

2009 White Paper  
Information and Communications in Japan  
<Outline>

July, 2009

Ministry of Internal Affairs and Communications, JAPAN

# Special Theme of the White Paper on Information and Communications in Japan 2009

## Special Theme: Why is ICT essential for Japan's revival?

- Information and communications technology (ICT) contributes to national economic growth through three channels of power: economic power, intellectual power and social power.
- Compared with other countries, Japan excels in terms of the development of its ICT infrastructure but faces significant challenges in terms of the utilization and security of ICT.
- There are three challenges facing the revival of Japan: (1) boosting the economic growth rate by increasing ICT investment (infrastructure) (2) using ICT as a catalyst for promoting collaboration between various relevant parties (utilization) and (3) creating a secure society by complementing local-community and family relationships with “e-relationships”\*(security).

\* a community of people or companies established on the basis of the utilization of an information network

### Chapter 1 Channels Linking ICT with Growth

- Economic power: Contributing to growth through a rise in productivity, accumulation of information capital and support for the labor force
- Intellectual power: Contributing to growth through an accumulation of human capital (knowledge/information and education/personnel)
- Social power: Contributing to growth through an accumulation of social capital (governance, local community networks)

### Chapter 2 Changing Global Economy and Japan's ICT

- Levels of infrastructure development of Japan's ICT are the highest in the world given the low cost and high speed of information access.
- Japan's ICT is lagging behind in terms of utilization, mainly in the fields of public services such as medical care and education.
- Although the environment for the utilization of ICT in Japan is fairly safe compared with other countries, Japanese users tend to feel insecure about ICT.

### Chapter 3 Three Challenges (I x C x T) Facing Japan's Revival

- If ICT investment is drastically increased, Japan's real economic growth rate may rise by nearly one percentage point in the 2010s.
- ICT will act as a catalyst for collaboration between different business sectors and between producers and consumers and help to provide one-stop services useful for the people.
- Feeling of insecurity about ICT may be eased by a networked society with a human touch based on the combination of local-community and family relationships with “e-relationships.”

I (Investment) x C (Collaboration) x T (Trust)

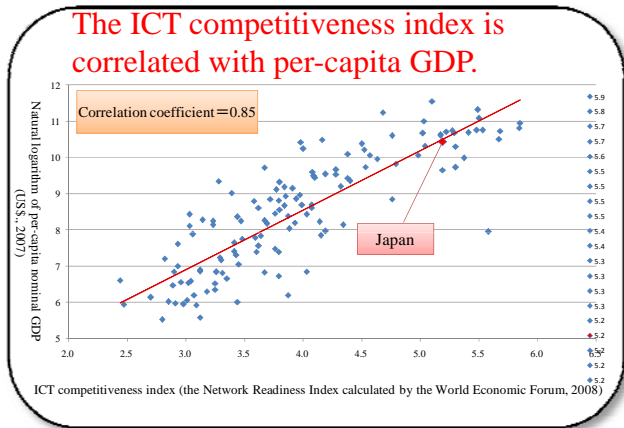
# Chapter 1

## Channels Linking ICT with Growth

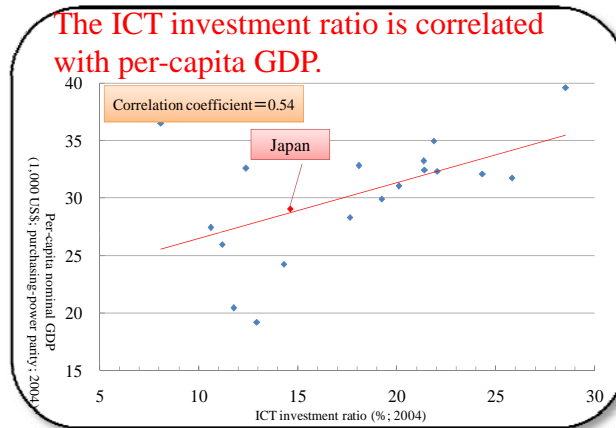
# ICT is Closely Related to Economic Growth

- Statistically, the development of ICT is closely correlated with economic growth.
  - e.g.) The relationship between the ICT competitiveness index and per-capita GDP, the relationship between the ICT investment ratio and per-capita GDP, and the relationship between the ICT investment growth rate and GDP growth rate.
- High-income countries position the ICT industry as an industrial pillar.
  - e.g.) In countries placed high in the per-capita GDP rankings (e.g. Nordic countries), the ICT industry generally accounts for a large portion of the economy and is growing strongly.

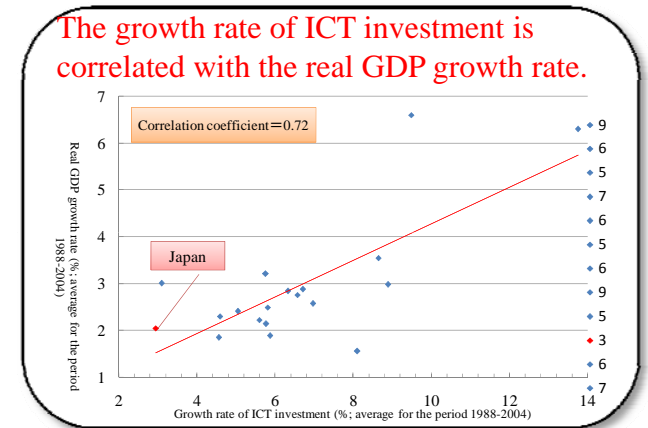
## ICT competitiveness and per-capita GDP



## ICT investment and per-capita GDP



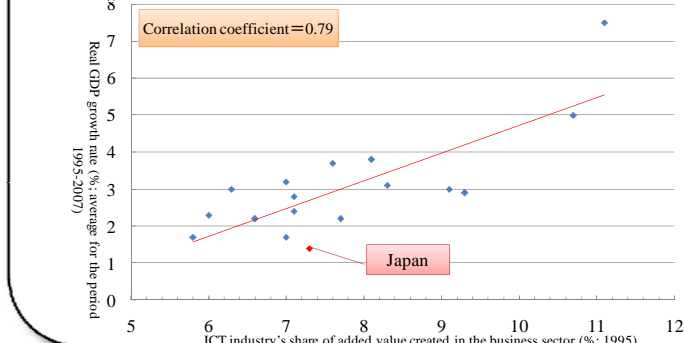
## ICT investment ratio and growth rate



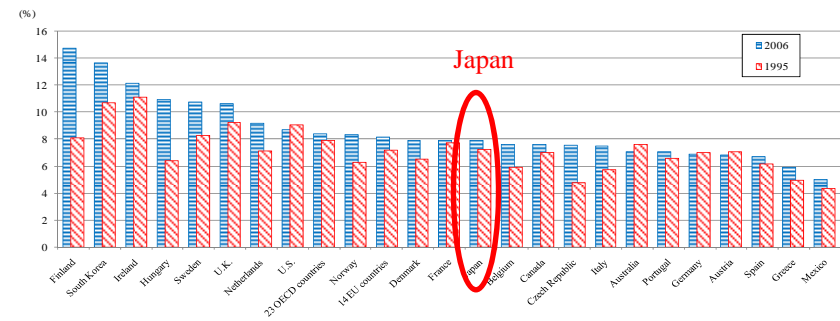
(Source) Statistical data compiled by the WEF, the IMF and the OECD

## Share of the ICT industry and growth rate

Countries in which the ICT industry has a large share of the economy generally enjoy high real economic growth.



The share of the ICT industry in Japan is not high compared with the share in other OECD countries.



## Developed countries position ICT as a new area of growth

- Amid the global economic crisis, the idea of positioning ICT as a new field that contributes to a future-oriented nation-building has taken hold.
- The United States, the United Kingdom, France and South Korea have adopted national strategies focusing on ICT. e.g.) U.S.: “Technology and Innovation”, U.K.: “Digital Britain”, France: “Digital France 2012”, South Korea: “New IT Strategy”

### National digital strategies adopted by major countries

#### United States

■ The new U.S. administration of President Obama has positioned **technology and innovation** as a cornerstone of its policy.

Examples of policy measures:

- Connecting all schools, libraries, households and hospitals with the world’s most advanced communications infrastructure
- Appointing a CTO (Chief Technology Officer), who will be responsible for overseeing the technology policy of the U.S. government as a whole in order to realize an “e-government.”
- Reducing the costs of medical care systems through ICT utilization

Source: Technology and Innovation, a policy drawn up by then presidential candidate Obama (November 2007)

A statement by President Barack Obama on technology and innovation:

“The state of the economy calls for action, bold and swift, and we will act — not only to create new jobs, but to lay a new foundation for growth. We will build the roads and bridges, the electric grids and digital lines that feed our commerce and bind us together. We will restore science to its rightful place and wield technology’s wonders to raise health care’s quality and lower its cost...and we will transform our schools and colleges and universities to meet the demands of a new age.” (extracted from the inaugural address made by President Obama on January 20, 2009)

#### United Kingdom

■ The United Kingdom announced “**Digital Britain**,” a new action plan for the ICT sector, in June 2009 (a detailed implementation plan is scheduled to be drawn up by this summer).

■ “Digital Britain” is a strategic plan aiming to accelerate the growth of the digital industry and enhance the United Kingdom’s position as a world leader in innovation, investment and quality. It describes mainly measures related to the development of ICT infrastructure, the promotion of “digital participation” by the general public and creative industries of the digital age.

A statement by Peter Mandelson, Secretary of State for Business, Enterprise and Regulatory Reform:

“The Government is determined that the UK will strengthen its place as a world leader in the communications and digital technology sectors. For the present financial and banking crisis, Britain must get through the worst and prepare for the upturn. The digital economy will be central to this.”

#### France

■ France announced “**Digital France 2012**,” a comprehensive national strategy for the digital sector, in October 2008

■ The strategy aims to increase the ICT sector’s share of GDP from 6% to 12% (as stated by Eric Besson, who was then Secretary of State in charge of the development of the digital economy).

(Note) The strategy comprises 154 measures, including those related to plans to enable all citizens to access broadband networks and enhance the production of digital contents.

#### South Korea

■ South Korea announced its **New IT Strategy**, an ICT policy of the government of President Lee Myung-bak, in July 2008.

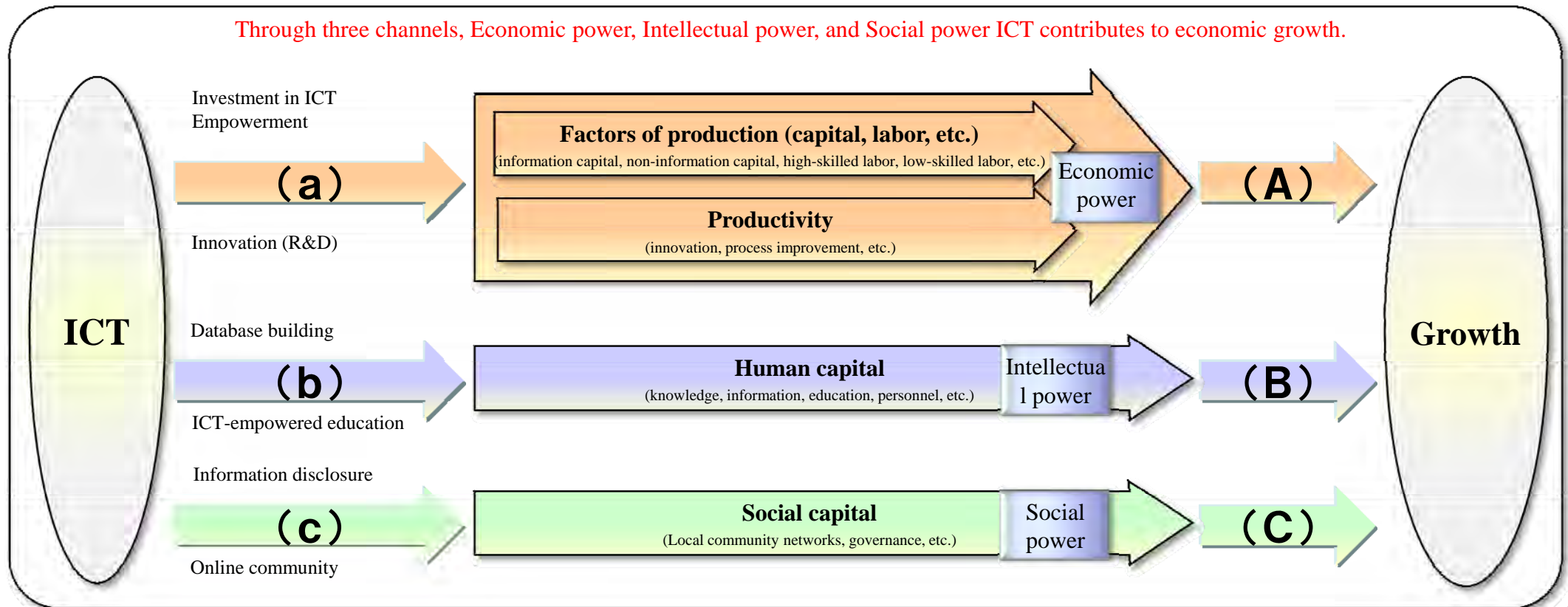
■ In December 2008, South Korea adopted the **basic plan for national information empowerment** for 2008 to 2012 and set five broad goals, including expanding the annual production value of the ICT industry from the 267.6 trillion won in 2007 to 386 trillion in 2012, with a view to creating an advanced knowledge- and information-based society with creativity and credibility. Following this, South Korea announced an implementation **plan for national information empowerment**, which listed 205 tasks related to 20 agenda items.

