

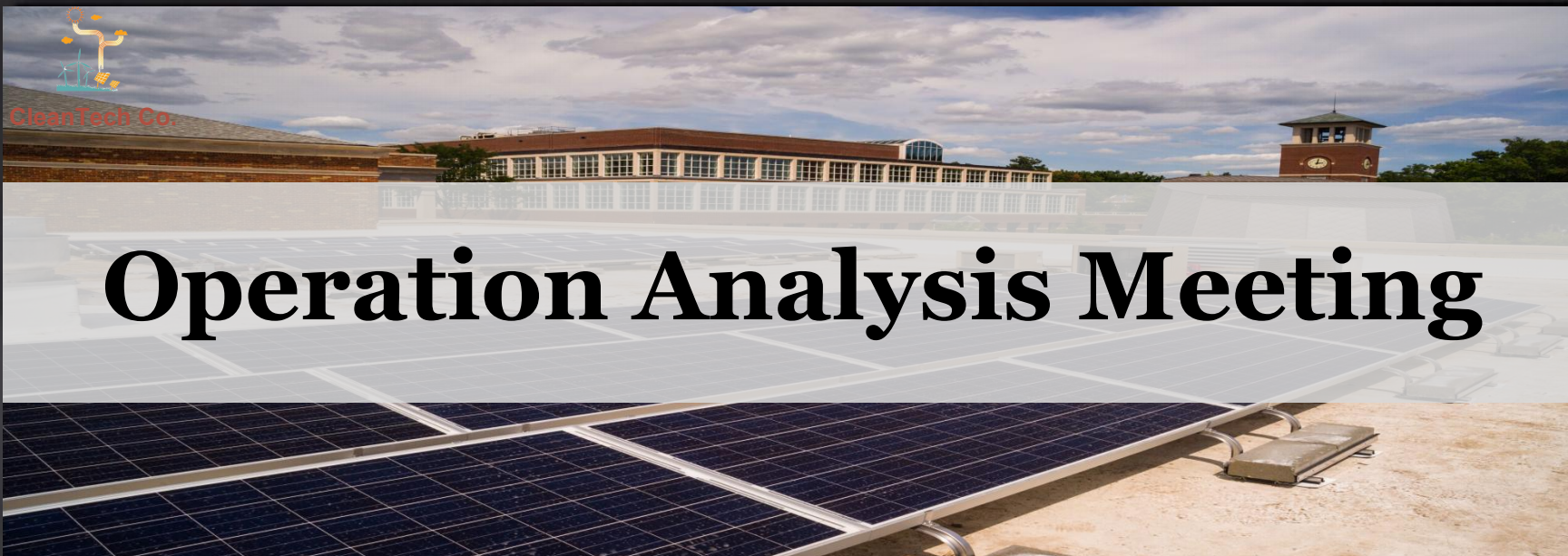
Increase Efficiency & Reduce Costs

- ▼ Striving to enter the first echelon

CleanTech Co.

Participate in the next
two meetings with us ➤

Team: Sailing
Number: HN20221886





Theme

Introduction of Strategic Procurement



Conferee

Li Ming

Head of Management
Accounting Department

Rebecca

procurement department
manager

Candy

Li Ming's assistant

Key members of the purchasing department

01 Current Situation on Procurement Department

- The review of Carton Case
- The current procurement concept adopted

02 Operational Procurement & Strategic Procurement


- Definition and advantages of strategic procurement
- The comparison of two kinds of procurement

03 Total Procurement Costs under Strategic Procurement

- Cost nature
- Cost category
- Cost item
- Cost description

Agenda





Li Ming: Good afternoon, everyone. Welcome to our **Operational Analysis Meeting**. I am Li Ming, the Head of Management Accounting Department as well as the Meeting Host.

Li Ming: At the **meeting concerning business analysis & summary of semi-annual budget last month**, Sales Department and Procurement Department held a heated discussion on Carton Case and this problem remained unsolved.

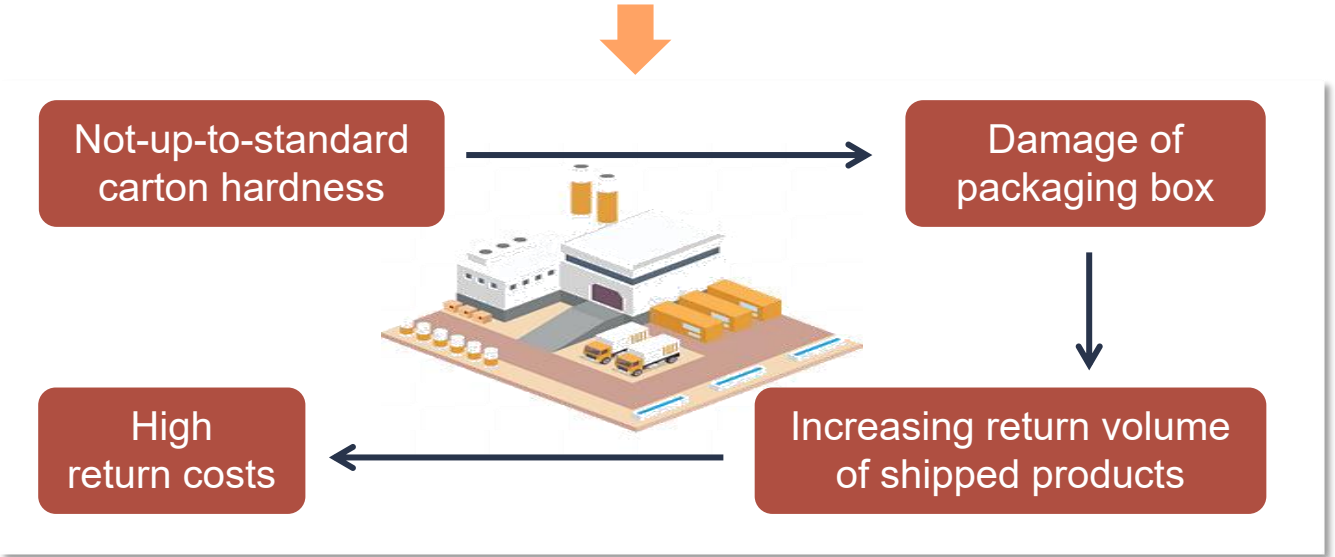
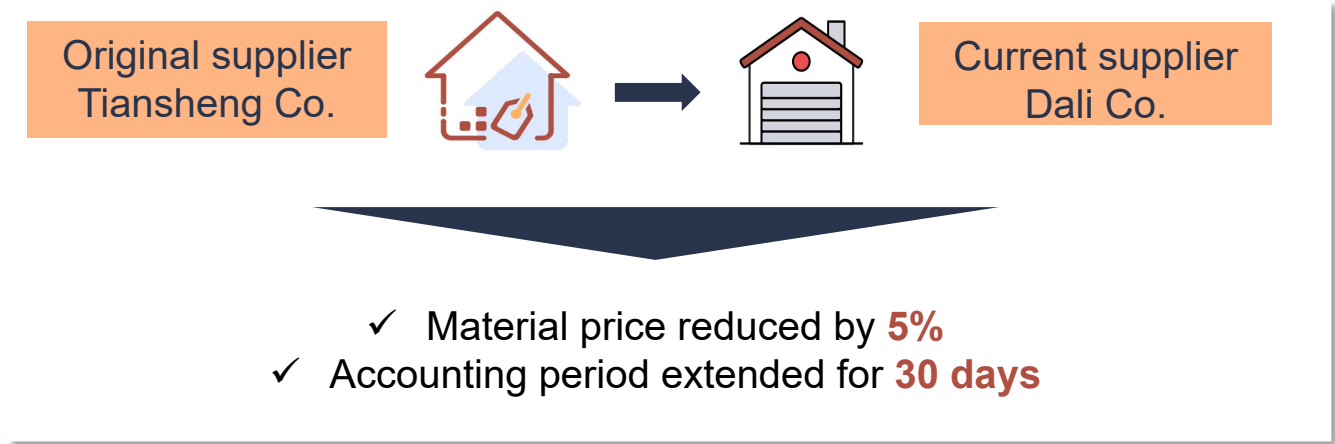
After **deep investigation** in one month, we gained a lot with the help of Procurement Department.

Now, let's introduce to Part 1. Welcome Procurement Department Manager Rebecca to help us **review Carton Case** and **report the basic information of what concept the Procurement Department adopted** through investigation.



Review: Carton Case

● The main problem remained: Carton Case ●



Rebecca: Through self-review and conclusion, we found the procurement concept we adopted for years is **Operational Procurement**. Then I will make **further explanation**.



Operational Procurement: Definition & Advantages & Principles

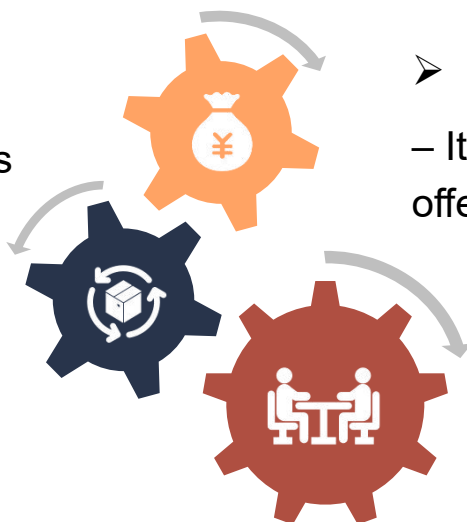
Operational Procurement

Operational procurement refers to the purchase of goods and services that are **generally required to sustain the daily production or business activities**.

Advantages

➤ Simple process

– It involves the process of finding the cheapest supplier as well as implementing procurement process



➤ Low initial material costs


– It will select the supplier who offers the lowest purchasing price

➤ Brief personnel structure

– There is no need to input more staff into that process

Basic Principles





Rebecca: Combining the Carton Case and Principles of Operational Procurement, it is apparent that in the past we **mainly focuses on Purchase List Price** and **overlooks other kinds of costs occurred alongside the whole procurement chain**, such as return costs caused by low-standard materials.

Therefore, after investigation we introduce a more advanced and widely-used procurement concept – **Strategic Procurement**.



Strategic Procurement: Definition & Advantages

Strategic Procurement

Strategic procurement refers to the process of **developing channels of supply at the lowest total cost**, which expands upon operational purchasing activities in the organization to **embrace all activities within the procurement cycle**.



Basic Principles

Accumulating the **total costs of ownership** covering the whole process from procurement to subsequent production, maintenance and so on.

