

## PROBLEM 1: ✓ LOSSES FROM INEFFICIENCY

Loss from inefficiency in our definition means there are some unnecessary costs in the operation. The expenses you have to pay, but they have not generated any returns.

Example:  
In dairy product industry (producing milk, cheese, yogurt, etc.), the products are easily perishable so that they have to be kept refrigerated at the appropriate temperature. If the manufacturer overproducing, the unsold products will remain in a warehouse which means the manufacturer have to accept the carrying cost (the cost of inventory holding. In this case, the costs includes rent, utilities, and salaries) and also the risk of losses in case of its products are expired before being sold out.

How to solve the problem:  
Shown in the flowchart, we assume that the calculation method is effective, so the only problem will be the input sales forecast. However, in reality, it's good to consider the calculation method such as EOQ to reach the effective solution.

### PROBLEM TYPES



CAN BE FOUND IN THE GAME



CANNOT BE FOUND IN THE GAME

## ✓ PROBLEM 2: STOCKOUT COST

We think this cost is opportunity cost as, in real life, we can't define the exact amount of revenue we will lose. (Hard to calculate)

Stockout cost is one of the obvious problems in the game. We think the key to resolve this problem is to manage the inventory effectively by using safety stock and it would be better if we are able to balance between this cost and carrying cost (explained in PROBLEM 1).

The relationship between them:  
If we decide to store too many inventory, no stockout cost will occur, but carrying cost (rental cost or overstock penalty in the game) must be too high.  
If we decide to store only a few inventory, stockout cost must be occur especially when there is a peak of demand.

Here is the challenge:  
How to calculate the proper auto-replenishment quantity by using EOQ and safety stock?  
As the last game we played, we could notice that these methods might not 100% work due to the inconsistent demand throughout the game. However, at least, it is more helpful to use the concept of these theories than not using it.

How to solve the problem is shown in the flowchart.

## ✓ PROBLEM 3: FOREX

Foreign exchange is one of the feature in the game (but we haven't tried it yet).

The simplest way we could figure out to solve fluctuate exchange rate problem is to store the products when the exchange rate is acceptable, but the biggest challenge is to determine 'What rate is acceptable?' and 'How many of the products should we purchase?'

How to solve the problem is shown in the separated flowchart on the left.  
(We think it's easier to understand if we illustrate separately.)

In reality, buying financial instruments like swaps or forwards to reduce risk of exchange rate losses might be another good choice to consider for well-established company.

## ✓ PROBLEM 5: RM AND OPEX

These cost are the key competitive advantage of the game because most of the company costs come from RM, DL, MOH and especially OPEX.

Cost of goods sold could be lowered by self-producing more than procuring finished goods from vendors and trying to use automation as much as possible, but the automation required a lump sum. Therefore, it is a good idea to do cost-benefit analysis to weigh the benefit of each choice.

Here are examples of how to lower costs:  
**Raw materials cost**  
1. Check remaining inventory to avoid irrelevant purchase.  
2. Determine the order quantity to reach economy of scale. (Purchase in high volume)  
3. Try to make a good relationship with vendors to get more discount.

**Operating expenses**  
1. Use machines instead of workers in some repeatable task.  
2. Optimize machines capacity. (should consider the demand of the products, in reality, if the demand is low, it is not good to produce them in full capacity.)  
3. Try to reduce employee turnover (lower training cost for new employees) by reviewing and adjusting current compensation plans.  
4. Optimize human working schedules  
5. Reduce rental cost by calculating optimal space for usage. (Rent only space we have to use.)

**How about 'outsourcing'?**  
Outsourcing is an interesting choice for several reasons:  
- A company cannot afford machines or does not have enough experience to produce by itself because of the technical mastery required.  
- A company has already used full capacity, but still cannot handle all demands.  
- A company finds out that outsourcing costs lower than self-producing.

## ✗ PROBLEM 6: REWORKING COST

This is a cost that is not in the game, but, in real life, it is a good idea to control this cost.

If there is spoilage, the company has to either rework or sell out.

Here is some factors to be considered to answer the question 'Would it be worth enough to rework the spoilage':  
- Can the spoilage be reworked?  
- How much time and extra-resources do we have to consume to rework?  
- Selling price of spoilage.  
- Do we have enough capacity to rework?

However, all of the factors above depend on the situation and judgement of each case.

## ✓ PROBLEM 4: INTEREST EXPENSE

This expense occurs only if you decide to get a loan. In reality, this expense directly depends on the financial institute and the credit of each company.

A loan is a good way to immediately increase your cash on hand, but it could cause a substantial amount of expense in the future. The only way to eliminate this expense is not getting a loan, but if a loan is necessary, we should determine 'When do we really need a loan?'

To answer that question, we should ask ourselves 'Do we have enough cash on hand to operate?' If the answer is no, a loan is necessary.

After decided to get a loan, in reality, we must choose the proper type of loan matching with the purpose of getting that loan. For example, we would like to acquire a considerable amount of merchandise to handle a peak of incoming demand. Thus, it is better to choose a short-term loan due to quick access to fund and low risk compared to a long-term loan. (We will discuss long-term loan later in PROBLEM 7.)

Interest expense is like a chronic disease. The more time passed, the more expense accumulated. Unless the company repay all the debts, the company will have no choice but to bankrupt.

## PROBLEM 7: ✓ CAPEX

A long-term loan is usually required for investment in assets like land, building, plant, machinery, and other fixed assets, and also for financing extension or expansion of business. We have discussed a short-term loan. (See PROBLEM 4)

The challenge of CAPEX is 'How do we know that the return after investing in assets will cover a loan?'. In the game, to be honest, we do not have a plan for now but trying to manage the income to cover this cost.