JAPANESE MANAGEMENT AND SALARY PRODUCTIVITY
The case of the electronic and automotive industries in Portugal

Abstract

The present paper intended to assert in what form the Japanese approach to business management, concerning the factors human resources, research and development and organization and methods, has effect on the value creation by workers, beyond those expressed in salaries.

The investigation fell on companies in the electronic and automotive sectors operating in Portugal, with and without Japanese capital, in the six-year span from 2001 to 2006.

The specific results demonstrated that that impact is clearly visible over the factor organization and methods. In addition, there are evidences of substantial and direct influence of research and development on the creation of surplus value.

KEYWORDS: human resources; organization and methods; research and development; salary productivity.

1. THE WORKONOMIC INDEX, INDICATOR OF SALARY PRODUCTIVITY

The company’s existing workforce forms the operating element that allows the creation of value. Without its activity, it’s impracticable to add value to business.

Thus, the concept salary productivity measures in which degree the workforce is generating a value that, besides enabling to remunerate that workforce, allows remunerating other entities that make possible the production process: banks, bondholders and other creditors; equity holders; owners of goods yielded to the company; the government.

The management consultant Boston Consulting Group (BCG)\(^1\) proposed, as an indicator of salary productivity, the Workonomic Index, thus determined:

\[
WI = \left(\frac{VAB - S}{S}\right) * 100 = \left(\frac{VAB}{S} - \frac{S}{S}\right) * 100 = \frac{VAB}{S} - 1) * 100, \text{ being } S \text{ the mass salary of the time span.}
\]

\(^1\) L’Expansion, March 2000.
2. THE JAPANESE BUSINESS MANAGEMENT AND THE SALARY PRODUCTIVITY

From the 1960s of the past century, and till the 1980s, the Japanese economic miracle has become a common reference. The media’s face of this phenomenon was the high competitiveness of the largest industrial corporations in Japan: their products were innovative and had more attractive prices than their euro-atlantic competitors.

As a reason to this competitiveness, it’s often referred the high productivity of the Japanese industrial worker, either being the blue-collar workman, the middle management, the researcher or the industrial executive.

On the other hand, this high productivity has been frequently justified on the following factors:

- The lifelong job, counterpointing the highly precarious bonds established by the employment relationships in the US;
- A deep identification between the workers and the executive’s goals;
- Innovative work processes;
- A great ability to offer innovative products.

As a last resort, three generic factors were linked to the Japanese economic miracle: the human resources management, the organization and methods and the research and development (R & D).

3. GOAL, METHODOLOGY AND HYPOTHESIS OF THE EMPIRICAL STUDY.

The purpose of the present research was to assert in what way the Japanese approach to the human resources, organization and methods and research and development factors acted upon the salary productivity in the companies in the electronic and automotive sectors operating in Portugal, with and without Japanese capital, in the six-year span from 2001 to 2006.

We’ve selected fifty six companies, starting from the information released by the newspaper Diário de Notícias between 2001 and 2006, in the offprint DN-Empresas, headlined As 1000 Maiores (The 1000 biggest ones). From these, twenty one had Japanese capital.
This information allowed us to obtain the necessary data to calculate the *Workonomic Index* according to each one of the fifty six companies, in the 2001-2006 span.

We tested the hypothesis of the Japanese approach of the *human resources, organization and methods* and *research and development* as being favourable to the improvement of the salary productivity.

Thus, we’ve used in this research a conceptual tool consisting of three independent variables (qualitative) – *human resources, organization and methods* and *research and development* – and a dependent variable (quantitative) – *Workonomic Index*. On the other hand, each one of the independent variables had turned into various components, often strictly related, that express the Japanese approach.

Which components?

Regarding the *human resources*, we considered the following components:

- Internal advanced learning, which allows the fluidity of the production process;
- Team work, to the detriment of individualism;
- Use of oldness as a basis to promotion and salary setting;
- Total productive maintenance, a system of preventive maintenance and systematic registration of the problems encountered in manufactured equipment, as well as the solutions adopted by the operators;
- Empowerment, which is reflected in the attribution of autonomy and responsibility to the employees;
- Outsourcing.

Concerning to *organization and methods*, we’ve considered the following components:

- Functional flexibility;
- *Just-in-time*;
- *Layout* optimization of the manufactured equipment in U-shape, being the first and last tasks done by the same worker; which allows a better control over the production rhythm than the linear layout;
• Quality circles;
• The ringi system, reflected in the collective process of decision making, from bottom to top of the chain of command;
• Use of kanban (ordering label), which allows to prosecute purchasing, requisition of materials supporting production, and production itself without stock accumulation.

Finally, regarding to research and development, we’ve considered the following components:
• Introduction of innovative products, whit an advantageous price-quality relationship;
• Constant upgrade of the range of products and the reduction of their life cycle;
• Zero-defect policy;
• Kaizen policy, that is, continuous improvement shared by all the corporation structure; underlying all the Japanese research and development effort.

After we’d determined the components, a questionnaire was sent to the selected companies, in which we asked, the following, on a 1 to 6 scale:

1. What was the importance given to each one of the components that express the Japanese approach to factors human resources, organization and methods and research and development;

2. What was the business performance regarding the above components.

From the obtained answers, we calculated the gap performance-importance (rate from the division between performance level and importance level) of each question posed. This gap allowed us to put performance in perspective when compared to the others components.