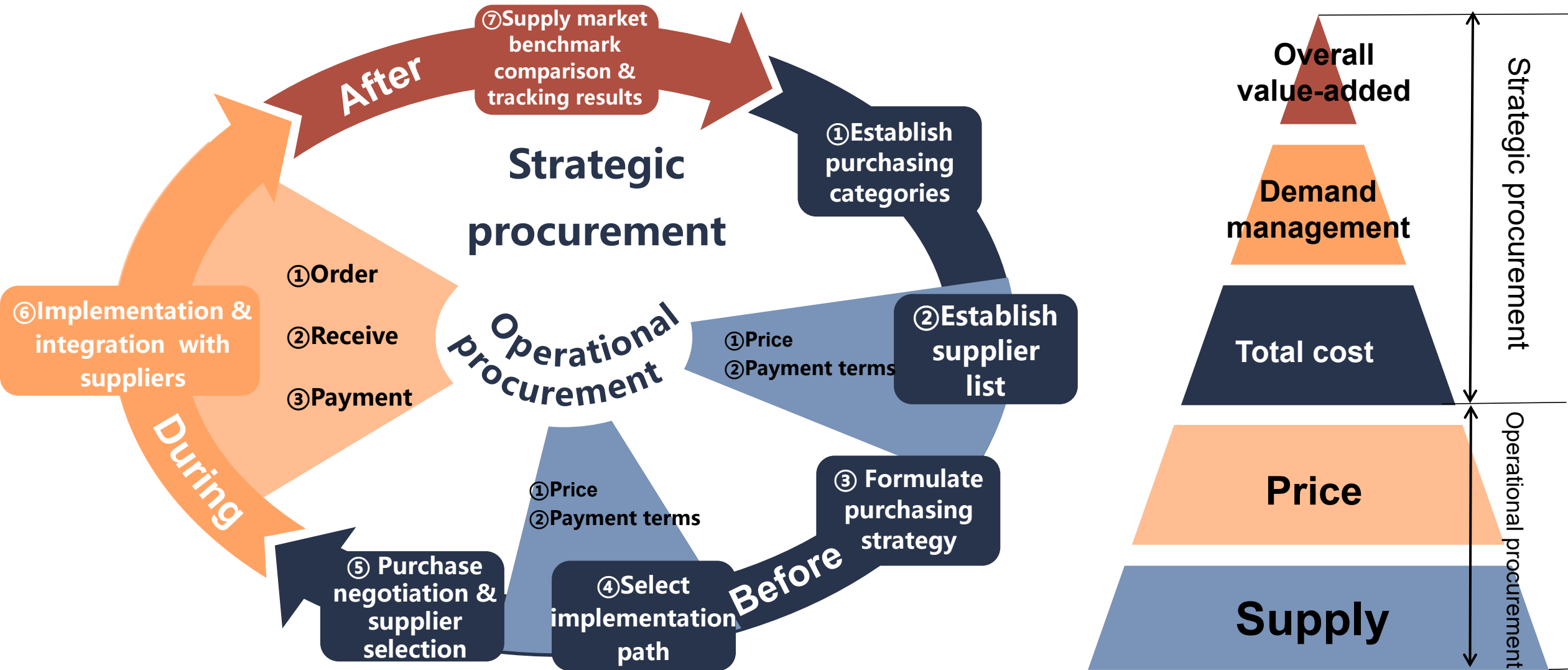


Strengthening supplier management



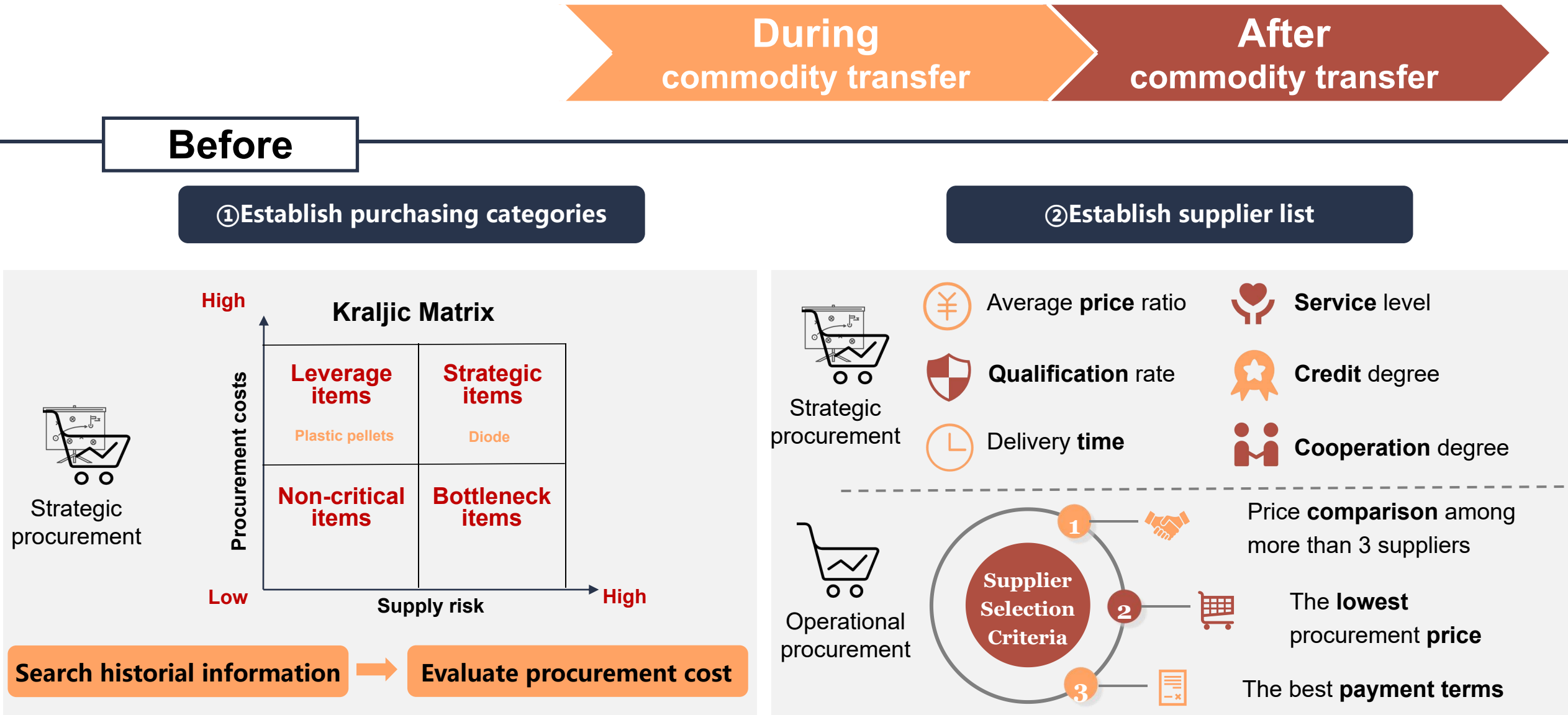


Relationship analysis and main work contents presentation





Work content of strategic procurement and operational procurement





Work content of strategic procurement and operational procurement

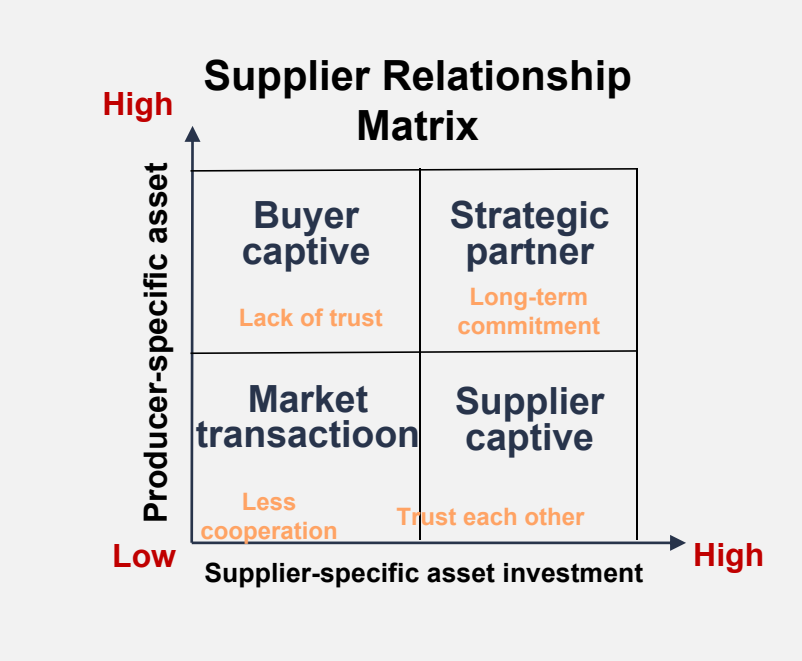
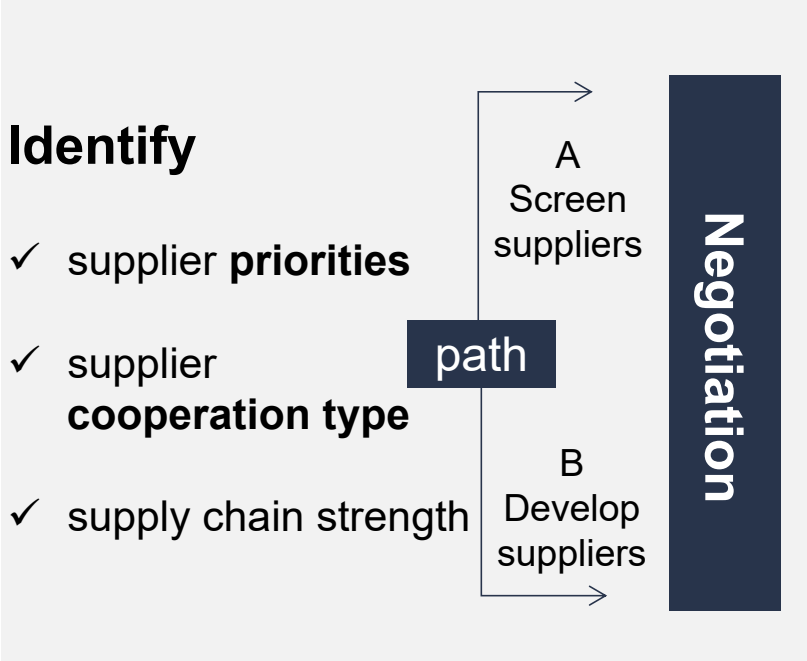
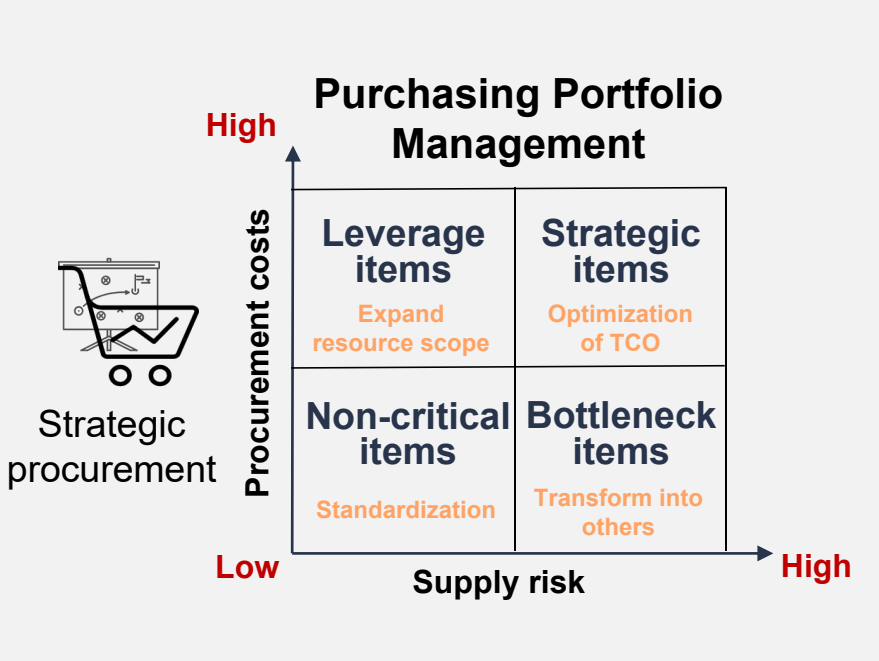


