

# Public Perception of Nanotechnologies in Japan from 2005 to 2009

June 2010 (ver.1.0)

Atsuo KISHIMOTO\*,  
Toru TAKAI and Hiroko WAKAMATSU  
Research Institute of Science for Safety and Sustainability (RISS)  
**National Institute of Advanced Industrial  
Science and Technology (AIST)**

\*Address correspondence to Atsuo KISHIMOTO ([kishimoto-atsuo@aist.go.jp](mailto:kishimoto-atsuo@aist.go.jp))



## Table of Contents

1. Survey Details
  2. Main Findings
  3. Interannual Change
    - 3.1 Perception of Nanotechnology
    - 3.2 Attitude toward Nanotechnology
    - 3.3 Experience of Purchasing and Using Nanotechnology Products
    - 3.4 Willingness to Purchase Nanotechnology Products
    - 3.5 Attitude toward Technologies, including Nanotechnology
    - 3.6 Attitude toward Nanotechnology Products
    - 3.7 Values about Science, Technology, and Society
    - 3.8 Trust in Stakeholders
- Appendix: Questionnaire Form of 2009

## Figure Captions

- Fig.1 Perception of the word “nanotechnology”
- Fig.2 Knowledge about the meaning of “nanotechnology”
- Fig.3 The impression of the word “nanotechnology”
- Fig.4 Experiences of purchasing and/or using nanotechnology products
- Fig.5 Nanotechnology products that were purchased or used
- Fig.6 Willingness to purchase nanotechnology-applied cosmetics
- Fig.7 Willingness to purchase nanotechnology-applied food and drinks
- Fig.8 Willingness to purchase nanotechnology-applied electric appliances
- Fig.9 Willingness to purchase nanotechnology-applied sporting equipment
- Fig.10 Willingness to purchase nanotechnology-applied household detergents
- Fig.11 Risk-benefit scatter plot for various technologies
- Fig.12 Perceived advantages of nanotechnology-applied products
- Fig.13 Perceived disadvantages of nanotechnology-applied products
- Fig.14 Risk-benefit scatter plot for four categories of nanotechnology-applied products
- Fig.15 Value on science, technology, and society
- Fig.16 Trust in stakeholders in 2007
- Fig.17 Trust in stakeholders in 2008
- Fig.18 Trust in stakeholders in 2009

|   |
|---|
| Acknowledgment: This study was partly funded by NEDO’s 2006–2010 project “Research and Development of Nanoparticle Characterization Methods.” |
|---|

## 1. Survey Details

For the general public to enjoy the benefits of nanotechnology, not only should its risk to human health and the ecosystem be minimized, but this new technology should also be accepted by the people. Whether or not it is accepted will depend on various factors, such as scientific data, the mass media, impression of nanotechnology-applied products, and school education. We take into consideration the perception, attitude, and behavior of the general public toward nanotechnology in order to grasp the societal acceptance of nanotechnology.

Starting in 2005, we conducted a questionnaire survey on the Internet for five consecutive years. The first survey in February 2005 was part of another survey titled “Survey on Health,” wherein the respondents could have been biased towards a guess that nanotechnology was something healthy. Only nanotechnology was targeted in the second, third, fourth, and fifth surveys, although each survey was given the title “A Questionnaire Survey for New Technologies and Life” in order to avoid preconceived impressions.

The respondents of the survey were not representative of the general public in Japan; this is because the survey was conducted on the Internet and the respondents were selected to represent groups that were evenly stratified according to age and gender. Because they were Internet users, the respondents were expected to have some level of technological literacy. In the 2008 survey, for instance, the male-to-female ratio of the respondents was 54:46; the average age was 47 years; the median of annual income was “5,000,000–8,000,000 yen”; the average proportion of the university background was 49 percent; and 74 percent were married. As of 2006, the university entrance proportion of high school graduates in Japan was 46 percent. The proportion of university graduates among the respondents of the survey was, therefore, higher than that of the average Japanese.

|                     |                                |
|---------------------|--------------------------------|
| ●Survey media       | Internet survey                |
| ●Survey area        | Nationwide                     |
| ●Survey target      | Men and women aged 20–69       |
| ●Population         | Nikkei Research Access Panel   |
| ●Target sample size | 2,000                          |
| ●Sampling method    | 200 for each sex and age group |

The first survey in February 2005

Number of respondents: 1,276 (response rate: 64%)

Male: 51%; female: 49%

Age groups: 20s (22%); 30s (25%); 40s (25%); 50s (19%); 60s (9%)

The second survey in May 2006

Number of respondents: 681 (response rate: 34%)

Male: 51%; female: 49%

Age groups: 20s (14%); 30s (21%); 40s (21%); 50s (22%); 60s (22%)

The third survey in May 2007

Number of respondents: 681 (response rate: 34%)

Male: 52%; female: 48%

Age groups: 20s (13%); 30s (18%); 40s (22%); 50s (21%); 60s (26%)

The fourth survey in May 2008

Number of respondents: 647 (response rate: 32%)

Male: 54%; female: 46%

Age groups: 20s (13%); 30s (16%); 40s (23%); 50s(25%); 60s (25%)

The fifth survey in May and June 2009

Number of respondents: 676 (response rate: 26%)

Male: 53%; female: 47%

Age groups: 20s (14%); 30s (17%); 40s (21%); 50s (23%); 60s (25%)

## **2. Main Findings**

From 2006, a constant proportion of 95 percent of the respondents claimed that they “have heard” or “might have heard” of the word “nanotechnology.” In comparison with the research findings of other countries, this percentage is extremely high from early on.

Continuously from 2005 to 2009, 80 percent of the respondents had favorable impressions of nanotechnology. This high rate of favorable impressions was highlighted when compared with the rate of favorable impressions of gene modification (less than 20 percent).

The ratio of those who claimed to have bought nanotechnology-applied products or products with the label “nano” tripled from 11 percent in 2005 to 32 percent in 2009. However, the increase from 2008 to 2009 was small, seemingly attributable to the fact that there was a decrease in the products with nanotechnology as their sales appeal.

We asked the respondents if the sales appeal of nanotechnology appeal would change their willingness to buy products, namely, food and drinks, electric appliances, sporting equipment, and household detergents. More than 40 percent of the respondents replied affirmatively with regard to electric appliances, and more than 30 percent, with regard to cosmetics and household detergents. With regard to food and drinks, however, 20 percent of the respondents replied affirmatively, while 20 percent replied negatively. In all categories of cosmetics, food and drinks, electric appliances, sporting equipment, and household detergents, the majority of the respondents claimed that their willingness to purchase the products would not change irrespective of the label of “nano” appeal being attached.

We asked the respondents to consider the advantages and disadvantages of technologies, including nanotechnology, after giving the information about nanotechnology. The respondents were asked to use a 1–7-point scale for their replies. We found that nanotechnology was considered similar to a cellular phone. No significant change was observed in three years.

We asked the respondents to consider the advantages and disadvantages of nanotechnology-applied products with respect to Japanese society, after giving them

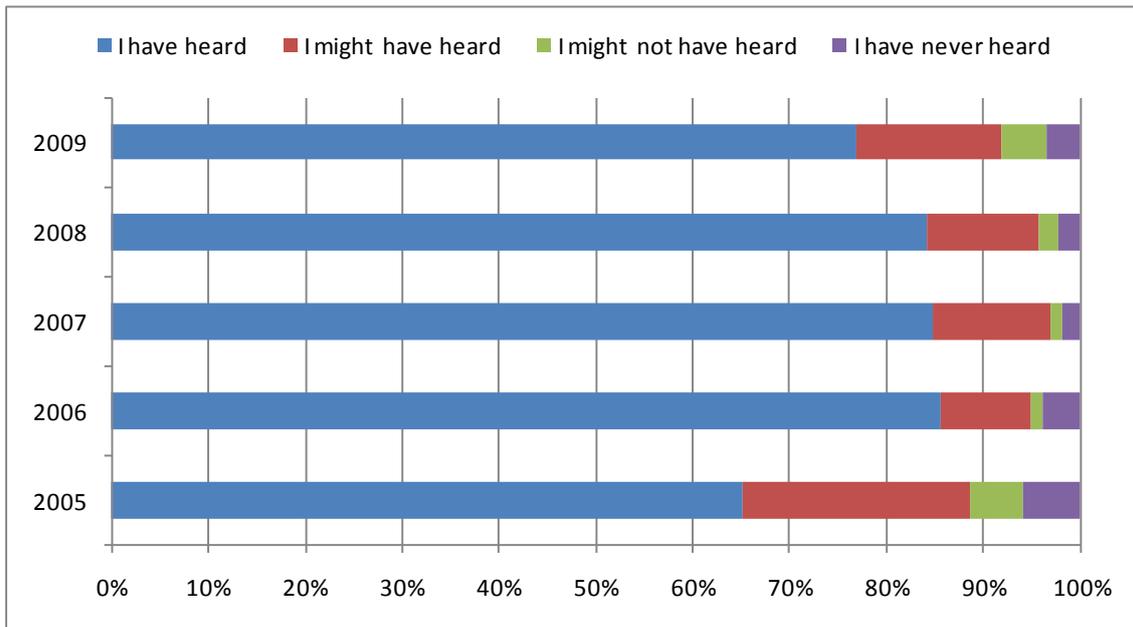
information on the expected outcome of nanotechnology application. The products were categorized into cosmetics, food, electric appliances, and medicine. The respondents were asked to rate their responses on a 1–7-point scale. We found that over 80 percent of the respondents favorably evaluated nanotechnology-applied medicine and electric appliances. In the category of nanotechnology-applied cosmetics and food, some 60 percent of them gave a positive evaluation, while over 10 percent gave a negative evaluation.

We asked the respondents about the degree of trust they had in stakeholders, namely, governmental institutions, industries, and academic researchers, with respect to nanotechnology. We found that, as a whole, the respondents had a low level of trust in them. With respect to the point of having enough technical knowledge, however, industries and academic researchers were seen as having a high level of trust by 40 percent of the respondents.

### 3. Interannual Change

#### 3.1 Perception of Nanotechnology

Fig.1 shows the interannual change in the ratio of responses to the following question: “Have you ever heard of or read the word ‘nanotechnology?’”



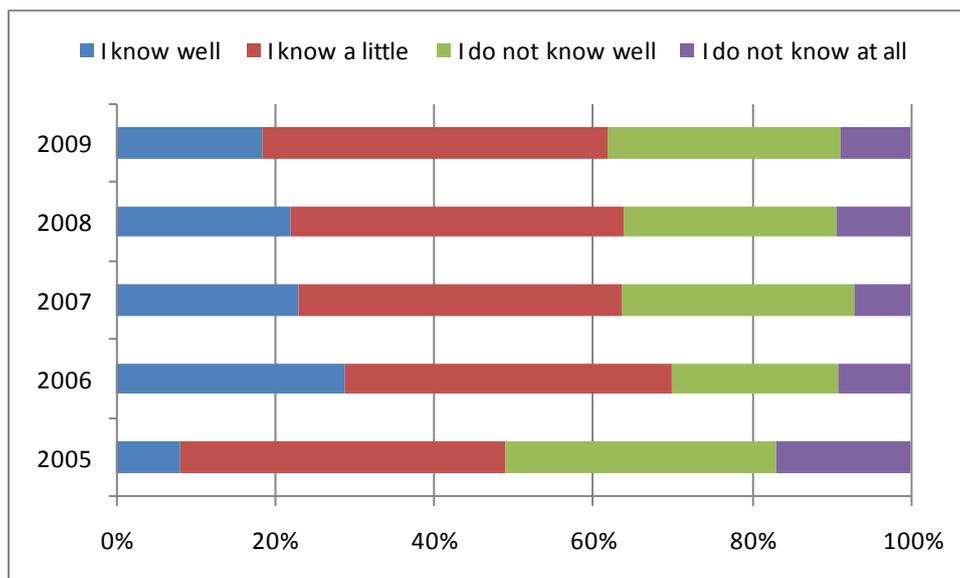
**Fig.1 Perception of the word “nanotechnology”**

The ratio of those who had heard of the word “nanotechnology” increased considerably from 2005 to 2006, but it came to be about the same or reducing a little thereafter. The surge in the ratio from 2005 to 2006 seemed to be a repercussion of the emergence of the word “nanotechnology” in the mass media. The marginal decrease in the number of those who had heard of this word from 2006 to 2009 seemed to be attributable to the change in the population; that is, as the Internet came to be used widely, the ordinary people whose science literacy was not particularly high might have joined the number of respondents. Since 2006, the sum of the ratio of those who had heard of “nanotechnology” and the ratio of those who might have heard of it steadily reached 95 percent. In other words, most people in Japan were familiar with the word “nanotechnology.” This was remarkable in comparison with people in other countries, not only because people in Japan came to perceive the word “nanotechnology” much

earlier than those in other countries but also because the proportion of those who perceived this word was exceptionally high.

