

Overview of the 2017 White Paper on Information and Communications in Japan

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1. Introduction

On July 28, 2017, the Ministry of Internal Affairs and Communications published the 2017 White Paper on Information and Communications in Japan.

This white paper* touches on the theme of this special issue (“Data-Driven Economy and Social Change”), and discusses the prospects for social activity redesign and the solution of social issues through the generation, collection, distribution, analysis and utilization of diverse data in a data-driven economy.

This article introduces the first three chapters of the white paper, which are closely related to this issue’s special theme.

2. Present and future of the smartphone economy (White Paper Chapter 1)

2.1 Advent of a smartphone society

Ten years have passed since the first iPhone was unveiled in the US in 2007. Smartphones have grown rapidly in popularity since 2010. By 2016 over 72% of households owned at least one, making them as popular as PCs. This rise in popularity has been much faster than that of other data communication devices.

Due to the growing popularity of smartphones, the amount of time people spend using them is also increasing. The average amount of time smartphone users spent on-line per day on weekdays in 2016 was 82 minutes. The 10-19 and 20-29 age groups spent even longer on-line (143 and 129 minutes on average, respectively).

2.2 Information behavior of millennials

The millennial generation (people who have reached adulthood since 2000) spend more time using smartphones, and less time using PCs.

According to the results of a questionnaire survey, people aged 10-29 spend considerably more time using social networks and video sharing sites on smartphones compared with other generations. This trend is more noticeable at weekends, when people aged 10-19 spend an average of 122 minutes using social networks, and 55 minutes using video sharing sites.

People in their twenties are also more tolerant of sharing in real space, and a high proportion of respondents said that they were not averse to sharing their belongings with others or borrowing things from other people, and can be said to exhibit

greater generosity in sharing with others.

Group interviews have also shown that the younger generation are less reluctant to share information on social networks, use flea market smartphone apps, and share their belongings in the real world. There have also been seen to multi-task on multiple devices, and to make active use of video media.

3. Data utilization (white paper, chapter 2)

3.1 Increased distribution and use of data

With further advances in digital technology, network performance, and the development of smaller and more affordable smartphones and IoT (Internet of Things) equipment such as sensors, an environment is being created where huge quantities of digital data (“big data”) can be collected and shared efficiently.

The amount of data circulating on networks is growing at an explosive rate, and as a result, improvements are being made to environments where data is used. These include the introduction of a basic act for promotion of public and private data utilization between the end of 2016 and the start of 2017, and the full implementation of the revised personal data protection law. As a result, by promoting the bulk utilization of data while balancing the need for data protection, one could say that 2017 is the first year of the big data era.

3.2 Data distribution and utilization issues

In a survey of Japanese businesses, 77% responded that they used or were considering using industrial data, and 78% responded that they used or were considering using personal data.

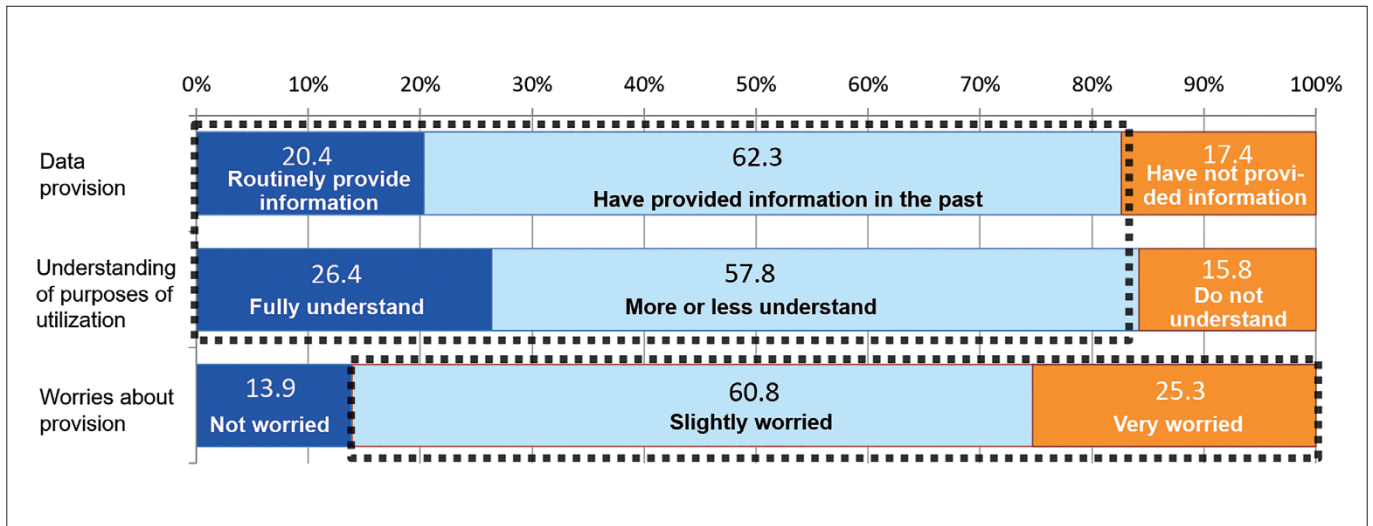
In a survey of individuals who share personal data, although 80% responded that they understood the purpose of providing personal data, over 85% responded that they felt uneasy about providing this data, indicating feelings of anxiety and resistance about the user of their personal information (Figure 1).