Before

③Formulate purchasing strategy

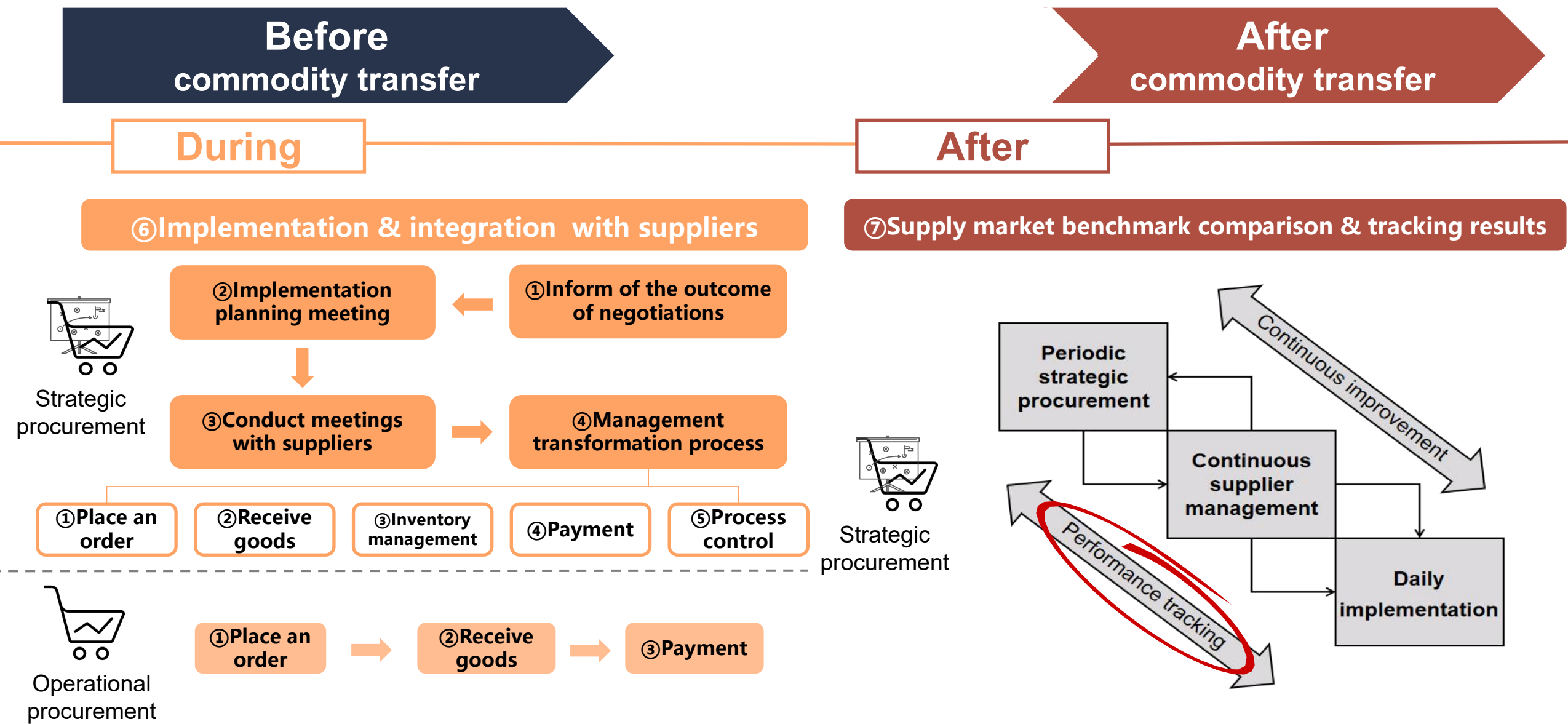
④Select implementation path

⑤Purchase negotiation & supplier selection



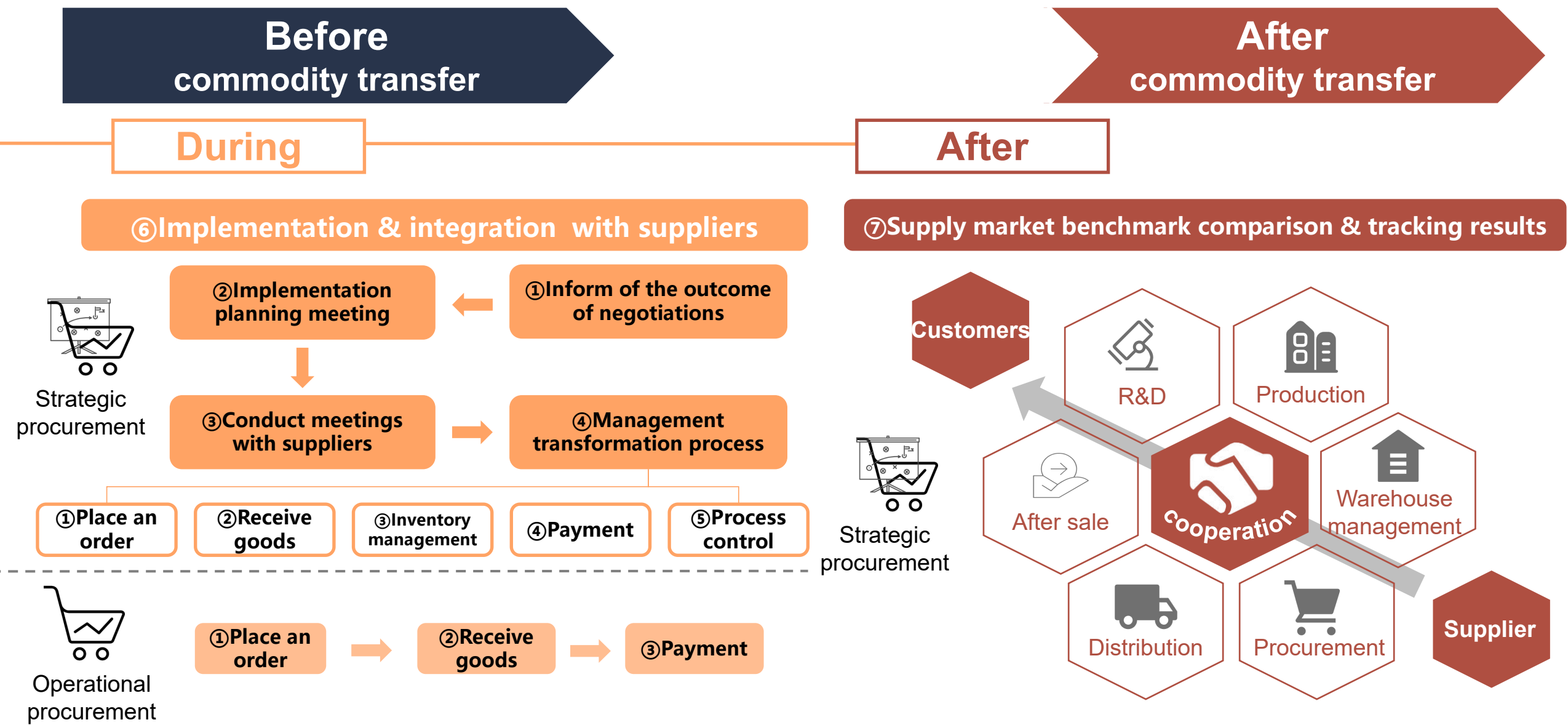


Work content of strategic procurement and operational procurement





Work content of strategic procurement and operational procurement





Li Ming: Next, let's welcome Candy, my assistant, to provide us with guidance on **TCO calculation** which will help build the model of "Total procurement cost" to assist in making **supplier selection decisions**.



Total cost of ownership can be divided into explicit cost and hidden cost

Total cost of ownership

Extend the cost of procurement to the **entire life cycle** of the purchased product, including all costs associated with the acquisition, use, and maintenance of the good or service.



Explicit cost

Expenditures incurred in the **procurement process** that are actually incurred and can be recorded in the account



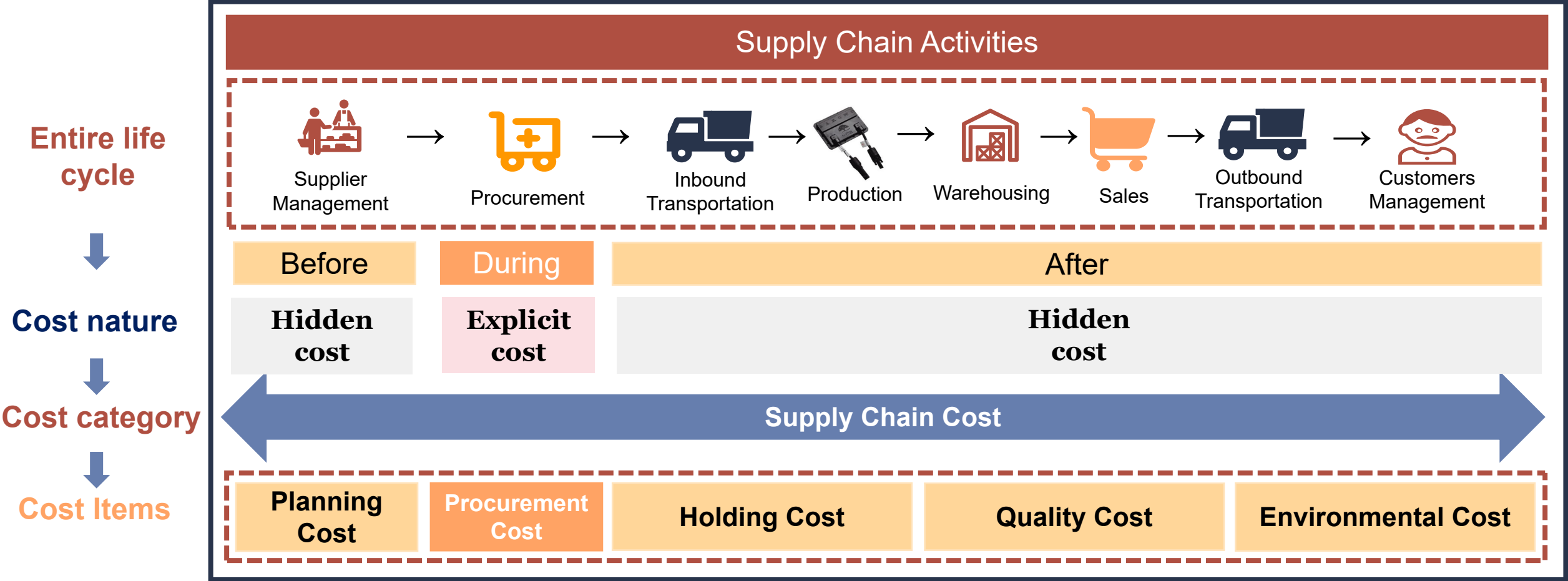
Hidden cost

Incremental costs due to purchases, or costs that cannot be recorded in the account





Composition of Total Cost of Ownership

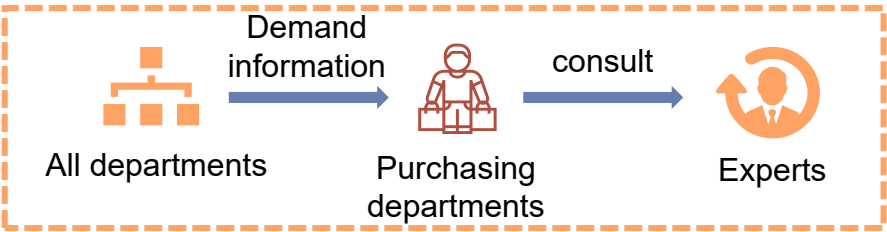




Planning Cost: Procurement Demand Integration Cost + Cost of Quotation + Supplier Search Costs (Hidden Cost)

Planning cost

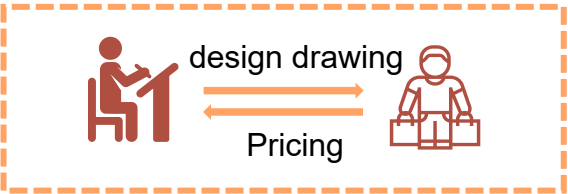
Procurement demand integration costs



- Labor cost = (Salaries and benefits)*number of employee
- Expert consulting cost= convention expense+ travel expense+ communication expense + entertainment expense
- Office expense

Senior professional	1500-2400 /day
Other professionals	900-1500 / day

Cost of quotation



Choose a pricing method

Market Pricing Method

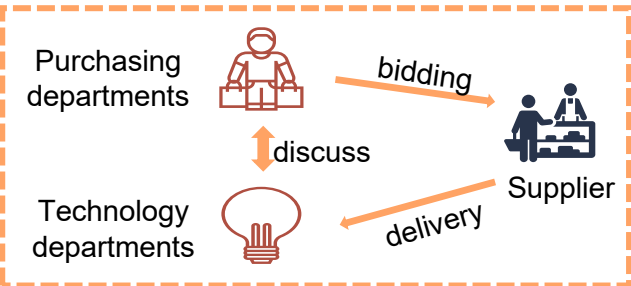
Inquire the market price of similar products

Cost-plus pricing

Calculate the whole process cost

➤ Office expense= printing fee+

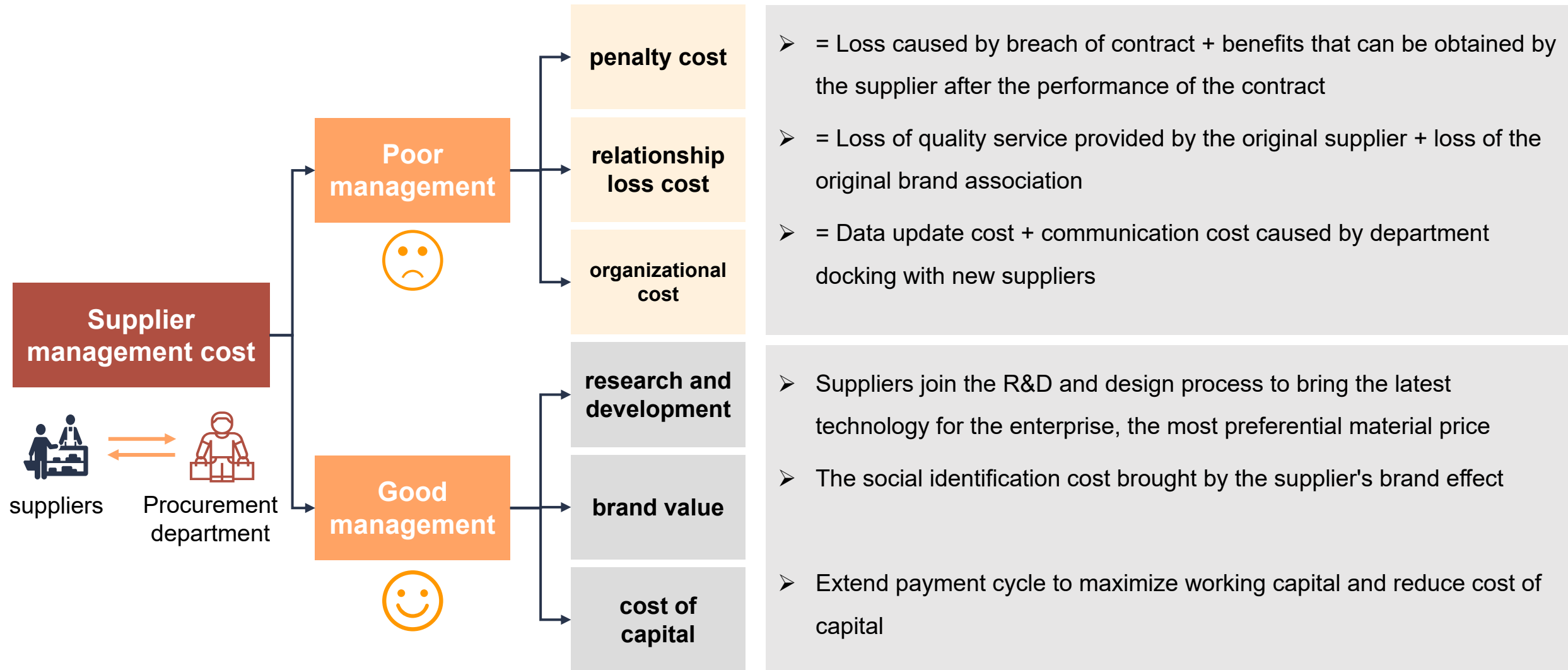
Supplier search costs



- Market research cost = library material fee + printing fee
- Supplier basic qualification certification fee = travel expense + consulting cost
- Bidding fee = bidding document preparation cost + contract signing fee
- Purchasing and R&D labor cost



Planning cost: Supplier Management Cost (Hidden Cost)





Procurement cost: Order cost + Purchase price + Transportation cost+ Tax payable + Acceptance cost (explicit cost)

Order cost

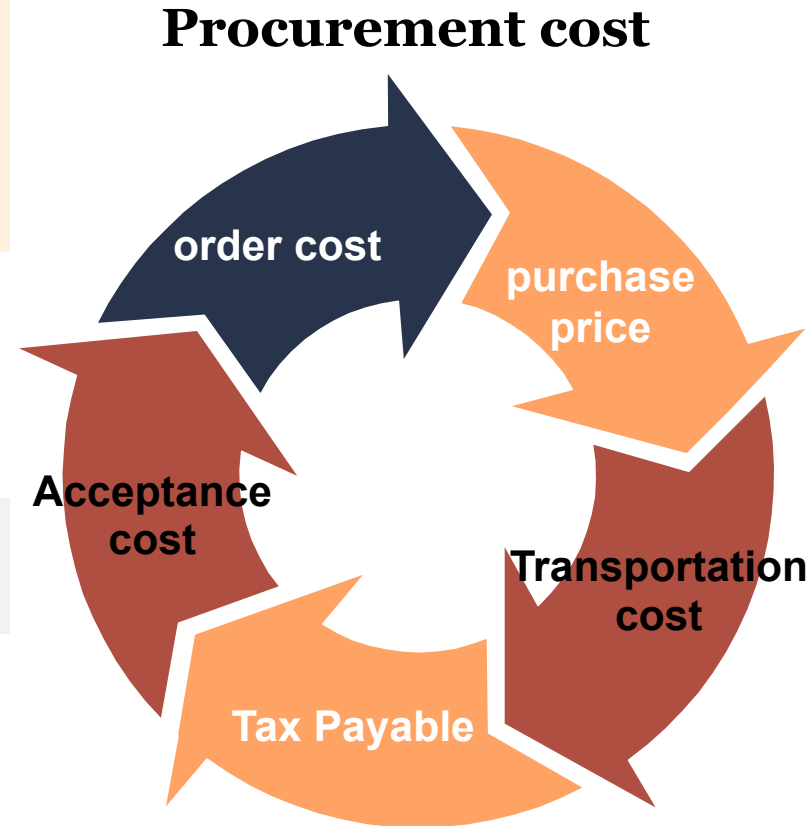
- order processing cost
= office expenses + document fee
- travel expenses
- postage
- inspection fees