On the basis of gender, it seems that the word “nanotechnology” was perceived in the same way by both men and women among the younger generation; however, among the older generation, more men than women were aware of this word. Cosmetic manufactures’ sales appeal for nanotechnology targeting young women appeared to be the background of the similar level of recognition among men and women at a younger age. There was no large gap with regard to educational qualification. Merely 10 percent more university graduates claimed to have heard of the word “nanotechnology” compared with junior high school, high school, and college graduates.

Fig.2 shows the interannual change in the rate of responses to the following question: **“How much do you know the meaning of the word ‘nanotechnology’?”**

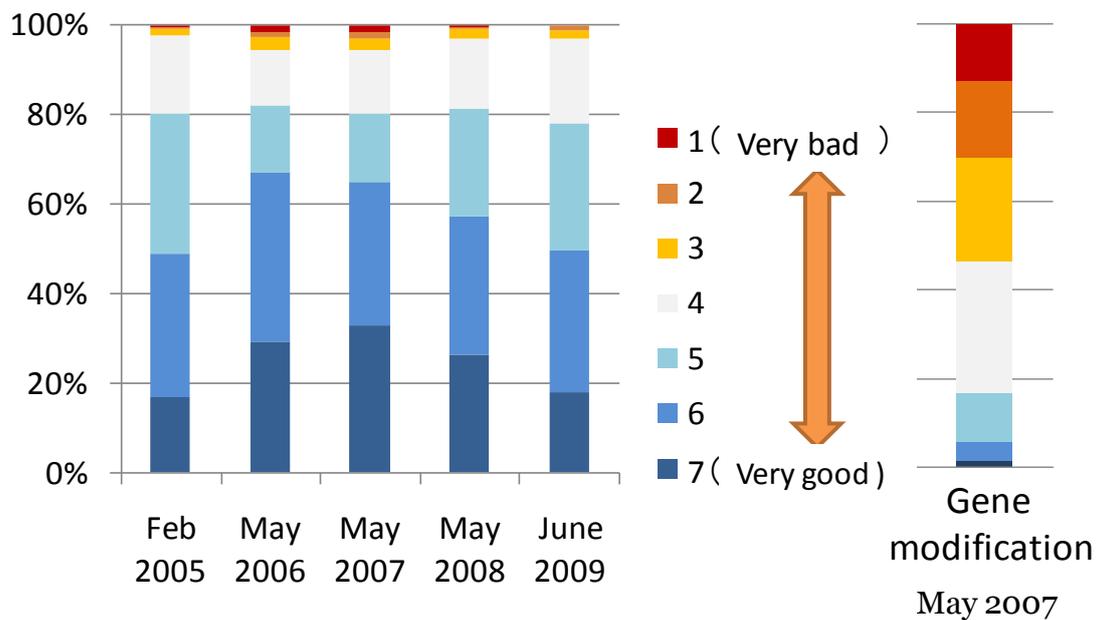


**Fig.2 Knowledge about the meaning of “nanotechnology”**

The sum of the ratio of those who answered that they knew the word well and the ratio of those who answered that they knew it to a limited extent increased from 55 percent to 74 percent from 2005 to 2006. The sum of the ratios remained relatively steady from 2007. This seemed to be attributable to the fact that the word “nanotechnology” came to be widely known to the public in 2005 and 2006 as well as to the change in population, whereby those who might not have had a high science literacy joined the number of respondents, as mentioned earlier with regard to Fig.1.

### 3.2 Attitude toward Nanotechnology

Fig.3 shows the interannual change in the rate of the responses to the following question: “**What kind of impression does the word ‘nanotechnology’ give you?**” No explanation about nanotechnology was given, because, as Fig.1 shows, over 95 percent of the respondents had heard the word “nanotechnology,” thus allowing us to assume that they had some kind of impression.



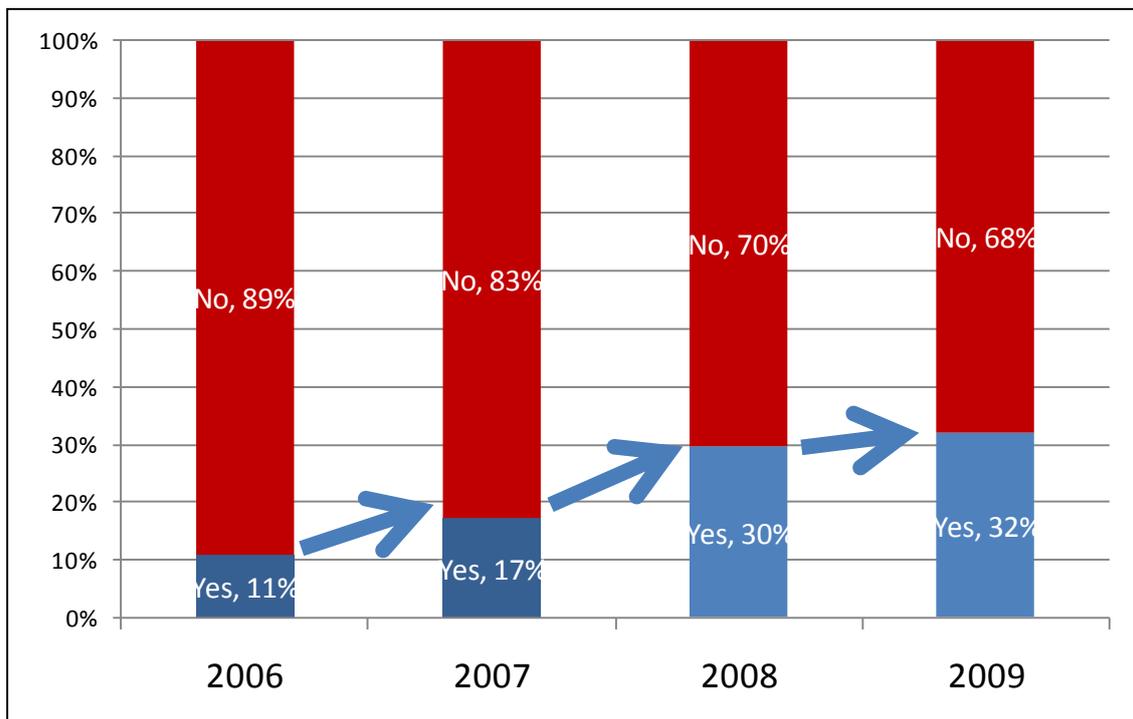
**Fig.3 The impression of the word “nanotechnology”**

The respondents gave a rating between 1 (very bad impression) and 5 (very good impression). Nanotechnology made a good impression consistently from 2005 to 2009 as about 80 percent of the respondents selected 5, 6 or 7. However, the ratio of those who selected “very good impression” was seen to be on a downward trend from 2008, while it increased from 2005 to 2007. This can be explained by the fact that from 2008, news reports started to imply an association between certain types of nanomaterials and possible health hazards. The population change and the increase in the number of respondents who were unfamiliar with new technologies, as noted earlier, also might have lead to the decline in the strata of those who held a very good impression about nanotechnology.

For the purpose of comparison, the above figure also shows the results from a question in the 2007 questionnaire survey, which asked respondents about their impression of the word “gene modification.” The results revealed that over half the respondents had a bad impression of gene modification. In comparison, nanotechnology presently enjoys a favorable impression.

### 3.3 Experience of Purchasing and Using Nanotechnology Products

Products bearing the word “nano” or “nanotech” came to be offered in markets from early on in Japan. The public also witnessed a number of TV commercials of products with nano as their sales appeal. This explained, therefore, why more people in Japan than in other countries had experienced the purchase and use of nano products. From 2006 onward, the respondents were also asked to answer the following question: “**Have you ever purchased and/or used nanotechnology-applied products or products that bore the title ‘nano’?**”



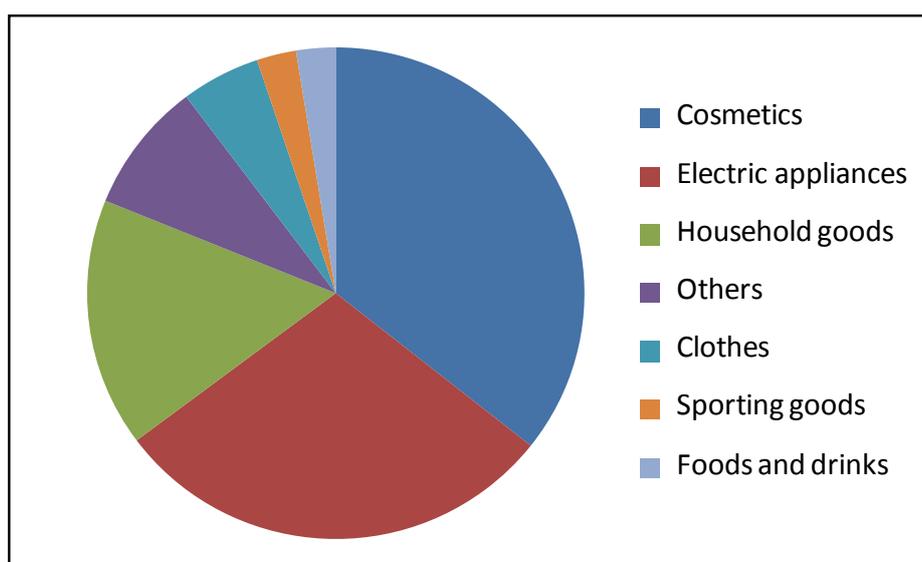
**Fig.4 Experiences of purchasing and/or using nanotechnology products**

The ratio of those who purchased or used nano products maintained an upward trend from 11 percent in 2006 through 17 percent in 2006 to 30 percent in 2008. However, in

2009, the growth was smaller as the proportion reached 32 percent. This may be because of the continued news reports since 2008 about the possible health hazards posed by nanomaterials. This cancelled the sales appeal of nanotechnology, and the number of products that boasted the use of nanotechnology decreased sharply.

We asked the respondents who had purchased or used nanotechnology products to provide three specific examples. As shown in Fig.5, cosmetics and electric appliances were most frequently named in 2008. The distribution that Fig.5 indicates is similar to the distribution of the actual sales of the products. See the Web site of “A Nanotechnology-claimed Consumer Products Inventory in Japan,” which lists cosmetics, clothing, electric appliances, daily commodities, sporting equipment, food, and others. As of June 2010, there are 432 items and 1,105 products.

<http://www.aist-riss.jp/db/nano/index.htm>

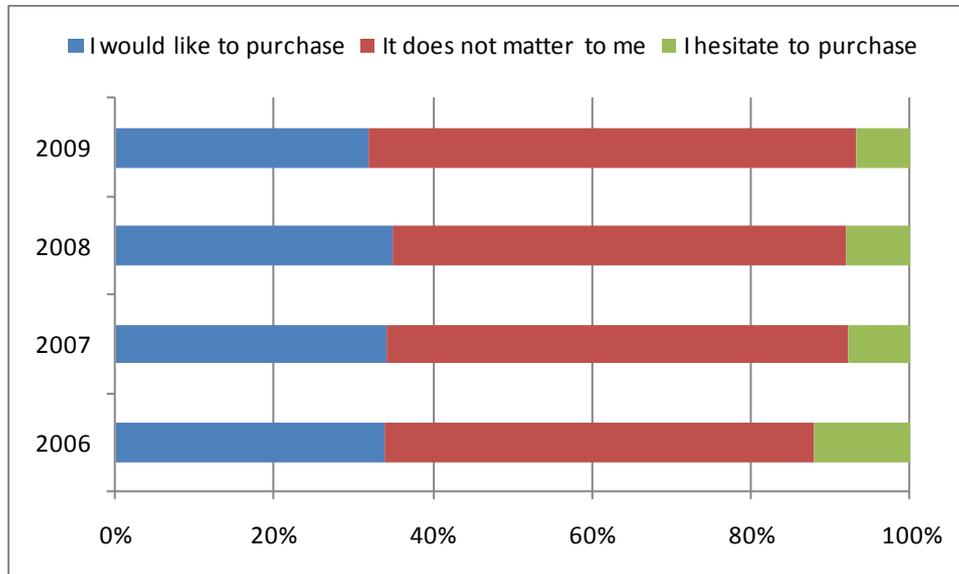


**Fig.5 Nanotechnology products that were purchased or used**

### 3.4 Willingness to Purchase Nanotechnology Products

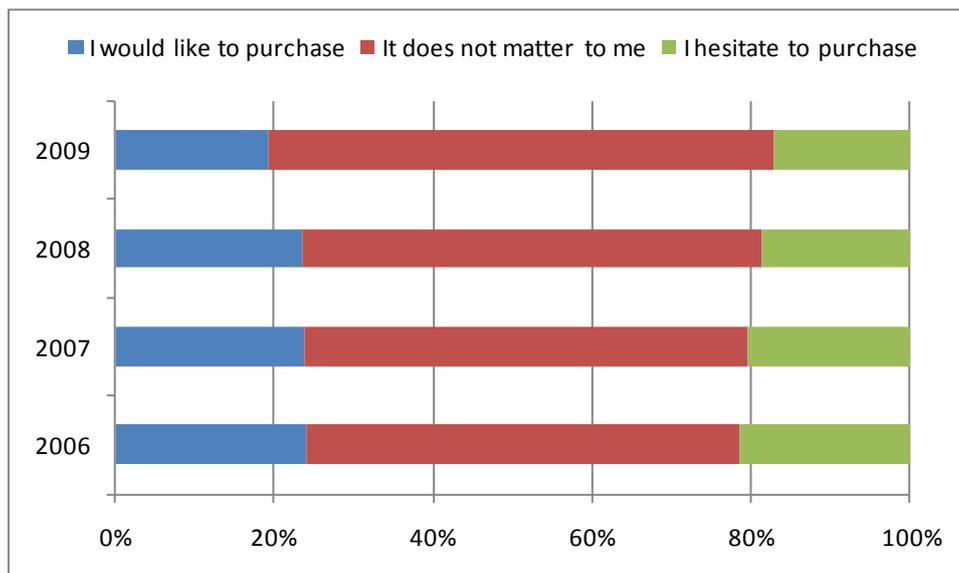
With regard to the attitude toward nanotechnology-applied products, we asked whether the respondents would like to purchase nanotechnology products or not. The question read as follows: **“Suppose you plan to buy a certain product. You find two products of a kind that look alike and are available for the same price. One has the label ‘nanotechnology is used’ and the other does not. Would you like to purchase the one with the label ‘nanotechnology is used’?”** Six categories were given: cosmetics (Fig.6), food

and drinks (Fig.7), electric appliances (Fig.8), sporting equipment (Fig.9), and household detergents (Fig.10).



