

地方セミナー  
(地方短期コース)

2018 年

ビジネスプロセスリエンジニアリング



## **Special Course (BPR and SCM)**

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**September,2018**  
**Uzbekistan Japan Center**  
**JICA**

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### **Vision and Mission of This Course**

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#### **Vision**

**All participants become familiar with BPR and SCM concept and methodologies, and apply them to their day to day operations in both factory shop floor and office in order to achieve business growth.**

#### **Mission**

**Identify the problems or challenges in the operation and come up with ideas for BPR and SCM and apply them through team work approach.**

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## Introduction of Lecturer

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**Experience** : (1) 30 years Japanese textile company  
International Business, Marketing & Administration  
(2) 3 years in Textile/garment factory in Africa  
(3) 12 years consulting in Kaizen, Production/Operation,  
Sales Management, Marketing in various countries.



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## Schedule/Table of Contents

Day	Topics	Slide No.
1	BPR (Business Process Re-engineering)	5
2	SCM (Supply Chain Management)	61

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# Business Process Re-engineering (BPR)

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## Introduction

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- The most charismatic figure in the reengineering movement is Mike Hammer, who popularized the term reengineering in the Harvard Business Review.

the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical contemporary measure of performance such as **cost, quality, service and speed.**

**KPI: Quality, Cost, Delivery**

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## Introduction

BPR reviews all aspects of people, process, technology and organization in a single coordinated approach.

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## Why reengineering?

Why companies need to implement reengineering?  
Why companies designed inefficient processes?



Many of their procedures were not designed at all, **they just happened.**

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## Process of 'just happened'

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1. The company founder recognized that he or she did not have time to handle a chore, so he or she delegated it to Smith.
2. Smith improvised. Time passed, the business grew, and Smith hired his entire clan to help him cope with the workload.
3. They all improvised.
4. Each day brought new challenges and special cases, and the staff adjusted its work accordingly.
5. The mixture of special cases and quick-fix was passed from one generation of workers to the next.

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## Company continual success

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A company's current success is usually based on changes made over the previous five to ten years, so success today does not guarantee success tomorrow unless a company is already thinking ahead.

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## Three kinds of companies undertaking BPR

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1. Companies finding themselves in deep trouble such as:
  - Uncompetitive price due to high production/operation cost.
  - Unsatisfactory or limited customer service level
  - High defective rate of products or services

Case study of 'Ford' in 1980 was a good example.

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## Three kinds of companies undertaking BPR

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2. Companies that are driving along very smoothly, but see something rushing forward them in their headlights
  - These companies are not yet in trouble, but have the foresight to see trouble coming. These companies have the vision to be reengineering in advance of running into adversity.

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## Three kinds of companies undertaking BPR

3. The company undertaking reengineering is in peak condition.
  - They have no discernable difficulties, either now or on the horizon, but their managements are ambitious and aggressive. Reengineering is an opportunity to further their lead over their competitors.
  - By enhancing their performance, they seek to raise the competitive bar even higher and make life even tougher for everyone else.

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## Key words of BPR

- Four key words that characterize BPR:

Fundamental, Radical, Dramatic, Process

Task-based thinking

Task-based thinking: Fragmentation of work into its simplest components and their assignment to special workers



Process-based thinking

Process-based thinking: Process to be reviewed whether such process adds value from the customer point of view.

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## Improvement in Process Design Phase

- ECRS Principles in IE (Industrial Engineering):
  - **E**liminate      Eliminate the operational steps
  - **C**ombine      Conduct several operational steps concurrently
  - **R**earrange      Change the order of operational steps
  - **S**implify      Simplify operational steps

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## Organizing for BPR

1. Identify the need for reengineering and business vision
2. Obtain the business unit leader's commitment
3. Identify process to be redesigned
4. Understand and measure existing processes
5. Identify the enabling role of IT and design new process
6. Specify the technical and social solutions
7. Transform the business processes

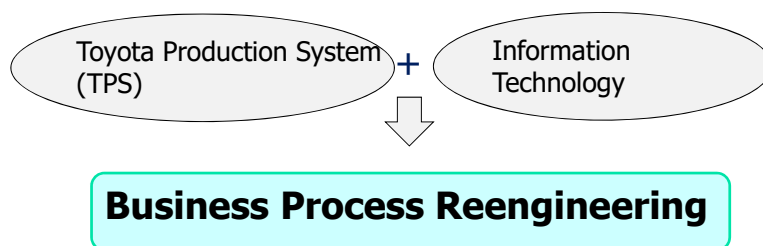
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## BPR (Business Process Reengineering)

### Definition

- Reengineering Work: Don't Automate, Obliterate (Michael Hammer)
  - Harvard Business Review (July-August 1990)
- Review the flow of business process completely and restructure (re-engineer) it with IT supports.
- Target is office (paper factory: white collar operation).

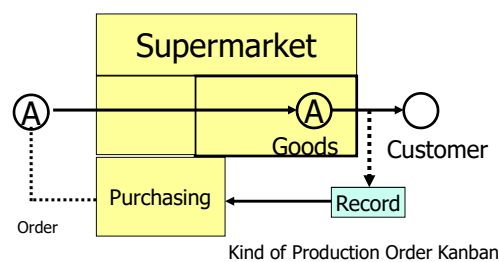


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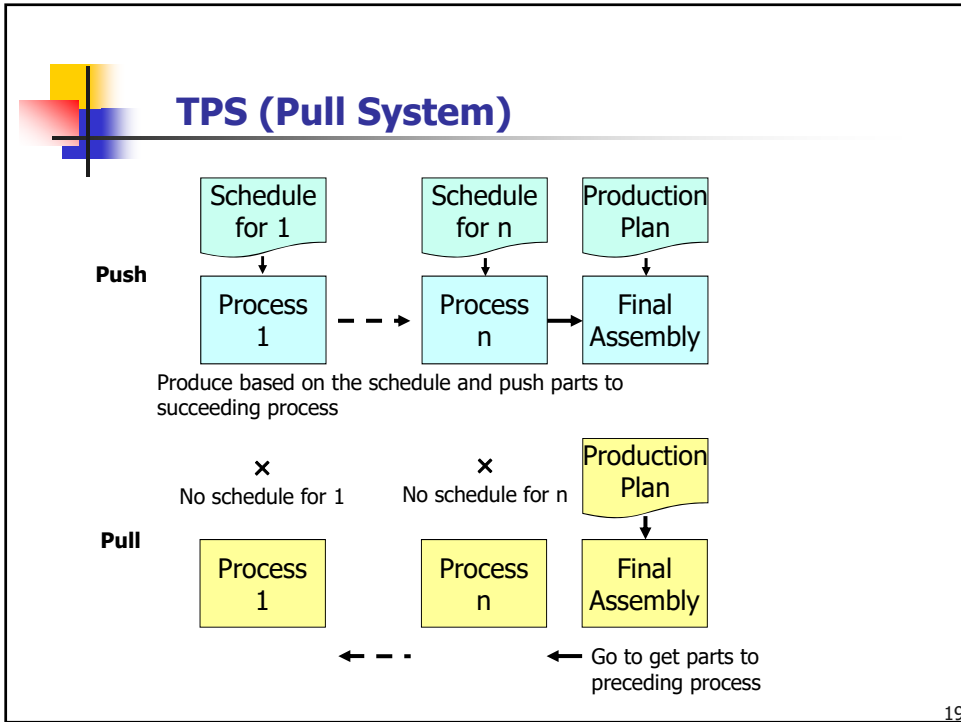
## TPS (Just In Time)

- **Just In Time: 'Just' is important.**
- **'In Time' still keeps wastes.**
- **Original idea was from Supermarket in the USA.**
  - **Customer = Succeeding Process**
  - **Supermarket = Preceding Process**
  - **Customer comes takes necessary amount of necessary items at necessary time.**

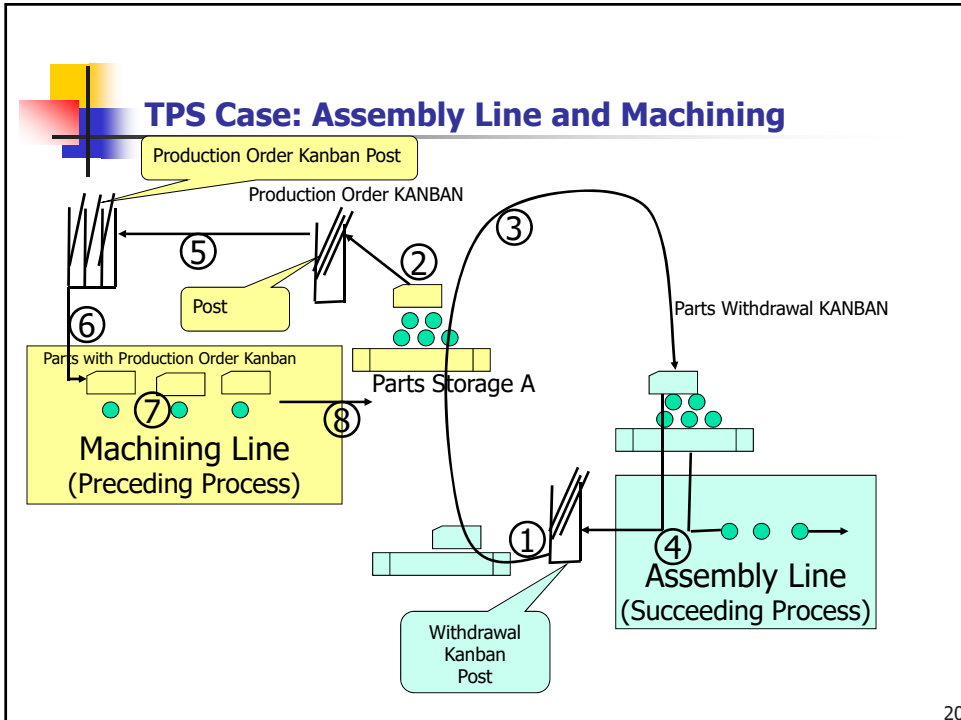


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## TPS (Root Cause Analysis-5 Whys )

- Suppose the machine stopped.
  - 1st Why: Why did the machine stop?  
Fuse was cut due to overload.
  - 2nd Why: Why overloaded?  
Insufficient lubricant.
  - 3rd Why: Why insufficient?  
Lubricant pump did not draw the oil well.
  - 4th Why: Why did the pump draw the oil insufficiently?  
The shaft of the pump wore down and became shaky.
  - 5th Why: Why did it wear down?  
No strainer gave a chance of getting small metal scraps.
- Then, the resolution is to install a strainer.
- If only 1<sup>st</sup> Why, the answer is just changing the fuse.

## Waste Analysis (1/2)

Man

Machines

Materials

### Seven Wastes

Motion
Waiting
Overproduction
Processing
Defects
Transport
Inventory

**Wastes/Futility = Cost Increase**




## Seven Wastes in Manufacturing (1/2)

Wastes	Definition	Frequent phenomena
<b>Motion</b>	Motion within a local area that does not add value	<ul style="list-style-type: none"> <li>• Searching for materials, components drawings or documents</li> <li>• Reaching for tools</li> <li>• Lifting boxes of components</li> <li>• Walking away to bring tools to area</li> </ul>
<b>Waiting</b>	Idle time created when people, materials, information, or equipment is not available when required	<ul style="list-style-type: none"> <li>• Waiting for parts or drawings</li> <li>• Waiting for information</li> <li>• Waiting for machine repaired</li> <li>• Waiting for people</li> </ul>
<b>Over production</b>	Generate more than the customer requires	<ul style="list-style-type: none"> <li>• Producing for stock/inventory</li> <li>• Working in large batches to avoid set ups</li> <li>• Adding 'scrap' allowances</li> </ul>
<b>Processing</b>	Efforts to create no added value from the customer's view	<ul style="list-style-type: none"> <li>• Unnecessary operations</li> <li>• Over-tight tolerance</li> <li>• Bad design</li> <li>• Multiple cleaning</li> </ul>

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## Seven Wastes in Manufacturing (2/2)

Wastes	Definition	Frequent phenomena
<b>Defects</b>	Not perfect products	<ul style="list-style-type: none"> <li>• Scrap</li> <li>• Rework</li> <li>• Defects</li> <li>• Corrective actions</li> <li>• Field failure</li> <li>• Variation</li> <li>• Missing parts</li> </ul>
<b>Transport</b>	Movement between plants or offices or areas that does not add to the value of the finished goods or service	<ul style="list-style-type: none"> <li>• Moving parts or equipment in and out of storage</li> <li>• Moving materials from one area to another</li> <li>• Moving parts between processes</li> </ul>
<b>Inventory</b>	More materials or information on hand than currently required	<ul style="list-style-type: none"> <li>• Raw materials</li> <li>• Work in process</li> <li>• Finished goods</li> <li>• Consumables</li> <li>• Off site inventory</li> </ul>

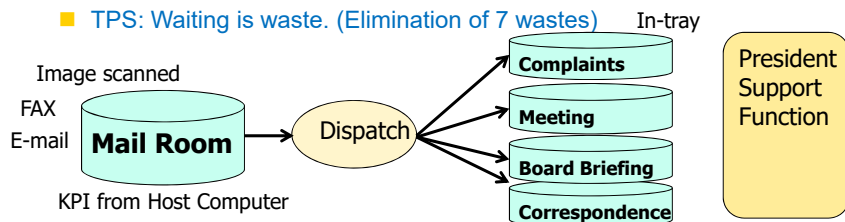
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## BPR Principles

### Principle 1

- Treat geographically dispersed resources as though they were centralized.
  - Develop system where information always exist when a person who needs it.
- TPS: JIT (Just In Time)
  - Withdraw necessary number of necessary items from preceding process to succeeding process and produce what withdrawn in preceding process.
- TPS: Waiting is waste. (Elimination of 7 wastes) In-tray



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## Case of Principle 1 (Rental business)

IT (Information Technology) enables you new services.

Average utilization  
40%



Big Rental's utilization  
70%

Schedule  
Optimization

IT  
Internet

24hours  
Monitoring

Rental business of  
heavy construction  
machines

- Position information+GPS/Internet
- Available machines
- Transportation optimization
- Pricing information
- Sales staff access to the information

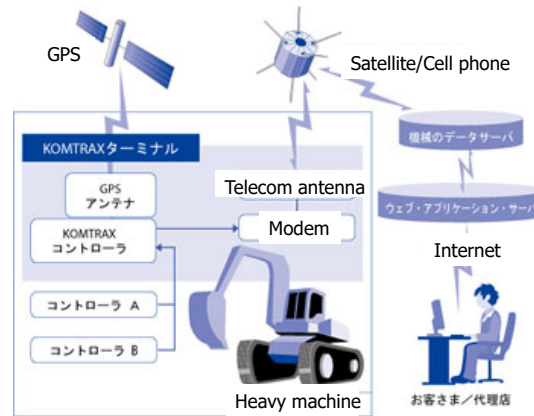
- 15 staff: 3,000 transactions/day
- 7,000 machines

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## Case: KOMATSU: KOMTRAX

- GPS/Internet
- Machines are geographically dispersed resources.
- Centralized information.
- More than 300,000 in the world.
- Many machines were not moving in China. Then, decrease the production by changing the production plan.

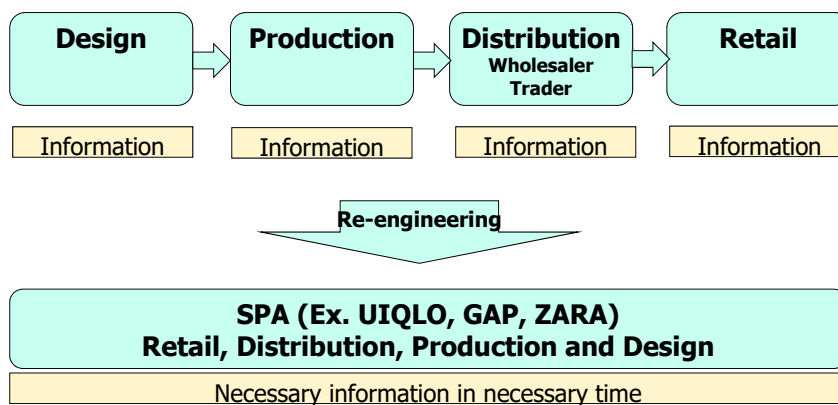


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## Case: SPA

(Specialty store retailer of Private label Apparel)



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## BPR Principles

- Principle 2: Capture information once and at the source.
- Principle 3: Link parallel activities instead of integrating their results
- Principle 4: Have those who use the output of the process perform the process.

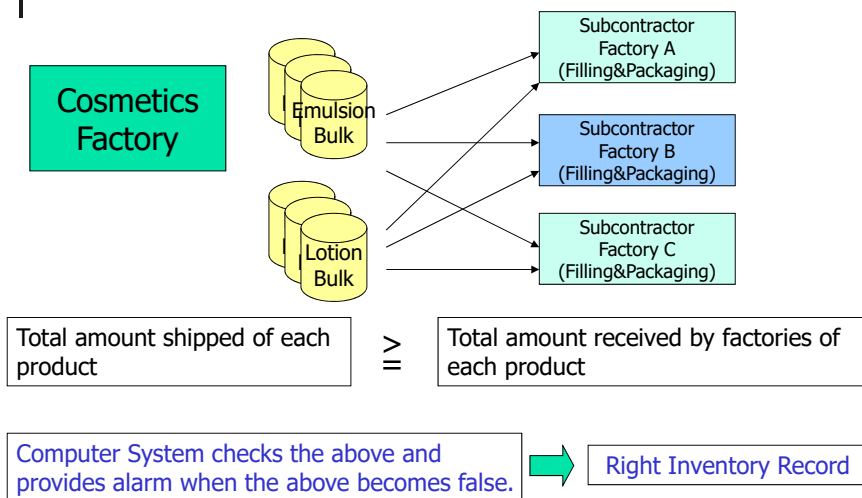
← TPS: Elimination of Wastes completely

Factory in Toyota	Knowledge-based activities
Waiting	No action due to waiting the information
Motion	Useless motion
Transport	Simple messaging, -bring file from cabinet.
Process	Meaningless business activity, -find the file.
Over production	Unnecessary much information
Inventory	Too advanced preparation
Defects	Mistakes, errors

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## Case of Principle 2



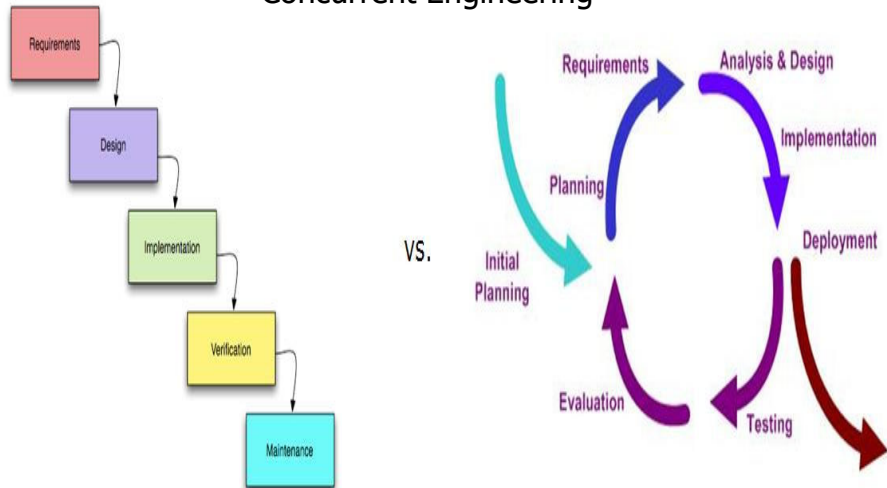
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## Case of Principle 3

### Concurrent Engineering



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## Concurrent engineering (CE)

Concurrent engineering(CE) is a work methodology emphasizing the parallelization of tasks (i.e. performing tasks concurrently),which is sometimes called simultaneous engineering or integrated product development (IPD) using an integrated product team approach.

It refers to an approach used in product development in which functions of design engineering, manufacturing engineering, and other functions are integrated to reduce the time require to bring a new product to market.

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## Concurrent engineering (CE)

Doing several things at once, such as designing various subsystems simultaneously, is critical to reducing design time and is at the heart of concurrent engineering.

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## Case of Principle 4

Manager



Analyst



**Before:** Manager reads a report prepared by the analyst.



**After:** Manager uses IT to prepare a report by himself and analyze the report.

**Elimination of waiting for report preparation.**

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## BPR Principles

### Principle 5

- Subsume information-processing work into the real work that produces the information.
- Integrate tasks of processing information with value-added work
- TPS: 5W1H (Root cause analysis)
  - Drill down approach (Executive Information System)
    - Online Analytical Processing/Multi-Dimensional Database
      - Slicing/Dicing/Drilling
    - Why: Human work, Processing: Computer work
- TPS: KANBAN system

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## Case: Drill Down approach

Area	Distributor	Retail	Product X	Product Y	Product Z
A	A1	A11			
		A12			
		A13			
	A2	A21			
		A22			
	A3	A31			
B	B1	B11			
		B12			
	B2	B21			
		B22			
	B3	B31			
		B32		✓	
B33					
C	C1	C11			
		C12			
	C2	C21			
		C22			

Sales went down

Which area?: B

Which distributor in Area B?: B3

Which retail under B3?: B32

Which product?: Product Y

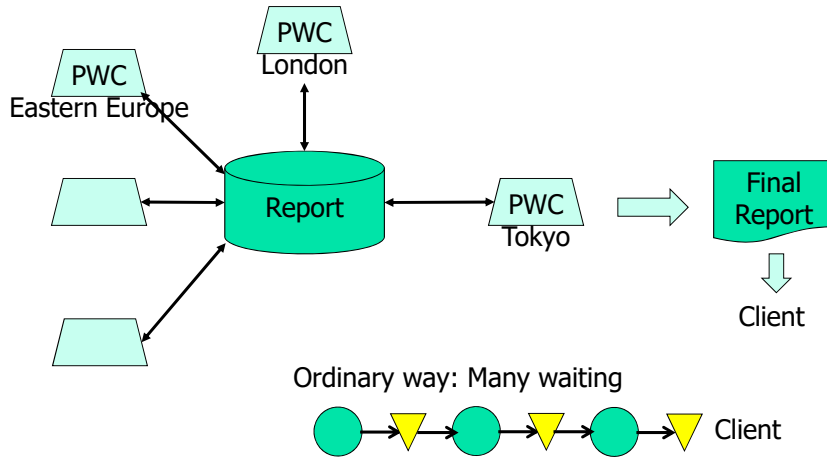
No segment for Product Y in B32 retail shop

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## Case: Project Identification Project

### Use of Groupware or Dropbox



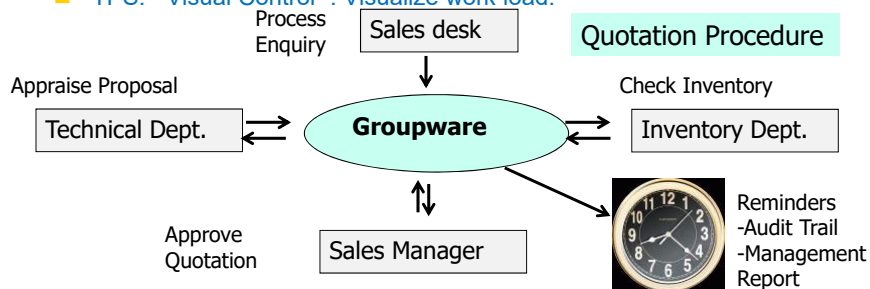
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## BPR Principles

### Principle 6

- Put decision points where the work is performed and build controls into the process.
- Build-in management process into business process
  - Fool proof, Work load management, Due alarm, etc.
- TPS: "Fool proof/Mistake proofing" : Due alarm
- TPS: "Visual Control" : Visualize work load.



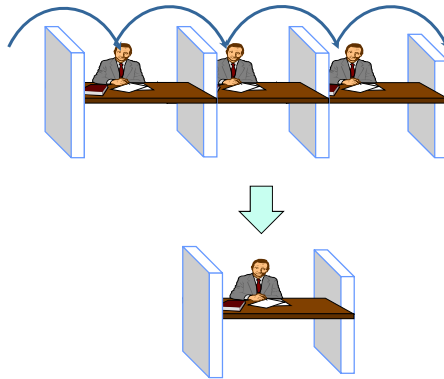
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# BPR Principles

## Principle 7

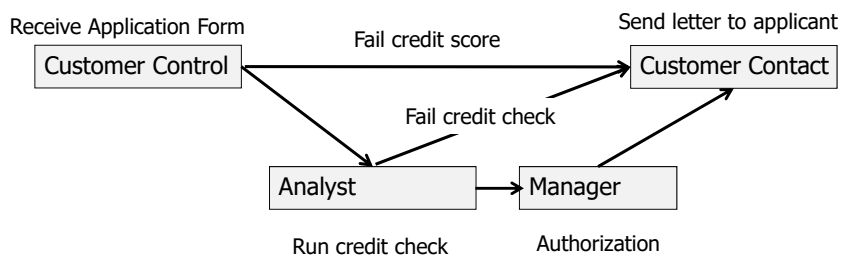
- Organize around outcomes, not tasks.
- Restructure organization to output oriented one by implementing multi-skilled worker system.
- TPS: "Multi-skilled worker"
  - Multi-skilled teller at a bank
  - Multi-items salesman
- TPS: Through production (Prerequisite of JIT)
- Case: Workflow Automation



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## Work Flow Automation Bank Loan Authorization Procedure



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## Process reformation by IT

Pattern	Detailed case
Automation	Elimination of process by human beings (Automatic ordering system by EDI)
Information	Sales information data collection by POS system
Re-arrangement	Re-arrange process order, link parallel process (Concurrent engineering using 3D CAD)
Tracking	Monitoring process situation and process itself (Tracking system using GPS or IC tag)
Analysis	Data analysis and improvement of decision-making (Data mining)

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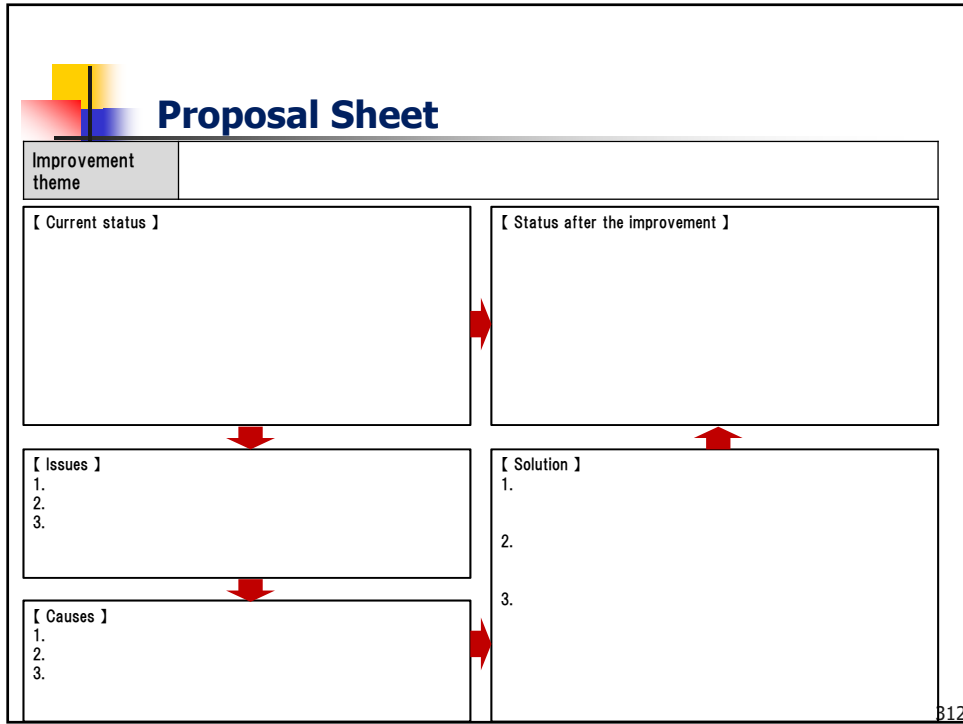


## Process reformation by IT

Pattern	Detailed case
Geography	Arrangement of processes dispersed geographically (Production, Inventory and Sales data)
Integration	Arrangement of job and process (Integrated control by using ERP)
Knowledge	Sharing individual know-how and team's success story
Direct	Elimination of obstacles from the process (Direct sales via internet (on-line))

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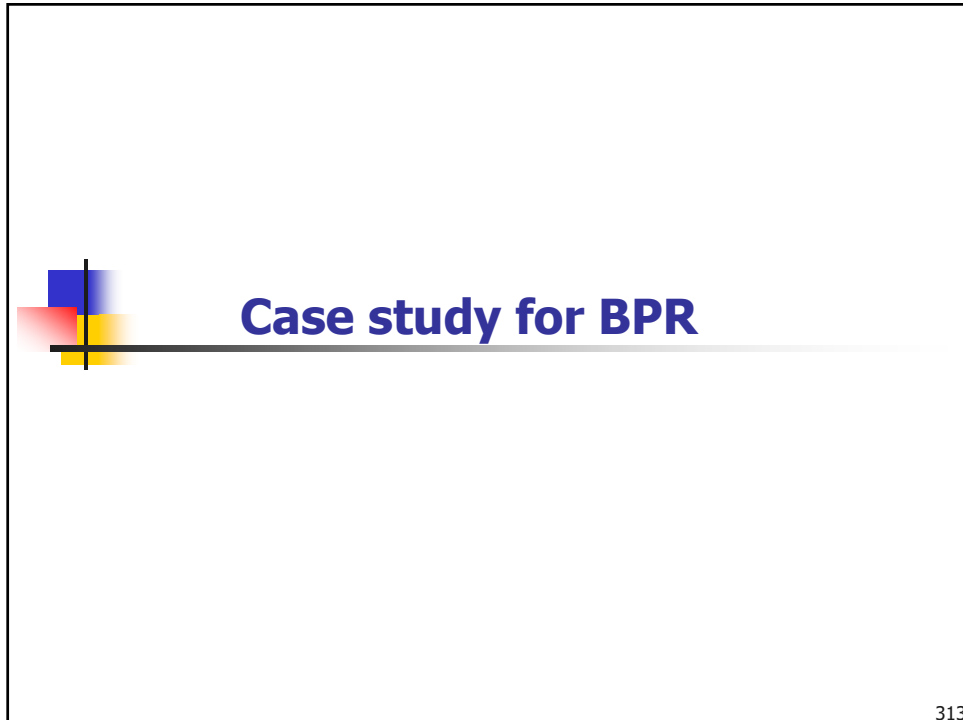


**Proposal Sheet**

Improvement theme			
[ Current status ]		[ Status after the improvement ]	
[ Issues ] 1. 2. 3.		[ Solution ] 1. 2. 3.	
[ Causes ] 1. 2. 3.			

B12

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**Case study for BPR**

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## BPR (FORD and MAZDA) case

### Group discussion

Please read the materials and discuss the following Issues.

- (1) Why did they implement BPR?
- (2) What were the results by BPR?
- (3) What principles of BPR were used?
  - Principles of TPS could be used.
- (4) What were their Critical Successful Factors?

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## Major stages for BPR

- (1) Identify the need for reengineering and business vision
- (2) Obtain the business unit leader's commitment
- (3) Identify process to be redesigned
- (4) Understand and measure existing processes  
"AS-IS"
- (5) Identify the enabling role of IT and design new process  
"TO-BE"
- (6) Specify the technical and social solutions
- (7) Transform the business process
- (8) Continuous process improvement

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## Key to success for BPR

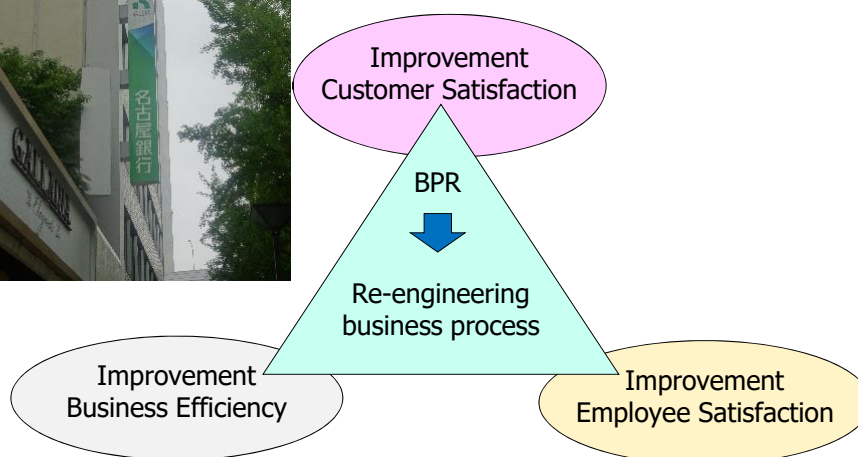
- (1) Leadership  
Creating a vision, value and climate  
BPR fundamentally changes organizational culture.
- (2) Shared values  
No pain, no gain.
- (3) Teamwork at all levels
- (4) Constituency relationships, especially with shareholders, customers and suppliers
- (5) Change and the desire to dominate the market

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## BPR case study (A Bank in Japan)



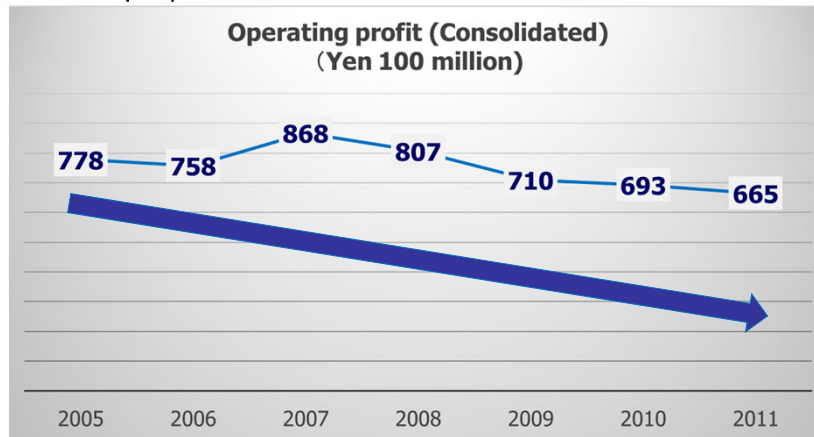
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## Background for BPR

Get out of the downward trend of profit over the years and achieve sustainability and growth of the company

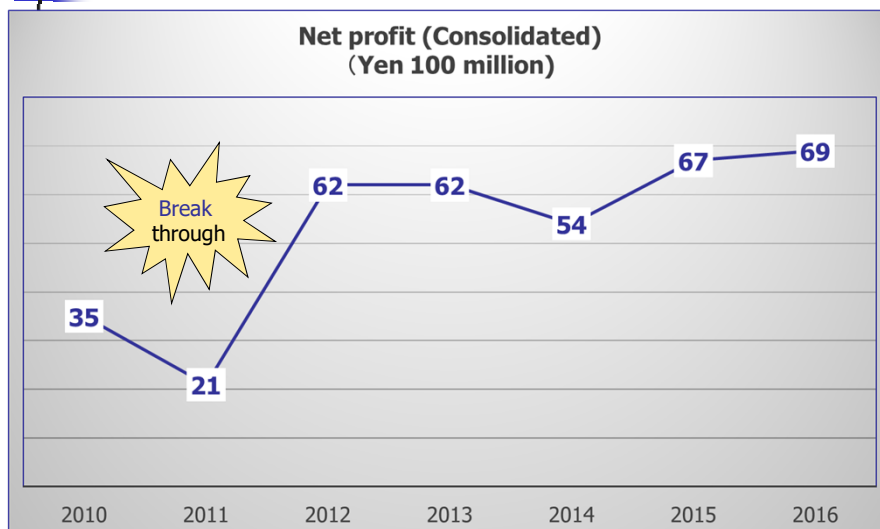


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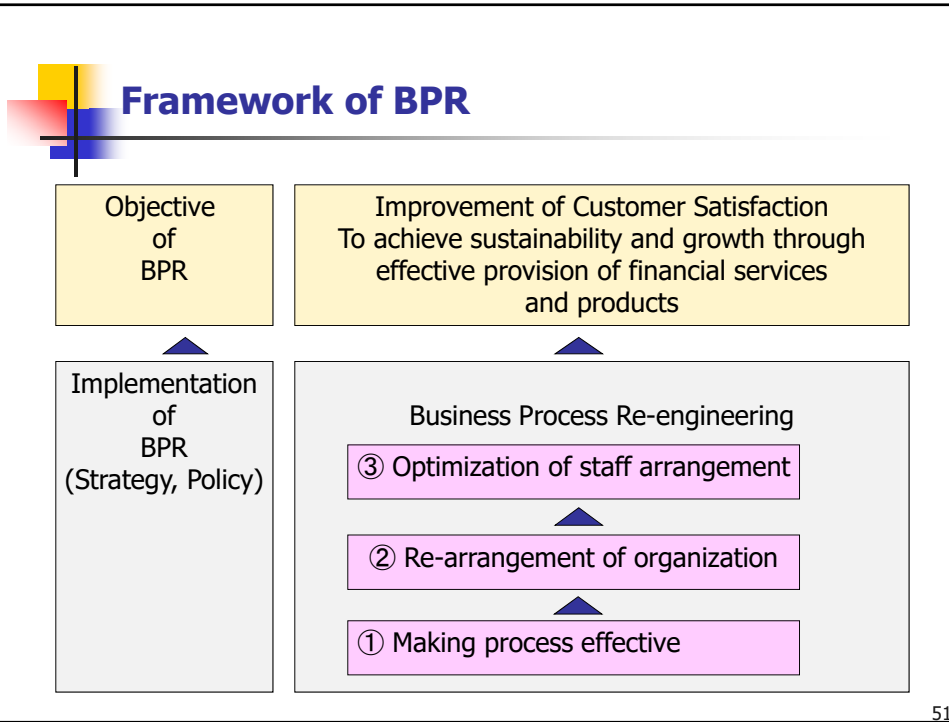


## Effect of BPR

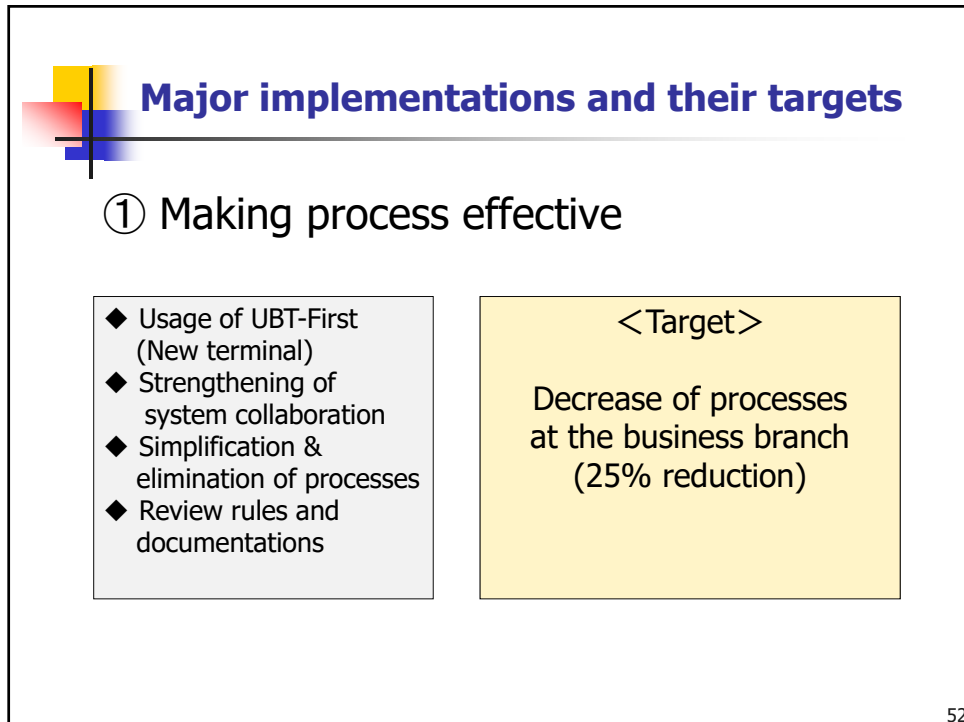


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## Fujitsu UBT First



UBT First terminal



Administration



Promotion



Relation

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## Major implementations and their targets

### ② Re-arrangement of organization

- ◆ Transfer of loan process to headquarters.
- ◆ Transfer of documents storage and checking processes.

