

## Basics of Supply-chain :-

→ Apply  
motor competition  
Carriers.

How many Warehouses we need.

Few

many.

very costly  
accessible.  
to customer.

(Hoarding all items  
at one place).



less risk.

(less safety stock).

⇒ Center of gravity approach.

↓  
Don't hoard all ATMs at

all location.

Some times transportation made it  
first becomes storage).

Square root law.

Rule of thumb for estimating

Change in over all inventory.

as a result of changing warehouse.

$$X_2 = \sqrt{X_1 \cdot \frac{N_f}{N_e}}$$

Where

- $X_1$  = Existing inventory.
- $N_f$  = No. of future warehouses.
- $N_e$  = No. of existing warehouses.

factors influence logistic network.

high service  $\leftrightarrow$  more expensive.

(Cost vs Service).

Pick minimum cost & gives best customer service.

(interest rates & fuel also contributes).

↓  
It intuit rates impacts the cost of holding inventory.  
if fuel cost goes up the overall cost goes up.

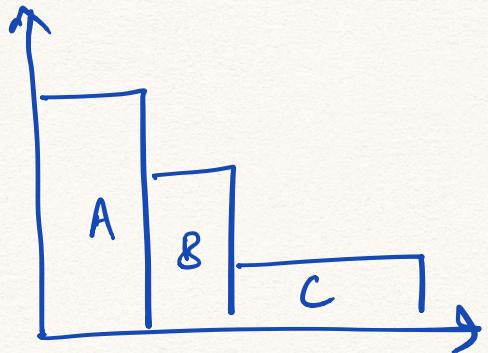
— logistic services.

Hold keeping units (SKU).  
Note:- you need to make for Not delayed to customer.

Keep (toll rate) high.

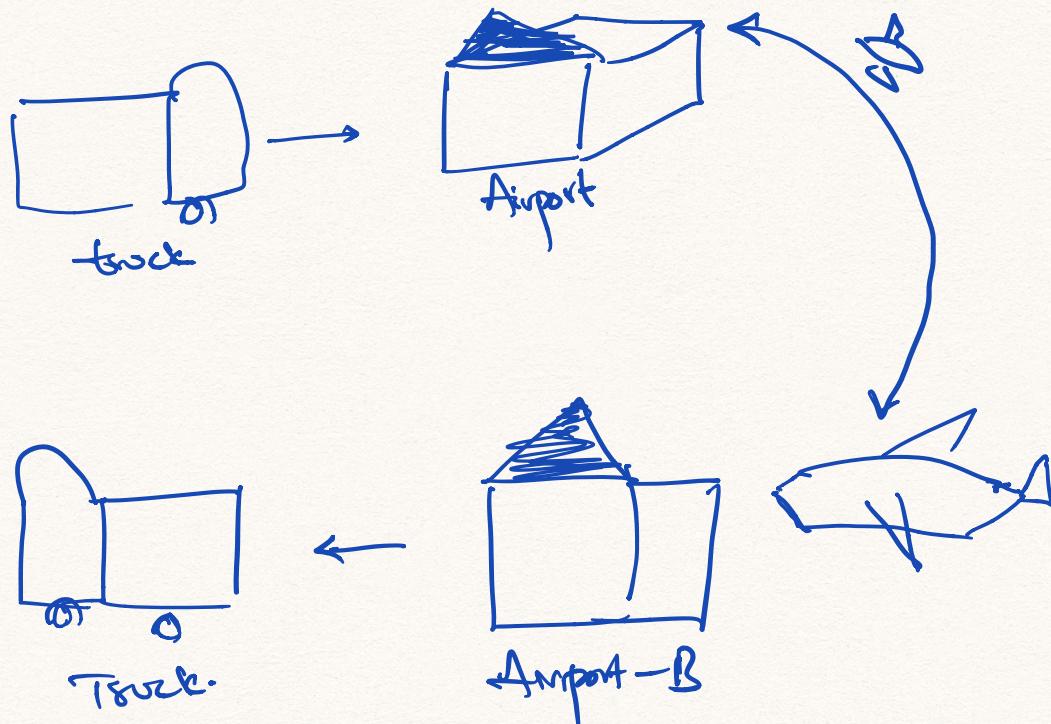
SKU → some  
↓  
A

Sell a lot & some others  
B | C.