## It is important to clarify the channels that link ICT with economic growth

- The correlation between ICT and economic growth could be merely superficial. It is essential to clarify the channels that link the two.
- The following are three major channels that link ICT with economic growth.
  - (1) Economic power: An increase in the input of factors of production (capital, labor, etc.) and a rise in productivity
  - (2) Intellectual power: Accumulation of human capital
  - (3) Social power: Accumulation of social capital

### Three channels that link ICT with economic growth

Through three channels, Economic power, Intellectual power, and Social power ICT contributes to economic growth.



# Through economic power, ICT contributes to economic growth by increasing the input of information capital and raising productivity

- The accumulation of information capital through ICT investment contributes to growth by increasing productivity. ICT also makes teleworking possible and contributes to growth by encouraging the social participation of child-rearing parents and elderly people and by supporting the labor force.
- Improved efficiency through the introduction of new ICT contributes to growth by increasing productivity.

(1) Economic power: Contribution to growth through a productivity rise, accumulation of information capital and support for the labor force

【Figure: Factors contributing to the real economic growth of Japan and the United States】

Impact of innovation (productivity rise)

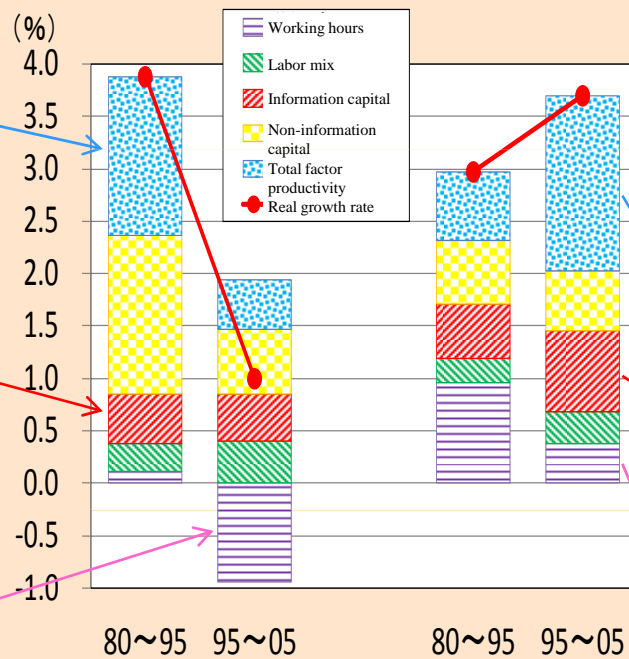
Technological innovation of ICT raises productivity.

Impact of ICT investment (accumulation of information capital)

Acceleration of ICT investment enhances the accumulation of information capital.

Impact of empowerment (support for the labor force)

Promotion of teleworking complements participation in the labor force.  
(significant impact on the social participation of child-rearing parents and elderly people)



Comparison of Japan and the United States during the periods 1980-95 and 1995-2005.

Japan	U.S.
ICT investment slumped after 1995. (The ICT investment ratio stood at 22% in 2007)	ICT investment accelerated after 1995 (The ICT investment ratio stood at 34% in 2007.)
The productivity rise was slow.	The productivity rise accelerated.
The contribution of ICT to growth in capital information remained flat. (The contribution to growth in non-information capital declined.)	The contribution of ICT to growth in information capital increased. (The contribution to growth in non-information capital remained flat.)
The ratio of teleworkers stood at 10% in 2005	The ratio of teleworkers stood at 32% in 2005.

Japan

U.S.

Source: EU KLEMS database  
A survey on the actual state of teleworking for fiscal 2005 by the Ministry of Land, Infrastructure, Transport and Tourism  
other sources

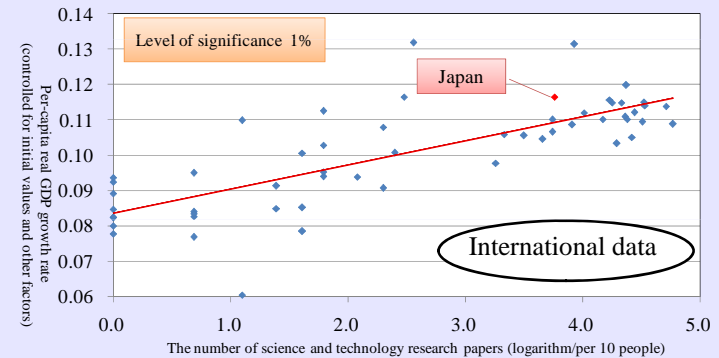
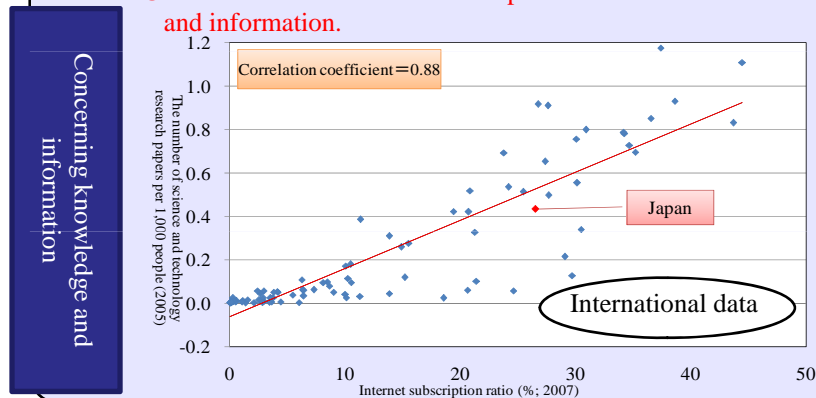
# ICT contributes to growth through intellectual power in the form of human capital and through social power in the form of social capital

- ICT-empowered education and sharing of knowledge and information based on the utilization of ICT promote the accumulation of human capital.
- The strengthening of local community networks and an improvement of governance based on the utilization of ICT promote the accumulation of social capital.
- The enhancement of human and social capital has acted as the main driving force behind economic growth in recent years.

Intellectual power: Contribution to growth through accumulation of human capital(knowledge, information, education, personnel)

● Increased access to the Internet promotes the creation of new knowledge and information.

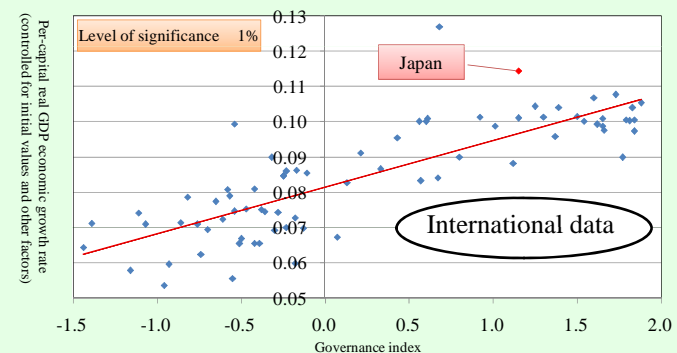
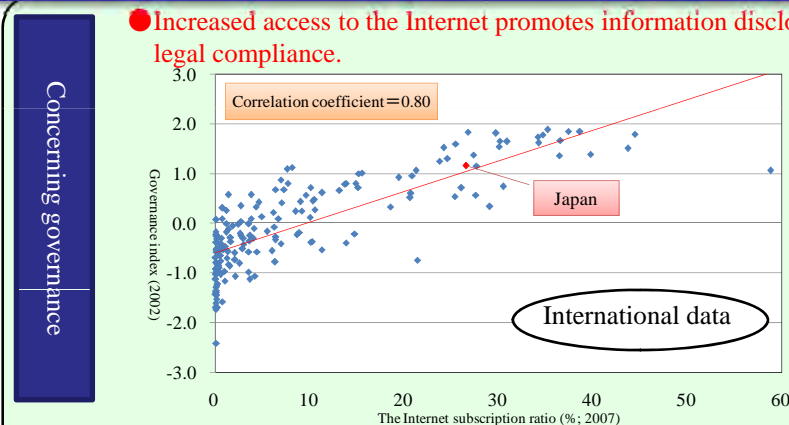
● The accumulation of knowledge and information boosts economic growth.



Social power: Contribution to growth through accumulation of social capital(governance and local community networks)

● Increased access to the Internet promotes information disclosure and legal compliance.

● A rise in the governance index boosts economic growth.



\*The governance index is compiled by the World Bank based on six indicators: (1) democratization, (2) political stability/non-violence, (3) government effectiveness, (4) regulatory quality, (5) rule of law and (6) control of corruption.



## Chapter 2

# Changing Global Economy and Japan's ICT

# Section 1

## Japan's ICT Industry Facing Problems

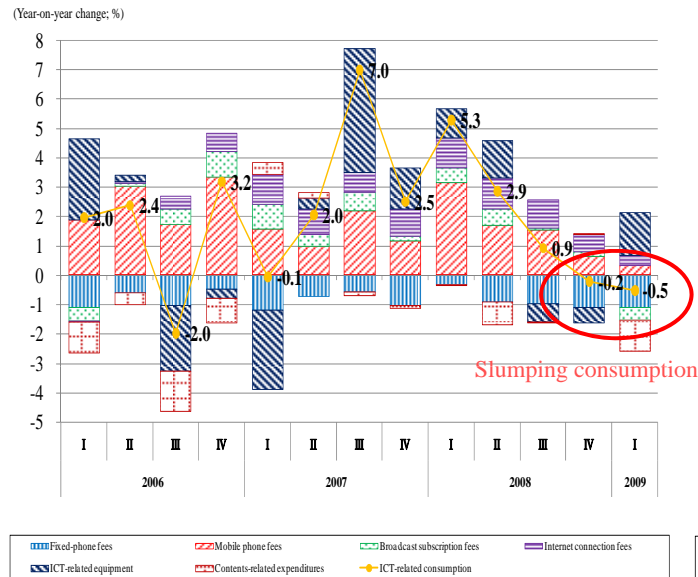
# Global recession directly hitting Japan's ICT industry

- The Japanese economy is slipping into the worst recession in the postwar period because of a sharp drop in exports.
- The ICT industry, hit by the recession, faces a rapid decline in demand, with ICT-related consumption, investment and exports all decreasing year-on-year.
- In industrial sectors heavily dependent on exports, the revision of strategies, including business restructuring, is necessary.

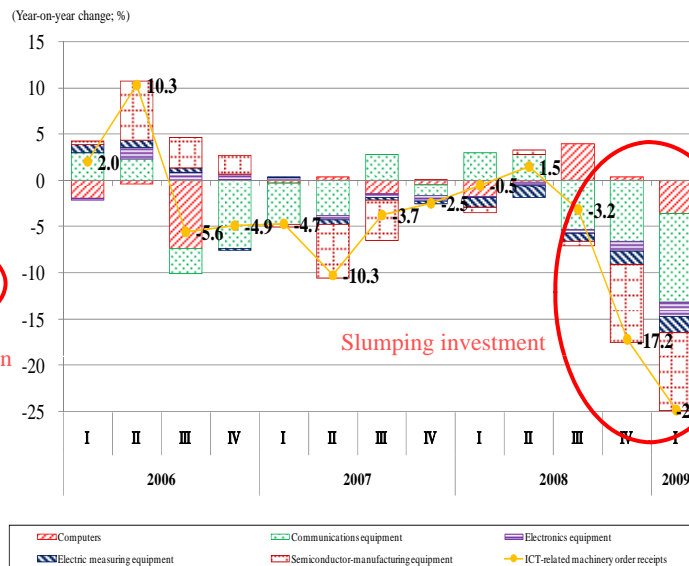
## Changes in major demand items (consumption, investment and exports) of the ICT industry

Consumption, investment and exports all decreased year-on-year

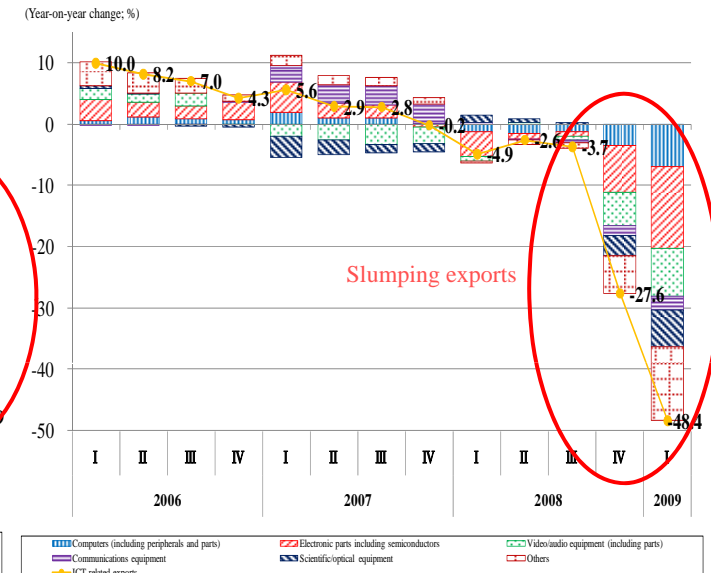
Consumption (ICT-related expenditures)