<Target>

Concentration of business processes at headquarters

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## Major implementations and their targets

### ③ Optimization of staff arrangement

- ◆ New establishment of Personal Concierge(PC).
- ◆ Communication enhancement with customers
- ◆ Support system at peak time.
- ◆ Flexible manpower arrangement with contract staff and part-time workers

<Target>

Strengthening of  
Customer Relationships  
(Personal Concierge: from  
550 to 700)

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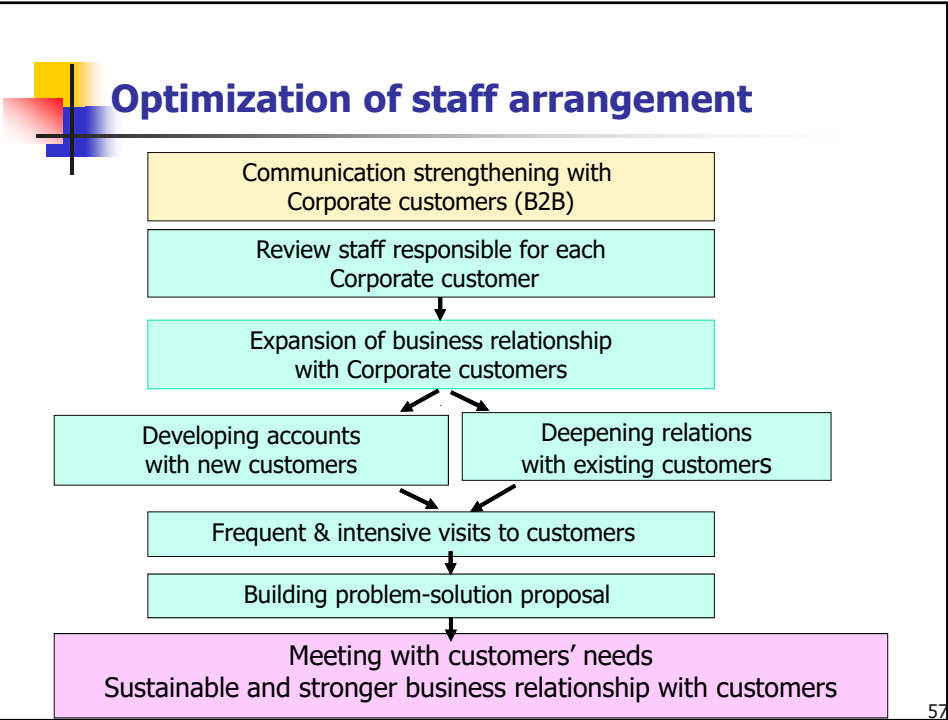
## Mission of PC

### Mission of Personal Concierge (PC)

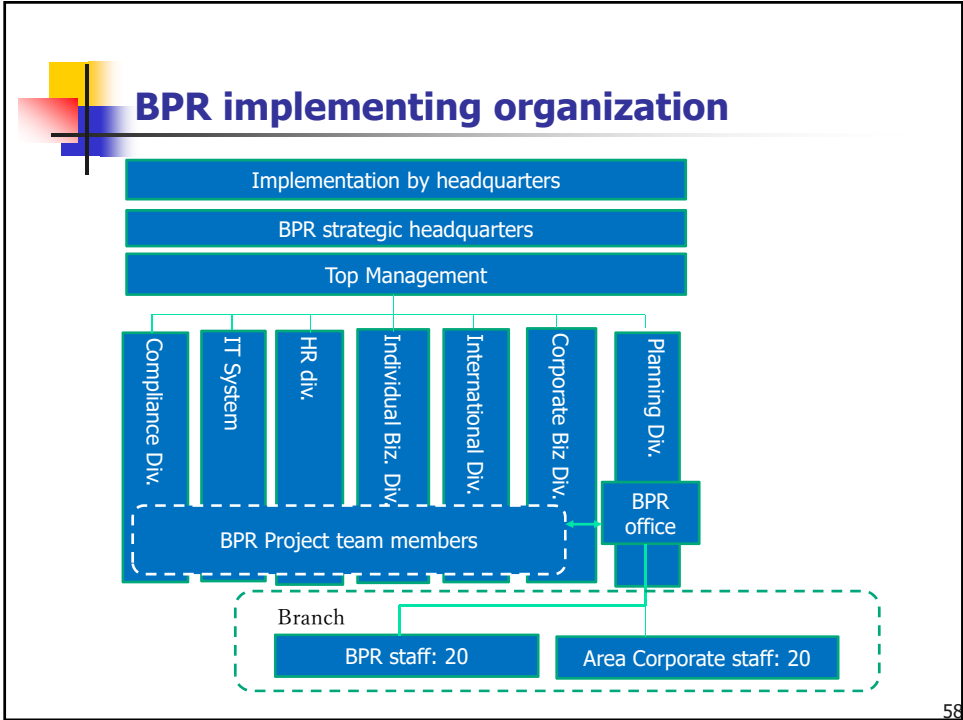
- Strengthening relationship with individual customers.
- Developing business transactions with new customers and improving business share in the region.
- Developing business transactions by becoming Main Accounts with existing customers.
- Meeting customers demands for fund operation, investment, etc.

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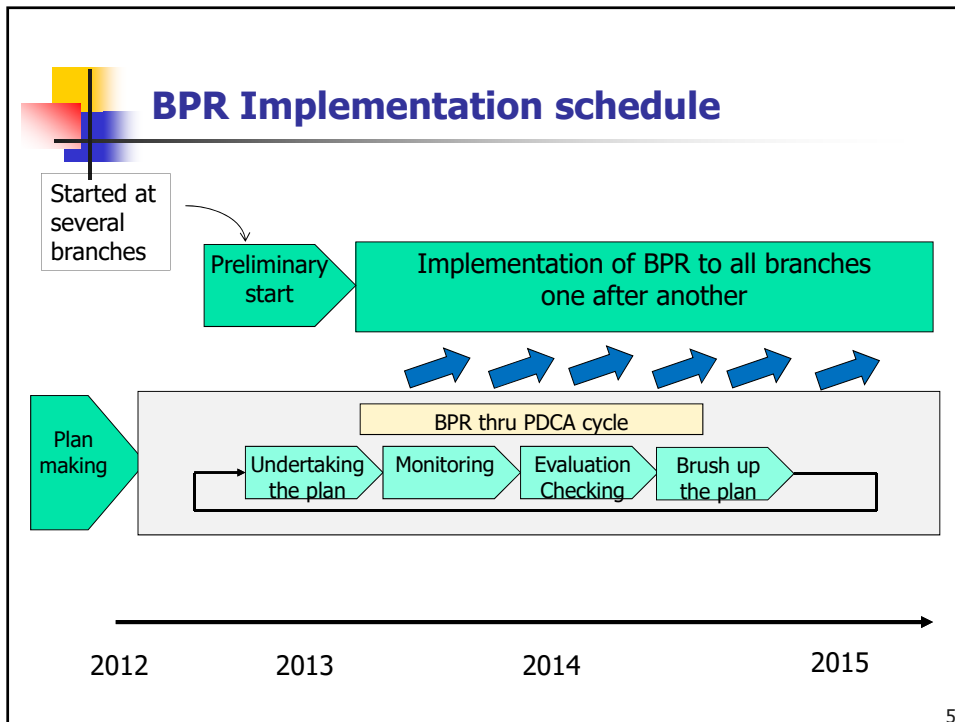
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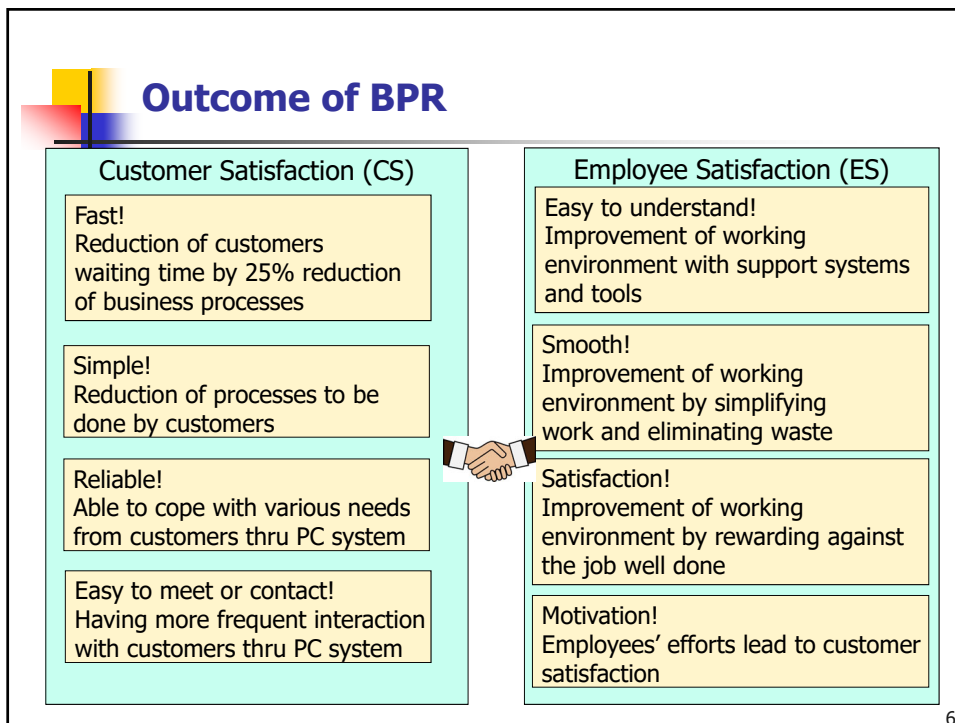
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# Supply Chain Management (SCM)

**November, 2017**

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## Background situation for SCM

Increased demand for SCM

```

    graph LR
      A[Slow economic growth and low demands] --> B[Increase of makers' inventories]
      C[Request for frequent deliveries of smaller lot by buyers] --> B
      B --> D[Review of production & logistic system]
      E[Wide variety of small lot production] --> D
      F[Diversification of consumption] --> E
      G[ICT development] --> H[Demands for SCM]
      I[Global competition] --> H
      D --> H
  
```

The diagram illustrates the background situation for SCM through a flowchart. It shows how factors like slow economic growth, diversification of consumption, and global competition lead to increased demands for SCM. Key elements include: Slow economic growth and low demands leading to an increase in makers' inventories; Request for frequent deliveries of smaller lot by buyers also leading to an increase in makers' inventories; Wide variety of small lot production leading to a review of production & logistic system; Diversification of consumption leading to wide variety of small lot production; ICT development and Global competition leading to demands for SCM; and a review of production & logistic system leading to demands for SCM.

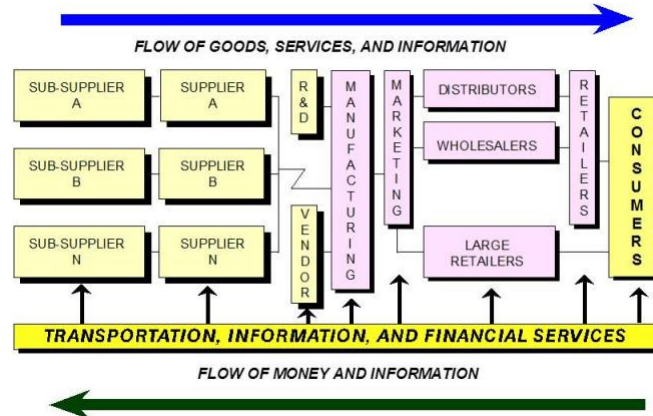
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## Supply Chain Management

### Economic Value Added

Supply-side and demand-side competition in a global economy



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## Supply Chain Management

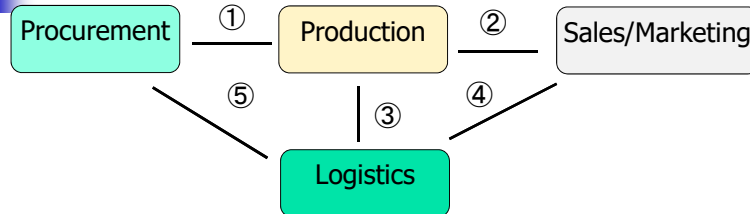
- Suppliers are partners (=working cooperatively)
  - Share information with partners
    - Production plan, Sales plan, Inventory and so on
  - Intel's BPR team for suppliers (Trading Partners)
  - Toyota's support to suppliers
    - Kanban method (JIT)
    - Production Control improvement
  - VMI (Vendor Managed Inventory)
    - Sony and suppliers
    - Fujitsu and suppliers
    - Wal-Mart/PG
- Reliable Suppliers are selected
  - Parts contents
    - Sony's inspection
- SCM with IT support
  - Global Standard for SCM: RosettaNet

BPR: Business Process Re-engineering

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## SCM in an organization

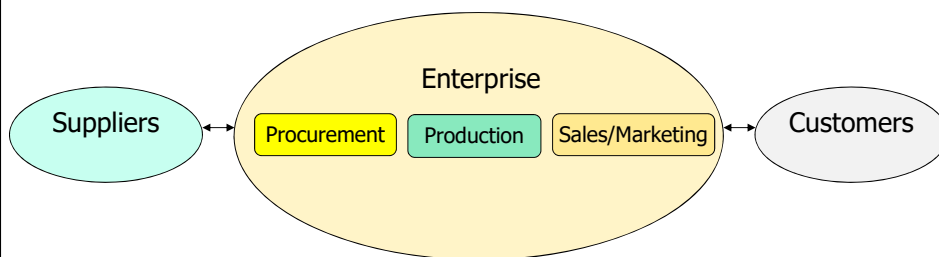


- ①: Procurement of raw materials depend on what and how many finished products are scheduled to be manufactured.
- ②: Production plan depends on what and how many finished products are scheduled to be sold.
- ③: What products are to be delivered to the warehouse?
- ④: What and how many finished products are to be stored to avoid stock-out and where?
- ⑤: Logistics are responsible for inventory management of both finished products and raw materials.

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## SCM between organizations

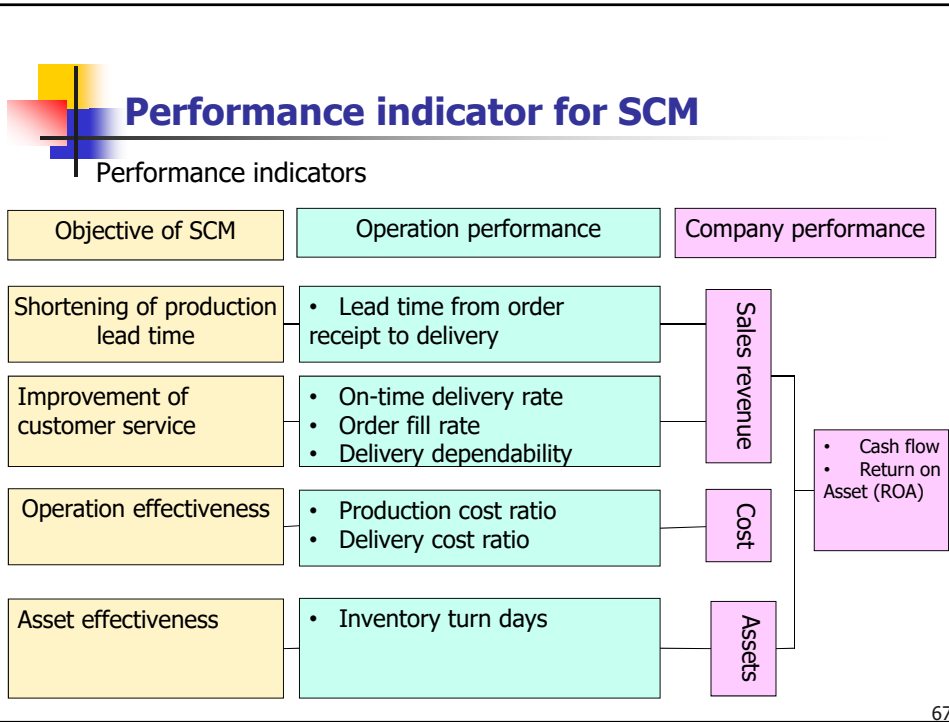


Up stream ← → Down stream

Suppliers would like to receive orders steadily and produce effectively, while customers would like to procure necessary items with necessary quantity and at necessary time.(JIT: Just in Time)

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## Improvement of customer service

On-time delivery rate	$\frac{\text{No. of on – time deliveries}}{\text{Total no. of deliveries}}$
Order fill rate	$\frac{\text{No. of deliveries}}{\text{Total no. of orders received}}$
Delivery dependability	<ul style="list-style-type: none"> <li>On-time delivery rate</li> <li>Wrong delivery rate</li> <li>Goods lost rate</li> <li>Goods broken rate</li> </ul>

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## Operation effectiveness

Production cost ratio (%)	$\frac{\text{Production cost}}{\text{Sales revenue}} \times 100$
Delivery cost ratio (%)	$\frac{\text{Delivery cost}}{\text{Sales revenue}} \times 100$

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## Asset effectiveness

1. Inventory turn (days)	$\frac{\text{Inventories}}{\text{Cost of sales}} \times 365$
2. Return on assets	$\frac{\text{Net profit}}{\text{Total asset}}$

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## Supplier management

Reliable and trustworthy suppliers are a vital link in an effective supply chain. Timely deliveries of goods or services and high quality are just two of the ways that suppliers can contribute to effective operations.

### **Vendor analysis**

Evaluating the sources of supply in terms of price, quality, Reputation, and service.

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## Supplier Audits

### Typical questions for choosing a supplier

Factor	Typical Questions
Quality and quality assurance	What procedures does the supplier have for quality control and quality assurance? Are quality problems and corrective actions documented?
Flexibility	How flexible is the supplier in handling changes in delivery schedules, quantity, and product or service changes?
Location	Is the supplier nearby?
Price	Are prices reasonable given the entire package the supplier will provide? Is the supplier willing to negotiate prices? Is the supplier willing to cooperate to reduce costs?
Product or service changes	How much advance notification does the supplier require for product or service changes?
Reputation	What is the reputation of the supplier?

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## Supplier Audits

### Typical questions for choosing a supplier

Factor	Typical Questions
Financial stability	How financially stable is the supplier?
Lead time	What lead time can the supplier provide?
On-time delivery	What procedures does the supplier have for assuring on-time deliveries? What procedures does the supplier have for documenting and correcting problems regarding the late delivery occurred?
Other accounts	Is the supplier heavily dependent on other customers, causing a risk of giving priority to those needs over ours?

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## Supplier Relationships

- Purchasing has the ultimate responsibility for establishing and maintaining good supplier relationships.
- Keeping good relations with suppliers is increasingly recognized as an important factor in maintaining a competitive edge.
- Many companies are adopting a view of suppliers as partners. This viewpoint stresses a stable relationship with relatively few reliable suppliers who can provide high-quality supplies, maintain precise delivery schedules, and remain flexible relative to changes in productive specifications and delivery schedules.

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## Supplier Relationships

Supplier as adversary versus supplier as partner

Aspect	Adversary	Partner
No. of suppliers	Many	One or a few
Length of relationship	May be brief	Long-term
Low price	Major consideration	Moderately important
Reliability	May not be high	High
Openness	Low	High
Quality	May be unreliable; Buyer inspects	At the source; vendor certified
Volume of business	May be low due to many suppliers	High
Flexibility	Relatively low	Relatively high
Location	Widely dispersed	Nearness is important for short lead time and quick service

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## Demand forecast

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## Steps in the forecasting process

---

1. Determine the purpose of the forecast
2. Establish a time horizon
3. Select a forecasting technique
4. Obtain, clean and analyze appropriate data
5. make the forecast
6. Monitor the forecast

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## Forecast based on judgment and opinion

---

1. Executive opinions
  - A small group of upper-level managers (marketing, operations, and finance, etc.) may meet and collectively develop a forecast.
2. Sales force opinions
  - Members of the sales staff or the customer service staff are often good sources because of their direct contact with consumers.
3. Consumer surveys
  - Because it is the consumers who ultimately determine the demand, it seems natural to solicit input from them.

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## Forecasts data on time-series data

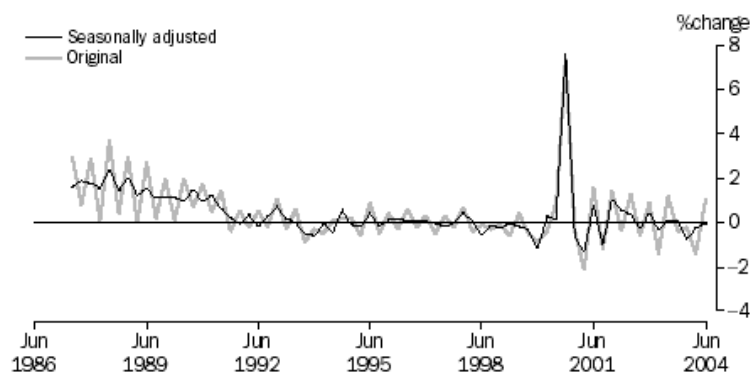
1. **Trend** (Population shift, changing income, cultural trend, etc.): Long-term upward or downward movement in the data
2. **Seasonality** (Restaurant, supermarket, theatre, clothing, etc.): Short-term, fairly regular variations generally related to factors such as the calendar or time of day.
3. **Cycles** (Economic, political, agricultural conditions, etc.): Wavelike variations of more than one year's duration
4. **Irregular variations**  
Unusual circumstances such as severe weather conditions, strike or major changes in a product or service.

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## Graph for irregular variations



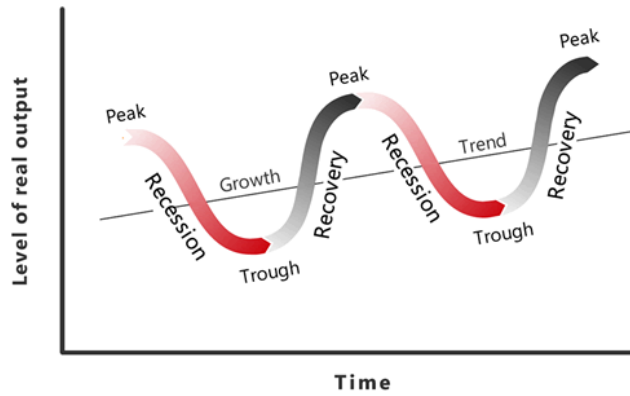
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# Cycles

## THE BUSINESS CYCLE

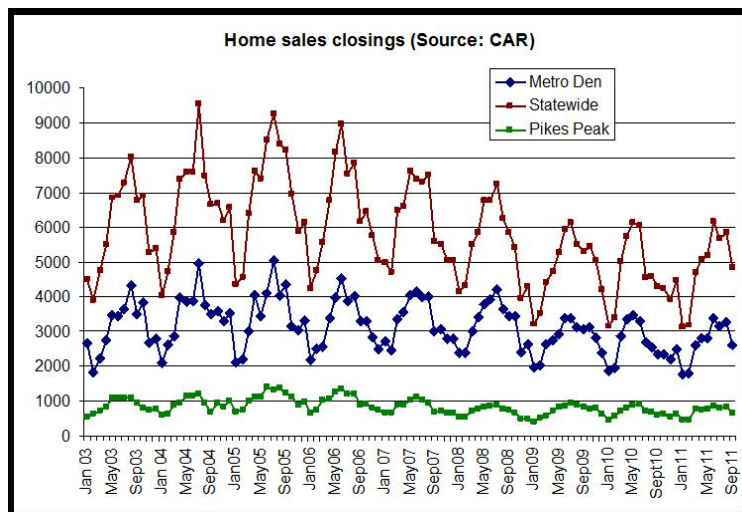


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# Seasonality graph



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## Demand forecast

### Techniques for Averaging

- Moving average
- Weighted moving average
- Exponential smoothing

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## Moving average

Moving average forecast uses a number of the most recent actual data values in generating a forecast.

$$\text{Formula: } F_t = MA_n = \frac{A_{t-n} + \dots + A_{t-2} + A_{t-1}}{n}$$

(Compute a **three-period moving average**)

Period	Demand
--------	--------

1	42
2	40
3	43
4	40
5	41

the 3 most recent demands

$F_t$  = Forecast for time period  $t$   
 $MA_n$  =  $n$  period moving average  
 $A_{t-1}$  = Actual value in period  $t-1$   
 $n$  = Number of periods in the moving average

$$F_6 = \frac{43+40+41}{3} = 41.33$$

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## Weighted Moving Average

A weighted average is similar to a moving average, except that it assigns more weight to the most recent values in a time series.

<u>Period</u>	<u>Demand</u>	<u>Weight</u>
1	42	-
2	40	0.10
3	43	0.20
4	40	0.30
5	41	0.40

$$F_6 = .10(40) + .20(43) + .30(40) + .40(41) = 41.0$$

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## Exponential smoothing

A weighted average method based on previous forecast plus a percentage of the forecast error

$$\text{Formula: } F_t = F_{t-1} + \alpha(A_{t-1} - F_{t-1})$$

$F_t$  = Forecast for period  $t$

$F_{t-1}$  = Forecast for the previous period

$\alpha$  = Smoothing constant

$A_{t-1}$  = Actual demand or sales for the previous period

Next forecast = Previous forecast +  $\alpha$  (Actual – previous forecast)

Smoothing constant  $\alpha$  represents a percentage of the forecast error.

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## Exponential smoothing

For example:

Previous forecast: 42 units

Actual demand: 40 units

$\alpha = 0.10$

$$F_t = 42 + 0.10 (40 - 42) = 41.8$$

If the actual demand turns out to be 43, the next forecast would be

$$F_t = 41.8 + 0.10 (43 - 41.8) = 41.92$$

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## Exponential smoothing

Period (t)	Actual demand	< $\alpha=0.10$ >		< $\alpha= 0.40$ >	
		Forecast	Error	Forecast	Error
1	42	-	-	-	-
2	40	42	-2	42	-2
3	43	41.8	1.2	41.2	1.8
4	40	41.92	-1.92	41.92	-1.92
5	41	41.73	-0.73	41.15	-0.15
6	39	41.66	-2.66	41.09	-2.09
7	46	41.39	4.61	40.25	5.75

Selecting a smoothing constant ( $\alpha$ ) is basically a matter of judgment or trial and error, using forecast errors to guide the decision.

Commonly used values of  $\alpha$  range from 0.05 to 0.50.

Low values of  $\alpha$  are used when the underlying average tends to be stable; higher values are used when the underlying average is susceptible to change

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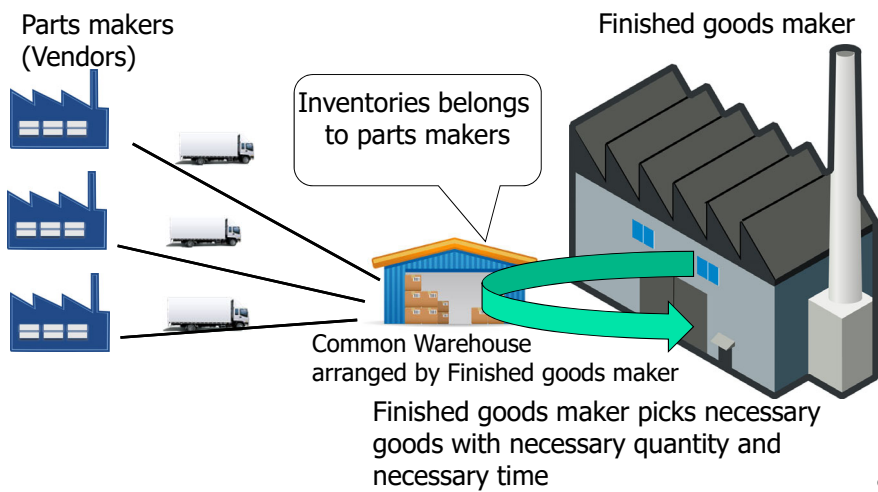
## VMI and CRP

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## VMI (Vendor Managed Inventory)

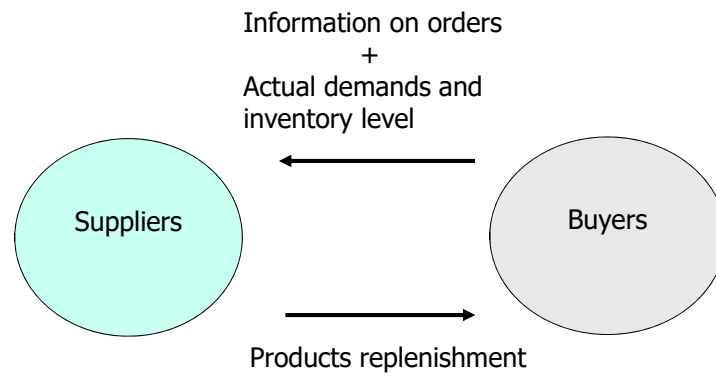
Vendor (=Supplier) manage inventory.



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## CRP (Continuous Replenishment Program)

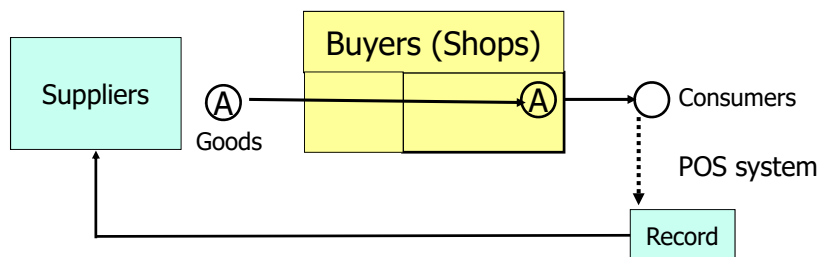


In case buyers are retailers, it is often the case that POS (Point of Sales) information is being shared with suppliers.

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## CRP (2)



Buyers and suppliers have discussed and agreed the inventory level of the products: total quantity of the products to be manufactured and sold in a certain period of time.

1<sup>st</sup> shipment at the beginning of the season: 5,000pcs to the shops  
 another 3,000pcs. to be delivered to the shops immediately after the goods are being sold. (Continuous Replenishment Program)

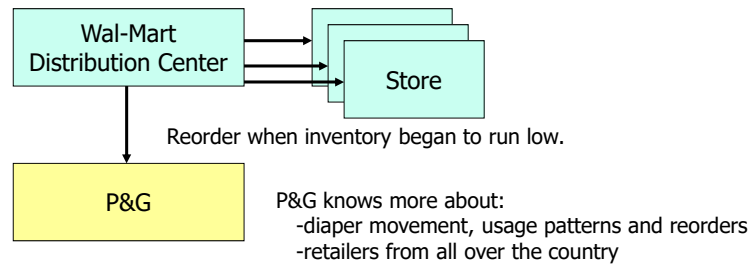
Avoidance of Opportunity Loss

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## Case: P&G and Wal-Mart

- Pampers (a disposable diaper) inventory
  - Require a lot of space, relative to its dollar value.
  - Inventory:
    - Too little – stock out causes opportunity loss
    - Too much- financing and storage cost
    - + Inventory Management cost

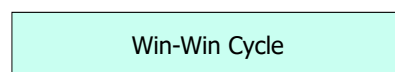


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## Case: P&G and Wal-Mart

- Step 1:
  - P&G tells Wal-Mart when to order, in what quantity, which Wal-Mart approves. (purchase recommendation)
  - Wal-Mart tells P&G how much stock was moved from the DC to the stores
  - No inventory control by Wal-Mart
- Step 2:
  - Skip purchase recommendation
  - Inventory replenishment by supplier (P&G)
  - A/R control less (P&G)
  - Client retention (P&G)



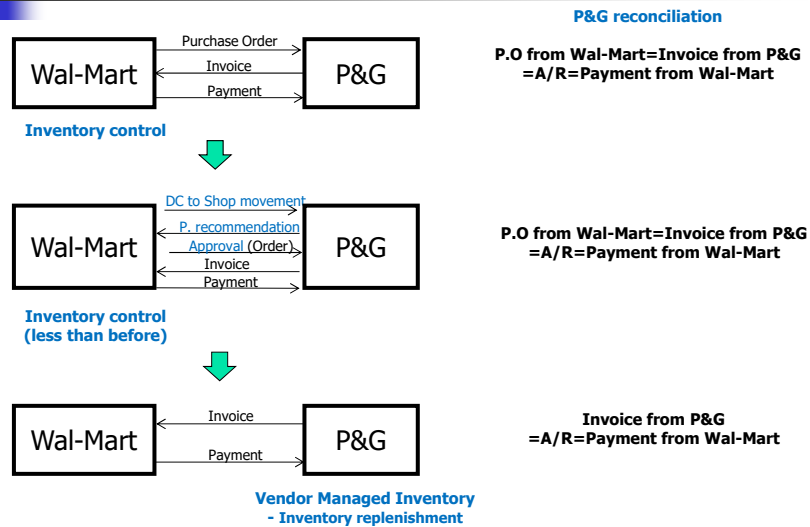
A/R = Accounts Receivable

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## Wal-Mart & P&G SCM



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## Delayed differentiation

- Delayed differentiation is a postponement tactic
  - Producing but not quite completing a product or service until customer preferences or specifications are known.

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## Delayed differentiation

- a concept in supply chain management where the manufacturing process starts by making a generic or family product is later differentiated into a specific end-product.
- This is a widely used method, especially in industries with high demand uncertainty, and can be effectively used to address the final demand even if forecasts cannot be improved.

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## Delayed differentiation

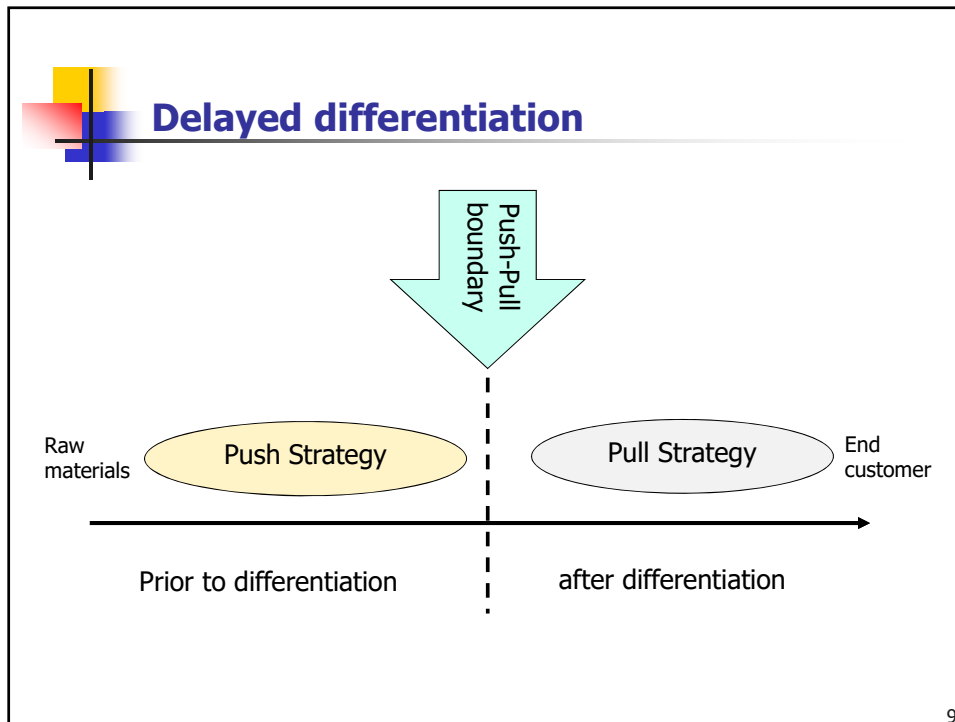
### Benetton (UNITED COLORS OF BENETTON)

Their knitted sweaters that are initially natural color, and then dyed into different colored only when the seasons customer color preference/demand is known.

