1. Vocational training and companies’ requirements: Matters required for technical tradition
2. Business matching with growing markets (activities in Kanagawa Prefecture)
3. Excellent company cases and corporate improvement cases
   Komatsu, Juken Kogyo, Toyota’s production in China, Yamato Transport
   Imabari Towel, Higeta, … Okano Kogyo, etc.
   Video cases, including Project X
4. Production technology MAP measures and TP development chart
5. Lessons and measures gained through guidance to PCS university students in the USA
Aspect of development of human resources

(manufacturing is development of human resources)
Training in support for fostering of top manufacturing experts of the food equipment manufacturer L

Yearly turnover of about 14 billion yen; 240 employees; deficit of about 10% at that time

Support was promoted through practical training on holidays in 2007 for one year.

1) Manufacturer outline and needs for training support: During the depression, the manufacturer concentrated factories into one district, and the present and next factory managers gradually proceeded with training measures for promptly strengthening abilities and strengthening earning power, including strengthening overseas development strategies. Each department’s purpose is measures for moving into the black and an increase in midterm profits through goal management.

2) Results: When about two-thirds of the training was completed, mainly the factory managers began activities by establishing (1) a profit improvement plan, (2) a plan to integrate the factories in two districts; and (3) a goal management system, and the following year, they were expected to achieve a surplus.

3) History from grasp of needs to realization of support training:
The analysis in the left figure, after founding the factories’ problems and improvement, creating a momentum to all employees’ participation, and deciding the activities of the managers as business innovation experts, practical training was proceeded with.

(1) Factory cost analysis and measures → Establishment of a guide to moving into the black through all employees’ participation
(2) No deficit/claim measures → Risk measures, including suppliers
(3) Factory transfer measures → Two factories were smoothly concentrated into one district through practical guidance by PERT+PPA method.
(4) Measures for vertical launching of new products
(5) Improvement of factory layout and division into cells → eliminate waste
## Automated Machinery Manufacturer R:
### Measures in the second half of FY2008 (prospective)

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Contents of implementation</th>
<th>In order of arrival</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Q</td>
<td>No defect measures (Physical phenomena measures)</td>
<td>2: No defect measures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1) Generation mechanism analysis; 2) compliance with standardization measures and quality cost; 3) comparative analysis; 4) scientific investigation and evaluation technique; 5) preventive/correctional measures</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Examples, cooperation with design, changes in chemical substances, measures against decrepit equipment</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Q</td>
<td>No HE measures</td>
<td>3: No HE measures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1) Measures for difference between unforced errors and ability; 2) measures for early feedback of problems; 3) error avoidance; 4) Cerebrophysiology; 5) CRM (training in pointing and calling)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Examples: prevention of judgment errors, early communication of facts to the source of a problem ~ no recurrence</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>C</td>
<td>Avoidance of waste by JIT and 5S ~ reduction in overtime work, VE measures</td>
<td>1: Reduction in overtime work cost Purchase VE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1) Avoidance of waste in work (improvement of flow); 2) Set of parts according to order of assembly; 3) movement economization and efficiency; 4) purchase VE; 5) improvement in clerical work</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Examples: Operation layout and storage space JIT measures, cell optimization (space securing)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>D</td>
<td>Production management (compliance with deadline, management of goods on hand, JIT payment)</td>
<td>5: Compliance with deadline, increasing range of functions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1) Improvement in the standard time management system (leveling); 2) increasing range of functions and production fluctuation measures; 3) operation efficiency ~ production instruction, management and express handling measures</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Examples: P-D-C visualization (information sharing), early abnormality discovery and measures, review of distinction between internal and external measures ~ clarification</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Q</td>
<td>No defect measures from the stage of development of new products</td>
<td>4. No defect</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1) Enumeration of on-site problems in design and development; 2) improvement method based on cases; 3) design-in measures and how to proceed with DR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>[This time’s site manager and the designer/developer shall be in charge of this case.]</td>
<td></td>
</tr>
</tbody>
</table>

The following about which issues were provided during this period are excluded: 1) launching of products (measures for increasing speed in release of drawing); 2) development of cooperative companies; 3) technical tradition measures; 4) risk in case of abnormality, such power failure ~ measures for seeking optimal measures; and 5) purchase VE, strategy SCM.

In addition, “Skills in On-site Management,” which was sent before, will be carried forward to the next time.
One of the management demands is “It is important to know the relation between a forest and trees!” This measure can be practically developed as follows:

1. First, plan a system that generates profits.
2. Determine strategies for products and manufacturing and develop hopeful activities.
3. It becomes necessary to carry out measures to develop experts in the form of fusion with local culture, and it becomes necessary to realize the image shown in the right figure.

Short deadline, high profits
Requirements for “above the best” in the manufacturing industry that were found as a result of JMA investigation just before the 21st century

1. Set a high goal and make inexhaustible daily efforts to realize it.

2. Analyze the current situation minutely.

3. Show an achievable story and make efforts to achieve it without fail.

Indeed, it is not surprising that professionals can do it!
“Yozan Uesugi’s reform,” which the late President Kennedy learned

Practitioners of national development and industrial development suitable for the place

When a press corps asked “Whom do you respect the most in Japan?” President Kennedy answered “Yozan Uesugi.” Because no Japanese knew his name, reporters investigated in a hurry and found that all his activities as a top-level executive had been put into practice. This made him famous. As a matter of course, he was greatly referred to for the purpose of economic regeneration in the US. After that, top-level executives in the world have been learning his basics of management practice.

The situation of the Uesugi clan and the situation around the time when Yozan Uesugi becomes a feudal lord

When Kenshin Uesugi became the first feudal lord of Echigo Province, his revenue exceeded two million goku. Because, by the assumption of the fifth feudal lord, the Uesugi clan accumulated wasteful expenditures for inheritance procedures and others, it had only 150,000 goku and was on the verge of bankruptcy. Around that time, the income of a warrior decreased to 90%, and the population of the province reduced from 140,000 to 90,000 (in 1770). Even in this situation, the Uesugi clan spent considerable expenses for deepening relationships with the shogunate and others, such as regular trips to the capital.

Conditions for Yozan Uesugi
(1) The Uesugi clan was short of help. He was born in a house of a feudal lord with only 30,000 goku in Akizuki of Takanabe (Miyagi Prefecture), married a princess of the Uesugi clan and became a feudal lord.
(2) The princess was mentally disabled.
(3) Although he was like a hired president, he was appointed as feudal lord.

[ Gist of reform ]
(1) He broke down the wall of the system.
(2) He broke down physical walls (production of rice had been difficult in mountainous areas).
(3) He broke down mental walls.

Concrete measures for this (result of analysis of the current situation)
1) Information sharing; 2) activation of discussions at workplaces; 3) development of management, placing importance on actual places and situations
As the top executive, Yozan himself carried out actions, quantified management activities and had project teams plan ideal goals and establish and develop implementation plans.
<table>
<thead>
<tr>
<th>Rank</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Manager’s pride, overestimation of management ability</td>
</tr>
<tr>
<td>2nd</td>
<td>Lack of employee training</td>
</tr>
<tr>
<td>3rd</td>
<td>Lack of business purpose, goal, plan</td>
</tr>
<tr>
<td>4th</td>
<td>Lack of industrial information and response to environmental changes</td>
</tr>
<tr>
<td>5th</td>
<td>Lack of new products, delay in technological development</td>
</tr>
<tr>
<td>6th</td>
<td>Family rift, bad effect of family management</td>
</tr>
<tr>
<td>7th</td>
<td>Intermingling of public policy with private interest, lack of management philosophy</td>
</tr>
<tr>
<td>8th</td>
<td>Lack of decision and implementation ability</td>
</tr>
<tr>
<td>9th</td>
<td>Lack of management through figures and lack of study</td>
</tr>
<tr>
<td>10th</td>
<td>Autocrat, lack of reflection</td>
</tr>
<tr>
<td>Manufacturing technology</td>
<td>Production technology</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>Chemical balance</td>
<td>Finite element method</td>
</tr>
<tr>
<td>Insulation</td>
<td>Numerical analysis/control</td>
</tr>
<tr>
<td>Heat conduction</td>
<td>Characteristic curve distribution</td>
</tr>
<tr>
<td>Heat stress</td>
<td>Adaptive control</td>
</tr>
<tr>
<td>Reactive product</td>
<td>Robot</td>
</tr>
<tr>
<td>Reaction velocity</td>
<td>Assembly automation</td>
</tr>
<tr>
<td>Chemical balance</td>
<td>Sensor</td>
</tr>
<tr>
<td>Moving velocity</td>
<td>MTBF analysis</td>
</tr>
<tr>
<td>Solidification temperature</td>
<td>Mechatronics</td>
</tr>
<tr>
<td>Heat of fusion</td>
<td>Retrofit</td>
</tr>
<tr>
<td>Pressure distribution</td>
<td>Line control</td>
</tr>
<tr>
<td>Boundary condition</td>
<td>SQC</td>
</tr>
<tr>
<td>Magnetic degree</td>
<td>LCA (Low Cost Automation)</td>
</tr>
<tr>
<td>Viscosity</td>
<td>OR (Operations Research)</td>
</tr>
<tr>
<td>Stiffness</td>
<td>CAD / CAM</td>
</tr>
<tr>
<td>Extrudability</td>
<td>IT</td>
</tr>
<tr>
<td>Castability</td>
<td>...</td>
</tr>
<tr>
<td>Young’s modulus</td>
<td>.....</td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Survey on the actual condition of JMA management issues in 2012

Issues on which manufacturers place importance

- **Flexible production system according to changes in demand**: 29.4% (2011) vs 35.3% (2012)
- **Improvement in production technology**: 36.4% (2011) vs 31.3% (2012)
- **Improvement in technology and skill**: 37% (2011) vs 28.8% (2012)
- **Review of global production base**: 24.9% (2011) vs 23.3% (2012)
- **Securing of excellent human resources**: 31.8% (2011) vs 23% (2012)
- **Improvement in material procurement function**: 22.3% (2011) vs 21.5% (2012)
Requirements for technical tradition in Japan

[Changes]
1. Skilled workers employed during the high-growth era will be retired several years after.
2. The penalty for having postponing problems will have to be paid.
3. Problems have begun to occur concerning trends toward reduction in personnel cost, overseas technical transfer, dependence on automaton and outsourcing.

The occurrence of the problems has accelerated due to a declining birth rate and an aging population.

Products cannot be made because no person can make them.

Changes in the population structure in Japan

[Suggested points]
1. Existence of a good leader and evaluation
2. Existence of a plan and a personnel system that make it possible to realize the company’s philosophy and strategy (construction ~ use)
3. Use and preparation of manuals

Leader

Have workers thoroughly understand and make their own.
Development of technology and role of skill

Synergy effect

Repetition of pushing up from below and pulling up from above

Anxious points
1. Retirement of skilled baby boomer workers
2. Decrease in the number of persons inheriting tradition due to a declining birth rate and an aging population
3. Bad effect of relaxed education policy
   Educational device for people who did not train the brain or have competition when young?
Shortage of professionals, which has continued to be a problem since 1997

In this situation, perhaps no company wants lathe workers.

Although companies have enough white-collar workers, they will employ you if you are skilled lathe or milling worker, even if you are 60 years old. We will immediately recommend you to the companies.

Interview at an employment agency

Although more than 8,000 small factories existed in Ota City in 1992, almost 2,000 were closed down.

As of 1997

Result of the Ministry of Labour’s survey of 2,077 companies in Japan in 1997

- Insufficient: 47.4%
- Sufficient: 52.6%

In the Future

- Insufficient: 60.2%
- Sufficient: 39.8%

Highly skilled workers

- Insufficient: 90%
- Sufficient: 10%
Efforts of developing SMEs which are often introduced by TV “Yume no Tobira (Doors of dreams)”

“World-smallest die” by Iriso Seimitsu
Employee: 14 Capital: ¥16 million

Strategy by President Kiyokazu Saito (manufacturing success)
A subcontractor like us cannot say, “We did that,” even if we have high technology. And so “we made the world-smallest die and announced it for PR to show our technology fairly under which we made it!”

Comparison with ball point pen-processing condition

Realization was made in 2004 and motivation was no business due to recession though the company was engaged shaving steel business. Then it realized that “An order will come to a company with the highest technology rather than a company with moderate technology.”
As a specific target, it provided iPhone cases with highest finish which general companies cannot do so. As a result, customers could reduce necessary finishing process and it succeeded in order increase (The content that strategy was highly evaluated by customers.)

The content of efforts to be referred to

(1) To concentrate on efforts to draw out the maximum of functions of new model MC molding machines.
(2) Scientific analysis and research: Generally sold die has a limit of 12 mm in one side but this manufacturing needs a cutting instrument with 2.5 mm width. Then they surveyed cutting instrument makers and found a maker which can make 0.1 mm width. In addition, when they asked the maker about the possible smallest limit, it replied an instrument with 0.06 mm width. Then they decided to make a die with 0.3 mm. (As the fixing method is a know-how, this kind of content is not going to be disclosed.)
(3) The tool maker has excluded the ultra small size product from their catalogue because they do not know the market even if it can make such a small size. (It is important to tie-up with hidden different lines of business.)