Next, we divided the companies in two fields: (1) companies without Japanese capital; (2) companies with Japanese capital.

For each one of these fields we determined the average gap regarding each company, concerning each one of the human resources, organization and methods and research and development factors. We correlated this last gap with the Workonomic Index average in the 2001-2006 span.
We used the (Charles) Spearman non-parametric correlation coefficient, once the data produced have an abnormal distribution.

4. RESULTS OF THE EMPIRICAL STUDY AND CONCLUSIONS.

The table 1 presents the correlations between salary productivity and each one of the factors in question, for the thirty five companies without Japanese capital.

<table>
<thead>
<tr>
<th></th>
<th>Human Resources</th>
<th>Organization and Methods</th>
<th>Research and Development</th>
<th>Salary Productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Resources</td>
<td>Correlation</td>
<td>1,000</td>
<td>0,534</td>
<td>0,376</td>
</tr>
<tr>
<td></td>
<td>coefficient</td>
<td>- 35</td>
<td>0,001</td>
<td>0,026</td>
</tr>
<tr>
<td></td>
<td>sig. (2-tailed)</td>
<td></td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Organization</td>
<td>Correlation</td>
<td>0,534</td>
<td>1,000</td>
<td>0,699</td>
</tr>
<tr>
<td>and Methods</td>
<td>coefficient</td>
<td>0,001</td>
<td>- 35</td>
<td>0,000</td>
</tr>
<tr>
<td></td>
<td>sig. (2-tailed)</td>
<td>35</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Research and</td>
<td>Correlation</td>
<td>0,376</td>
<td>0,699</td>
<td>0,277</td>
</tr>
<tr>
<td>Development</td>
<td>coefficient</td>
<td>0,026</td>
<td>- 35</td>
<td>0,108</td>
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<td></td>
<td>sig. (2-tailed)</td>
<td>35</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Salary</td>
<td>Correlation</td>
<td>0,316</td>
<td>0,473</td>
<td>1,000</td>
</tr>
<tr>
<td>Productivity</td>
<td>coefficient</td>
<td>0,065</td>
<td>0,004</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>sig. (2-tailed)</td>
<td>35</td>
<td>35</td>
<td>35</td>
</tr>
</tbody>
</table>

Source: Reis, Felipa Lopes; Silva, Victor Gomes (2008).

The salary productivity has a positive and moderate correlation with the organization and methods variable (0,473), with a significance level of 1%.

We also verified that there is a correlation:

- Positive and high between the organization and method and research and development variables (0,699), with a significance level of 1%.
- Positive and moderate between the human resources and organization and method variables (0,534), with a significance level of 1%.
The Table 2 presents correlations between salary productivity and each one of the factors in question, to the twenty one companies with Japanese capital.

### Table 2

**Results of the Spearman non-parametric correlation analysis**

*(companies with Japanese capital)*

<table>
<thead>
<tr>
<th></th>
<th>Human Resources</th>
<th>Organization and Methods</th>
<th>Research and Development</th>
<th>Salary Productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Human Resources</strong></td>
<td>Correlation coefficient</td>
<td>1,000 - 21</td>
<td>-0,194 0,399 21</td>
<td>0,134 0,564 21</td>
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<tr>
<td><strong>Organization and Methods</strong></td>
<td>Correlation coefficient</td>
<td>-0,194 0,399 21</td>
<td>1,000 - 21</td>
<td>0,800 0,000 21</td>
</tr>
<tr>
<td><strong>Research and Development</strong></td>
<td>Correlation coefficient</td>
<td>-0,134 0,564 21</td>
<td>0,800 0,000 21</td>
<td>1,000 - 21</td>
</tr>
<tr>
<td><strong>Salary Productivity</strong></td>
<td>Correlation coefficient</td>
<td>-0,299 0,188 21</td>
<td>0,450 0,41 21</td>
<td>0,337 0,135 21</td>
</tr>
</tbody>
</table>

Source: Reis, Felipa Lopes; Silva, Victor Gomes (2008).

The salary productivity has a positive and moderate correlation with the *organization and methods* variable (0,451), with a significance level of 5%.

We also verified that there is a positive and high correlation between the *organization and methods* and *research and development* variables (0,800), with a significance level of 1%.

In short, the Japanese approach to *organization and methods* constitute the only relevant factor to improve the salary productivity in companies with and without Japanese capital. In fact, in both groups of companies the components that feature the Japanese approach to *organization and methods* factor contribute moderately to the creation of surplus values.

At the same time, in both groups of companies we ascertain a positive and high correlation between the *research and development* and the *organization and methods* variables. This fact allows hinting a significant indirect influence of *research and development* in the creation of surplus value, through organization and methods.
Finally, for the companies without Japanese capital, there is a positive correlation, although moderate, between the factors human resources and organization and methods; which allow hinting some indirect influence of the Japanese methods of human resources management in the creation of surplus value, through organization and methods.

A new study could reveal the reason why such correlation is restricted to the companies without Japanese capital.

References


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