Acceptance cost

- cost required to return or replace the goods

Tax payable

- Tariff + consumption tax + resource tax + VAT input tax



Purchase price

- Purchase price * annual purchase quantity * (1- discount rate)
- VAT input tax that cannot be deducted

Transportation cost

- ✓ Airfreight = Fuel surcharge+ weight * distance*price
- ✓ land freight
- full-car load = quantity*number of car*tonnage
- Less-than-truck load = unit price * weight * distance
- ✓ ocean freight
- packaging expense + storage expense + domestic transportation charge + shipping charge + bank charge + estimated loss



Holding Cost: Processing Cost+ Warehousing Cost+ Shortage Cost(Hidden Cost)

Holding cost

Processing cost

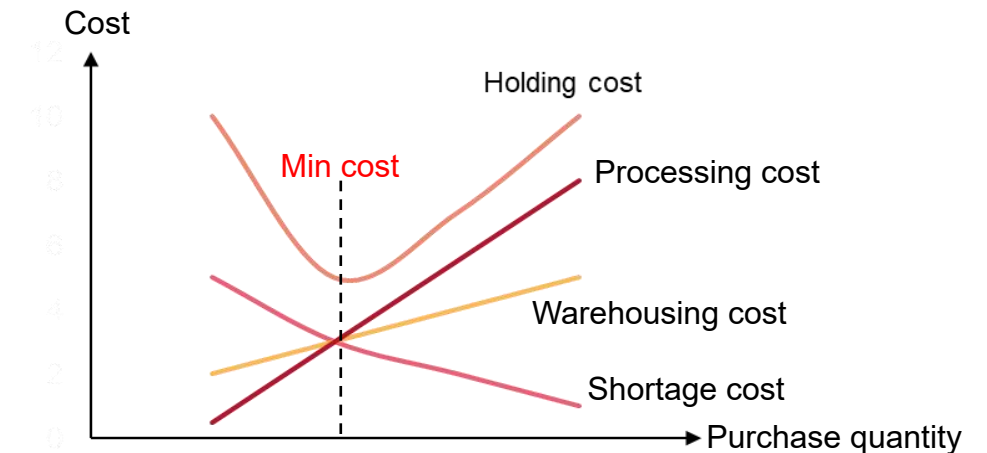
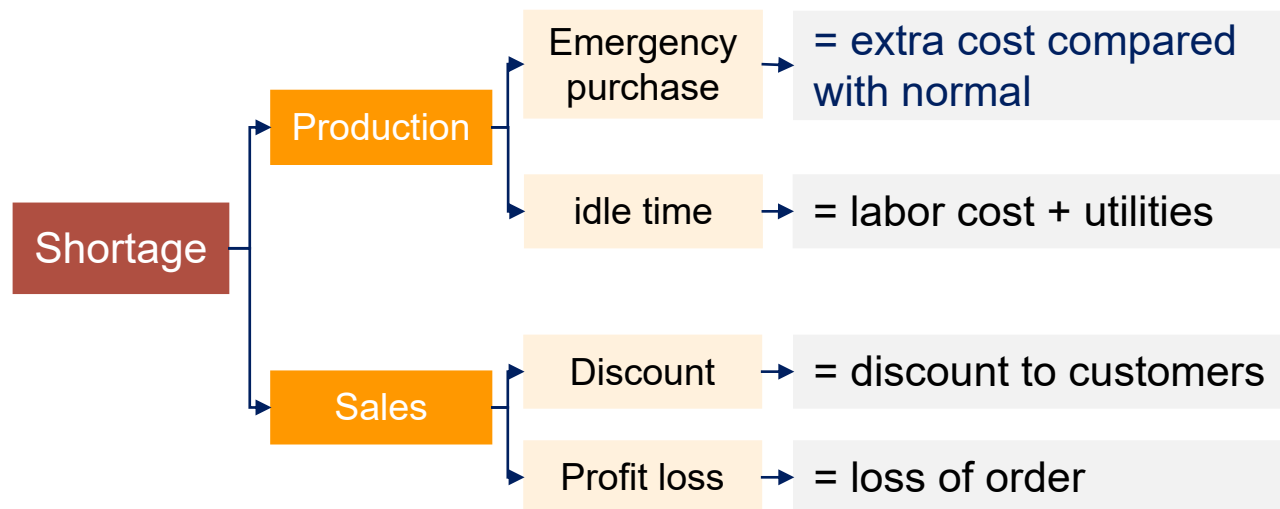
- Material cost spent in processing
- labor cost
- Overhead



Warehousing costs

- Insurance premium
- handling fee
- Cost of Capital occupation= Capital occupation*WACC

Shortage cost

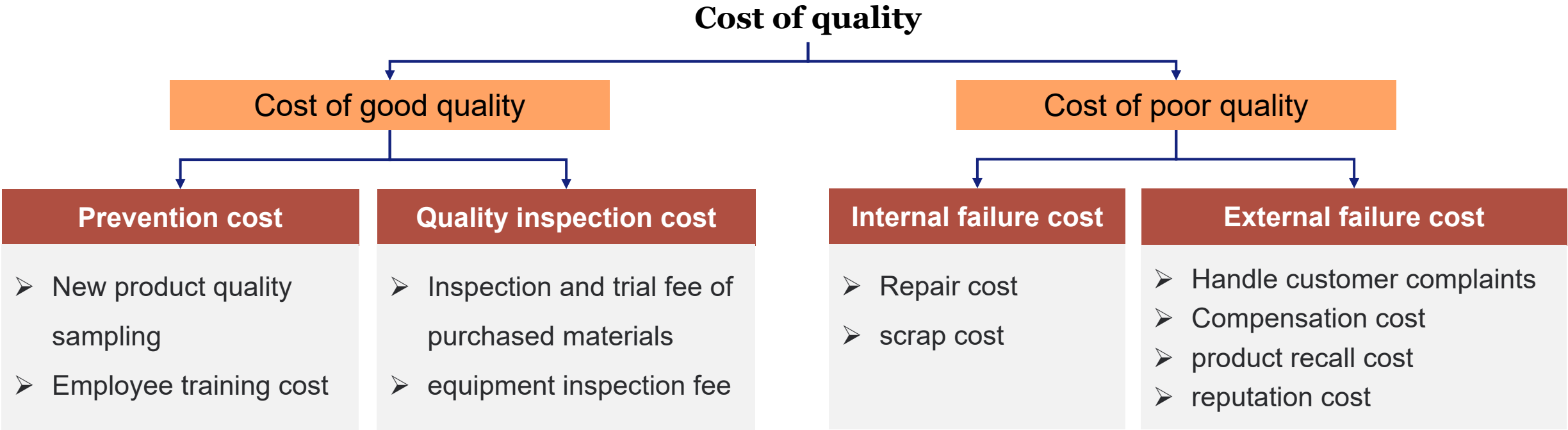


Minimum holding cost should be calculated when purchasing



Cost of Quality (Hidden Cost)

Environmental Cost(Hidden Cost)



