heavy items and reach high storage areas.

2. Improves Employee Satisfaction

Job discomfort causes frustration, low morale and loss of motivation in employees.

By utilizing materials handling systems, employees are released from labor-intensive (for example, lifting heavy items) and monotonous tasks that will help them reduce stress levels and achieve overall satisfaction with work.

3. Increases Productivity and Efficiency

Want your employees to focus on more pressing tasks such as quality control assurance?

Material handling equipment can help your employees transport, locate, and pick inventory, allowing them to be more competent and productive with other tasks.

4. Saves You Money

To prevent spending more on equipment damage, invest in quality solutions and educate your employees on the proper equipment maintenance.

**PRINCIPLES OF MATERIAL HANDLING**

1. Planning: All material handling operations should be carefully planned to optimize efficiency.
2. Standardization: The methods, equipment and software needed for material handling should be standardized without compromising flexibility.
3. Work: Material handling work should be simplified as much as possible to improve productivity. Unnecessary movement should be eliminated by shortening routes, moving multiple products together, etc.
4. Ergonomics: The capabilities and limitations of humans should be considered when planning material handling tasks and ordering equipment in order to protect worker safety.
5. Unit load: Individual items should be consolidated into unit loads (e.g. on pallets) to optimize movement efficiency.
6. Use of space: Use all available space effectively and efficiently. Keep storage areas organized and make the most of vertical space.
7. System: All material handling activities should be coordinated to form a single integrated operational system.
8. Automation: Material handling operations should be automated or mechanized wherever possible to improve efficiency and worker safety.
9. Environment: Material handling systems should be designed with environmental impact and energy consumption in mind.
10. Life cycle cost: Material handling equipment and systems should undergo thorough economic analysis that accounts for their entire lifecycle.
11. Orientation Principle: It encourages study of all available system relationships before moving towards preliminary planning. The study includes looking at existing methods, problems, etc.
12. Energy Principle: It considers consumption of energy during material handling.
13. Ecology Principle: It encourages minimum impact upon the environment during material handling.
14. Mechanization Principle: It encourages mechanization of handling process wherever possible as to encourage efficiency.
15. Flexibility Principle: Encourages of methods and equipment which are possible to utilize in all types of condition.
16. Simplification Principle: Encourage simplification of methods and process by removing unnecessary movements
17. Gravity Principle: Encourages usage of gravity principle in movement of goods.
18. Safety Principle: Encourages provision for safe handling equipment according to safety rules and regulation
19. Computerization Principle: Encourages of computerization of material handling and storage systems
20. System Flow Principle: Encourages integration of data flow with physical material flow
21. Layout Principle: Encourages preparation of operational sequence of all systems available
22. Cost Principle: Encourages cost benefit analysis of all solutions available
23. Maintenance Principle: Encourages preparation of plan for preventive maintenance and scheduled repairs
24. Obsolescence Principle: Encourage preparation of equipment policy as to enjoy appropriate economic advantage.

Material handling operations are designed based upon principles as discussed above. Material handling equipment consists of cranes, conveyors and industrial trucks.