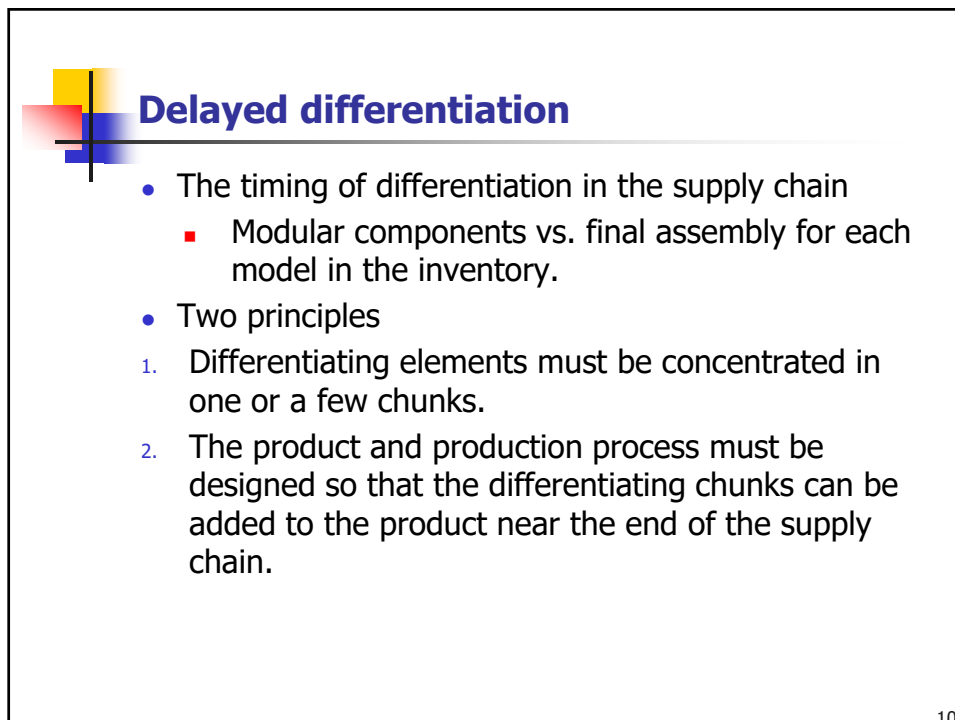


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## Case Study for SCM (1)

K-Cosmetics Company  
Japan

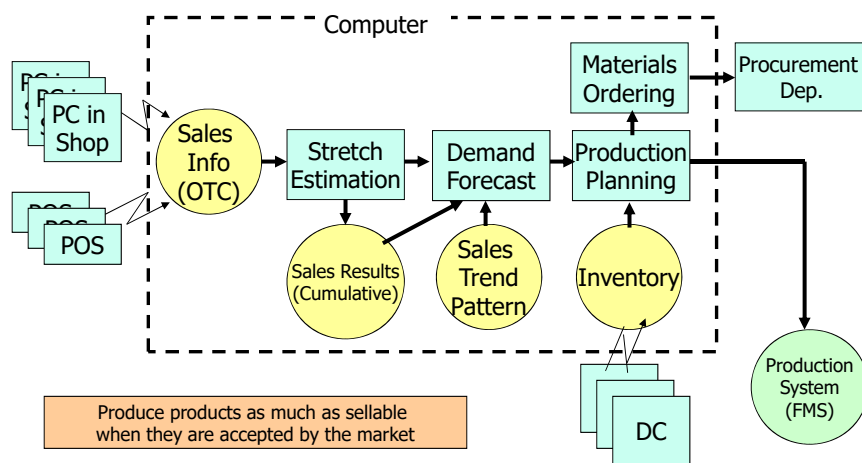
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## (POS-FMS)

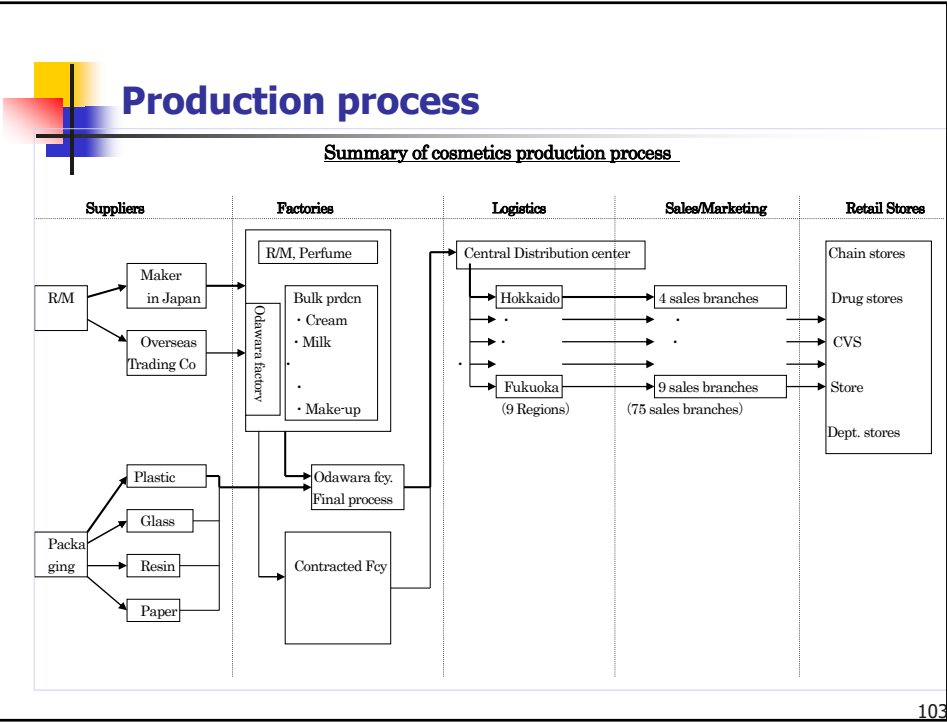
### ■ K Cosmetics Approach Patented

- POS link and Flexible Manufacturing System

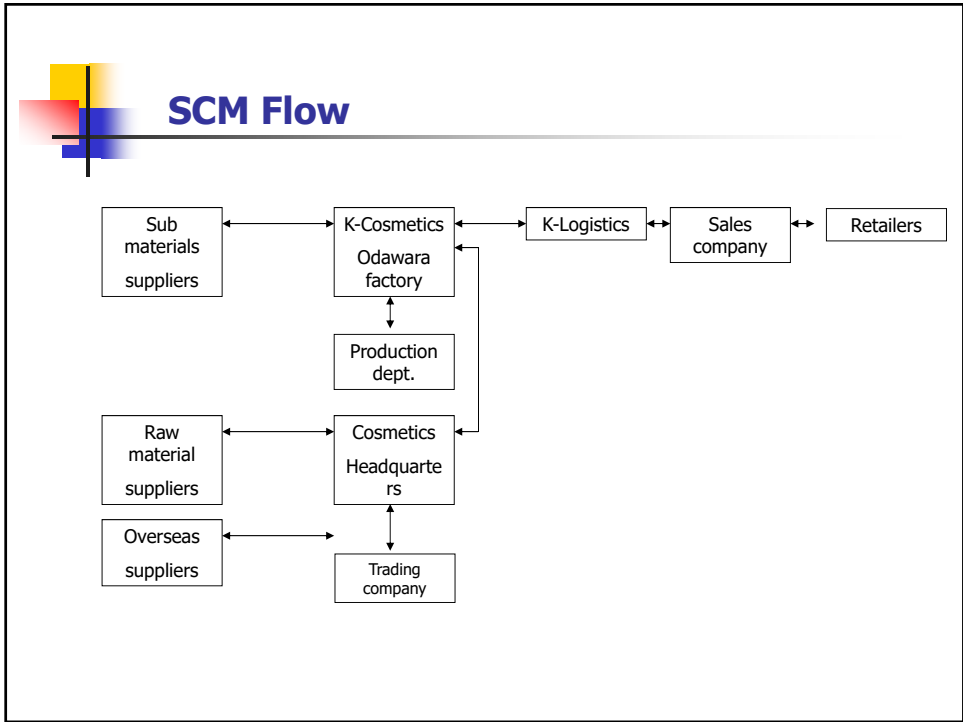


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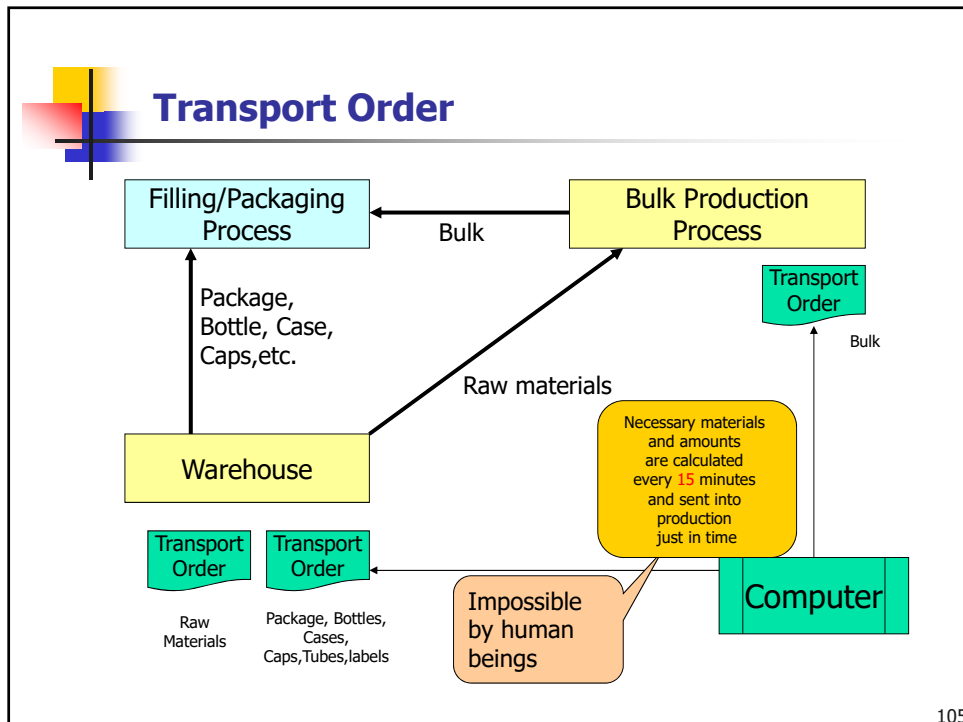
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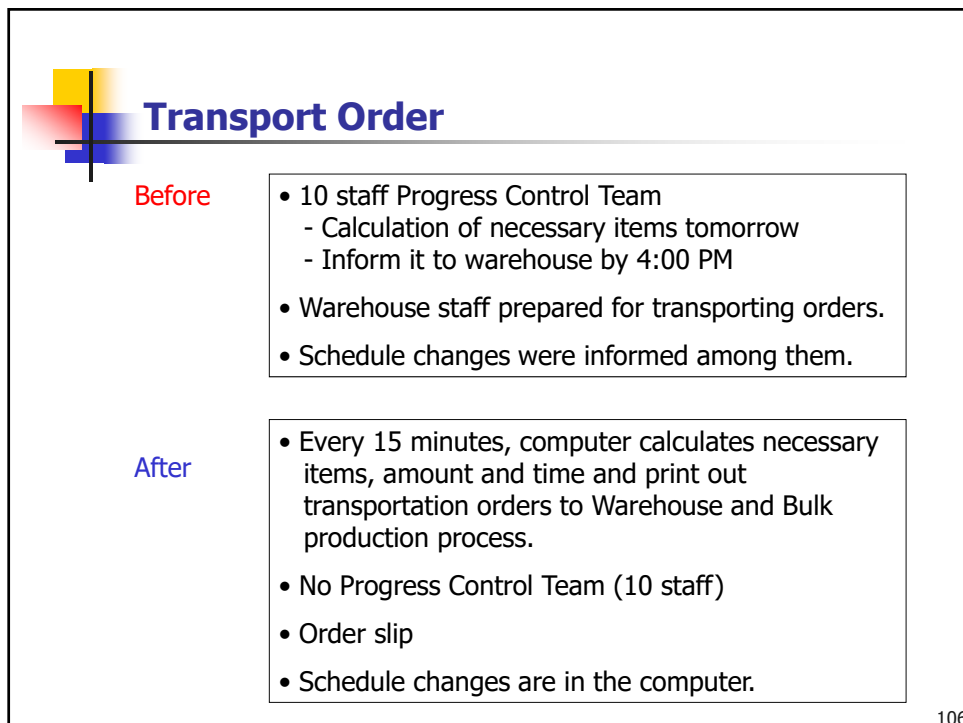
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## Transport Order

### Transporting order slip

No. <u>Y-00048</u>		<u>Raw Material Transporting order</u>		99/01/29		
Name <u>TSLP</u>		Case <u>10E</u>				
Quantity	Contents	No. of Cases	To:	Time	Product Name	Remarks
1620	324	5	F1	09:41	TSLPLRS	No Fraction
Others						

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## Case study for SCM (2)

Calbee, Inc.  
Japan

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## Brief history of company

Manufacturer of snacks

- Established in Hiroshima, Japan in 1949.
- Company name changed to 'Calbee, Inc.' in 1955.
- Started sales of 'Kappa Ebisen' in 1964.



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## Sales

Sales: Yen 179.4 billion (USD1.6billion)  
in FY2013



Worldwide sales:

U.K., Spain, Hongkong, Thailand, South Korea,  
Singapore, Taiwan, Philippines, Indonesia,  
Australia, U.S.A, Canada

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## Calbee Potato, Inc. (A subsidiary company)

In order to procure quality potatoes from the contracted farmers in Japan, Calbee Potato, Inc. was established.

Mission of Calbee Potato, Inc. is:

- (1) Procurement of potato
- (2) Storage
- (3) Transport
- (4) Processing
- (5) Research and development
- (6) Planting/growing

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## Procurement system of quality potato

30,000tons of potato  
required in 2018!

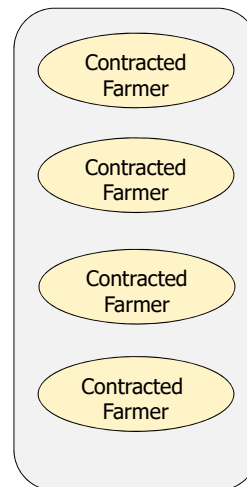


Target:  
Average output:  
40tons/ha per farmer  
(currently 35tons/ha per  
farmer)

Calbee 'Field man'  
• Data collection  
• Information  
provision  
• Technical advice  
on species, field,  
output, fertilizer,  
etc.




Supply of quality  
potato

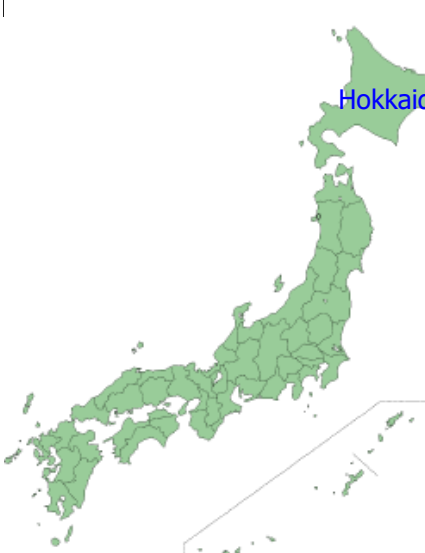


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## Procurement system of quality potato



Hokkaido

Potato field in Hokkaido



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## Case study for SCM (3)

Inditex, Spain  
(ZARA)

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## Inditex, Spain

Sales: Euro 16.7 billion  
No. of ZARA shops: 6,340 in  
87 countries  
No. of total employees:  
128,313  
(Year 2013 annual report)



ZARA shop in Osaka

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## ZARA Brand

Zara brand:  
No. of SKU (Stock Keeping Unit) in a year:  
**about 300,000**  
**(10,000 items x 5-6 colors x 5-7 sizes)**



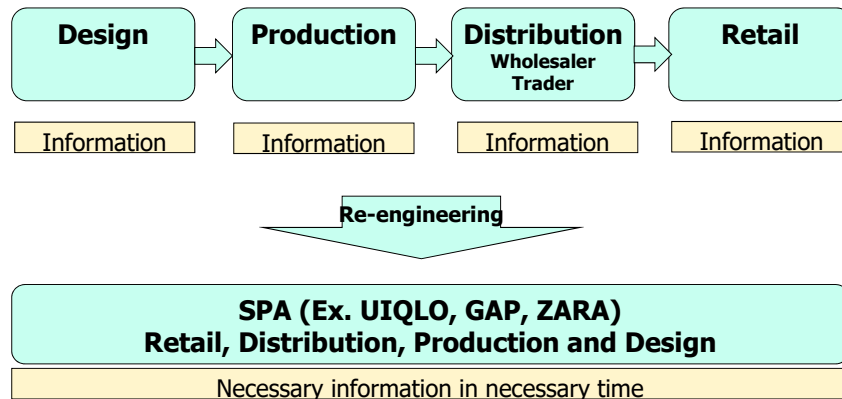
ZARA TRAFALUC COLLECTION  
AW 2017

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## Case: SPA

(Specialty store retailer of Private label Apparel)



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## Production and procurement outlook

### After season

- Designing and raw materials procurement: 35%
- Buying finished products from contracted factories: 40-50%
- Manufacturing at its own factories: 85%



Only 15% of total finished products to be manufactured at its own factories **before season** and remaining 85% to be manufactured **in season** while checking the sales of the finished products

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## Supply Chain Process

- Making rough designs by about 200 designers.
- Discussing with marketers & buyers responsible for procurement in the same commercial team.
- Designing by computers
- Making prototype samples
- Final decision-making with prototype samples
  - Marketer to decide retail price
  - Buyer to do production costing and estimate production capacity

About 10,000 items out of 40,000 items are going to be manufactured in the above process and sold in their shops.

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## Inventory management in the shops

Inventory control by headquarters


In principle, the shops are not allowed to carry much inventories; about 2-3 pieces per SKU.



Create atmosphere to make customers buy the items they prefer **NOW!**

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## Production system

---


ZARA's strength:

**They have their own factories!**

- 20 own factories in Spain
- Comditel  
Fabric manufacturer, one of the subsidiaries
- Fabracolor  
Dyeing manufacturer, one of the subsidiaries

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## 20 own factories

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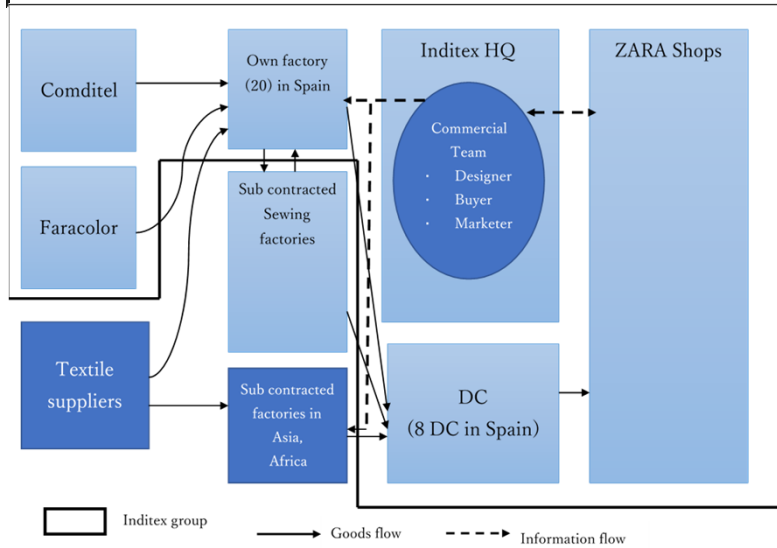
About 50% of ZARA products: mainly new and seasonal items

- Cutting fabrics by CAD,
- Delivering cut pieces to contracted sewing factories (about 500 companies)
- Receiving sewn products
- Finishing (Ironing, folding, labelling and packaging)

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## ZARA Operation flow



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## Comditel

About 90% of its total sales from 'ZARA' brand.  
They supply about 40% of the total raw materials required for the production by own factories.

About 50% of the raw materials are 'before dyeing.'  
(Fabrics will be dyed at a later stage; in season.)

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## Fabracolor

---

About 20% of its total sales from ZARA brand.

Fabrics will be dyed in season according to the fashion trend in the market.

(Piece dyed)

Benetton, Italian casual brand, is well known this system. (Delayed differentiation)

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## Contracted factories

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Contracted factories are located in Asia (China, Bangladesh) and North Africa (Morocco).

Mainly producing regular items such as T-shirts, Sweaters.

Inditex places orders with these factories 6 months before the season.

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## Logistics

All finished products which are manufactured by their own factories or sub-contracted factories will be delivered to 8 distribution centers (DC) in Spain.  
(Space at one DC near the headquarters: 500,000 square meters)

The goods will be sorted out within 2 hours and ready for delivery to ZARA shops within 8 hours respectively, after the goods have arrived at DC.

Packaging: Carton boxes for air-lifting

Carton boxes or hanger for truck transport.



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## Performance of SPA

Company name	Inventory turn rate (Day)	Operating profit Ratio (%)
Inditex (ZARA)	33.6	23.5
H & M	38.8	29.1
GAP	41.7	13.3
FR (UNIQLO)	42.4	11.6

SPA:

Specialty Store Retailer of Private Label Apparel

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地方セミナー  
(地方短期コース)

2018 年

カイゼン管理



## **Business seminar (KAIZEN Management)**

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**August/September, 2018**

**Uzbekistan Japan Center  
JICA**

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## **Vision and Mission of This Course**

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### **Vision**

**All participants become familiar with KAIZEN concept and methodologies, and apply them to their day to day operations in both factory shop floor and office in order to achieve business growth.**

### **Mission**

**Identify the problems or challenges in the operation and come up with ideas for KAIZEN and apply them through team work approach.**

---

2



## Introduction of Lecturer

**Name** : Mitsuo Tamada, JICA Expert ,EBRD Senior Industrial Advisor

**Email address:** mitsuo.tamada@truspire.com

**Company** : Truspire Co., Ltd. ([www.truspire.com](http://www.truspire.com))

**Experience** : (1) 30 years Japanese textile company  
International Business, Marketing & Administration  
(2) 3 years in Textile/garment factory in Africa  
(3) 12 years consulting in Kaizen, Production/Operation,  
Sales Management, Marketing in various countries.



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## Schedule/Table of Contents

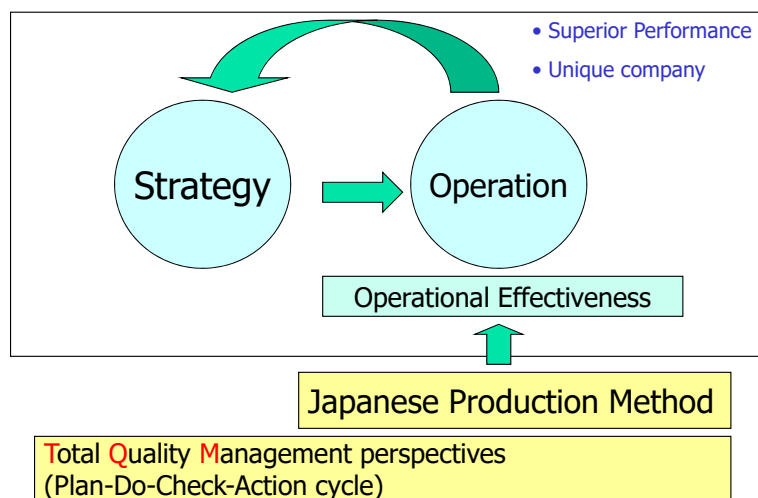
Session	Topics	Slide no.
1	Introduction of KAIZEN (Continuous improvement)	5
2	KAIZEN Case Study	14
3	Total Quality Management (TQM)	24
4	TQM Company wide approach	29
5	Quality Control (QC)	38
6	Quality Control (QC) Circle	46
7	Visualization	77
8	5S and 7 Wastes	93

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## Introduction of KAIZEN (Continuous improvement)

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## Strategy + Operational Effectiveness



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## Operational Effectiveness

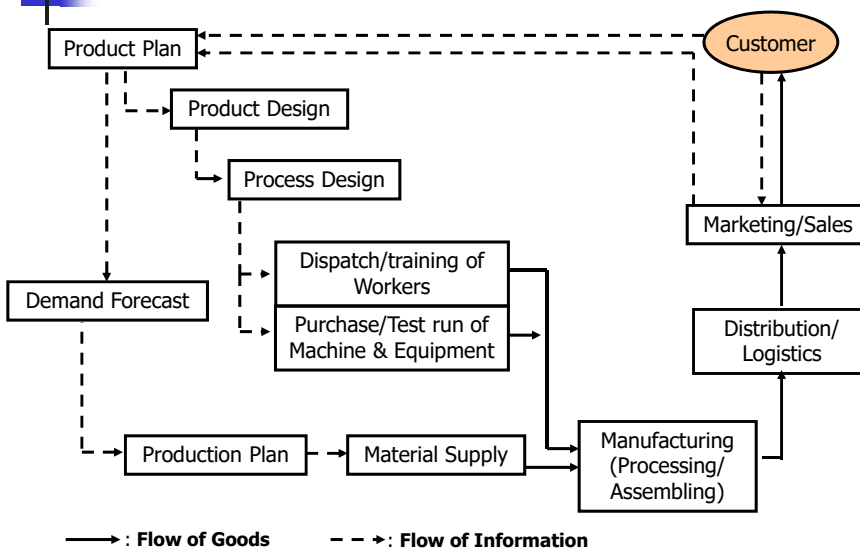
- **Operational Effectiveness has been developed through Japanese Production Control Method.**
  - Toyota's way is known most.
  - Applicable not only for production sites but also for offices.
- **Team approach**
- **BPR (Business Process Reengineering) principles are all from Toyota's Method.**
- **Strategy with operational effectiveness really differentiates the company from the competitors.**
- **Production & Quality Management is the core of operational effectiveness.**

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7

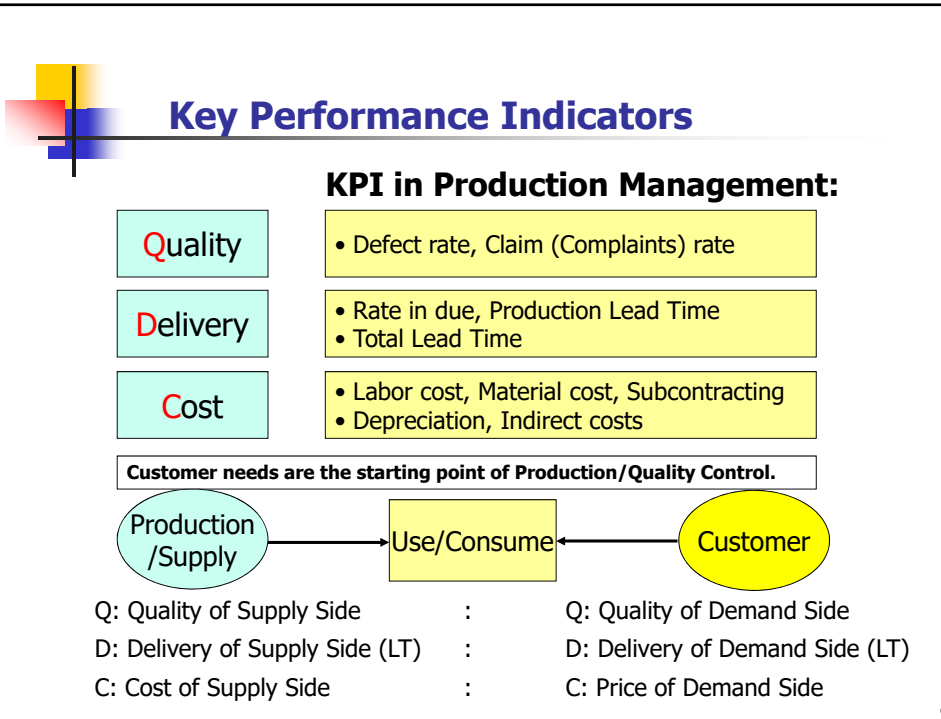


## Functions Related to Production

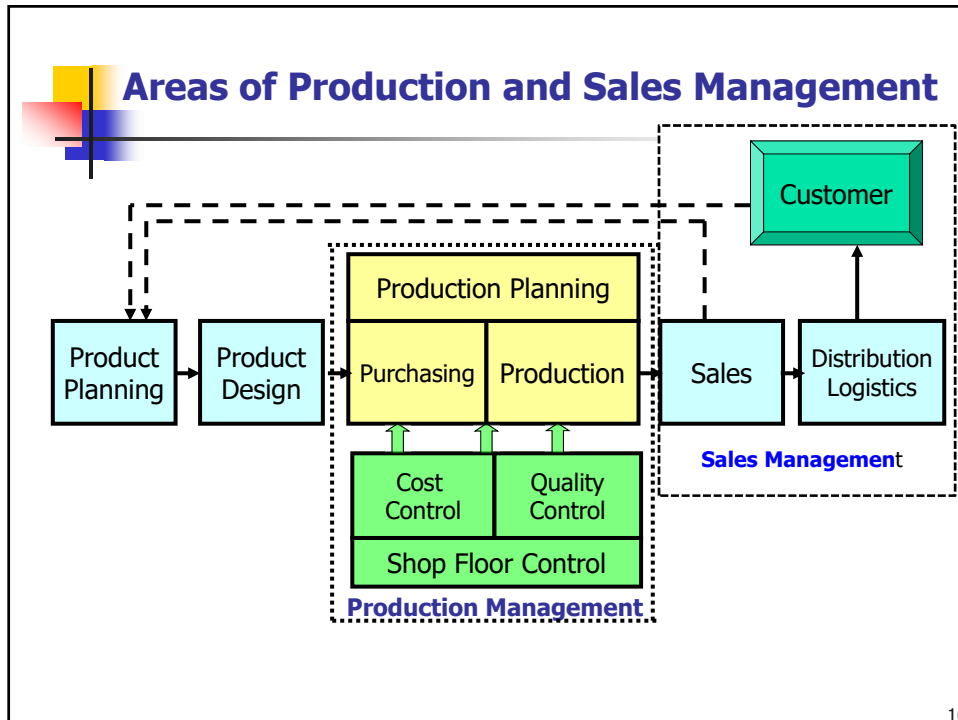


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## KAIZEN

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KAIZEN is derived from the word "KAI" which means to "improve" and "ZEN" means to "make it better".

Kaizen is synonymous with "Continuous Improvement".

Kaizen is written in Japanese letters as below

改(KAI) 善(ZEN)

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## Points in Kaizen

---

- **Bottom up, and Top down approach**
- **Management Acceptance/Commitment**
  - Implement any idea.
- **Tools/Methods are necessary to find improvement opportunities.**
  - ECRS (Industrial Engineering: IE)
    - Motion Economy, Time Study
  - 7 Tools in QC Circle Activities
  - 5S
  - Elimination of 7 Wastes (One of TPS principles)
  - TPS (Toyota Production System) Principles
- **Tools are from Production/Quality Management.**

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## KAIZEN Organization in a Heavy Industry

- **KAIZEN Committee (5-6 people) in each section**
  - Evaluate proposals; Platinum, Gold, Silver, Bronze (Incentives)
    - Cost reduction,
    - Better safety,
    - Better working environments, etc.
  - Implement them and review periodically
  - Budget preparation
  - Publication
- **Proposals from all workers (Engineers, Staff, Workers)**
  - Group/Individual
  - Problem, How to improve, How much....
  - Current situation/Future situation (Before/After)
  - To suggestion box or Committee directly

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## KAIZEN (Case study)

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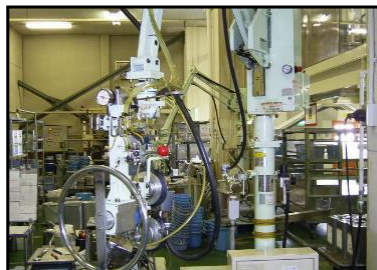
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## KAIZEN (Case study)

### Use of Air Balancer (Improvement of efficiency)



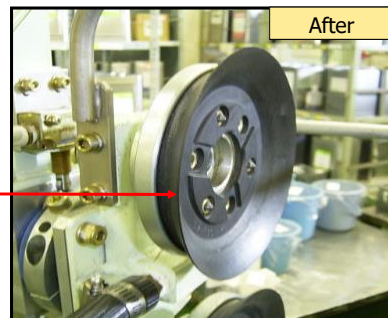
1. Process: Weighing liquid
2. 20kg can was handled by hands before. Air balancer helps bring up the can and pour liquid to weigh now. Woman handles the operation now.



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## KAIZEN (Case study)

### Air Balancer Sucker with Spike (To keep safety)



1. Process: Weighing liquid (Air Balancer)
2. With spikes in Sucker, accidents of dropping the can has been prevented.

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## KAIZEN (Case study)

### Place of Container Cart (Improve efficiency)



1. Process: Weighing of raw materials
2. Big sign board to show which production tank uses the raw material is put up the container cart in order to eliminate mistakes.

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## KAIZEN (Case study)

### Dissolution Tank Lid (Improve safety)



1. Process: Heat dissolution of raw materials
2. The lid of the tank is 80°C. When it is opened handle of the lid is used with help of balancer to reduce the heavy weight of the lid.

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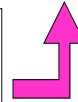
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## KAIZEN (Case study)

Bar code checker (Improve efficiency and prevent contamination)



1. Process: Bulk transport out
2. Barcode label is put on the movable tank to filling process and checked by barcode reader before handling.



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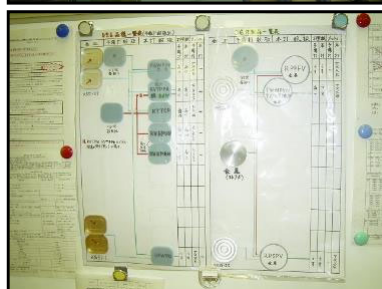
19

## KAIZEN (Case study)

Sign Board of Product (Improve efficiency)



1. Process: Forming and packaging
2. To reduce the careless mistakes color of current product producing and specification of the product is visually shown on many sign boards.

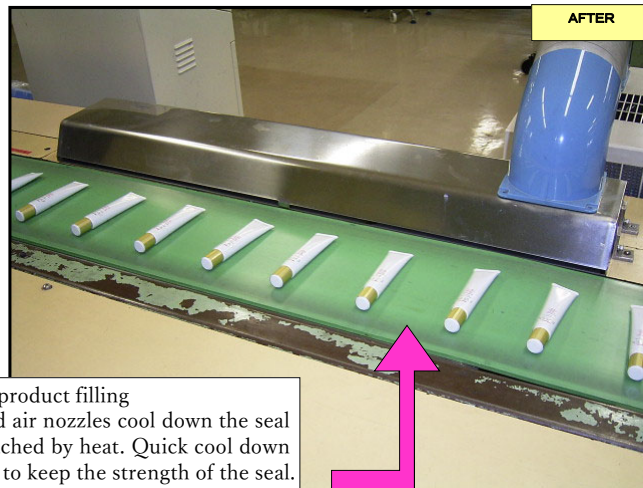


20

20

## KAIZEN (Case study)

Seal part cooling after filling into tube (Improve quality)



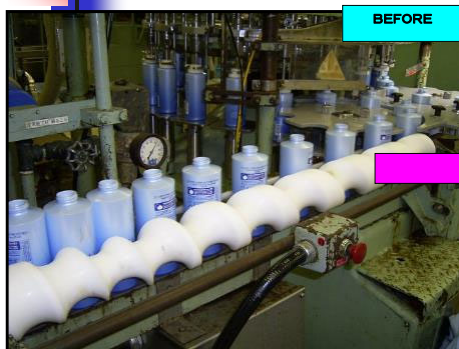
1. Process: Tube product filling
2. Spot cooler and air nozzles cool down the seal parts which is attached by heat. Quick cool down of the seal is good to keep the strength of the seal.

21

21

## KAIZEN (Case study)

Attachment of product filling line (HAKAMA) (Improve efficiency)



1. Process Filling of liquid type product
2. Set-up and adjustment which required changes and adjustment of guide and parts, took a lot of time. Use of transporting jig eliminates such cumbersome set-up work.