Environmental cost



reutilization

Repair the junction box for reuse



recycling

Recycling of available materials for restructuring

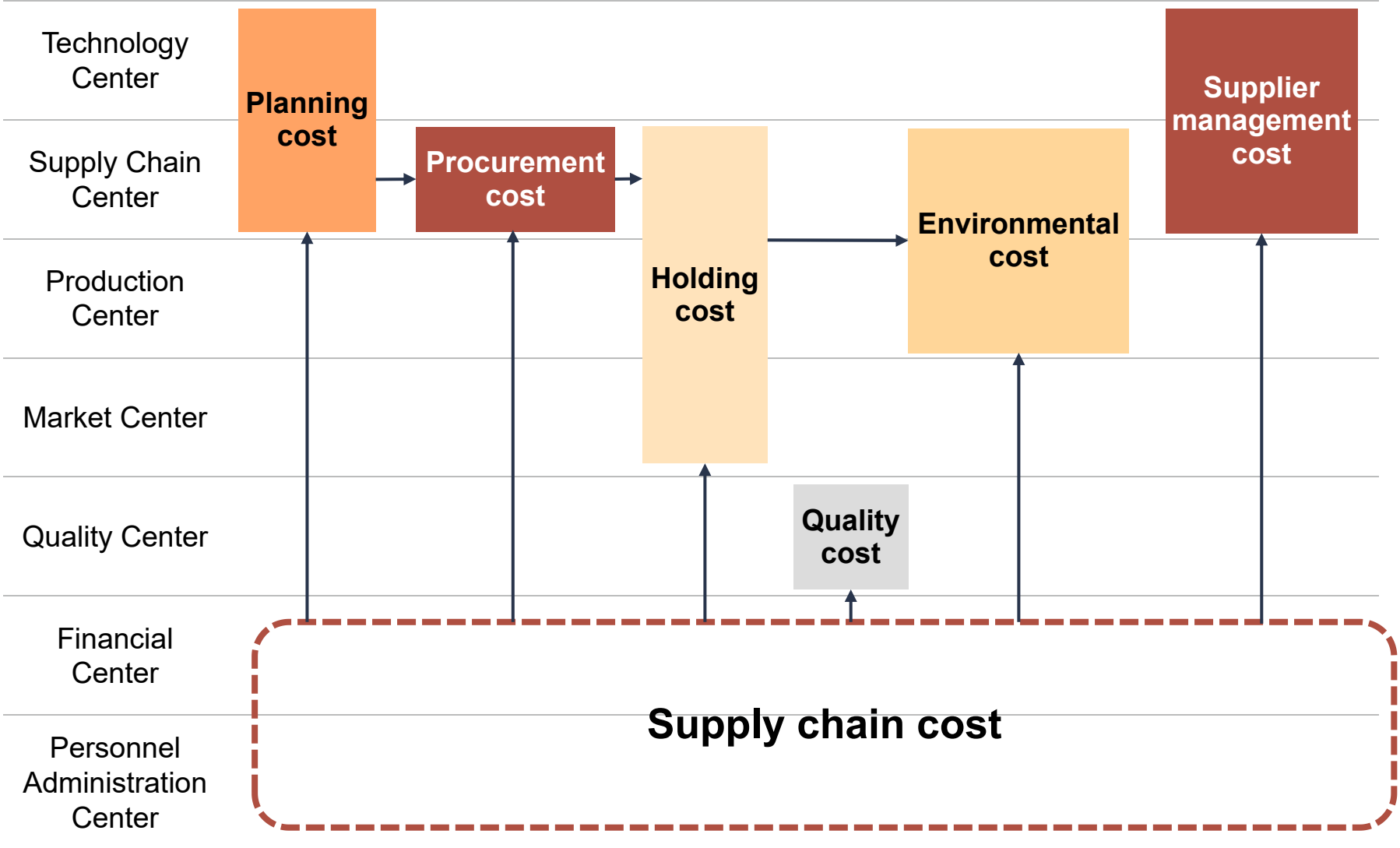
Disposal cost

- Recycle cost + processing expense - disposal income

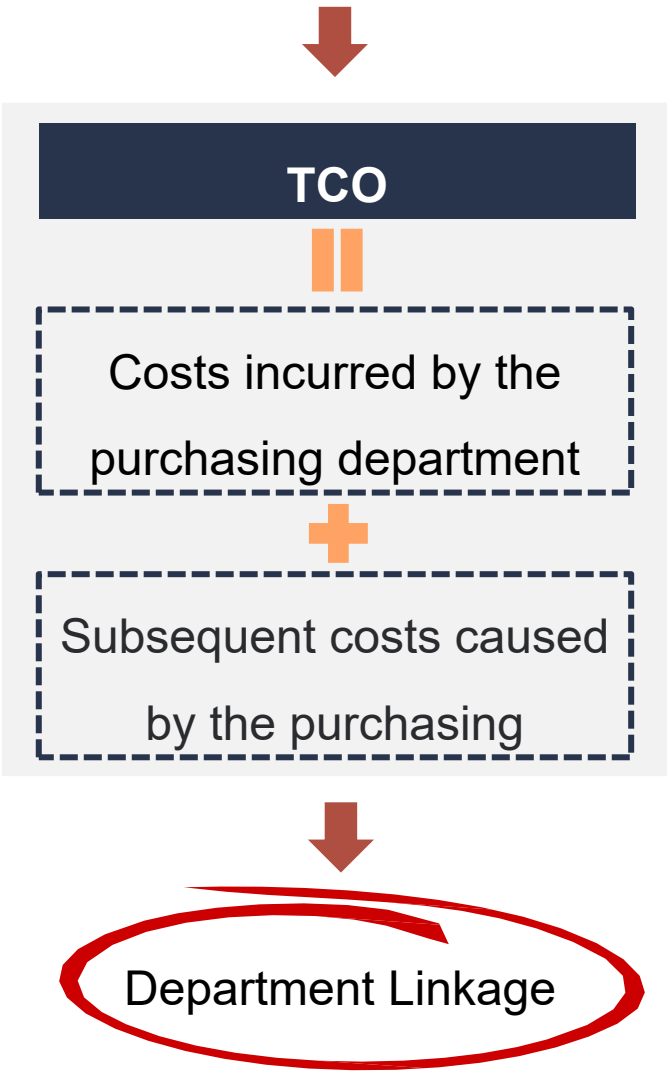


TCO include the entire life cycle cost which introduced by purchase

Total cost of ownership

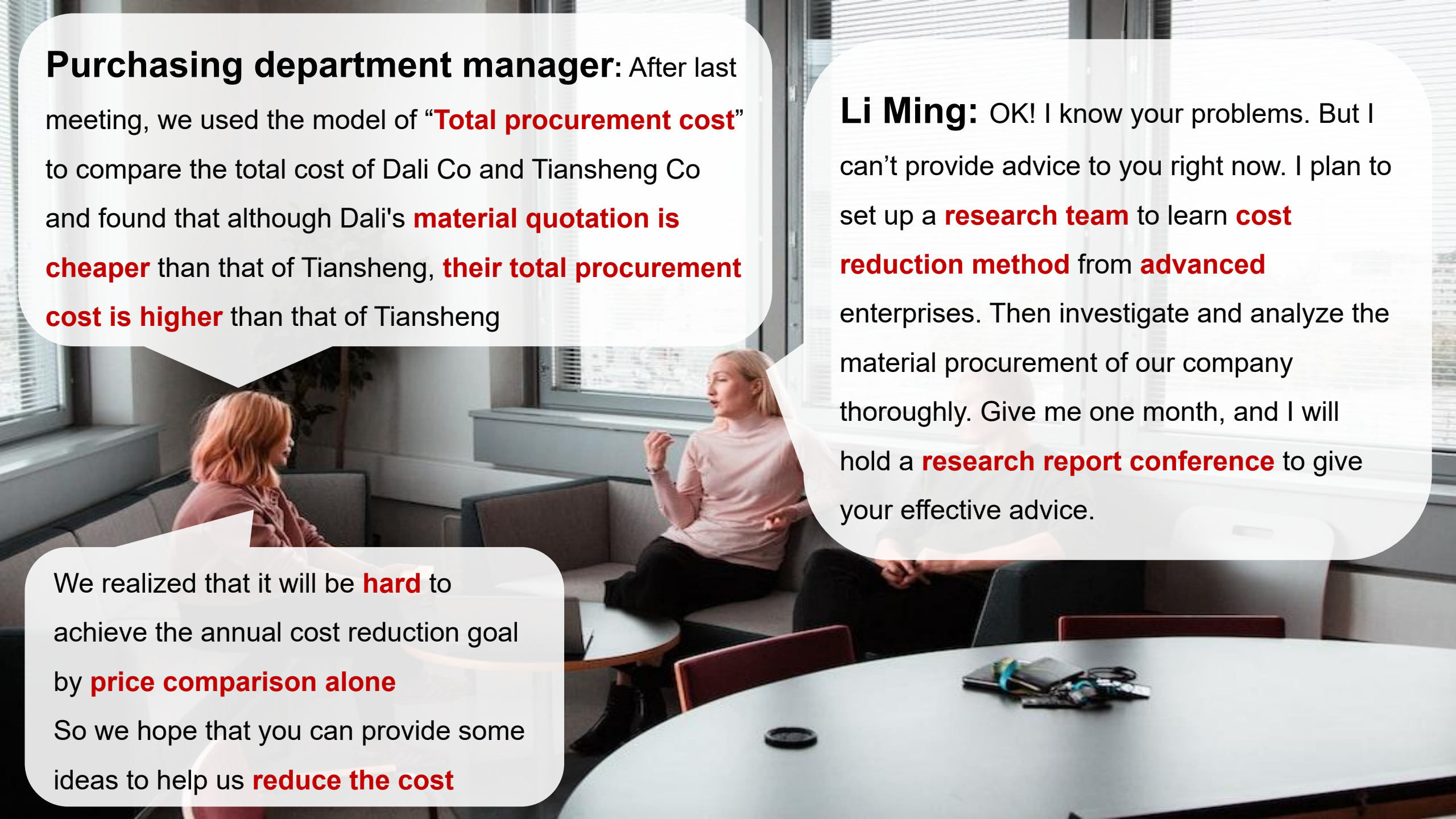


Strategy Procurement



A modern conference room with a large wooden table, white chairs, and large windows overlooking a city skyline. The room is bright and airy, with a large painting on the wall and a chandelier hanging from the ceiling.

**After the Meeting A New
Problem is Emerging**



Purchasing department manager: After last meeting, we used the model of “**Total procurement cost**” to compare the total cost of Dali Co and Tiansheng Co and found that although Dali's **material quotation is cheaper** than that of Tiansheng, **their total procurement cost is higher** than that of Tiansheng

Li Ming: OK! I know your problems. But I can't provide advice to you right now. I plan to set up a **research team** to learn **cost reduction method** from **advanced** enterprises. Then investigate and analyze the material procurement of our company thoroughly. Give me one month, and I will hold a **research report conference** to give your effective advice.

We realized that it will be **hard** to achieve the annual cost reduction goal by **price comparison alone**. So we hope that you can provide some ideas to help us **reduce the cost**.



ONE MONTH LATER



Research Report Meeting



Theme

Procurement Problems Identification and Solutions



Conferee

Li Ming

Head of Management
Accounting Department

Nancy

Member of the
Research Team

Flora

Member of the
Research Team

The main personnel of Procurement Department

01 Problem Analysis and Suggestion

- Small Batch Purchase
- Outsourcing Supplier
- Product Design Change
- The Weight of Junction Box
- Price Volatility Risk
- Out-of-stock Risk

Agenda

02 Introduction of Procurement Digitalization

- Main Paths and Business Mode
- Input and Output
- Desirable Result





01

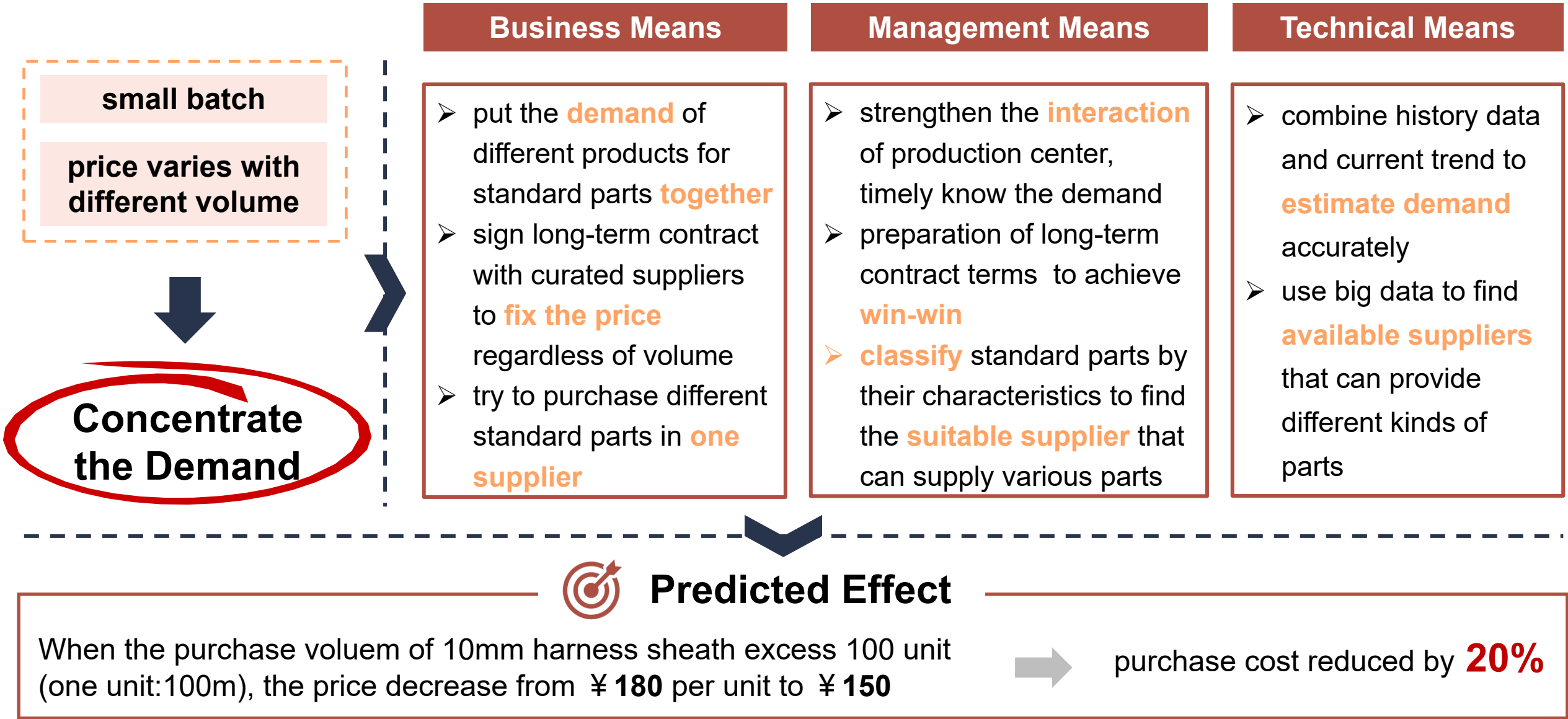
Problem Analysis and Suggestion

The Possible Problems of Using Small Batch Purchase

Current Situation	Possible Problems Incurred	Impact on Costs
small batch	<ul style="list-style-type: none">the order is so small that there is no sufficient attention to trace the deliverythe parts may be delivered latelyinterrupt the productioncan not deliver prouducts on time	production & sales shortage cost
8 suppliers	<ul style="list-style-type: none">✓ take lots of time and energy to juggle with all suppliers✓ the quality of parts may not be consistent	supplier mgt cost cost of quality
price varies with different volume	<ul style="list-style-type: none">✓ hard to price products✓ adverse to performance appraisal	purchase cost fluctuation

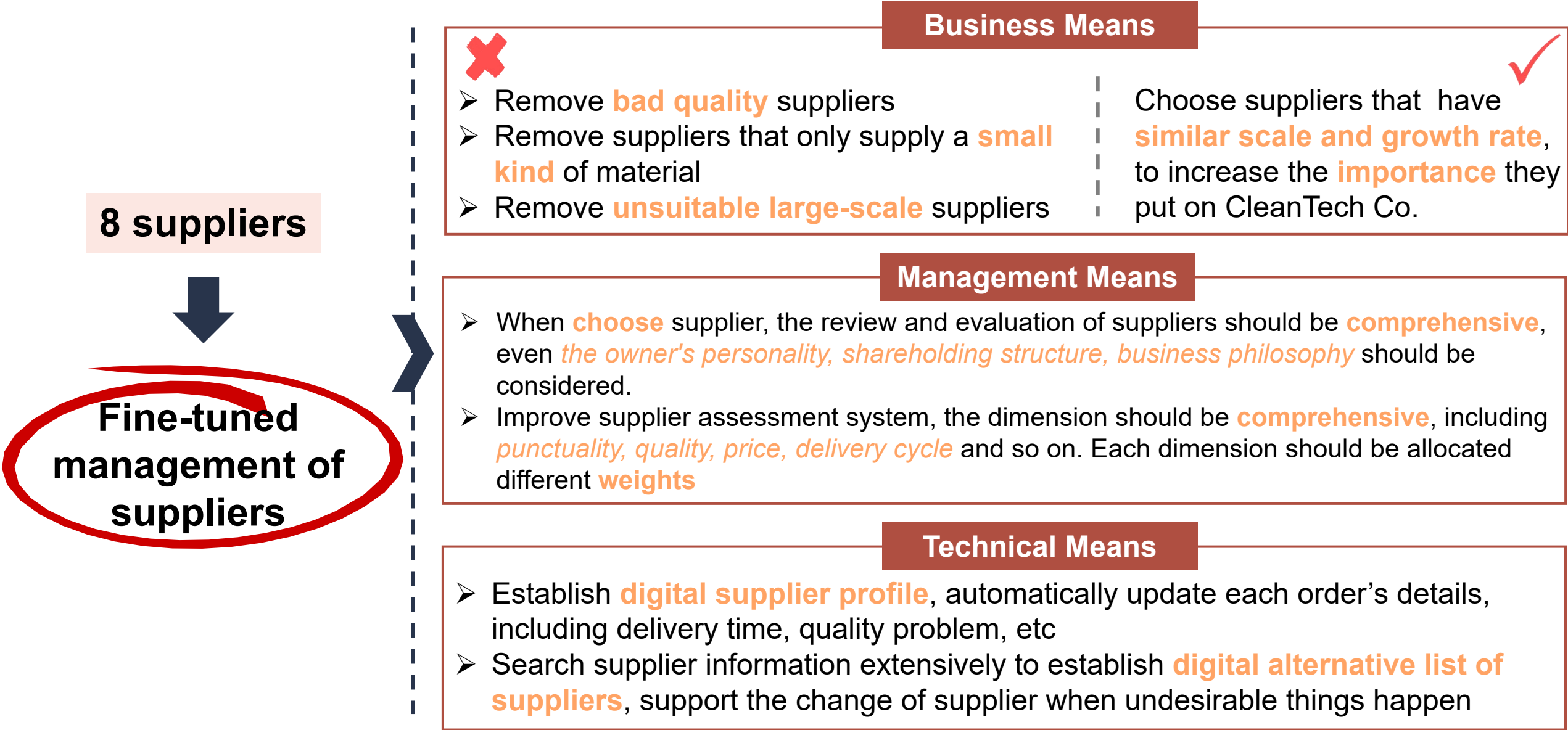


The Suggestion to Solve the Possible Problems Caused by Small Batch Purchase





The Suggestion to Solve the Possible Problems Caused by Small Batch Purchase





The Reaction to the Higher Quotation Requirement of Sunny Manufacturing Company

The shell's classification analysis

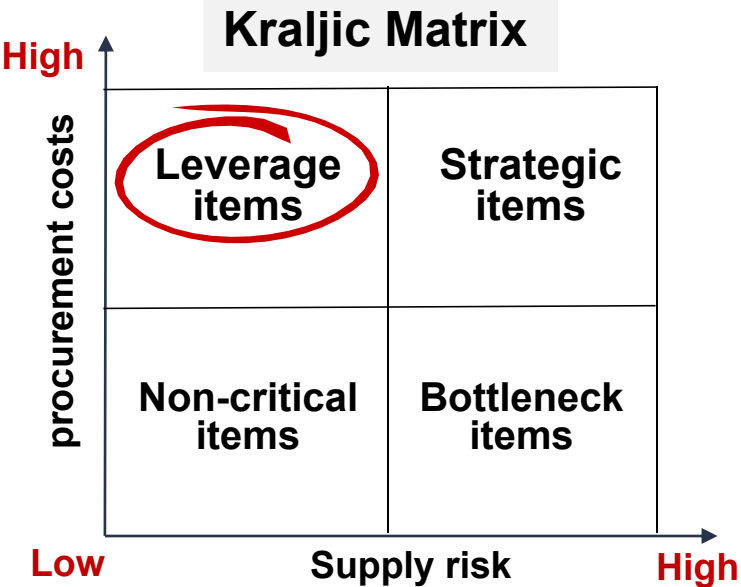
The junction box is composed of **three** main parts the **shell**, the cable and the connection terminal