Investment (ICT-related machinery order receipts)



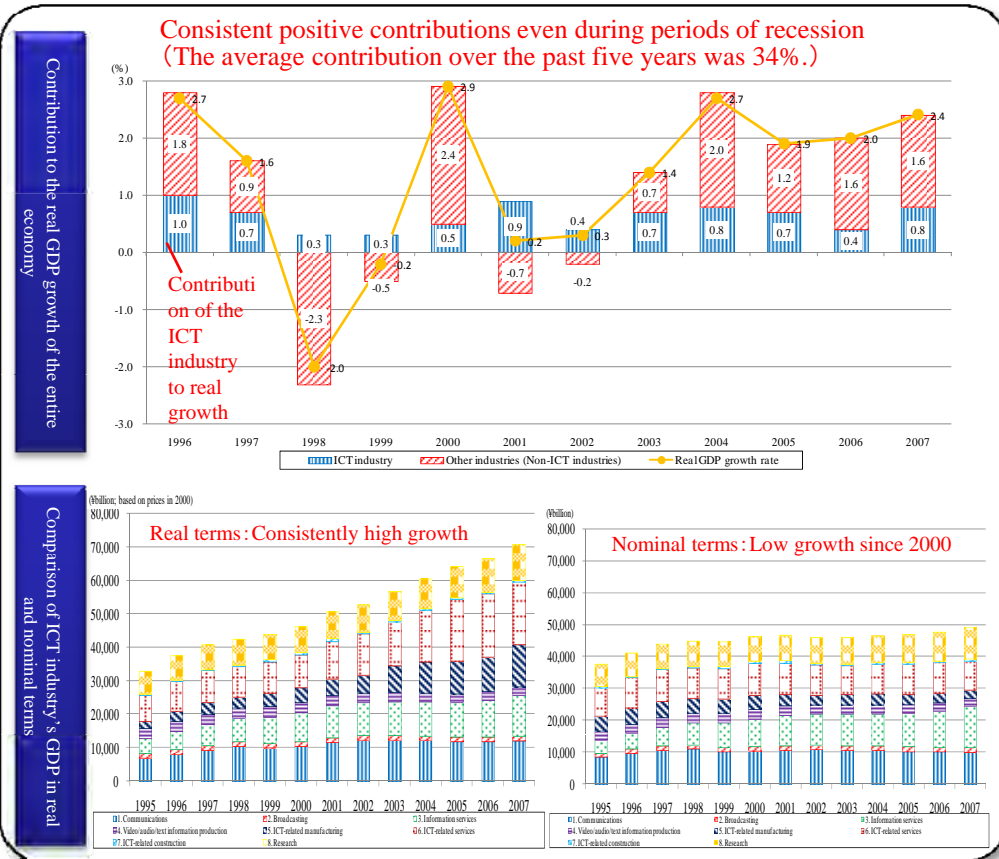
Exports (ICT-related exports)



# Japan's ICT industry also faces medium- and long-term challenges

- In recent years, Japan's ICT industry has accounted for about a third of the country's real economic growth, thus making a steady contribution to growth.
- While the ICT industry continues to post strong growth in real terms, its growth remains slow in nominal terms due to the impact of price reduction.
- The ICT industry, particularly the ICT equipment-manufacturing sector, is experiencing price drops due to commoditization and global competition. The information services sector also needs to prepare for future global competition as cloud computing technology is starting to spread.

## ICT industry developments related to real and nominal GDP



(Source) Study concerning ICT Economic Analysis (2009) by the Ministry of Internal Affairs and Communications

## Challenges faced by the manufacturing and services sectors of the ICT industry

Both ICT-related manufacturing sector and information service sector are facing price reduction and global competition.

○ Japan's ICT-related manufacturing sector is confronted with the problem of commoditization.\*

• The GDP deflator for the ICT industry has been declining every year. The ICT-related manufacturing sector has suffered a particularly sharp decline (upper figure).

• In the ICT-related manufacturing sector, imports from Asian, where labor costs are low, increased rapidly (lower figure).

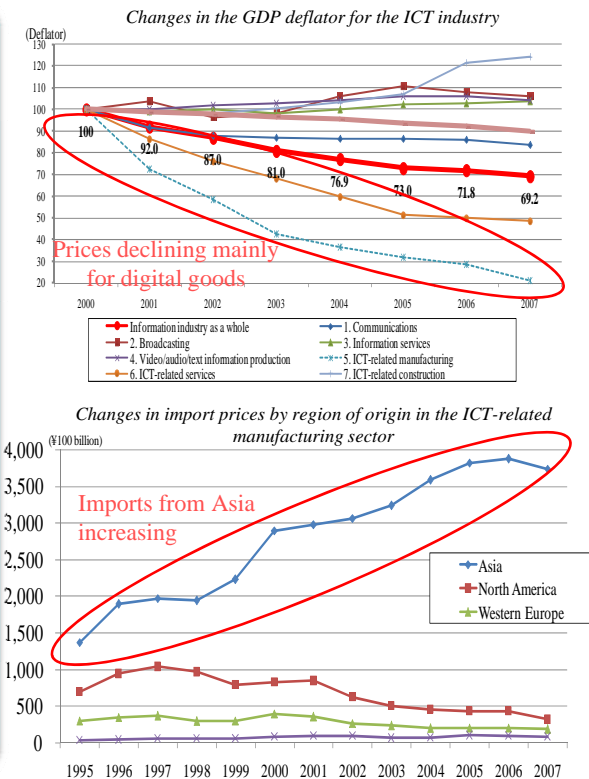
• Amid price reduction and global competition, moves to start overseas production and form partnerships on a sector-by-sector basis are accelerating.

\* Commoditization refers to a situation in which products offered by different companies become so similar that differentiation becomes difficult and price becomes the only competitive factor.

○ Growth is expected for the information services sector.

As imports are also increasing in the information services sector, which is contributing to the nominal growth of the ICT industry, how to enhance competitiveness in anticipation of global competition is a challenge for the sector.

(Source) ICT Industry Input-Output Data by the Ministry of Internal Affairs and Communications and Trade Statistics by the Ministry of Finance

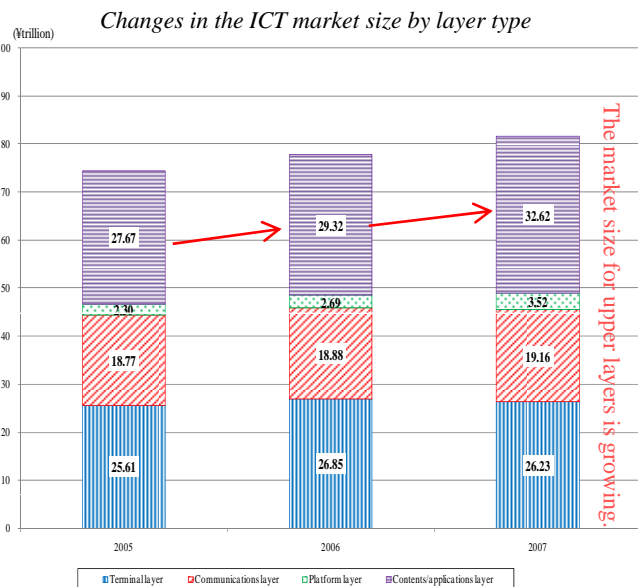


# There are signs of dynamism emerging from the industry slump

- The difficult economic environment provides an opportunity to carry out the structural reforms that would be hard to implement in more favorable economic conditions. As structural changes such as the spread of the contents/application layer, the growth of Internet-based media and the diversification of Internet terminals are steadily proceeding in the ICT market, it is necessary to consider domestic and international strategies in light of such changes.
- Some companies are earning record profits despite the recession by taking advantage of ICT to capture the needs of “stay-at-home consumers” and demand based on word-of-mouth advertising, development of a new product and promoting the efficiently at distribution.

## Growth of contents in the ICT market

Upper layers such as the contents/applications layer and the platform layer are growing rapidly. There are hopes for the creation of a diverse distribution market for information, including information related to medical care and education.

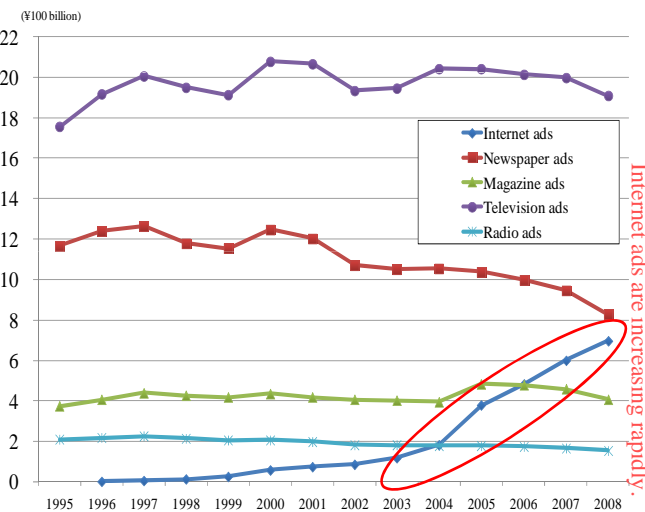


(Source) Quantitative analysis of the socio-economic impact of the advance of ICT (2009) by the Ministry of Internal Affairs and Communications

## Internet's growth as a media outlet

Amid the decline in expenditures for advertising using existing media, Internet-based media are growing. The advance of crossmedia is raising hopes for a new market that combines advertising and sales promotion.

Changes in expenditures on ads using four existing media and Internet ads

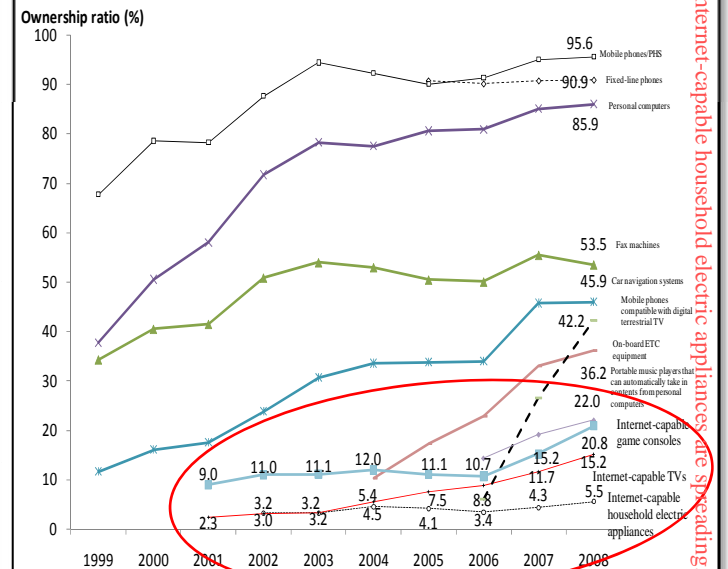


(Source) Advertising Expenditures in Japan(2008) by the DENTSU INC.

## Diversification of Internet terminals

In addition to personal computers and mobile phones, game machines and TV sets and household electric appliances that can be connected to the Internet are steadily spreading. There are hopes for the creation of new business opportunities.

Changes in the household dissemination rate of ICT equipment



(Source): Survey on ICT utilization 2008 by the Ministry of Internal Affairs and Communications

## Section 2

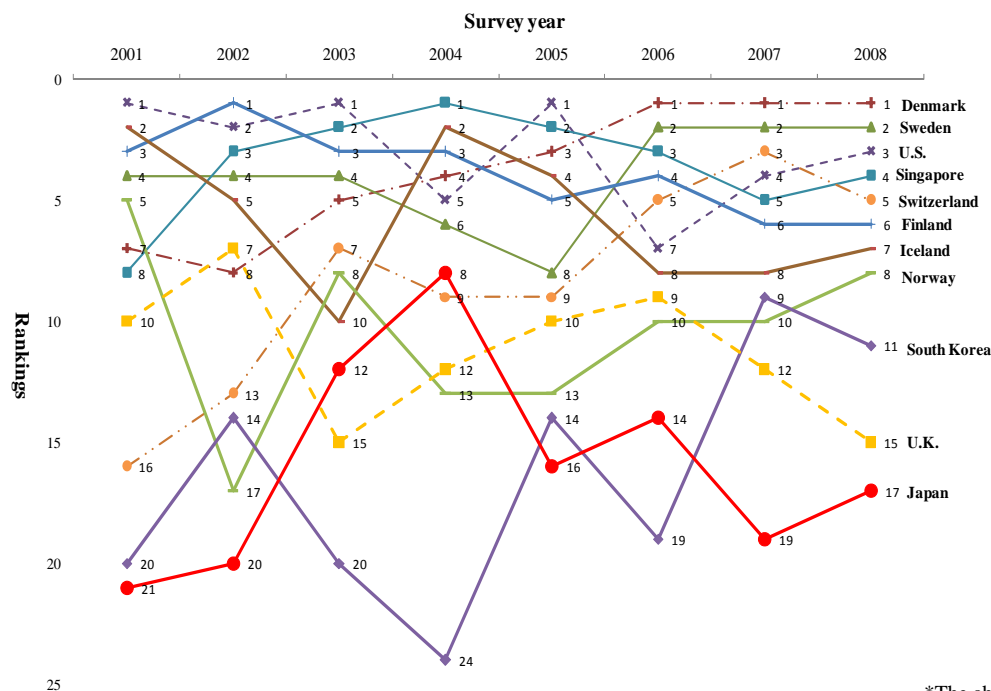
# Japan's ICT Lagging Behind in Overall Evaluation (1)

## Japan's ICT has floundered in the ICT competitiveness rankings recently

- Japan was placed 17th in the World Economic Forum's ICT competitiveness rankings for 2008. Japan has remained around 20th in recent years.
- Denmark and Sweden occupied the first and second positions for the third consecutive year. European countries, led by Northern countries, occupied seven of the top 10 positions.
- However, there are some problems with the ICT competitiveness rankings. For example, the criteria they are based on include those not directly related to ICT yet do not include those related to new technologies such as third-generation mobile phone services and optical fiber communication.