## flying freight

- \* Speed: (Emergency shipments). ↗ Biggest expense is fuel cost.
- \* Highly competitive (highly variable). ~\\$500 - for different planes.
- \* (All cargo) → (Mostly for logistics).
  - or Belly cargo - Commercial plan
  - \* Narrow planes.



## Air Carriers.

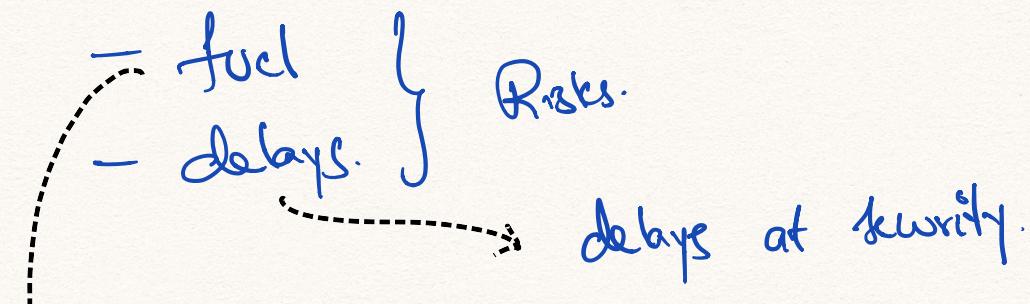
①. All-Cargo → TL  
\* whole plane

②. Commercial Article - LTL

Weight is tricky.

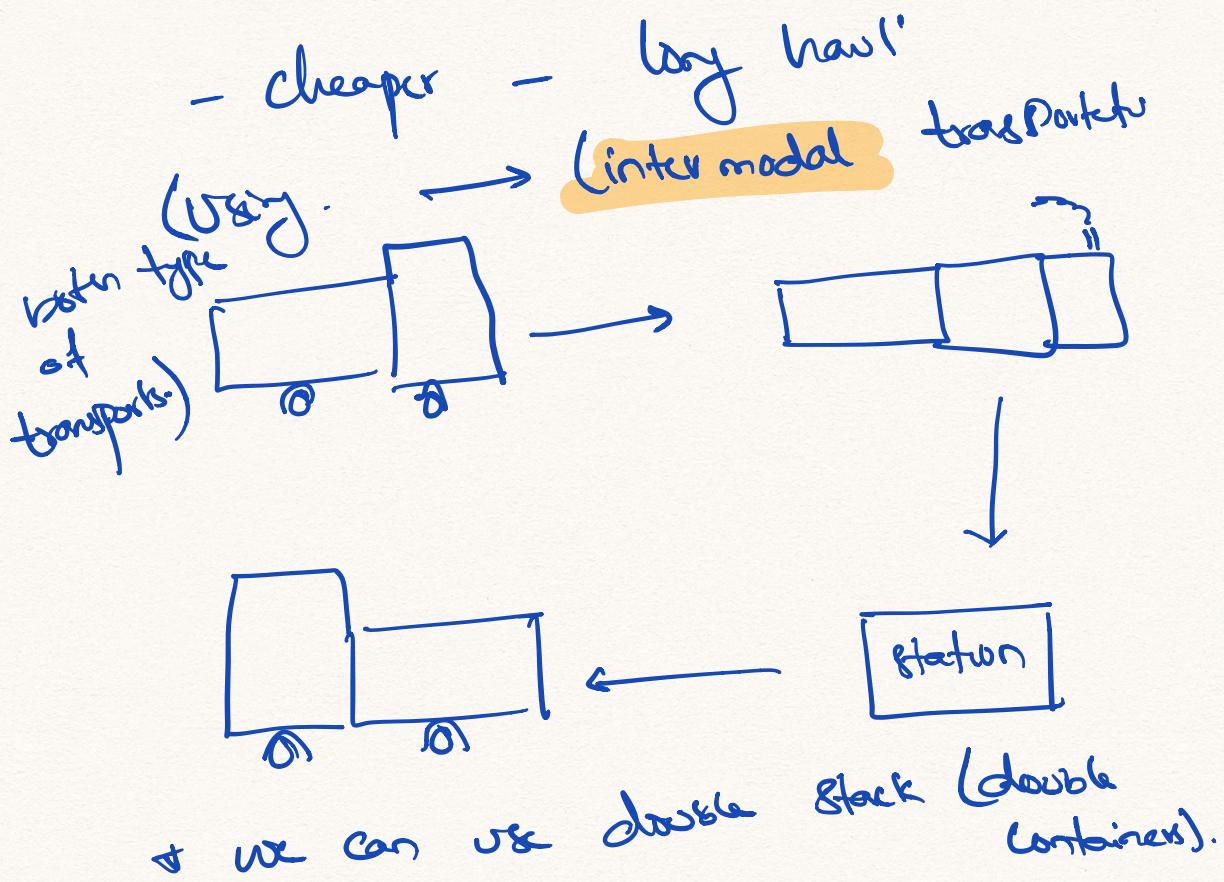
(But also associates with density).  
i.e. it is heavier you pay weight