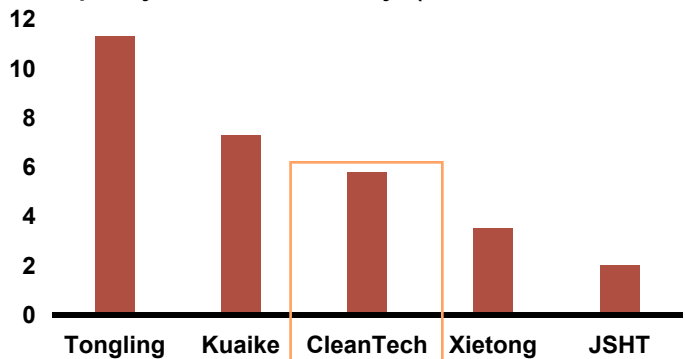
shell **accounts a lot** in the total cost



There is **a lot of** supplier of shell



The sales revenue in 2021 of main company in PV industry (RMB' 100 million)



CleanTech Co. is a **large customer** to suppliers



Two measures to copy with the price increase



negotiate the **level of price increase** with Sunny Manufacturing Company

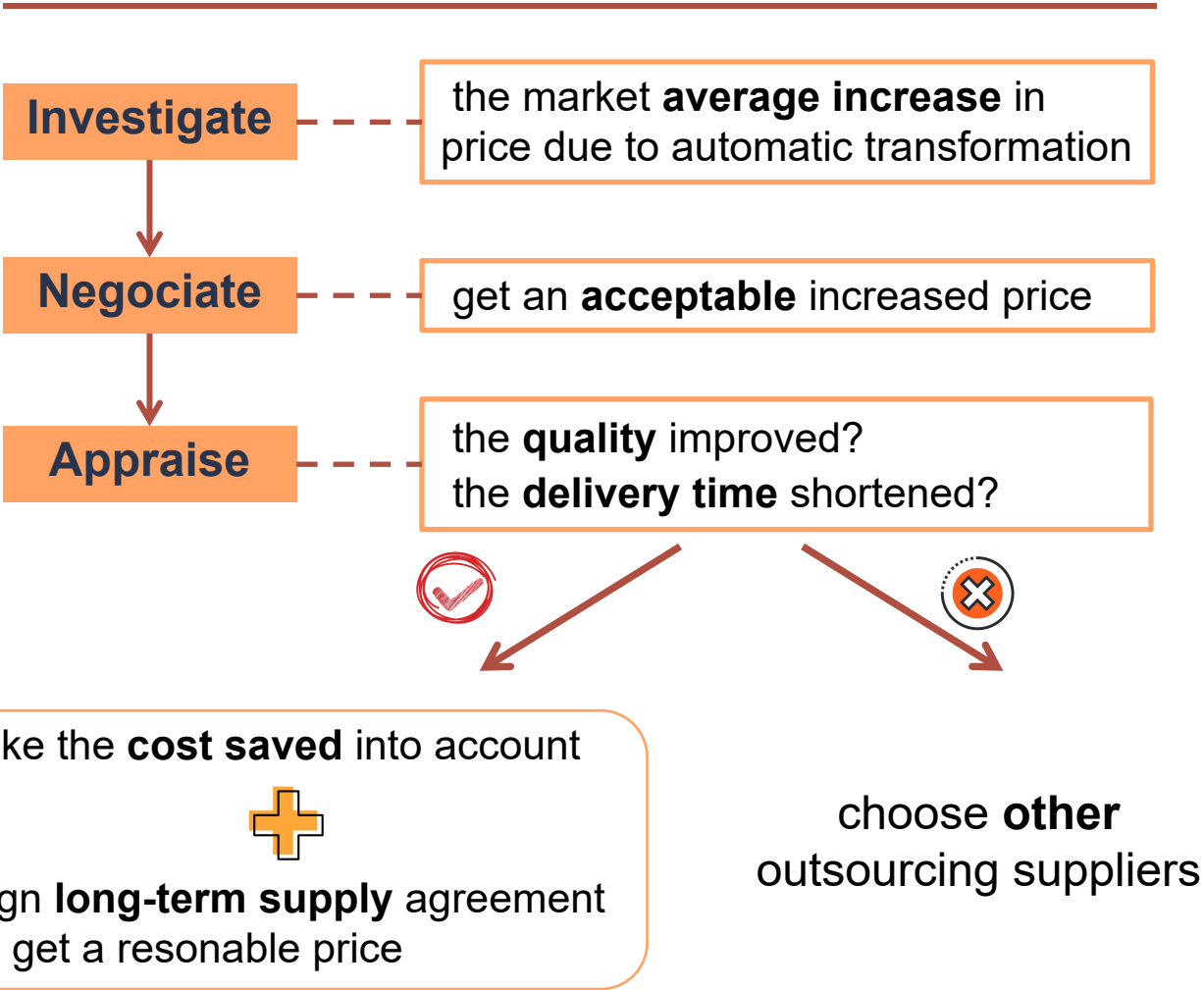


seek for **new outsourcing supplier**

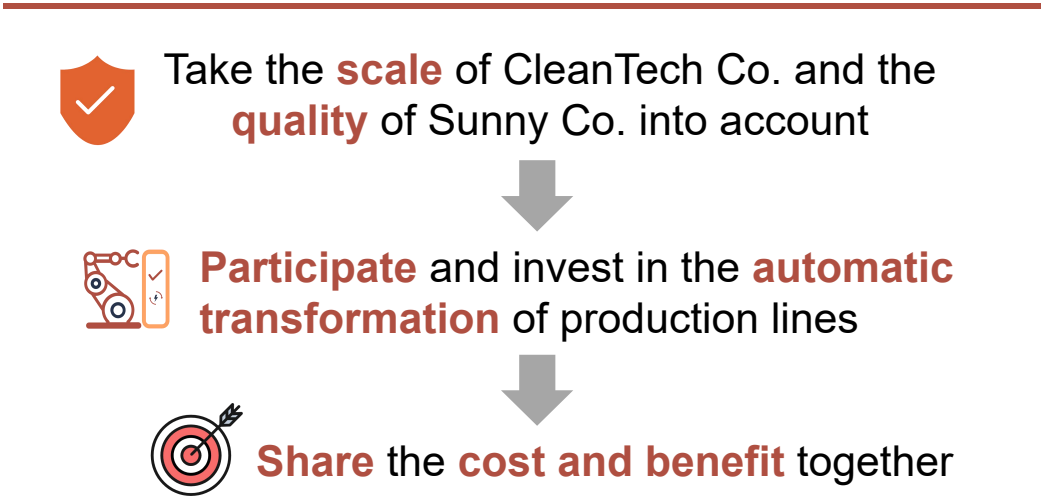


Three Means to Facilitate the Negotiation of Price Increase

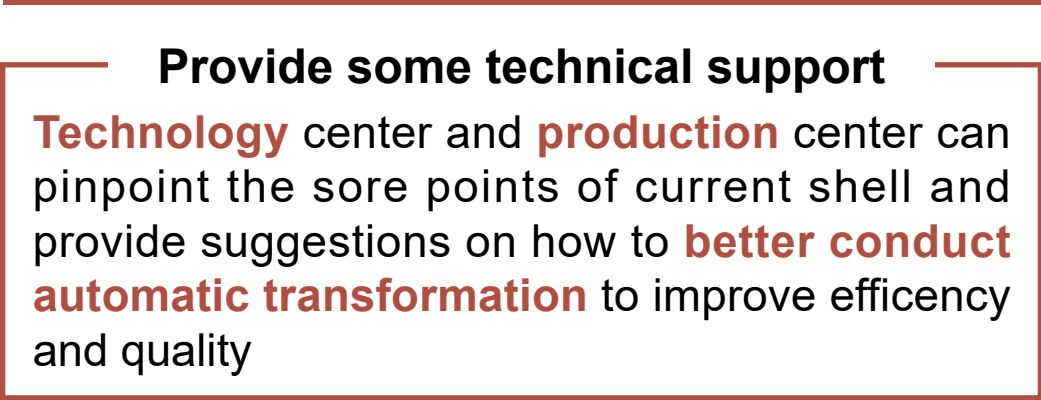
Business Means



Management Means



Technical Means





Three Means to Facilitate the Seeking for New Outsourcing Suppliers

Business Means



Through the **bidding** to attract potential suppliers



Competitors' suppliers



Marketing Campaign

- **Before**

Clear and unambiguous supplier qualification evaluation requirements

- **If winning the bid**

Suppliers are required to provide relevant qualification documents to **prove qualification**

- **Subsequent management**

Regular **communication** and **risk** management

- **Target**

Stronger competitors with high market share, like LingXian PV & MingXi PV

- **What to do**

Analyze products to confirm key material **brands and suppliers**



Attend **trade shows**

Personally review **product samples** and meet **face-to-face** with potential suppliers

Management Means

Publish procurement needs on the **enterprise website** and authorize related parties to enter the platform docking interface to provide relevant enterprise **qualifications**

Technical Means



Improve the ability of **information gathering**

- ✓ The **time and address** of trade shows related to **PV**
- ✓ **Identify suppliers** by the key material's brand



The Means to Deal With Clients' Requirement to Change Product Design

Client require to **change** design **after quotation**



The Design Department **not record** the changes **in detail**



①

The procurement department need to calculate the price **from scratch**



Low efficiency

②

Some details of change may **not be identified**



Quotation is **not accurate**, may incur **loss**



Business Means

- Procurement Department **compare** the design drawings **meticulously**
- Seek the **suitable** supplier according to client's **expectation** of price



Management Means

- Strengthen the **communication** with Design Department, require them to provide **the details of change**
- Negotiate the **number of change** client can require at most



Technical Means

- **Digitalize** the design drawings and make a **digital list** of all materials needed
- Build a shared digital platform that can **automatically identify the change** of design

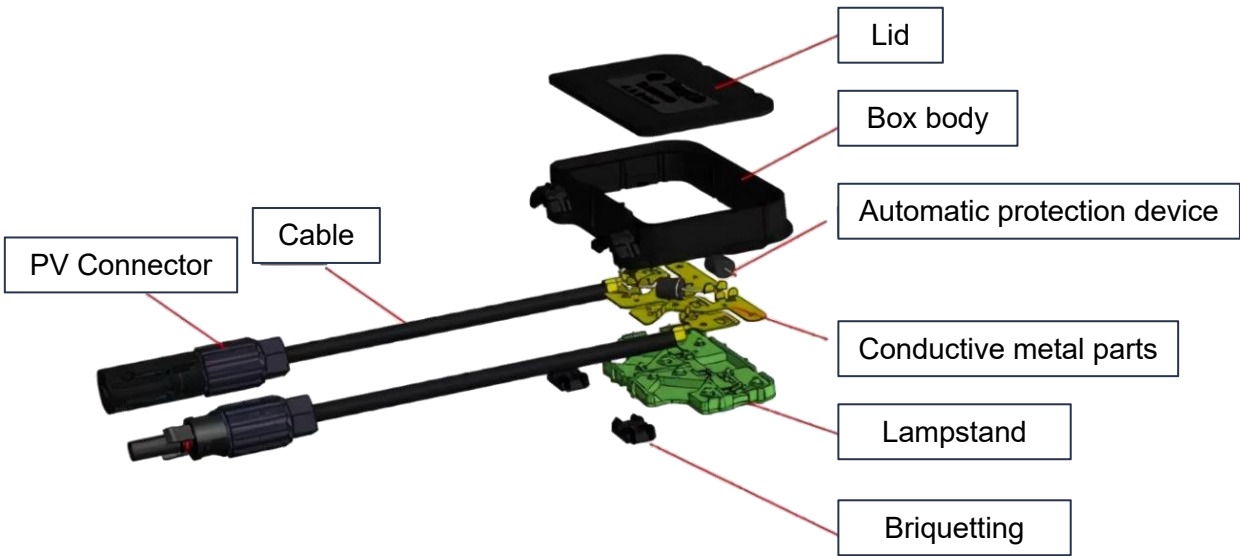
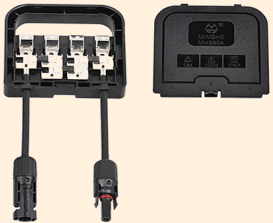


Structure of PV Junction Box and Question Analysis

Structure of PV Junction Box

Two main functions of PV junction box:

- **Connect** between PV module and the load, leading out the current and generating power;
- **Protection** in the event of a hot spot effect on the component.



