International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 05 Issue: 01 | Jan - 2021 ISSN: 2582-3930

Hub and Spoke model and its impact on efficiency in Logistics

Ameya Nisal

Tilak Maharashtra University

The business scenarios today are adopting more and more smarter models for execution and implementation which would result in a perfect co-ordination and thereby result in the complete efficiency of the organization.

Logistics contributes towards a key A key parameter in business industry today. hence the hub and spoke model and its evolution resulted in far more deep impacts across the world. logistics is the pivotal .4 the business efficiency and also carries out a fairly large percentage of the overheads for selling goods.

the details of hub and spoke model can be studied by an understanding of the definition of hub and spoke model, and the evolution of this model.

the model can be summarized as a centralized distribution through “hub “and final notes of distribution as spokes .in logistics this can be termed as the final point of delivery or the last mile delivery.

Hub and Spoke v/s Point-to-Point model

If we compare the two models you would understand that earlier point-to-point model was more effective in delivery models. however, in the hub and spoke model, though it accounts for a large deal of planning and management, the efficiency of hub and spoke model is far greater than the earlier one. the costing of hub and spoke model is also relatively cheaper and results in lesser cost of goods transportation.

The aviation industry heavily uses the hub and spoke model 2 ensure the transportation off material people and goods from a starting point to define destination point through a consolidated efficiency and management tracking of the model.

the model is being creatively used in different other arenas like -social media management, project management and similar industries.

The key benefits of the model are:

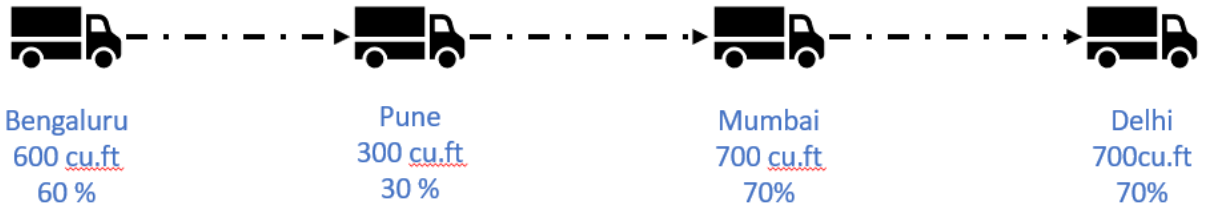
- **A movement which is continuous:**An uninterrupted movement of the logistics results in the reduction of the point of losses. The movement becomes extremely efficient and thus can result in the enhancement of logistical network efficiency and can avoid any gaps in the same.
- **The halt time is decreased:** An older version of the logistics entailed work to be done in a staggered format. The halt time was an integral part of the logistics model. This halt time is poised to be decreased and hence logically resulting in increase of the efficiency.
- **Cost reduction**: The model focuses on the efficiency and the performance done with the maximum utilization. This results in the cost reduction to the fullest extent in the larger perspective.
- **Productivity Improvement:** Because of an uninterrupted supply of raw material as well as outreach of finished goods, the productivity of the goods manufacturing is also increased significantly.
- **Decreasing carbon footprint:** A comprehensive analysis of the model gives us insights that the model results in decreasing the carbon footprints of the complete movement and thereby contributing towards a greener movement.
- **Pricing finalization:** The predictability in the movement increases due to efficiency of the model. This also results in a predictable pricing finalization of the logistics and thereby the complete transportation

Logistics Industry Model Analysis:

For an example of the aggregation explanation, a real-life example was analyzed to analyze the efficiency of the movement, time and costing.

A 1000 cu.ft vehicle was analyzed for home goods transportation from Bengaluru to Delhi. The route is via Pune and Mumbai. Now the vehicle is being scrutinized of conveying the right material to the destination.