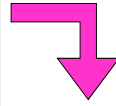
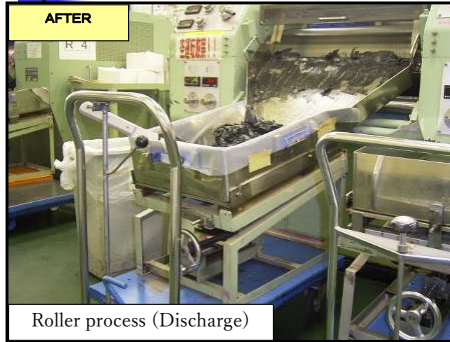


22

22

## KAIZEN (Case study)

Cart for lipstick bulk transportation (Improve efficiency)



1 Process : Lipstick production  
2 Cart is used for getting raw material discharged from roller and charging it to dissolving process for recycling. Efficiency is improved and work load is decreased.

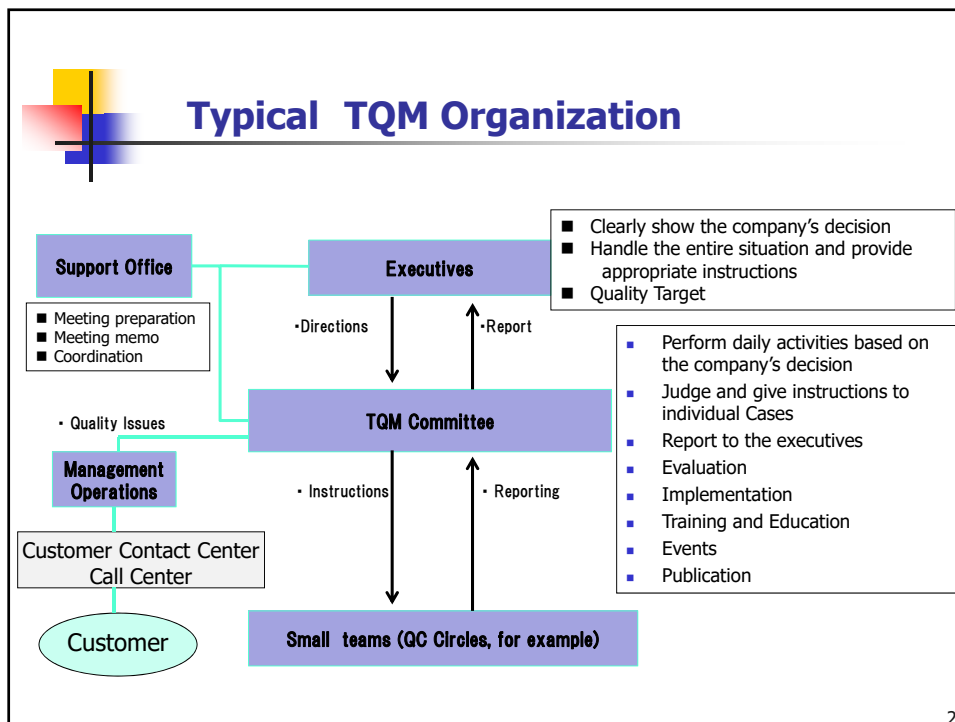
23

23

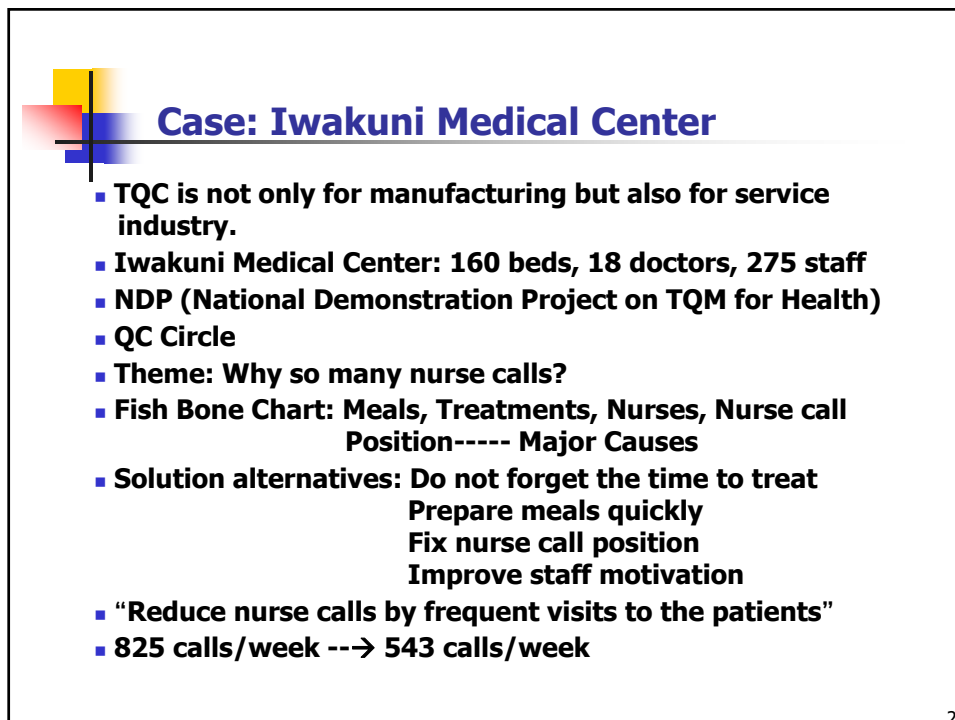
## Total Quality Management (TQM)

24

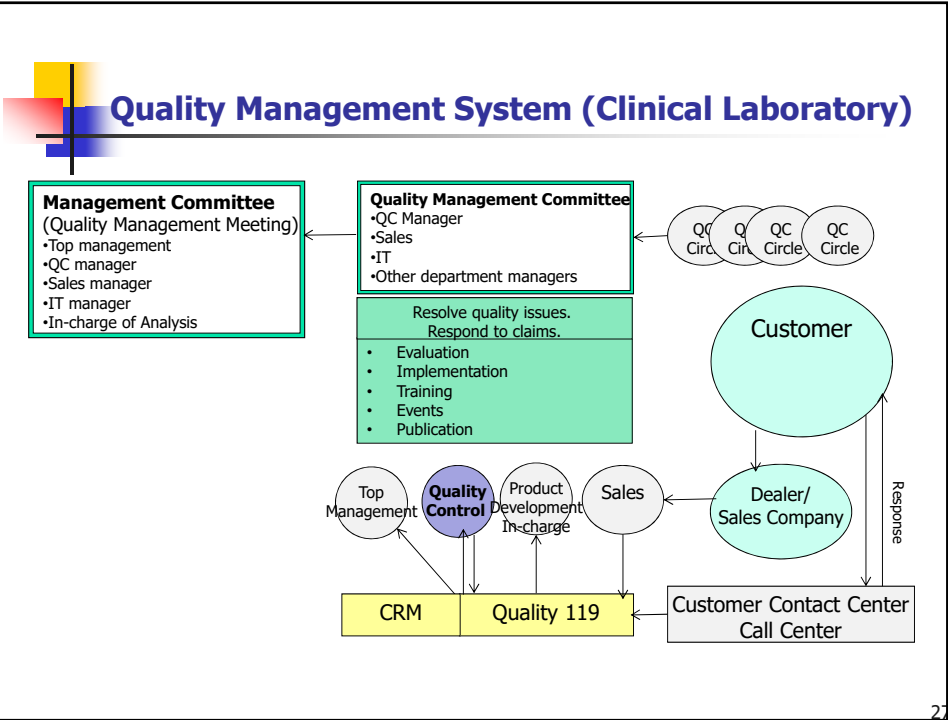
24



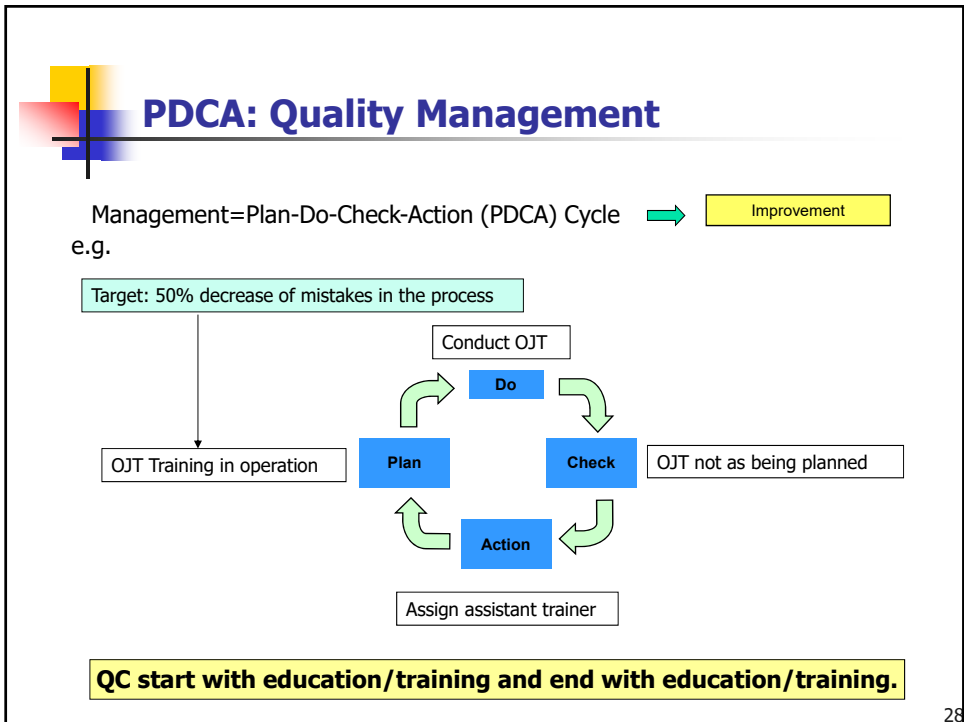
25



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## TQM- Company-wide approach

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1. Product Planning
2. Product Design/Process Design
3. Production
4. Sales
5. After Sales

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## TQM (Total Quality Management) Key Words

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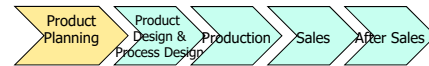
- **Company total**
  - Total employee involvement
  - All departments, Not only by production and Quality Management department
- **Integrated system**
- **Customer focused**
- **Brand means 'Quality'.**
- **Quality = Management quality**
- **PDCA (Plan-DO-Check-Action) cycle**
- **Continuous improvement efforts (KAIZEN)**
- **Top-down and bottom-up**
  - Policy by the top, commitment
  - Idea from people close to the operation
- **Manufacturing sector + adapted for use in almost every type of organization.**

30

30



## 1. Product Planning



- **Market Needs Analysis**
- **Set/Define 'Quality'**
- **Basic Quality**
  - **Functionality**
    - Example: Universal design
    - Packaging is also quality.
  - **Effectiveness**
    - Cutting place to open (Additional process): Customer's view
    - Design to attract customers
  - **Product Life**
  - **Product Design**
- **Seeds Approach, too (Sony (Old days), Apple)**
  - **New product proposal to customers**

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## 2. Product Design and Process Design




- Design to manufacture easy.
  - Assembly: From the bottom up and the inside out
  - Bad design:
    - Mistake in planning of a seminar
    - Project design in consulting -> Use of old proposals
    - System design phase
- Much of the costs of manufactured product are influenced during the design phase.
  - Specify standard materials, parts and processes.
  - Parts: Market standard: least expensive
- Industrial designer would be involved.
- Include elimination of wastes concept in process design.
  - ECRS principles
  - Fool-proof
  - Work with gravity

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### 3. Production



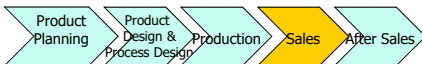
- Put quality at the source.
  - Each process defect rate should be minimized(zero).
    - Purchasing, factory production shops, warehouse and shipping
    - Preventive maintenance
- QC process
  - Defects definition
  - QC Charts, Fish Bone Charts
  - QC Circle
- Standard Operation
  - Standard Operation Sheet
  - Stop-the-line in trouble
  - Education and training
- Process Capacity
- Mistake-proof

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### 4. Sales



- Standard Operation
  - CRM standardizes the sales operations.
- Mistake-proof
  - CRM provides proper information to the sales
    - Inventory availability
    - Recent product information
    - Connection to the engineer/back office at the customer site

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## Case: CRM (Customer Relationship Management)

### Develop long term relationship with the customers using IT

- Use integrated customer information (=Customer DB),
- Provide service which meets exactly to the needs of a customer (=One-to-One Marketing),
- Increase customer satisfaction by responding to the customer continuously and thoroughly.

— CRM definition by Gartner Group

CRM involved capturing customer data from across the enterprise, consolidating all internally and externally acquired customer related data in a central database, analyzing the consolidated data, distributing the results of that analysis to various **customer touch points** and using this information when dealing with customers via any touch point.

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## 5. After Sales



- **Guarantee**
- **70% of the customers who have complaints will remain customers, if the complaints are resolved.**
- **Call Center (CRM) -> Communication Center**
  - **Claim is an important source for improvements and new products.**
- **Warehouse control and shipping control**

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## After sales: Traceability

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- **Claim**
  - Product X
  - Lot Number Y
  - Defect Parts Z or Defects areas
- **Traceability**
  - Trace production record/history to identify the problems. (Date, Lot, Parts, Conditions)
  - Lot Number
    - Example: AX3=2010.12.03 production
- **Recall = reliable maker (costly)**
  - Identify other possibilities in other products.
  - Recall the other products, too.

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## Quality Control (QC)

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## QC: Definition

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- **Total Quality Control (TQC)** may be defined as “an effective system for integrating the quality development, quality maintenance, and quality improvement efforts of various groups in an organization so as to enable production and service at the most **economical levels** which allow for full **customer satisfaction**.” (A.V. Feigenbaum)
- **Statistical Quality Control (SQC)** is the application of **statistical techniques**, in all stages of manufacture, toward the most **economic** manufacture of a product that is maximally useful and has a **market**. (W.E. Deming)

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## Quality definition (Product Quality)

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### Eight dimensions of quality

- **Performance**: main characteristics of the product or service.
- **Aesthetics**: appearance, feel, smell, taste.
- **Features**: extra characteristics (convenience, high tech., etc.)
- **Conformance**: how well a product or service corresponds to design specifications.
- **Reliability**: consistency of performance
- **Durability**: the useful life of the product or service
- **Perceived quality**: indirect evaluation of quality (e.g. reputation)
- **Serviceability**: handling of complaints or repairs.

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## Quality definition (Service Quality)

### Seven dimensions of quality

- **Convenience:** the availability and accessibility of the service
- **Reliability:** the ability to perform a service dependably, consistently, and accurately.
- **Responsiveness:** the willingness of service providers to help customers in unusual situations and to deal with problems.
- **Time:** the speed with which service is delivered.
- **Assurance:** the knowledge exhibited by personnel who come into contact with a customer and their ability to convey trust and confidence.
- **Courtesy:** the way customers are treated by employees who come into contact with them.
- **Tangibles:** the physical appearance of facilities, equipment, personnel, and communication materials.

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## Quality inspection at a textile company



Inspection for fabric defects



Inspection for size measurement

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## Quality inspection at a textile company



Needle/metal detection



Inspection for stitching

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## Quality inspection at a textile company

Quantity per style	Quantity to be checked	No. of defects tolerated
Less than 500 pieces	40	1
501 to 1000 pieces	80	3
1001 to 3000	100	4
3001 to 5000	120	5
Over 5001	140	6

In case the defective quantities are more than the above tolerated quantities, all the quantities of the item are to be inspected and delivered with final quality inspection sheet and report for quality improvement signed by the manager.

In case there is no quality improvement observed, business with such suppliers has to be terminated.

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## **Group discussion**

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- What does 'Quality' mean ?
- State and evaluate your organization's policy for quality, and suggest improvements to the present approach.

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## **Quality Control (QC) Circle**

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## Quality Circle (1)

- Quality circles were originally associated with Japanese management and manufacturing techniques. The introduction of quality circles in Japan in the postwar years was inspired by the lectures of W. Edwards Deming (1900- 1993), a statistician for the U.S. government.
- Quality circle is one of the employee participation methods. It implies the development of skills, capabilities, confidence and creativity of the people through cumulative process of education, training, work experience and participation.

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## Quality Circle (2)

- It also implies the creation of facilitative conditions and environment of work, which creates and sustains their motivation and commitment towards work excellence.
- Quality circles have emerged as a mechanism to develop and utilize the tremendous potential of people for improvement in product quality and productivity.

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## Quality Circle (3)

- Quality circle is a small group of 6 to 12 employees doing similar work who voluntarily meet together on a regular basis to identify improvements in their respective work areas using proven techniques for analyzing and solving work related problems coming in the way of achieving and sustaining excellence leading to mutual development of employees as well as the organization.
- It is " a way of capturing the creative and innovative power that lies within the workforce."

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## QC 7 Tools

- **QC circle uses tools and natural data.**
- **Seven Tools are:**
  - Histogram
  - QC Chart (Control Chart)
  - Cause Analysis (Fish Bone Chart)
  - Pareto Analysis (80/20 rules, ABC analysis)
  - Graph
  - Check Sheet
  - Scatter Chart
- **Number of QC Circle members: 5-6**
- **Themes:**
  - QC
  - Improvement in productivity, operation, delivery, safety, communications and morale.

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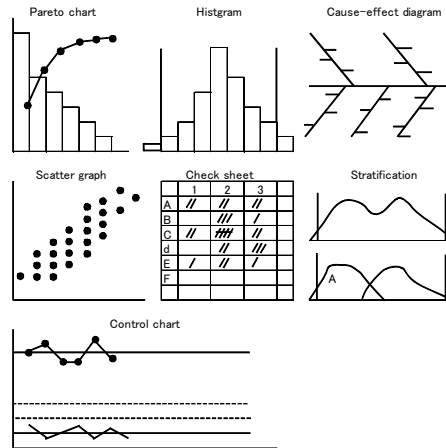


## QC 7 Tools

- Powerful tools for quality activity by small group

- 7 tools

1. Cause Effect Analysis (Fish Bone Chart)
2. Histogram
3. Pareto Analysis (80/20 rules, ABC analysis)
4. QC Chart (Control Chart)
5. Graph (Stratification)
6. Check Sheet
7. Scatter Chart



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## No Intentional Data for QC

(1/3)

- Experiment 1: The most favorable number in 0-10?
- Experiment 2: Flip a coin ten times and count the number of heads?

Draw Histogram

- Experiment 1: Intentional
- Experiment 2: Natural

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## No Intentional Data for QC

(3/3)

- QC uses only natural data, which distributes.
- Processes in the factory provide distributed data, which are not intentional but natural.
  - Watching natural data which reflect the current situation of the process are the starting point of improvements.
  - Even if you follow the standard operation, the results are different. "Variability"
- If you get 10 heads in ten toss-ups, you may think that the coin is suspicious, although it could happen.
- In QC, if such a thing happens (probability like three out of 1,000), we think that something happens in the process. Such a situation is called 'Over Control Limit'.

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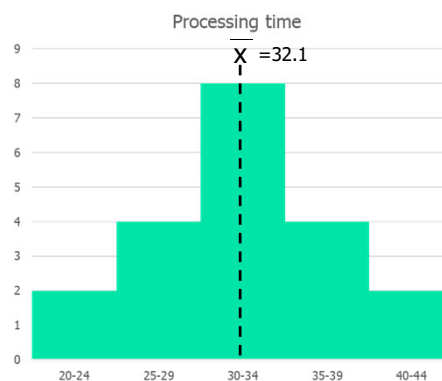
53



## Histogram

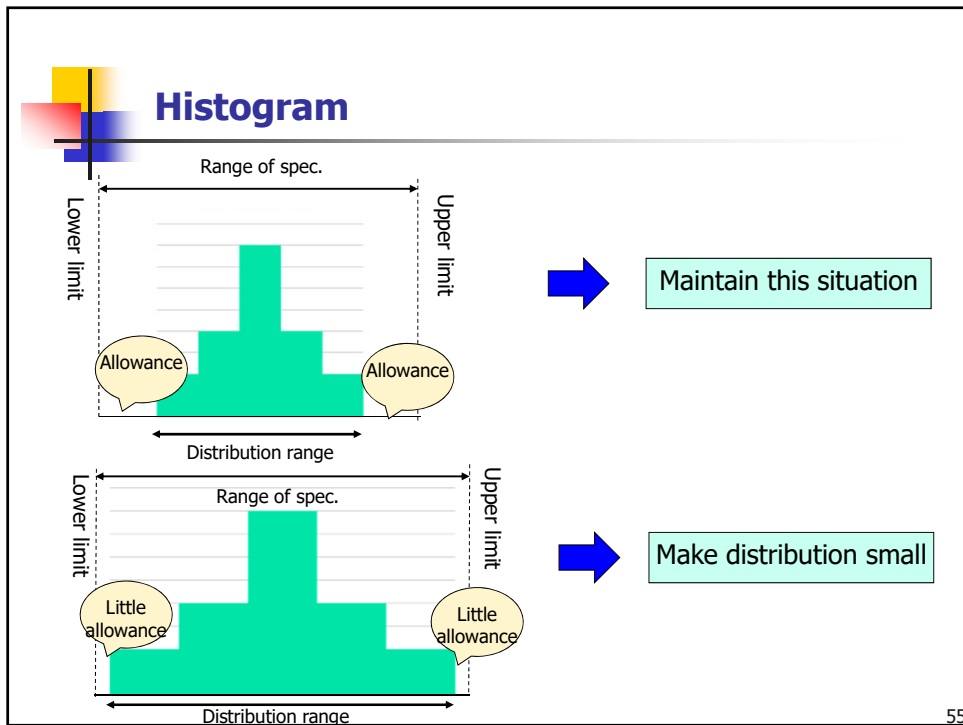
Processing time (min.)			
27	38	22	33
42	34	33	32
37	34	44	30
36	26	35	28
25	23	32	32

		No. of workers
20-24	//	2
25-29	////	4
30-34	//////	8
35-39	////	4
40-44	//	2



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## Check sheet

Defect	Mon	Tue	Wed	Thu	Fri	Total
Head	### ##	### ###	### ###	### ###	### ###	50
Raw material	###	###	###	###	###	30
Screw		////	//	////		10
Wrong length	///	/	/			5
Scar		/	/	/		3
Other		/	/			2

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## Pareto Analysis (80/20)

Vifred Frederico Damaso Pareto  
(1848-1923) Italian Economist

Identify what problems are the major ones!

1. To identify and narrow down targets for problem solving
2. To measure the KAIZEN impact using Pareto analysis 'before' and 'after.'

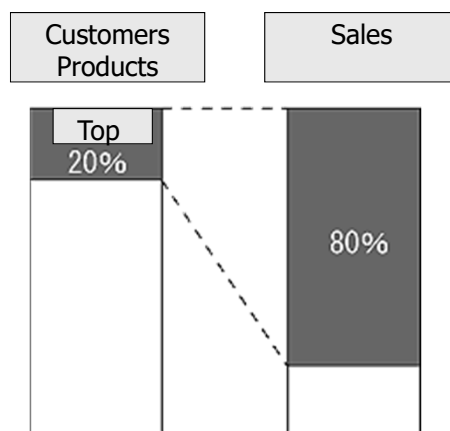
57

57



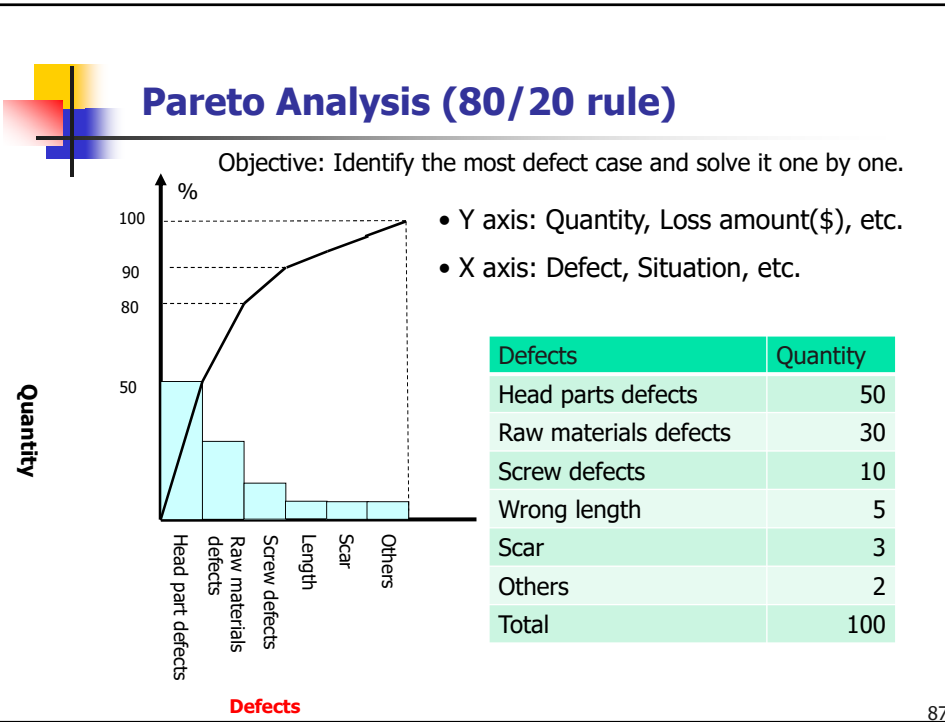
## Pareto Analysis (80/20)

For example: 80% of total sales comes from top 20% customers or top 20% products.

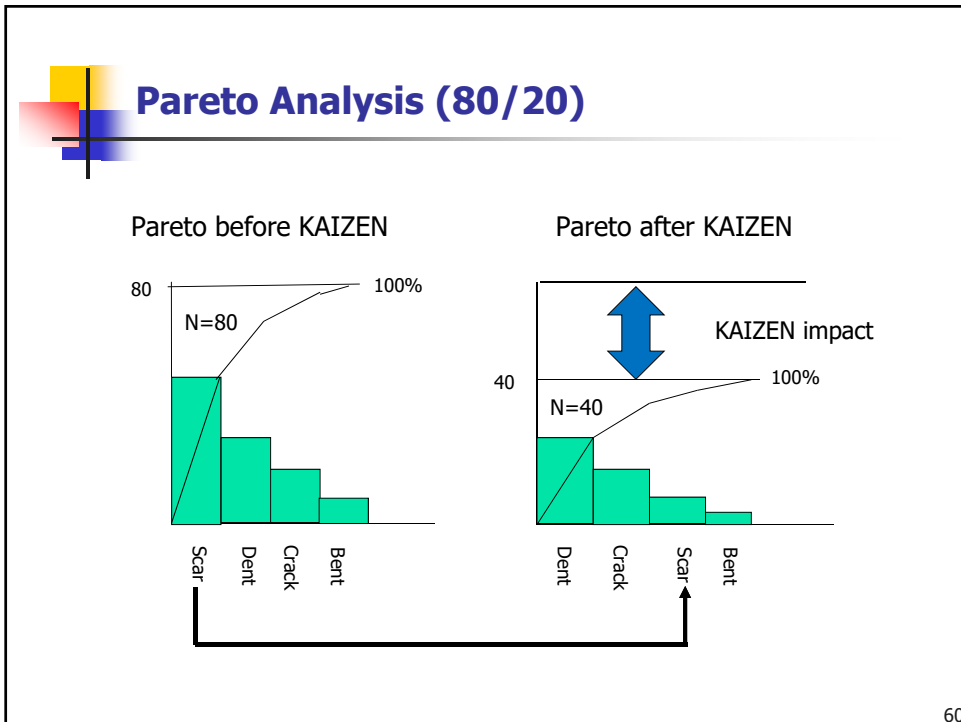


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58

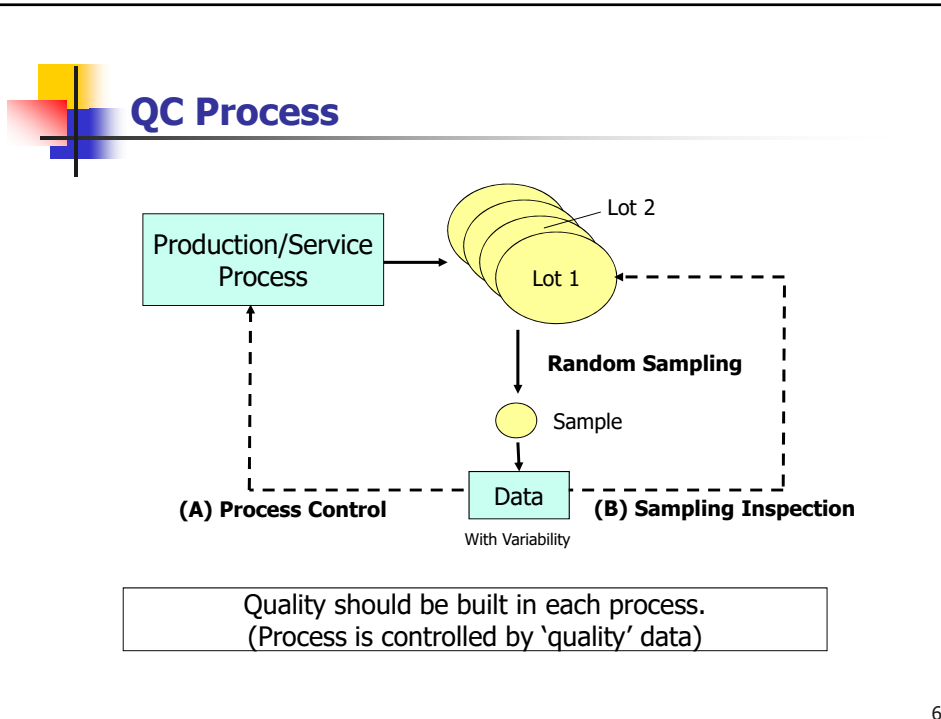


59



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## QC Charts

(1/2)

**5 units from each lot were chosen to measure the length L ( $20 \pm 0.1$ ). The chart below shows  $\bar{X}$ -R Control, based on the recent data covering 20 lots.**

Lot	Measurement					$\bar{X}$	R
001	19.96	20.04	20.00	20.06	19.99	20.010	0.100
002	20.04	20.01	19.98	20.00	19.99	20.004	0.060
003	19.99	20.03	20.01	20.02	20.01	20.012	0.040
004	19.97	20.03	19.95	20.02	20.00	19.994	0.080
005	19.97	19.97	19.96	20.04	20.02	19.992	0.080
006	19.99	20.05	19.95	20.01	19.97	19.994	0.100
007	20.03	20.00	20.01	20.00	19.99	20.006	0.040
008	19.98	20.07	20.01	19.96	20.01	20.006	0.110
009	20.05	19.99	19.94	19.94	19.97	19.978	0.110
010	20.00	20.00	19.97	19.96	19.97	19.980	0.040
011	20.04	19.96	20.05	20.01	20.06	20.024	0.100
012	19.94	19.97	19.97	20.00	19.99	19.974	0.060
013	20.03	20.07	19.95	19.96	20.04	20.010	0.120
014	20.05	20.05	20.06	20.03	19.99	20.036	0.070
015	19.93	20.00	20.00	19.98	20.05	19.986	0.120
016	20.00	20.01	20.10	20.02	20.06	20.026	0.060
017	19.96	20.05	20.05	20.04	19.99	20.002	0.090
018	20.07	19.94	19.94	20.00	20.04	20.012	0.130
019	19.95	19.97	19.97	19.99	19.93	19.958	0.060
020	20.05	19.95	19.95	19.98	20.06	20.020	0.110

⊙  $\bar{X}$  Control Chart

$\bar{\bar{X}} = 20.001$

$UCL = \bar{\bar{X}} + A_2 \bar{R}$

$= 20.001 + 0.577 \times 0.084$

$= 20.049$

$LCL = \bar{\bar{X}} - A_2 \bar{R}$

$= 20.001 - 0.577 \times 0.084$

$= 19.953$

⊙ R Control Chart

$\bar{R} = 0.084$

$UCL = D_4 \bar{R}$

$= 2.114 \times 0.084 = 0.178$

$20\text{mm} \pm 0.1\text{mm}$

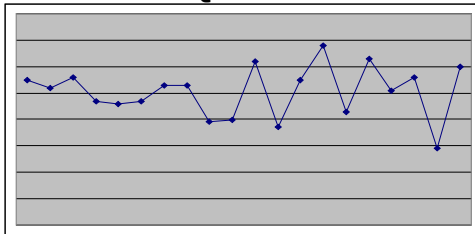
62

62

# QC Charts (Control Chart)

## Shewhart X-bar and R & S control chart (2/2)

**$\bar{X}$  QC Chart**



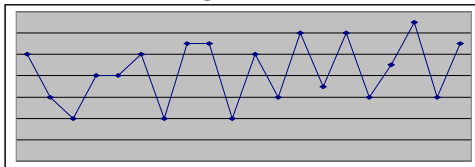
- With Control Limit Lines
- Controlled State v.s. Out of Control

← limit UCL(20.049): Upper Control Limit  
 CL(20.001): Center Line  
 ← limit LCL(19.953): Lower Control Limit

© The number of Data and coefficient of each lot

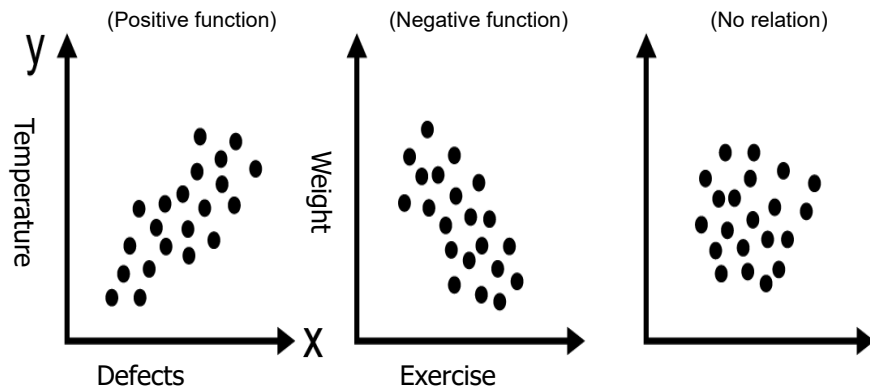
The number of Data	A2	D4
2	1.880	3.268
3	1.023	2.574
4	0.729	2.282
5	0.577	2.114

**R QC Chart**



UCL(0.178)  
 0

# Scatter diagram





## Data Class/Data Layer

By what data is collected?

- Time: e.g. AM, PM
- Worker
- Material
- Machine
- Method
- Condition

To find the real problem.

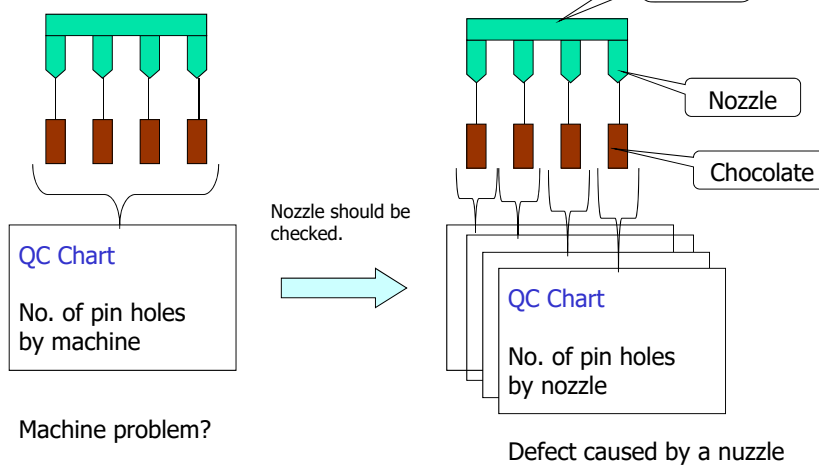
65

65



## Case: Chocolate Factory

Pin hole is the most serious problem.  
Data collection is the key.



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## Cause Analysis: Mind Map

### Brain Storming

Brainstorming is used to generate a high volume of ideas with team members' full participation.

It is FREE OF CRITICISM AND JUDGEMENT.

No idea is criticized !