Question Analysis



Higher quotation



Higher production costs and expenses



Product development structure needs improvement

To solve problem:

Short term

→ Compress related costs

Long term

→ Procurement Department proactively participate in new product development

Decrease total costs & quotation



Short Term: Compress Related Costs

Technology Center

- Control the **R&D and optimization expenses** of products

Supply Chain Center

- Control **inventory costs & quality costs**

Production Center

- Control **feeding**
- Control **energy consumption costs**
- Control **non-conforming products**
- Control **labor costs**

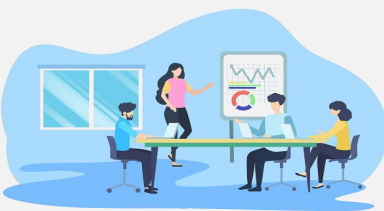
- Define goals



- Control process



- Feedback results



- **Customer intention research**
- **Budget management**
- **Feasibility analysis**
- **Potential risk analysis**
- **Existing production line promotion**
- **Safety inventory**
- **Inspection management system**
- **Standardized feeding process**
- **Control water and electricity costs, mechanical maintenance**
- **Reasonable failure product rate**
- **High level of mechanized operation**

Business Means

Management Means

Technical Means



Long term: Procurement Department and Excellent Suppliers Proactively Participate in New Product Development

Supplier participation and cross departmental collaboration

- Early involvement of suppliers to assist R&D personnel in identifying issues
- Joint development of relevant departments and suppliers
- Quality grading purchase, setting product size from the perspective of manufacturing and assembly
- Standardize product specification to reduce cost waste

Business Means

- The procurement department actively participates in product development
- Encourage excellent suppliers to participate in product development to reduce costs
- Guide and encourage them to participate in supplier selection
- Early perception of potential future demand from the perspective of the early stages of the supply chain

Management Means

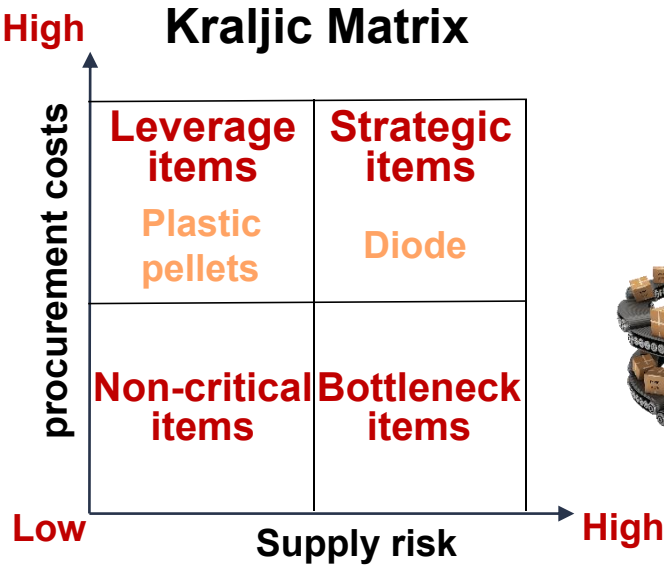
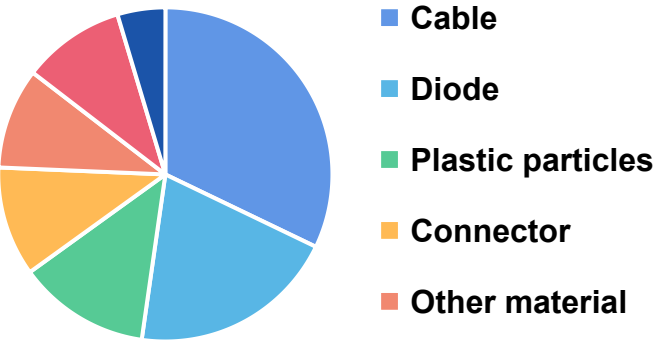
- Supplier review and selection system
- Supplier management, rating, and reward and punishment system
- Product design, process, manufacturing and quality control
- Product development and mass production data sharing

Technical Means



One-time Stockpiling of Plastic Pellets in 2021.10

Cost composition of split diode junction box



The Procurement Dept believed that the price will maintain rising



The Procurement Dept apply for a large amount of stock at one



Buying in large amount of plastic particles at the highest price



- Significant deviation in forecast
- Premature responses



2021.01-2022.12 China Plastic Index

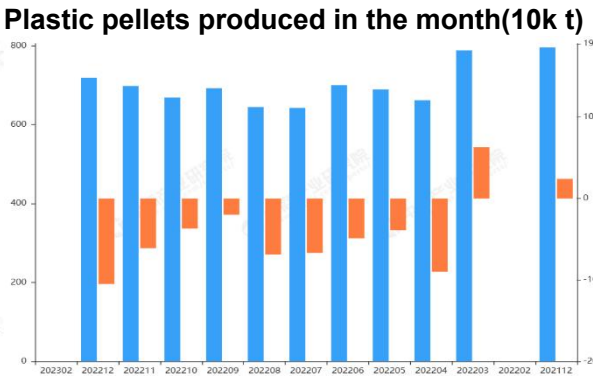
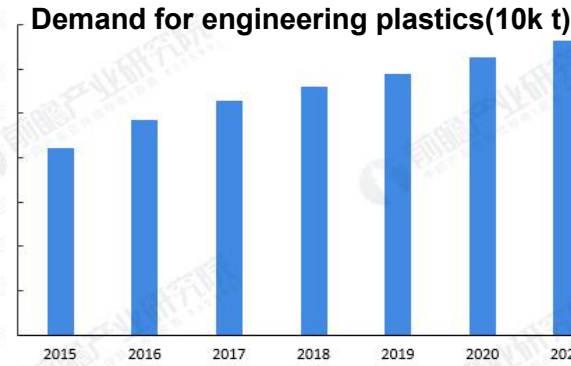


Analysis of the Causes of Price Increase



Brent crude oil price trend chart

Changes in raw material prices



Changes in supply and demand fundamentals

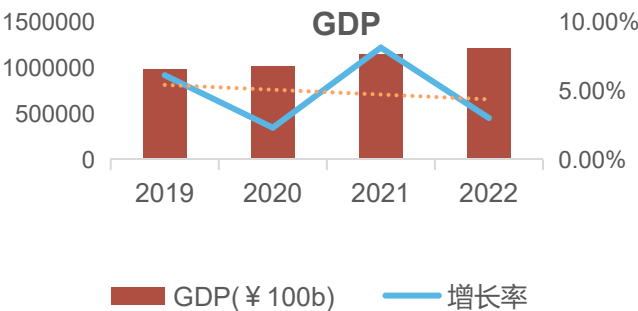
➤ Short-term adjustment of supply and demand

Price volatility risk

Macroeconomic & Industry policy changes

Others

- Economic **downturn** & gradual **recovery**
- **Environmental** policies strengthen
- **Monetary** Policy of **European & US**



- Market **sentiment**
- Cold wave, some **polyolefin plants** in EU & US **interrupted** production
- **Ample** liquidity, and investment speculation



Analysis of the Causes of Price Increase



- No overall change in the supply and demand sides of bulk commodities
- No basis for long-term price increase



Procurement Dept **should not** made that prediction
or **at least** should not make that premature countermeasures



The price increase should be managed as **price volatility risk** rather than a single business processing



Plastic Pellets Price Volatility Risk Management Suggestions





Plastic Pellets Price Volatility Risk Management Suggestions

Price volatility risk response system

Risk identification

Risk assessment

Risk response

Feedback

Prepare plans in advance



Stock up in advance

- x Storage cost & management expenses
- x Loss if wrong predictions



Expand the scope of supplier sourcing, select the lower

!! Pay attention to total ownership cost



Adjust supplier list

- Alternate or joint supply by suppliers
- Combine different suppliers with scale & locations

Benefits:

- ✓ Control political, economic and other risks

Drawback:

- x Supplier management costs



Reasonable review mechanism for vender

- Contract life= 3(fixed one) + N years depending on review results

Benefits:

- ✓ Motivate suppliers for favorable quality & price

Drawback:

- x Management & information collection cost



Plastic Pellets Price Volatility Risk Management Suggestions

Price volatility risk response system

Risk identification

Risk assessment

Risk response

Feedback

Prepare plans in advance



Agreements to lock in prices in advance

- One-year price lock agreement is most commonly used

Drawback:

- ✗ Difficult to identify the locked price

锁定钢材价格协议

购货方：（以下简称甲方）

供货方：（以下简称乙方）

甲方为建设工程，在乙方定购钢材万元（锁定价格），为明确甲、乙双方的责任和义务，经协商，在自愿、合法、互利的基础上，达成如下协议。

一、 钢材品牌及产品质量的约定：

1、 约定钢材品牌：冷钢、萍钢、湘钢。

2、 产品质量：国家标准，甲方先检后用，检测不合格的钢材退换运费由供货方负责。

二、 价格、规格数量的约定：

名称	规格	牌号	单价（元/吨）	计量方式
螺纹钢	Φ18-25	HRB400		过磅计量
螺纹钢	Φ16	HRB400		过磅计量
螺纹钢	Φ14	HRB400		过磅计量



Price insurance

- ✗ Hard to obtain sufficient hedge compensation
- ✗ Not that common



Financial instruments


- Purchase financial derivatives and instruments
- ✗ Professional guidance is required
- ✗ Risk management activities may deviate to speculative ones
- ✗ Management costs & cost of capital occupation





Plastic Pellets Price Volatility Risk Management Suggestions



Prepare plans in advance 

Manage exchange rate fluctuation risk



Transaction risk management

Internal methods

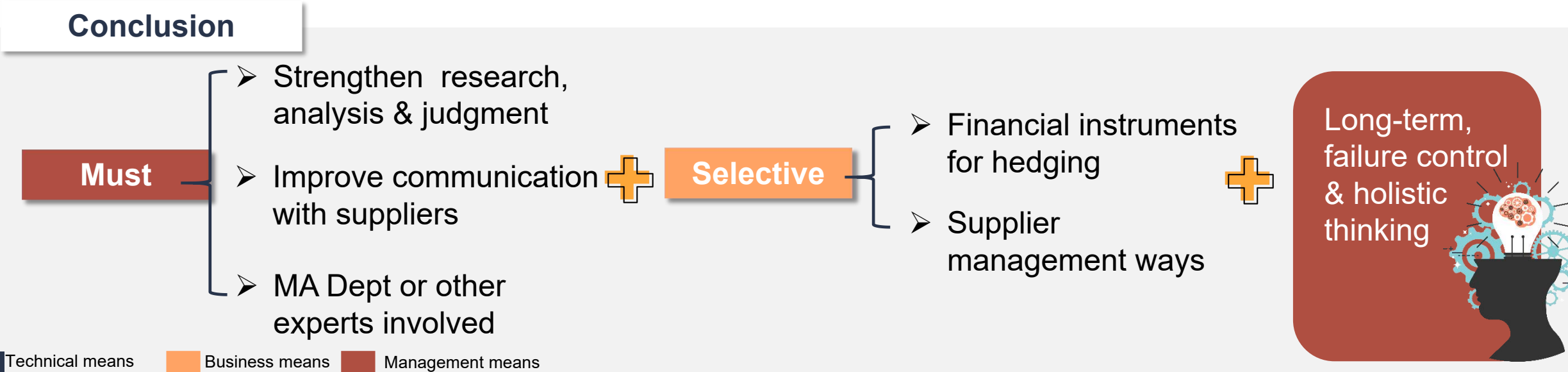
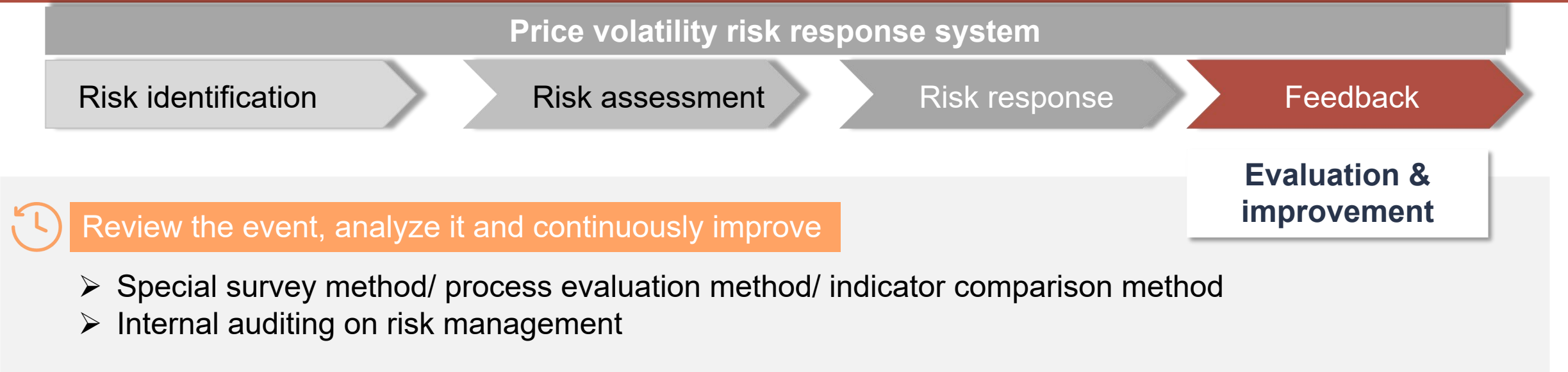
- Leading/lagging
- Matching/netting