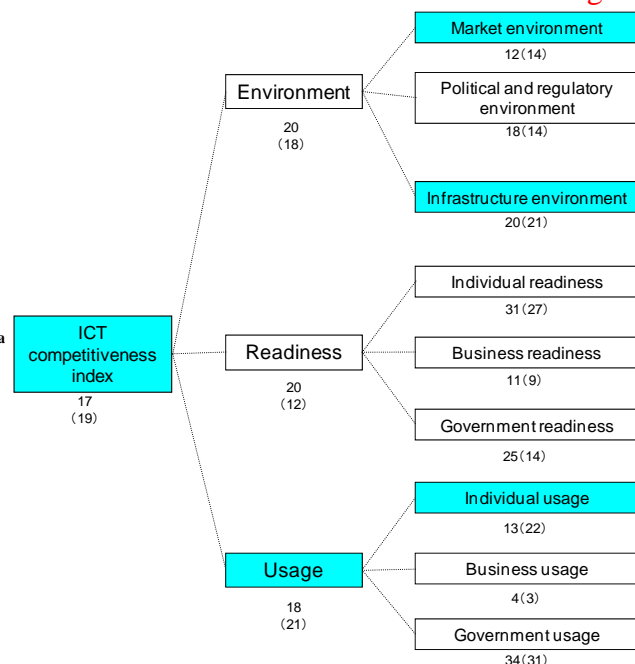
### Changes in the ICT competitiveness rankings

Japan has remained around the 20th position in recent years



### Components of the ICT competitiveness index (subindexes and pillars)

There are some problems with the ICT competitiveness rankings in evaluating Japan's ICT

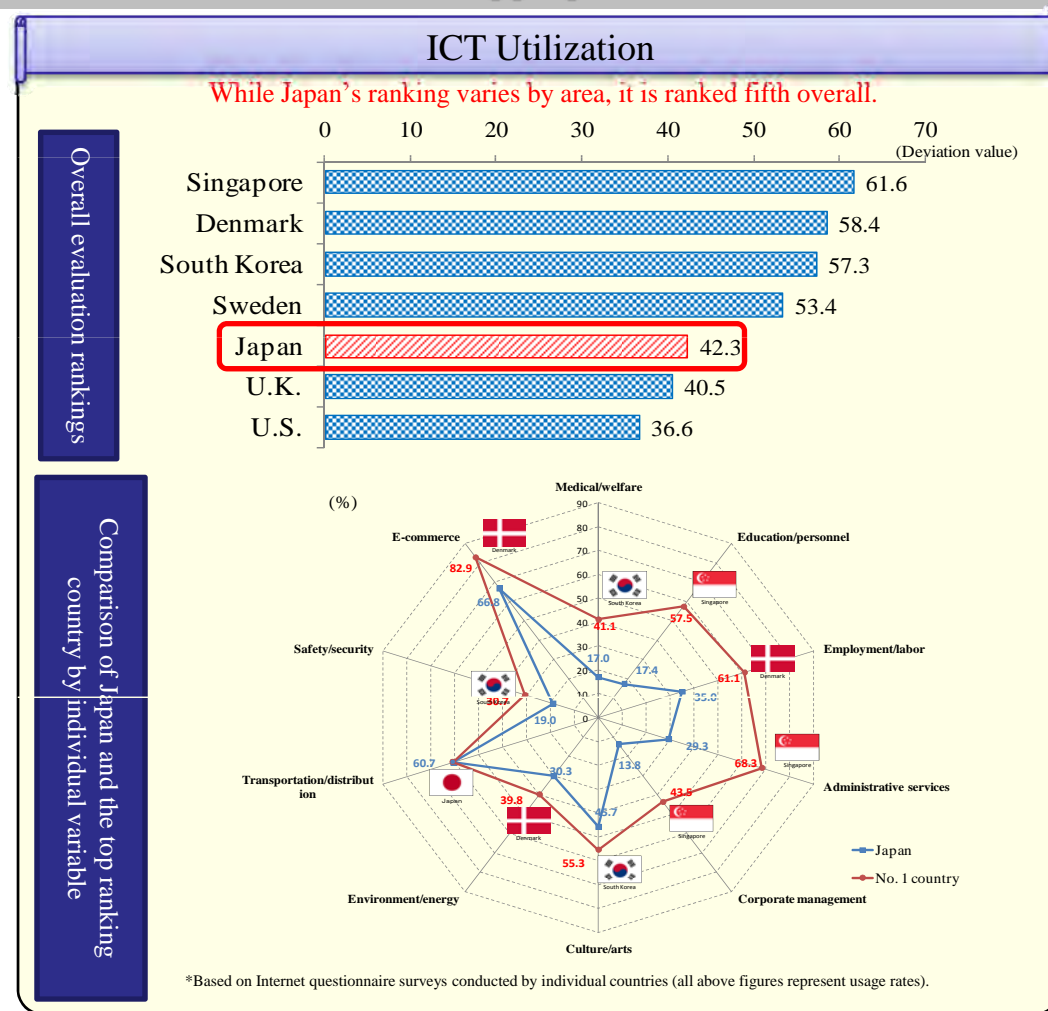
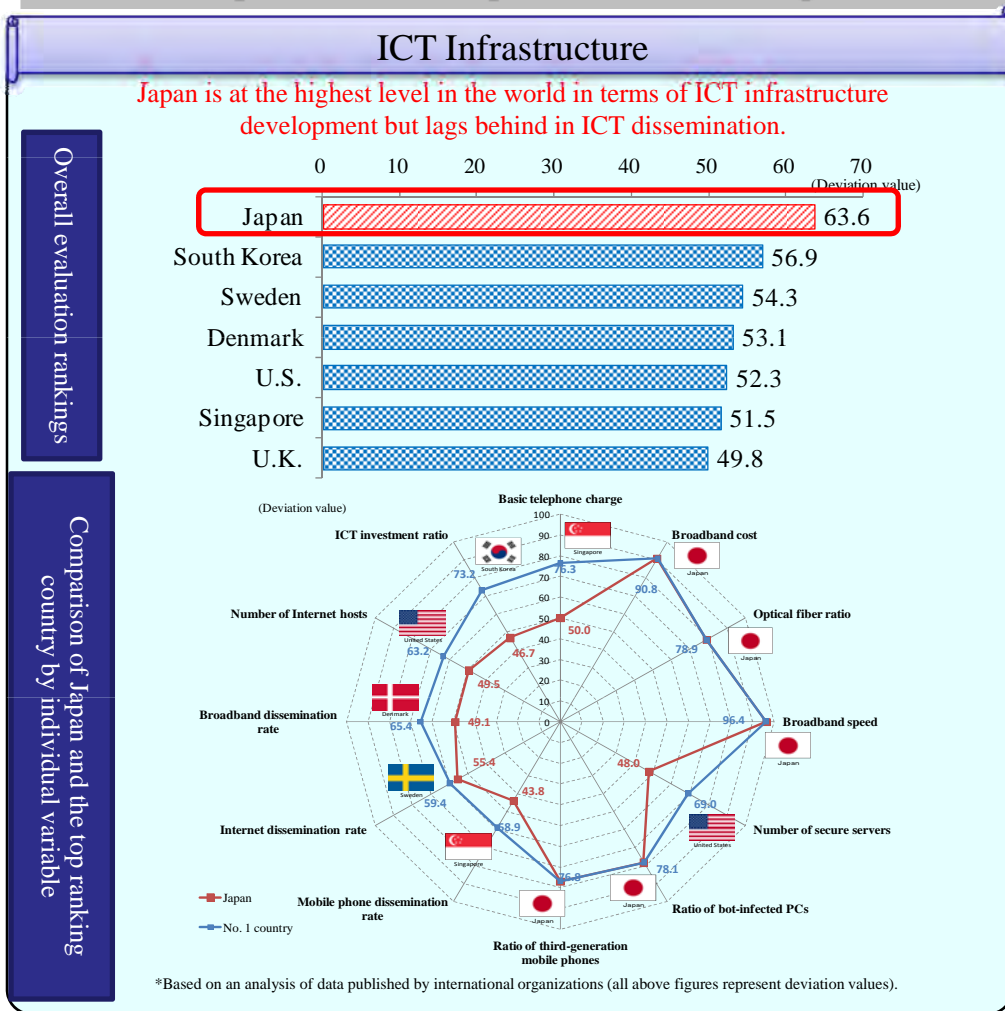


**The following problems are associated with the ICT competitiveness index, which is calculated on the basis of 68 variables**

- (1) Many of the variables concern matters not directly related to ICT, such as tax systems, financial education, law and politics.
- (2) Many of the variables are qualitative ones based on questionnaire surveys conducted on a small group of experts.
- (3) While many variables concerning existing technologies such as fixed phones are adopted so as to enable comparison between countries and regions around the world, there are few variables concerning new technologies such as third-generation mobile phones and optical fiber communication.
- (4) The variables related to usage include few that concern the usage of contents and applications or industrial usage.

## International comparison of the current status of Japan's ICT mainly in terms of infrastructure, utilization and security

- We evaluated seven countries considered advanced in ICT (Japan, the United States, the United Kingdom, South Korea, Singapore, Denmark and Sweden), which were selected so as to achieve a geographical balance, from three major viewpoints: ICT infrastructure, utilization and security.
- While Japan has developed the world's highest level of broadband networks, it is lagging behind in ICT utilization.



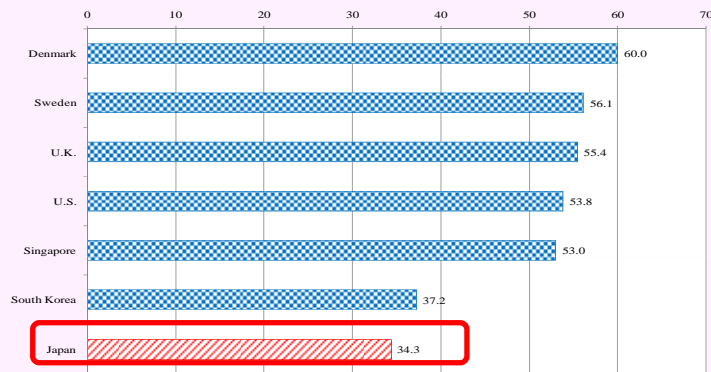


# Japanese users tend to feel insecure about ICT despite the safe environment for ICT utilization in Japan.

- Japanese users tend to feel insecure about ICT despite the safe environment for ICT utilization in Japan.
- It is necessary to continue to thoroughly implement safety measures and promote user education and awareness so as to make users feel secure.

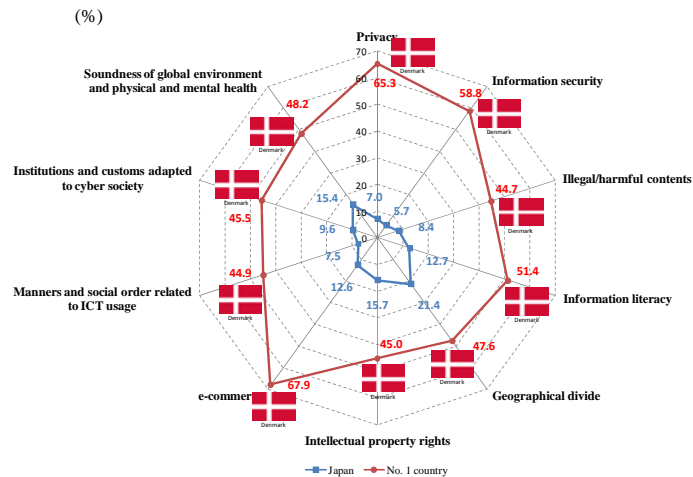
## ICT Security

Japanese users' feel insecure despite the safe environment for ICT utilization.