Technology was recognized like strategy and 1/1,000,000 gram gear production of Jyoken Kogyo and measure to expand industry

Ultra small die development
## 2. Business matching with growing markets

### Market research, client’s honest opinion, request grasping

**Where shall I go?**

**What shall I do?**

**This is a claim!**

**I want to be rich!**

### Method of market research

<table>
<thead>
<tr>
<th>Research method</th>
<th>Examples of specific means</th>
<th>Opinion gathering method</th>
<th>Free needs gathering method</th>
<th>Limited item confirming method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questionnaire distribution/ collection method</td>
<td>(1) Questionnaire by DM/phone/mail</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>(2) Gathering research method: Collect opinion after explanation</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>(3) Relaxed mood/free discussion type</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Product use test method by client</td>
<td>(1) Listing dissatisfaction/comparison method with similar products</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>(2) Actual use/issue point pick-up type</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>(3) Random action analysis method</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>(4) Best selling goods/site shop research method</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>(5) Designated client intensive use test method</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Simulation method</td>
<td>(1) Model house method (including questionnaire)</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>(2) Monitoring method (member recruitment)</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>(3) Test sales by shops</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>(4) Client needs grasping by developer method</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>(5) Test piece use test method</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
Example of growing market analysis data

Outline of 2010 market size condition example forecast by Industrial Structure Council, etc. (macro market growth forecast result)

- House-related
- New-saving energy
- City structure preparation
- Biotechnology-related
- Marine-related
- Business support
- Environment-related
- Logistics/distribution
- New manufacturing technology
- Information/communication
- Life culture
- Medical treatment/welfare

Unit of amount: trillion yen

Example: Internet, SCM, Logistic maintenance, etc.
Example: Internet, mobile communication, multi-channel broadcasting
Example: house nursing high service, biotechnology-based medical treatment, high medical devices
Example: rubbish issue, recycling, public hazard measures
Karaoke market condition

Number of Karaoke rooms
Peak period: 160,000 rooms

Participating population (left scale)

From children to adults overseas

Surplus goods phenomenon

Only excellent goods sold!
Average actual economic growth ratio forecast after 20 years


<table>
<thead>
<tr>
<th>Ranking</th>
<th>Name of business lines</th>
<th>Average annual growth ratio (%)</th>
<th>2006 (Trillion yen)</th>
<th>2016 (Trillion yen)</th>
<th>2026 (Trillion yen)</th>
<th>Growth ratio of 20 years (times)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Information and communication</td>
<td>4.3</td>
<td>26.08</td>
<td>39.61</td>
<td>60.16</td>
<td>2.31</td>
</tr>
<tr>
<td>2</td>
<td>Electric devices</td>
<td>3.8</td>
<td>60.30</td>
<td>83.81</td>
<td>126.83</td>
<td>2.10</td>
</tr>
<tr>
<td>3</td>
<td>Office services</td>
<td>3.8</td>
<td>92.56</td>
<td>134.21</td>
<td>194.59</td>
<td>2.10</td>
</tr>
<tr>
<td>4</td>
<td>Medical treatment/welfare</td>
<td>3.7</td>
<td>53.12</td>
<td>76.28</td>
<td>109.54</td>
<td>2.06</td>
</tr>
<tr>
<td>5</td>
<td>Finance/insurance</td>
<td>2.6</td>
<td>43.15</td>
<td>55.63</td>
<td>71.71</td>
<td>1.66</td>
</tr>
<tr>
<td>6</td>
<td>Transport machine industry</td>
<td>2.6</td>
<td>54.15</td>
<td>69.65</td>
<td>89.60</td>
<td>1.65</td>
</tr>
<tr>
<td>7</td>
<td>Complex service business</td>
<td>2.5</td>
<td>5.06</td>
<td>6.48</td>
<td>8.31</td>
<td>1.64</td>
</tr>
<tr>
<td>8</td>
<td>Non-ferrous metal industry</td>
<td>2.4</td>
<td>6.48</td>
<td>8.21</td>
<td>10.40</td>
<td>1.60</td>
</tr>
<tr>
<td>9</td>
<td>Individual service</td>
<td>2.3</td>
<td>61.02</td>
<td>76.29</td>
<td>95.79</td>
<td>1.56</td>
</tr>
<tr>
<td>10</td>
<td>Mining</td>
<td>2.0</td>
<td>1.42</td>
<td>1.73</td>
<td>2.12</td>
<td>1.49</td>
</tr>
<tr>
<td>11</td>
<td>Real estate industry</td>
<td>1.9</td>
<td>71.52</td>
<td>86.20</td>
<td>103.89</td>
<td>1.45</td>
</tr>
<tr>
<td>12</td>
<td>General machine industry</td>
<td>1.7</td>
<td>32.65</td>
<td>38.78</td>
<td>46.08</td>
<td>1.41</td>
</tr>
<tr>
<td>13</td>
<td>Learning support</td>
<td>1.6</td>
<td>41.16</td>
<td>48.32</td>
<td>56.74</td>
<td>1.37</td>
</tr>
<tr>
<td>14</td>
<td>Chemical industry</td>
<td>1.5</td>
<td>26.08</td>
<td>30.21</td>
<td>35.01</td>
<td>1.34</td>
</tr>
<tr>
<td>15</td>
<td>Electricity/gas/heat supply/ water supply industry</td>
<td>1.4</td>
<td>28.52</td>
<td>32.81</td>
<td>37.75</td>
<td>1.32</td>
</tr>
</tbody>
</table>
## Average actual economic growth ratio forecast after 20 years


<table>
<thead>
<tr>
<th>Name of business lines</th>
<th>Average annual growth ratio (%)</th>
<th>2006 (Trillion yen)</th>
<th>2016 (Trillion yen)</th>
<th>2026 (Trillion yen)</th>
<th>Growth ratio of 20 years (times)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 Pulp/paper/paper processing industry</td>
<td>1.3</td>
<td>14.71</td>
<td>16.80</td>
<td>19.17</td>
<td>1.30</td>
</tr>
<tr>
<td>17 Transportation industry</td>
<td>1.3</td>
<td>47.43</td>
<td>54.14</td>
<td>61.80</td>
<td>1.30</td>
</tr>
<tr>
<td>18 Wholesale/retail industry</td>
<td>1.2</td>
<td>95.49</td>
<td>108.11</td>
<td>122.39</td>
<td>1.28</td>
</tr>
<tr>
<td>19 Public service</td>
<td>0.8</td>
<td>39.12</td>
<td>42.33</td>
<td>45.80</td>
<td>1.17</td>
</tr>
<tr>
<td>20 Oil/coal product industry</td>
<td>0.5</td>
<td>12.98</td>
<td>13.65</td>
<td>14.35</td>
<td>1.11</td>
</tr>
<tr>
<td>21 Agriculture, forestry and fisheries</td>
<td>0.4</td>
<td>13.68</td>
<td>14.29</td>
<td>14.93</td>
<td>1.09</td>
</tr>
<tr>
<td>22 Food/tobacco industry</td>
<td>0.4</td>
<td>36.47</td>
<td>38.04</td>
<td>39.67</td>
<td>1.09</td>
</tr>
<tr>
<td>23 Steel industry</td>
<td>0.1</td>
<td>18.86</td>
<td>19.02</td>
<td>19.18</td>
<td>1.02</td>
</tr>
<tr>
<td>24 Other industries</td>
<td>0.0</td>
<td>29.78</td>
<td>29.80</td>
<td>29.89</td>
<td>1.00</td>
</tr>
<tr>
<td>25 Precision machine industry</td>
<td>-0.9</td>
<td>4.09</td>
<td>3.75</td>
<td>3.44</td>
<td>0.84</td>
</tr>
<tr>
<td>26 Metal product industry</td>
<td>-1.6</td>
<td>11.15</td>
<td>9.51</td>
<td>8.11</td>
<td>0.73</td>
</tr>
<tr>
<td>27 Construction industry</td>
<td>-1.8</td>
<td>63.24</td>
<td>52.77</td>
<td>44.04</td>
<td>0.70</td>
</tr>
<tr>
<td>28 Ceramic/quarrying product industry</td>
<td>-2.2</td>
<td>6.70</td>
<td>5.39</td>
<td>4.33</td>
<td>0.65</td>
</tr>
<tr>
<td>29 Textile industry</td>
<td>-5.7</td>
<td>4.52</td>
<td>2.50</td>
<td>1.39</td>
<td>0.31</td>
</tr>
<tr>
<td>All industries</td>
<td>2.0</td>
<td>1001.48</td>
<td>1198.32</td>
<td>1477.01</td>
<td>1.47</td>
</tr>
</tbody>
</table>
How management strategy should be

Degree of added value

Cheaper than others  Client buys higher goods

<table>
<thead>
<tr>
<th>Targeted market</th>
<th>Large market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy: Large company dependence! strategy  Example: car market- home appliance</td>
<td></td>
</tr>
<tr>
<td>Subcontractor-oriented</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Niche market</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Station noodle customer quick rotation strategy</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Brand strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gucci, Ferragamo, Channel  Ferrari</td>
</tr>
</tbody>
</table>

￥100 shop:  To large market with a number of goods

QBB: ￥1,000 barber shop  Get profit by short-time customer rotation

Only one in the world!

Craftsman/artwork strategy
Case study

Panama Vegas Case

The manufacturing-and-selling problem of a new tomato

A poor area called Vegas is located in Panama. Even if who looked at this example, it was the measure considered to be right. Since it was the contents with which the United Nations dealt especially and everybody thought it will make a great success production & Sales sample. The contents were the tomato production which is one of the characteristic products. If new manure is used, production of this tomato will increase several times. If this project will be success, the area becomes rich and education will be also substantial. A problem of this plan was How to find out a cooperator of this tomato production. That reason was because people of this land had the culture which dislikes a new measure. But, although time was taken, a certain farmer will cooperate in this plan. Tomato production was winning a great success soon. For this reason, tomato production spread greatly in Vegas. The needs of a tomato are great in a neighboring area. Please think about and consider what kind of progress this plan followed after that.
The result of a tomato Story at Vegas

Production of the tomato was successful. But, since heavy rain attacked near Vegas, passing of a road became difficult to transport Tomato boxes. For this reason, also in the tomato which remained in the field, twenty percent rotted in the fields. Furthermore, the physical distribution contractor has made demands for a price increase on the farmer who profited by tomato sale. Furthermore, Since the amount of supply of the tomato far exceeded demand, it was that the price of it is reduced. For this reason, the income of each farmhouse decreased and almost all farmhouses stopped tomato production.

In the past, agriculture has been advanced here by the system which does not determine the boundary of land each other. But Everyone got to know that Tomato production is decided by size of land. For this reason, it became the scramble of land. Although it became the next year in such a situation, many farmers do not have money and many those who cannot buy the manure of the agriculture done until now. Then, the tomato became a high price in the market. Farmers suffered troubles and started tomato production. But, he cannot buy manure. For this reason, it became a poverty life.

The contents of a report of the direction which drew up and furthered this plan. The fact of having succeeded at first to no marketing technique tops are problematic. The reason for failure is a lack in farmers' ego and a motivation.

How do you think to this opinion?
UNESCO carried out a judgment called failure in this plan. Then, the volunteer was put in this place and Agriculture was revived by prolonged efforts.
A economic effect on marketing

The size of the market of mass consumption goods was decided. If superfluous supply is performed to an amount demanded, the price will fall. Conversely, if it runs short to an amount demanded, the price will rise.

<table>
<thead>
<tr>
<th>Price</th>
<th>Amount demanded</th>
</tr>
</thead>
<tbody>
<tr>
<td>When there is little amount of supply</td>
<td>The situation of a price decline</td>
</tr>
<tr>
<td>When the amount of supply increases</td>
<td></td>
</tr>
</tbody>
</table>

If it becomes oil overproduction, a producer price will fall. For this reason, it has adjusted by the international conference.

This tomato production case study also becomes the same situation.
PPM: Products portfolio management

They have also held the sales situation of other food.

You can eat any Food!

High Market growth rate

Low Market share

- **Star**
- **Problem Child**
- **Cash Cow**
- **Dog**

High Market share → Low

High Market growth rate ↑
The plant factory from which introduction is expected in a desert area

Example A: Mr. Masayoshi Yamae
The China export, Organic Hydroponics
The special fluid in which water does not become foul is developed.
Medicine is a top secret in order that China may infringe on a patent.

Notes:
Sufficient market aim is required. Beginning from a test market is important.
Example B: Mr. Hiroyuki Watanabe Box type vegetable plant

This system is producible in the underground of a building. LED light usage Type  Production cycles, such as lettuce, a medicinal herb, and a strawberry, are short, and a high added value and vegetables with high food safety are applicable.

Yunkus is a physical distribution contractor. This cooperates with other physical distribution contractors, and an empty track is used effectively.

The physical distribution improvement by Yunkus Ltd.

Fresh vegetables are carried to the selling big city, and they are sale and a yearly turnover of 1 billion yen. A profit higher than a vocational physical distribution is secured. It is a Side job.
3 layer structure of electricity use (Case of TEPCO area)

Characteristics: Variable portions are office and home and peak time is an only problem. We should “concentrate on measures for the time from 14:00 to 16:00,” and we find that electricity storage and use of solar power consist of large portions for this time zone and electricity.

General home: 18% 10 million KW

Office: 51% 28 million KW

Companies (plants) 31% 17 million KW

Total 55 million KW

Peak time 60 million KW
Smart Unit Image

- Neighbor natural energy
  - Solar generation
  - Small wind generation
  - Small water generation

- Sun lighting

- Insulation

- Effective air circulation

- Air-conditioning system by using waste

- Generating equipment considering natural disaster

- Electricity supply from EV and PHV during parking

- Air-conditioning system by using geothermal heat

- Use of timer
  - UPS: Night electricity is stored for use by using uninterrupted power system

- Demand control and measures to reduce electricity
<table>
<thead>
<tr>
<th>National Youth Outdoors Learning Center “Use Promotion Map” Building</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leisure and culture (psychological improvement)</strong> health and body building</td>
</tr>
<tr>
<td>A. Memory building Life experience</td>
</tr>
<tr>
<td>• Outside activity</td>
</tr>
<tr>
<td>• Marine activity</td>
</tr>
<tr>
<td>• Room orienting</td>
</tr>
<tr>
<td>• Candle fire</td>
</tr>
<tr>
<td><strong>Leisure and culture (psychological improvement)</strong> leisure</td>
</tr>
<tr>
<td>B. Body strength/exercise Skill improvement</td>
</tr>
<tr>
<td>Walking activity</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Brain storming</strong></td>
</tr>
<tr>
<td>C. Culture leisure</td>
</tr>
<tr>
<td>Tool-using activity</td>
</tr>
<tr>
<td>Night activity (star watching, etc.)</td>
</tr>
<tr>
<td><strong>Brain storming</strong></td>
</tr>
<tr>
<td>D. Measures for intellectual improvement</td>
</tr>
<tr>
<td>• Craft activity</td>
</tr>
<tr>
<td>★ Invention class night</td>
</tr>
<tr>
<td><strong>Brain storming</strong></td>
</tr>
<tr>
<td>E. Local friendliness</td>
</tr>
<tr>
<td>• Holding events</td>
</tr>
<tr>
<td>• Lecture by well-known persons</td>
</tr>
<tr>
<td><strong>Industry support</strong></td>
</tr>
<tr>
<td>F. Local industry support</td>
</tr>
<tr>
<td>★ New employee training</td>
</tr>
<tr>
<td>★ Various company training</td>
</tr>
<tr>
<td>★ New business project</td>
</tr>
<tr>
<td>★ Drill against natural disaster</td>
</tr>
<tr>
<td><strong>Industry support</strong></td>
</tr>
<tr>
<td>(1) Infant</td>
</tr>
<tr>
<td>★ General family</td>
</tr>
</tbody>
</table>

Let us tell a dream!
2010: EV (September of first year) “Status analysis results”

Car industry forecast 2020: 2 million units, 2030: 6 million units, 2050: 8 million units

Big car companies
- Toyota: HV plug-in with GM on J/V basis
- Mitsubishi: iMiev
- Actual car test at Goto Retto/Okinawa: PR/spread
- Nissan: Develop LEAF worldwide and reduce price by rental of battery

Local-base development by waste car remodeling EV
- Toyama: Takeoka Car Art EV pioneer
- Kadoma/Moriguchi City, Osaka: home appliance SME group began it as a step for bad business
- Yonago/JT: Began EV to save local society due to decrease in tobacco sales

Competition with big companies
- Gunma Uni.: bus
- Hiroshima: SME group
- Itochu: Work for Asia by investing in Norwegian car
- Gifu SME car industry: import and sales of Korean cars

Begin EV rental
- Okayama/Kanagawa

Attention! Target
- Special case
- Contracted EV making/sales
  - PUES Corp.
  - NPC
  - Tajima Motor Corp.
- Individual making (hobby) support
  - Japan EV Association

Use
- EV realization environment support
  - Small wind generation
  - EV part business

Hobby-oriented EV
- Osaka: Yodogawa Works For sightseeing?
- Gunma Uni.: 1 man EV
- Keio Uni.: high speed 6 wheels
- Yonezawa Technical High School: Trial car exhibit
- Solar car Iron Arm Dash

S INFONIA enters EV quick generator.