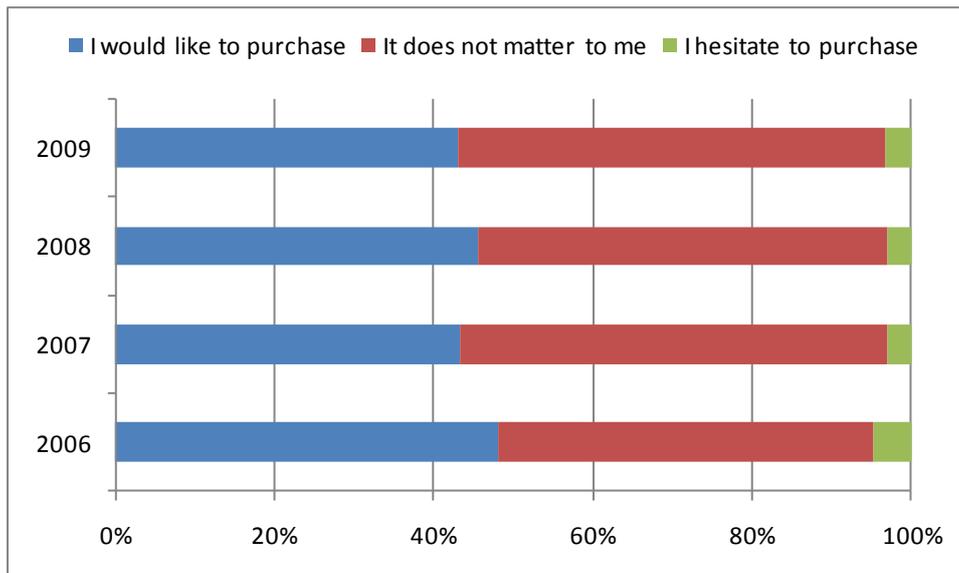
**Fig.6 Willingness to purchase nanotechnology-applied cosmetics**

In 2006, over 10 percent of the respondents replied that they would hesitate to buy nanotechnology-applied cosmetics. This ratio, however, fell to less than 10 percent from 2007 to 2009. This revealed that, in general, nanotechnology-applied products in the category of cosmetics sit well with the public.



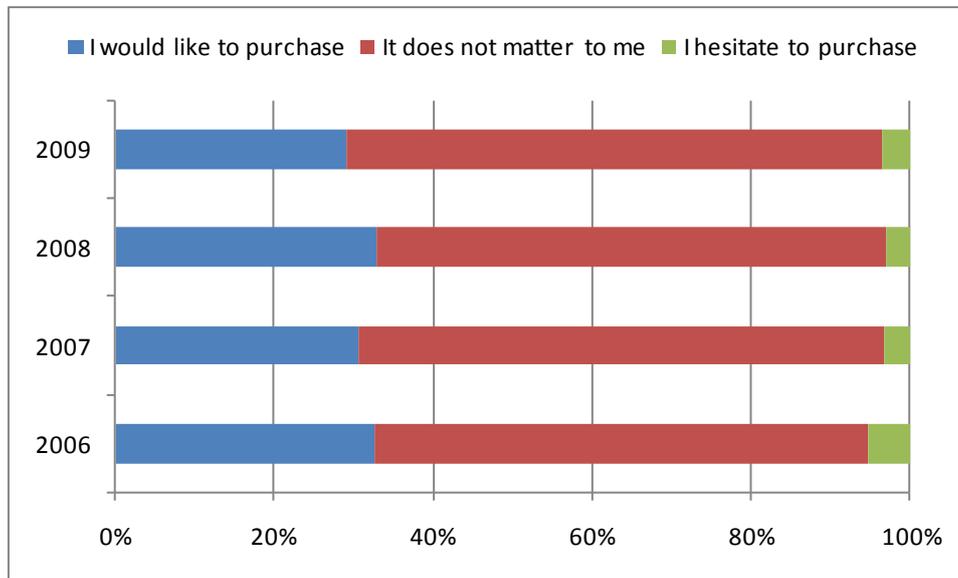
**Fig.7 Willingness to purchase nanotechnology-applied food and drinks**

Those who replied that they would hesitate to purchase nanotechnology-applied food and drinks accounted for 20 percent. This signified the low acceptance level for nanotech food and drinks by the public. The characteristic features of the food and drinks that are directly taken into body seem to explain people’s preventive attitude.



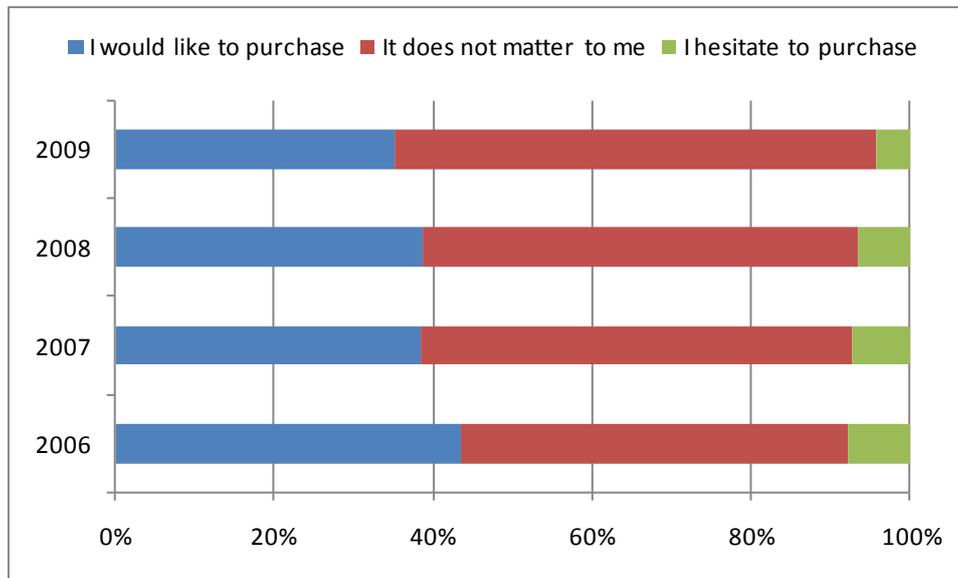
**Fig.8 Willingness to purchase nanotechnology-applied electric appliances**

The number of respondents who replied that they would hesitate to buy nanotechnology-applied electric appliances was not large; their proportion was merely 3 percent from 2007 to 2009. When people found clear advantages in nanotechnology-applied products, the degree of their acceptance was likely to be high. The proportion of those who replied that they would like to purchase products with the label “nanotechnology used” accounted for 40 percent of the respondents in the category of electric appliances, higher than the proportion in any other category.



**Fig.9 Willingness to purchase nanotechnology-applied sporting equipment**

The ratio of respondents who replied that they would hesitate to purchase nanotechnology-applied sporting equipment was 3 percent from 2007 to 2009. However, the ratio of those who replied that they would like to buy sporting equipment with the label “nanotechnology used” was not as high as the ratio of those who replied that they would like to buy electric appliances with the label “nanotechnology used.” The low level of willingness to purchase sporting equipment seemed to reflect the fact that, unlike electric appliances, sporting equipment were not common necessities in contemporary life.



**Fig.10 Willingness to purchase nanotechnology-applied household detergents**

With regard to nanotechnology-applied household detergents, the ratio of those who replied that they would hesitate to purchase them was on a declining trend and was less than 10 percent. At large, this was similar to nanotechnology-applied cosmetics. In general, nanotechnology-applied household detergents were accepted. The ratio of those who replied that they would like to purchase nanotechnology-applied household detergents, however, was also on a declining trend.

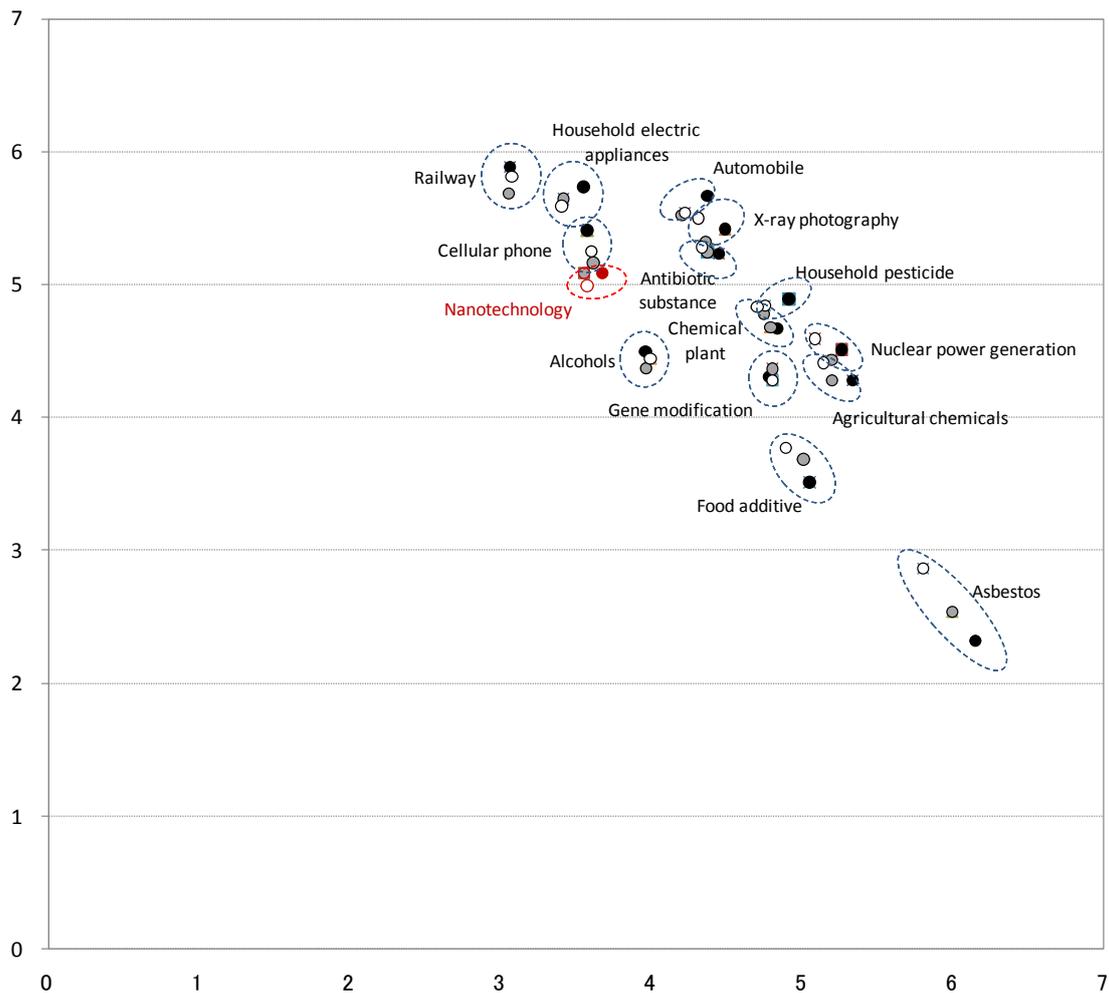
### 3.5 Attitude toward Technologies, including Nanotechnology

We asked the respondents to read the information about nanotechnology provided by us (see Appendix) and then compare the subjective advantages and disadvantages of nanotechnologies with those of other technologies. The question read as follows: **“How advantageous (beneficial and/or convenient) and disadvantageous (risky with regard to health and environment) do you think the following technologies and substances are to Japanese society? Rate your answer on a 1–7-point scale. When you answer about advantages, consider only the advantageous effects. When you answer about disadvantages, consider only the disadvantageous effects.”** Because, as is customary, people consider things without separating their advantages and disadvantages, we reminded the respondents to consider them individually. We wanted the respondents to take policy decision makers’ side, while the question to consider advantageous and

disadvantageous sides of technologies “to Japanese society” could lead to veering away from the replies from the viewpoint of individuals’ recognition of risk and benefits.

