The Change in the Wage System and its Impact on the Production Management at Toyota

The End of Ohnoism?

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1. Changes in the Wage System for the Blue-collar Workers since 1993

<table>
<thead>
<tr>
<th></th>
<th>April 1993~</th>
<th>Oct. 1999~</th>
<th>April 2014~</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS</td>
<td>BW (40%)</td>
<td>PEA (30%)</td>
<td>PEA (30%)</td>
</tr>
<tr>
<td>PEA</td>
<td>PA1 (20%)</td>
<td>PA1 (20%)</td>
<td>PA2 (20%)</td>
</tr>
<tr>
<td>GA</td>
<td>GA1 (20%)</td>
<td>GA2 (30%)</td>
<td>GA2 (30%)</td>
</tr>
<tr>
<td>AA</td>
<td>AA (20%)</td>
<td>AA (20%)</td>
<td>AA (20%)</td>
</tr>
</tbody>
</table>

BS = Basic Wage det. by Satei  
PEA = Pay for the employee’s gained ability, det. by Satei.  
PA = Productivity Allowance  
GA = Allowance related to the Grade position (GA1), which is fixed by the wage grade after 1999 (GA2).  
AA = Age Allowance (Allowance fixed by age or function after 2014)

1.1 Changes in the determination method of the Productivity Allowance

Before April 1993, PA is determined every month and individualized:  
PA = BW x [PA Coefficient fixed per Work Team]

From April 1993 to March 2004, PA is determined every month:  
PA1 = [Sum fixed by qualification/rank of employee] x [PA Coefficient fixed per Work Team]  
This sum is fixed by the wage grade, newly created in 1999.

From April 2004, PA is fixed for one year:  
PA2 = [Sum fixed by Wage grade] x [coefficient fixed by productivity growth rate of the company in the precedent year]  
EX. PA = 60,000 yens x 1.04 = 62,400 yens  
If the sum fixed by wage grade for a worker is 6,000 yens, and the productivity growth rate realized in the previous year is 4%.
1.2 Qualification and Wage grade since 1999

<table>
<thead>
<tr>
<th>Ancient Rank</th>
<th>Administrative &amp; Engineering Staff</th>
<th>Production Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>(required minimum service years)</td>
<td>Qualification</td>
<td>Wage Grade</td>
</tr>
<tr>
<td>30 (29)</td>
<td>Upper Professional</td>
<td>AE 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AE 2</td>
</tr>
<tr>
<td>40 (--)</td>
<td></td>
<td>A E 3</td>
</tr>
<tr>
<td>50 (25)</td>
<td>Professional</td>
<td>A E 4</td>
</tr>
<tr>
<td>60 (22)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7A (18)</td>
<td>Operations Personnel</td>
<td>A E 5</td>
</tr>
<tr>
<td>7B (15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80 (10)</td>
<td></td>
<td>A E 6</td>
</tr>
<tr>
<td>9A (5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9B (1)</td>
<td></td>
<td>A E 7</td>
</tr>
<tr>
<td>9C (0)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Team leaders post (TL), replaced by EX at the beginning of 1990’s, is reintroduced in 2007, without the team however.

1.3 What does it imply, this change in 2004?

It can be interpreted as an essential revision of the productivity management system, founded by Taiichi Ohno.

- Until 2004, the management system of Ohno had been respected, which closely worked with the wage system, especially with the productivity allowance.
- This relationship has been cut off by 2004’s modification.
2. What has changed?

2.1 Productivity Management System, founded by Ohno

2.2 New Prod. Management System

The parts colored have been abolished in 2004 reform.
2.3 What Has Been Abolished.

**Determination of the PA coefficient and ST cutting Rule**

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Buai Class</td>
<td>PA Coefficient</td>
</tr>
<tr>
<td>High</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A (20%)</td>
<td>Average of the PEs of A</td>
</tr>
<tr>
<td></td>
<td>B (30%)</td>
<td>Average of the PEs of B</td>
</tr>
<tr>
<td>Low</td>
<td>D (20%)</td>
<td>Average of the PEs of D</td>
</tr>
</tbody>
</table>

All work teams were ranked according to their production efficiency.

ST cutting rule: the Standard Time of the WT of which PE was higher than the average of the PEs of A was cut off until their PE became this average.