MLIT Discussion Panel
- Kashiwa City/Chiba
  - Solar battery stand preparation
- Tochigi, Ibaraki, and Osaka
  - Prefectures, and Kyoto and Kobe Cities
  - Solar battery stand preparation
  - Prepare charging stand with eco-friendly measures
- Saitama Prefecture
  - Establish EV fund for SME promotion -encourage them to develop new technology

Tochigi, Ibaraki and Osaka
- Prefectures, and Kyoto and Kobe Cities
  - Solar battery stand preparation
- SINFONIA enters EV quick generator.

Attention!
- Target
- NPC

Individual making (hobby) support
- Japan EV Association
R • EV

target this time

Measures to aim to enter market by manufacturing EV from beginning seen at other areas
Activities by each prefecture and organizations

<table>
<thead>
<tr>
<th>Acting organization and acting group</th>
<th>Measures/content of activities for various EVs</th>
<th>Activity by category</th>
</tr>
</thead>
<tbody>
<tr>
<td>R•EV (Ryomo P)</td>
<td>Asanuma Management Center/JMA support project</td>
<td>Get rid of red ink/mark</td>
</tr>
<tr>
<td>Yonago</td>
<td>Measure for EV by Kyoto Uni. due to JT office closure</td>
<td>( )</td>
</tr>
<tr>
<td>Hiroshima</td>
<td>Delorean plan/Hiroshima Kokusai Gakuin University</td>
<td>( )</td>
</tr>
<tr>
<td>Yonezawa</td>
<td>Yonezawa Technical High School Zero Emission P</td>
<td>( )</td>
</tr>
<tr>
<td>Saitama</td>
<td>Technical development support business for next generation car</td>
<td>( )</td>
</tr>
<tr>
<td>Ota City</td>
<td>Arai Jidosha Hanbai sells EV rickshaw and electricity-driven bike</td>
<td>( )</td>
</tr>
<tr>
<td>Higashi Osaka</td>
<td>Higashi Osaka SME group (lacquered tricycle type)</td>
<td>( )</td>
</tr>
<tr>
<td>Ehime Institute of Industrial Technology</td>
<td>Open publicly second-hand car remodeling EV manufacturing</td>
<td>( )</td>
</tr>
<tr>
<td>Gunma Uni.</td>
<td>EV trial for social proof test/sponsor recruitment</td>
<td>( )</td>
</tr>
<tr>
<td>Nursing car</td>
<td>Japan’s smallest company (appeared on NHK)</td>
<td>( )</td>
</tr>
<tr>
<td>Dash village</td>
<td>Tetsuwan Dash/NIHON TV/Solar car/Dr. Yamamoto support</td>
<td>( )</td>
</tr>
<tr>
<td>Japan EV association</td>
<td>Can run 560km by one charge (world record))</td>
<td>( )</td>
</tr>
</tbody>
</table>

A project to make a new car from scratch considering competition with big companies
1. **Technology on a contactless smart card by Sony Corporation**

   The patent No.2705076 is a patent named Felica concerning IC cards and is an invention used for various systems including IC tags. Sony not only implements this patent by itself but also has granted the license to other companies such as JR. JR has made cards called “Suica” and this contactless smart card is widely used for passing an attended ticket gate or payment in shopping.

2. **“Intellectual Property Pool System” of Hitachi, Ltd.**

   Hitachi has been controlling the patents of each group company comprehensively, and Intellectual Property Department has been selling them with high profits which are equivalent to the profit earned by a big plant.

3. **Nissan Motor “Sales of Patents by Intellectual Property Department”**

   Nissan has started sales of technology which can be used by other industries than car industries including surface treatment technology. (TV broadcasting in 2007)

   We would like to contribute to developing SMEs by opening and selling patents which are not used by big companies. Enhance international competition

   We sell this technology! Don’t you want to use it? Develop new business

   FY2005 survey by Japan Patent Office
Technology Licensing Organization (TLO)

TLO (Technology Licensing Organization) is an organization which gets assignment of the right to receive the patent from an inventor mainly concerning research results of a university, acquires a patent of the invention and grants licensing, etc. to companies based on acquired patents. Characteristics include

1. To find R&D which has potentiality of commercialization;
2. To evaluate potentiality by researching market needs instead of only finding R&D; and
3. To work to find companies to which license is granted after applying for the patent of high technology to meet the above (1) and (2) and acquiring the patent. In 2005, 40 organizations were certified and they are now working.

Specific examples of commercialization: a milking machine to be used for study of dioxin contamination of breast milk, and a vision analyzer for ultra low eyesight patients.

Examples: Todai TLO, Ltd.: http://www.casti.co.jp
Waseda University (Research Collaboration and Promotion Center) http://www.waseda.jp/tlo/
Examples of specific support and measures for business expansion

1. **Business matching promoted by SME Support, JAPAN**
   - **Content of implementation:** First meeting was held at Tokyo Station Conference on January 25, 2012.
     - (1) 21 SMEs made their PR for about 5 minutes to introduce technology and products to sell to big companies
     - (2) They held a meeting to explain and consult at a separate room according to the content of the above. They made efforts to sell their products and technology to big companies at 10 separate rooms with attendance of about 500 audience.
   - Jointly held with Planning Section, Planning Business Dept., KSP Inc.  TEL: 044-819-2001
   - Sponsored by: Keio University SFC Research Center, Open Network Lab. and National Institute of Information and Communication Technology

2. **Kawasaki City “Intellectual Property Exchange/Intellectual Property Symposium”: Introduction of the content of specific technology grant**
   - **An explanation meeting was held on February 8, 2012 by Kawasaki City to grant technology owned by the central government and public organizations.**
   - (1) Bureau chief Koizumi said: Kawasaki has more than 200 research offices and has promoted to develop advanced technology in collaboration of industry and academia.
   - (2) JAXA: Japan Aerospace Exploration Agency and JAMSTEC: Japan Agency for Marine-Earth Science and Technology, etc. have introduced the content of grantable technology.
   - After introduction of the content of technology to be granted to SMEs, an exchange meeting was held. (First meeting was only to exchange company cards.)

3. **Tokyo Institute of Technology(TIT) YVP: Venture support**
   - An example of commercialization of technology developed by Tokyo University was introduced by a TV program “Yume no Tobira.” However the content of business firstly developed by TIT: room rental to venture companies and various activities are being developed. (Free seminars are held from time to time.)
   - URL: http://www.smrj.go.jp/incubation/yvp/

   - A company introduced to JMA. It mainly mediates a business between a company which “wants to sells technology to some SMEs due to absence of a successor though it has maintained its technology and market” and a company which “wants to buy such technology.” The company began to work for the needs accompanied by declining birth rate and aging population.
The Content of Intellectual Property Exchange, Kawasaki City (5)

Flow of intellectual property exchange of Kawasaki City

- Meeting
- Determine possibility
- Contract negotiation
- Commercialization of product

Results of past performances (as of 2007-February 2012)

1. Number of meetings: 21 times

2. Companies providing intellectual property: 7 companies + 3 independent administrative corporations
   (Fujitsu Limited, Toshiba Corporation, NEC Corporation, Hitachi, Ltd., Pioneer Corporation, Ajinomoto Co., Inc., Nissan Motor Co., Ltd.)
   (Japan Aerospace Exploration Agency, Japan Agency for Marine-Earth Science and Technology and the National Institute of Advanced Industrial Science and Technology)

3. Results: Patent Licensing Contract – Number of contracts 10 cases and joint research 1 case
Monitoring inner part of lithium cell can prevent thermal runaway?

Image of thermal runaway mechanism

Internal short circuit  Overcharge
Heat generation of anode  Heat generation of cathode  Ignition

Low temperature  Cell temperature  High temperature

Use of optical sensor advantage enables you to monitor inner part of cell (temperature, distortion).
What is “Generating Floor®” about?

“Generating floor” is a floor-type generating unit which generates power by using vibration given by people and vehicles to floors during moving as energy sources.

Piezoelectric elements are spread all over the inside of the floor, which changes vibrating energy added to the floor to power. An advantage of using piezoelectric elements is to keep the sinking of the floor when stepped less than some millimeters, which does not disturb people very much.

One step on the generating floor enables 100-200 pieces of LED with high brightness to emit light. For example, if you put a generating floor on the passage with LED, it will be a blinking guide light according to the movement of people. In addition, it can send a wireless signal and so it can be applied to a digital signage and so on.

[Generating volume of generating floor on a rental basis]
- 0.1-0.3W (instant maximum value of about 1 m second)
- 2mW (per second)
*In case where a person with 60kg walks at the pace of 2 steps a second.
The Content of Intellectual Property Exchange, Kawasaki City (4)

Some of the initiatives by intellectual property meetings of Kawasaki City

- Recognition of small-and-medium size companies -
  • Many opinions are “to have their own products to get rid of the type of business of production based on order (subcontractor).”
  • The companies feel attraction for technology with results at the stage of practical use instead of the latest and most advanced technology.
  • Many companies have resistance to intellectual property meeting with big companies.
  • The companies expect further support by administration in addition to provisions of the places.

- Roles to be played by administration/coordinators -
  • Provisions of places for matching (holding exchange meetings and provision of information on seeds and needs)
  • Adjustment of licensor and licensee (joint talk at the time of matching and creation of good atmosphere, interpretation of culture)
  • Discussion and proposal of product commercialization and business idea (think and consider with small-and medium size companies)
  • Advice on contract negotiation and procedures
  • Support for product commercialization (finding of development partners, implementation of performance test, acquisition of development funds), etc.
R&D projects of JAXA

Rocket transport system
Development of main rocket H-IIA and H-IIB

Artificial satellite/earth observation
Development and use of artificial satellite - contribution to global environment and social security

International space station/manned space activities

Basic research concerning space aviation

Research on space science
Solar system probe, astronomical observation to seek space progress

Space environment use
3. Excellent company cases and corporate improvement cases

Shichifuku Towel Co., Ltd. (Location is Imabari, Ehime Prefecture)

There were 500 towel makers in 1976 and there are only about 100 such companies in 2008, many of which are run in the red. Among them, this company has maintained extremely high profits!

(1) Quality strategy
   1) Study high quality towel at the request of Tokyo Hands
   2) Develop sales targeting hotels with water-absorbing quality
   3) PR with good design was a break at the US trade fair and use of their towels at Hollywood has spread (free design)

(2) Delivery strategy
   1) Put company name and phone number on products
   2) Construct direct sale system to retailers
   3) Produce towels according to free design
      In particular, Hollywood stars advertise towels freely! Meet individual needs
Group guidance seen at “MIDORIKAI” of Komatsu Ltd.

Komatsu MIDORIKAI: Average sales growth rate 2.5 times

Use of bolts of Kyowa Kogyosho for all the Komatsu’s construction machines around the world

MIDORIKAI produces 70% and more parts of Komatsu’s construction machines.

Several Komatsu’s employees are loaned to cooperative companies.

Each group company has high profit

Sales to others

Video case introduction 2
Technological innovation to shear a sheep

A sheep is usually sheared by a pair of clippers.

Innovative technology by Higeta Shoyu

Develop technology by hints from anticancer agent

(1) Cover a sheep with net-like clothes
(2) Give an injection and take some time
(3) Take off wool from skin with net-like clothes

Measures needed high technology because a pair of clippers give a sheep not only damage but also stress.
Case introduction of Incth Co., Ltd.

2002 announcement 40 days → 10 days, the following year: 3 days, 2007: 46 hours
AQURAHOME VE

Number of houses sold by big housing makers

[Bar chart showing sales amount of housing makers]

<table>
<thead>
<tr>
<th>Position</th>
<th>Company</th>
<th>Sales Amount (¥)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Daiwa House</td>
<td>1,690,900</td>
</tr>
<tr>
<td>2nd</td>
<td>Asahi Kasei</td>
<td>1,552,100</td>
</tr>
<tr>
<td>3rd</td>
<td>Sekisui House</td>
<td>1,514,100</td>
</tr>
<tr>
<td>4th</td>
<td>Sekisui Chemical</td>
<td>934,200</td>
</tr>
<tr>
<td>5th</td>
<td>Sumitomo Forestry</td>
<td>823,800</td>
</tr>
</tbody>
</table>

AQURAHOME ¥27,800

Noteworthy profitable company

[Bar chart showing AQURAHOME's sales amount]

Research by Jutaku Sangyo Kenkyusho Co., Ltd.
AQURAHOMVE VE

Viewpoints
1. Consider lowering cost by total cost of material + man-hour
2. President house is a test room
3. IT systemization of large know-how book

How to make a reasonable and good house

Teach VE know-how to others -on sale

Only carpenter and president can know how to make a reasonable and good house.
SCM: Sell/produce socks for direct sale to retailers
SCM of dan Company (present Tabio Corporation)

Plant/large volume/speculative production

Wholesale

SCM

Meet market needs, best seller becomes a single item. Production for immediate delivery increases sales and makes financing smooth!
Points seen in the results of revival of Nissan Motor

CF; The activities of Nissan President Ghosn who implemented cross-function over the barrier of the organization and the points of the results

1. Planned activities (revival plan)
2. Power of top management
3. Activities beyond framework/organization

If organization and activities really change, results/corporate culture greatly change!
4. Production technology MAP measures and TP development chart

Content of achieving quality objectives in ISO9000:2000

Rule 2.3 Approach to quality management system
a) Determine needs and expectations of customers and other interested parties.
b) Establish quality objective policy and quality objectives.
c) Define process and responsibility required to achieve quality objectives.
d) Define and provide resources required to achieve quality objectives.
e) Apply indicators to judge effectiveness and efficiency in each process.
g) Determine means to prevent nonconformity and remove the cause of it.
h) Establish and apply process for continuous improvement of quality management system.