With regard to the 1–7-point scale for the advantages, 1 signified “not useful at all” and 7 signified “very useful.” With regard to the 1–7-point scale for the disadvantages, 1 signified “no risk” and 7 signified “high risk.” Fig.11 shows the results. The vertical axis indicates the advantage/benefit, while the horizontal axis indicates the disadvantage/risk side. Therefore, the upper left area indicates that the advantage/benefit is greater than the disadvantage/risk, and the lower right area indicates that the disadvantage/risk is greater than the advantage/benefit.

Black circles represent the survey of 2007; gray circles, of 2008; and white circles, of 2009. The shifting of these colored circles indicates the change in the three years. From the standpoint of nanotechnology, railway, for example, was located on the upper left, while food additive, on the lower right. Nanotechnology and cellular phone were in a similar location. The difference between the two was that while people had some concrete knowledge about the advantages of cellular phones, they were ambiguous about the advantages of nanotechnology. In other words, people seemed to see a bright future of nanotechnology, even though their understanding of nanotechnology was limited.



**Fig.11 Risk-benefit scatter plot for various technologies**

**\*The vertical axis represents advantage/benefit and the horizontal axis indicates disadvantage/risk.**

**\*\*● represents 2007; ●, 2008; and ○, 2009.**

### 3.6 Attitude toward Nanotechnology Products

We provided the respondents with information about the expected outcomes when nanotechnology was applied to products, namely, cosmetics, food, electric appliances, and medicine. Then, they were asked to consider the advantages and disadvantages of nanotechnology-applied products, using a 1–7-point scale. The question read as follows: “How advantageous (beneficial and/or convenient) and disadvantageous (risky with regard to health and environment) to Japanese society do you think is the application of nanotechnology to products of the following categories? Rate your answer on a 1–7-point

scale. When you answer about advantages, consider only the advantageous effects. When you answer about disadvantages, consider only the disadvantageous effects.” Here, again, we reminded the respondents to consider the advantages and disadvantages separately.

The following information was given to the respondents as the expected outcome of applying nanotechnology to products.

**a. Application of nanotechnology to cosmetics**

Active ingredients, which are encapsulated on a nano scale, are said to penetrate deep into skin layers, thus magnifying the effect of the active ingredients.

**b. Application of nanotechnology to food**

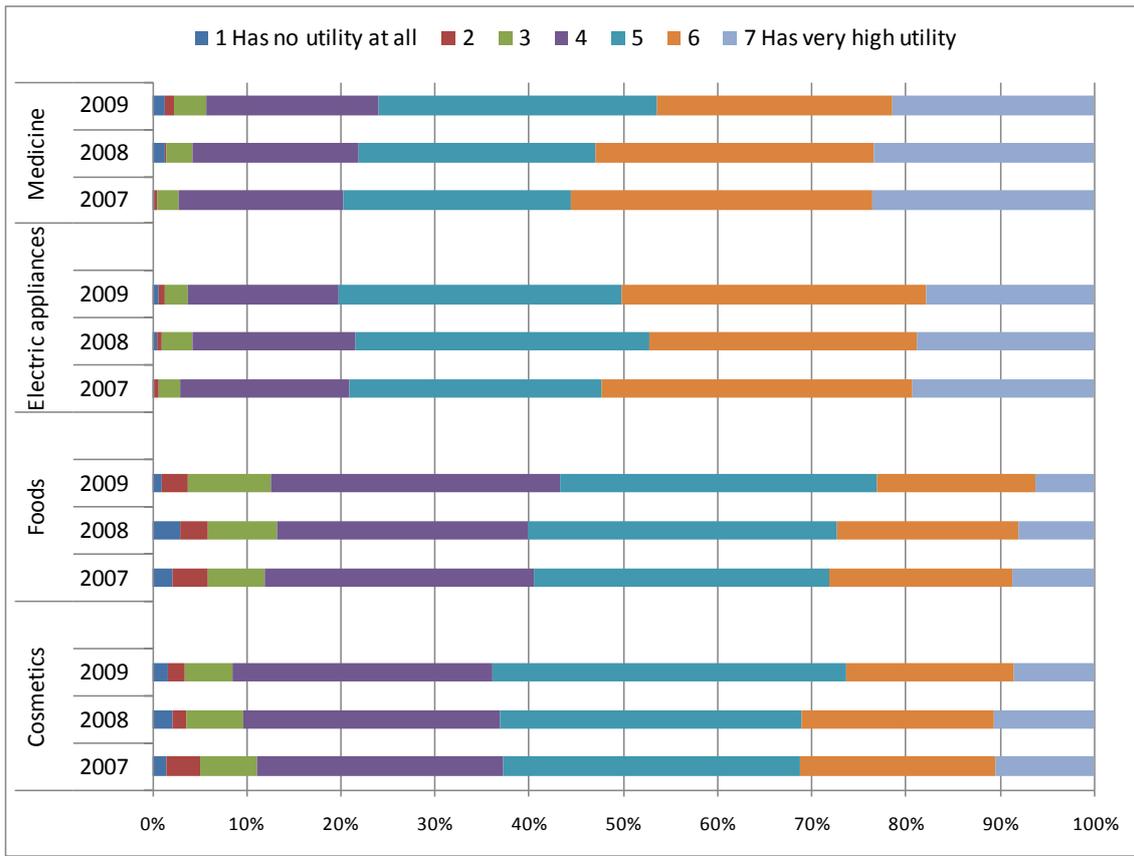
Nanotechnology is applied to supplements, drinks, yogurt, and others, thereby intensifying their antioxidative potency and absorption ability.

**c. Application of nanotechnology to electric appliances**

Filters with nanoparticles are attached to electric appliances, such as refrigerators and washing machines, thus facilitating deodorization and sterilization.

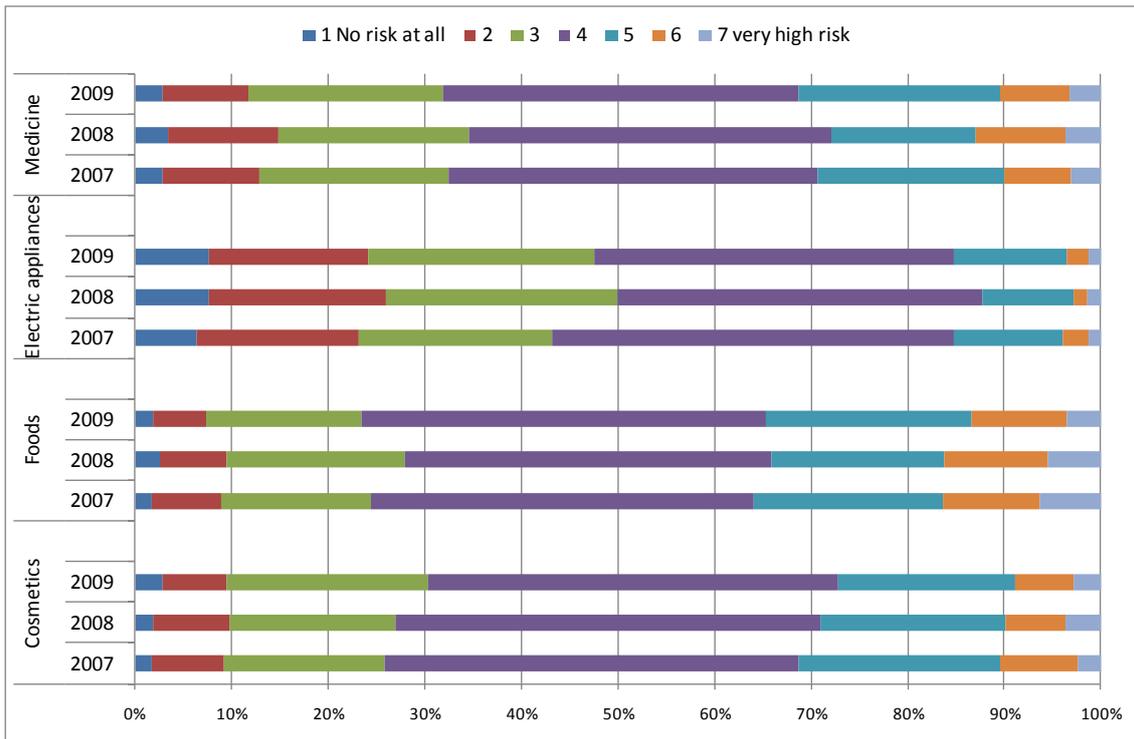
**d. Application of nanotechnology to medicine**

Ingredients of medicine are contained by nanocapsules and delivered to the targeted cells, thus enabling medical treatment with fewer side effects.



**Fig.12 Perceived advantages of nanotechnology-applied products**

The ratio of those who replied that nanotechnology-applied products would be beneficial, that is, those who selected 5, 6, or 7, was as high as 80 percent in the categories of electric appliances and medicine. However, in the categories of cosmetics and food, the ratio of those who found nanotechnology-applied products to be beneficial was some 60 percent. Further, 10 percent of the respondents replied that nanotechnology-applied products would not be beneficial; that is, they selected 1, 2, or 3, even though information about the expected outcomes was provided. The interannual change was not observed.

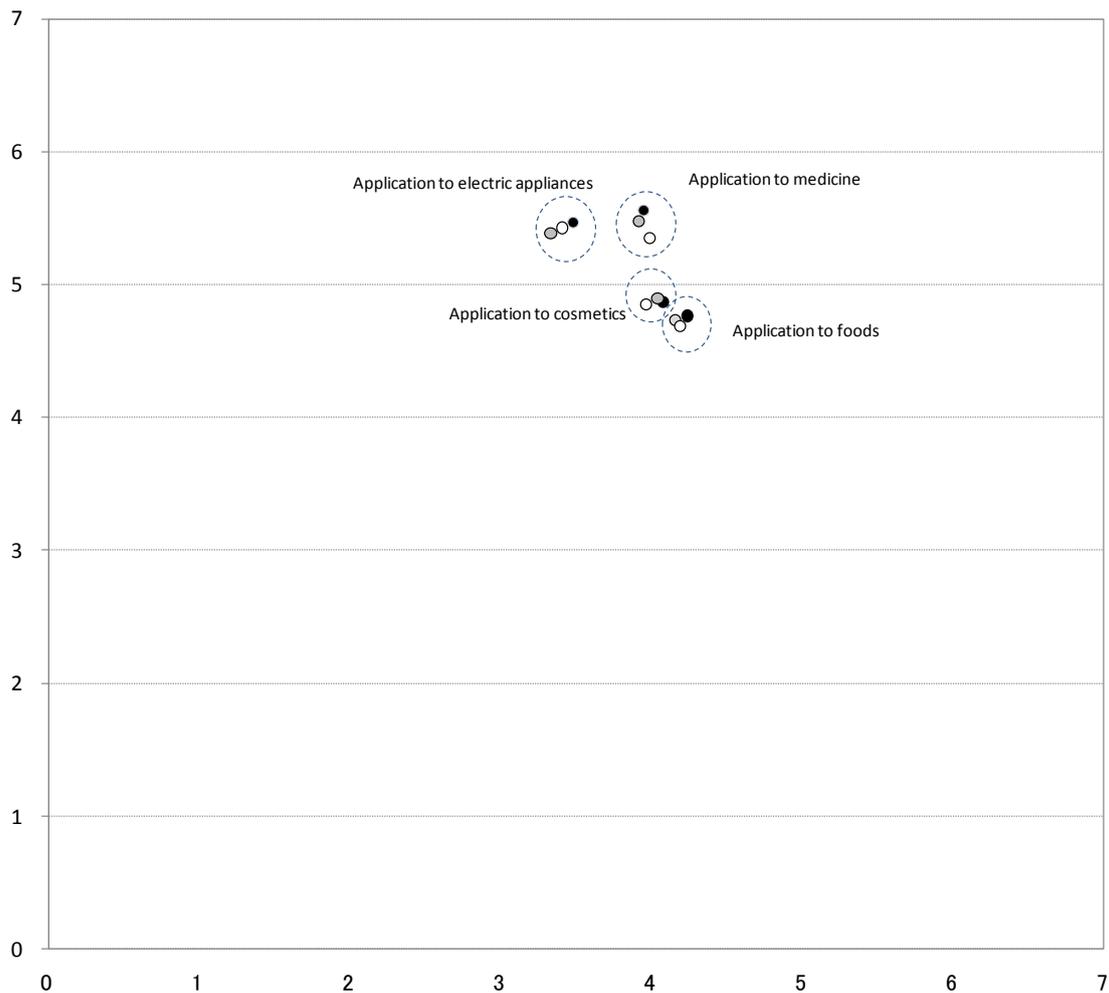


**Fig.13 Perceived disadvantages of nanotechnology-applied products**

In the category of electric appliances, the proportion of those who regarded nanotechnology-applied products as risky was 15 percent throughout the 3 years. With regard to the other categories, the proportion was more or less 30 percent. Concerning electric appliances, about one-half of the respondents replied that there would be no significant risk; that is, they selected 1, 2, or 3. Concerning the rest of the categories, 30 percent of the respondents replied that there would be no significant risk.