Overall evaluation rankings

Comparison of Japan and the top ranking country by individual variable

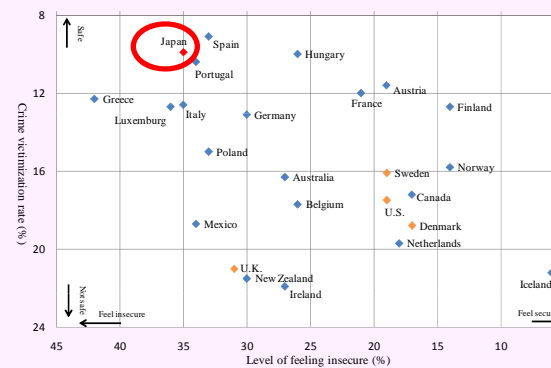


\* Based on Internet questionnaire surveys conducted by individual countries (all above figures represent the ratio of people who replied they feel not insecure).

(Source) International Comparison of ICT-related developments (2009) by the Ministry of Internal Affairs and Communications

**[Note 1]** Japanese people tend to feel insecure despite the safe environment.

【Figure: Crime victimization rate and level of concerns】

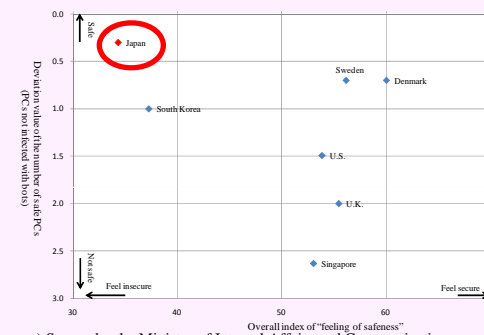


\* Japanese people tend to feel insecure even though the crime victimization rate is low.

Compiled from the OECD Factbook 2009

**[Note 2]** A sense of secure may also be lacking in the ICT despite the safe environment.

【Figure: Ratio of safe PCs and the index of sense of secure】

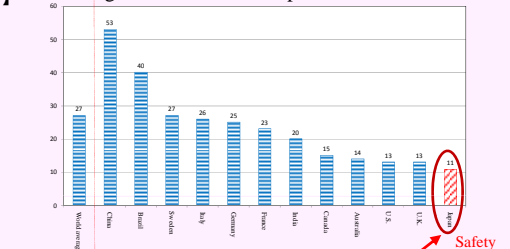


(Source) Survey by the Ministry of Internal Affairs and Communications

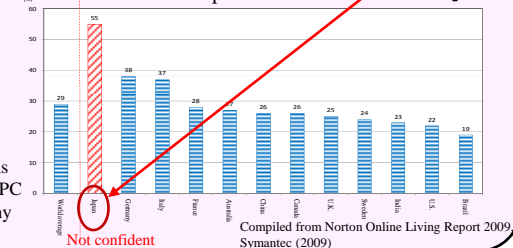
\* [Upper figure] Japanese people tend to feel insecure about ICT utilization although the ratio of bot-infected PCs is lower in Japan than in any other country.

【Right figure】 Japanese people are not confident that their personal information is safe although the PC intrusion experience ratio is lower in Japan than in any other country.

【Figure: PC intrusion experience ratio】



【Figure: Concerns ratio of people who are not confident that their personal information is safe】



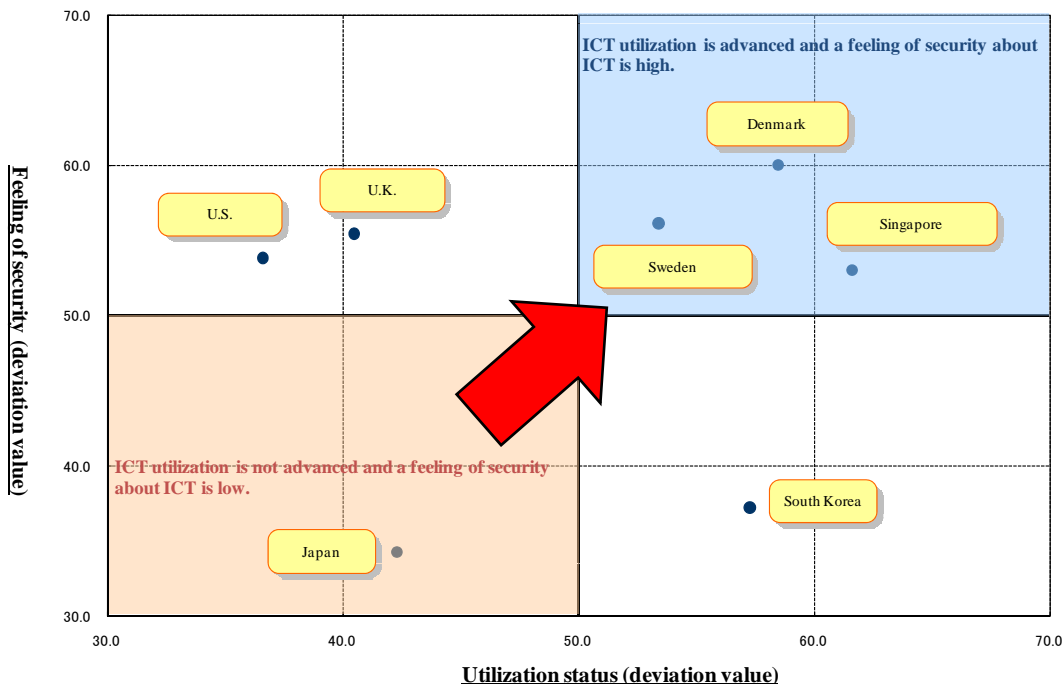
Compiled from Norton Online Living Report 2009, Symantec (2009)

## Japan is lagging behind in both utilization and security

- The matrix plotting ICT utilization against sense of security for the seven countries we evaluated shows that Japan is at the opposite end from Denmark, Sweden and Singapore, which are well advanced in terms of both ICT utilization and sense of security.
- For Japan to become the most advanced ICT power in the true sense, the country needs to study and actively incorporate the practices and know-how of more advanced countries, which are devoting serious efforts to national ICT strategies.

### Relationship between the ICT utilization status and the sense of security (seven countries)

- The figure shows that in Denmark, Sweden and Singapore, ICT utilization is advanced and the sense of security surrounding ICT is high.
- The figure shows that Japan is the only country in which ICT utilization is not advanced and the sense of security surrounding ICT is low.



### Evaluation of Denmark, Sweden and Singapore with regard to government-related variables of the ICT competitiveness rankings

- Denmark, Sweden and Singapore are all ranked high with regard to variables related to government prioritization of ICT and government usage of ICT.
- Japan is ranked low with regard to these variables.

	Government's prioritization of ICT	Importance of ICT to government's vision of the future	Government success in ICT promotion	Availability of government online services	ICT use and government efficiency	Presence of ICT in government offices
Denmark	3rd	7th	6th	3rd	3rd	4th
Sweden	7th	11th	7th	4th	8th	3rd
Singapore	1st	1st	1st	2nd	1st	1st
Japan	41st	31st	59th	51st	78th	35th

Compiled from "The Global Information Technology Report 2008-2009" by WEF (2009)

# Chapter 3

## Three Challenges Facing Japan's Revival

# Section 1

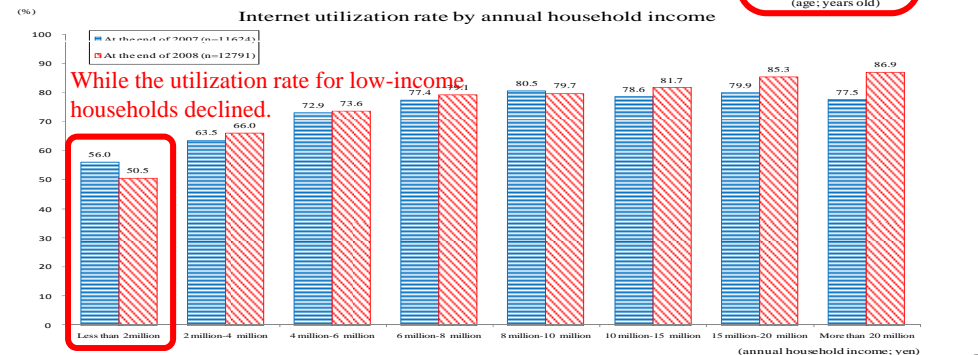
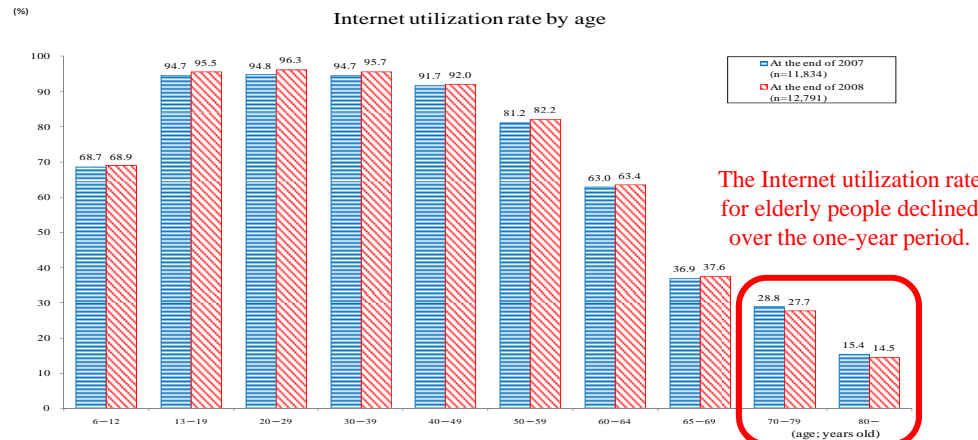
## Investment for Enhancing Information Accessibility

# There remains an information gap between individuals and between companies

- While three in four Japanese citizens use the Internet, there are concerns that the global economic crisis could widen the information gap between individuals by causing elderly people and poor households to be left behind in access to information.
- There is also an information gap between companies, with the level of access to broadband services varying according to the company size and the business sector, and accessibility could be critical to whether or not local small and medium-size enterprises can secure nationwide or worldwide sales channels.

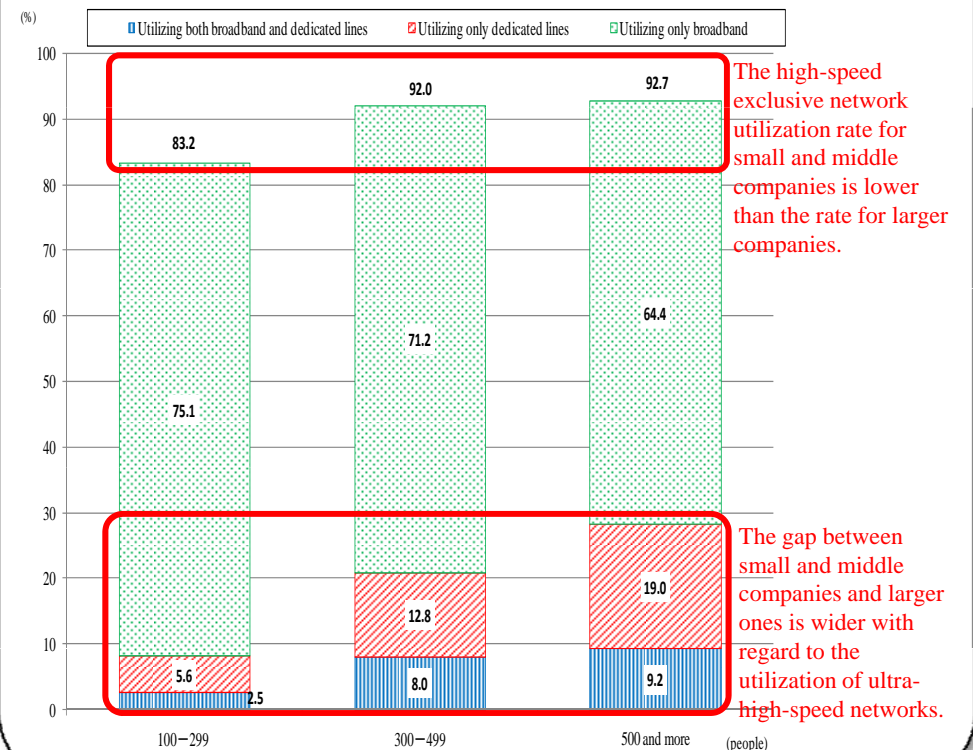
**Status of Internet utilization by individual attribute (age and annual household income)**

The Internet utilization for elderly people and low-income households declined a little within spreading the internet.



**Utilization status by company size**

Small and middle companies are behind with the broadband and the high-speed exclusive network utilization.