Actual step to achieve quality improvement objectives

1. Set objectives
2. Develop objectives
3. Choose measures and allocate resources
4. Specific improvement activities
5. Create and verify results

We move to the theme on how to do activities to achieve quality improvement objectives for all to participate in. Effective use of resources (quality improvement activities for all to participate in) is one of the important themes in ISO9000s. To do this, we apply TP development chart which JMA has used. The procedures are the same as the content specified in ISO9000.
Necessity of “visualization” of management functions and measures

Top-down/needs

Company Q·C·D·S

Site power

Improve people and technology

Develop “Let us do it.”

Use it as a tool
Measures for visualization

Study if we can
Understand well
Visualize

Visualize to realize management subjects and dreams

Bottom-up management participation activities

Realize results by “we can do it.”

Necessity of “visualization” of management functions and measures

50
Use it for objective achievement activities for all to participate in TP development chart (basic)

1. Set total objectives
2. Develop objectives
3. Guide for measures
   - Choose measures
4. Specific activities
5. Create and achieve results

TP (total productivity) = \( \frac{Q \times P \times S&E \times C}{C \times D&T} \)

- Q: Quality
- P: Productivity
- S&E: Eco/safety
- C: Cost
- D&T: Delivery/time
Aim of TP Management and evaluation method

TP = Total Productivity

- Q: Quality
- P: Productivity
- S: Safety
- M: Morale
- C: Cost
- D: Delivery
- E: Eco influence

1. Plant innovation (Develop objectives/policy) = Top-down
2. Seek customer satisfaction
3. Improve profit
4. Activities beyond organization and management
5. Invite best members (choose them) - realize each measure - develop activities to achieve.

1. Think what to do for what purpose, do activities by clearly grasping contribution and make efforts to realize measures as soon as possible.
2. Each person and group conducts activities by understanding the relationship (between forest and trees-branches).
3. While achieving objective and measures (each subject) of the company, each person tries to create an active workplace with activity awareness and contribution of each person and high motivation to work in order to solve individual issues.
Objectives: To realize mid-term plan, (1) Review and set numerical target suitable for each plant. To realize target, (2) Choose the content and best method required for improvement in manufacturing/production/control technology and set measures suitable for each plant and state goal for leading company while referring to information of leading/different companies. After this measure, to realize (1) and (2), you will indicate goal achieving method for all to participate in. For this purpose, (3) Choose human resource training method, systemize it and put all in the map.
Example of evaluation to improve level at production site

Points in benchmark setting and use of it

1. Choose highest level case and content which you can reach by element of plant control/improvement including different lines of business and make it be the highest among 5 levels.

2. Judging from the present situation, make the lowest level be at level 1 and indicate the content of each of five levels.

3. As shown in the right chart, make 5 level table and then evaluate the present level. Determine what to do for level improvement by item, show specific measures to implement/achieve together with human resource/technology training plan and carry them out!
What the productivity indicators should be: macro → micro

Indicators for the enterprise (whole company, whole factory):  Aim to make the return on asset, the profit per capita and the total asset turnover world-class!

Indicators for semi-macro activities:  
Yield ratio / percent defective, product-sales lead time, productivity per capita, marginal profit per product, etc.

Activity indicators (concrete activity indicators: micro indicators in comparison to macro ones):  
Capacity utilization, production achievement (target, result/difference), standard time recovery rate, number of defective and repairing articles, multifunction rate, line balance, number of goods in process, appropriate inventory difference, etc.

Evaluation of the appropriateness of production activities and the achievement of objectives

Figure 3-7: Relation between top-down indicators and micro (concrete) activities indicators at manufacturing site
5. Lessons and measures gained through guidance to PCS university students in the US

Hakomono education, which has become a problem in Japan

What is *hakomono* education?

Examples:
(1) “Top-level management lectures” that are held regularly on newsy themes, inviting famous companies and persons
(2) Unnecessary lectures on contents that can be understood only by reading books, such as the Drurger theory and MBA, for the purpose of cultivation and basic training
(3) Stereotyped “manager training” that is given to managers without any output demand and ends in an educational program

- (1) Routine training by routine menu
- (2) Leaving all decision-making to famous teachers under the name of OJT
- (3) Educational form where a period and a menu are determined and obeyed dispassionately

Hold a drinking session on the theme of heart-to-heart communication
Situation of training and work at the Television Sound Unit of the Service Division of Company M

Chief A (32 years old) of the Household Television Unit of the Service Division of Company M has six service men. They are in charge of the services of household circuit components for televisions, tape recorders, stereo sets and others in the prefectural capital with a population of 300,000 and its surroundings.

Among its services, services to troubles and complaints directly from customers are provided by its front-line sole agents and chain stalls. In reality, however, there are some troubles that the sole agents and chain stalls cannot repair. The Unit is in charge of repair work entrusted by the sole agents and general customers and has an important mission of giving technical guidance to the sole agents.

All the six service men are in their 20s or younger. Service Man B (25 years old) is in charge of the eastern district, C (24 years old) the western district, D (26 years old) the southern district, and E (22 years old) the northern district, where the number of customers is relatively small. Many of them are lone wolves who have confidence in their skill. On the other hand, F (20 years old) and G (19 years old), both of whom has just graduated from the electronic science course of an industrial high school, were in charge of repair of products brought into the Service Center or products carried back. These two employees were guided by one of the four field service men who was comparatively not busy or the person in charge who carried back the product. With regard to how to proceed with the work, arrangements were made in the morning of every Monday and, whenever a problem occurred, instructions were given to the persons in charge.

In this local city, Company T had the largest share in the sales of televisions, advertising its great skills and reliable services. However, Company X, which is good at advertising and guidance to its sole agents, has recently selected the local city to expand its sales, built a small factory for manufacturing parts and carried out strong marketing efforts. As a result, the difference in share between both has greatly reduced, and Company M was strongly requested to improve both the quality and quantity of the services as a strategy against Company X. In an informal meeting of the presidents of the chain stalls also, because many demanded technical training seminars for salespersons to improve after-the-sale service skill, a workshop on skill in repair of new color televisions was held on Thursday two weeks ago in haste at the discretion of Department Chief H and Division Chief I (35 years old). Although Division Chief I has rich experience in washing machines and refrigerators, he is unfamiliar with electronics. Because Chief A has always heard complaints to the effect that “chain stalls bring in too many products that need basic repair,” he made a plan with enthusiasm, taking an advantage of a great opportunity, and took the lead in proceeding with the workshop that day.
B, D and E were ordered to cancel a day trip service and give practical guidance.

In the workshop, guidance on repair and adjustment procedures was given in good order, and the participants made detailed questions with enthusiasm, with the result that the workshop ended one hour after the scheduled closing time. When an informal meeting was held at the end of the workshop, participants stated favorable opinions: “I can provide services with confidence” and “we can reduce the number of products brought in.” However, some participants stated that “So far, persons in charge have not given such guidance. In the future, we would like persons in charge to give technical guidance in addition to repair, answering our questions.” Chief A answered that “Because even basic repair was so far brought into our office, we have no time to give full guidance. In the future, because you have improved your skill in today’s workshop, we will have a little time to spare.” Moreover, Department Chief H also concluded that “Let’s take an advantage of this opportunity to improve the after-sales service and repulse the pursuit of Company X.”

Because, at the end of last week, sole agents gave orders to procure service parts of televisions one after another, the number of orders became more than three times as large as normal. On Monday this week, Chief J of the Parts Unit consulted with Division Chief I and notified that parts would be distributed mainly to the sole agents for the time being. On that occasion, Chief J talked to Chief A with smile that “Because you encouraged the participants in the workshop two weeks ago, each chain stall was full of spirit and, after all, cut our own throats. If you had made previous announcement, we could have taken some measures.”

When C was going out for repair in the morning on Tuesday, C came to Chief A and complained as follows: “because some of the parts of the Y-3 crystal resonator brought in last week did not arrive, I will be late in repair. Since the local commercial high school Y plays a baseball game at Koshien, I will have to bring it there without fail. Chief J said “I cannot give you what I do not have.” Because I directly connect with the client, I cannot say that I cannot repair it.” Chief A consulted with Division Chief I, who borrowed a resonator used for display at the advertising showroom and gave it to C to smooth out.
Situation of training and work at the Television Sound Unit of the Service Division of Company M (continued)

Because the commercial high school Y advanced to the quarterfinals was scheduled to play a game from 3 p.m. today, Company T’s employees who graduated from the school could not concentrate on their work from the morning.

In this situation, Mr. Q, a client in the southern suburban part, called the Company M and said that “How about the repair I requested some days ago? Because the high school Y’s game began from 3:00 p.m. and Pitcher Ota is from our town, please bring it to me by the beginning of the game.” When Chief A immediately called E for confirmation, E said that because the Y-3 special part would not come until 11:00, he was requested by D to repair another tape recorder. Chief A ordered E to complete the repair as soon as the arrival of the part and deliver it to the client. After that, Chief A went to Chief J for confirmation.

Chief J turned the tables on, saying as follows: “You are joking! Last week we sold two articles to sole agents, and yesterday we received two articles from the south branch. We gave one of them to you and gave the other to Kimura Chain Stall this morning, making a humble apology. In spite of this, F said that there was a shortage, and we earnestly requested the north branch to bring it by 11:00 a.m. Because, as a result of the settlement in March, there was the problem that there were too many parts on hand, the Department Chief ordered 20% reduction from May, as you know. Be that as it may, you have many parts, the price of Y-3 special part is high, and there has so far hardly been ordered. If the part is so defective, we’d better consider make a complaint to the factory. Investigate the actual situation.”

Sometime after 2:00 p.m., E came and said that “although it took me a lot of time, I managed to repair it. I’m going to delivery it.” Then, E went out vigorously. Around 4:00 p.m., Mr. Q again called: “What is up with you. Your employee brought it now. Good parts of the game have already passed and our team is losing. First of all, what is the name of the employee who brought it? He even did not say sorry and said that I have to pay business trip expenses. No kidding! If you do such a thing, I will not buy your products. Since a short while ago, Company X has come to us about once a month to hear the condition.” After that, he banged the phone down.
**Shape of On-the-job-training to be considered preliminary at all position levels**

1. **Importance of setting objectives of on-the-job-training**
   In the above mentioned example, the company conducted a training while facing fierce competition with Company X. Its problem was the emotional atmosphere and self-satisfaction (inner-directed). The following measures should be taken:
   
   **Example of setting objectives:**
   - Realization of far superior service compared to company X
   - Doubling sales/profit, doubling service capability

2. **Clarification of achievement**
   If similar problems occurred repeatedly, the company would deplete customer confidence. One claim would lead to 30 customers’ loss, and if rumors spread, 1,000 customers’ loss per month.
   
   **Example of setting objectives:**
   - No trouble in the past (including decrease in expected troubles) + addition of concrete service items (including measures for risk in emergency)

3. **Whose skills are built up to what extent? (Development of a map)**
   Like soccer and baseball, organized activities are associated with positions, players, evaluation of skills and measures for level-up
   
   **Example of setting objectives:** **Employees and contents of education:**
   - Development of education based on matrixed evaluation standard
Example of training for new employees with manufacturing job conducted by JMA

<table>
<thead>
<tr>
<th>First Day: To get used to the workplace (Exercise style)</th>
<th>Second Day: How to settle into a new job quickly and on improved ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Structure and Roles of a company</td>
<td>1. Importance of profitability and instructions employed by the company</td>
</tr>
<tr>
<td>2. Business manner (greeting, honorific expression, etc.)</td>
<td>2. How to acquire skills for one’s job: analysis of the procedure and how to make notes</td>
</tr>
<tr>
<td>3. Communication skills through exercises</td>
<td>3. How to pursue improvement using simulant materials of practical operation</td>
</tr>
<tr>
<td>4. Exercise to prevent mistakes after joining a company</td>
<td>Under the title of “My challenge”, employees write up how to make use of what they learn in practice operations and dreams for work.</td>
</tr>
<tr>
<td>5. Prior review and preparation of work</td>
<td></td>
</tr>
</tbody>
</table>
Use of Internship

Internship Program: A program aiming to get students interested in and to obtain manufacturing jobs through working experience during their school days. The program has been organized by Ministry of Health, Labor and Welfare. From April to September in 2005, 2,800 students out of 8,400 applicants were accepted in various companies. According to Tokyo Employers Association, one of the problems is there are limited companies accepting this program.

[Example of Application and Result]
Press die manufacturer
Nagara, Co, Ltd. (Nagoya)
TEL: 052-362-6066
According to Company President Hayase, the company has accepted about 15 to 20 students every year. They experience manufacturing works about for 2 weeks in summer vacation. Among them, 4 or 5 students join the company and are ready to become die builders in a short term.

Problems in 2005
1. Small-and-middle-sized enterprises have limited interested in internship
2. In 1997, the former Ministry of Education, Ministry of International Trade and Industry and Ministry of Health, Labor and Welfare put together the basic concept, but have failed to reach an unified policy.
3. As a result, projects sponsored by the government have not fully operated.