Although many people regarded nanotechnology-applied products to be useful, they also perceived some risk in them. There was no large interannual change observed in any category.

Fig.14 shows a risk-benefit scatter plot for four categories of nanotechnology-applied products.



**Fig.14 Risk-benefit scatter plot for four categories of nanotechnology-applied products**  
**\*The vertical axis represents advantage/benefit and the horizontal axis indicates disadvantage/risk.**

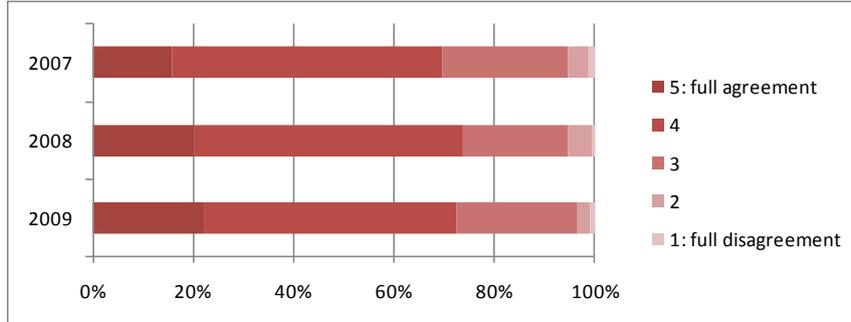
**\*\*● represents 2007; ◐, 2008; and ○, 2009.**

### 3.7 Values about Science, Technology, and Society

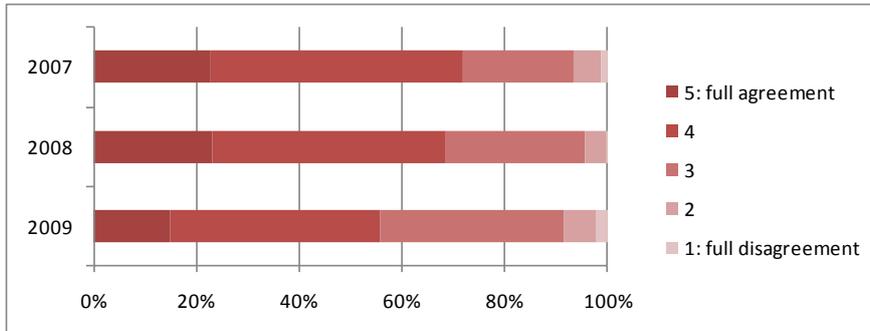
We asked the respondents about their attitude toward science, technology, and society. Regarding this, there were 11 questions in 2007 and 14 questions each in 2008 and 2009. The question read as follows: **“Do you agree or disagree with the following sentences with regard to science, technology, and contemporary society? Rate your responses on a 1–5-point scale where 1 indicates full disagreement and 5 indicates full agreement.”** Figs.15-a to k show the findings of the surveys conducted from 2007 to 2009, while

Figs.15-1 to n show the findings of the surveys conducted in 2008 and 2009. No specific interannual change was observed.

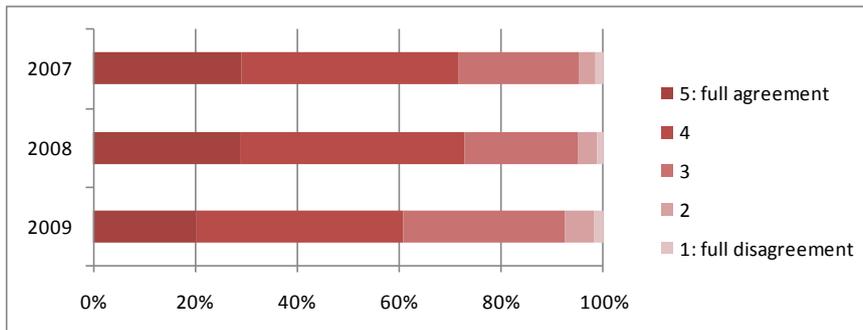
**a. Science and technology have brought us wealthy life.**



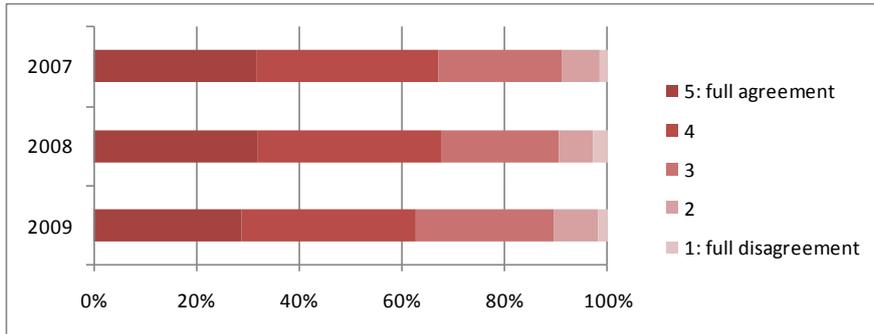
**b. Science and technology today have an unbalanced nature.**



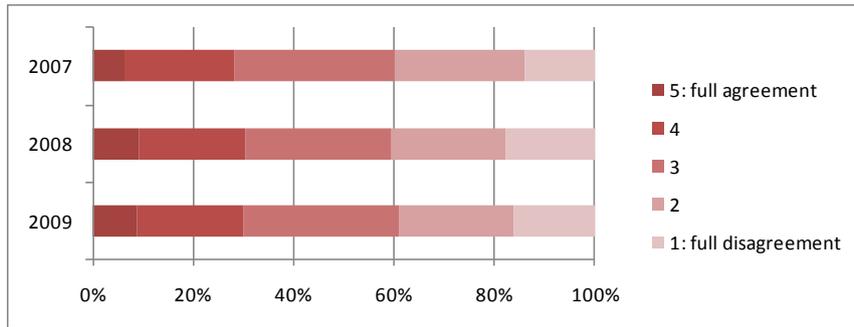
**c. Large companies need to be subjected to closer scrutiny now.**



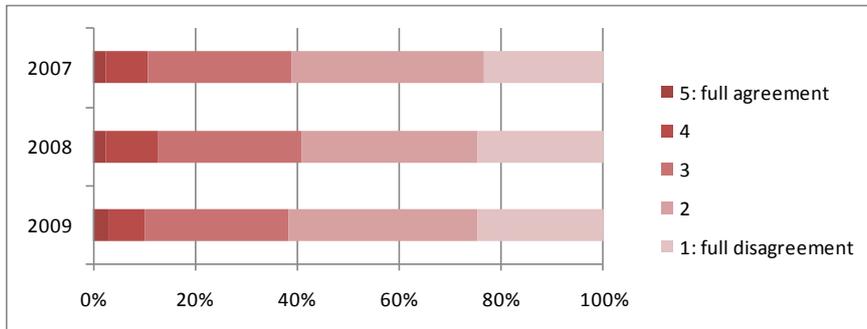
**d. It is arrogant for human beings to control nature.**



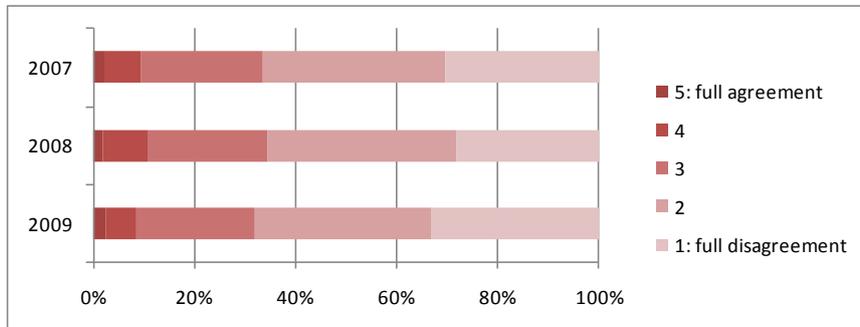
**e. Human beings can settle in space in this century or the next.**



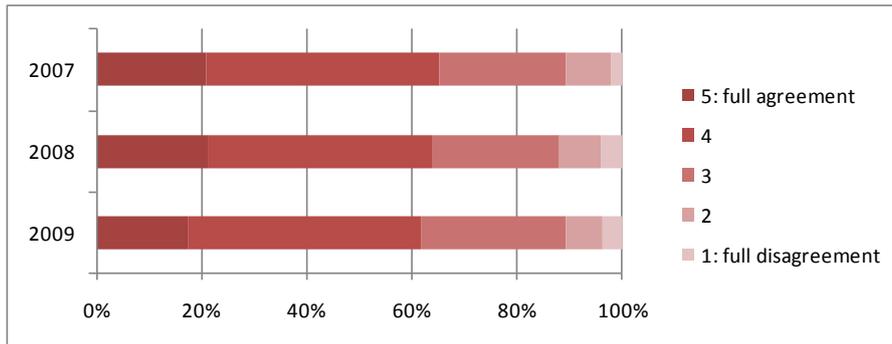
**f. Japan does not need economic growth anymore.**



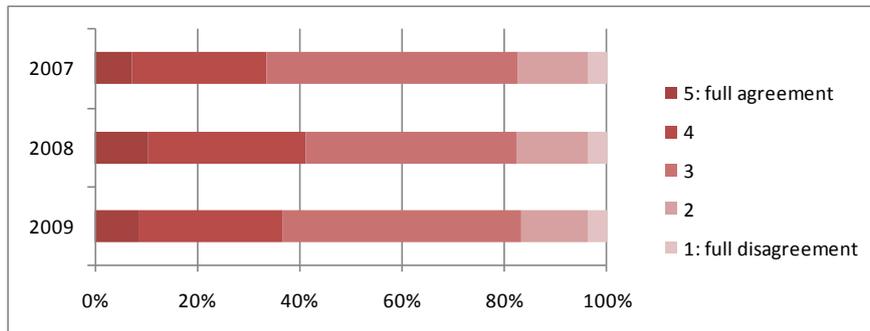
**g. There is no need for further development in science and technology.**



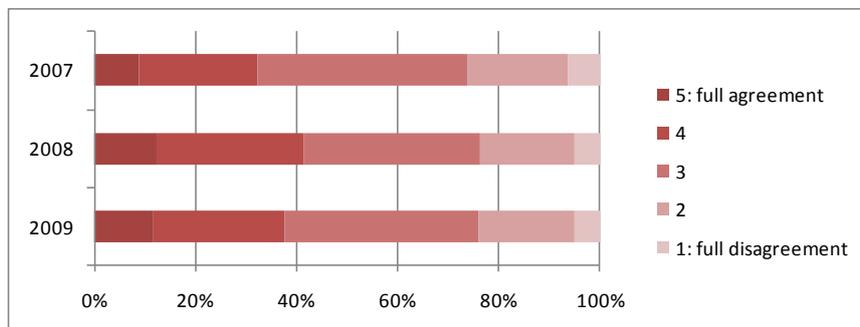
**h. For the purpose of our safety, we sometimes need laws to limit out activities.**



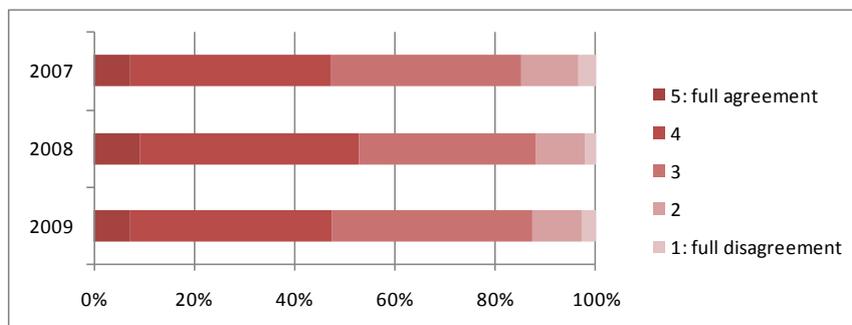
**i. It is the responsibility of society to fulfill the basic needs of all people.**



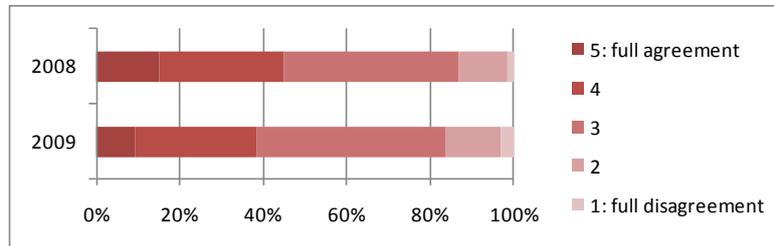
**j. Society would be better off if wealth was distributed more equally.**