# Lack of sufficient ICT investment is stalling Japan's economic growth

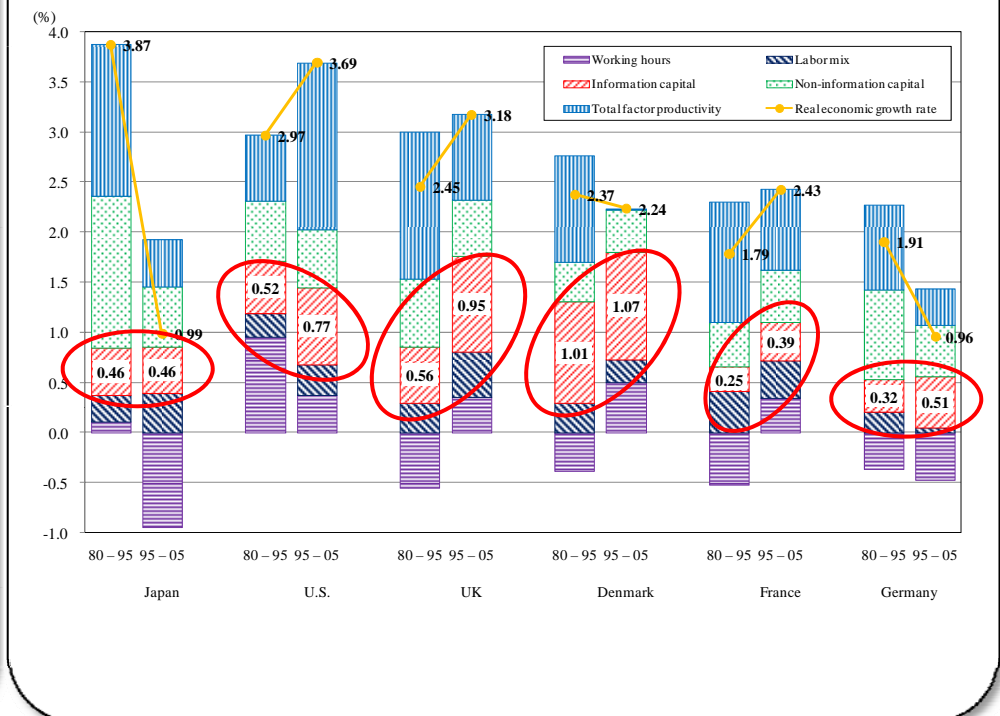
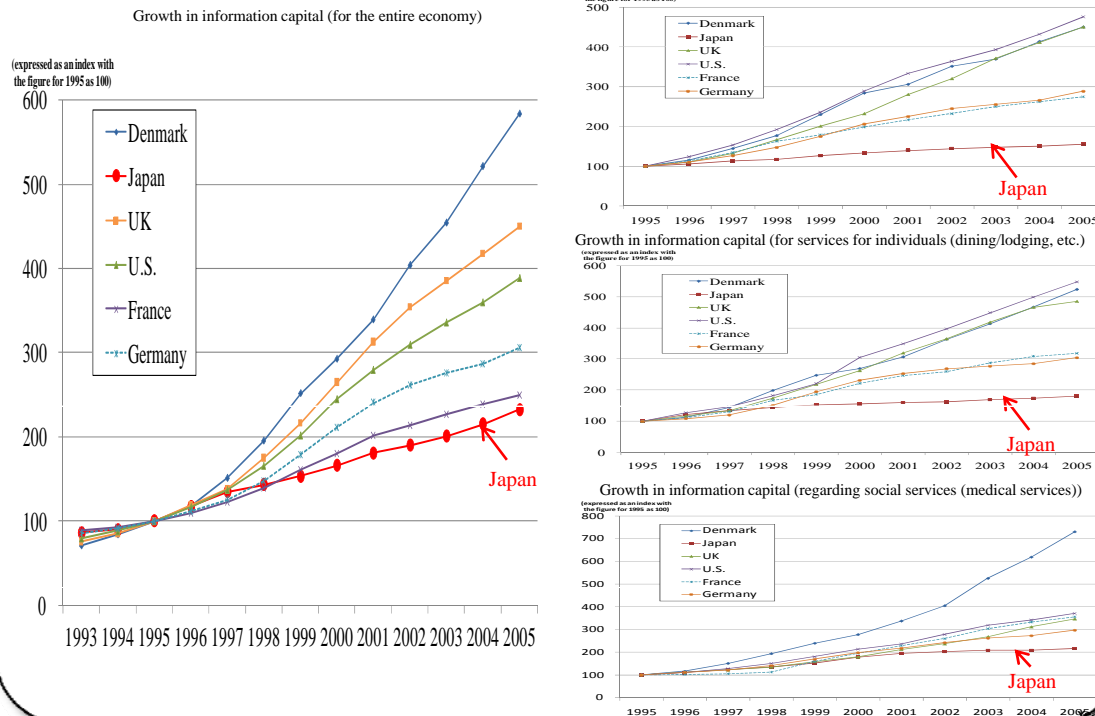
- Japan's growth in ICT investment is the lowest among developed countries. ICT investment by Japanese industries relying on ICT utilization, such as the retail and services industries, is showing particularly slow growth, lagging far behind ICT investment by their counterparts in countries such as the United States and the United Kingdom.
- As a result, the accumulation of information capital has failed to advance, causing the contribution of information capital to economic growth to remain flat in Japan whereas it is growing in many countries. Presumably, the accumulation of information capital has not been fully effective in boosting Japan's economic growth rate.

**International comparison of growth in information capital**

**International comparison of the contribution of information capital to economic growth**

Japan's growth in ICT investment is the lowest among developed countries. Industries relying on ICT utilization, such as the retail and services industries, is showing particularly slow growth

The contribution in of information capital to economic growth remain flat in Japan whereas it is growing in many countries.

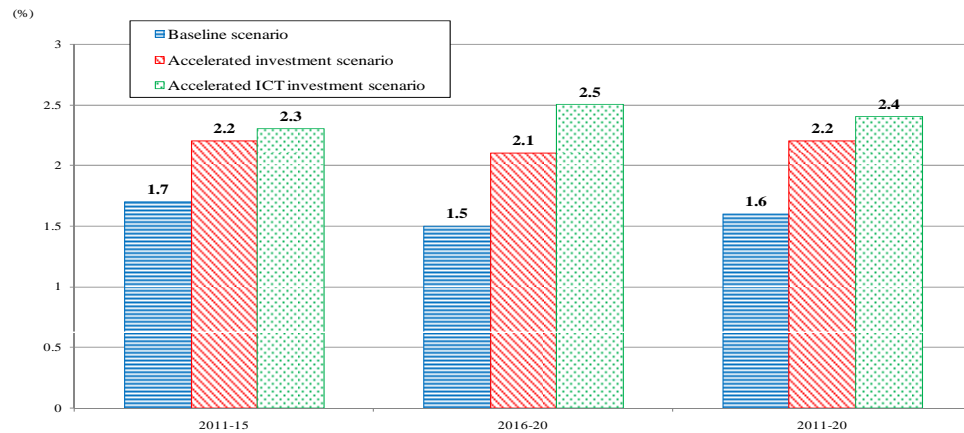


# A drastic acceleration of ICT investment will be the key to economic regeneration

- We estimated the impact of a drastic acceleration of ICT investment on Japan's economic growth in the 2010s by using medium- and long-term economic forecast simulations based on macroeconomic modeling.
- As a result, we found that if ICT investment is accelerated drastically, the Japanese economy is highly likely to raise average real growth almost 1% in the 2010s.
- However, it is essential for Japan to tackle challenges boldly amid the recession in order to restore ICT investment to the growth trends seen in the 1980s.

**Real GDP rate in the 2010s by the acceleration of ICT investment**

A drastic acceleration of ICT investment is indispensable to achieve average real growth over 2% in the 2010s.



\*Baseline scenario: This assumes that the global economy, which is rapidly slipping into recession, will recover moderately in fiscal 2010.

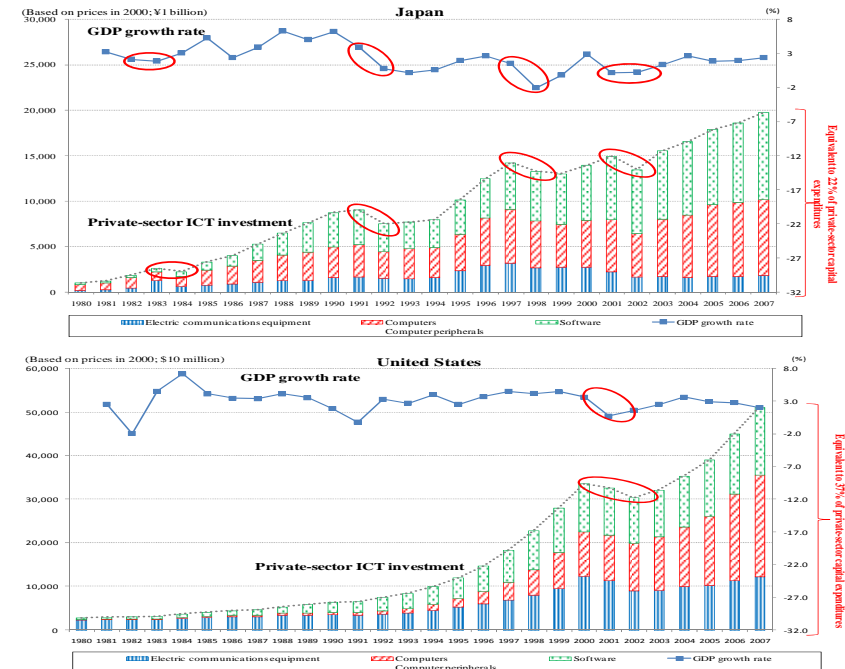
Accelerated investment scenario: This assumes, in addition to the assumption of the baseline scenario, that private-sector corporate capital expenditures will start growing sharply (average rise of 5 percentage points during the 2010s) in fiscal 2010 because of drastic investment promotion measures.

Accelerated ICT investment scenario: This assumes, in addition to the assumption of the accelerated investment scenario, that the ratio of ICT investment to private-sector corporate capital expenditures will rise (average rise of approximately 2 percentage points during the 2010s) because of aggressive measures to promote ICT investment.

(Source) Survey on the Impact of ICT Investment and the accumulation of ICT-related Capital on the Japanese Economy by the Ministry of Internal Affairs and Communications

**Economic cycles and ICT investment in Japan and the United States**

In Japan, ICT investment declined during periods of recession. On the one hand in the United States, ICT investment has consistently increased without being affected by economic cycles (except for during the IT bubble).



(Source) Survey on Economic Analysis of ICT (2009) by the Ministry of Internal Affairs and Communications

## Section 2

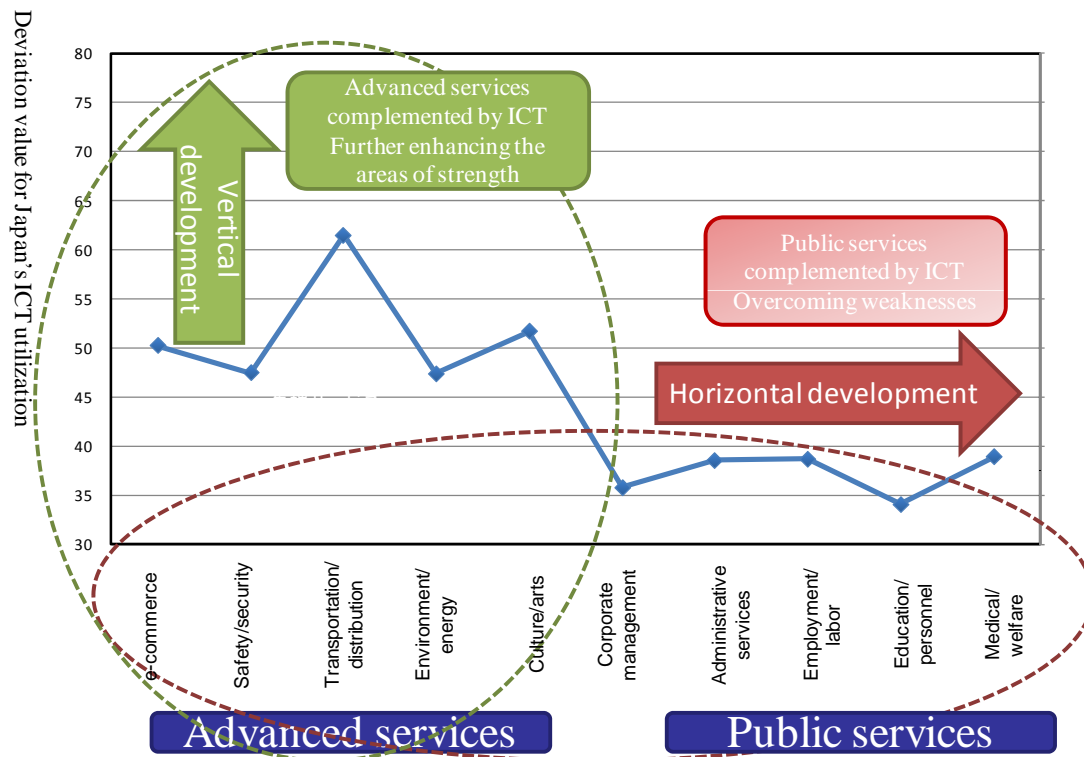
# Collaboration for Overcoming National Problems



## In order to promote ICT utilization, it is necessary to adopt “horizontal development” and “vertical development” approaches