External methods

- Forward contracts
- Currency futures
- Currency options
- Currency swaps



Plastic Pellets Price Volatility Risk Management Suggestions

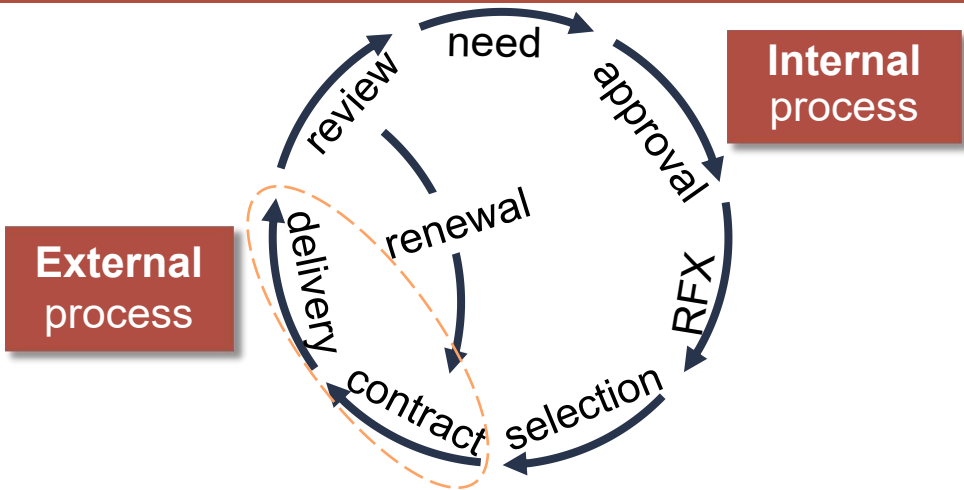




Procurement Cycle and Question Analysis

Procurement cycle

The procurement cycle is the process of selecting a vendor, buying goods or services from them and managing their ongoing performance.



Question analysis

Stabilize the procurement cycle
to but more than
Manage the out-of-stock risk

Internal factors

- **Inefficiency**
- **Unreasonable** processes & control mechanisms
-

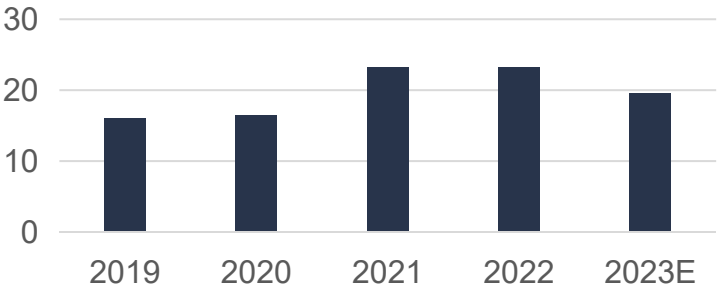
External factors

- **Uncontrolled** environment (eg. COVID-19; tense international situation)
- **Information bias**
-


Schottky diode delivery time in 2018

Supplier	Delivery time(weeks)	Trend
Diodes Inc	12-22	Lengthen
Nexperia	20-40	Lengthen
ON Semicondouctor	20-40	Lengthen


Chinese diode production capacity/100m\$



Switch to domestic suppliers

- ✓ Minimize risk from interrupted transportation and cross border transactions
- x Supplier switch cost 

Multiple & alternative supply

- ✓ Don't put all your eggs in one basket
- x Management costs 
- x May lose bulk discounts

Regular delivery assessment & communication

- Communicate for reasons of late delivery
- Cease cooperation if vender fail to meet the standards

Global		Domestic
Vishay	US	CR Micro
FUJI	Japan	Suzhou Good
ROHM	Japan	Shandong Jingdao
Infineon	Germany	Chongqing Pingwei
Onsemi	US	Yangjie Tech

Global		Domestic
Microsemi	US	Nantong Hantech
Vishay	US	Jinan Jingheng
Skyworks	US	Zhejiang Liuqing
Toshiba	Japan	Wuxi Xuyang
MACOM	US	

Use axial diode mainly

Benefits:

- ## Drawbacks:

- x The design has to change
- x Product performance may be affected

Replacing diodes with chips

Benefits:

- ## Drawbacks:

- x New challenge in managing supply of chips & quality and design of products

Sign a lock agreement in advance

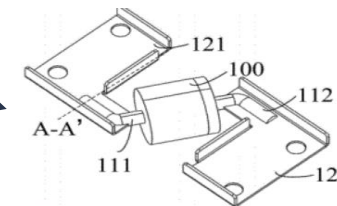
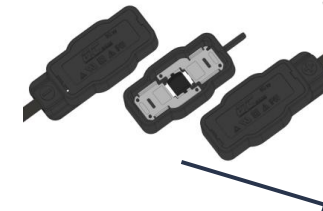
- Sign a preliminary agreement about how many diodes would be bought in a fixed period, which should be granted

Benefits:

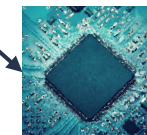
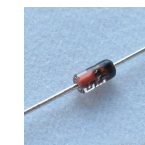
- ✓ Obtain promise from suppliers

Drawbacks:

- × Suppliers may not willing to sign



Axial diode junction box




Increase safety stock

- ## Take full advantage of third-party logistics

-

Increase safety lead time

- x Hard to determine
- x Storage costs 

Order tracking Management

- ✕ May just be a mere formality
- Introduce or improve **OMS**(order management system) / **SRM** system(supplier relationship management system) / **ERP** system(enterprise resource planning system) / **SaaS**(software as a service)

!! Require initial input & fit with current systems

Improve & standardize procurement process

- Kaizen, BPR, self-review
- Digitization
- ✓ Shorten procurement cycle
- x Costly & time-consuming
- x Counter-effective if not managed well



02

Introduction of Procurement Digitalization

Main paths of digitalization

- target customer
the annual amount of
procurement ≥ 1 billion
- the level of order
million

=licenses unit
price*amount

depend on the difficulty of
program and the time spent

=licenses fee*fixed
coefficient

- target customer
the annual amount of
procurement < 1billion
- the level of order
50,000~300,000 per year

Charge in combination with the number of suppliers and functional modules used

- ✓ Charge based on annual purchase amount * fixed coefficient
- ✓ No fixed factor, but quotes based on annual purchase amount

Supply Chain Finance

Provide financial technology services
to charge technology service fees

Logistics, invoice verification, etc. Partner with third-party service providers and earn the price difference

Use SaaS

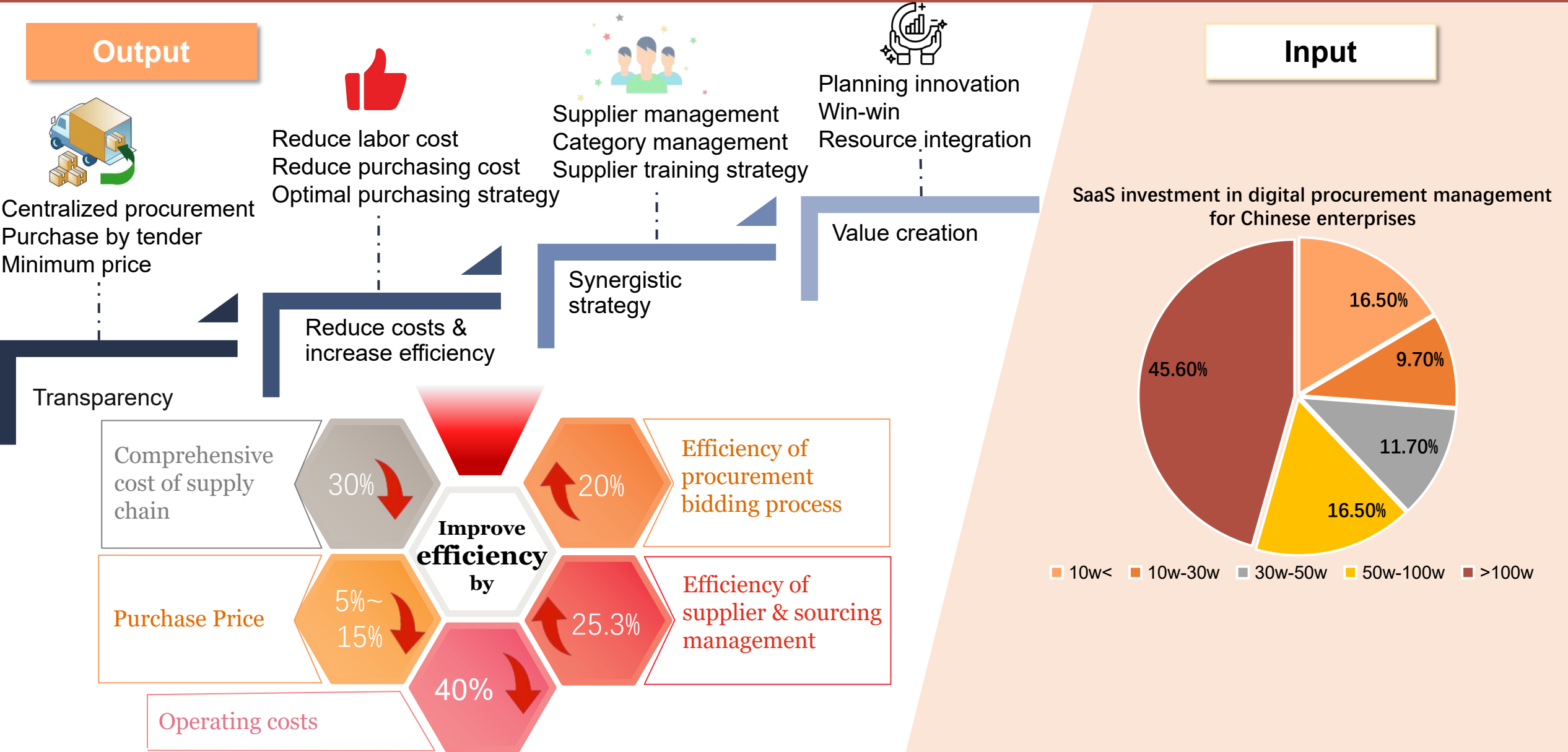
Improve ERP

Introduce SRM system

Others

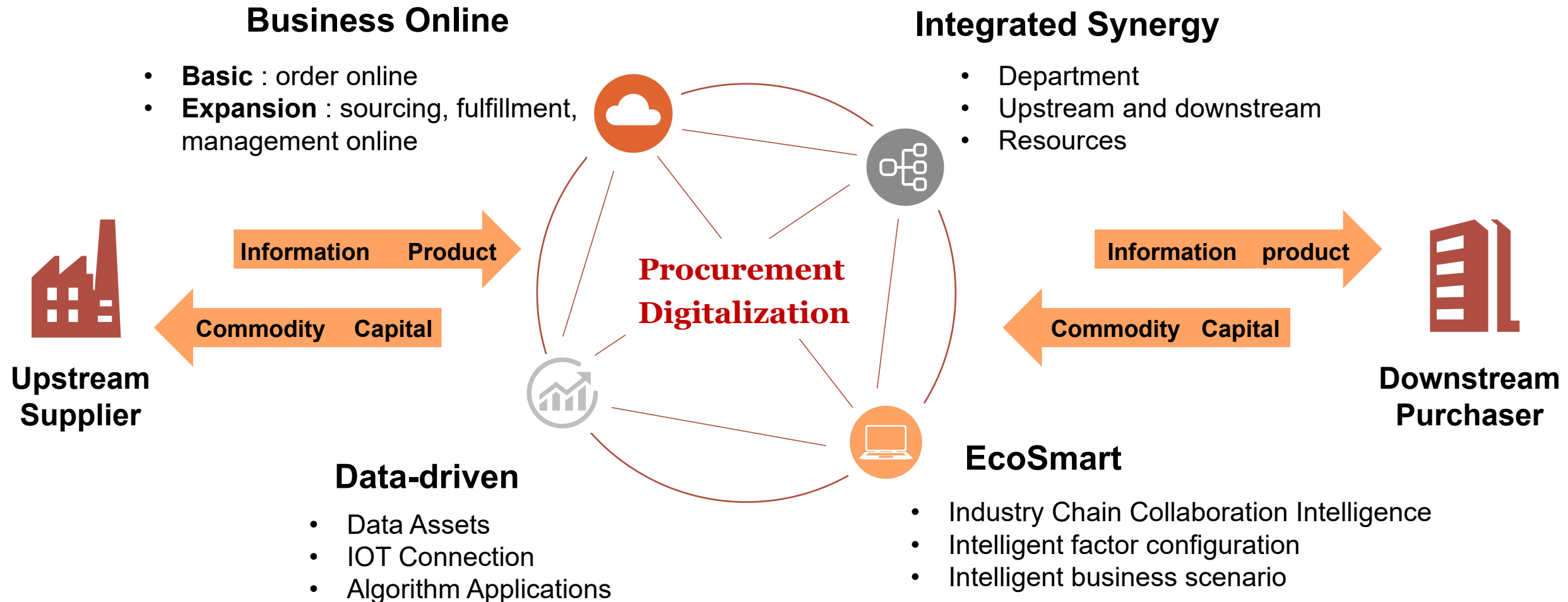


Procurement Digitalization under Supply Chain Management





Procurement Digitalization under Supply Chain Management





Thanks for Your Attendance