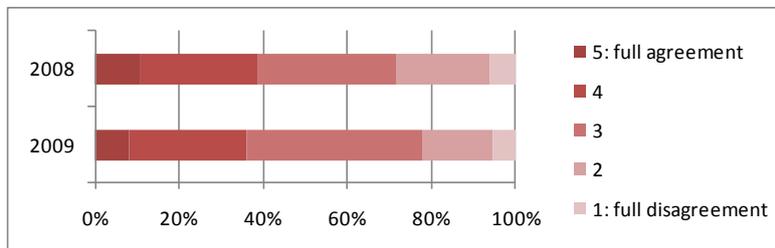
**k. A person who is successful in business has the right to lead a prosperous life to match.**



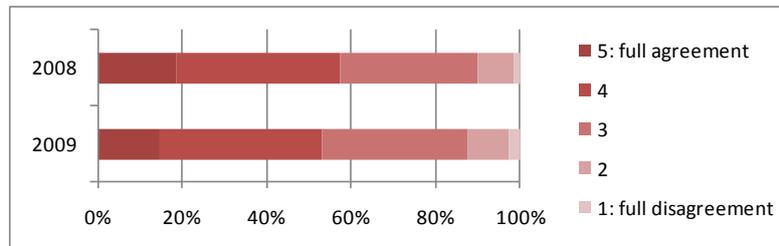
**l. The government intervenes excessively in our life, and more of its work should be handled by the private sector.**



**m. Egalitarianism has prevailed excessively at present, depriving society of vigorousness.**



**n. Many social problems today are caused by the loss of traditional values as well as the traditional shape of family.**

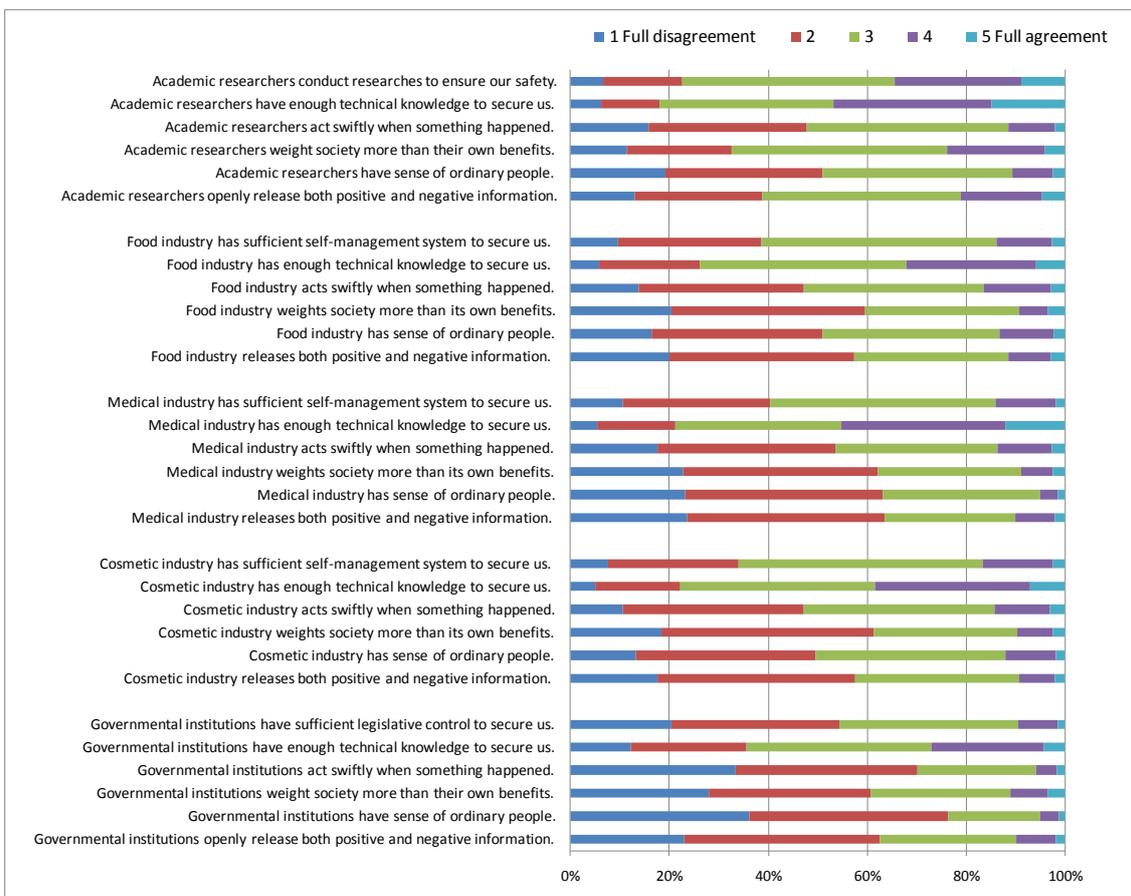


**Fig.15 Value on science, technology, and society**

### **3.8 Trust in Stakeholders**

The actors that are involved in research and development and the regulation of nanotechnologies are governmental institutions, companies/industries, and academic research institutes/researchers. In the field of psychology, it has been pointed out that trust in these actors influences the social acceptance of new technologies to some degree. Since 2007, our questionnaire surveys have also included questions with regard to trust.

Because we judged that trust was better understood by means of multiple questions rather than by a single question, we asked the respondents whether they agreed or disagreed to the six sentences given below. They were asked to rate their responses on a 1–5-point scale, where 1 indicates full disagreement and 5 indicates full agreement. The question in the 2007 survey read as follows: **“How much can you trust governmental institutions, industries, and researchers? Choose the one that is the closest of your way of thinking.”** Fig.16 shows the findings. In the types of industries, we considered cosmetics, medicine, and food.

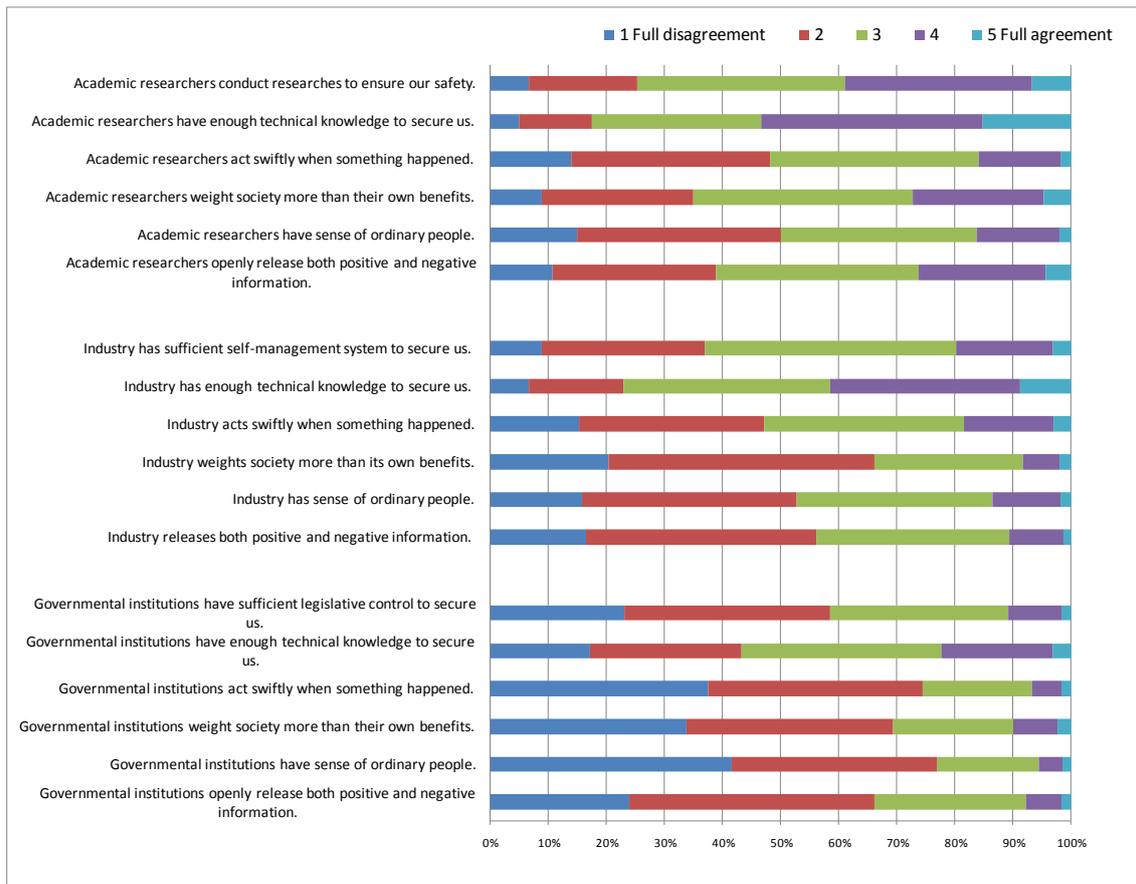


**Fig.16 Trust in stakeholders in 2007**

Trust in governmental institutions was found to be low, in particular, because the sentences “Governmental institutions have sense of ordinary people” and “Governmental institutions act swiftly when something happens” distracted the respondents. However, trust in the cosmetic, medical, and food industries and in academic researchers was found to be high with respect to the point that “(it) has enough technical knowledge to secure us.” A high level of trust was also noted for

academic researchers with respect the point that “Academic researchers conduct researches to ensure our safety.”

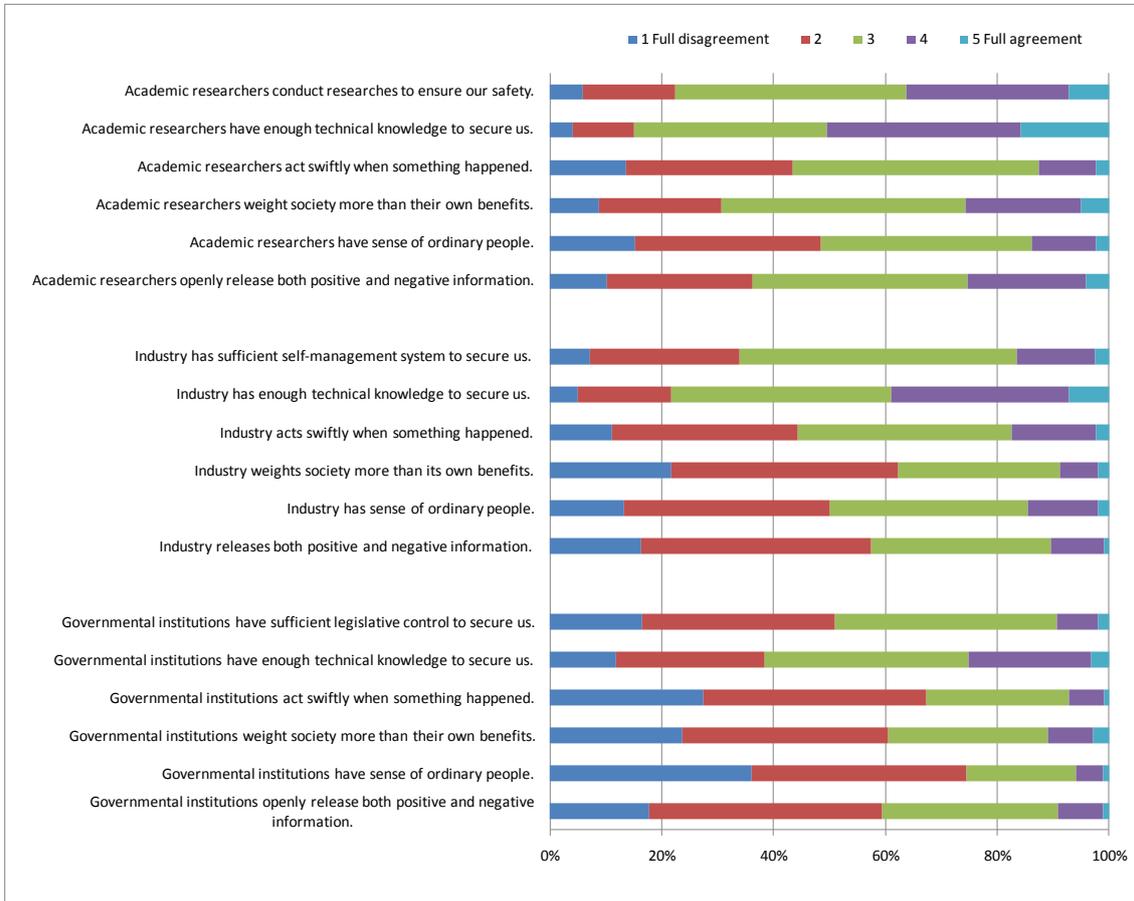
We asked the same questions in the 2008 questionnaire survey (Fig.17). The companies/industries category, however, were clubbed under the category of industry, because the difference among the industries of cosmetics, medicine, and food was not observed in the 2007 survey.