it is Bigger you pay by Volume.



Normally they hedge the fuel prices.

## Container on a train.



Express delivery

+ have local network of terminals.

2) Companies having warehouses.

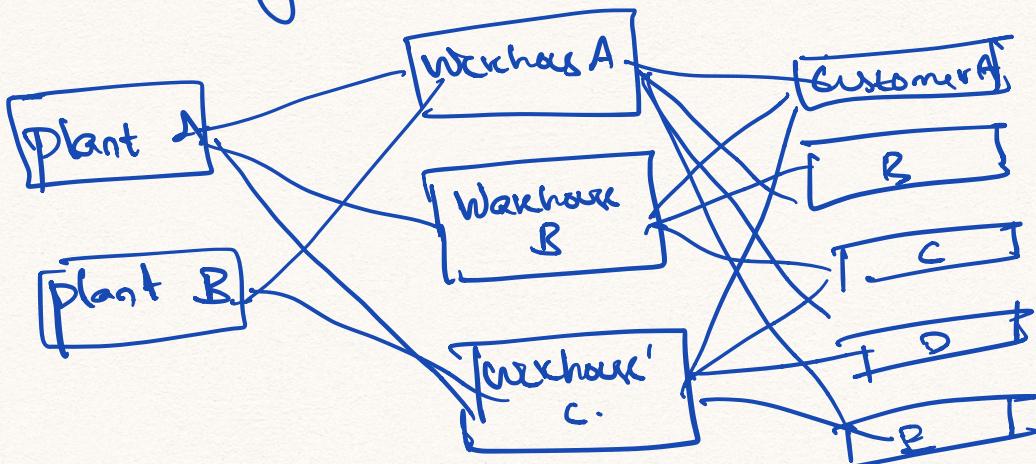
①. Efficiency.

- Holding inventory.

②. Risk Pooling.

③. Service lvl.

Eg: Distributing with warehousing.



advantageous.

### functions of warehouse.

- (1). Movement.
- (2). Storage.
- (3). Information.

2) What makes a warehouse real good?

- (1). Speed.
- (2). Quality.
- (3). Productivity.