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## Cause Effect Analysis

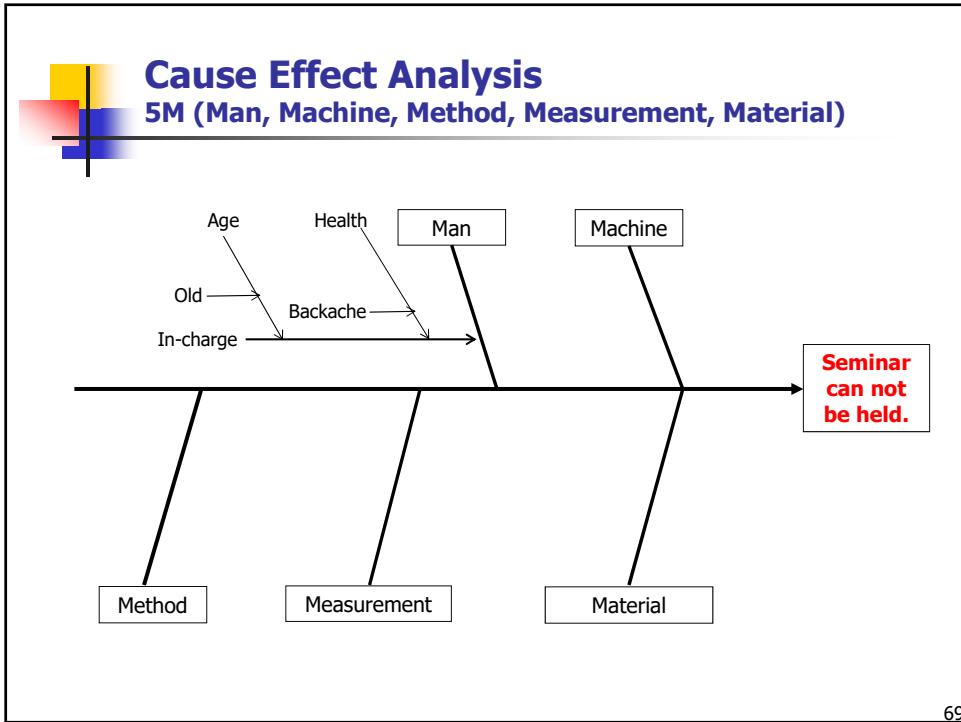
### 5M (Man, Machine, Method, Measurement, Material)

5M = Input for production/services

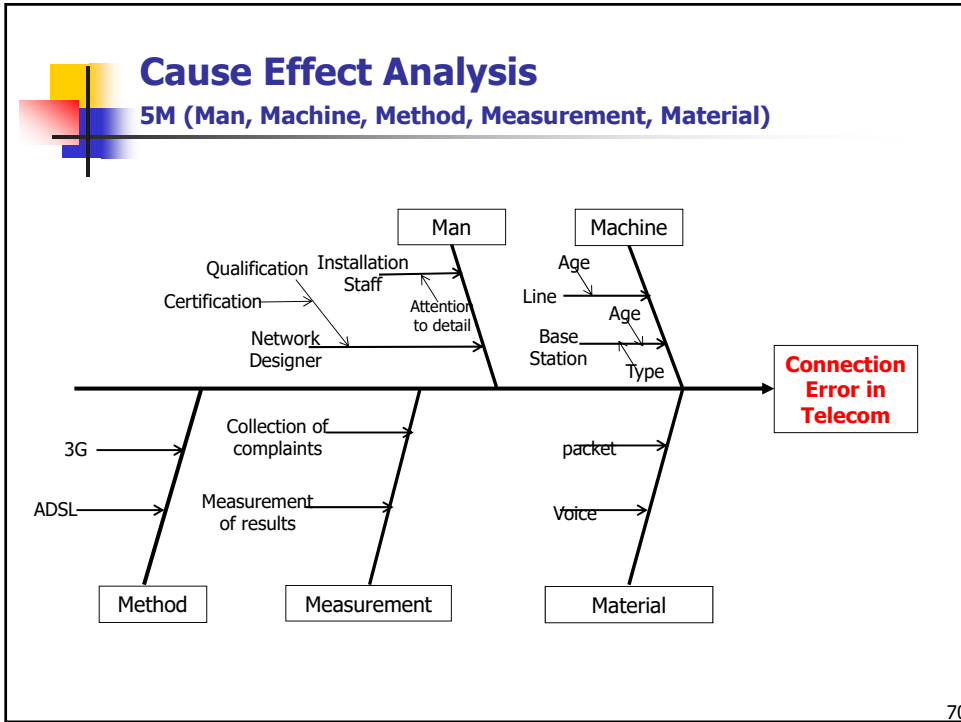
5M	Description
Man	Cause Factor of In-charge, Management, Partner
Machine	Cause Factor of Machine, Equipment, Tool, Facility, Room, Chair or Table
Method	Cause Factor of Technology, Operation Procedure, How-to-do
Measurement	Cause Factor of Collecting information, Confirming process, Measurement of the result
Material	Cause Factor of Material to be processed

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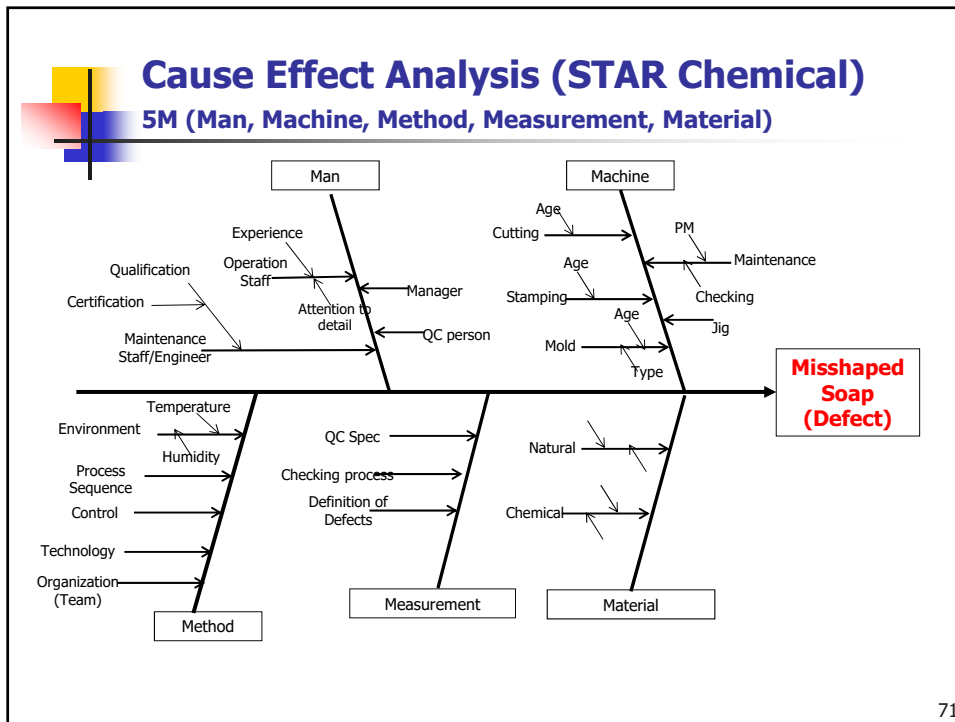
68



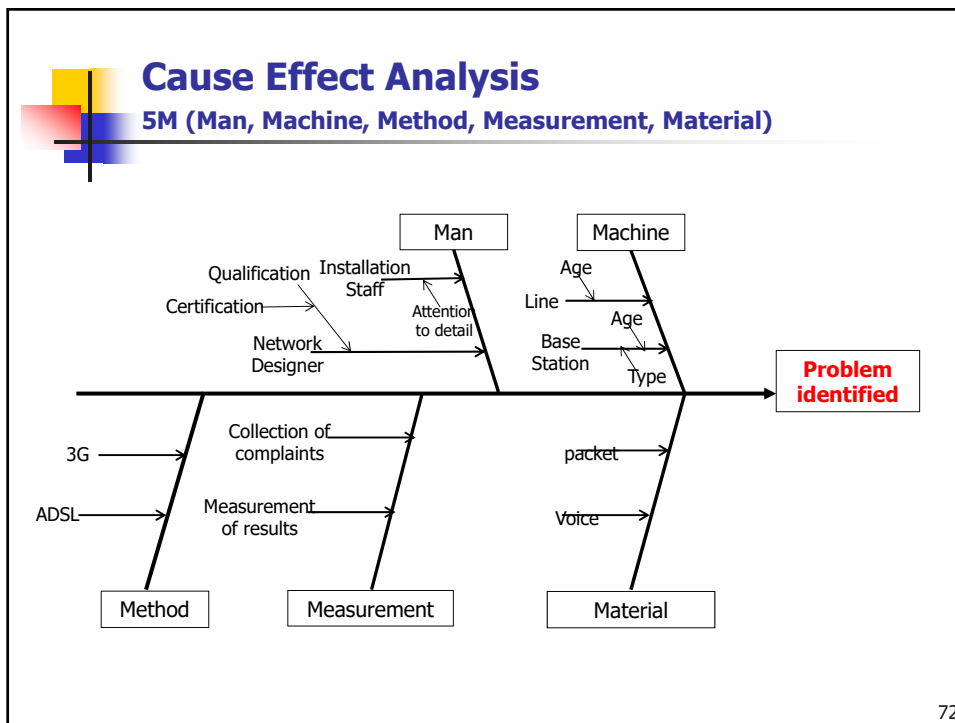
69




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## Effectiveness of QC Circle

- Defects decrease
- Continuous Improvement
- Members capability up
- Leadership
- ? (Another important one)

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## Case: Honda

- 1971: QC Contest was started.
- 1972: NH Circle – ‘Now’, ‘Next’, ‘New’ Honda
  - Focus on not only the results but also the processes
  - Develop teamwork/communication in working place
  - Improve morale
- Now worldwide QC Convention

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## Case: Toyota

(1/2)

- **1965: TQC implementation was started.**
  - **Production efficiency was increased**
    - No. of employees 2 times more and production 7 times more than 1955 when Toyota Crown sales had started.
  - **However, quality not so satisfactory**
    - Lack of education and training
    - Manager's capability still premature
    - Less communication among the departments
    - Quality: competitive factor
- **QC Circle = Education & Training -> Develop employees**
- **Top management defines the **quality target** and makes all employees understand it.**
- **Functional cooperation is required among all the departments**
- **Improvement ideas in the shop floor are from QC Circles.**

Idea was from Peter Drucker

75

75



## Case: Toyota

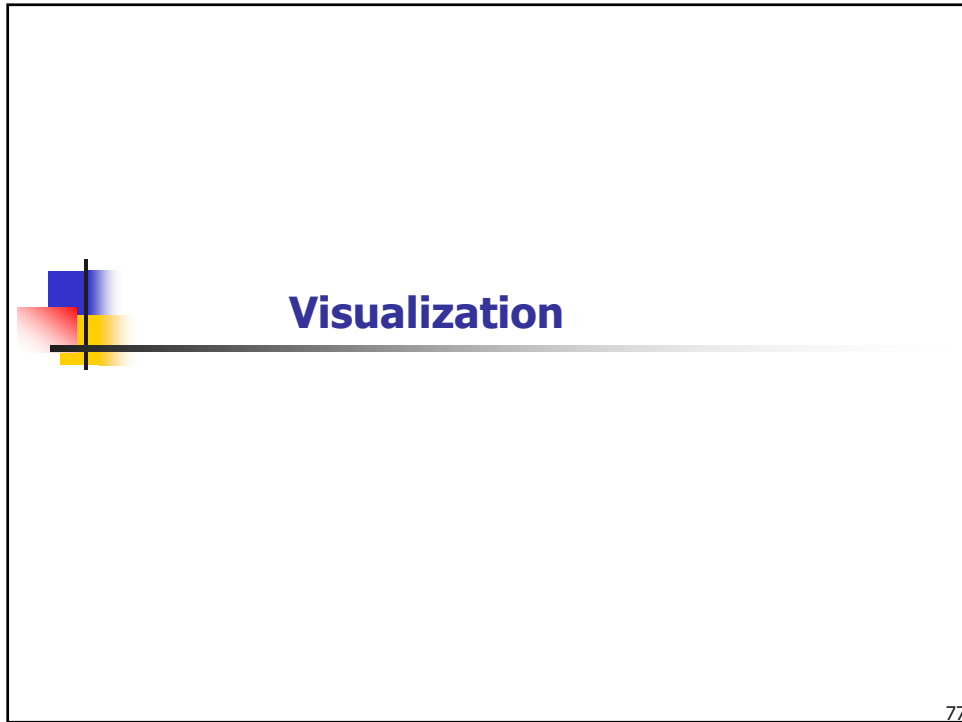
(2/2)

- **QC Themes, for example:**
  - **Manual work improvement to eliminate wasteful hand movement.**
  - **Implementation of new machine/upgraded machine**
  - **Improvement of the way of using materials and consumables and saving money**

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77

A slide with a white background and a black border. It features the same graphic as slide 77 on the left. To the right of the graphic, the word "Visualization" is written in a bold, blue, sans-serif font. Below the title, there is a paragraph of text and a bulleted list. A thin horizontal line extends from the end of the vertical line across the slide.

Visualization means 'Visual control' or 'Mieruka' which is a Japanese terminology.

There are 3 basic rules for effective visual control.

- Make it easy to understand
- Make it big and easily visible
- Make it interactive and easy to change

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## Visualization

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### **Make it easy to understand**

An effective visual distills information to its essential core, so that people can immediately understand what the visual is trying to communicate.

A good visual allows all people, from management to employees, to immediately understand the current situation. The emphasis here is on speed and simplicity, as it will allow an issue to be understood, or a problem to be quickly spotted, analyzed and tended to, as opposed to be hidden away in an obscure report.

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## Visualization

---

### **Make it big and easily visible**

A good visual is one placed in publicly visible areas, such as walls at high traffic areas, so that people don't need to go hunting for the information. Making the visual physically large is also important as it makes it easier to see, as you would want the message to be impossible to miss.

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80



## Visualization

### **Make it interactive and easy to change**

It must be kept up-to-date with the latest information and should be easy to update. A Toyota whiteboard will often contain magnetic stickers which can be shuffled around in order to provide simple updates, with hand-written notes using a whiteboard marker if more detailed information is needed.

And finally...

When you put these rules together, you will be able to create visuals in no time.

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81



## Visualization

All departments declare what kind of activity they will undertake every week by putting the board **on the wall at the corridor of high traffic and share their progress company wide.**



82

82

## Visualization

Date		03/52			
Part #	Box ID	Qty	No. of Defective	Iyrikawata	
1				Part 204F000-2110 < 204 >	
2				1 0255555555555555 100	
3				2 0255555555555555 100	
4				3 0255555555555555 100	
5				4 0255555555555555 100	
6				5 0255555555555555 100	
7				6 0255555555555555 100	
8				7 0255555555555555 100	
9				8 0255555555555555 100	
10				9 0255555555555555 100	
11				10 0255555555555555 100	
12				11 0255555555555555 100	
13				12 0255555555555555 100	
14				13 0255555555555555 100	
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83

83

## Visualization

Identification and classification of shelves and goods



84

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## Visible Control System

### A picture is worth a thousand words.

- Assignment Board
- Schedule Board
- Diary/Weekly reporting
  - Work load
- Signs, plates, notices



Inventory Control Label with color sticker  
Ex. 12 colors for 12 months for FIFO

85

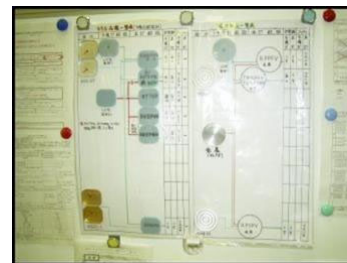
85

## Cases: Control Processes Visually

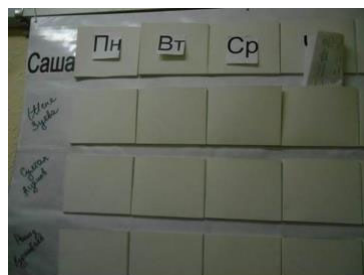
- Daily schedule control

Machine X	Dec. 6	
Item YYY	20	##,##,
ITEM ZZZ	30	

Hand written on white board



Standard operation chart on the wall



Simple schedule (Printing company)

86

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## Case : Medical Clinical Laboratory & Testing

Use of bar code and different color (Sample, Container and Wall)

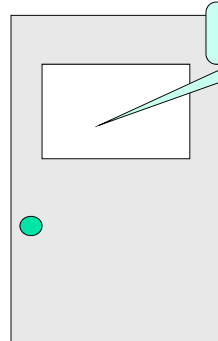


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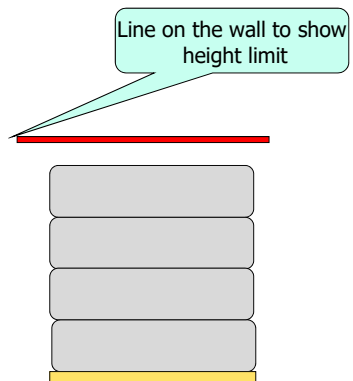
87



## Case:



Window to see outside



Line on the wall to show height limit

88

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## Case: Gantt chart

(Visualization of daily production planning)

Day	1	2	3	4	5	6	7	8	9	10
Line 1										
Line 2										
Line 3										
Total No. of workers										

89

89



## Visualization check list

No.	Check point	Score (1-5)
1	Sign to classify sections are large enough?	
2	Colored line on the floor indicating how a product is to be stacked?	
3	Signs are easy to understand?	
4	Are there freestanding whiteboard?	
5	Are there progress control board?	
6	Production plan is visible?	
7	Color is used, e.g. in inventory management? (FIFO)	
8	Traceability information is visualized? (Lot no., production date, internal code no. etc.)	
9	Bar code or QR code is used?	

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## Visualization check list

No.	Check point	Score (1-5)
10	Defect cases are visualized?	
11	Follow-up of defects is visualized? (who, what, when, where)	
12	Defect graph by reason exists?	
13	In the storage area, each area is clearly marked to ensure that there are no mistakes when sorting and placing goods?	
14	The shelves are systematically organized and clearly labeled, while each individual product is also labeled with a sticker?	
15	Each label is designed to be both human and machine readable?	

91

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**Exercise:** Please develop cases of applying ECRS in your life (business/private) .

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### 5 S's in both Japanese & English

5 Fundamental Principles

In Japanese	In English
<b>Seiri</b> (整理)	<b>S</b> orting: Remove unnecessary things. Separate out what is needed for the operations.
<b>Seiton</b> (整頓)	<b>S</b> et in order: Place things in order and make them visible
<b>Seiso</b> (清掃)	<b>S</b> weep: Tidy up and clean up
<b>Seiketsu</b> (清潔)	<b>S</b> tandardize: Keep/ <b>m</b> aintain your surroundings clean and comfortable
<b>Shitsuke</b> (躰)	<b>S</b> ustain: Make a custom of practicing the principles

## Case: Seiri, Seiton



Die Storage Shelf

Tool Shadow Board

### Seiri: Discarding Rules

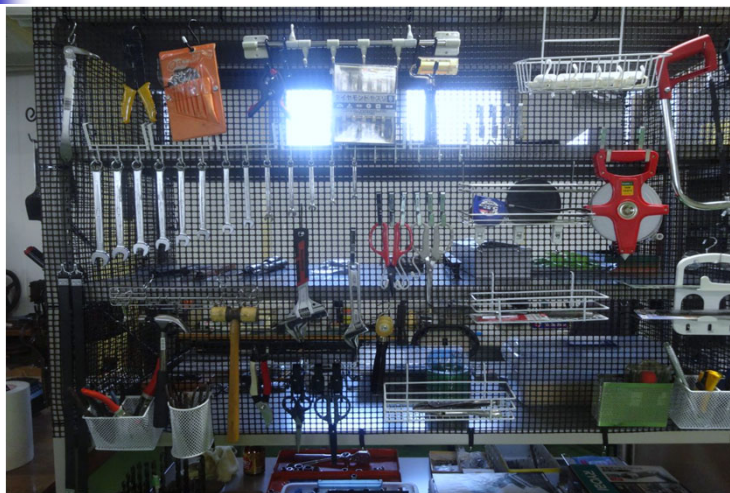
- Checking Cycle
- Place
- Term to keep



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## Tool Seiton Board



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## Sorting sewing threads at the warehouse



97

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## Keeping fabrics intact



Introduction of Pallet to  
keep materials intact.

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## Case: Seiton in Office



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## Case: Seiton in Office



100

100

## SMEs in Higashi Osaka

This company is supplying aircraft parts to Boeing, U.S.A.  
Quality check at every production process and all quantities.



Storage system of spare parts/  
tools (size by size)



Utilizing the vertical space to  
store materials

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## Cutting section at a garment factory

**Before KAIZEN**



**After KAIZEN**



Preventing sand, dust etc. falling from the ceiling on the cutting table

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## Safe working environment

Before



After



103

103



## Easy to transport with wheel



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## Factory 5S check list

Score: 1 Not at all, 2: Need improvement, 3: Good

Area	No.	Description	Score (1-3)	Remark
Workshop	1	Materials, WIP, Tools are only for today?	1 2 3	
	2	Material and parts are in order?	1 2 3	
	3	Tools are close to handle by order of frequency? The more use, the closer.	1 2 3	
	4	No material, WIP, tools not necessary now are on operation table?	1 2 3	
	5	Unnecessary items under the operation table?	1 2 3	
	6	Documents, operation manuals are scattered?	1 2 3	
	7	Ashtray?	1 2 3	
	8	Food or beverage?	1 2 3	
	9	Personal belongings?	1 2 3	
	10	Pleasant atmosphere?	1 2 3	

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## Factory 5S check list

Score: 1 Not at all, 2: Need improvement, 3: Good

Area	No.	Description	Score (1-3)	Remark
Equipment/machine	1	Machines, equipment, old parts are left?	1 2 3	
	2	Tools are left?	1 2 3	
	3	Safety cover is set well?	1 2 3	
	4	Recorder and meter is correct?	1 2 3	
	5	Pipes and cables of electricity, oil, steam and air set with differentiation?	1 2 3	
	6	No leakage of oil, steam air?	1 2 3	
	7	Manual and electricity chart are well stored?	1 2 3	
	8	Machine and equipment are cleaned?	1 2 3	

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## Factory 5S check list

Score: 1 Not at all, 2: Need improvement, 3: Good

Area	No.	Description	Score (1-3)	Remark
Parts shelf	1	Unnecessary items?	1 2 3	
	2	Not parts like tools in the shelf?	1 2 3	
	3	Number of items is recorded and right?	1 2 3	
	4	Easy to take out?	1 2 3	
	5	Shelf is good place to use?	1 2 3	
	6	FIFO?	1 2 3	
	7	Can items be seen from outside?	1 2 3	
	8	Cleaned well including surrounding of shelf?	1 2 3	

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## Factory 5S check list

Score: 1 Not at all, 2: Need improvement, 3: Good

Area	No.	Description	Score (1-3)	Remark
Place of Materials	1	Any material not used long time?	1 2 3	
	2	Other items are in the place?	1 2 3	
	3	Well organized? By group, by product, by process or by supplier?	1 2 3	
	4	FIFO?	1 2 3	
	5	Cleaned well including surrounding areas?	1 2 3	
Place of finished products	1	Any product stays long time?	1 2 3	
	2	Anything which is not finished products in the place?	1 2 3	
	3	Any deteriorated product?	1 2 3	

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## Factory 5S check list

Score: 1 Not at all, 2: Need improvement, 3: Good

Area	No.	Description	Score (1-3)	Remark
Place of finished products	4	FIFO?	1 2 3	
	5	Cleaned well including surrounding areas?	1 2 3	
Pipes, cables	1	Any unnecessary pipes and electric cables?	1 2 3	
	2	Fixed well?	1 2 3	
	3	Disturbing walking?	1 2 3	
	4	Steam pipes well insulated?	1 2 3	
	5	Categorized and signed by directions to go?	1 2 3	
Corridor/Floor	1	Unnecessary items?	1 2 3	

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## Factory 5S check list

Score: 1 Not at all, 2: Need improvement, 3: Good

Area	No.	Description	Score (1-3)	Remark
Corridor/Floor	2	Lined to differentiate	1 2 3	
	3	Cleaned	1 2 3	
		<b>Total</b>	/ 132	

Final evaluation:  
 SA: 118-132, A: 106-117, B:86-105, C:below 85

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## Office 5S check sheet (Seiri: Sorting)

Score: 1. Not at all, 2. Need improvement, 3. Good

No.	Check item	Check details	Score 1- 3	Comment
1	Are there any unnecessary things in the office?	Inside locker & drawers, on the desk	1 2 3	
2	Are items being sorted out?	Are these items being used	1 2 3	
3	Are unnecessary things being clearly identified?	Are unused carton boxes, items already used such as non-usable inks being kept in the facility?	1 2 3	

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111



## Office 5S check sheet (Seiri: Sorting)

No.	Check item	Check details	Score 1-3	Comment
4	Are displayed items being sorted out?	Out of date, stain, coordination	1 2 3	
5	Are magazine rack and brochure stand being sorted out?	Out of season, adequate copies	1 2 3	

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## Office 5S check sheet (Seiton: Setting in order)

No.	Check item	Check details	Score 1-3	Comment
1	Are document files and items being properly labelled?	Are there labels indicating name of items and document files?	1 2 3	
2	Are document files and items stored in order?	Are they being stored at the right place?	1 2 3	
3	Is time for searching eliminated due to removal of unnecessary things?	There is demarcation between the stock items and items being used.	1 2 3	

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## Office 5S check sheet (Seiton: Setting in order)

No.	Check item	Check details	Score 1-3	Comment
4	Are unnecessary motion being eliminated?	Can items be picked up easily without removing unnecessary things on top of them?	1 2 3	
5	Are the positions of displayed items adequate?	Are they being visualized?	1 2 3	

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## Office 5S check sheet (Seiso: Shining)

No.	Check item	Check details	Score 1-3	Comment
1	Are there any litters or stains on the floor? Is there any dust in the locker or on the desk?	Are there any dirt or dust in the hidden areas?	1 2 3	
2	Are the surrounding areas clean?	Are there any litters or fallen leaves in the areas?	1 2 3	
3	Is the glass clean?	There is no stain on the glass and door is being cleaned completely.	1 2 3	

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## Office 5S check sheet (Seiso: Shining)

No.	Check item	Check details	Score 1-3	Comment
4	Is the dustbin full of litters?	Are empty cans or bottles outside the dustbin?	1 2 3	
5	Are the parking lots or surrounding areas clean?	Are any litters found in the back side of the facility? Does daily cleaning activity continue?	1 2 3	

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## Office 5S check sheet (Seiketsu: Standardizing)

No.	Check item	Check details	Score 1-3	Comment
1	Is shining/cleaning being done thoroughly as planned?	Are check sheets being used to ensure that 5S is being continued?	1 2 3	
2	Are maintenance and inspection of the machines such as copy machines or lighting equipment being done?	Are the machine, equipment, etc. working well? Is there any dangerous part in the facility?	1 2 3	
		Total	/51	

Final evaluation:  
SA:46-51, A:40-45, B: 30-39, C: below 29

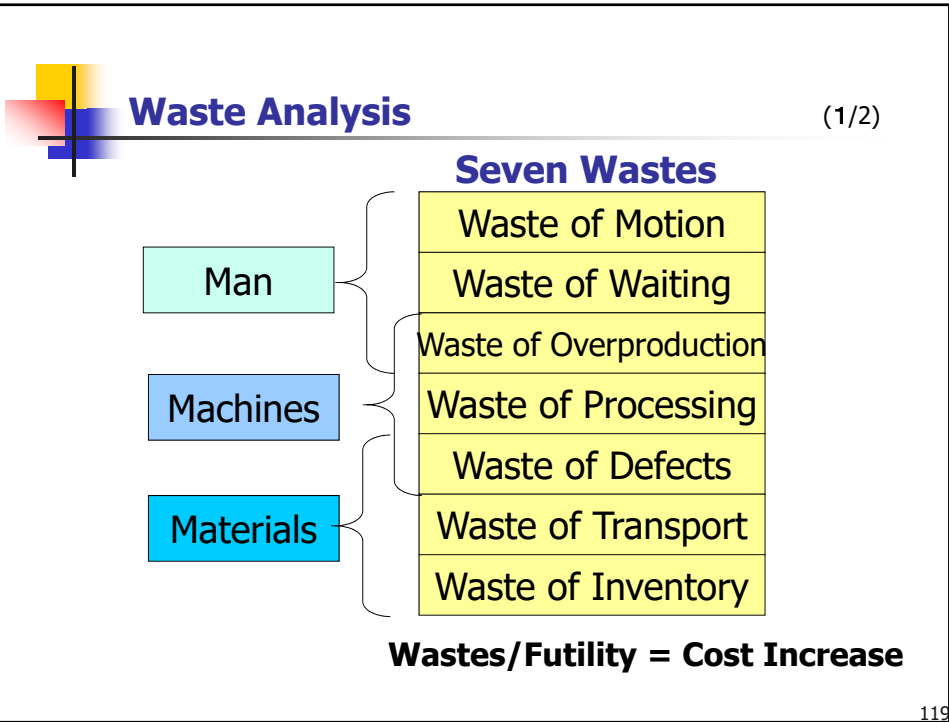
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**Exercise (Homework):** Please show photo in your office or factory of "Before" and "After" implementing 5S.

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## Seven Wastes in Manufacturing (1/2)

Wastes of	Definition	Frequent phenomena
<b>Motion</b>	Motion within a local area that does not add value. <i>Difficult motion</i>	<ul style="list-style-type: none"> <li>•Searching for materials, components drawings or documents</li> <li>•Reaching for tools</li> <li>•Lifting boxes of components</li> <li>•Walking away to bring tools to area</li> </ul>
<b>Waiting</b>	Idle time created when people, materials, information, or equipment is not available when required	<ul style="list-style-type: none"> <li>•Waiting for parts or drawings</li> <li>•Waiting for information</li> <li>•Waiting for machine repaired</li> <li>•Waiting for people</li> </ul>
<b>Over production</b>	Generate more than the customer requires	<ul style="list-style-type: none"> <li>•Producing for stock/inventory</li> <li>•Working in large batches to avoid set ups</li> <li>•Adding 'scrap' allowances</li> </ul>
<b>Processing</b>	Efforts to create no added value from the customer's view such as <i>rework, reprocessing.</i>	<ul style="list-style-type: none"> <li>•Unnecessary operations</li> <li>•Over-tight tolerance</li> <li>•Bad design</li> <li>•Multiple cleaning</li> </ul>

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## Seven Wastes in Manufacturing (2/2)

Wastes of	Definition	Frequent phenomena	
<b>Defects</b>	Not perfect products Processing due to defects, rework, repair or discard.	<ul style="list-style-type: none"> <li>•Scrap</li> <li>•Rework</li> <li>•Defects</li> <li>•Corrective actions</li> </ul>	<ul style="list-style-type: none"> <li>•Field failure</li> <li>•Variation</li> <li>•Missing parts</li> </ul>
<b>Transport</b>	Movement between plants or offices or areas that does not add to the value of the finished goods or service	<ul style="list-style-type: none"> <li>•Moving parts or equipment in and out of storage</li> <li>•Moving materials from one area to another</li> <li>•Moving parts between processes</li> </ul>	
<b>Inventory</b>	More materials on hand than currently required	<ul style="list-style-type: none"> <li>•Raw materials</li> <li>•Work in progress</li> <li>•Finished goods</li> <li>•Consumable storage</li> <li>•Off site inventory</li> </ul>	

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## Seven Wastes in Office

Wastes	Office
Motion	Search, unnecessary motions without standard operation
Waiting	Waiting for signature, specification, document
Overproduction	Extra features
Processing	Paper work, Non-value added work
Defects	Error, mistake, bug Additional operation due to error
Transportation	Document, message switching, task switching By office layout, position of items
Inventory	Partially done work, documents waiting for being processed

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## Waste 1: Motion

- Taking video and viewing the motion
  - Pick up parts behind (0.6 seconds)
  - Difficult motion → Defects
  - Table height in the office



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## Waste 2: Waiting

**Case: Team Coordinator is travelling abroad and consultants under the team coordinator sending invoices to the office. Invoices are waiting for his signature.**

**Before:** Invoices waiting for the signature while he is travelling abroad



**After:** On-line approval by email after checking invoices and evidences

**Further:** Electronic signature

**Case: Workflow automation**

**Case: Queuing Theory**

- More service counters
- Multi-skilled workers
- Reduction of service time dispersion

**Case: Reservation system (Barber shop, Hospital)**

**Case: Phone transfer/Voice warp**

**Case: Just-In-Time (Pull system)**

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## Case : A Barber Shop

**Waiting is no value-added activity.**

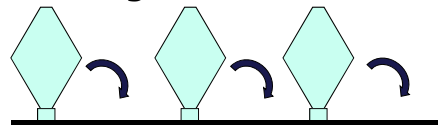
1. Barbour shop is always crowded.
  - Many people are waiting.
  - They are losing time.
  - Potential customers leave due to the crowdedness.
  - Owner is not profitable but busy.
2. Copy the idea in production control!
  - Normally production plan is well organized to meet the demand and resources constraints.
  - Scheduling is the key.
3. New service
  - Reservation system.
  - No waiting of customers.
  - More profitable work for owner.

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## Waste 3: Processing

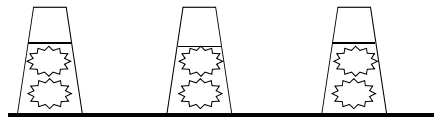
### Bad design: Bottle of water



Unstable shape designed



Unnecessary process  
: Raise a fallen bottle



Too decorative surface designed



Unnecessary process  
: Refilling for water with gas  
To keep the level

### Bad design:

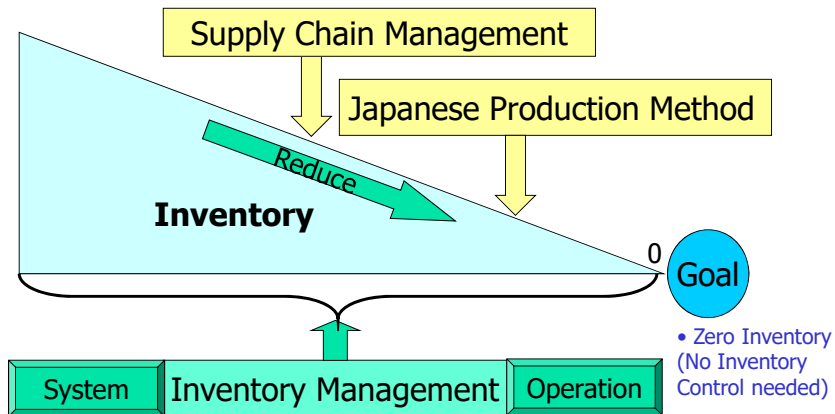
- Mistake in planning of a seminar
- Project design in consulting -> Use of old proposals
- System design phase

### Delegation

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## Waste 4: Inventory Japanese Stance of Inventory Management

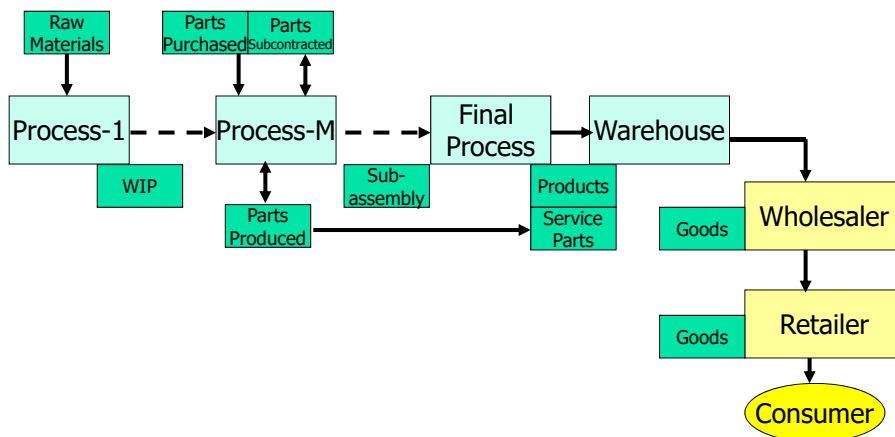


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## Definition of Inventory

- Which        do you call inventory at your firm?

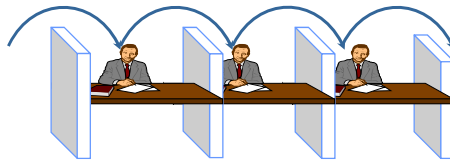


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## Inventory in Office Work

- Inventory in Office Work?
  - Batch process in the office.
  - WIP in the office.
- Software asset in IT industry.
- Inventory in Knowledge working?
  - Too advanced preparation
  - Applications waiting for being processed



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## Requirements of Inventory Management

- Principle: Inventory should be zero.
  - Many problems reside within inventory.
  - Difficult to identify real problems.
    - Defects
    - Machine down
    - Can not catch up the delivery time.
    - Can not follow the specification changes quickly.
  - Zero base approach is important.
  - Inventory is 'waste', 'wrong thing to have' or even 'evil'.
- Zero inventory means no need for inventory control.
- Inventory control is required en route to zero inventory.

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## Why Is Inventory Bad?

### Inventory covers up the problems in the factory

- Schedule change not followed
- Many defect products
- Machine troubles
- Long setup time
- Shortage of parts
- Machine capacity ill-balanced
- Machine size too large

### Inventory causes:

- Increase of interest on a loan
- Occupation of additional space
  - Outside Warehouses
- Wasteful transportation
  - Transport it to the warehouses
  - Extra Workers, Forklifts
- Extra management cost
  - Additional Inventory Control Systems
- Unnecessary consumption of materials and parts
  - Stain remover, pallets
- Waste of energy

Shortage → More production → More inventory

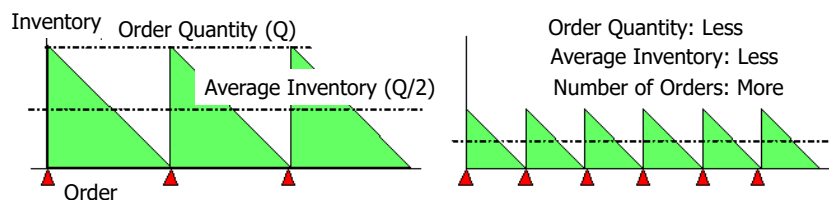
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## Ordering/Lead Time/Inventory

- Assume that:
  - Same shipment (sales) everyday
  - Same order quantity every time

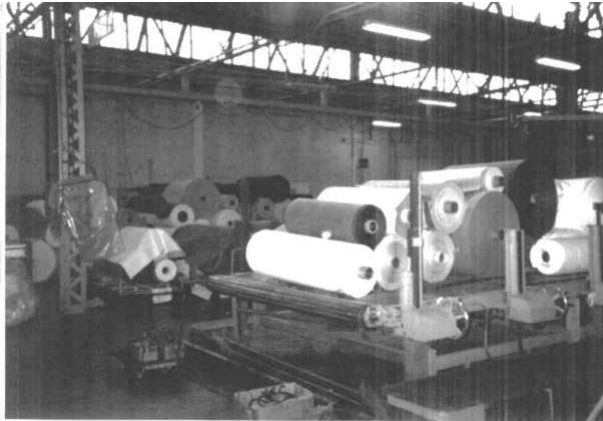


**The more frequent ordering, the less inventory.  
Less lead time is the key!**

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## Waste: Inventory Case: Work in process



Inventory

- Work in process
- Not well organized

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## Inventory Tag

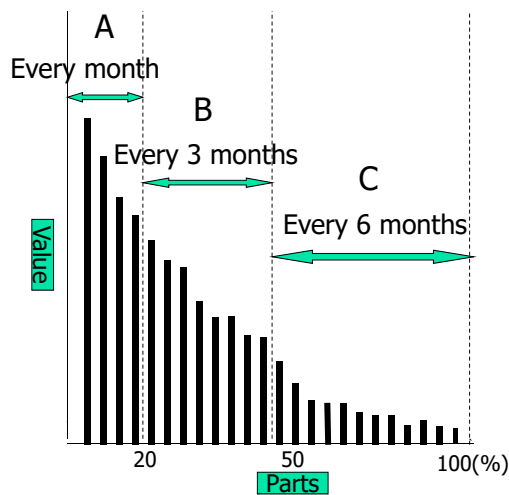
### Important points in attaching inventory tags

1. Put one tag on each item. Fill in the number of receive/issue on each receive and issue of inventory.
2. In case the item belongs to the 'Ordering Point System' category, write the number of items at Reorder Point for further order,
3. At inventory check, put a mark (e.g. red line) on the tag and fill in the inventory check results. This makes it clear when the theoretical inventory met the physical inventory.

