



Scalable Warehouse design for E-commerce industry – Stellium Approach

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OVERVIEW OF SCALABLE WAREHOUSE DESIGN FOR E-COMMERCE INDUSTRY

Capabilities Created

Detailed warehouse design, evaluation and end to end implementation to meet the Client's growing user demands.

Summary

The client is in the process of setting up multiple warehouses across India to handle the burgeoning demand and realized the need for a comprehensive and flexible warehouse design. Stellium evaluated multiple warehouse designs on the basis of feasibility, scalability, and modularity and engineered a new approach for a flexible warehouse design.

About our Client

The client is one of the most prominent players in the Indian E-commerce industry with revenues of over billion dollars. The client has over 20 million products in more than 50 categories and caters to a registered user base of more than 20 million online shoppers.

The challenge

Online retail industry has witnessed highly unpredictable demand in recent times. The competition has paved the way for players going for frequent promotions in order to maximize customer base and to capture market share. However, this had led to tremendous pressure on the supply chain in general, and warehouses in particular, which form the back bone of these organizations. The challenge here is to remain lean while addressing demand variations, at the same time maximizing asset utilization.

Key Highlights

Rapid growth and cut throat competition in E-commerce space has led to **Warehouse Design** acquiring strategic importance. Unprecedented and unpredictable demand in this sector has culminated in companies realizing the importance of being lean and adaptable. Scalability of warehouse design is a major differentiating factor and companies with flexible design gain competitive advantage.

Scalability calls for capability to cater to rapid variations in demand at short notice. This capability can be achieved through

- a) Mechanization
- b) Planning for larger facilities

However, planning for larger facilities is expensive – often inefficient and incapable of achieving quick Turn-Around-Time (TAT) expected in this industry. Hence mechanization is the solution to issues that have been plaguing this sector in recent times.

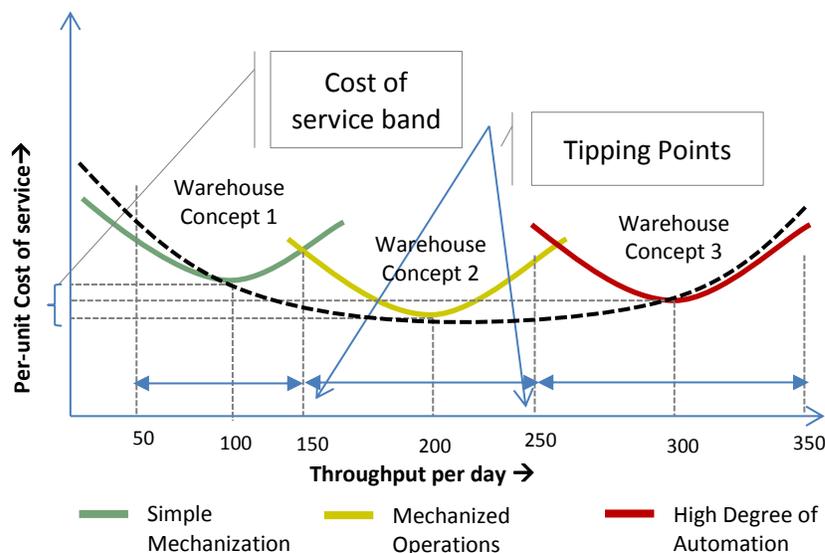
Stellium Consulting Pvt. Ltd. has been able to address these challenges effectively through conceptualizing varying degrees of mechanization for warehouse depending on the growth rate of the client’s business.

Stellium adopted a three pronged approach to achieve this

1. **Discovery:** The effect of demand variation on the warehouse throughput levels and the cost associated with servicing such variations were monitored.
2. **Concept Design:** Stellium developed various design concepts based on different levels of mechanization. A band of indifference between different design concepts was calculated comparing their operational costs. The band of indifference indicated the range where the cost of transition nullified the utility of mechanization. The points of transition to alternative concepts, indicating the need for increasing mechanization, were identified.

For example : In the chart described below, for throughput less than 150 units per day simple mechanization leads to the lowest per unit cost of service. Between 150 and 250 units per day, mechanized operations is most optimal. For throughput beyond 350 units per day, a high degree of mechanization is desirable.

Concept Development: Automation vs. Cost to Serve



Design recommendation: The mechanization for the current operations was determined by utilizing ready-to-use design models using mean throughput data as the primary input. What-If analysis was performed on the ideal design by varying the throughput levels, based on the forecasted growth in demand. It was evident from the analysis that with increase in demand variations, the degree of mechanization in warehouse should also increase to maintain service levels.

Other design concepts were also evaluated taking into account, the probability of demand fluctuation, budget and the desired customer service level. Finally, Stellium recommended a flexible design approach with higher capability to absorb and cater to the demand variations.

The Outcome

- Flexible warehouse design after evaluating multiple concepts on the basis of volume sensitivity and cost levers
- Robust design approach catering to rapid variations in the client's demand



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