

A Probability design to manage resources

Drive efficiencies at optimized resources

One of the top 10 Logistics Companies in the world manages its Export Operations through Probability Distribution Models. The models helped the operation manager to maximize the use of labor and its related resources and minimize the costs of labor and its corresponding resources. Inefficiencies in work load and time management were eliminated. The Probability Distribution Study suggested a uniform spread of labor resources based on the activities in the warehouse. In addition, the study also explained the labor and shipment activity patterns for better decision making of its operations and its resources.



Business Challenge

The resources in the Export Operations have not been utilized well, whereas the Imports and the Logistics Operations were swamped with work load. The task was to effectively manage the work load, the time, the forklift usage and the labor resources. The export process was to receive the shipment, validate the shipment specifications, on hand the shipment and store the shipment on to their respective bins. And when the Transport Orders come through, they get consolidated onto their respective Destination Based Consolidations. The frequency of the consolidations to the same destination varies from one destination location to another. For example, Shanghai can have a consolidation almost every day as opposed to Tokyo. Furthermore, since shipment activity played a very big role in this project, the study was also to find out if there existed a pattern to the Shipment Activity on a day to day basis.

Solutions

There was a huge debate about the way to attack this issue. Finally, the Operations Consultant team decided to use Probability and Statistics to come up with a plan to study the Shipment Activity and its relationship with the operational processes. The study was to find out if there existed a pattern in the Shipment Arrivals. Now, the challenge was to find out the type of Probability Distribution this Shipment Arrival rate belonged to. Due to the nature of the Shipment Activity, this belongs to a Poisson Distribution. So the team decided to study the patterns of the Shipment Activity through Poisson



“ The Business

Challenge was the lack of understanding of the Shipment Activity and a lack of understanding of Shipment-Resources

Distribution. The Discrete and Continuous random variables were chosen and the Mean was calculated to populate the Poisson Distribution. The Shipment Activity was studied for each and every day of the week using the Poisson Distribution.

The following table is the Description and Nomenclature of the Labor Degree Scenarios. Fig 1.1 is the result of the Poisson Distribution Study. This is a clear depiction of the Labor Trends for a week in the Export Operations. The Trends also compare against the Sessions on a particular day.

Needed Labor Degrees	Desc.
0	No Labor
1	Minimal Labor
2	Average Labor
3	Maximum Labor

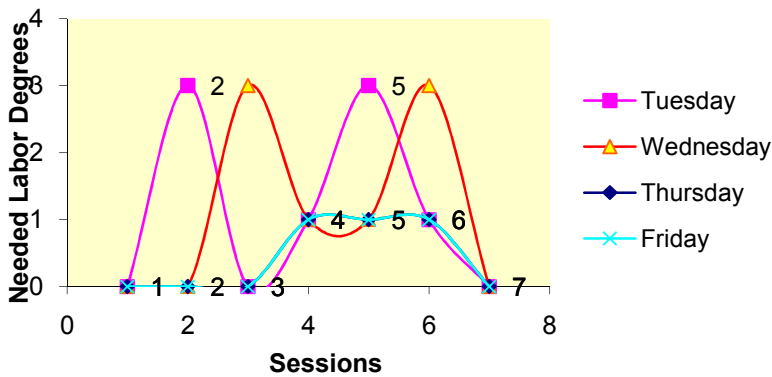


Fig 1.1

Impact

- Effectively manage the work force to increase productivity.
- Increase or decrease the work force (Temporary Workers)
- Efficiently schedule work hours.
- Route the labor resources to other departments.
- Route the labor resources for other tasks such as labeling and pulling out freight.
- To accurately predict the lunch hours and break hours.
- Consolidate the work (In a session, a team should have at least a decent # of Skids to work on as opposed to processing just a few shipments and being idle until the next shipment arrives).
- Be more proactive and route the resources as needed.

Relationship.”

“ The Probability Study brought about a solution to effectively manage the workforce productivity, Resource scheduling and alternative resource Routing strategies.”

Conclusion

There is a clear understanding of how effective resource management can save labor and utility costs by way of maximum utilization. Through this, it is certain that we can also increase productivity and make sure that our resources are not wasted in anyway. Furthermore it is also evident that how Probability Distributions Functions can help the Decision Making process in an organization.