Possible to be an eye-catching policy!
1. Framework: Practical training + Study group activities
1. Example: In training targeting at “Development of Producing Technology Department Manager”, participants learn and improve necessary management skills.
2. Implementation of practical training about for 12 days in a year in defined circumstances, such as 1 million yen for a person/achievement and more than 3 million yen for a person.
Framework for the activity is defined as development directly linked to the budget. The host provides place and materials, and if necessary, a company observation tour and a lecture by a specialist.
3. Limited lecturers should lead the activity. (Insufficient contents should be complemented by visiting lecturers)
4. Training contents will be decided after carrying out and analyzing a questionnaire survey to each company, and priority and common issues are decided.
5. After setting main themes, training promoting organizations send textbooks and ask each company to consider them preliminary.
   (1) Explanation of main points and Q&A (half a day), (2) Prior distribution of problems and agendas → opinion exchange, (3) Decide homework and consider how to employ what the participants have learned (practice), (4) Arrangement of influenced contents in each company → designing, and (5) Activity report and planning of future development (including estimate of effect)
6. Contents regarding priority and issues and eligible for disclosure are disclosed in the industry, which will be compiled as collection of initiatives and case examples by lecturers

2. Process to invite companies to participate
More than 6 companies, 3 participants per company
Preliminary meeting is held 3 months after the training decision
Visit companies and promote the training program to each company
Before the budget decision for the next fiscal year is made.
1. Explanation of intent and purpose
2. Example: Investigation of each company’s needs based on problems concerning producing technology as a key point
3. Ask a budget for human resource cultivation
Ask participant companies possible themes and needs by the end of XX (month) next year
1. Provisional setting of themes and achievement → Feedback
2. Concrete schedule
3. Decision of lecturers
After deciding to conduct training, a training organizing body signs up to pay a fixed trainer’s fee
XX (month) - start of activities
1. General training and mutual discussion: Setting of themes by each company (-mediation of producing technology map)
2. Training of significant themes
   Individual supports by JMA trainers (Visiting and Online support)
3. Top-level executives can attend training for significant themes to observe
   * Next top-level executives are subject to cross-industrial exchange

Achievement of activities
(Activities in about one year)
1. Progress report
   Introduction to industry
2. Summarizing the result by each participant: Planning of human resource development
   (It is not disclosed because it includes confidential in-house information.)
3. Information which can be disclosed is summarized and utilized to promote by the person in charge.

Example of training to develop top and key persons in a manufacturing section in a form of cross-industrial exchanges
1. Differences from other similar efforts (difference between general training and this research group)

<table>
<thead>
<tr>
<th>Item</th>
<th>Certification acquisition seminar</th>
<th>New Project</th>
<th>Activities of J research group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Restriction for Achievement</td>
<td>Each company sets restriction and supports achievement → Realize it together with cross-industrial exchange.</td>
<td>Restriction if applicable: Exchange of information in each company. Results are at the same level as a written report.</td>
</tr>
<tr>
<td>2</td>
<td>Activity form</td>
<td>JMA lecturers support each company individually until it achieves its goal.</td>
<td>Each company decides its theme and implement measures, and participants exchange information each other aiming at intercommunication.</td>
</tr>
<tr>
<td>3</td>
<td>Budgetary treatment</td>
<td>Payment to participating companies and lecturers are fixed. The number of participants are limited to three.</td>
<td>Appropriate fee setting (generally, JMA provides charge-free service)</td>
</tr>
</tbody>
</table>

2. Candidate theme  In case of cross-industrial exchange, it is determined after adjustment between gathered companies

1. Development of the next factory manager: Measures to arrange management and strengthen execution ability
2. Development of the next producing technology manager: Observation of other leading companies aiming at strengthening producing and manufacturing technology and promotion of planning and practice.
3. Development of top-quality realization instructor: Influence on management, aiming at improvement of quality → outline of cutting-edge technology → implementation
4. Development of a key person with improvement capability in charge of management of manufacturing site: Integration of IE+QC+VE+JIT, taking measures to obtain results quickly
5. Development of global business leaders: Investigation and arrangement of requirements for human resources to give a global response and successful case examples of enhancement of technology → organizing know-how
   [Example in the following page: Designed in supporting an international bearing manufacturer]
6. Others, measures for design-in, manufacturing directly linked to VOC, measures for target cost, etc.

3. Task of trainers

1. After deciding supporting and training costs with a trainer, the trainer (1) provides materials, (2) is in charge of seminars, (3) offers consultation on progress of each company, (4) prepares activity reports, and (5) leads promotion at production innovation meetings, etc., except for special lectures and training to promote the program after the completion of the training.
2. Support for concrete achievement: Appropriate contact to participant companies during activities → Active support to increase success rate free of charge (mainly online contact, but claim of actual expenses in case of a business trip)
3. Publication of monthly activity reports during activities to participant business leaders, arranging with JMA head office

Figure 1-4 Emphasis on achievement and shape of practical training
Are they the bad influence of Japanese-style education?

1. Conducting training in quantity means head office has done work.
   [Bad case: Furnishing head office with an alibi]

2. Example typified by TQC training: [Bad case→similar training in quantity]
   • Training of conceptualism changes in consciousness and integrate direction.
   • Satisfied with establishing a framework of “training”, face-to-face training is also available.
   • High achievers are praised and followed by other participants.

3. Systemization of step-by-step training and determining contents of the training after deciding the period
   [Bad case: Rip-off by training providers (wasteful spending of budget)]

OJT trainings operated repeatedly?
   [Neglect of clarification of achievement and individualization]

Inflow to OJT education
   [Training style leaving all to trainers]
1. **Problem:** the repair of a TV set which was supposed to finish by 3 o’clock was delayed and the customer made a complaint about it (Write the result with 5Ws and 1H)

2. **Analysis of the fact: some examples**

<table>
<thead>
<tr>
<th>Prior consideration</th>
<th>At the time of a problem occurrence</th>
<th>Subsequent handling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis of the situation</td>
<td>2. Improvement of A/S is necessary</td>
<td>1. Quick response is necessary to deal with Company X’s market entry.</td>
</tr>
<tr>
<td>Participating training and taking measures</td>
<td>3. 3 employees attended the meeting owing to lack of electronic knowledge</td>
<td>4. The lecture has a high rating, but just a time reduction?</td>
</tr>
<tr>
<td>Implementation</td>
<td>4. Orders have more than tripled. Is it necessary to reexamine the production plan?</td>
<td>7. Mr. Hatakeyama in a southern area of the city gave a warning.</td>
</tr>
<tr>
<td>Prediction and confirmation of the result</td>
<td>5. Lack of crystal oscillators</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. How about preventive measures to a customer who needs a TV set at 3 o’clock?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Insufficient</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8. Senior staff member, Makino is busy in responding to complaints by customers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9. The customer made a complaint that he/she did not receive a TV set by 4 o’clock.</td>
<td></td>
</tr>
</tbody>
</table>

3. **Invention/Test → Standardization/Restriction**

Learning → Using → Prior consideration and taking proactive measures are the key.
Looking Points to KAIZEN

Wastes in transportation, management, defect and rework, equipment failure, set-up, check-up, idling, report checking, operation time, unnecessary checks etc. etc.

What is waste?
First-class work (Ideal) — Reality
Kaizen Gap

Themes for waste elimination kaizen

Videoing
Concept of Kaizen

Three sorts to Time reduction

① Kaizen: Loss Elimination
② The work which should be done is omitted. Japanese: Tenuki
③ Compulsion of speedup

Generalities at a Low Level Kaizen Company

Quality
Ancient thought
Cost
Delivery & Time

Kaizen Thinking & Action

Paradox Resolution is the mission of a technology

Improvement technology

Quality
Cost
Delivery & Time
Usage of Process Analysis

Foreclosed of work, the thing, and information to the grip improvement excavation in four aspects

○（マル）: Work to give birth to net and additional value, If it is lathe work, the content that grinds the material at the best in the world and the highest speed is shown.

□（シカク）: If the quality item is made in the inspection and the process, it judges it of inspect unnecessary. The inspection aims at the inspection guarantee (self-conclusion type) in the process as much as possible.

▽（サンカク）: As for the hand waiting and the material, WIP and information file, etc.

→（ヤジルシ）: Movement, transportation, transportation, and transmission of information
Need to elimination or Shorter transport distance

Methods for Kaizen

Ideal Question for Improvements
Real

Improvements Gap

E (Eliminate) 省略？

C (Combine) 結合？

R (Rearrange) 置き換え？

S (Simplify) 単純化→自動化？

Need Clean up Losses

This gap is Loss to have to be improved soon or near future!
Image of Each Job element

Consideration of process study and uselessness

☐ : Net Job = Does it have the value that the customer buys?
→ : Transportation: Smaller the better, Elimination is Best

□ : Inspection (If the quality is surely warrantable in the process, it is unnecessary.

▽ : It is necessary to lose a useless hand waiting.

Questions for Improvements

E (Eliminate)  C (Combine)  R (Re - Arrange)  S (Simplify)

Loss is just Loss money
# Process Analysis Chart

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total: 800PCS/Day, Defect 10%
Model Answer

Before

Central Tool Box

Transportation Length is 1,500m/One car

Useless walking is just no added value job!

After

The content of the improvement:
The parts box was distributed.

Transportation Length is 300m/One car
# Analysis of Current Conditions in Electrical Outlet Assembly Operations

<table>
<thead>
<tr>
<th>Step</th>
<th>Work</th>
<th>Transport</th>
<th>Hold</th>
<th>Inspect</th>
<th>Distance (m)</th>
<th>Time (min.)</th>
<th>#W/1H</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>0.04</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>0.20</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>0.04</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>0.02</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>0.02</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>0.03</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>0.06</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.03</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>0.05</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>0.05</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>0.05</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

Comments:
- Can wire bin be placed closer to work table?
- What if she picks up exactly 20 wires?
- What if the wires were cut at this process?
- Can a can be used to carry sets of parts and wires?
- Can this be moved closer to the work table?
Worker gets tired in order to move violently with right and left.

Before Kaizen

The sitting-down repetition which stands

Useless Work Flow line

Worker gets tired in order to move violently with right and left.

Case Study 4-1, cont'd
Process Analysis of Electrical Outlet Assembly Operation

Improvement Points:
- Wires and other electrical outlet parts were brought closer to the operator's work table.
- Wire is kept on a reel to make it more easily accessible.
- A foot-operated wire cutter is used to free the operator's hands for other work.
- The operator can pick up all needed parts and perform the assembly work while seated at the work table.
- The finished product bin has been moved next to the work table.

New Standards for Electrical Outlet Assembly Operations (After Improvement)
Kaizen to a kind of cell System

Before Kaizen

Useless Work Flow line

The sitting-down repetition which stands

Worker gets tired in order to move violently with right and left.

Use JIT Assemble Work system

Very Easy Job system

Keep the company Cycle Time

Eliminate Useless Work Flow line by using Turn Table

Kaizen to a kind of cell System
Sample of a Field diagnosis

Please look for problems!

Work looked for on a shelf
The place of air is a problem.
It is a major division like a library.
Inside classification → Small Classification.
You should carry out the work which finds the thing to look for simply.

Futility which bends and looks for the waist.
You should put the often used thing on the height of a breast from the waist.
【実践・演習】Sample of Improvement

現場診断法～物の見方の例

1. Too much Work in Process (WIP)
2. Uselessness that carries air
3. Defects
4. Uselessness where it strolls
5. Cutting child dispersion
6. Cutting Air
7. Operator waiting
8. WIP on Conveyer
9. Repair of equipment failure
10. Work to have lumbago easily
11. Uselessness not cleaned easily
12. Oil spill Need Clean up
13. Useless transshipment

Model Answers from Here
### Principle of use of body

<table>
<thead>
<tr>
<th>Rules</th>
<th>Review method of improvement that it means principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, Principle of both hands simultaneous operation</td>
<td>Both hands should be moved contrasting it, be started at the same time, and end at the same time.</td>
</tr>
<tr>
<td>2, Principle of hand waiting prevention</td>
<td>It is necessary to make it to work one hand is not allowed to play excluding break time, and with the hand waiting.</td>
</tr>
<tr>
<td>3, Principle of operation number minimization</td>
<td>The range where the hand moves decreases the body and the range, the distance, and the operation of the sector are decreased to the center as much as possible.</td>
</tr>
<tr>
<td>4, Principle of the elements use</td>
<td>You may use gravity and inertia as much as possible for the movement and the work of the thing.</td>
</tr>
<tr>
<td>5, Principle of movement without obstruction</td>
<td>You may make the movement of the hand free movement that changing suddenly, zigzag, and the limitation are not generated.</td>
</tr>
<tr>
<td>6, Principle of easy posture maintenance</td>
<td>Decrease the uncomfortable body position and the top and bottom of the body as much as possible.</td>
</tr>
<tr>
<td>7, Principle of operation rhythm making</td>
<td>Give the sequence of movement the rhythm and the automatic operation of nature.</td>
</tr>
</tbody>
</table>
### Motion Mind and Improvement Looking Points 2/2

**Principle concerning arrangement of work place**

<table>
<thead>
<tr>
<th>Rules</th>
<th>Review method of improvement that it means principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, Principle of fixed position making material</td>
<td>The tool, the material, and the operation lever, etc. decide the position, and facilitate leaving.</td>
</tr>
<tr>
<td>2, Principle of adjacent</td>
<td>The employed material and the measurement tool, etc. with a lot of frequency are adjacent, and decrease the uselessness of the movement.</td>
</tr>
<tr>
<td>3, Principle of gravity use</td>
<td>In the movement of the material, the simplification is attempted by the use for gravity, the spring, and the pedal operation, etc.</td>
</tr>
<tr>
<td>4, Principle of front arrangement</td>
<td>To prevent the rotation of the body and the vertical motion work, the one often used is arranged in the near future.</td>
</tr>
<tr>
<td>5, Principle of height of work</td>
<td>The chair is given to work, and the simplification of work is aimed at for a long time at the same position.</td>
</tr>
<tr>
<td>6, Principle of lighting and lighting</td>
<td>Give a lighting not tired and the lighting that is appropriate for work.</td>
</tr>
<tr>
<td>7, Principle of comfortable working environment</td>
<td>Measures to keep comfortable work in consideration of the temperature, humidity, and ventilation are aimed at for the workshop.</td>
</tr>
</tbody>
</table>
Sample of Motion Mind Improvements

A, The one often used is acquired.

B, Fixed positional assembly:
- with the balancer
- Check list tools measuring instrument ...

C, JIT installation of the one used without fail

D, Batch preparation for arrangements substitution with set truck
- Manual tool and measuring instrument part ····· checklist

E, The one set part supply: in the method of spreading a table.