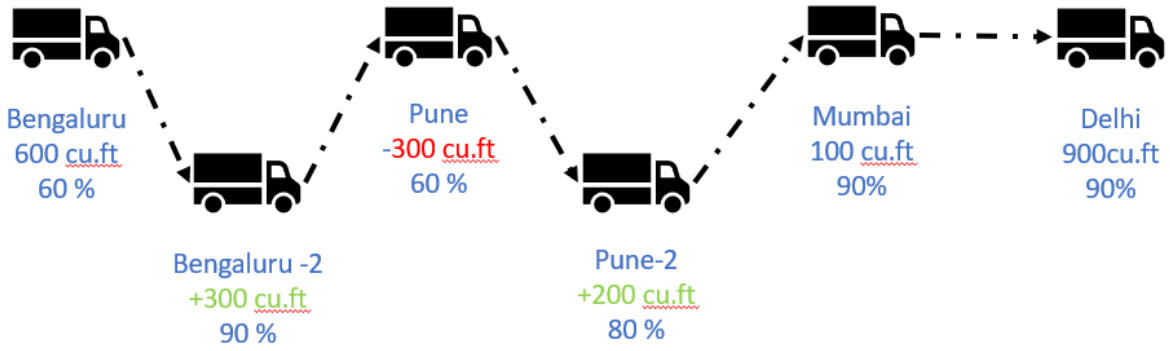
In the first instance the vehicle filling from Bengaluru needs to be finalized.Lets assume that the vehicle gets 60% full. Hence the material filled is only 600 cu.ft.



The vehicle will ply from Pune to Mumbai with 30 % capacity to Mumbai. The vehicle would get 500 cu.ft material loaded from Mumbai which would be sent to Delhi. Hence in total the vehicle is operating currently at maximum of 70 % occupancy.

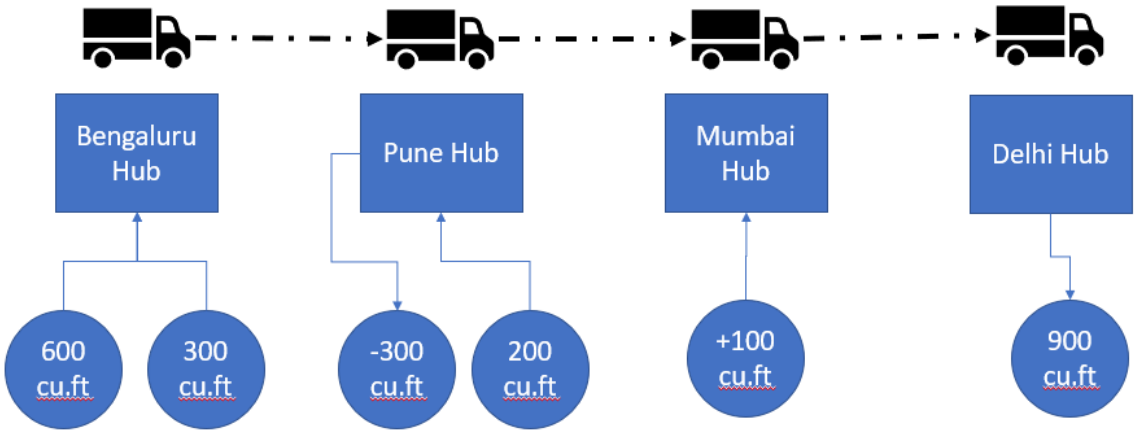
If the vehicle needs to utilize itself completely it would need to take intermediate stops to ensure the vehicle operates at full capacity. However as per the traditional method, the vehicle would need to increase its cost by increasing stops.

A classic example:



If the vehicle needs to ply at minimum of 90 % occupancy, the vehicle needs to ensure it has a fill of at least 800-900 cu.ft material loaded out of 1000 cu.ft capacity. The material needs to be picked up from various locations in the same city. In the example above, the vehicle needs to move within Bengaluru and Pune to two locations each, in order to ensure that the material in filled. This exercise would not only increase the movement cost, but also increase the time, halts and thereby increasing overall overheads of the movement.

The same capacity can be filled by using a hub and spoke model wherein the material can be collected at one point per city and the model can be executed.



Each city will have its hub to be created which will the loading and uploading point for the truck. This point is the point from where the city specific transport is taken to ply of deliver the goods within the city.

This model not only ensures the delivery efficiency as the vehicle intercity route is not disturbed, but also ensures the reduction in costs as the delivery model does not increase costs and overheads due to halts and internal material transports within a city.

Hence the Hub-spoke model ensures efficiency increase with a significant reduction in costs.

References:

1. https://www.fleetmanagement.ae/blog/importance-of-hub-spoke-distribution-model-in-modern-telematics/
2. Ahuja, R.K., Magnanti, T.L., Orlin, J.B.: Network Flows. Prentice Hall, New York (1993)Google Scholar
3. https://medium.com/@flexspace/how-the-hub-and-spoke-warehousing-model-will-transform-the-transportation-industry-of-india-post-accab58a59ab
4. https://transcendent.ai/blog/inventory/why-convert-distribution-to-a-hub-and-spoke-model/