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## Classification and Frequency of Inventory Check (Example)



Classification	Month of inventory check
A	Every month
B1	1, 4, 7,10
B2	2, 5, 8,11
B3	3, 6, 9,12
C1	1, 7
C2	2, 8
C3	3, 9
C4	4, 10
C5	5, 11
C6	6, 12

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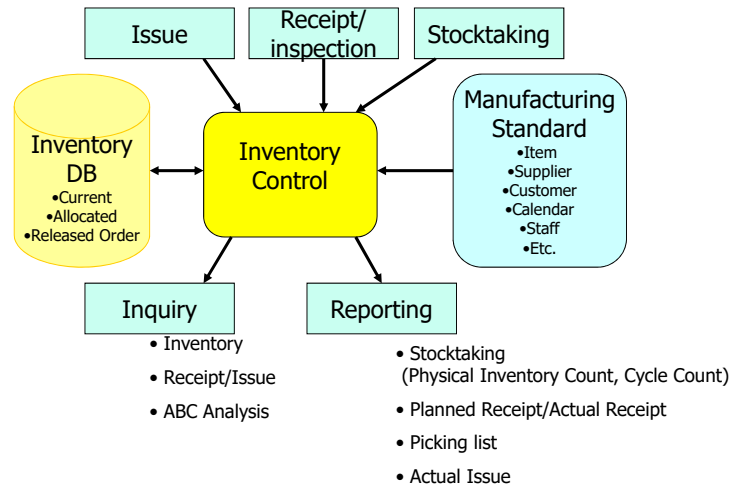
## Inventory Control System

- Objectives
  - By having accurate inventory (including planned), it would be possible to:
    - Promises to delivery (to customers, to production)
    - Get appropriate ordering quantity
  - Find dead stock to discard or slow moving items.
  - **Quality** of slow moving items and dead stock is questionable.

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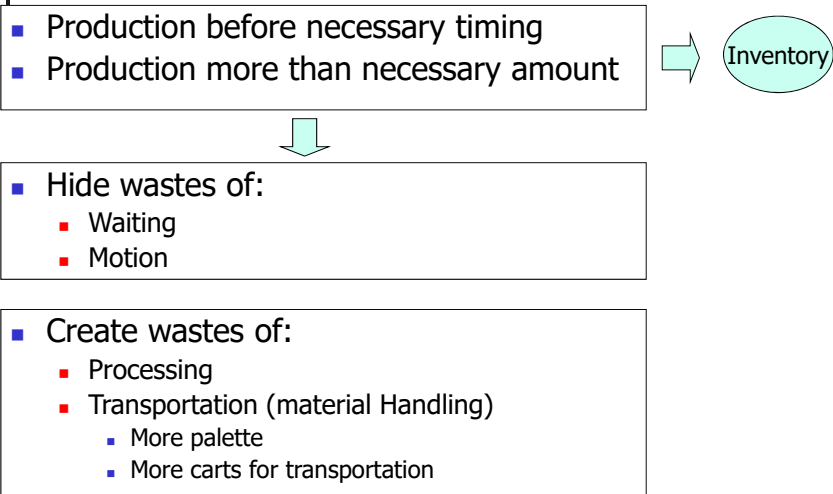
## Inventory Control System



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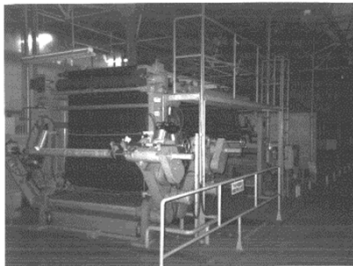
## Waste 5: Over Production



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## Case: Working in large batches



- Huge continuous line
- Huge lot size
- Not well used



### Case: Cell Method

Flexible production to meet with market needs/changes

### Case: Over-specification

### Case: Over-wrapping

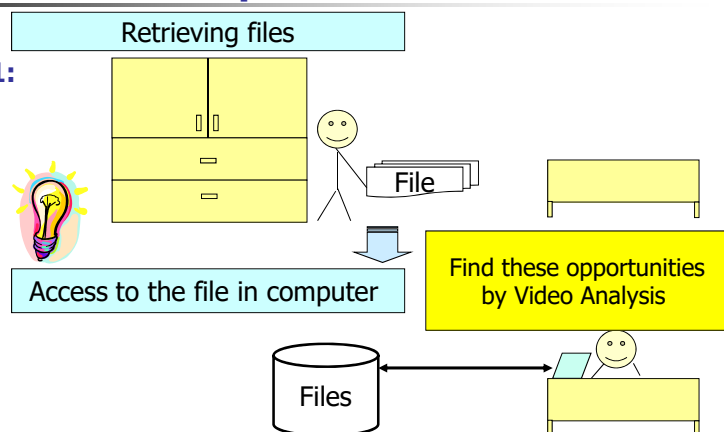
### Case: Excess of report writing

139

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## Waste 6: Transportation

### Example 1:



### Example 2:

Panasonic: 50 units/container -> 100 units/container by small size change of packaging, then half a number of transportation

140

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## Waste 6: Transportation



- Bottle to dirty floor, then bag
- Transportation by bag
- Taking out bottle from bag in the next process
- New container to transport smoothly and for quick take-out
- No more putting bottle to the floor and putting it to the bag (small transportation)
- No more transportation by bag to the next process

Next step: Eliminate the transportation itself or shorten it!

141

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## Waste 7: Defects

- Poka-Yoke (Fool proof)
  - Use of checklists
- Standard operation
- QC circle
  - Use of 7 tools
- Quality at the source (TPS)
- Use of proven software

142

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## 7W (Waste)

Waste	Definition	Frequent phenomena	List up in your case
Motion	Motion within a local area that does not add value	<ul style="list-style-type: none"> <li>● Searching for materials, drawing or documents</li> <li>● Reaching for tools</li> <li>● Lifting boxes of components</li> <li>● Walking away to bring tools to area</li> </ul>	
Waiting	Idle time created when people, materials, information, or equipment is not available when required	<ul style="list-style-type: none"> <li>● Waiting for parts or drawings</li> <li>● Waiting for information</li> <li>● Waiting for machine repaired</li> <li>● Waiting for people</li> </ul>	

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## 7W (Waste)

Waste	Definition	Frequent phenomena	List up in your case
Over production	Generate more than the customer requires	<ul style="list-style-type: none"> <li>● Producing for stock/inventory</li> <li>● Working in large batches to avoid set ups</li> <li>● Adding 'scrap' batches allowances</li> </ul>	
Processing	Efforts to create no added value from the customer's viewpoint.	<ul style="list-style-type: none"> <li>● Unnecessary operations</li> <li>● Over-tight tolerance</li> <li>● Bad design</li> <li>● Multiple cleaning</li> </ul>	

144

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## 7W(Waste)

Waste	Definition	Frequent phenomena	List up in your clients
Defects	Not perfect products	<ul style="list-style-type: none"> <li>● Scrap</li> <li>● Field failure</li> <li>● Rework</li> <li>● Variation</li> <li>● Defects</li> <li>● Missing parts</li> <li>● Corrective actions</li> </ul>	
Transport	Movement between plants or offices or areas that does not add to the value of the finished goods or service	<ul style="list-style-type: none"> <li>● Moving parts or equipment in and out of storage</li> <li>● Moving materials from one area to another</li> <li>● Moving parts between processes</li> </ul>	

145

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## 7W(Waste)

Waste	Definition	Frequent phenomena	List up in your case
Inventory	More materials on hand than currently required	<ul style="list-style-type: none"> <li>● Raw materials</li> <li>● Work in process</li> <li>● Finished goods</li> <li>● Consumable storage</li> <li>● Off site inventory</li> </ul>	

146

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**Group discussion:**  
Please identify '7 Wastes' in your office or factory and make presentation.

147

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**Thank you for your  
diligent participation!**

148

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1

A slide with a decorative graphic on the left. The title "Memo-pad Specifications" is in blue. To the right is a diagram of a trapezoid with dimensions: top width 2cm, bottom width 7.4cm, height 8.5cm, and a 1cm cut-off at the top right corner. A "staple" is indicated on the left side, and a "Cut off here" label points to the top right corner. A blue horizontal line is drawn at the bottom of the trapezoid, 1cm from the right edge. A small number "2" is in the bottom right corner.

**"Memo-pad" Specifications**

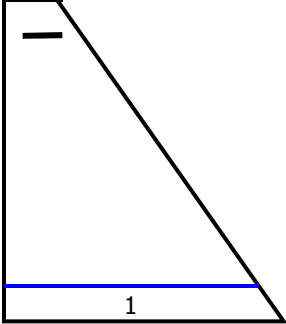
- **Shape**
  - Trapezoid (Height 8.5cm x Width 7.4cm)
  - 1/16 of A4 sheet of paper with one corner cut off
- **Number of Pages: 10**
- **Stapled (centered)**
- **Colored Line on each page (any color)**
- **Numbering on each page (1 to 10)**

2




## Tools to Use

- Scissors
- Ruler
- Pencil
- Color Pencil
- Stapler



3

3



## Production of memo pad

1. Checking the specifications of the products to be manufactured
2. Discussion production plan with members
3. Discussion production process with members
4. Assignment of members to each production process
5. Starting production

4

4



## Production process (Example)

---

1. Drawing lines on papers
2. Cutting for memo pad along the lines
3. Stapling
4. Putting numbers (1-10)
5. Quality check before delivery to customers

5



## Production process(Example)

---

Time study (Industrial Engineering)

Please measure time for each production process and discuss whether **ECRS** can be applied to improve the process.

**E: Eliminate C: Combine R: Rearrange**

**S: Simplify**

6



## ECRS Principles

---

**Eliminate:** whether the process can be eliminated

**Combine:** whether a certain process can be combined with other process

**Rearrange:** whether the process can be rearranged; i.e. the process order can be changed

**Simplify:** whether the process can be simplified.

7

7



## More things to consider

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### ■ Quality

- How many of your memo-pads are considered as “good quality”?
- Quality is a big differentiator in the market
  - Same Price: Higher quality > Poor quality
  - Higher quality, higher price

### ■ No Wasted Material

- Wasted Materials due to defect
- Consider Wasted Material as “Revenue unrealized”

### ■ No WIP (Work in Process)

- Materials could be used for future production, but worthless unless further production is planned.

8

8





## Group discussion

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No. of good products:

No. of defects:

1. Please identify the causes of manufacturing defects using 'Fishbone analysis.'
2. Please discuss what actions you should take to avoid defects.

# ビジネスセミナー

2016 年

重要な成功要因



## Critical Success Factors (CSFs)

5 September, 2016

Uzbekistan Japan Center  
JICA

1



## Introduction

**Name:** Tetsuo Fukuyama, JICA Expert,  
EBRD Team Co-ordinator

**Company:** Truspire Co., Ltd. ([www.truspire.com](http://www.truspire.com))

**Business History:** 10 years in a Japanese company- Production control  
(Textile, Cosmetics, Food, Pharmaceutical and Housing)

14 years in Price Waterhouse- Management Consulting  
(Manufacturing, Financial Services and  
Strategic Management)

21 years in own consulting companies- Consulting

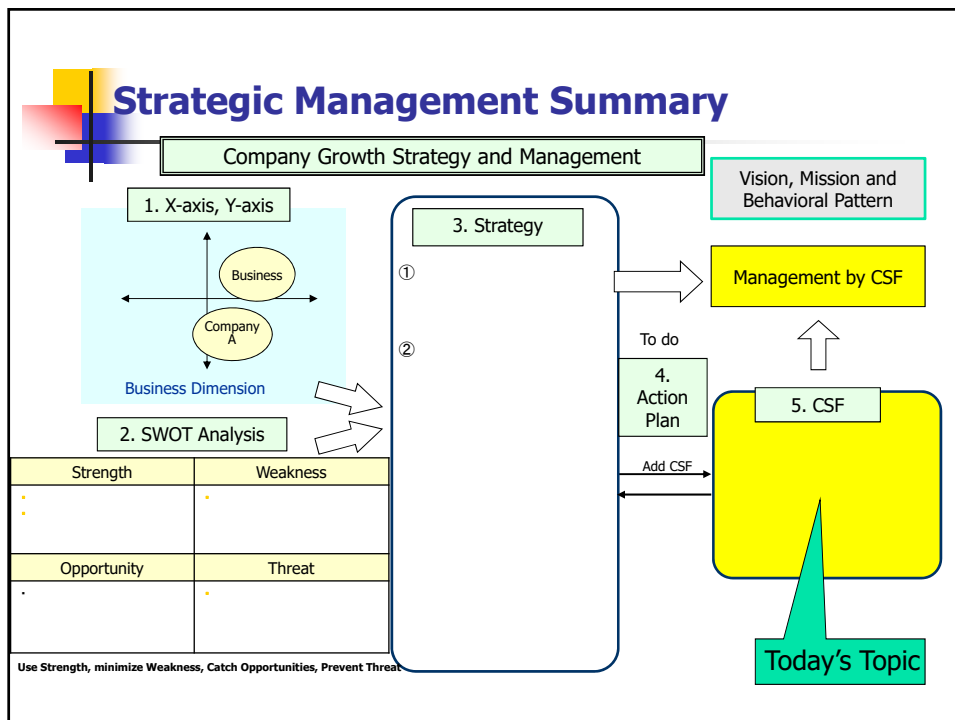
2

## Today's topics

- Overview of CSFs
- Cases of CSFs
- Top Management Reporting System
- CSF Hierarchy
- CSF and Strategy
- CSF: Origin of Balanced Score Cards
- Workshop: **Output is draft of CSFs for your company**

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## CSF: Critical Success Factors

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- Factors which lead a company to success and must be done right
  - Critical success factors are those few things that must go well to ensure success for an organization, and, therefore, they represent those managerial or enterprise area, that must be given special and continual attention to bring about high performance. CSFs include issues vital to an organization's current operating activities and to its future success.
- 5-6 factors (not too many)
- Depend on;
  - industry structure, competitive situation, position in the market, geological conditions, economy, legal aspects, environmental restrictions, etc.
- Changed
- Different by industry and by company

Management by reviewing CSFs

5

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## Sources of CSFs

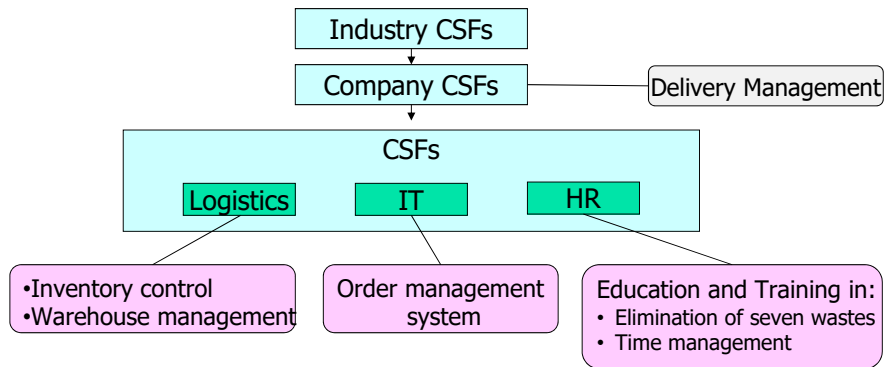
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- The industry
- Industry position
  - ex. A small company in an industry: CSF=protecting its particular niche
- Environmental factors
  - Fluctuation of economy
  - National politics
  - Population trends, regulatory trends, energy sources, etc.
- Temporal factors
  - ex. Loss of executives: CSF=rebuilding the executive group
  - ex. Major supplier's factory fire/Damaged by earthquake and tsunami
- Value related
  - Being different (Value) → 'Styling' in automobile industry
- Successful history

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## The CSF Hierarchy Case: Distributor



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## Organizational Goals and CSFs

How attainment of organizational goals is supported by CSFs.

Non-profit organization needs CSFs, too.

Example	Goals	Critical Success Factor
For-profit concern	Earnings per share Return on investment Market share New product success	<b>Automotive Industry</b> Styling Quality dealer system Cost control Meeting energy standards
<b>Non-profit concern</b>	Excellence of health care  Meeting needs of future health care environment	<b>Government hospital</b> Regional integration of health care with other hospitals  Efficient use of scarce medical resources Improved cost accounting

8


8



## CSF and Core Competence

- **Styling**
  - Design Centre
  - Designer (Star Designer)
  - Market Study Ability
- **Cost Control**
  - QC Circle
  - Implementation of Toyota Production System
- **Quality of Dealer**
  - Partner Program
  - Training System

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## Strategy ↔ CSFs

Strategy → CSFs

Strategic alliance with a company who has an advanced technology

↓

Keep good relationship with partner companies

CSFs → Strategy

Styling (Automobile industry)

↓

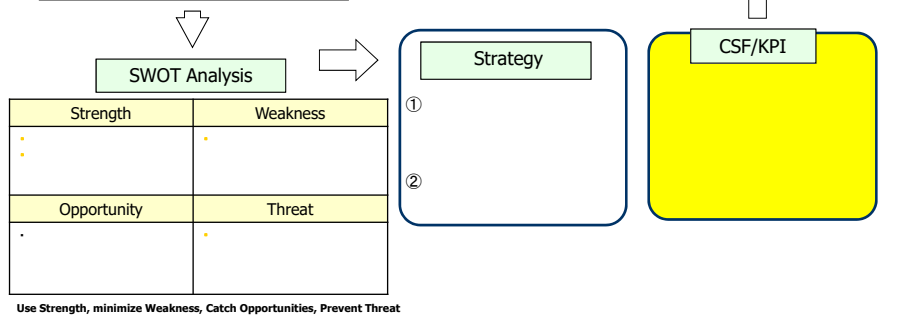
Recruit the top designer and start designing center

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## Origin of Balanced Score Cards (BSC)

CSF Approach is the origin of BSC

- Four Perspectives
1. Financial
  2. Customers
  3. Business Processes
  4. Learning and Growth



Use Strength, minimize Weakness, Catch Opportunities, Prevent Threat

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## Cases of CSFs

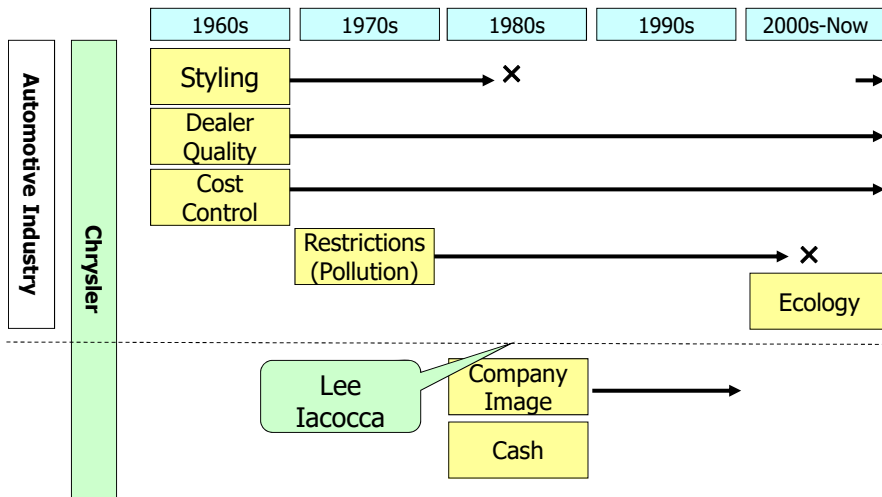
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## Case: Automotive industry and Chrysler



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## Lee Iacocca and CSFs

- In Ford
  - Started his career with sales: **Dealer Quality**
  - Then, Mustang: **Styling**
- In Chrysler
  - Hired capable staff with MBA : **Cost Control**
  - Then, TV commercial showing himself: **Image up**
  - Borrowed money from the US government (Jimmy Carter): **Cash**

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## Lee Iacocca and Mustang(Ford)

One of the CSFs in Auto Industry is Styling.



"For me, the excitement in the automobile business is to do something different; to pioneer a new concept, and to win. Years ago, some of us believed that America was ready for a new kind of car. It would be a small, personal type of car that the average American could afford and enjoy. It had to be **classic in style**, yet should immediately imply performance."

"It offered a combination of driving fun, roominess and **style** that permits the Mustang buyer to make of the car almost anything he desired. That's how the Mustang was born, **designed for a market looking for a car.**"

"We reached way out, and the success that Mustang has enjoyed is proof that Americans really like something which is entirely new and dramatically different."  
- Lee Iacocca

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## CSFs in Supermarket / Convenience Store

- Product mix on the shelves
- Inventory control/Freshness control
- Sales promotion
- Price
- Cleanliness (Hygiene)
- Friendly service

## CSFs in Chemical Industry

- New product development
- Continuous supply chain
- Facility utilization
- Maintenance

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## CSFs in consulting business

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- **Utilization (assignment)**
  - Assignment Board
- **Practice Development (sales) including retaining same clients**
  - Meetings (formal, informal)
  - Articles
  - Speech/Lecture
- **Knowledge Management**
  - Database
    - Proposal
    - Report
    - Company information
    - Skill inventory
  - Sharing session (ex. Part of Monday meeting, good for team building, too )
- **Continuing Education**
- **Engagement Management**
  - Teamwork, Client Control
  - Filing: See Engagement Management File
  - Issue Resolution Log, To Do List
- **Staff morale**
  - Evaluation system (Plan, Counseling by annual plan, Evaluation by project)

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## CSFs of Food Industry

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- **Critical Success Factors**
  - ?
  - ?
  - ?
  - ?
  - ?

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## Case Study- Company A

### Company A

- **Distributor in Uzbekistan**
- **IT, Telecom & Electric Appliance**
- **Many dealers under A, In-direct sales**
- **US\$40million**

Temporal CSF

CSF	Key Performance Indicators (KPI)
Quality of distributor/agent	<ul style="list-style-type: none"> <li>■ Independence (time spent for a distributor)</li> <li>■ Claims ratio</li> <li>■ Sales volume</li> </ul>
Delivery management	<ul style="list-style-type: none"> <li>■ In-time delivery ratio</li> <li>■ Lead time</li> </ul>
Selection of products/suppliers	<ul style="list-style-type: none"> <li>■ Share</li> <li>■ Profits</li> </ul>
Staff morale	
To be No.2 at worst in selling C products - Market coverage (Sales) - Quality of operations - Presence in the market	<ul style="list-style-type: none"> <li>■ Number of high-quality partners</li> <li>■ Time to reply</li> <li>■ Number of technical specialists</li> <li>■ In-time delivery ratio</li> <li>■ Percentage of goods sold from stock</li> <li>■ Number of staff on site</li> <li>■ Time spent on place</li> </ul>

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## Case Study- Company V

### Corporate Profile

Business: Manufacturer of Appearance Inspecting Systems  
 Inception: 2005  
 Employees: 80  
 Sales revenue: US\$ 20 million (2007)


Now, they aspire for big growth;  
 Sales USD 30mil. (in 3 years)→**USD 100mil. (in 5years)**



Company V has to develop new strategy.

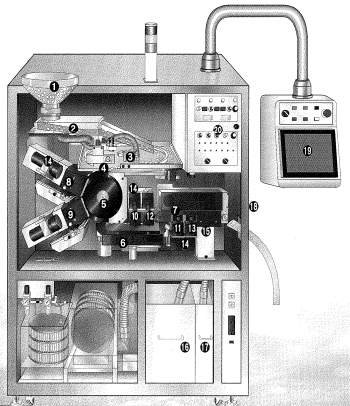
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## Visual Inspection System

Application tablets	Uncoated, film-coated, sugar-coated tablets with printed mark on one or both sides; scored tablets; tablets with engraved mark
Tablet size	Round tablets: 5-12 mm in diameter and 2-8 mm in thickness Shaped tablets: 5-12 mm in width, 2-8 mm in thickness, 5-21 mm in length Non-standard shape tablet is also applicable. Non-standard shape tablet is also applicable.
Inspection items	Dirt, scratch, adherence of foreign particle, crack, chip, deformation, different color, discoloration, scratchy print, blurred print, hair, mottled tablet, etc. (Algorithm to improve inspection accuracy has been added.)
Inspection surfaces	Face, back, and side
Inspection accuracy	Defects equivalent to a 50 $\mu\text{m}^2$ or larger black speck
Processing capacity	350,000 tablets/hour (actual value; dia. 6 mm).The value according to the size and shape of tablets,



Tablet automated visual inspection system

1. Hopper
2. Vibratory feeder
3. Flow-control turntable
4. Height&width gate
5. Disc conveyoy unit
6. 1<sup>st</sup> belt conveyoy unit
7. 2<sup>nd</sup> belt conveyoy unit
8. Side 1/2 optical unit
9. Side 3/4 optical unit
10. Face 1 optical unit
11. Face 3 optical unit
12. Face 2 optical unit (Optional)
13. Face 4 optical unit (Optional)
14. CCD line sensor camera
15. Rejection unit
16. Defective tablet collecting bin
17. Uninspected tablet collecting bin
18. Acceptable tablet outlet
19. Touch panel
20. Operating panel



## Case Study: Company V

- Goal: Growth of sales  
USD30mil. ⇒ USD100mil. (in 5 years)
- CSF: By Viswill

Customers' view	<ul style="list-style-type: none"> <li>• Amazingly high performance (No.1)               <ul style="list-style-type: none"> <li>- High performance = no other competitor can do + realization of customers' desire</li> <li>- Easy operation and maintenance</li> </ul> </li> <li>• Amazingly good service.</li> </ul>
Business process	<ul style="list-style-type: none"> <li>• Quality of distributor</li> <li>• Concurrent business development</li> <li>• Strengthening of the cooperation with partners</li> </ul>
Learning and developing	<ul style="list-style-type: none"> <li>• Development of elemental technologies and introduction of external technologies.</li> <li>• Nurturing engineers (On-the-job training).</li> <li>• Raise awareness of costs</li> </ul>

## CSFs suggested by TF

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What are the factors to ensure the success of Viswill so far?

What will be the factors to ensure the success of Viswill from now on?

Viswill will watch these factors to be successful.

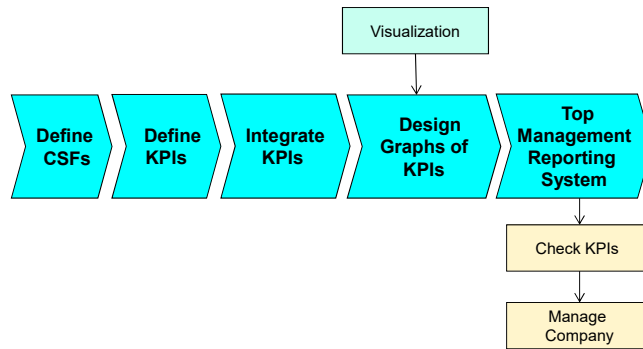
- **Heat discussion between engineers, stimulating each other**
- **Client retention (Continuous orders from the same client)**
- **New technologies acquisition**
- **New product development**
- **Good relationship with partner companies**
- **Staff morale**



## Top Management Reporting System

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## Top Management Reporting System Process



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## CSFs and KPIs

### CSFs

CSF helps us find the areas which should be watched so that the success is ensured.



### KPI

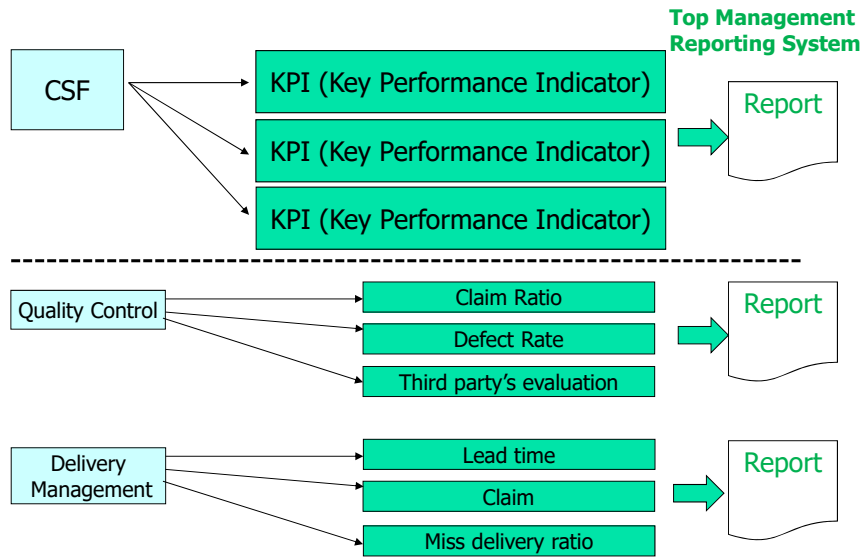
KPI is used to measure performance



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## Top Management Reporting System

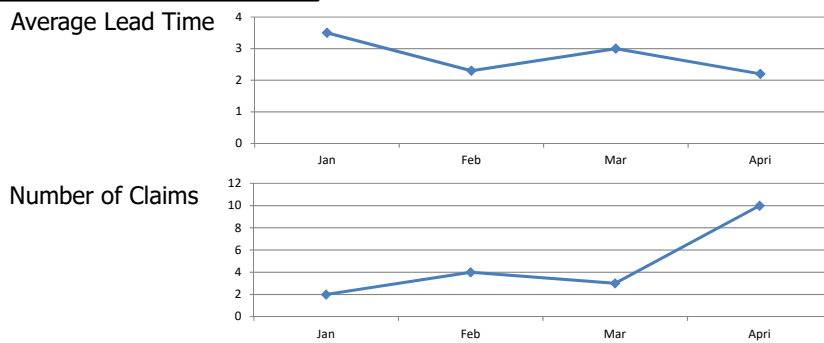


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## Image of Top Management Reporting

**CSF: Delivery Management**



**CSF: Quality of Agent**

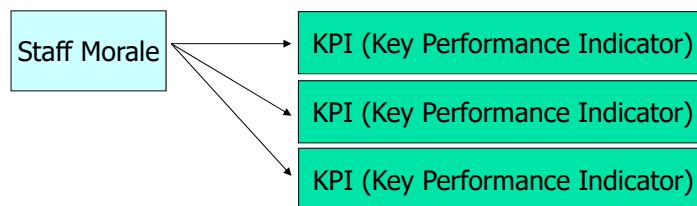
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## Exercise

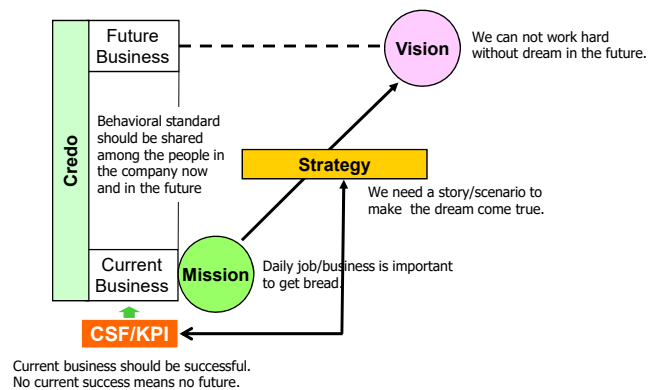
- 'Staff Morale' could be one of the CSFs in system integrator, software house, and knowledge work.
- Key Performance Indicators of CSF 'Staff Morale'
  - ?
  - ?
  - ?
  - ?



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## Words in Strategic Management (Mission, Vision, Credo, Strategy and CSF)



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## Workshop

---

- Organize teams.
- Decide the company you discuss.
  - Existing company!
- Define CSFs.  
(From various sources)
- Define KPIs fro each CSF.
- Make presentation by the team

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# Thank You !

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# ビジネスセミナー

2016 年

戦略的管理アプローチ



# Strategic Approaches

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September 2, 2016

Uzbekistan Japan Center  
JICA

1



## Introduction

---

**Name:** Tetsuo Fukuyama, JICA Expert,  
EBRD Team Co-ordinator

**Company:** Truspire Co., Ltd. ([www.truspire.com](http://www.truspire.com))

**Business History:** 10 years in a Japanese company- Production control  
(Textile, Cosmetics, Food, Pharmaceutical and Housing)

14 years in Price Waterhouse- Management Consulting  
(Manufacturing, Financial Services and Strategic Management)

21 years in own consulting companies- Consulting

2

## Today's topics

---

- **Overview of Strategic Management**
- **Strategic Approaches**
  - (1) X-axis and Y-axis
  - (2) Change the place
  - (3) IT as Strategic Weapon
  - (4) Knowledge Creation
  - (5) New Employment

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Session 1



## Overview of Strategic Management

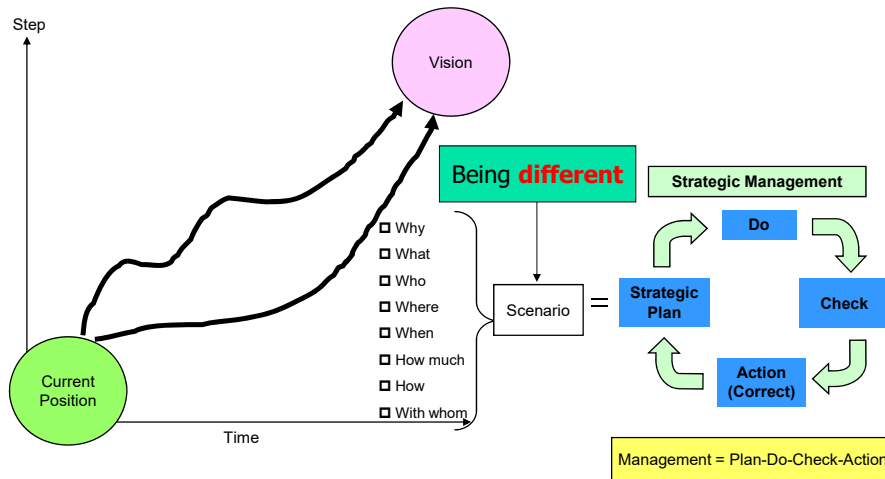
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## Strategy/Strategic Management



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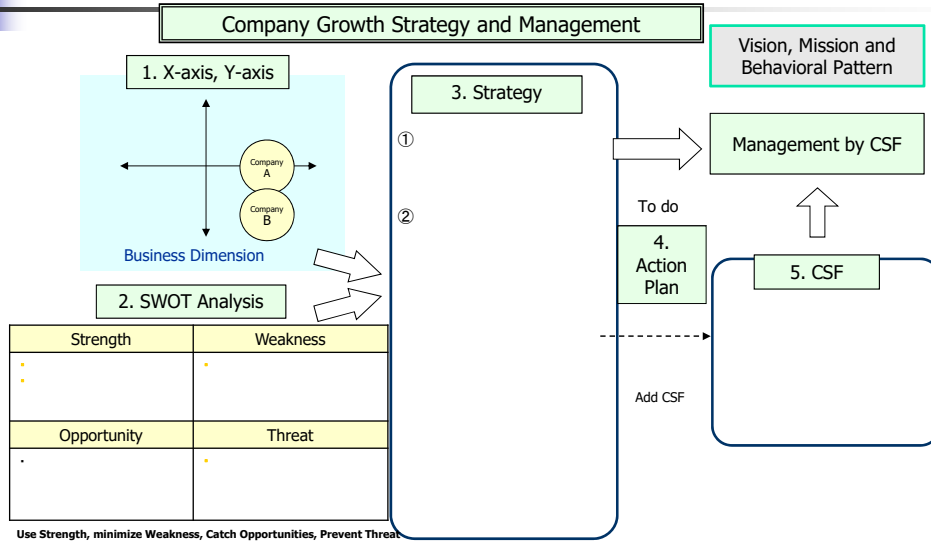
## Scenario: 6W2H

### Summary Statement

Who	Customer
What	Products, services
Why	Value for the customer (Why they buy, Why you do the business)
When	Timing, Time span
Where	Channels
Whom	Tie-up with whom (partnerships)
How	How many, how much
How	How to organize the business (operation, business process)

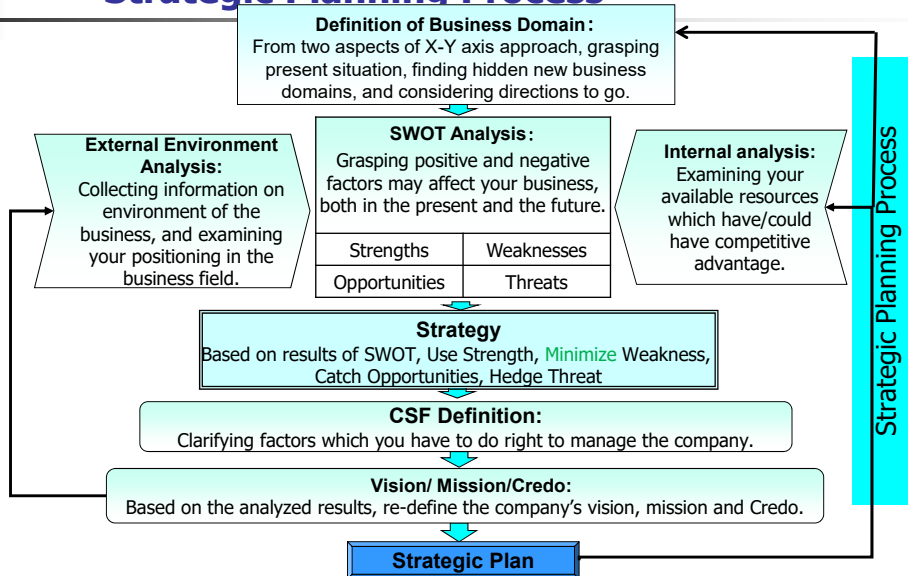
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## Strategic Management Summary



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## Strategic Planning Process



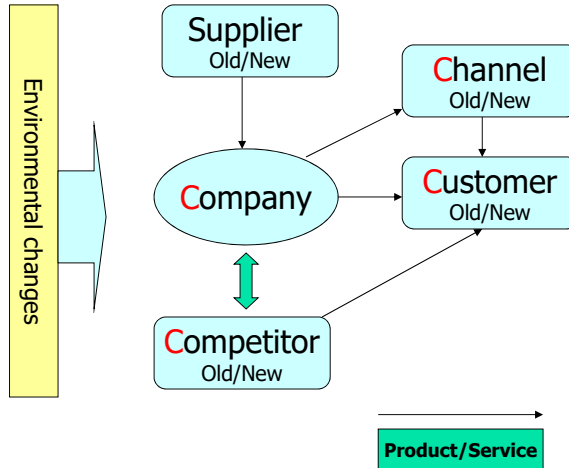
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## Major Aspects in Strategy

### 4Cs

- ❑ Competitors
- ❑ Company
- ❑ Customer
- ❑ Channel

Know your environment  
 Know yourself  
 Know your competitors  
 Know your customers  
 Know your sales channels



## Why 'strategy'? Case: Honda

(1/2)

- Honda's strategic decision in 1959.
- Two years market study:

Area	Market Size	Image on Motorcycle	Competitors	Risk
USA	60,000 only over 500cc	Negative ("Easy Rider" image)	No	High
SEA	?	Positive	No	Low
Europe	3,000,000	Positive	Yes	Medium

- Decision was to enter the USA market.