F, Taking out: with the turntable one by one.

G, The number of confirmations of the material: in the container of the constant type.
- One Look $5 \times 4 = 20$

H, Horizontal array reserved seat ..shelf.. being make

I, Necessary tools: to the reserved seat.

J, Necessary tools: to the reserved seat.

K, Tools that can be united integrate.

L, Parts in the drawing describe the shelf number (retrieval simplification when breaking down).
## Try to start Motion KAIZEN

<table>
<thead>
<tr>
<th>No.</th>
<th>Work Unit</th>
<th>Time Measurement 1st</th>
<th>Time Measurement 2nd</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Reading Time</td>
<td>Net time</td>
</tr>
<tr>
<td></td>
<td>Start</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>All pins are put in to the Board.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Thee Seat boards put in each pin group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Five caps are put on Each Pin group.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total Time</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time Measurement 3rd</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time Measurement 4th</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Start</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>All pins are put in to the Board.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Thee Seat boards put in each pin group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Five caps are put on Each Pin group.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total Time</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Example of Time Analysis and KAIZEN

① Instruction sheet
②,⑨ Pen
③ Drawing out type shelf
④ File cabinet
⑤ Clamping tools
⑥ Air Drill
⑦ Assemble Parts
⑧ Calipers
⑨ Assemble Part is under the Table
⑩ Drill cabinet
Improvement Idea about Parts Assemble Job Step

After Improved Working Style

① New Assemble Table Job
Set three Parts on the Parts Clamping Die.
and Drill jobs make holes after that set Parts by set tool

② Slide Table: Positioning treatment and Fixing device
Major jobs are Measurement, Check Parts Position and
Making Marks & Writing on Parts.
This Die can turn 360° (Angle)
## Work Process and Time Analysis Table (No. 1)

### Work Process and Time Analysis Table (No. 1)

<table>
<thead>
<tr>
<th>No.</th>
<th>Work Process</th>
<th>IE</th>
<th>DVD Time</th>
<th>Net Time</th>
<th>Example of an Improvement Idea</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Check Instruction sheet</td>
<td>□</td>
<td>0:00 → 0:04</td>
<td>0:04</td>
<td>Cell Layout will reduce 0.3</td>
</tr>
<tr>
<td>2</td>
<td>Take pen</td>
<td>→</td>
<td>0:04 → 0:06</td>
<td>0:02</td>
<td>Cell Layout will reduce 0.1</td>
</tr>
<tr>
<td>3</td>
<td>Check and Right on Part</td>
<td>○</td>
<td>0:06 → 0:08</td>
<td>0:02</td>
<td>Cell Layout will reduce 0.1</td>
</tr>
<tr>
<td>4</td>
<td>Move hand to take a Tape</td>
<td>→</td>
<td>0:08 → 0:14</td>
<td>0:06</td>
<td>Cell Layout will reduce 0.5</td>
</tr>
<tr>
<td>5</td>
<td>Tape treatment</td>
<td>□</td>
<td>0:14 → 0:19</td>
<td>0:05</td>
<td>Cell Layout will reduce 0.5</td>
</tr>
<tr>
<td>6</td>
<td>Back Tape to Shelf</td>
<td>→</td>
<td>0:19 → 0:23</td>
<td>0:04</td>
<td>Cell Layout will reduce 0.3</td>
</tr>
<tr>
<td>7</td>
<td>Take parts and check</td>
<td>○</td>
<td>0:23 → 0:39</td>
<td>0:16</td>
<td>Assemble Die Tool Set will reduce 0.11</td>
</tr>
<tr>
<td>8</td>
<td>Take Instruction sheet</td>
<td>→</td>
<td>0:39 → 0:42</td>
<td>0:05</td>
<td>Cell Layout will reduce 0.2</td>
</tr>
<tr>
<td>9</td>
<td>And back to the Table</td>
<td>→</td>
<td>0:42 → 0:44</td>
<td>0:02</td>
<td>Cell Layout will reduce 0.2</td>
</tr>
<tr>
<td>10</td>
<td>Move to File cabinet</td>
<td>→</td>
<td>0:44 → 1:02</td>
<td>0:18</td>
<td>Cell Layout will reduce 10</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td><strong>62 Sec.</strong></td>
<td></td>
<td><strong>Reduction Total is 26 Sec.</strong></td>
</tr>
</tbody>
</table>

---

Sample sows No. 4 & 6

---

No. 2, No. 4, & 6

---

No. 10

---

No. 8 & 9
## Work Process and Time Analysis Table (No.2)

<table>
<thead>
<tr>
<th>No.</th>
<th>Work Process</th>
<th>IE</th>
<th>DVD Time</th>
<th>Net Time</th>
<th>Example of Improvement Idea</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Check the Instruction</td>
<td>□</td>
<td>1:02 → 1:08</td>
<td>0:06</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Take Measurement Tool</td>
<td>→</td>
<td>1:08 → 1:11</td>
<td>0:03</td>
<td>Cell Layout will reduce 0.02</td>
</tr>
<tr>
<td>13</td>
<td>Adjust Distance</td>
<td>□</td>
<td>1:11 → 1:34</td>
<td>0:23</td>
<td>Adjustment with standard can reduce 0.17</td>
</tr>
<tr>
<td>14</td>
<td>Check Parts Distance</td>
<td>□</td>
<td>1:34 → 1:40</td>
<td>0:06</td>
<td>New Assemble Die has no check: 0.06</td>
</tr>
<tr>
<td>15</td>
<td>Adjust Distance</td>
<td>□</td>
<td>1:40 → 2:23</td>
<td>0:02</td>
<td>Adjustment with standard can reduce 0.37</td>
</tr>
<tr>
<td>16</td>
<td>Adjust Distance</td>
<td>□</td>
<td>2:23 → 2:31</td>
<td>0:08</td>
<td>New Assemble Die has no check: 0.08</td>
</tr>
<tr>
<td>17</td>
<td>Back Measurement Tool</td>
<td>→</td>
<td>2:23 → 2:34</td>
<td>0:01</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Take Pen and M-Tool</td>
<td>→</td>
<td>2:34 → 2:39</td>
<td>0:05</td>
<td>Cell Layout will reduce 0.03</td>
</tr>
<tr>
<td>19</td>
<td>Marking on Part</td>
<td>○</td>
<td>2:39 → 3:34</td>
<td>0:55</td>
<td>New Assemble Die can decreases time (?)</td>
</tr>
<tr>
<td>20</td>
<td>Parts Pre Assemble Check</td>
<td>○</td>
<td>3:34 → 3:44</td>
<td>0:10</td>
<td>New Assemble Die has no check: 0.10</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td>152 Sec.</td>
<td></td>
<td><strong>Estimated Reduction Time: 83 Sec.</strong></td>
</tr>
</tbody>
</table>

**Image of New Assemble Die**

- This Die can turn 360° (Angle)
- Positioning treatment device
- One Action or Auto Clamping
### Work Process and Time Analysis Table (No.3)

<table>
<thead>
<tr>
<th>No.</th>
<th>Work Process</th>
<th>IE</th>
<th>DVD Time</th>
<th>Net Time</th>
<th>Example of Improvement Idea</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Instruction Sheet file back</td>
<td>○</td>
<td>3:34→3:56</td>
<td>0:22</td>
<td>Cell Layout will reduce 0.22</td>
</tr>
<tr>
<td>22</td>
<td>Take Inspection Tool</td>
<td>→</td>
<td>3:56→3:58</td>
<td>0:02</td>
<td>Cell Layout will reduce 0.01</td>
</tr>
<tr>
<td>23</td>
<td>Set Distance on the Tool</td>
<td>□</td>
<td>3:58→4:08</td>
<td>0:10</td>
<td>Adjustment with standard can reduce 0.07</td>
</tr>
<tr>
<td>24</td>
<td>Set Distance on a Part</td>
<td>○</td>
<td>4:08→4:23</td>
<td>0:15</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Back Inspection Tool</td>
<td>→</td>
<td>4:23→4:32</td>
<td>0:09</td>
<td>Cell Layout will reduce 0.08</td>
</tr>
<tr>
<td>26</td>
<td>Clamping a Part</td>
<td>○</td>
<td>4:32→5:37</td>
<td>0:74</td>
<td>New Assemble Die has no Clamping 0.70</td>
</tr>
<tr>
<td>27</td>
<td>Take Gloves and Put on</td>
<td>→</td>
<td>5:37→5:50</td>
<td>0:13</td>
<td>New Assemble Die has no Gloves 0.13</td>
</tr>
<tr>
<td>28</td>
<td>Change Drill</td>
<td>○</td>
<td>5:50→6:01</td>
<td>0:11</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Drill: Holes Making</td>
<td>○</td>
<td>6:01→6:16</td>
<td>0:15</td>
<td>Work that danger is somewhat attended</td>
</tr>
<tr>
<td>30</td>
<td>Clamping Position Chang</td>
<td>○</td>
<td>6:16→6:31</td>
<td>0:15</td>
<td>New Assemble Die has no Clamping 0.15</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>!77Sec.</td>
<td></td>
<td>Estimated Reduction Time: 143 Sec.</td>
</tr>
</tbody>
</table>

No.25 Job: Inspection Tool Back in Box  
No.26 Job: Clamping a Part
## Work Process and Time Analysis Table (No.4)

<table>
<thead>
<tr>
<th>No.</th>
<th>Work Process</th>
<th>IE</th>
<th>DVD Time</th>
<th>Net Time</th>
<th>Example of Improvement Idea</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>Drill: Holes Making</td>
<td>○</td>
<td>6:31 → 6:44</td>
<td>0:13</td>
<td>Work that danger is somewhat attended</td>
</tr>
<tr>
<td>32</td>
<td>Take Assemble Parts</td>
<td>→</td>
<td>6:44 → 6:53</td>
<td>0:09</td>
<td>Cell Layout will reduce 0.05</td>
</tr>
<tr>
<td>33</td>
<td>Take Parts Set Tool</td>
<td>→</td>
<td>6:53 → 6:57</td>
<td>0:04</td>
<td>Cell Layout will reduce 0.02</td>
</tr>
<tr>
<td>34</td>
<td>Set Parts set on Work</td>
<td>○</td>
<td>6:57 → 7:17</td>
<td>0:20</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Take out Clamping</td>
<td>○</td>
<td>7:17 → 7:23</td>
<td>0:06</td>
<td>New Assemble Die has no Clamping 0.04</td>
</tr>
<tr>
<td>36</td>
<td>Set &amp; Check Part B</td>
<td>□</td>
<td>7:23 → 0:39</td>
<td>0:16</td>
<td>New Assemble Die has no Clamping 0.12</td>
</tr>
<tr>
<td>37</td>
<td>Takes off one's gloves.</td>
<td>→</td>
<td>7:39 → 7:44</td>
<td>0:05</td>
<td>New Assemble Die has no Gloves 0.05</td>
</tr>
<tr>
<td>38</td>
<td>Adjust and Clamping B</td>
<td>○</td>
<td>7:44 → 9:07</td>
<td>0:83</td>
<td>New Assemble Die has no Clamping 0.83</td>
</tr>
<tr>
<td>39</td>
<td>Take Glove and Drill</td>
<td>→</td>
<td>9:07 → 9:11</td>
<td>0:04</td>
<td>New Assemble Die has no Gloves 0.02</td>
</tr>
<tr>
<td>40</td>
<td>Drill: Holes Making</td>
<td>○</td>
<td>9:11 → 9:25</td>
<td>0:14</td>
<td>Work that danger is somewhat attended</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td><strong>174 Sec.</strong></td>
<td></td>
<td>Estimated Reduction Time: 113</td>
</tr>
</tbody>
</table>

---

*One Touch Clamping and no Adjustment System*

*New Assemble Die*
## Work Process and Time Analysis Table (No.5)

<table>
<thead>
<tr>
<th>No.</th>
<th>Work Process</th>
<th>IE</th>
<th>DVD Time</th>
<th>Net Time</th>
<th>Example of Improvement Idea</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>Take Assemble Parts</td>
<td>→</td>
<td>9:25→9:29</td>
<td>0:04</td>
<td>Cell Layout will reduce 0.02</td>
</tr>
<tr>
<td>42</td>
<td>Set Parts</td>
<td>○</td>
<td>9:29→9:39</td>
<td>0:10</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>Take out Clamping</td>
<td>○</td>
<td>9:39→9:43</td>
<td>0:04</td>
<td>New Assemble Die has no Clamping 0.04</td>
</tr>
<tr>
<td>44</td>
<td>Turn the Parts Unit</td>
<td>→</td>
<td>9:43→9:45</td>
<td>0:02</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>Take Pen</td>
<td>→</td>
<td>9:45→9:47</td>
<td>0:02</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>Take Glove</td>
<td>→</td>
<td>9:47→9:50</td>
<td>0:03</td>
<td>New Assemble Die has no Gloves 0:03</td>
</tr>
<tr>
<td>47</td>
<td>Write memo on Parts Unit</td>
<td>○</td>
<td>9:50→10:06</td>
<td>0:16</td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>Take Inspection Tool</td>
<td>→</td>
<td>10:06→10:13</td>
<td>0:07</td>
<td>Cell Layout will reduce 0.05</td>
</tr>
<tr>
<td>49</td>
<td>Set Distance on the Tool</td>
<td>□</td>
<td>10:06→10:28</td>
<td>0:22</td>
<td>Adjustment with standard can reduce 0:17</td>
</tr>
<tr>
<td>50</td>
<td>Check Parts Unit Distance</td>
<td>○</td>
<td>10:28→10:45</td>
<td>0:17</td>
<td>New Assemble Die has no Check 0:17</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>Total 83 Sec.</td>
<td></td>
<td>Estimated Reduction Time: 43 Sec.</td>
</tr>
</tbody>
</table>
## Work Process and Time Analysis Table (No.6)