\* designing a warehouse



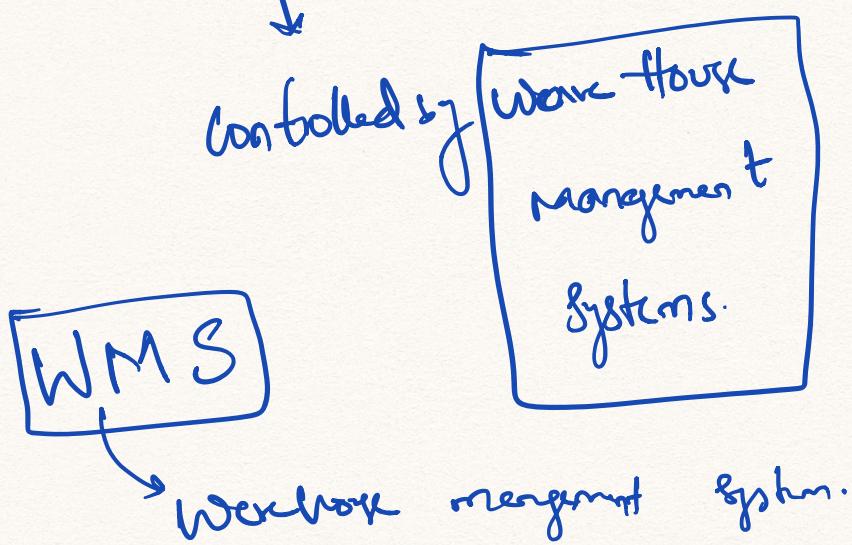
\* shortest distance

(Items that are selling the most).

bent are placed close  
to shipping dock).

- \* Quality (Don't send wrong product).
- \* Throughput.

⇒ Warehouse process:

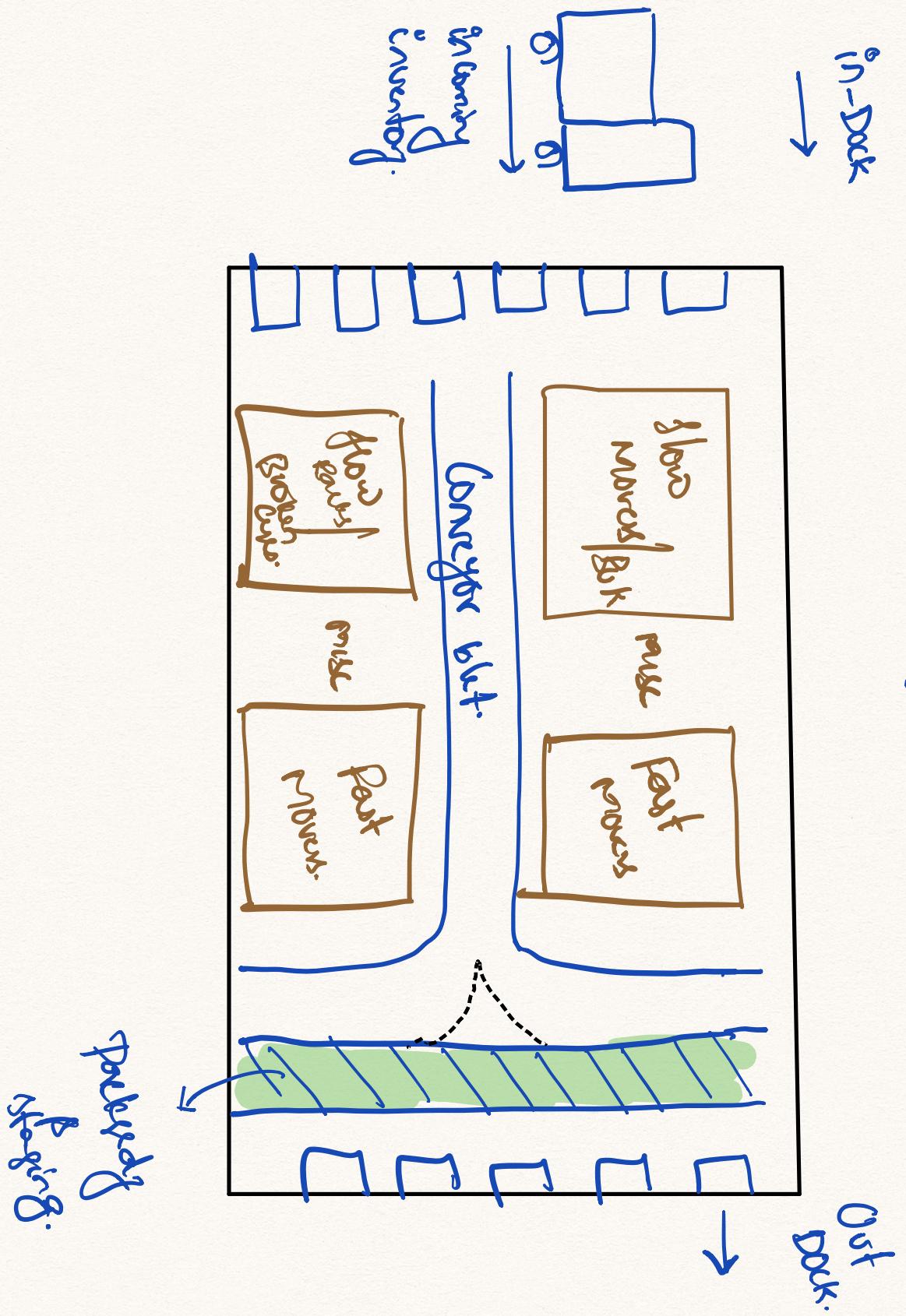


Best practices for setting up a warehouse:-

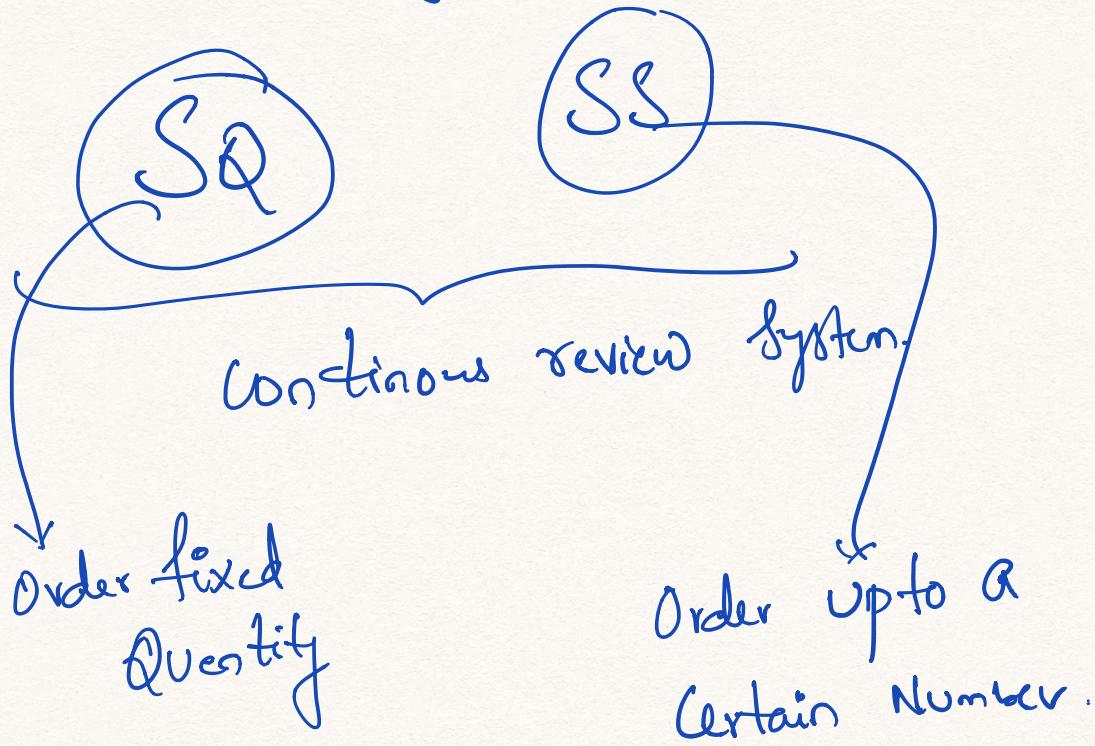
- \* place frequently picked close to shipping area.
- \* Automation.

- \* Maximize vertical space.
- \* implement W.M.S  
→ warehouse management system.
- \* pick to light systems.

## Warehouse design - Cukura.



When to order inventory.



- ① Simple
- ② Predictable for supplier.

- ①. Make order for supplier.
- ②. but efficient & precise.