# **Greater Female Presence Means Better Corporate Performance**

How Patents Reveal the Contribution of Diversity to Economic Value

May 25, 2017

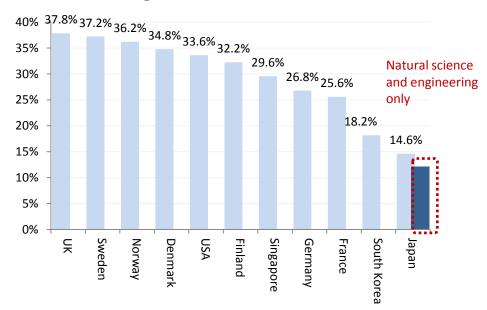


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# Women's Participation in Research and Development

- Low birthrates and an aging society are shrinking the working population in Japan. It is a challenging environment in which to encourage women's participation in the workplace.
- Progress has been particularly slow in the fields of R&D.
- For more women to take an active part in R&D, we need to make workplace environments more conducive to innovation. This will also help to meet the growth in consumption by women.

### **Percentage of Female Researchers**



# Source: OECD "Main Science and Technology Indicators" and National Science Foundation "Science and Engineering Indicators 2014"

#### The Female Presence in R&D

#### Background:

- Women's control over most consumption – a ratio set to grow in the future.
- The need for greater efficiency in R&D.

Response to consumption by women

Boosting of innovation through greater diversity Greater corporate

Prepared by DBJ.



## **Method of Verification**

Mitsubishi Research Institute Support Service for Intellectual Property Analysis (MRIP)

Contains data on all patents applied for and released in Japan over the past 25 years.



Valid patents were selected from those of Japanese manufacturing firms having a total of at least 1,000 patents



1 million patents (of some 400 firms) selected on the above basis were grouped as below according to the inventor's name

Patents involving male inventors only

Patents involving both male and female inventors

We then compared the average economic value\* of patents produced by the above two groups, and ⇒ calculated the contribution of female participation to a patent's economic value.

\* Economic value of a patent: Estimated by MRI, based on the economic value of patent assets calculated on the basis of corporate value (current and book) and an indexation of the patent's importance and its profile among third parties (conditional upon the patent-holding company's being currently in business).

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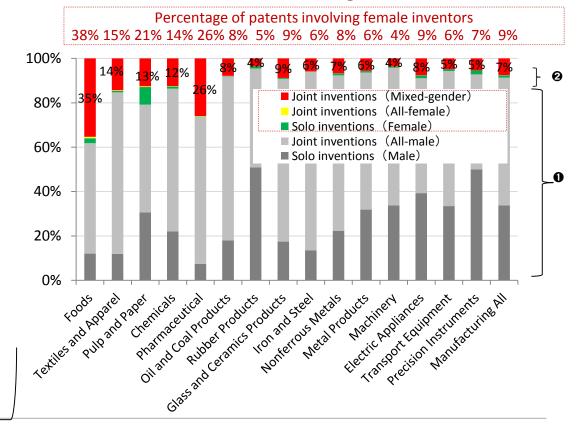
### **Patent Overview**

- The greater part of patents were for electrical machinery and other processing and assembly industries. Chemicals accounted for a large share in the materials sector.
- ➤ The "percentage of patents involving at least one female inventor" (≓rate of female participation) was higher in the materials sector while low, at 5 percent or so, in the processing and assembly industries.

### **Numbers of Domestic Patents**

#### 50 45.2 45 40 35 30 25 20 14.5 15 10 5 Glass and Ceramics. Nonferrous Metals Metal Products Electric Appliances **Transport Equipment** Precision Instruments Pulp and Paper **Textiles and Apparel Pharmaceutical** Oil and Coal Products **Rubber Products** Iron and Steel Machinery **Processing Materials** & assembly

### **Patent Categories**

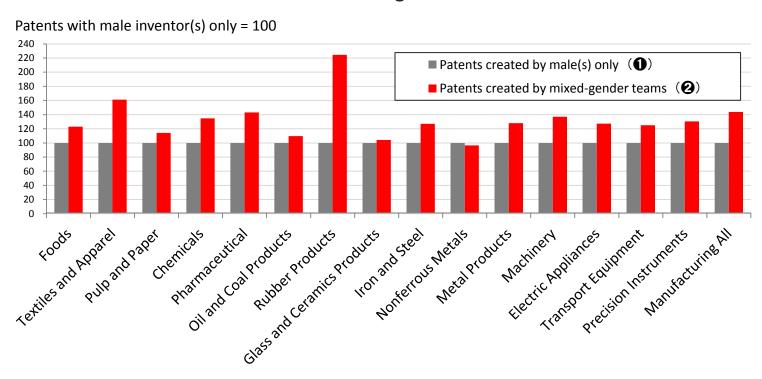




## The Result: Patents Created by Gender-diverse Teams Have Greater Economic Value

- Patents created by gender-diverse teams were shown to have greater economic value than those created by men only.
- In many industries the economic value was 1.2 times as great.

# Comparison of Economic Value of Patents Involving Male Inventors Only and Those Also Involving Female Inventors



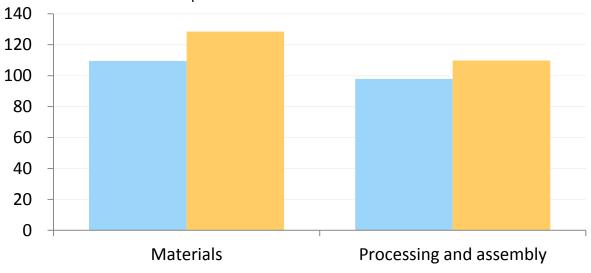


## The More that Women Take Part, the Greater the Effect of Gender Diversity on Patents

- Gender diversity exerted its best effects in the group of companies where female participation was high.
- For gender diversity to make a greater impact on the economic value of patents in the R&D sector, we need a workplace environment in which at least some women participate actively.

# Contribution of Female Participation and Gender Diversity to Patents' Economic Value (Classified by Firms with High and Low Female Participation)

Economic value of patents issued to teams including both men and women, when economic value of patents issued to all-male teams = 100



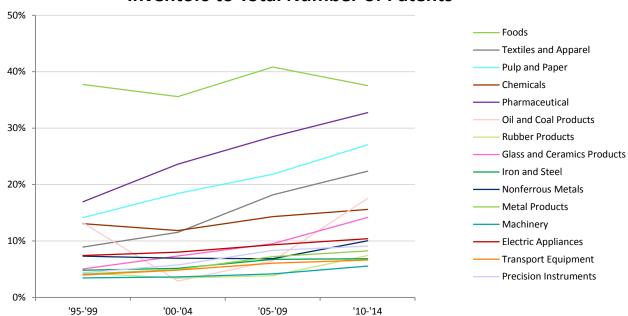
- Firms where the ratio of patents involving female inventors is relatively small
- Firms where the ratio of patents involving female inventors is relatively high



## **Conclusion**

- In many industries the percentage of patents involving females (≓rate of female participation) is rising. In the processing and assembly sector it remains low.
- Patents have greater value when women play an active role in the workplace. The greater the progress in female participation, the greater the benefits of gender diversity. Thus, companies will benefit from making the most of their women employees.

# Ratio of Patents Involving Female Inventors to Total Number of Patents





Thank you.

NEXT: "Women's Contribution to Area-Based Collaborative Research"

Ms. Silaporn Buasai,