In the provision and collection of personal data, the purpose for which both business and personal data will be used features prominently in the information that businesses should provide to individuals, but individuals are particularly concerned about security measures, and there is a gap in the provision of information that businesses concentrate on, such as whether the information will be offered to third parties.

Although there are high expectations and motivations for the

* Available online at <http://www.soumu.go.jp/johotsusintokei/whitepaper/eng/WP2017/2017-index.html>

■ Figure1: Understanding and anxieties regarding personal data provision (Japan)



use of data by businesses, it is feared that the use of personal data will not advance while individuals still have deep-seated concerns about the provision of personal data. To promote the future distribution and use of data leading to economic growth and social change, it will be necessary to eliminate such gaps between the enthusiasm of businesses to use this data, and public fears about providing this data.

4. Changes brought about by the fourth industrial revolution (white paper, chapter 3)

On June 9, 2017, the Cabinet set forth its 2017 growth strategy and 2017 basic policy on economic and fiscal management and reform. To achieve medium- to long-term growth, these policies aimed to incorporate the technical innovations of the fourth industrial revolution into industry and society to solve various social issues and bring about “Society 5.0” ahead of the rest of the world.

Huge quantities of data (big data) are collected by diverse tools including smartphones, and stored for processing and analysis using technologies such as artificial intelligence (AI) as a way of understanding the present and predicting the future as a way of creating value and solving problems.

4.1 Progress towards and issues of the fourth industrial revolution

An international comparison with the United States, United Kingdom and Germany regarding which industry sectors are particularly likely to be revolutionized in the fourth industrial revolution appears to show that the answers given by Japanese businesses are centered on the information and telecommunications sector, and demonstrate lower awareness that the fourth industrial revolution will have an impact on other industries.

In 2017, when businesses were asked to classify the stage of their response to the fourth industrial revolution as “under examination”, “in progress/infrastructure development” or “in effect/reforms being implemented”, most responses were “under examination”. Meanwhile, many other countries have reached the

“in progress/infrastructure development” stage, and are one step ahead of Japan.

From 2020 onwards, the fourth industrial revolution is expected to bring about drastic changes in the structure of industry, but Japanese companies seem less willing to invest in new businesses and markets than businesses in other countries.

Of the challenges involved in implementing the fourth industrial revolution, the awareness of factors that are outside the control of businesses (e.g., rules, regulations and networks) is perceived as highly important in the US, UK and Germany, where businesses are keenly aware of issues relating to networks, standardization, terminals and the like. Meanwhile, Japanese businesses have a strong awareness of issues relating to standardization, the regulation of data distribution and collaboration (Figure 2). Regarding the awareness of issues concerning internal factors, overseas companies and Japanese companies were found to differ in terms of their awareness of issues concerning human resources and external resources (Figure 3).

4.2 Development of IoT in the information and telecommunications industry

As of 2016, the number of objects (IoT devices) connected to the Internet is 17.3 billion, which represents a substantial increase of 12.84% on the 15.4 billion IoT devices recorded in 2015 (Source: IHS Technology). It is expected that the annual average growth rate will accelerate to 15.0% until 2021, reaching about 30 billion in 2020, which is double the current quantity.

In addition, the Ministry of Internal Affairs and Communications devised an IoT International Competitiveness Indicator in March 2017. This indicator divides the ICT industry into an “IoT market” that provides components and systems related to smart cities and connected cars, and a “conventional ICT market” that provides other technologies. When scores were calculated for the business competitiveness of ten major countries and regions, Japan achieved third place in the IoT market, and third place overall.

Figure2: Issues relating to the provision of environments for the fourth industrial revolution (external factors)