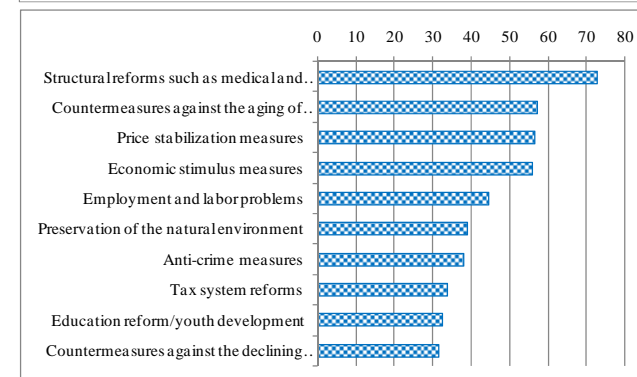
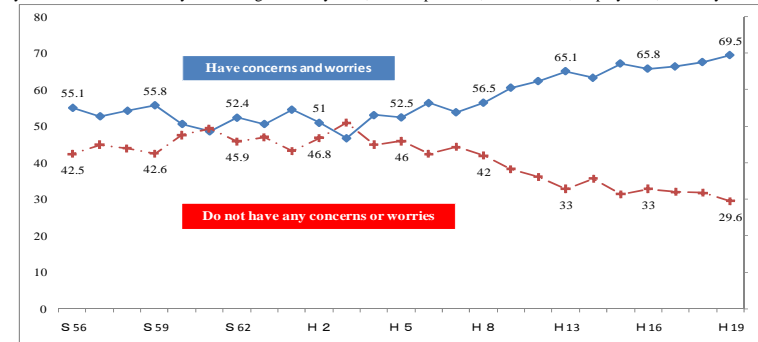
- It is necessary to spread ICT utilization in ICT-lagging public sectors, such as medical/welfare, education/personnel, employment/labor and administrative services (horizontal development) while enhancing the quality of services in ICT-advanced sectors, such as transportation/distribution, culture/arts and “e-commerce” (vertical development), thereby strengthening the international competitiveness of these sectors.
- First, promoting horizontal development is especially important for resolving social challenges related to social security, economy, employment and education.

“Horizontal development” and “vertical development” in the promotion of ICT utilization



Citizens' causes of concern and requests to the government

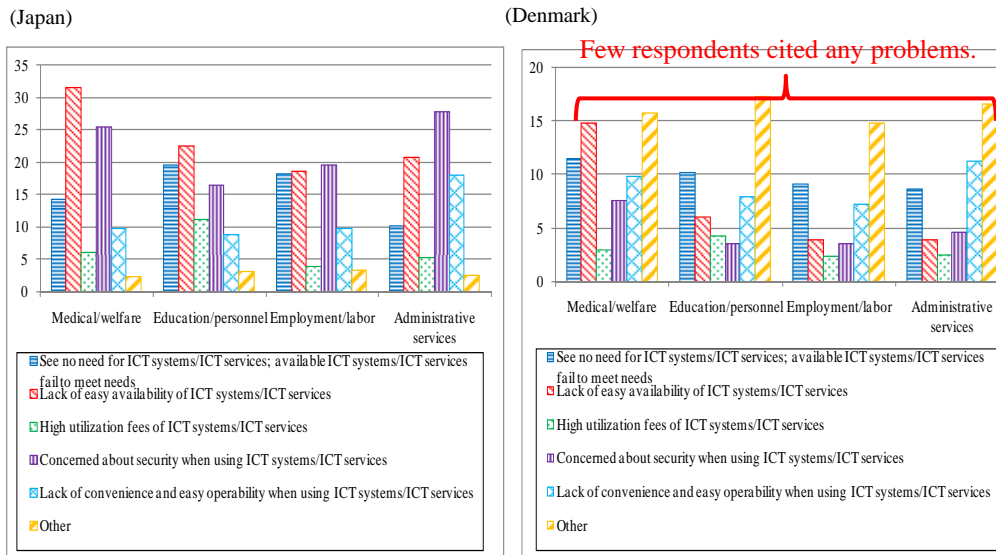
- The ratio of citizens who have concerns and worries has been almost consistently increasing since 1991 (the late stage of the bubble economy).
- Reflecting social circumstances such as the declining birthrate and the aging of society as well as the economic crisis, citizens' requests to the government are mostly related to matters directly concerning their daily lives, such as pensions, medical care, employment, economy and education.



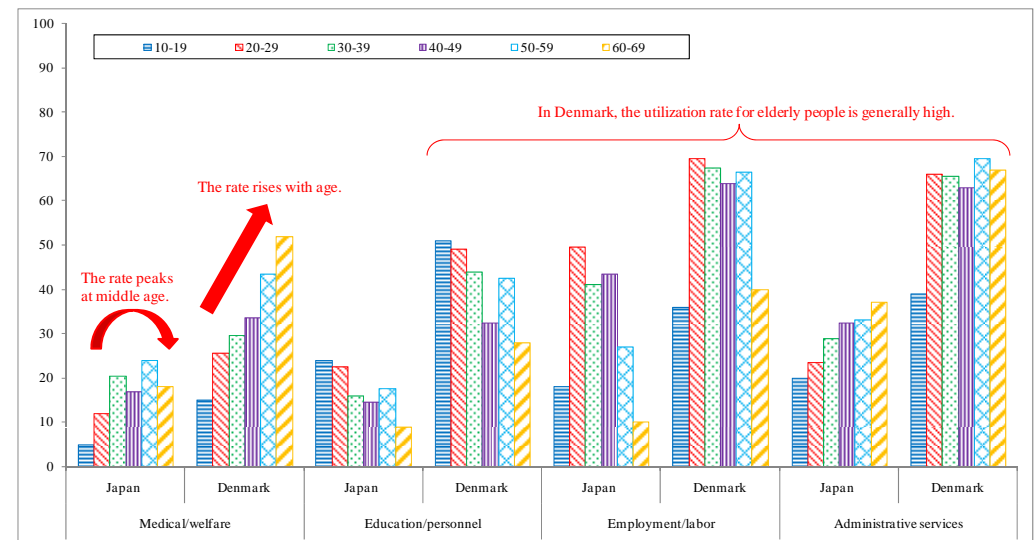
# There is a mismatch between user needs and the ICT services available

- Asked about problems related to ICT utilization in public services, many Japanese users cited “lack of easy availability,” “concerns over security” and “failure to meet needs.” Regarding administrative services in particular, many users cited “lack of convenience and easy operability.” Meanwhile, few Danish users cite problems with regard to any services.
- It is possible that in Japan, relevant parties are not sufficiently collaborating with each other in order to accurately identify the needs of citizens and other users and to provide ICT services devised from the standpoint of citizens.
- A look at the utilization rate in the medical/welfare sector by age group shows that the utilization rate rises with age in Denmark, whereas in Japan, the utilization rate is lower among elderly people. In short, although people who need ICT can use it in Denmark, that is not true in Japan.

**Problems related to effective ICT utilization**



**ICT utilization rate by age group**



## The ICT industry should act as a catalyst for promoting collaboration and provide solutions devised from the standpoint of citizens

- Japan should study the leading practices (e.g. the creation of a portal for citizens) adopted by Denmark and other countries considered advanced in ICT utilization.
- In order to effectively provide ICT systems and services that are easy to understand and use for elderly people, the ICT industry needs to act as a catalyst for promoting collaboration between user industries, relevant organizations and users and providing solutions devised from the standpoint of citizens.

### An Internet portal for citizens (borger.dk) (Denmark)

- This portal serves as a one-stop site for citizen access to public information and services related to 17 subjects.
- The second version of the portal (launched in October 2008) has an additional *Minside* (MyPage) function, which enables site editing according to individual users' needs.



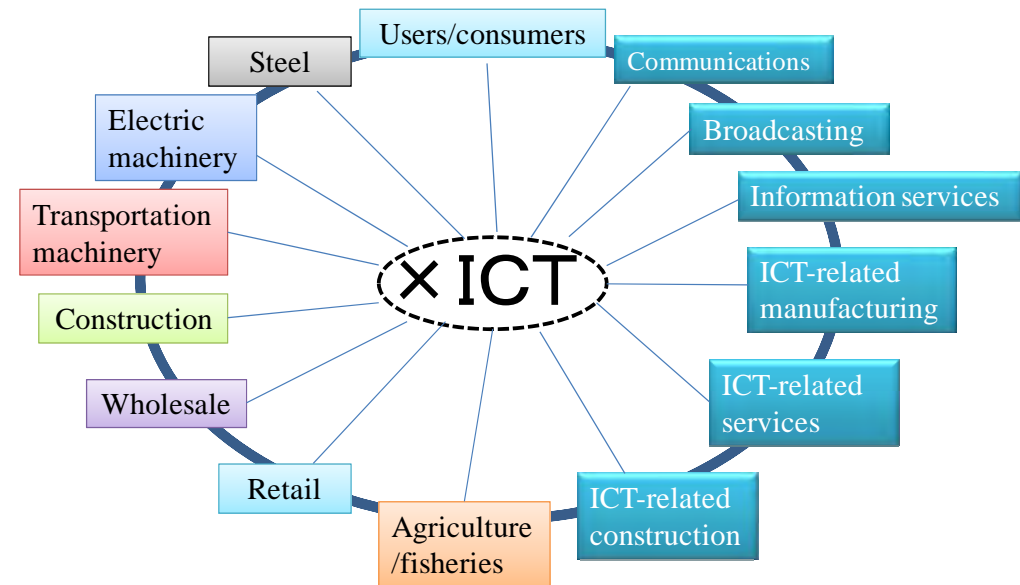
【17 subjects】

- ① Labor/employment
- ② Housing/moving house
- ③ Transportation/travel
- ④ Danes living abroad
- ⑤ Family/children/youth
- ⑥ Consumption/money/insurance
- ⑦ People with disabilities
- ⑧ Culture/leisure
- ⑨ Environment/energy
- ⑩ Pensions
- ⑪ Police/law/lawyers
- ⑫ Society/rights
- ⑬ School/education
- ⑭ Health/disease
- ⑮ Foreign nationals living in Denmark
- ⑯ Elderly people
- ⑰ Economy/tax

Extracted from the borger.dk website.

### Collaboration between the ICT industry and other industry in prompting "horizontal development" and "vertical development"

Collaboration between the ICT industry and relevant parties will provide effective solutions devised from the standpoint of citizens.



## Section 3

Trust :  
“e-Relationships” for Secure Internet Utilization

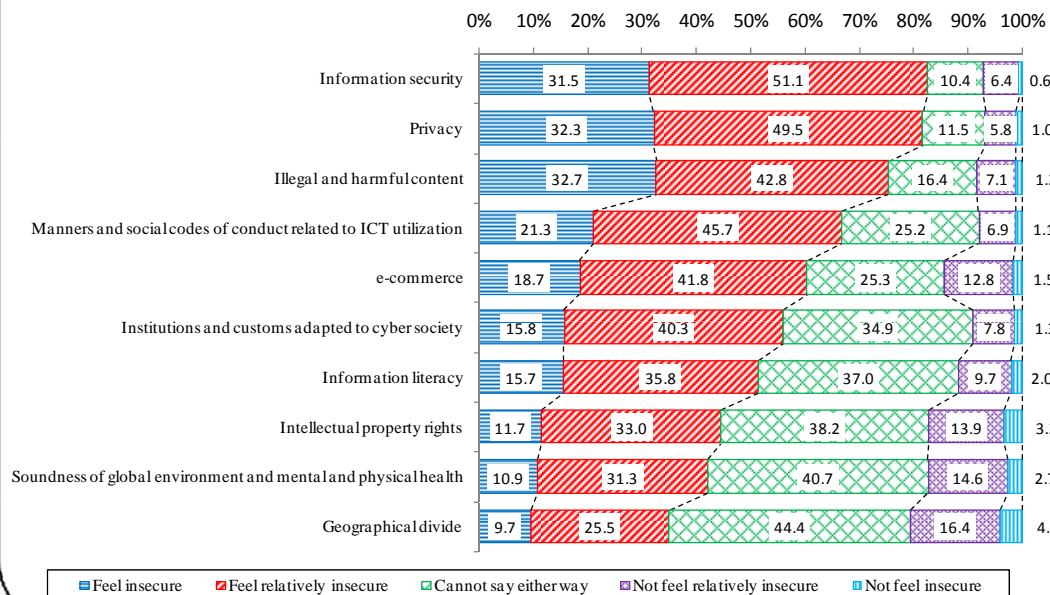
**Three major causes for feeling insecure are “information security,” “privacy” and “illegal and harmful content”**

- Three major causes for feeling insecure over using ICT for citizens and companies are “information security,” “privacy” and “illegal and harmful content”
- In addition, citizens also have feeling insecure over “manners and social codes of conduct related to ICT utilization” and “e-commerce”, and companies over “manners and social codes of conduct related to ICT utilization” and “information literacy”.