**Fig.17 Trust in stakeholders in 2008**

Consistent with the findings of the 2007 survey, it was found that the respondents had a high level of trust in industries and academic researchers with respect to the point that they “have enough technical knowledge to secure us,” and in academic researches with respect to the point that “Academic researchers conduct researches to ensure our safety.” These issues deal with system or technology for safety. Other issues such as “to openly release both positive and negative information,” “to have sense of ordinary people,” “to attach more weight to society than to their own benefits,” and “to

act swiftly when something happens” witnessed a low level of trust.



**Fig.18 Trust in stakeholders in 2009**

The findings of the 2009 questionnaire survey were similar to those of the 2008 survey in that the respondents had the lowest level of trust in governmental institutions, followed by industries and academic researchers. The respondents had a high level of trust in industries and academic researchers regarding the point of having “technical knowledge to ensure our safety,” and only in academic researchers regarding the point they “conduct researches to ensure our safety.”

## Appendix: Questionnaire form of 2009

### ■ “A questionnaire survey for new technologies and life”

This questionnaire is about the potential effects of various new technologies on our lives. We would like to know how you feel about them in everyday life.

Therefore, you are expected to answer what you think without referring to other Web sites or returning to the preceding pages even if you encounter some unfamiliar words.

Click the “Next” button to enter the questionnaire site.

#### Q1. Have you ever heard of or read the following words?

(SELECT ONE RESPONSE PER ROW.)

|  |   | I have heard of it       | Maybe I have heard of it | Maybe I have not heard of it | I have not heard of it   |
|--|---|--------------------------|--------------------------|------------------------------|--------------------------|
| Environmental endocrine disruptors             | → | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>     | <input type="checkbox"/> |
| Sick house (building) syndrome                 | → | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>     | <input type="checkbox"/> |
| Pollutant Release and Transfer Register (PRTR) | → | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>     | <input type="checkbox"/> |
| Gene modification                              | → | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>     | <input type="checkbox"/> |
| Fuel cells                                     | → | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>     | <input type="checkbox"/> |
| Nanotechnology (nanotech)                      | → | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>     | <input type="checkbox"/> |
| Negative ion (“minus ion”)                     | → | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>     | <input type="checkbox"/> |
| iPS cells                                      | → | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>     | <input type="checkbox"/> |
| Global warming                                 | → | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>     | <input type="checkbox"/> |

#### Q2. How much do you know about the meaning of the following words?

(SELECT ONE RESPONSE PER ROW.)

|  |   | I know well | I know a little | I do not know too much | I do not know at all |
|--|---|-------------|-----------------|------------------------|----------------------|
| Environmental endocrine disrupters             | → |             |                 |                        |                      |
| Sick house (building) syndrome                 | → |             |                 |                        |                      |
| Pollutant Release and Transfer Register (PRTR) | → |             |                 |                        |                      |
| Gene modification                              | → |             |                 |                        |                      |
| Fuel cells                                     | → |             |                 |                        |                      |
| Nanotechnology (nanotech)                      | → |             |                 |                        |                      |
| Negative ion (“minus ion”)                     | → |             |                 |                        |                      |
| iPS cells                                      | → |             |                 |                        |                      |
| Global warming                                 | → |             |                 |                        |                      |

**Q3A.** What kind of impression do the following words give you? Please consider all the words, including unknown words. Indicate your impression on the 1–7–point scale below, where 1 = very good and 7 = very bad. (SELECT ONE RESPONSE PER ROW.)

|                           |   | Very bad | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Very good |
|---------------------------|---|----------|---|---|---|---|---|---|---|-----------|
| Nanotechnology (nanotech) | → |          |   |   |   |   |   |   |   |           |

**Q3B.** What kind of impression do the following words give you? Please consider all the words, including unknown words. Indicate your impression on the 1–7–point scale below, where 1 = very good and 7 = very bad. (SELECT ONE RESPONSE PER ROW.)

|                                  |   | Very bad | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Very good |
|----------------------------------|---|----------|---|---|---|---|---|---|---|-----------|
| Application of nanotechnology to | → |          |   |   |   |   |   |   |   |           |

|  |   |  |  |  |  |  |  |
|--|---|--|--|--|--|--|--|
| cosmetics  |   |  |  |  |  |  |  |
| Application of nanotechnology to food                | → |  |  |  |  |  |  |
| Application of nanotechnology to electric appliances | → |  |  |  |  |  |  |
| Application of nanotechnology to medicine            | → |  |  |  |  |  |  |

**Q4.** Do you agree or disagree with the following statements with regard to science, technology, and contemporary society? Use a 1–5–point scale, where 1 indicates full disagreement and 5 indicates full agreement. (SELECT ONE RESPONSE PER ROW.)

|   |   | Full disagreement | 2 | 3 | 4 | 5 | Full agreement |
|---|---|-------------------|---|---|---|---|----------------|
| a. Science and technology have brought us wealthy life.                                     | → |                   |   |   |   |   |                |
| b. Science and technology today have an unbalanced nature.                                  | → |                   |   |   |   |   |                |
| c. Large companies need to be subjected to closer scrutiny now.                             | → |                   |   |   |   |   |                |
| d. It is arrogant for human beings to control nature.                                       | → |                   |   |   |   |   |                |
| e. Human beings can settle in space in this century or the next.                            | → |                   |   |   |   |   |                |
| f. Japan does not need economic growth anymore.   | → |                   |   |   |   |   |                |
| g. There is no need for further development in science and technology.                      | → |                   |   |   |   |   |                |
| h. For the purpose of our safety, we sometimes need laws to limit out activities.           | → |                   |   |   |   |   |                |
| i. It is the responsibility of society to fulfill the basic needs of all people.            | → |                   |   |   |   |   |                |
| j. Society would be better off if wealth was distributed more equally.                      | → |                   |   |   |   |   |                |
| k. A person who is successful in business has the right to lead a prosperous life to match. | → |                   |   |   |   |   |                |

l. The government intervenes excessively in our life, and more of its work should be handled by the private sector.



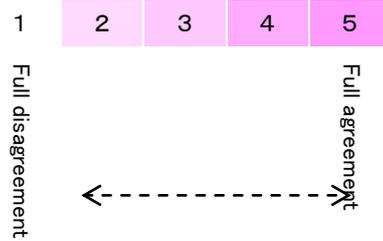
m. Egalitarianism has prevailed excessively at present, depriving society of vigorousness.



n. Many social problems today are caused by the loss of traditional values as well as the traditional shape of family.



|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|--|--|--|--|--|



**Q5. Have you ever purchased or used a product to which nanotechnology has been applied?**

(SELECT ONE RESPONSE)

- 1 Yes
- 2 No

[This question is for those who chose “yes” in Q5.]

**Q6. What kind of nanotechnology–applied products have you purchased or used? (SELECT ONE RESPONSE PER ROW.)**

|                     |   | I have purchased or used | I have not purchased or used |
|---------------------|---|--------------------------|------------------------------|
| Cosmetics           | → |                          |                              |
| Food and drinks     | → |                          |                              |
| Electric appliances | → |                          |                              |
| Medicine            | → |                          |                              |
| Sporting equipment  | → |                          |                              |
| Household detergent | → |                          |                              |
| Others (Specify )   | → |                          |                              |

【The following questions are about the “cosmetics” product that you mentioned in response to Q6.】

**Q6SQA1.** Did you find an additional positive benefit of the product with the label “nanotech”?

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 Yes, I found it to a large extent.
- 2 Yes, I found it to a small extent.
- 3 No, I did not find it much.
- 4 No, I did not find it at all.

**Q6SQA2.** Was the product expensive or inexpensive in comparison with the similar one without the label “nanotech”?

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 The product was much more expensive than the one without the label “nanotech.”
- 2 The product was slightly more expensive than the one without the label “nanotech.”
- 3 The prices of the products were the same.
- 4 The product was slightly more inexpensive than the one without the label “nanotech.”
- 5 The product was much more inexpensive than the one without the label “nanotech.”

**Q6SQA3.** Would you like to purchase it again?

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 I will definitely buy it again.
- 2 I will buy it sometimes.
- 3 Do not know
- 4 I will probably not buy it again.
- 5 I will never buy it again.

【The following questions are about the “food and drinks” product that you mentioned in response to Q6.】

**Q6SQB1.** Did you find an additional positive benefit of nanotech?

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 Yes, I found it to a large extent.

- 2 Yes, I found it to a small extent.
- 3 No, I did not find it much.
- 4 No, I did not find it at all.

**Q6SQB2. Was the product expensive or inexpensive in comparison with the similar one without the label “nanotech”?**

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 The product was much more expensive than the one without the label “nanotech.”
- 2 The product was slightly more expensive than the one without the label “nanotech.”
- 3 The prices of the products were the same.
- 4 The product was slightly more inexpensive than the one without the label “nanotech.”
- 5 The product was much more inexpensive than the one without the label “nanotech.”

**Q6SQB3. Would you like to purchase it again?**

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 I will definitely buy it again.
- 2 I will buy it sometimes.
- 3 Do not know
- 4 I will probably not buy it again.
- 5 I will never buy it again.

【The following questions are about the “electric appliances” product that you mentioned in response to Q6.】

**Q6SQC1. Did you find an additional positive benefit of nanotech?**

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 Yes, I found it to a large extent.
- 2 Yes, I found it to a small extent.
- 3 No, I did not find it much.
- 4 No, I did not find it at all.

**Q6SQC2. Was the product expensive or inexpensive in comparison with the similar one without the label “nanotech”?**

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 The product was much more expensive than the one without the label “nanotech.”
- 2 The product was slightly more expensive than the one without the label “nanotech.”

- 3 The prices of the products were the same.
- 4 The product was slightly more inexpensive than the one without the label “nanotech.”
- 5 The product was much more inexpensive than the one without the label “nanotech.”

**Q6SQC3. Would you like to purchase it again?**

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 I will definitely buy it again.
- 2 I will buy it sometimes.
- 3 Do not know
- 4 I will probably not buy it again.
- 5 I will never buy it again.

【The following questions are about the “medicine” product that you mentioned in response to Q6.】

**Q6SQD1. Did you find an additional positive benefit of nanotech?**

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 Yes, I found it to a large extent.
- 2 Yes, I found it to a small extent.
- 3 No, I did not find it much.
- 4 No, I did not find it at all.

**Q6SQD2. Was the product expensive or inexpensive in comparison with the similar one without the label “nanotech”?**

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 The product was much more expensive than the one without the label “nanotech.”
- 2 The product was slightly more expensive than the one without the label “nanotech.”
- 3 The prices of the products were the same.
- 4 The product was slightly more inexpensive than the one without the label “nanotech.”
- 5 The product was much more inexpensive than the one without the label “nanotech.”

**Q6SQD3. Would you like to purchase it again?**

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 I will definitely buy it again.
- 2 I will buy it sometimes.
- 3 Do not know

- 4 I will probably not buy it again.
- 5 I will never buy it again.

【The following questions are about the “sporting equipment” product that you mentioned in response to Q6.】

**Q6SQE1. Did you find an additional positive benefit of nanotech?**

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 Yes, I found it to a large extent.
- 2 Yes, I found it to a small extent.
- 3 No, I did not find it much.
- 4 No, I did not find it at all.

**Q6SQE2. Was the product expensive or inexpensive in comparison to the similar one without the label “nanotech”?**

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 The product was much more expensive than the one without the label “nanotech.”
- 2 The product was slightly more expensive than the one without the label “nanotech.”
- 3 The prices of the products were the same.
- 4 The product was slightly more inexpensive than the one without the label “nanotech.”
- 5 The product was much more inexpensive than the one without the label “nanotech.”

**Q6SQE3. Would you like to purchase it again?**

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 I will definitely buy it again.
- 2 I will buy it sometimes.
- 3 Do not know
- 4 I will probably not buy it again.
- 5 I will never buy it again.

【The following questions are about the “household detergent” product that you mentioned in response to Q6.】

**Q6SQF1. Did you find an additional positive benefit of nanotech?**

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 Yes, I found it to a large extent.

- 2 Yes, I found it to a small extent.
- 3 No, I did not find it much.
- 4 No, I did not find it at all.

**Q6SQF2. Was the product expensive or inexpensive in comparison with the similar one without the label “nanotech”?**

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 The product was much more expensive than the one without the label “nanotech.”
- 2 The product was slightly more expensive than the one without the label “nanotech.”
- 3 The prices of the products were the same.
- 4 The product was slightly more inexpensive than the one without the label “nanotech.”
- 5 The product was much more inexpensive than the one without the label “nanotech.”

**Q6SQF3. Would you like to purchase it again?**

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 I will definitely buy it again.
- 2 I will buy it sometimes.
- 3 Do not know
- 4 I will probably not buy it again.
- 5 I will never buy it again.