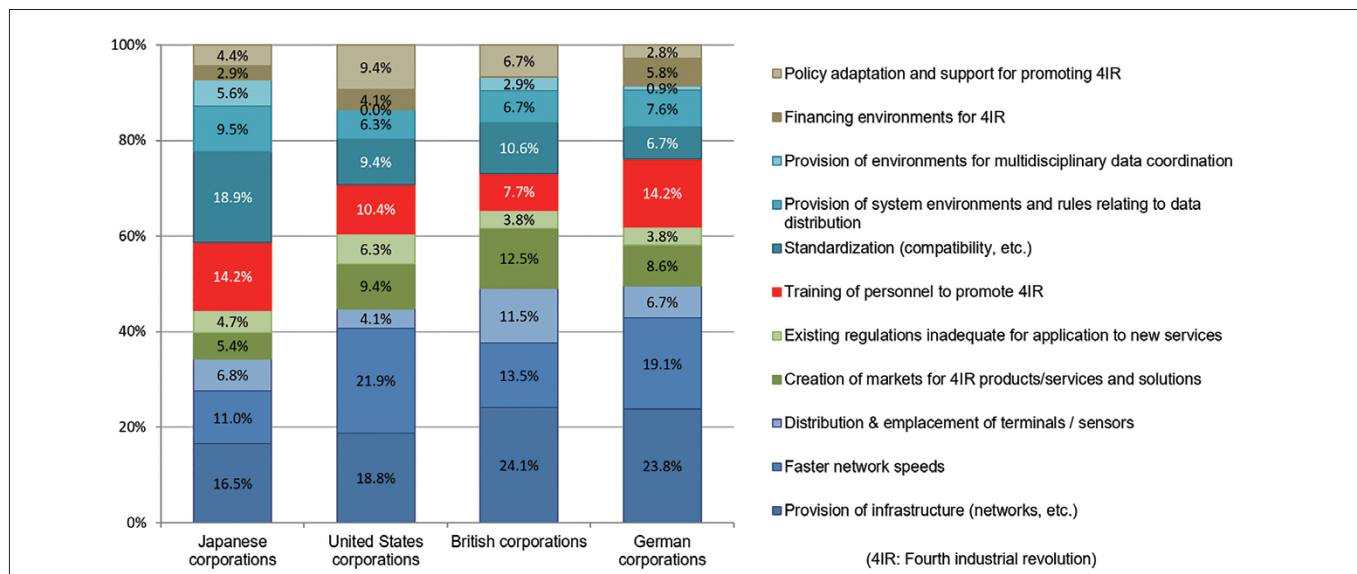
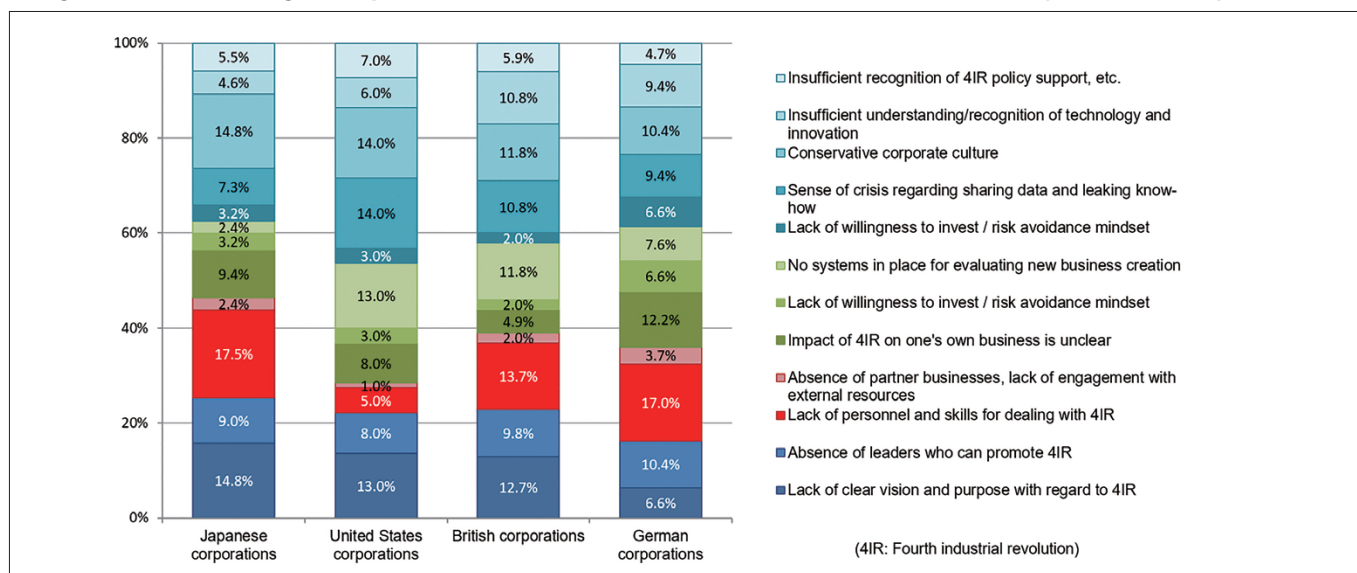


Figure3: Issues relating to the provision of environments for the fourth industrial revolution (internal factors)



4.3 Comprehensive analysis of the fourth industrial revolution

To gain an overview of the economic impact of business reforms and the introduction of IoT and AI (IoT introduction), a comparison was made of one economic growth scenario in which these changes made steady progress, and another scenario based on the Cabinet's medium- to long-term forecast.

In the economic growth scenario, it is assumed that IoT introduction and business reforms will be implemented at different timings for each category such as process innovation, product innovation, and so on.

The values of various indicators such as market scale (induced production value), real GDP and employment figures (labor inducement figures) were estimated based on these frameworks up to the year 2030. As a result, it was estimated that the economic growth scenario will achieve a real GDP of ¥725 trillion by 2030, ¥132 trillion higher than the base scenario (Figure 4).

Figure4: Impact of the development of IoT