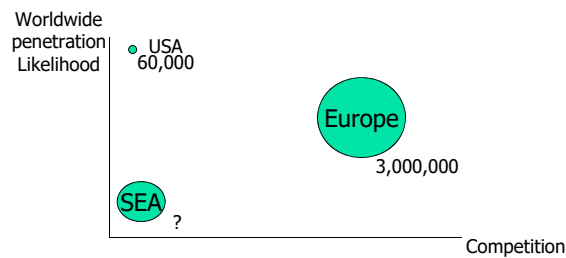
## Why 'strategy'?

### Case: Honda

(2/2)

- Vision vs. Risk

- Vision was 'To Be the World No.1 Motor Cycle Company'.



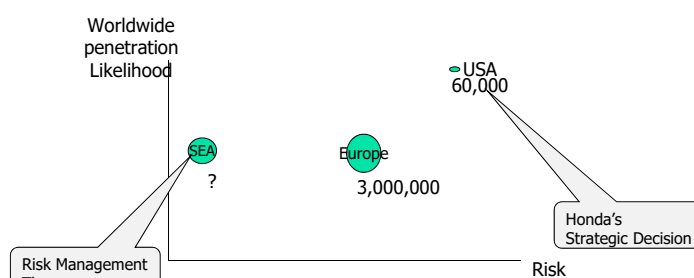
- Vision far away from the capability of Honda at that time resulted in creative thinking:

- If the USA market accepts Honda, the other markets follow.
    - Product concept change: from ran-away rider to leisure and family use.

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## Risk Management and Honda's Strategic Decision



### Strategy: Change image, develop new channels, with full support by Honda subsidiary in the USA and Japan

- Who Family focused nice people (not easy-riders)
- What 50cc motorcycle
- Why Enjoyment with family
- When from early stage (1960)
- Where Sports shop/Leisure item shop
- Whom New channels
- How Rapid growth
- How Honda subsidiary in the USA, with delivery system of parts, and maintenance support

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## Case: Webvan

(1/5)

- Good **idea** does not mean good business **strategy**.
- The following is the case of Webvan:
  - Did not study their competitors (supermarkets).
    - Competitors can enter the market with delivery service.
  - Did not study company cost structure well.
    - Infrastructure cost, delivery cost, handling cost
    - Low margin business
- Failed in 25 months, after US\$ 1 billion investment

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## The Webvan Mission

(2/5)

*“The Last Mile for e-Commerce”*



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## Revolutionary E-commerce Operations (3/5)



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## Strategic Lessons in Webvan (5/5)

### **Focus on how value will be created.**

WebVan focused on the technical aspects of online ordering and home delivery. They didn't have a good enough idea of how their potential customers would realize value from them.

### **Stress higher margin products.**

Since the focus on grocery items was very low margin, the potential for profit was small. They should have included a product mix that included higher margin products from the outset.

### **Don't assume that people will appreciate convenience.**

They discovered, especially after the economic bubble burst, that people were not willing to pay a premium for internet shopping and home delivery. In fact, the motive for internet shopping was lower price. Probably WebVan needed to establish cost savings for its customers rather than the perceived higher costs for convenience.

### **Look for partners to share capital investments and costs.**

WebVan should have tried to leverage other distribution systems or find more ways to share its intensive capital and labor investments with other companies seeking such a delivery network. Because WebVan was able to raise a lot of capital during the .com boom, they assumed they could go it alone.

### **Provide for actual display of products.**

Shoppers want to actually see what they are buying. Safeway Stores, a major grocery supermarket chain, now has the capability to take online orders for home delivery. But, people can come to the store to see the general quality of what they are buying. It will be interesting to see how Safeway will do in this business.

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## Case: Wood-Framed PC

(1/2)

- Good **idea** does not mean good business **strategy**.
- The following case of Wood-Framed PC:
  - Did not study the customer/market well.
  - Did not study company cost structure well.
    - Factory machines for wood processing, special craftsmen for processing, mahogany from Uganda (expensive)
    - No sales experience in PC
  - No channels to retail stores
- Failed in 12 months, after US\$ 1 million investment

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## Wood-Framed PC

(2/2)



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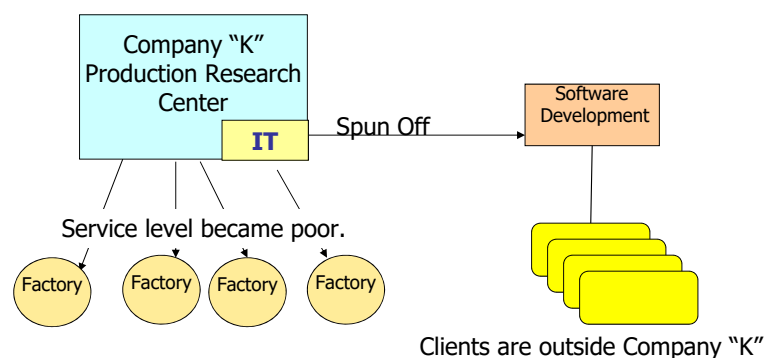
## Case: Company K

- Conglomerate company K had a production/engineering research center for all kinds of factories.
- Most powerful competence was IT used for production.
- They spun off IT team to sell IT service for outside companies. At the peak, they had 900 staff and US\$ 200 million in revenue.
- Recently, Company K went bankrupt, 25 years after the spin-off.
- Long-term strategic thinking is important to keep the company.

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## Company K



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## Strategic Approaches

- (1) X-axis and Y-axis
- (2) Change the place
- (3) IT as Strategic Weapon
- (4) Knowledge Creation
- (5) New Employment

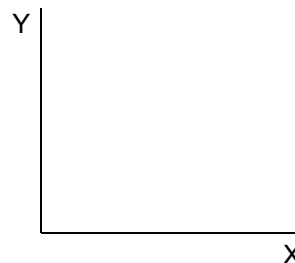
### (1) X-axis and Y-axis

Objectives and Advantages: X-Y axis analysis helps you;

- (1) to grasp your present situation,
- (2) to find hidden new business domains to take in, and
- (3) to see which direction your business goes.

Method: Define X axis and Y axis, whatever you try to analyze.

(e.g. Competitors, Market, Products, Risk, etc.)



The more you think, the better X and Y axis you find, the better analysis you can do.



## Defining the Axes

Find X and Y which are not co-related.

When X and Y are highly co-related, the selection of two axes are poorly defined.



Generally, the higher the risk, the higher the return.

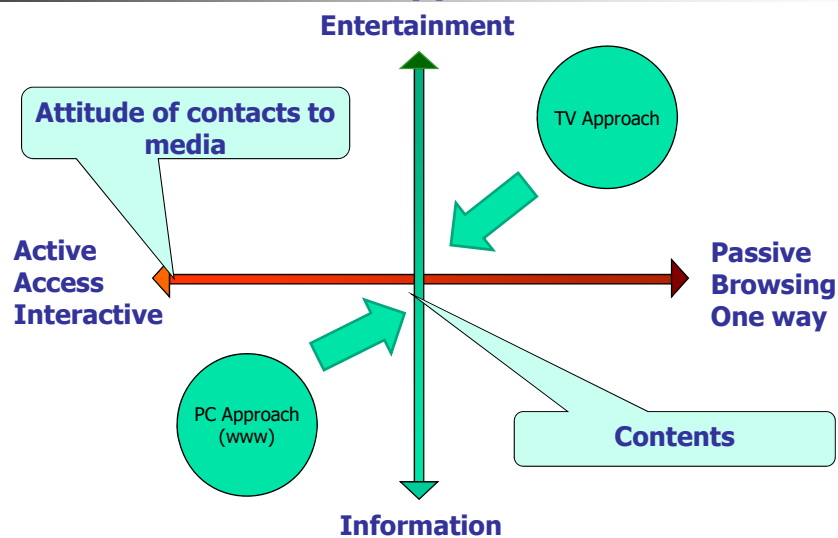
Appropriate continuity in each axis: Be creative!

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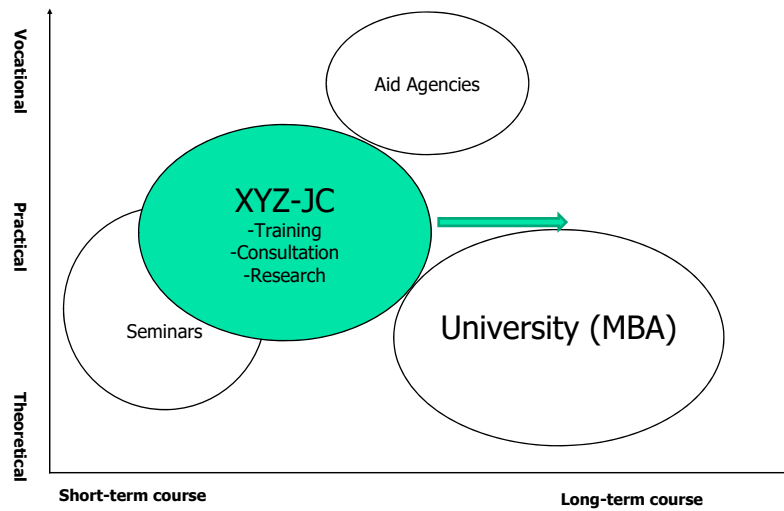
## Case: TV and PC Approaches



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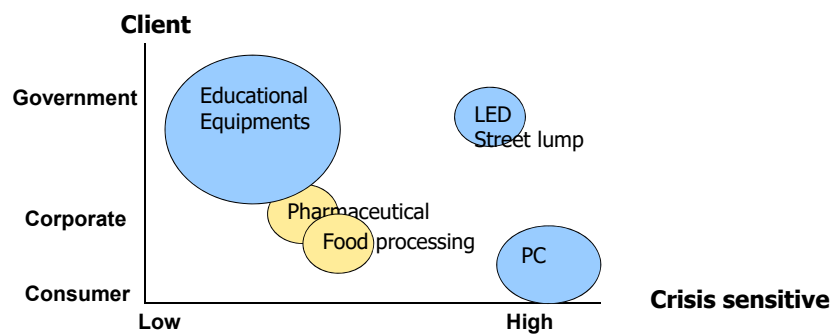
## Case: Japan Center



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## Case: Product/Service Positioning



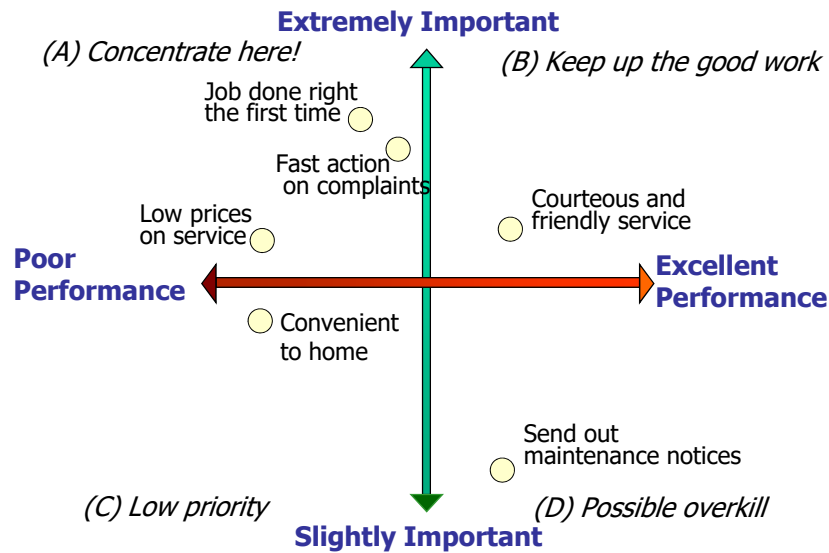
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## Case: Service/Product Analysis (Garage)

- Performance Rating v.s. Customer Importance

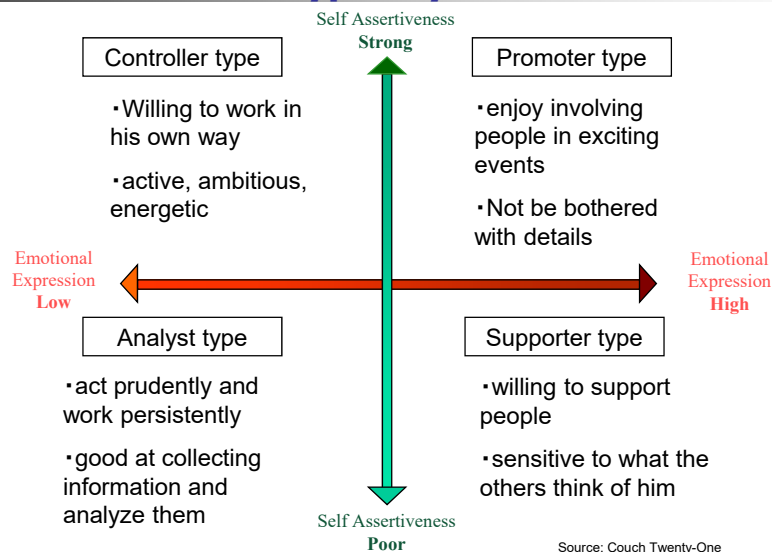


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## Case: Human Resource Analysis

- Which type is your staff?



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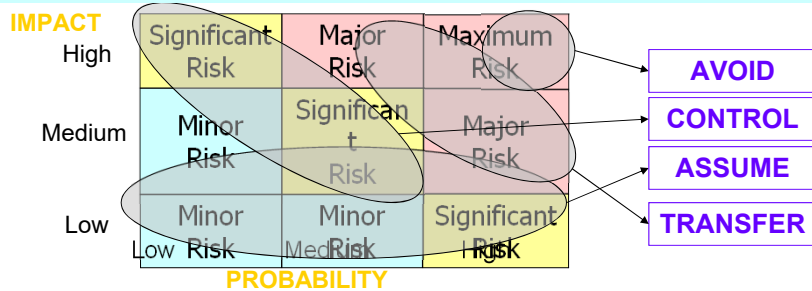
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## Case: Risk Management

Countermeasures

- ① AVOID: Change of project management, planning and aspects, not to realize the risk.
- ② CONTROL: Plans for reducing impact. Developing a contingency plan.
- ③ ASSUME: Accept of impact, prepare for the risk.
- ④ TRANSFER: Transfer of risk or responsibility for reacting risk to third party (insurance, etc.)



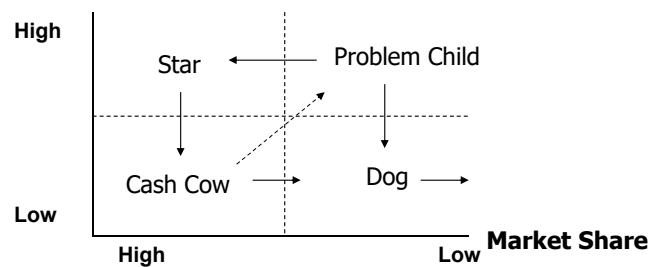
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## Case : Product Portfolio Management (PPM) -BCG Growth-Share Matrix

Growth Rate



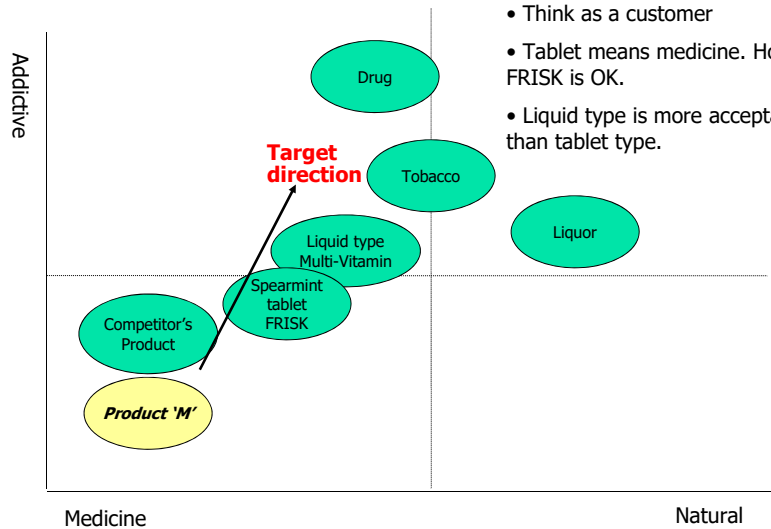
- Good approach
- Harold Geneen (ITT CEO) and Japanese management did not simply follow the idea.

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## Case: Product 'M' Positioning

(1/2)



### Competitor Analysis

- Think as a customer
- Tablet means medicine. However, FRISK is OK.
- Liquid type is more acceptable than tablet type.

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## Consumer's View

(2/2)

- Guarantee of safe product
- Difference from taking vitamin from natural food
- Differentiation from liquid type multi-vitamin
- Image
- Use of existing brand
- Difference between taking various tablets and one multivitamin tablet
- Unnatural way of taking a tablet
- Vending machine could be a channel with Tobacco, as a supplement to increase vitamin taken away by smoking.
- Some specific effect, like good for fatigue eyes
- Convenience store channel

Product

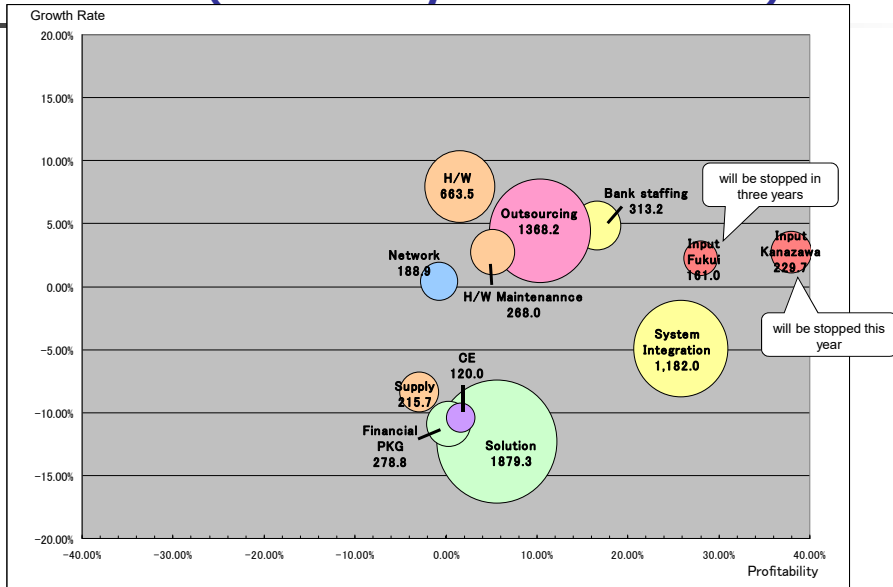
Place  
(Channel)

Promotion  
(Media)

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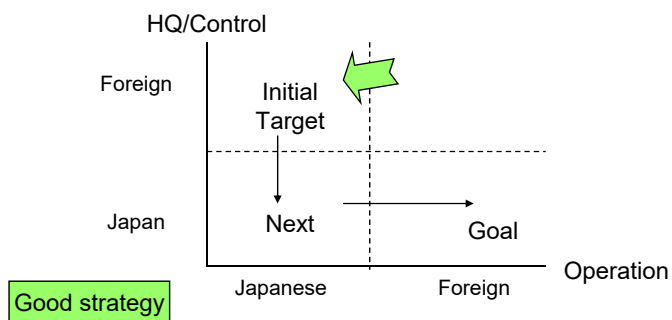
## Case: Business Line Mapping (Profitability and Growth rate)



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## Case: Market Segmentation (P Consulting Firm, Financial Service)



**Good strategy**

1985-1991 : 25 out of 50 foreign securities houses were clients.

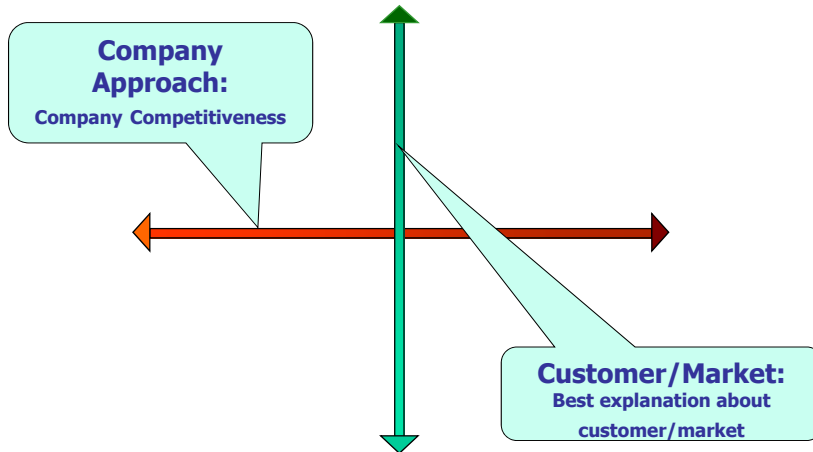
**Bad strategy**

1992- : No clients.

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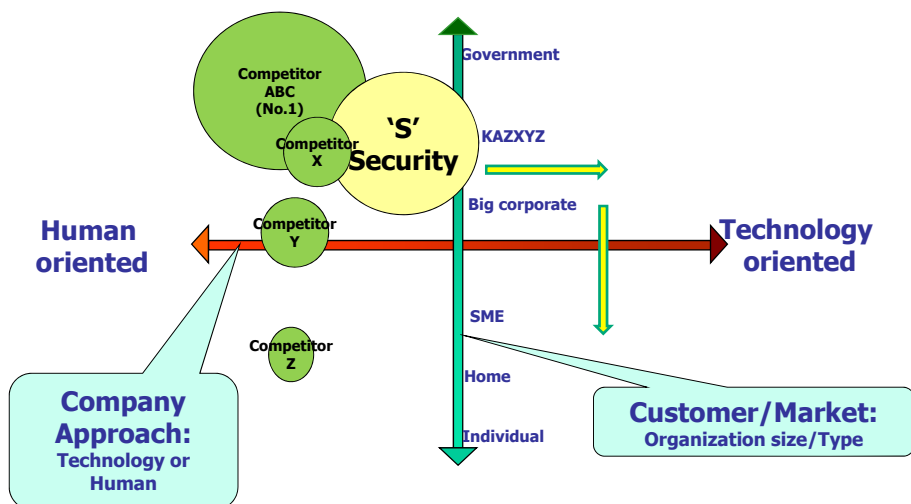
## Case: Company's Positioning -Customer Axis v.s. Company Axis



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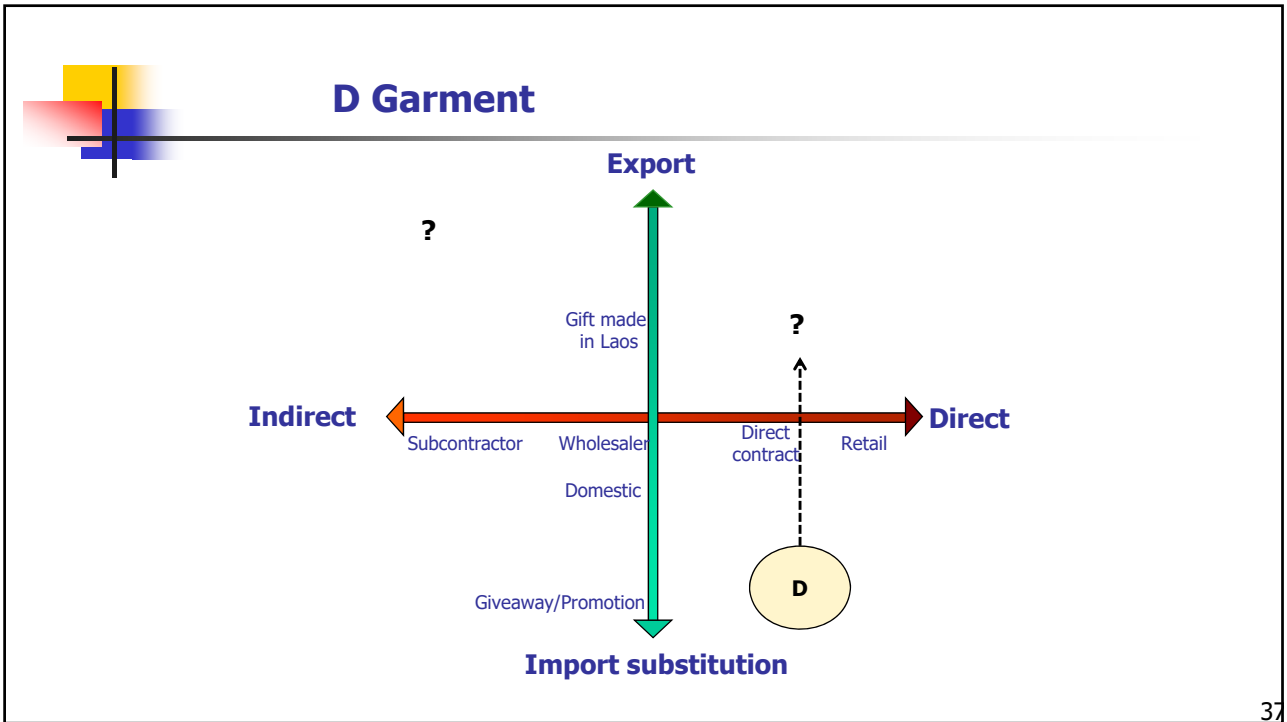
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## 'S' Security



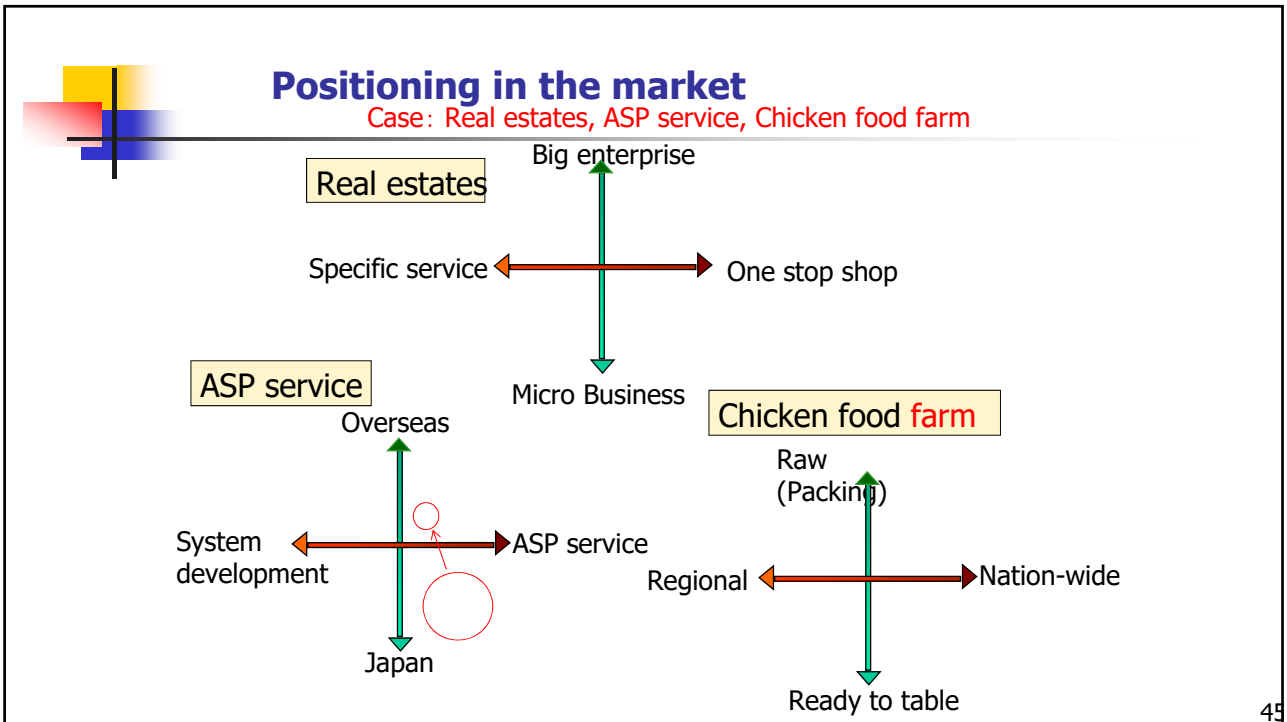
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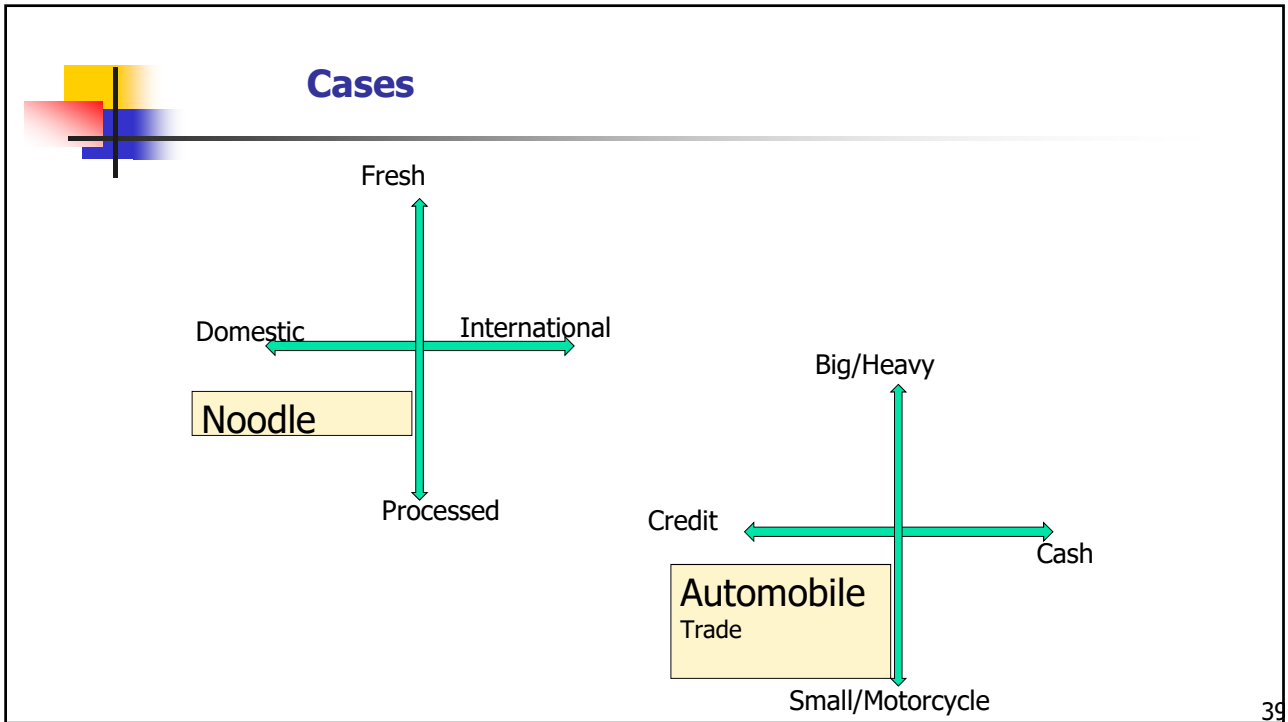
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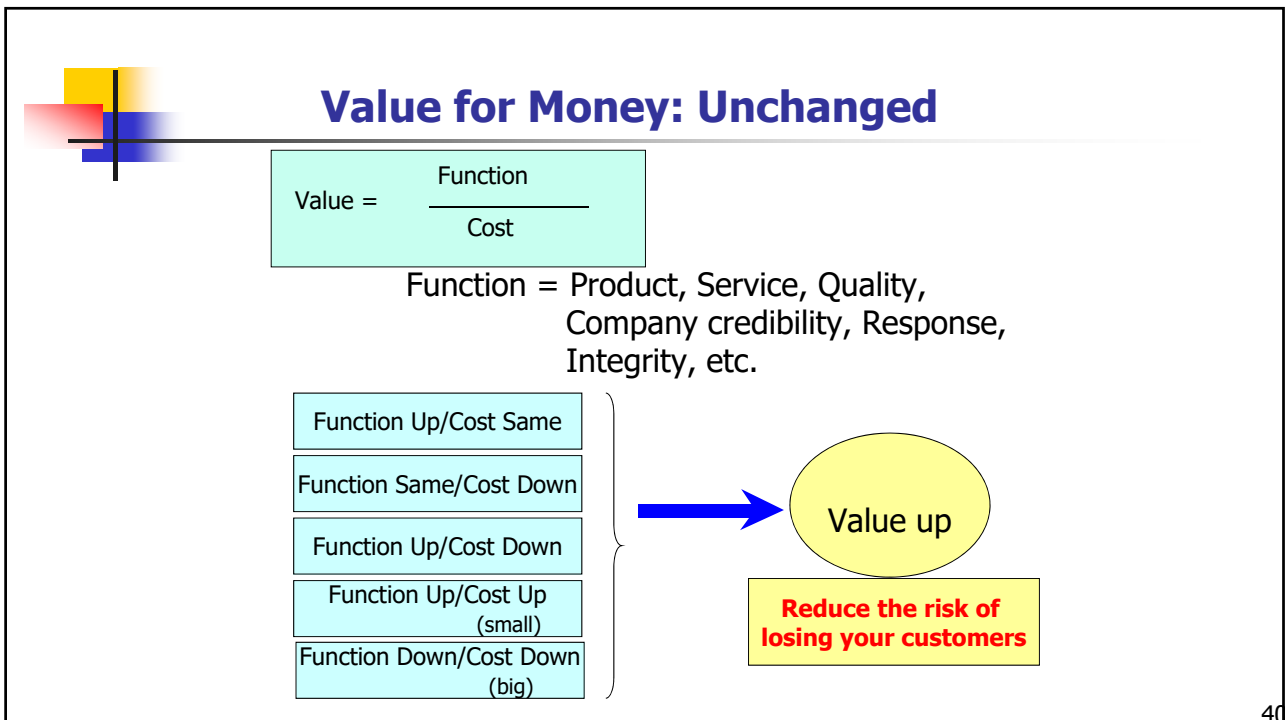
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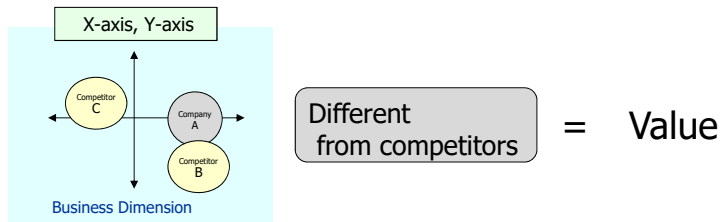
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## X-Y and Value



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## Value by segment and occasion

- Different by segment and occasion
  - Segment: Japanese business men, staying in Tashkent
  - Occasion: 1) Dinner by himself  
2) Dinner with potential client
    - 1) Japanese restaurant X
      - Japanese food: **Value**
    - 2) Japanese restaurant Y
      - Atmosphere, good taste, hygiene: **Value**

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## Value

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- **Office cleaning company**

- What are the values?