Evaluation of PAC was made by Buai Group: a group of foundries, forges, stamping and sheet metal shops, a group for mechanical components, a group for body welding, painting and plastic moulding, and an assembly group.

The ST cutting rule remained the same as before.

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**Incentive System, founded by Ohno, and tendency of increase in average Production Allowance Coefficient**

The production allowance had a tendency to increase, and therefore, the wage also increased with time even without the annual wage increase, called "base-up" in Japan.
2.4 New Productivity Management

Objective fixed by Top Management is the growth rate of the productivity of the company as a whole.

### Target Management

<table>
<thead>
<tr>
<th>Hierarchical levels</th>
<th>Productivity</th>
<th>Production Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direction Générale</td>
<td>Annual Objective</td>
<td></td>
</tr>
<tr>
<td>(Negociations)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plants</td>
<td>Annual Objective</td>
<td>Objectives of the PE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shops</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Teams (Ka)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shift Teams (Kakari)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working groups (Kumi)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How to manage the productivity

The growth rate of the productivity of the plant $q_t$ is determined as below:

$$q_t = \frac{PEP_t}{PEP_{t-1}}$$

*PEP$_t$*: Production efficiency of the Plant as a whole for the year $t$.

The PEP is calculated as below:

$$PEP = \sum \frac{ST_i \times Q_i}{NW \times WH}$$

- $ST_i$: Standard Time for the product.
- $Q_i$: Number of completed products.
- $NW$: Number of workers in the plant, including TM, TL, GL, CL.
- $WH$: Working Hours per worker.

The production efficiency (PE) remains as the central means for the production management, and the TPS as the method of Kaizen: heritage of Ohno-ism.
3. Why was this change realized?

- Officially, the change in the determination of the production allowance was made for:

  - Rectifying the negative effects provoked by short-term and excessive approach for increasing the production efficiency.

  - As a consequence, the coefficient of productivity allowance is not calculated by Work Team (Ka) and the allowance is not paid every month.

  - Now, the one and only coefficient is determined according to the company’s productivity growth, and applied to all blue-collar workers for one year.

But the reason why this change was realized is not pronounced clearly. Some reasons could be pointed out:

- The production efficiency management, linked with the wage system, was brought into question during the bubble economy at the end of 1980s.

- The difficulty to implement Toyota’s production efficiency management, linked with the wage system, outside of Toyota in Japan.

- The emphasis on the “Toyota Way”, applicable everywhere in the World, and which contains the TPS as the method of Kaizen.

- And.........
Thank you for your kind attention.

Publication List about the Subject


APPENDIX:
Crisis of the TPS at the end of the 1980s

- Background of the labor crisis: “bubble economy” of 1987-91:
  - The labor force shortage for the manufacturing industry
  - It gave an occasion to get an easy but high wage job in the tertiary industry, especially in the service sector.
  - It heated up the demand and the diversification of parts and products.

- Toyota’s problems in such a situation:
  - Many of newly hired young workers quitted Toyota. This provoked a Labor shortage.
  - In order to solve this problem, Toyota hired massive temporary workers:
    - 2,540 TW in the 23,370 direct workers (11% on average).
  - This provoked a confusion on the shop-floor:
    - lowering of the production efficiency, and exhaustion of supervisory stuff.

Confusion in the “bubble economy”

![Chart showing production, productivity, and labor force from 1985 to 1992](chart.png)

Source: Shimizu (1999)

Note) “Labor force” means the number of the direct workers on the production lines. The production excludes that produced by subcontracted assembly companies. Productivity represents the productivity per man-hour.
Means for coping with the crisis

A joint committee of the management and the union decided to solve this labor crisis in a radical way.

- Training system of blue-collar workers
  - Long initial training, and new vocational training system
- Hierarchical positions of supervisory staff
  - Creation of experts positions (EX, SX, CX) and abolition of Team (han) and team leader (TL, han-cho)
- Way to work on the assembly line
  - Making assembly work attractive by making disappear heavy loaded, dangerous and dirty works.
  - New segmented assembly lines, quality control by segment, use of buffers, and ergonomic devices, etc.
  - Successive two shifts work without night shift (6:30–15:15 and 16:15–1:00)
- Cost management
  - Giving an autonomy & responsibility to the factory, and revision of the wage system (production allowance).