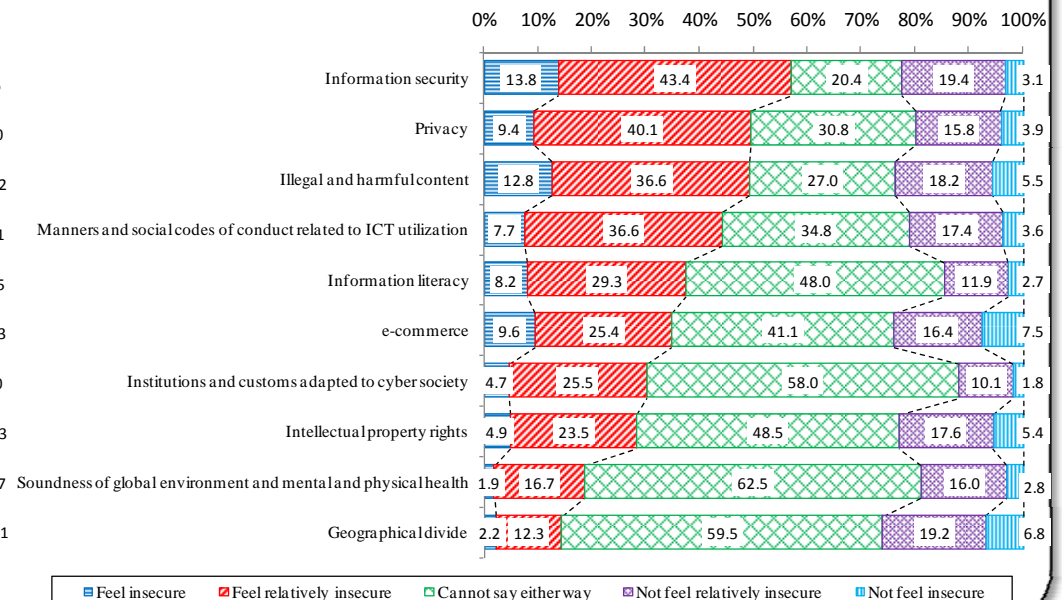
**Feeling insecure using ICT for citizens and companies**

Both citizens and companies have feeling insecure over “information security,” “privacy,” “illegal and harmful content” over ICT utilization.

(Citizens’ levels of feeling insecure over 10 safety- and security-related issues)



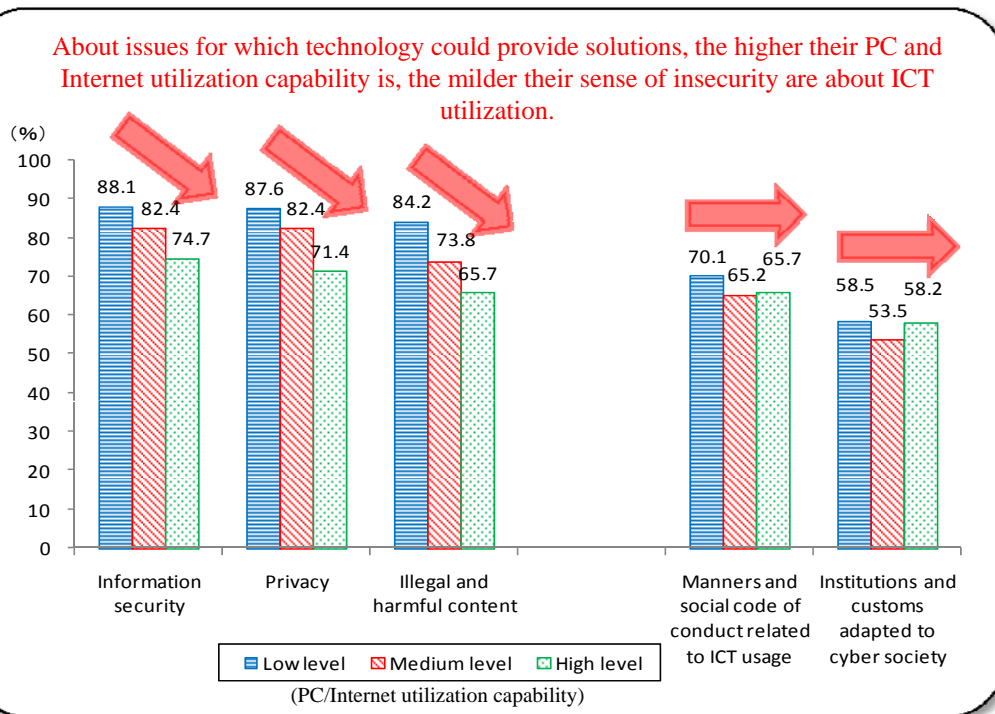
(Companies’ levels of feeling insecure over 10 safety- and security-related issues)



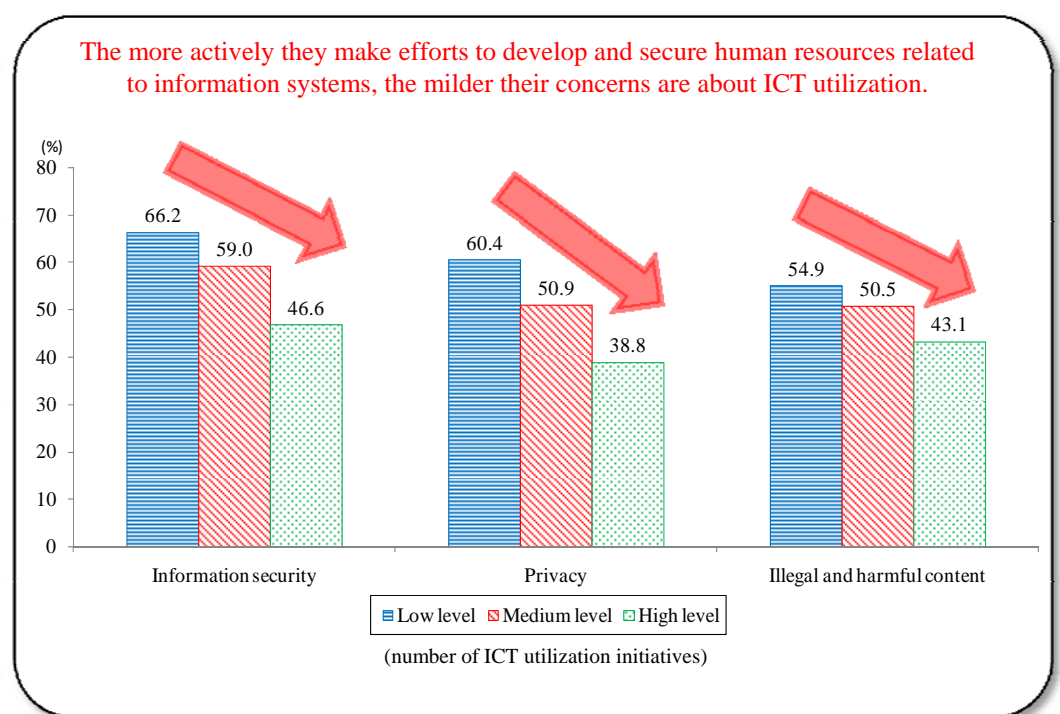
## Key to alleviating sense of insecurity (1): Enhancement of information utilization capability

- Regarding citizens, the higher their PC and Internet utilization capability is, the milder their sense of insecurity are over issues for which technology could provide solutions, such as security, privacy and illegal and harmful contents. On the other hand, the intensity of sense of insecurity over social issues, such as manners and customs, is not affected by the level of PC and Internet-utilization capability.
- Regarding companies, the more actively they make efforts to develop and secure human resources related to information systems, the milder their concerns are about ICT utilization.

**Extent of feeling insecurity among citizens by level of PC/Internet utilization capability**



**Extent of feeling insecurity among companies by number of ICT utilization initiatives**



## Key to sense of insecurity (2): Achieving a balance between online and offline community activities

- Analysis of the “relationship strength” index, which measures the strength of a person’s relationship with other people in online and offline communities, indicates that people who achieve a balance between participation in online communities and participation in offline communities have more relationship strength than people who lean too much either way.
- The more relationship strength people have, the milder the sense of insecurity they have over ICT utilization. This trend is particularly prominent among people who spend most of their time at home and elderly people.

### What is the “relationship strength” index?

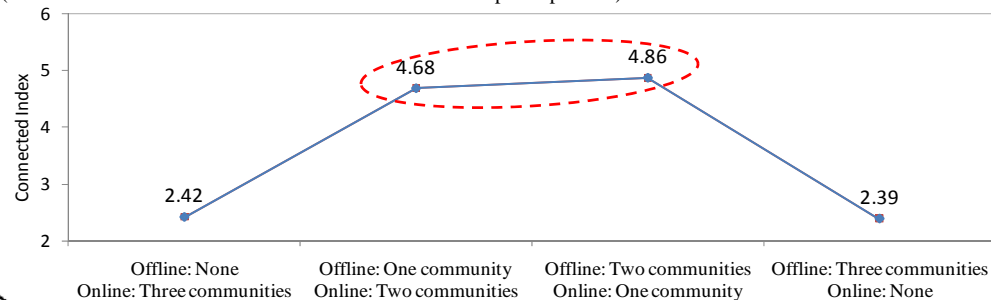
- (1) Identification of the respondent’s sense of community  
→ Identifying the respondent’s sense of community regarding both online and offline communities based on questions concerning two elements of social capital: trust and mutual benefits
- (2) Expressing each community’s “strength of bond” as a numerical value  
→ The strength of bond\* for each community is expressed as a numerical value on the basis of points awarded for the sense of community held by participants. \*Communities of a voluntary nature generally have a stronger bond.
- (3) Expressing each individual’s “relationship strength” as an index  
→ The index value for the relationship strength\*\* for each respondent is calculated on the basis of points awarded for relationship strength in communities in which he/she participates. \*\*The index value indicates the level of the individual’s participation in communities with a strong bond.

### “Relationship strength” by participation in communities

People who achieve a balance between participation in online communities and participation in offline communities have more relationship strength than people who lean too much either way.

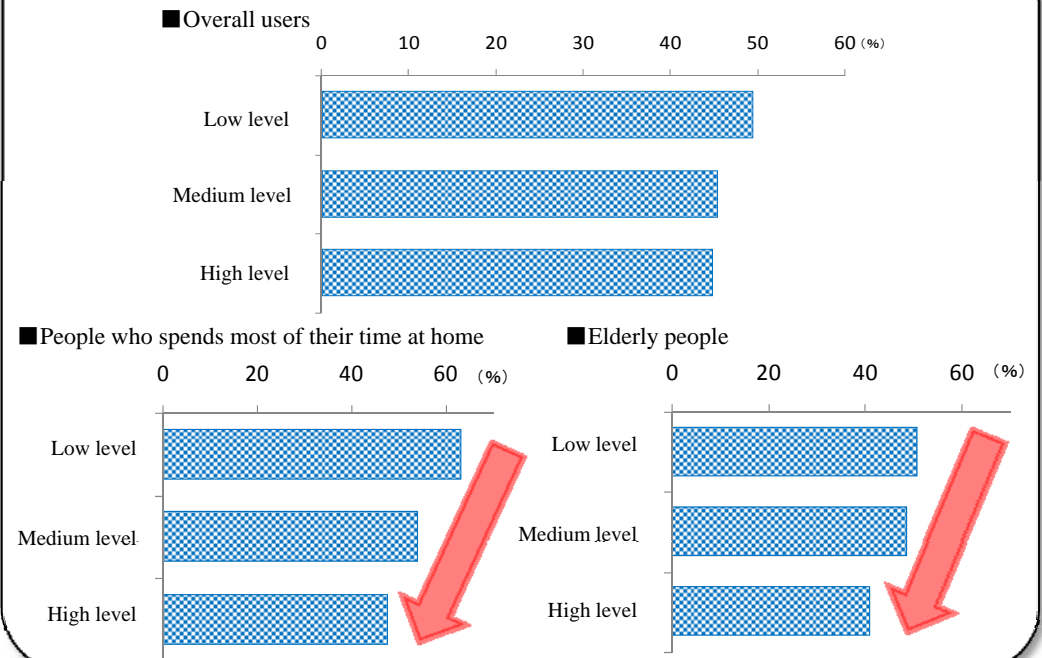
Participation leaning too much toward online communities ← **Balanced participation** → Participation leaning too much toward offline communities

(The total number of communities in which an individual participates: 3)



### The extent of concerns by relationship strength level

The more relationship strength people have, the milder the concerns they have over ICT utilization.



## Section 4

Toward Realizing Japan's Revival by  
Tackling the “I x C x T” Challenge



## Toward Realizing Japan's Revival by Tackling the "Investment x Collaboration x Trust" Challenge

- For Japan to overcome the economic crisis and achieve revival, there are three key challenges that must be tackled in relation to ICT.
  - (1) **I**nvestment: ICT investment, mainly by industries relying on ICT utilization, should be drastically accelerated.
  - (2) **C**ollaboration: The ICT industry should act as a catalyst for actively promoting collaboration between different business sectors.
  - (3) **T**rust ("e-relationships"): The creation of an information society based on trust and mutual benefits should be promoted through the achievement of a balance between the virtual and real world.
- (1) contributes mainly to an increase in information capital, (2) to a rise in productivity and (3) to an increase in human and social capital. It is desirable that all of the three will lead to growth through their respective channels of power.