- ?
    - ?
    - ?

- **OA equipment sales**

- What are the values?

- ?
    - ?
    - ?

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## (2) Change the Place

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### Change the place.

- Domestic success → International
- Success in a country A → Myanmar

- Success ratio is 33%, when you do the same thing in different places.
- Much higher than starting new business.

**Internet is a good tool to find the opportunities.**

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## Case: Cinema Complex

- **Movie Theater business was declined completely in 1980-1995 in Japan due to TV and other entertainments.**
- **However, 174 million saw movies in 2010, compared with 140 million in 1990. (161 million in 2014) The number of screens was 3,364 in 2014 and 1,734 in 1993.**
- **Cinema Complex changed it.**
  - **Different way of thinking**
    - One theater is unprofitable, but many could be profitable.
    - 10 screens or more in a theater.
    - USA origin
  - **Performance oriented**
    - Many screens for many customers and less for niche area film
- **Cinema Complex successful in the USA**

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## Case: Electric Commerce

- **Rakuten in Japan.**
  - **Founded in 1997.**
  - **Group Gross Transaction Value = 1 trillion yen**
  - **e-commerce, online travel reservation, online securities brokerage**
  - **55 million Rakuten Group Members**
- **e-Commerce was started in the USA.**
- **Rakuten is now in Asia.**

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## Service Industry (From Japan to SEA)

### Government to Support Retailers to Expand Overseas

Convenience stores, Supermarkets

Success in Japan → Seek business abroad

- Already more than 8,600 shops in East Asia
- **Risk !** local laws and regulations against foreign capitals to flow in

Japanese government support is required as for trade agreements with the local government

FTA (Free Trade Agreement): agreement on trade

EPA (Economic Partnership Agreement): agreement on partnership of extensive areas

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## (3) IT as a Strategic Weapon

### **IT is a Strategic Weapon.**

- Customer retention (Case: CITIMARKETS)
- ASP service (Wecan Japan): 250 clients, monthly charge
- Electronic Commerce
  - Dog accessory (US\$200.00) 25/Month
  - Meditation CD (US\$ 800.00) 20/Month
- MindMap (Brainstorming Tool)
  - Myron Scholes (Nobel prize in Economic Science) is using to develop his model.

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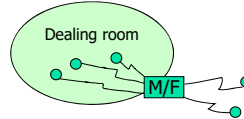
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## Case: CITIMARKETS

### ■ CITIBANK Tokyo

- FX/Money Market information
  - From dealing room to customers
  - On-line real time service
  - Only necessary information for corporate (different from Reuters)
  - User customizable
  - Started in 1983, same concept now on Internet
- 
- Results of new service
    - FX/MM transaction increase dramatically
    - Good relations between customer dealers and treasury department of customers
    - Tool for customer retention
    - Education of two-way quotes to Japanese companies



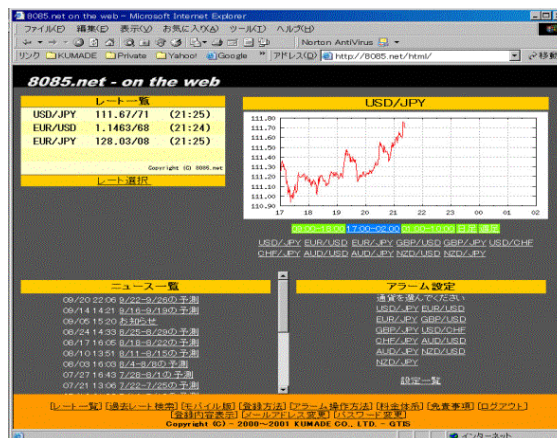
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## Case: CITIMARKETS Current Version

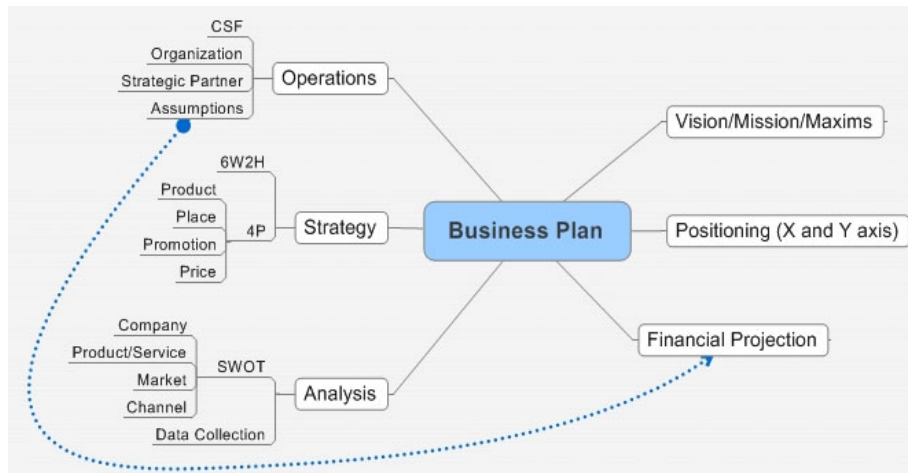
### ■ Internet Version



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## Mind Map



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## (4) Knowledge Creation

- **Domain of Human Brain (Ladder of Business Intelligence)**
  - Collaboration provides understanding
- **Refresh corner**
  - Price Waterhouse AI Center in the USA
  - Many high-tech companies have such corners
  - Researchers/Office workers get together to talk in relaxed atmosphere.
- **Internal School**
  - Soft Bank: Soft Bank Academia for 300 employees (Mr.Son's lecture, too)
  - Soft Bank University fro 2,200 employees
  - GE: GE University (Jack Welch)
- **Free discussion**
  - Canon: In the morning from 7:50 -

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## Knowledge Creation

### SOFTBANK GROUP (SoftBank) Empowers In-Company Training To Vitalize HR Development

#### SoftBank University

- est. Sep. 2010
- 400,000 lectures/year of 40 courses to train attendants in transmission technologies, financial and business skills and management theories
- To provide in-company training of 22,000 employees

#### SoftBank Academia

- est. July 2010
- To make successor of Chairman and CEO Son and to train the top management of SoftBank's group companies
- Mr. Son gives lectures to 300 managers, including 30 selected attendants from outside the company

NIKKEI Newspapers 1 Sep 2010

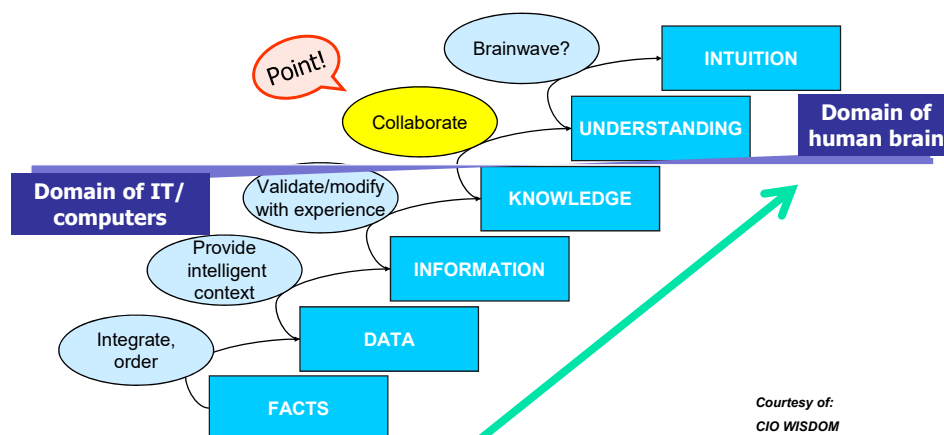
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## Ladder of Business Intelligence

Strategy: from the higher, the better.



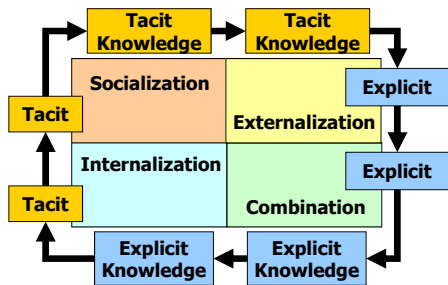
Courtesy of:  
CIO WISDOM  
Dean Lane et al  
© 2004 Prentice Hall

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## SECI Model: Tacit and Explicit knowledge



- **Socialization**  
Process to acquire and transmit tacit knowledge by common experience.
- **Externalization**  
Process to convert tacit knowledge to explicit knowledge.
- **Combination**  
Process to combine explicit knowledge to create new explicit knowledge.
- **Internalization**  
Process for individuals to absorb the acquired Explicit knowledge

### ■ SECI model

SECI is a process model to describe how the "knowledge creative company" creates the organizational knowledge. Achieve excellent business results by making its knowledge common and applicable.

It is well known as the base theory of knowledge management.

In Nonaka's organizational knowledge creative model, there are two kind of knowledge, which is tacit knowledge and explicit knowledge.

New knowledge is created by continuously exchanging and transfer existing knowledge between individual, group and, organization.

SECI model express the process of exchange and transfer of knowledge.

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## (5) New Employment

### New employment

- **Text book: Recruit based on the strategy**
- **However, new employee could change the strategy.**  
- e.g. A securities house hired a specialist in bond trading.  
Expansion of bond business dramatically.
- **So, be flexible to develop strategy by new employment.**

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## Workshop

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- **Decide the company to discuss in the team.**
  - Existing company is better to discuss.
  - Some member's company in the team.
  
- **Discuss and define:**
  - Corporate positioning (X-axis, Y-axis);
  - Value for customer.

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## Thank You !

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[tetsuo.fukuyama@truspire.com](mailto:tetsuo.fukuyama@truspire.com)



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# ビジネスセミナー

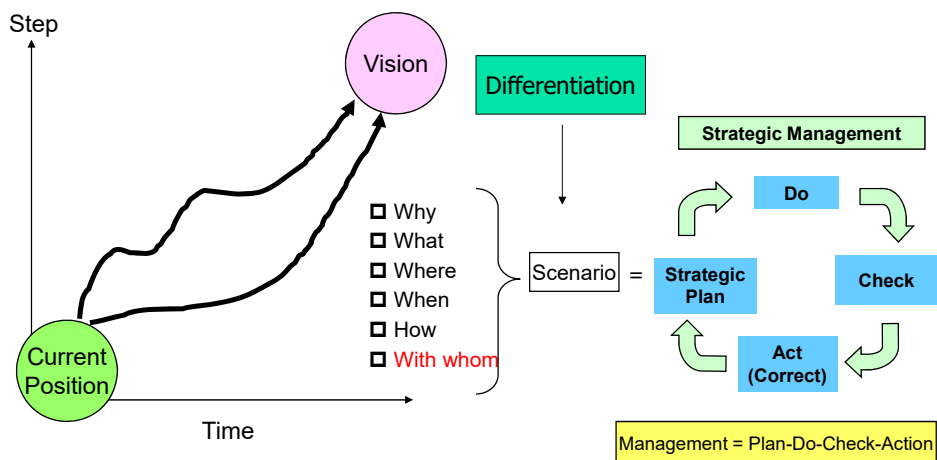
2016 年

クラスター管理と戦略的提携

# Cluster Management and Strategic Alliance

Mitsuo Tamada  
Truspire Co.,Ltd.  
Tokyo, Japan  
2016

## Strategic Alliance (With Whom)





## Strategic Alliance

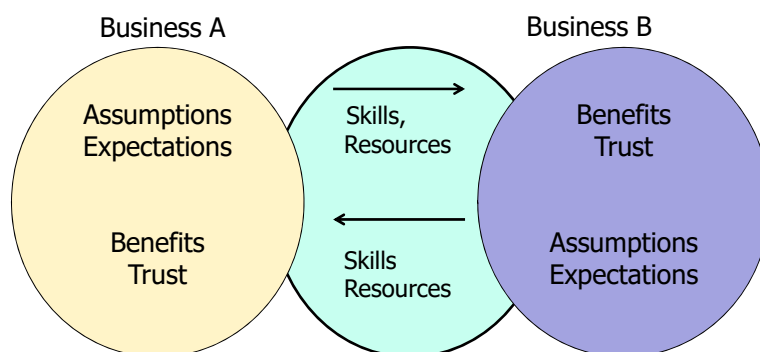
- Companies are not isolated entities – they exist in a complex network of relationships with **suppliers, customers, competitors and public authorities**.
- Successful handling of these relationship can result in a clear competitive advantage.
- A strategic alliance is a joint activity by at least two businesses with the goal of changing their own situation. Under the heading “ We are stronger together” each of the actors involved contributes special abilities, in order to profit from cooperation with other businesses. Added value of a strategic alliance: ‘Synergy effect’

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## The basic model of Strategic Alliance

How an alliance works



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## General characteristics of Strategic Alliance

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- The partners expect a benefit (added value) for themselves. They are proceeding on the conviction that the anticipated added value can only be achieved through strategic alliance – or at least, more easily. (**Orientation on benefits**)
- Partners in a strategic alliance focus on their strengths in working together. The anticipated added value in the alliance arises out of the interaction of specific strengths of the partners in the alliance. (**Orientation on strengths**)

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## General characteristics of Strategic Alliance

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- The partners in the alliance bring in specific strengths, but not their businesses as a whole. (**Partial link**)
- The partners in the alliance maintain their autonomy. (**Functional autonomy**)
- The structural alliance gives rise to a new system of relationships.

There being any number of different reasons for strategic alliance, in many cases businesses enter into alliance because they share complementary characteristics. They are partners in a value chain or they use similar technologies or need similar know-how by their employees which they can organize better and more cheaply in joint trainings.

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## Clusters or networks

- Clusters are regional concentration of businesses including their service providers along a value chain. Clusters are networks of businesses and complementary entities.
- Successful clusters mostly involve a complementary mix of three kinds of businesses:
  - Internationally active companies which are particularly strong in the market and are technological leaders,
  - Suppliers or supplementary businesses (often small or medium sized enterprises –SMEs),
  - Particularly innovative and dynamic knowledge-based specialists (e.g. research facilities, advanced training instructions, ICT specialists, etc.).

Clusters are networks of alliances between a large number of different actors in a (regional) production system.

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## Key Successful Factors for cluster

- Businesses with adequate potential output in terms of economic performance, market access, and ability to innovate.
- Clear expectation and orientation towards benefits as a basis of active involvement of the partners in the the cluster activities.
- Readiness to engage in active pooling of knowledge, and specifically of so-called 'tacit knowledge.'
- Establishing and maintaining reciprocal trust as a basis.

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## Success factors for cluster

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- Joint network management by all partners to coordinate cluster activities and handle internal and external networking (cluster management).
- Development of a common image to the public and the markets (cluster PR and marketing systems).



## Why clusters?

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Globalization is making life difficult for businesses; everything is becoming faster, bigger and less predictable.

To succeed in the increasingly complex and turbulent environments, businesses have to

- Sell a stream of new and better products on growth markets **and**
- Take the lead in quality and technologies **and**
- Produce and sell at competitive costs.

Innovation: the decisive factor in competition

Flexible and knowledge-based businesses are the leading factors for success.



## Why clusters?

All-rounders are rare, it is enormously expensive to try and be the best in every field; innovation and knowledge.

Globalization is forcing businesses to concentrate more on their **core competences** and take on just a section of the entire **added value** chain from the raw materials to the product ready for the consumer.

Ask yourself what is your core competence!

The success of any one business is depending more and more on the contribution of other businesses.

**Cooperation is becoming the key**, with the success of a business increasingly resembling as an orchestra concert where numerous soloists blend in an unmistakable overall sound.

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## Origin and growth of cluster

**The first cluster was discovered, rather than made.**

- The economy flourishes in regions where there are many outstanding businesses in strategic alliances in an industry or along a value chain and where there are also the corresponding service providers close by, such as engineers, technical agencies, R&D institutes, universities, and advanced training institutions.
- Clusters can arise on their own because more suppliers and supplementary service providers relocate or establish businesses in places where there are already enough partners.
- These location decisions upgrade the region in question, giving it appeal for new complementary relocations – thus the cluster grows.

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## Benefits of cluster

Clusters offer small and medium sized enterprises (SMEs) in particular an opportunity to establish an international profile through networking and strategic alliances.

- Growth of production and employment
- A boost to innovation
- Improved competence and know-how
- Improved quality and productivity
- Higher exports
- Better resource utilization through cooperation

Clusters are based on strategic alliances, and without them, there are no clusters.

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## Benefits and prerequisites of Strategic Alliances

Strategic alliances are a specific form of cooperation in which participants retain their independence, and not only allies but also competitors at the same time.

Strategic alliances open up possibilities for partners which would otherwise be inaccessible or at least difficult to attain.

Almost all areas of a business are conceivable as part of an alliance for instance,

- Purchasing cooperatives to gain bargaining power against the suppliers.
- Outsourcing by multiple businesses
- Sales alliance (particularly interesting when it comes to opening up new markets)

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## Benefits and prerequisites of Strategic Alliances

---

- Joint human resources development
- Research alliances
- Capacity coordination

### Certain features to successful strategic alliances:

- Trust: Alliance partners can trust each other. As relevant internal data are always used as part of strategic alliance, such trust is essential.
- Voluntary participation: All project members are there voluntarily and retain their independence.
- Open style: Cooperation has a dynamic and open style. A rigid style structure will not be able to exploit opportunities arising in the course of the project.

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## Benefits and prerequisites of Strategic Alliances

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- The partners remain competitors in other areas, so that there is no question of cartel formation. This boosts the dynamic level of the alliances and ensure a stimulating environment.
  - Cooperation and Competition
- The cooperative project is managed by the partners themselves. It is particularly important to avoid attempts by public authorities or outside businesses to influence the alliance.
- Strategic alliance results in clear additional benefits to all participants.

If all these factors are present, strategic alliances offer an attractive prospect for a business.

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## Benefits and prerequisites of Strategic Alliances

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SMEs can counter the problems of small size.

For SMEs in particular, there is also the appeal of gaining access to missing resources and know-how through strategic alliances, while offering their own to the partner.

This allows each partner to concentrate on its strengths while using the other businesses to supplement the other areas.

Innovation is the key to success and joint innovative efforts have become increasingly important in view of steadily shortening product Cycles.

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## Phases of Cluster and Strategic Alliances

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1. Preparation
  - First steps
  - Develop goals and strategies
  - Business plan and financing
2. Implementation
  - The organization structure and systems
  - Developing and offering cluster services
  - Managing cluster projects and processes
  - Attracting and binding partners
  - Innovative thinking
3. Change
  - Monitoring and evaluation
  - Change management
  - Strategic learning and management

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## The first steps

### Key questions

- What do we want to achieve through the strategic alliance or cluster?
- Can we use other means to reach our goal?
- What partners does the project need?
- Do the partners have sufficient economic, organizational and innovative capacity?
- What benefits (strengths) are the partners bringing into the network?
- What benefit does the network offer its partners?
- What existing successful or solid strategic alliance can the networking build on?

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## The first steps

- Is the "chemistry" between the partners right?

Chemistry: 'Compatibility' or 'Congeniality'

- What trust-building measures are required?
- Are the goals and functions of the strategic alliance or network clear to all the relevant stakeholders?

The following steps to be followed.

- SWOT analysis
- Goals
- Check on partners (definition of potential partners for the project)

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## SWOT analysis

SWOT analysis in the various operations of the businesses:

- Purchasing
- Logistics
- Human resources development
- Human resources use
- Organizational structures
- Bought in and outsourced services
- Production allocation (capacity coordination)
- R&D
- Sales
- Market research
- Marketing
- Customer service

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## Framework and Popular Tools/Methods of Strategic Management

### SWOT Matrix

Environmental Factors	External Opportunities: • • • • • •	External Threats: • • • • • •
Own Specific Factors		
Own Strengths: • • • • •	Strategies to make use of Opportunities through our Strengths: • • • •	Strategies to prevent Threats through our Strengths: • • • •
Own Weaknesses: • • • • •	Strategies to make use of Opportunities to minimize Weaknesses: • • • •	Strategies to minimize the potential dangers lying in sectors where our Weaknesses meet Threats: • • • •

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## Strategic Alliance intentions and cluster goals

---

### Key questions

- What benefit can the business generate for itself from the strategic alliance?
- What benefit can it offer its partners? What competences is the business prepared to bring into the strategic alliance?
- How far is the business prepared to open itself up to its partner?

### Form and intensity of cooperation

- Loose association
- Separate businesses
- Cooperative
- Public forum

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## Choosing partners

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- Sometimes a strategic alliance or cluster project is started with specific partners already in mind, or the partners may get together first and then develop the concept.
- The success of many strategic alliances and clusters depends decisively on choosing the right partners.
- Personal knowledge of the industry is the most important.
- Trusted partners should be included in planning the strategic alliance as early as possible. (Core group)

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## Detailed planning

- After a core group has been formed which is ready to cooperate, the rules applying within the group have to be defined e.g. how new members are added, how decisions are taken, who is responsible for what etc.
- Once the rules have been settled, it is necessary to establish the detailed sequence of events and responsibilities. This plan of deployment is the basis for implementing the strategic alliance or cluster.
- The themes addressed in the first outline for the alliance – transfer of competence, legal form, legal title, cost apportionments, benefits gained etc. – now need to be defined clearly and decisions be taken.

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## Case study of cluster in Higashi Osaka



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## 18 Industrial cluster projects promoted by Japanese Government

Area	Name of cluster project	Industry
Hokkaido	Hokkaido IT Innovation Strategy	IT
	Hokkaido Biotech Industry Growth strategy	Biotechnology
Tohoku	Tohoku Monodzukuri Corridor	Mfg*. Medical/Industry Environment, IT
Kanto (Tokyo)	Regional Industry Revitalization Project	Mfg.
	Fostering Bio-Ventures	Biotechnology
Tokai	Project to Create Manufacturing Industry In Tokai Region	Mfg.
	Tokai Bia-Factory Project	Biotechnology
	Project to Create Manufacturing Industry In Hokuriku Region	Mfg. Biotechnology
Kansai	Kansai Bio Cluster Project	Biotechnology

\*Mfg: Manufacturing

Source: Industrial Cluster Project 2009 by METI

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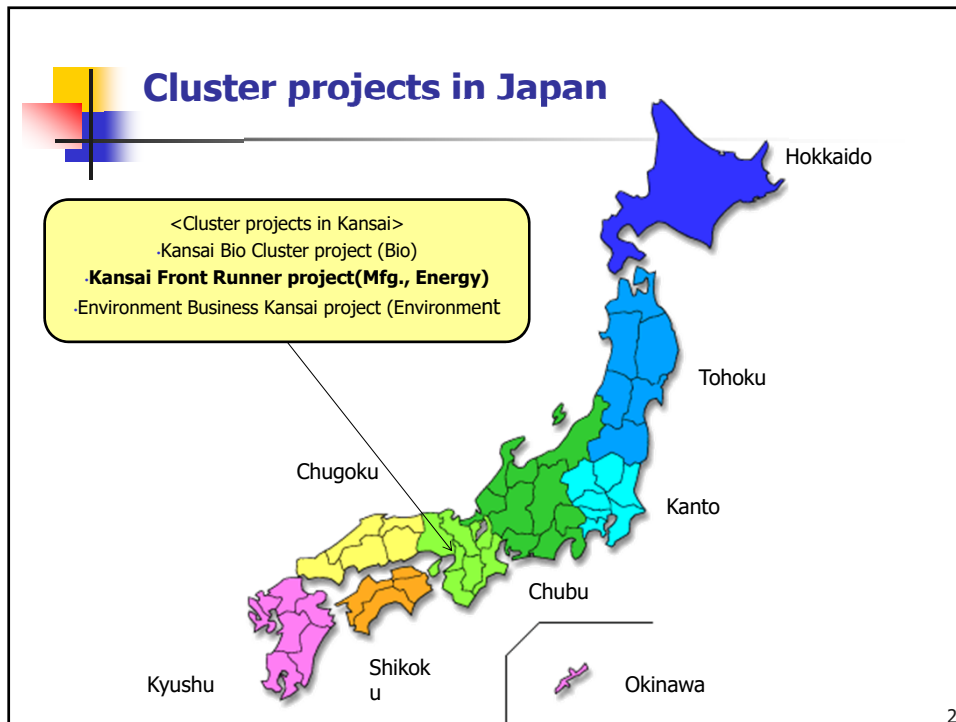
## 18 Industrial cluster projects promoted by Japanese government

Area	Name of cluster project	Industry
Kansai	Kansai Front Runner Project	Mfg. Energy
	Environmental Businesses Kansai project	Environment
Chugoku	Project to Form Next Generation Key Industries	Mfg. IT, Biotechnology
	Project to Form Recycling-oriented and Environmentally Society	Environment
Kyushu	Kyushu Recycle and Environmental Industry Plaza (K-RIP)	Environment
	Kyushu Silicon Cluster Project	Semiconductor
	Kyushu Bio Cluster Project	Biotechnology
Shikoku	Shikoku Techno Bridge Plan	Mfg. Health, Biotechnology
Okinawa	Okinawa Industry Promotion Project	IT, Health, Environment, Value added trading

Source: Industrial Cluster Project 2009 by METI

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## Kansai Front Runner Project

### Overview

The objective of this project is to use the concentration of globally recognized consumer digital electronics companies in Kansai to form an industrial chain cluster capable of producing next-generation digital electronic appliances that lead the way to new life styles; these futuristic products include information appliances, robots, next-generation environment-friendly products, and so on.

Source: Industrial Cluster Project 2009 by METI

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## Kansai Front Runner Project

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### Industry to focus

Futuristic digital electronic appliances, service robots, next generation environment-friendly products, related components, materials and advanced manufacturing technology, contents and so on.

### Collaboration key organizations

- Osaka Urban Industry Promotion Center
- Foundation of Kansai Research Institute
- Higashi-Osaka Municipal Small and Medium Sized Enterprises Promotion Association
- NPO WATT Kobe

Source: Industrial Cluster Project 2009  
by METI

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## Major organizations in the cluster

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### **Business partners (1,500 companies)**

- Panasonic, Sharp, Omron, Osaka Gas, Kyocera, Murata Manufacturing Co.,Ltd. etc.

### **Universities (60 universities)**

- Kyoto University
- Osaka University
- Kobe University
- Nara Institute of Science and Technology
- Ritsumeikan University
- Doshisha University,etc.

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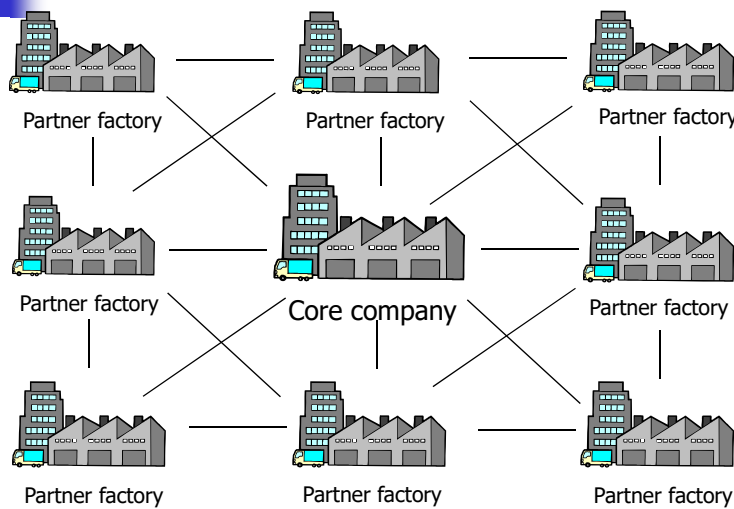
## Map of Osaka pref.



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## Clusters in Higashi Osaka city



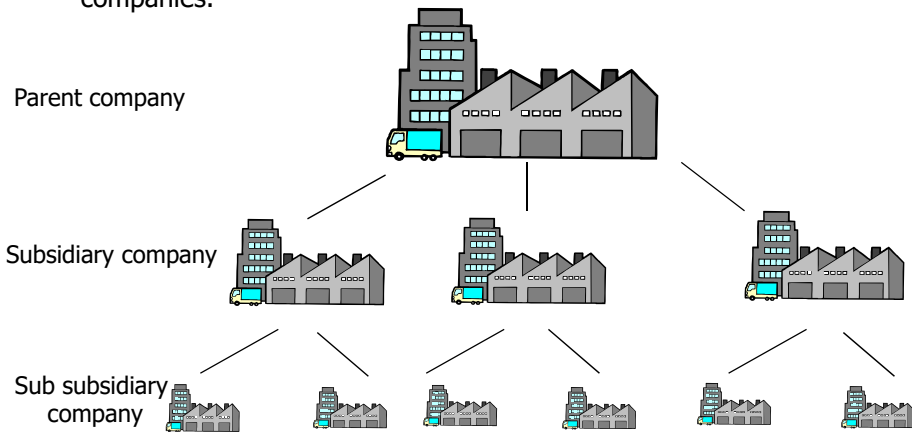
Extensive networks have been developed among many core companies and their Neighboring partner companies.

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## A pyramid structure (Keiretsu)

A pyramid structure of few parent companies and subsidiary companies.



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## Manufacturing city Higashi Osaka

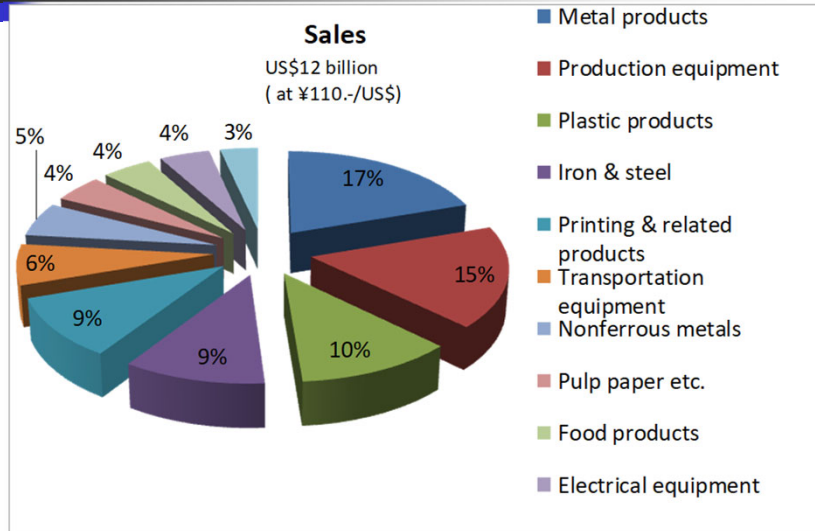
- Outline of Higashiosaka city (as of April 1, 2014)
  - Area: 61.81Km<sup>2</sup>
  - Population : 504,822
  - Number of household: 220,416
  - Population density : 8,167/km<sup>2</sup>
- Higashiosaka city is situated adjacent to Osaka city, which is the industrial/commercial center in the western part of Japan.
  - Access: 30 minutes by car and bus from the Osaka Airport for domestic flights and Kansai International Airport for both domestic and international flights.
  - Transportation network and expressways and highways running through
  - 20 minutes by train to the central area of Osaka city.

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## SMEs in Higashi Osaka

Sales amount of manufactured goods

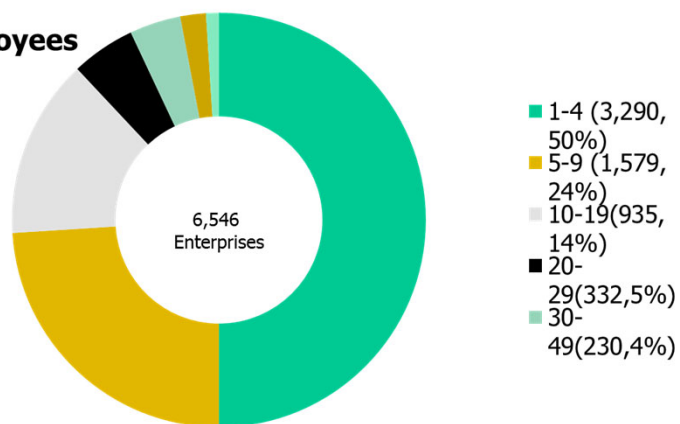


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## SMEs in Higashi Osaka

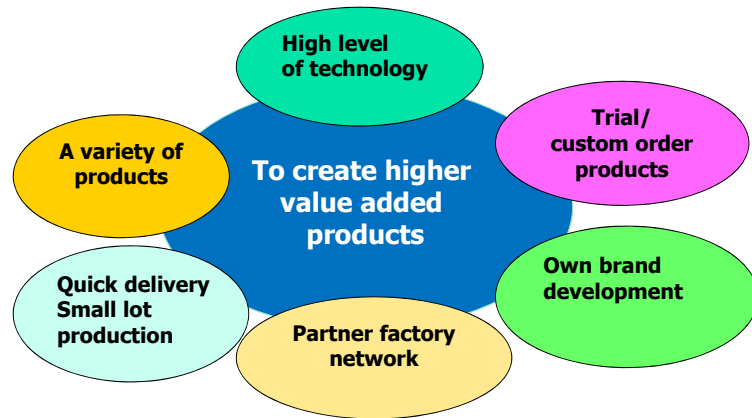
**Employees**



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## Cluster in Higashi Osaka



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## SME in Higashi Osaka

Manufacturing very sophisticated metal products like monuments and ornaments according to customers' orders with cutting edge technology.



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## SME in Higashi Osaka

Products: Monuments and Ornaments



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## SMEs in Higashi Osaka

This company has been supplying aircraft parts to Boeing, U.S.A.  
Quality check at every production process and all quantities.



Storage system of spare parts/  
tools (size by size)



Utilizing the vertical space to  
store materials

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## SMEs in Higashi Osaka

5S Slogan



Manufacturing of Spring for vehicle



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## SMEs in Higashi Osaka

Manufacturing process of spring for vehicle



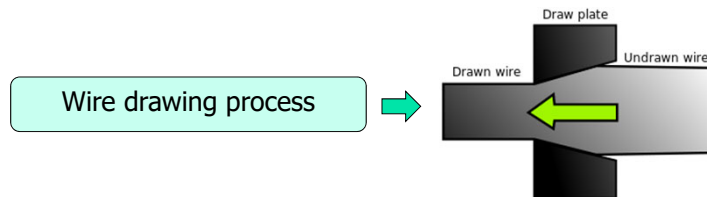
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## Origin of cluster in Higashi Osaka

Origin of cluster traced back to the following three industries in 1700s and 1800s. (Edo era)

1. Wire drawing industry by motive power from water wheels in the river running down from Mt. Ikoma.



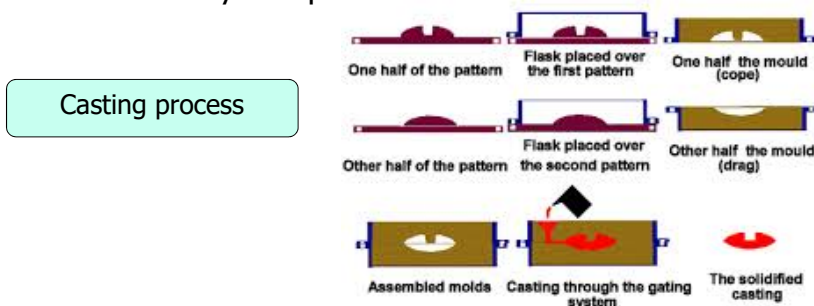
Application of wire drawing: Production of wire and nails leading to development of secondary industrial fields using wire rods, such as manufacture of bolts, nuts, rivet, etc.

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## Origin of cluster in Higashi Osaka

2. Casting industry transferred from south area of Osaka enabling to produce agricultural and industrial tools, pans and pots. This technology, later on, advanced to help produce parts for vessels, machines and military goods during the World War 1, accompanied by the development of cutting and polishing techniques necessary in a post process of cast products.



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## Origin of cluster in Higashi Osaka

### 3. Cotton industry

The area was developed to produce cotton using water from channels from Yamato river. The cotton produced in this area was called 'Kawachi cotton'. However, the Kawachi cotton lost its competitiveness and many labors turned to produce wire-netting, hair clippers, etc.



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## Achievement 1: Robot Vacuum Cleaner) Chinoujutsu Co.,Ltd. Osaka, Japan

One example of a project they worked on is the LadyBird, a robotic vacuum cleaner. This product was developed along with a group company of West Nippon Expressway Co., Ltd. (formerly the Japan Highway Expressway Public Corporation) and a number of Kansai companies to make restroom cleaning easier at highway rest stops. This project received the Kansai Front Runner Award in 2009.

Turning a solution into a business has advantages for both users and the innovators, and is a model for regional revitalization.



Source: Industrial Cluster Project 2009  
by METI

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## Achievement 2 (Security Software)

### HyperTech Co. Ltd. Kyoto, Japan

Easy to install, the World's most advanced security software

To fight back, HyperTech developed CrackProof, software that guards against cracking (security hacking). Easy to install, CrackProof provides the highest level of tamperproof protection in the world, protecting where software is vulnerable.

Because of this product, HyperTech won the Kansai Front Runner Award in 2007, which has led to a remarkable improvement of HyperTech's goodwill. Additionally, HyperTech has received support from the Keihanna New Industry Creation & Interactive Community Center of the Foundation of Kansai Research Institute, one of the key organizations of the Kansai Front Runner Project, which has brought in new customers. Since receiving that award, they have continued to actively work on further developments, receiving other awards including the Software Product of the Year® 2008 Grand Prix.



Source: Industrial Cluster Project 2009 by METI

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## Development of Partnership



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