【The following questions are about the “others” product that you mentioned in response to Q6.】

**Q6SQG1. Did you find the additional positive benefit of nanotech?**

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 Yes, I found it to a large extent.
- 2 Yes, I found it to a small extent.
- 3 No, I did not find it much.
- 4 No, I did not find at all.

**Q6SQG2. Was the product expensive or inexpensive in comparison with the similar one without the label “nanotech”?**

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 The product was much more expensive than the one without the label “nanotech.”
- 2 The product was slightly more expensive than the one without the label “nanotech.”

- 3 The prices of the products were the same.
- 4 The product was slightly more inexpensive than the one without the label “nanotech.”
- 5 The product was much more inexpensive than the one without the label “nanotech.”

**Q6SQG3. Would you like to purchase it again?**

(In case you have used more than one product, please select the response that describes the overall impression.)

(SELECT ONE RESPONSE.)

- 1 I will definitely buy it again.
- 2 I will buy it sometimes.
- 3 Do not know
- 4 I will probably not buy it again.
- 5 I will never buy it again.

**Q7. Suppose you plan to buy a certain product. You find two products of a kind, which look alike and are available for the same price. One is with the label “nanotechnology is used” and the other is without. Would you like to purchase the one with the label “nanotechnology is used” in the following categories? (SELECT ONE RESPONSE PER ROW.)**

|                     |   | I would like to purchase | It does not matter to me | I hesitate to purchase |
|---------------------|---|--------------------------|--------------------------|------------------------|
| Cosmetics           | → |                          |                          |                        |
| Food and drinks     | → |                          |                          |                        |
| Electric appliances | → |                          |                          |                        |
| Medicine            | → |                          |                          |                        |
| Sporting equipment  | → |                          |                          |                        |
| Household detergent | → |                          |                          |                        |

**Q8. How advantageous (beneficial and/or convenient) and disadvantageous (risky with regard to health and environment) to Japanese society do you think are the following technologies and substances? Use a 1–7–point scale for your answer.**

When you answer about advantages, consider only the advantageous effects. When you answer about disadvantages, consider only the disadvantageous effects. (SELECT ONE RESPONSE PER ROW.)

With respect to “nanotechnology,” please answer this question after reading the explanation in the following box.

<positive side>

Has  
no  
utility  
at all

←----->

Has  
very  
high  
utility

|                               |   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-------------------------------|---|---|---|---|---|---|---|---|
| Automobile                    | → |   |   |   |   |   |   |   |
| Household pesticide           | → |   |   |   |   |   |   |   |
| X-ray photography             | → |   |   |   |   |   |   |   |
| Agricultural chemicals        | → |   |   |   |   |   |   |   |
| Antibiotic substance          |   |   |   |   |   |   |   |   |
| Chemical plant                |   |   |   |   |   |   |   |   |
| Household electric appliances |   |   |   |   |   |   |   |   |
| Gene modification             |   |   |   |   |   |   |   |   |
| Alcohol                       |   |   |   |   |   |   |   |   |
| Asbestos                      |   |   |   |   |   |   |   |   |
| Nuclear power generation      |   |   |   |   |   |   |   |   |
| Cellular phone                |   |   |   |   |   |   |   |   |
| Railway                       |   |   |   |   |   |   |   |   |
| Food additive                 |   |   |   |   |   |   |   |   |
| Nanotechnology                |   |   |   |   |   |   |   |   |

<negative side>

No  
risk

←----->

Very  
high

|                               |   | at all risk |   |   |   |   |   |   |
|-------------------------------|---|-------------|---|---|---|---|---|---|
|                               |   | 1           | 2 | 3 | 4 | 5 | 6 | 7 |
| Automobile                    | → |             |   |   |   |   |   |   |
| Household pesticide           | → |             |   |   |   |   |   |   |
| X-ray photography             | → |             |   |   |   |   |   |   |
| Agricultural chemicals        | → |             |   |   |   |   |   |   |
| Antibiotic substance          |   |             |   |   |   |   |   |   |
| Chemical plant                |   |             |   |   |   |   |   |   |
| Household electric appliances |   |             |   |   |   |   |   |   |
| Gene modification             |   |             |   |   |   |   |   |   |
| Alcohol                       |   |             |   |   |   |   |   |   |
| Asbestos                      |   |             |   |   |   |   |   |   |
| Nuclear power generation      |   |             |   |   |   |   |   |   |
| Cellular phone                |   |             |   |   |   |   |   |   |
| Railway                       |   |             |   |   |   |   |   |   |
| Food additive                 |   |             |   |   |   |   |   |   |
| Nanotechnology                |   |             |   |   |   |   |   |   |

The following is an explanation of the meaning of nanotechnology and its potential positive and negative effects.

**Nanotechnology is a type of technology that enables us to measure, see, predict, and create things on an extremely small scale, that is, 1/1,000th to 1/100,000th of a hairbreadth.** Substances made on such a small scale are called nanomaterials. These substances often obtain various new characteristics in physical, chemical, and biological terms that are different from those of the same substance of ordinal size.

**The positive aspects that nanotechnology is expected to bring about will be exemplified by the products to which**

**nanotechnology is applied.** They should include food packaging that kills bacteria, stain-resistant clothing, highly qualified sporting equipment, high-speed and small computers, and highly efficacious cosmetics and sunscreens. Nanotechnology has enormous potential, such as in the treatment of new diseases, purification of environment pollution, and production of inexpensive energy.

At the same time, however, **it has been pointed out that this extreme “smallness” of nanomaterials may have a negative impact on our health and environment.** Although nanomaterials may be absorbed into the body by inhalation, skin contact, eating, or drinking, or be discharged into rivers and soils, their potential impact on our health and the environment still needs to be clarified.

**Q9. How advantageous (beneficial and/or convenient) and disadvantageous (risky with regard to health and environment) to Japanese society do you think is the application of nanotechnology to products of the following categories? Use a 1–7-point scale for your answer.**

**When you answer about advantages, consider only the advantageous effects. When you answer about disadvantages, consider only the disadvantageous effects. (SELECT ONE RESPONSE PER ROW.)**

**a. Application of nanotechnology to cosmetics**  
Active ingredients, which are capsulated on a nano scale, are said to penetrate deep into skin layers, thus magnifying the effect of the active ingredients.

|   |                 |                       |         |   |   |   |   |                       |
|---|-----------------|-----------------------|---------|---|---|---|---|-----------------------|
|   | <positive side> | Has no utility at all | ←-----→ |   |   |   |   | Has very high utility |
|   |                 | 1                     | 2       | 3 | 4 | 5 | 6 | 7                     |
| a. Application of nanotechnology to cosmetics | —               |                       |         |   |   |   |   |                       |
|   | <negative side> | No risk at all        | ←-----→ |   |   |   |   | Very high risk        |
|   |                 | 1                     | 2       | 3 | 4 | 5 | 6 | 7                     |
| a. Application of nanotechnology to cosmetics | —               |                       |         |   |   |   |   |                       |

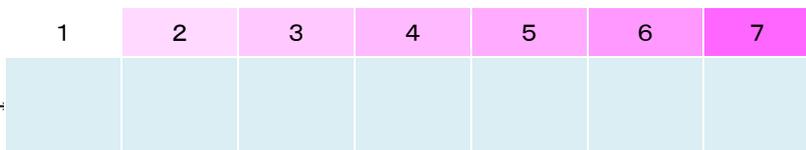
### b. Application of nanotechnology to food

Nanotechnology is applied to supplements, drinks, yogurt, and others, thereby intensifying their antioxidative potency and absorption ability.

<positive side>

Has no utility at all ←-----→ Has very high utility

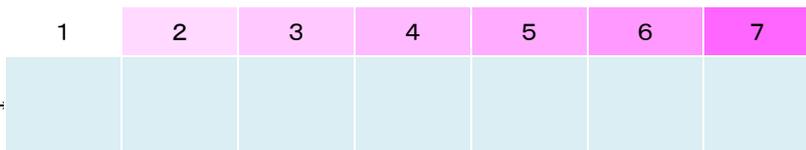
b. Application of nanotechnology to food



<negative side>

No risk at all ←-----→ Very high risk

b. Application of nanotechnology to food



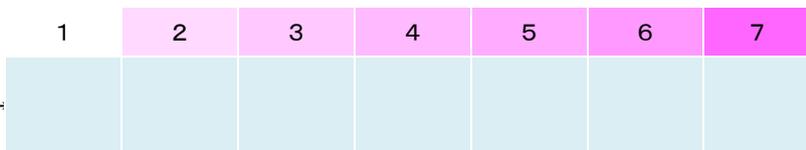
### c. Application of nanotechnology to electric appliances

Filters with nanoparticles are attached to electric appliances, such as refrigerators and washing machines, thus facilitating deodorization and sterilization.

<positive side>

Has no utility at all ←-----→ Has very high utility

c. Application of nanotechnology to electric appliances



<negative side>

No risk at all ←-----→ Very high risk





consumer products

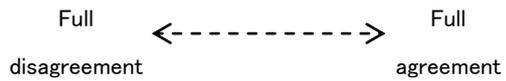
**Q10.** With regard to the products that you mentioned in response to Q9, how much do you trust the following organizations, that is, governmental institutions, industries, and academic researchers? **(SELECT ONE RESPONSE PER ROW.)**

**Governmental institutions (which administrate cosmetics, food/drinks, electronic appliances, and medical products)**



|  | 1 | 2 | 3 | 4 | 5 |
|--|---|---|---|---|---|
| They openly release both positive and negative information.    |   |   |   |   |   |
| They have sense of ordinary people.                            |   |   |   |   |   |
| They attach more weight to society than to their own benefits. |   |   |   |   |   |
| They act swiftly when something happens.                       |   |   |   |   |   |
| They have enough technical knowledge to secure us.             |   |   |   |   |   |
| They have sufficient legislative control to secure us.         |   |   |   |   |   |

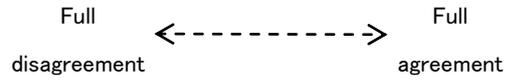
**Industries (cosmetics, medicine, food, and drinks)**



|  | 1 | 2 | 3 | 4 | 5 |
|--|---|---|---|---|---|
| They openly release both positive and negative information.    |   |   |   |   |   |
| They have sense of ordinary people.                            |   |   |   |   |   |
| They attach more weight to society than to their own benefits. |   |   |   |   |   |
| They act swiftly when something happens.                       |   |   |   |   |   |
| They have enough technical knowledge to secure us.             |   |   |   |   |   |

They have an adequate self-management system to secure us. →

**Researchers in university and research institutions**



|  | 1 | 2 | 3 | 4 | 5 |
|--|---|---|---|---|---|
| They openly release both positive and negative information.    |   |   |   |   |   |
| They have sense of ordinary people.                            |   |   |   |   |   |
| They attach more weight to society than to their own benefits. |   |   |   |   |   |
| They act swiftly when something happens.                       |   |   |   |   |   |
| They conduct sufficient research to secure us.                 |   |   |   |   |   |
| They have enough technical knowledge to secure us.             |   |   |   |   |   |

**Q11. How much time do you spend watching or reading the following media on an average day? (SELECT ONE RESPONSE PER ROW.)**

|  | 0 hours | 0-1 hours | 1-2 hours | 2-3 hours | 3-4 hours | 4-5 hours | More than 5 hours |
|--|---------|-----------|-----------|-----------|-----------|-----------|-------------------|
| Television (including via cellular phone and the Internet) |         |           |           |           |           |           |                   |
| Newspaper (printed version only)                           |         |           |           |           |           |           |                   |
| Journals, comics, and books (printed version only)         |         |           |           |           |           |           |                   |
| The Internet (excluding the time for e-mails)              |         |           |           |           |           |           |                   |

Lastly, please answer some questions about yourself.

**F1. Your sex (SELECT ONE)**

- 1 Male
- 2 Female

**F2. Your age**

**F3. Are you married? (SELECT ONE)**

- 1 Yes
- 2 No

**F4. Your academic qualification (SELECT ONE)**

- 1 Elementary school
- 2 Junior high school
- 3 High school
- 4 Professional school
- 5 Two-year college
- 6 University
- 7 Graduate school
- 8 Others (specify: \_\_\_\_\_ )

**F4SF. Is your background arts or science? (SELECT ONE)**

- 1 Arts
- 2 Science
- 3 Both
- 4 Neither
- 5 Do not know

**F5. Your current job (SELECT ONE)**

- 1 Employee (full time)
- 2 Employee (part time)
- 3 Corporate manager
- 4 Housewife
- 5 Student
- 6 Out of work
- 7 Others (specify: \_\_\_\_\_ )

**F6. Annual income of your household before tax deductions and including pension (SELECT ONE)**

- 1 Less than 3 million yen
- 2 3-5 million yen
- 3 5-8 million yen
- 4 8-10 million yen

5 10–15 million yen

6 15–20 million yen

7 More than 20 million yen

**F7.** Was this survey interesting to you? (SELECT ONE)

1 Yes

2 No

3 Neither

**F8.** Comments ( )