<table>
<thead>
<tr>
<th>No.</th>
<th>Work Process</th>
<th>IE</th>
<th>DVD Time</th>
<th>Net Time</th>
<th>Example of Improvement Idea</th>
</tr>
</thead>
<tbody>
<tr>
<td>51</td>
<td>Back tool</td>
<td>→</td>
<td>10:45→10:49</td>
<td>0:04</td>
<td>Cell Layout will reduce 0.02</td>
</tr>
<tr>
<td>52</td>
<td>Take Pen &amp; Scale</td>
<td>→</td>
<td>10:49→10:53</td>
<td>0:04</td>
<td>Cell Layout will reduce 0.02</td>
</tr>
<tr>
<td>53</td>
<td>Mark &amp; Sign on Parts Unit</td>
<td>○</td>
<td>1053→11:27</td>
<td>0:34</td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>Take Glove &amp; Drill</td>
<td>→</td>
<td>10:27→11:36</td>
<td>0:09</td>
<td>New Assemble Die has no Gloves 0:07</td>
</tr>
<tr>
<td>55</td>
<td>Drill</td>
<td>○</td>
<td>11:36→11:44</td>
<td>0:08</td>
<td>Work that danger is somewhat attended</td>
</tr>
<tr>
<td>56</td>
<td>Back Drill and Take Parts</td>
<td>→</td>
<td>11:44→11:50</td>
<td>0:06</td>
<td>Cell Layout will reduce 0.03</td>
</tr>
<tr>
<td>57</td>
<td>Assemble Part</td>
<td>○</td>
<td>11:50→12:02</td>
<td>0:12</td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>Turn Parts Unit</td>
<td>→</td>
<td>12:02→12:07</td>
<td>0:05</td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>Takes off one's gloves.</td>
<td>→</td>
<td>12:07→12:10</td>
<td>0:03</td>
<td>New Assemble Die has no Gloves 0:03</td>
</tr>
<tr>
<td>60</td>
<td>Take Parts</td>
<td>→</td>
<td>12:10→12:20</td>
<td>0:10</td>
<td>Cell Layout will reduce 0.05</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>95 Sec.</td>
<td></td>
<td>Estimated Reduction Time: 22 Sec.</td>
</tr>
</tbody>
</table>
## Work Process and Time Analysis Table (No.7)

<table>
<thead>
<tr>
<th>No.</th>
<th>Work Process</th>
<th>IE</th>
<th>DVD Time</th>
<th>Net Time</th>
<th>Example of Improvement Idea</th>
</tr>
</thead>
<tbody>
<tr>
<td>61</td>
<td>Take Parts →</td>
<td></td>
<td>12:20 → 12:27</td>
<td>0:07</td>
<td>Cell Layout will reduce 0.04</td>
</tr>
<tr>
<td>62</td>
<td>Assemble Parts &amp; Checking</td>
<td></td>
<td>12:27 → 12:58</td>
<td>0:31</td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>Take Parts →</td>
<td></td>
<td>12:59 → 13:02</td>
<td>0:03</td>
<td>Cell Layout will reduce 0.01</td>
</tr>
<tr>
<td>64</td>
<td>Set Parts &amp; Check</td>
<td></td>
<td>13:02 → 13:31</td>
<td>0:29</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>Take Pen →</td>
<td></td>
<td>13:31 → 13:32</td>
<td>0:01</td>
<td>Small time can reduce</td>
</tr>
<tr>
<td>66</td>
<td>Memo on Parts &amp; Check</td>
<td></td>
<td>13:32 → 13:39</td>
<td>0:17</td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>Clamping ○</td>
<td></td>
<td>13:49 → 14:10</td>
<td>0:21</td>
<td>New Assemble Die has no Clamping: 0:17</td>
</tr>
<tr>
<td>68</td>
<td>Put on Glove →</td>
<td></td>
<td>14:10 → 14:13</td>
<td>0:03</td>
<td>New Assemble Die has no Gloves: 0:03</td>
</tr>
<tr>
<td>69</td>
<td>Drill ○</td>
<td></td>
<td>14:13 → 14:28</td>
<td>0:15</td>
<td>Work that danger is somewhat attended</td>
</tr>
<tr>
<td>70</td>
<td>Adjustment □</td>
<td></td>
<td>14:28 → 14:41</td>
<td>0:13</td>
<td>New Assemble Die has no Adjustment: 0.13</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>141 Sec.</td>
<td></td>
<td>Estimated Reduction Time: 35 Sec.</td>
</tr>
</tbody>
</table>
# Work Process and Time Analysis Table (No.8)

Each color shows each improvement:
- Green: By New Assemble Die Improvement
- Yellow: By Cell Layout Improvement
- Blue: By Adjustment Improvement

<table>
<thead>
<tr>
<th>No.</th>
<th>Work Process</th>
<th>IE</th>
<th>DVD Time</th>
<th>Net Time</th>
<th>Example of Improvement Idea</th>
</tr>
</thead>
<tbody>
<tr>
<td>71</td>
<td>Take parts</td>
<td>□</td>
<td>14:41→14:47</td>
<td>0:06</td>
<td>Cell Layout will reduce 0.04</td>
</tr>
<tr>
<td>72</td>
<td>Parts Assemble</td>
<td>○</td>
<td>14:47→14:56</td>
<td>0:09</td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>Take out Clamping, Check</td>
<td>○</td>
<td>14:56→15:10</td>
<td>0:14</td>
<td>New Assemble Die has no Clamping: 0:14</td>
</tr>
<tr>
<td>74</td>
<td>Take part and Checking</td>
<td>□</td>
<td>15:10→15:26</td>
<td>0:16</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>Take out Clamping, Check</td>
<td>○</td>
<td>15:26→15:28</td>
<td>0:02</td>
<td>New Assemble Die has no Clamping:: 0:02</td>
</tr>
<tr>
<td>76</td>
<td>Adjust Part &amp; re-Clamping</td>
<td>→</td>
<td>15:28→15:51</td>
<td>0:23</td>
<td></td>
</tr>
<tr>
<td>77</td>
<td>Drill</td>
<td>○</td>
<td>15:51→16:06</td>
<td>0:15</td>
<td>Work that danger is somewhat attended</td>
</tr>
<tr>
<td>78</td>
<td>Adjusting</td>
<td>□</td>
<td>16:06→16:19</td>
<td>0:03</td>
<td>This adjust can’t understand, May be Cancel</td>
</tr>
<tr>
<td>79</td>
<td>Take Clamping</td>
<td>→</td>
<td>16:19→16:23</td>
<td>0:04</td>
<td>Cell Layout will reduce 0.02</td>
</tr>
<tr>
<td>80</td>
<td>Clamping Parts Unit</td>
<td>○</td>
<td>16:23→16:31</td>
<td>0:08</td>
<td>New Assemble Die has no Clamping:: 0:08</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td></td>
<td>110 Sec.</td>
<td>Estimated Reduction Time:28</td>
</tr>
</tbody>
</table>

No. 76.79
# Work Process and Time Analysis Table (No.9)

Like this Short Time Transportation can reduce, but At This time Can not calculate

<table>
<thead>
<tr>
<th>No.</th>
<th>Work Process</th>
<th>IE</th>
<th>DVD Time</th>
<th>Net Time</th>
<th>Example of a Improvement Idea</th>
</tr>
</thead>
<tbody>
<tr>
<td>81</td>
<td>Drill</td>
<td>○</td>
<td>16:31→16:57</td>
<td>0:26</td>
<td>Work that danger is somewhat attended</td>
</tr>
<tr>
<td>82</td>
<td>Parts Assemble</td>
<td>○</td>
<td>16:57 →17:09</td>
<td>0:12</td>
<td></td>
</tr>
<tr>
<td>83</td>
<td>Take out Clamping</td>
<td>○</td>
<td>17:09 →17:22</td>
<td>0:13</td>
<td>New Assemble Die has no Clamping: 0:13</td>
</tr>
<tr>
<td>84</td>
<td>Parts Setting</td>
<td>○</td>
<td>17:22 →17:34</td>
<td>0:12</td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>Preparation of Clamping</td>
<td>→</td>
<td>17:34 →17:50</td>
<td>0:16</td>
<td>New Assemble Die has no Clamping: 0.16</td>
</tr>
<tr>
<td>86</td>
<td>Clamping</td>
<td>○</td>
<td>17:50 →18:30</td>
<td>0:40</td>
<td>New Assemble Die has no Clamping: 0:40</td>
</tr>
<tr>
<td>87</td>
<td>Drill</td>
<td>○</td>
<td>18:30→18:46</td>
<td>0:16</td>
<td>Work that danger is somewhat attended</td>
</tr>
<tr>
<td>88</td>
<td>Take off Parts</td>
<td>○</td>
<td>18:46 →19:19</td>
<td>0:33</td>
<td></td>
</tr>
<tr>
<td>89</td>
<td>Check and Memo on Parts</td>
<td>○</td>
<td>19:19 →20:19</td>
<td>0:60</td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>Desk Clean up</td>
<td>→</td>
<td>20:19 →21:09</td>
<td>0:50</td>
<td></td>
</tr>
</tbody>
</table>

**Total** 278 Sec. **Estimated Reduction Time:** 69 Sec.
**Work Process and Time Analysis Table (No.10)**

### New Assemble Line Image

- **Under Table Parts is here!**
- **Operator Move To Under the Table**

---

<table>
<thead>
<tr>
<th>No.</th>
<th>Work Process</th>
<th>IE</th>
<th>DVD Time</th>
<th>Net Time</th>
<th>Example of a Improvement Idea</th>
</tr>
</thead>
<tbody>
<tr>
<td>91</td>
<td>Take Parts under the Table</td>
<td>→</td>
<td>21:09 → 21:23</td>
<td>0:14</td>
<td>Cell Layout will reduce 0.04</td>
</tr>
<tr>
<td>92</td>
<td>Take Parts</td>
<td>→</td>
<td>21:23 → 21:27</td>
<td>0:02</td>
<td>Cell Layout will reduce 0.02</td>
</tr>
<tr>
<td>93</td>
<td>Under Table Setting</td>
<td>✔</td>
<td>21:27 → 22:24</td>
<td>0:57</td>
<td></td>
</tr>
</tbody>
</table>

**Total**

- Total 75 Sec.
Estimated Reduction Time 568 by Improvements

Current Working Time $22:24 = 1344$ Sec.

$\frac{568}{1344} = 42, \ 26\% \ \text{Reduce}$

**Current Job System**

3. Practices of DVD job Process on your Company

[Diagram showing current job system with labeled parts and steps]

**Improvement Idea**

Improvement Idea about Parts Assemble Job Step

After Improved Working Style

- New assemble Die
- Slide Table
- Assemble three Parts under the Table
- Drill cabinet
- Assembly Parts
- File cabinet
- Pen
- Drawing type shelf
- Calipers (measure tool)
- Clamping tools
- Air Drill
- New assemble Table Job
- Set three Parts on the Parts Clamping Die, and Drill jobs make holes after that set Parts by set tool
- Slide Table: Positioning treatment and Fixing device
- Major jobs are Measurement, Check Parts Position and Making Marks & Writing on Parts. This Die can turn 360° (Angle)

[Diagram showing improved job system with labeled parts and steps]
1. Objective: Improving your company's sales efficiency and doubling the sales

<table>
<thead>
<tr>
<th>Item</th>
<th>1991</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of customers</td>
<td>N persons</td>
<td>M persons</td>
</tr>
<tr>
<td>New products</td>
<td>∆ MY</td>
<td>∆ units</td>
</tr>
<tr>
<td>Share</td>
<td>15%</td>
<td>20%</td>
</tr>
</tbody>
</table>

2. Major means available
   (1) Increasing the number of customers contacted and the number of customer service hours
   (2) Research on customers' needs: formulating strategies for improvement
   (3) Preparation of tools

3. Tools to be used
   (1) Education in PC and the use of networks
   (2) Introducing IT systems for various sales tools
   (3) Sharing sales know-how to formulate strategies

4. Schedule
   (1) February X, 1991: Kick-off meeting
   (2) March 1991: Proposals and coordination
   (3)  Until May 1991: Development of tools
   (4) June 1991: Test runs
   (5) From July 1991: Review and start of operations

5. Reference: Customer-oriented Sales Services by Toyota Sales Staff: Summary of Yasufumi Shiina's activities

- **Building relationships with customers**
  - Increase in the number of private customers through hand-made and hand-delivered messages
  - No customer declines the offer of a chat over a glass of water.
  - Use lottery tickets (give your customer one of tickets with consecutive numbers).
  - Make giant-size business cards and distribute them among customers. Let your name be remembered and even recorded in Guinness World Records.

- **Finding opportunities**
  - Use a large seal that attracts other people's attention as your registered seal. You may be requested by customers to make them similar seals for them.
  - Make a lookup table to show how to respond to customers, take another new car to show it to the customer and his neighbors (a trade fair during delivery).

- **Seizing business opportunities**
  - Immediately respond to wrong number calls and customers' complaints to obtain orders. Respond to complaints and wrong number calls about Toyota cars and make sure to obtain orders.
  - Assess cars even from behind a fence. Competitors may refrain from sales activities hearing your name.

- **Responding to orders quickly**
  - Keep a checklist in your bag so that you can quickly check procedures and documents any time.
  - Prepare contracts and payment documents during a conversation and complete all documents before the conversation is over so as to obtain the customer's seal on the spot.

- **Providing quick paperwork services**
  - Keep a checklist in your bag so that you can quickly check procedures and documents any time.
  - Carry around the following seven tools:
    (1) A large A4-size paper bag
    (2) Giant-size business cards
    (3) A catalog
    (4) List of prices and payment conditions by car type
    (5) Stickers with your name and a store map
    (6) Order forms
    (7) Your registered seal
  - With these tools, you can respond to any requests of customers. Carry a large bag.

- **Selling cars to achieve record-breaking sales**
  - Writing down effective action plans on a card and formulate strategies in charts before visiting customers.
  - The author has achieved top sales for 15 years and has sold 18 cars in a single day. His record of selling 4,500 cars in 15 years is recorded in Guinness World Records.

- **Formulating strategies**
  - Write down effective action plans on a card and formulate strategies in charts before visiting customers.

- **Avoid doing what annoys customers**
  - Don't praise their children too much. Consider circumstances facing children.
  - Avoid doing what annoys customers

- **Devotion to Toyota Corolla**
  - Sales strength is supported by the product quality. Understand the difference with other cars and use your knowledge as a basic tool for sales.
  - Act with the joy of sales to achieve a specific goal.

- **Making sales efforts and using wisdom to make it easier for customers to buy cars**
  - Make a lookup table to show how to purchase products for 3,000 yen per month. Provide customers with a table of monthly installment payments to show purchasing know-how.

- **Avoiding customers that have no requests**
  - According to analysis, the following people don't buy cars:
    (1) Those who are opposed to owning cars
    (2) Those who have financial problems
    (3) Those who have difficulty in obtaining parking space
    (4) Those who don't have a driver's license
    (5) Those who have no need for cars

- **Providing good after-sales care services**
  - Provide quick services in an emergency, such as when you have closed the door of a car whose key you have received from a customer. Send a copy of the key to the customer to improve customer satisfaction.
  - Use PCs to make a list of customers sorted in alphabetical order of their names to send messages on their birthdays and to manage customer data, including the number of cars sold, service periods and replacement periods, using the alarm feature.

- **Making efforts to increase sales**
  - Systematically solving problems facing customers
  - Make a bag. Describe all procedures and schedules in tables so that you can manage everything with your bag without searching elsewhere.
  - Give your customers a ride for parking and tax registration all at once. Finish time-consuming procedures all at a time for customers.

- **Write down effective action plans on a card and formulate strategies in charts before visiting customers."**

---

**Figure 2-2: Card-style Problem Analysis Method**

**Title:** Summarizing the practices of veteran salespeople for increasing sales for the purpose of making effective use of such practices (example: SN Company’s Sales Strategy Division)

**From the book published by Nishin Houdou**

- **Sorting out customers who are willing to buy products and catching their attention**
  - Work harder than other people to sell products (work until later).
  - Avoid customers who have no requests

- **Identifying customers’ true needs**
  - Make a list of ways to purchase cars to make it easier for customers to buy cars.

- **Tracing a contract into pieces before the eyes of a customer who do not buy a car**
  - Line up used and new cars for customers who want to buy used cars (so that they can compare used and new cars).

- **Avoiding customers that have no requests**
  - According to analysis, the following people don’t buy cars:
    (1) Those who are opposed to owning cars
    (2) Those who have financial problems
    (3) Those who have difficulty in obtaining parking space
    (4) Those who don’t have a driver’s license
    (5) Those who have no need for cars

- **Devotion to Toyota Corolla**
  - Sales strength is supported by the product quality. Understand the difference with other cars and use your knowledge as a basic tool for sales.
  - Act with the joy of sales to achieve a specific goal.

- **Making sales efforts and using wisdom to make it easier for customers to buy cars**
  - Make a lookup table to show how to purchase products for 3,000 yen per month. Provide customers with a table of monthly installment payments to show purchasing know-how.

- **Avoiding customers that have no requests**
  - According to analysis, the following people don’t buy cars:
    (1) Those who are opposed to owning cars
    (2) Those who have financial problems
    (3) Those who have difficulty in obtaining parking space
    (4) Those who don’t have a driver’s license
    (5) Those who have no need for cars
Means-end System Diagram: An Example of Analysis, Using the Hotel Industry as an Example

Improving the quality of customer services:
1. Making decisions from customers’ perspective
2. Making effective use of limited resources, including personnel, facilities and funds

Requirements:

Increasing the value of the product service system

Providing customers with incentives to visit the hotel (again)

Creating a comfortable environment

Creating an environment that provides satisfaction to customers

Creating an environment that meets customers’ needs

Creating a service environment that matches customers’ image

Providing high-value services

Providing high-quality services

Being friendly to customers

Adopting a sincere attitude

Learning proper service manners

Improving the cost performance of services

Creating an impression that you are providing services in accordance with costs

Conducting follow-up surveys to see if customers are willing to visit the hotel again

Conduct questionnaire surveys to study reasons why customers visited the hotel; send seasons’ greetings to customers.

Send a sequence of presents rather than sending all at once; it is better to send a flower bouquet of 1,000 yen ten times than sending a bouquet of 10,000 yen at a time.

Adopt the method chosen first

It is sometimes better to send a stuffed doll than flowers. Tissue paper bags printed with a store name are bulky and difficult to carry around, so they need to be of a size that fits women’s handbags.

Provide cultural services; use curvaceous architecture designs; use elaborately designed entrances; improve the outward appearance; five Ss

Keep chairs for physically disabled persons; speak fast to young people; add a word of thanks even for 100 yen

Use the service style of eel restaurants that keep customers waiting on an appointment list or of fresh-from-the-oven bread stores; prepare high-grade coffee with high-grade milk and sugar; prepare beverages that go with the food (e.g., Super Dry beer with green soybeans)

Create space for handbags in women’s toilets; install full-body size mirrors; vending machines provide goods without having to talk to sales staff; women visit golf courses not only to play golf but also to enjoy bath and food services; young people need an environment designed for the young

Wear outfits (including employee uniforms) that match the workplace environment; write announcements and messages for customers horizontally; XEROX and fax machines

Provide specific work instructions to part-time and temporary employees

Memorize their names to call them by their names; give them your business cards when introducing yourself; create friendly relationships

Greet customers with a winning smile; don’t put the manager’s desk on the highest floor of the office (which may create a condescending attitude toward customers); provide the highest level of customer services

Hotel staff must pay attention to how to cross their arms and hold their hands; use polite language and be careful about your appearance; be polite and apologize sincerely; get employees to understand the difference between good services and poor services; provide high-quality services as part of routine activities; learn language manners (e.g., effective use of the phrase “as you know”)

Use tricks of numbers (price of 980 yen instead of 1,000 yen; provide free gifts; Art Corporation puts 100 yen in a bag for using the customer’s phone, but it is included in the house moving fee; pizza delivery service restaurants give discounts for a pizza delivered 30 minutes or more past the scheduled time

Customers are satisfied with the services at Disneyland despite the high admission fees. There is no value in services that do not match the costs (in countries other than Japan, customers pay tips for services; McDonald’s staff greet customers with a cheerful smile and are working to create an impression that their products are inexpensive)

Use number tricks (price of 980 yen instead of 1,000 yen; provide free gifts; Art Corporation puts 100 yen in a bag for using the customer’s phone, but it is included in the house moving fee; pizza delivery service restaurants give discounts for a pizza delivered 30 minutes or more past the scheduled time

Customers are satisfied with the services at Disneyland despite the high admission fees. There is no value in services that do not match the costs (in countries other than Japan, customers pay tips for services; McDonald’s staff greet customers with a cheerful smile and are working to create an impression that their products are inexpensive)

In order to improve the response rate of a questionnaire survey, provide small presents before the survey; customers almost always request gasoline station staff to fill up their tanks when given wet towels at the time of their arrival at the station; in a credit card society like ours, people tend to enjoy first and work to make payments later rather than spending money they have earned; handing out a flower bouquet to a beauty shop customer before she enter the shop is more effective than handing it out later

It is sometimes better to send a stuffed doll than flowers. Tissue paper bags printed with a store name are bulky and difficult to carry around, so they need to be of a size that fits women’s handbags.
### Means-end System Diagram: An Example of Analysis, Using the Hotel Industry as an Example

<table>
<thead>
<tr>
<th>Service</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offering new services</td>
<td>Using strategies focused on specific generations or trends</td>
</tr>
<tr>
<td>Understanding the characteristics of services for male customers</td>
<td>Understanding the characteristics of services for female customers</td>
</tr>
<tr>
<td>Correctly identifying customers’ responses to services</td>
<td>Correctly identifying customers’ needs (including changes in their needs)</td>
</tr>
<tr>
<td>Making distinctions between different types of needs and providing appropriate services</td>
<td>Developing strategies to meet customers’ changing needs</td>
</tr>
<tr>
<td>Finding ways to fulfill hidden needs</td>
<td>Services based on the thought that wages are provided by customers.</td>
</tr>
</tbody>
</table>

#### Supporting statements:
- **Support by companies**
  - A unified effort of all employees to provide high-quality services
  - Creating a sense of unity

#### Developing hidden needs:
- **Correctly identifying customers’ needs**
  - Offering new services
  - Using strategies focused on specific generations or trends
  - Understanding the characteristics of services for male customers
  - Understanding the characteristics of services for female customers
  - Correctly identifying customers’ responses to services
  - Making distinctions between different types of needs and providing appropriate services
  - Finding ways to fulfill hidden needs

#### Fulfilling needs:
- **Finding ways to fulfill hidden needs**
  - Support by companies
  - Services based on the thought that wages are provided by customers.
  - Present purposes and goals of services. Form small groups to share responsibilities.
  - Present policies. Develop corporate principles and systems and present competitors and models to promote customer-oriented services.

#### Examples:
- **Yurakucho Marion**, a commercial complex, came back to life by developing an environment for female customers. Hotels that adopted special design for women’s baths increased the number of their customers. It is necessary for service providers to take the initiative in attracting generations that are used to being served. Women are beginning to enter the world of gambling, such as mahjong, pachinko and horse races, that used to be men’s world. There is a need to use a repetition strategy to attract inactive generations that do not use hotels when they have comfortable homes. Provide male customers with logical explanations supported by numbers, which are designed to allow them to show off their knowledge. Male customers tend to remember professional services for a long period of time. Provide specific information with numerical data. The title "Ten Excellent Restaurants in Shibuya" is more attractive than "A Feature on Restaurants in Shibuya." According to studies on gender differences, women’s stimulus-response time is 85% of men’s. Therefore, it is efficient to repeat the same explanation twice for female customers. Women prefer service products that provide more practical and utilitarian benefits. Female customers are intolerant of the same mistake made twice. Conduct interviews rather than questionnaire surveys to gain a deeper understanding of the actual state of things. Choose services depending on whether or not they meet customers’ needs. Observe the behavior of targeted customers before starting a project. Managers need to pay attention to how employees feel. Consider employees as potential customers and treat them well.

- **Special customer services** include (1) unique services, (2) entertaining services and (3) new services. In a place like a department store, which provides business opportunities (Konosuke Matsushita, the founder of Panasonic), Pizza delivery service is a form of business that uses customer complaints for business services. Special customer services include (1) unique services, (2) entertaining services and (3) new services. In a place like a department store, which provides business services to attract customers, the lower the ceiling, the more at home customers feel. Services provided with fast speech attract inactive generations that do not use hotels when they have comfortable homes. That adopted special design for women’s baths increased the number of their customers. According to studies on gender differences, women tend to remember professional services for a long period of time. Provide specific information with numerical data. The title “Ten Excellent Restaurants in Shibuya” is more attractive than “A Feature on Restaurants in Shibuya.” Therefore, it is efficient to repeat the same explanation twice for female customers. Women prefer service products that provide more practical and utilitarian benefits. Female customers are intolerant of the same mistake made twice. Conduct interviews rather than questionnaire surveys to gain a deeper understanding of the actual state of things. Choose services depending on whether or not they meet customers’ needs. Observe the behavior of targeted customers before starting a project. Managers need to pay attention to how employees feel. Consider employees as potential customers and treat them well.

#### Services:
- **Offering new services**
  - Providing information about what customers are interested in knowing. Minor acts of kindness are remembered for a long period of time and make good impressions (e.g., asking a customer who has made a long-distance phone call to hang up the phone and calling back to save the customer the fee for the phone call). Offer information services about daily life. A customer who is looking for a restroom is asking for service. Pointing to a chair and saying “Please sit down” is different from pulling up a chair for a customer to sit down. Learn from circus clowns who are dignified and humorous and yet always support roles. It is kinder to customers to illustrate restaurant menus with photos and pictures.

- **Correctly identifying customers’ needs**
  - Providing umbrella-lending service at hotels is a customer service and also an advertisement. Provide quick support to help customers solve their problems. It is a good service to offer to help a female customer purchasing a film roll to install the roll in her camera.

- **Making distinctions between different types of needs and providing appropriate services**
  - Clearly identifying targeted customers
  - Appealing to customers’ sense of pride
  - Providing information about what customers are interested in knowing. Minor acts of kindness are remembered for a long period of time and make good impressions (e.g., asking a customer who has made a long-distance phone call to hang up the phone and calling back to save the customer the fee for the phone call). Offer information services about daily life. A customer who is looking for a restroom is asking for service. Pointing to a chair and saying “Please sit down” is different from pulling up a chair for a customer to sit down. Learn from circus clowns who are dignified and humorous and yet always support roles. It is kinder to customers to illustrate restaurant menus with photos and pictures.

- **Finding ways to fulfill hidden needs**
  - Providing information about what customers are interested in knowing. Minor acts of kindness are remembered for a long period of time and make good impressions (e.g., asking a customer who has made a long-distance phone call to hang up the phone and calling back to save the customer the fee for the phone call). Offer information services about daily life. A customer who is looking for a restroom is asking for service. Pointing to a chair and saying “Please sit down” is different from pulling up a chair for a customer to sit down. Learn from circus clowns who are dignified and humorous and yet always support roles. It is kinder to customers to illustrate restaurant menus with photos and pictures.

- **Presenting purposes and goals of services**
  - Form small groups to share responsibilities.

- **Present policies**
  - Develop corporate principles and systems and present competitors and models to promote customer-oriented services.

### System Diagram

- **Support by companies**
  - A unified effort of all employees to provide high-quality services
  - Creating a sense of unity

- **Finding ways to fulfill hidden needs**
  - Correctly identifying customers’ needs (including changes in their needs)
  - Making distinctions between different types of needs and providing appropriate services
  - Offering new services
  - Using strategies focused on specific generations or trends
  - Understanding the characteristics of services for male customers
  - Understanding the characteristics of services for female customers
  - Correctly identifying customers’ responses to services
  - Studying the actual state of things through questionnaire surveys
  - Studying trends among customers

- **Developing hidden needs**
  - Providing information about what customers are interested in knowing. Minor acts of kindness are remembered for a long period of time and make good impressions (e.g., asking a customer who has made a long-distance phone call to hang up the phone and calling back to save the customer the fee for the phone call). Offer information services about daily life. A customer who is looking for a restroom is asking for service. Pointing to a chair and saying “Please sit down” is different from pulling up a chair for a customer to sit down. Learn from circus clowns who are dignified and humorous and yet always support roles. It is kinder to customers to illustrate restaurant menus with photos and pictures.

- **Fulfilling needs**
  - Providing umbrella-lending service at hotels is a customer service and also an advertisement. Provide quick support to help customers solve their problems. It is a good service to offer to help a female customer purchasing a film roll to install the roll in her camera.

- **Offering new services**
  - Understanding the characteristics of services for male customers
  - Understanding the characteristics of services for female customers
  - Correctly identifying customers’ responses to services
  - Making distinctions between different types of needs and providing appropriate services
  - Finding ways to fulfill hidden needs

- **Presenting purposes and goals of services**
  - Form small groups to share responsibilities.

- **Present policies**
  - Develop corporate principles and systems and present competitors and models to promote customer-oriented services.