

# Chapter 3

## Toward Solving Social Issues through Advancing Digital Technologies

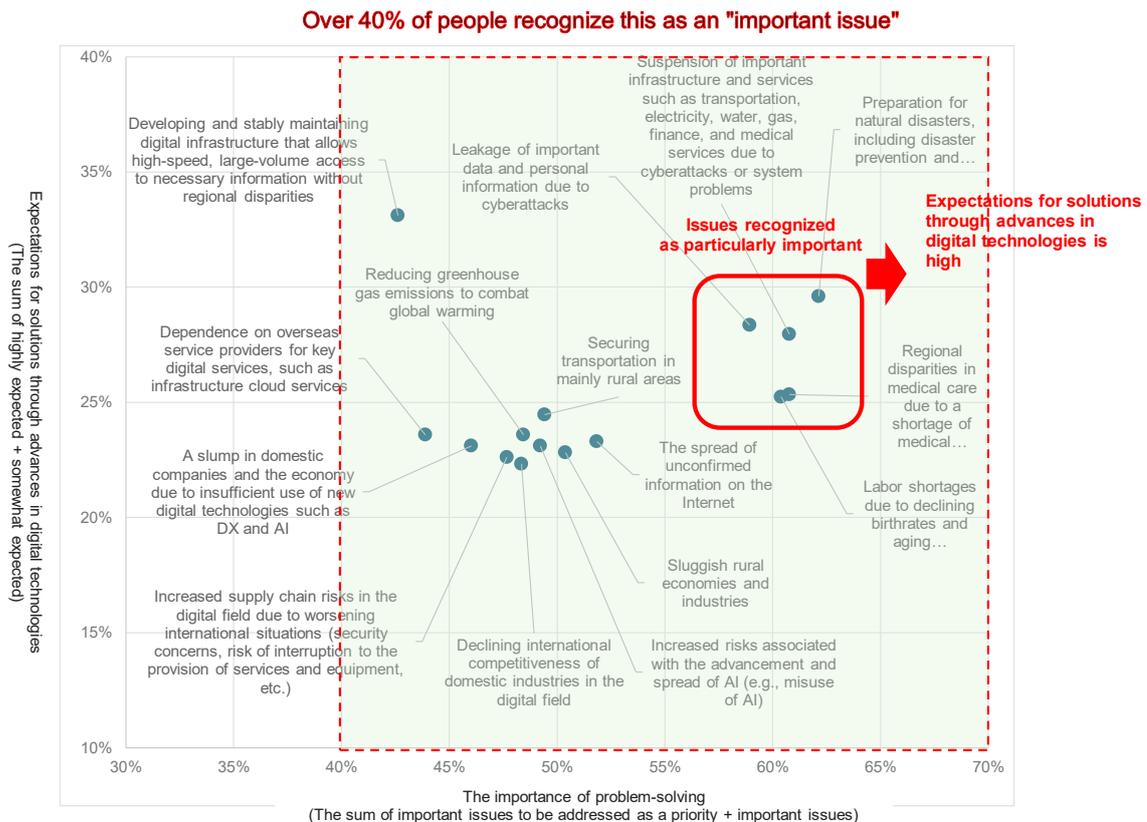
In Japan, the problem of a declining birthrate and aging population is becoming increasingly serious, and responding to the impoverishment and decline of local economies and the intensification of disasters has also become an important social issue. It is expected that further expanding the effective use of evolving digital technologies will contribute to solving and alleviating these social issues.

A survey was conducted on the importance of resolving major social issues and issues in the digital field, and the level of expectation that advances in digital technologies will lead to solutions to these social issues. For all issues, more than 40% of people responded that they recognized the presented issues as important issues (the sum of “important issues that should be addressed as a priority” and “important issues”). Among these, the ar-

reas where there were particularly high expectations for the advancement of digital technologies to solve problems included “preparation for natural disasters, including disaster prevention and mitigation,” “regional disparities in medical care due to a shortage of medical professionals,” “labor shortages due to a declining birthrate and aging population,” as well as preventing cyberattacks, system failures, and related issues. Additionally, the highest percentage of respondents said they expect digital technologies to be used to develop and stably maintain a large-capacity, high-speed digital infrastructure without regional disparities (Figure 1-3-1-1).

This chapter provides an overview of the role and prospects for digital technologies in resolving Japan’s major social challenges.

Figure 1-3-1-1 Importance and the level of expectation for solving social issues and issues in the digital field



### Section 1 Revitalizing and Growing Japan’s Economy

In the future, as digital technologies such as AI and robots advance and become more widely used in society, it is expected that they will help revitalize the economy

by solving labor shortages, improving productivity and enhancing competitiveness in Japan, which is facing a declining birthrate and aging population, and population

decline. In addition, from the perspective of Japan's economic growth, and in light of the increasingly uncertain global situation, from the perspective of economic security, ensuring the autonomy of companies and organiza-

tions based in Japan by expanding the provision of services in the digital field is an important issue, therefore, it is important to promote efforts to strengthen the international competitiveness of Japan's digital companies.

## 1. Promoting the use of evolving digital technologies for business

One direction for efforts to link advancing digital technologies to economic growth is to utilize advancing digital technologies in areas where Japan or individual companies and organizations have strengths.

For example, the results of a survey conducted by the MIC show that Japan is lagging behind the U.S., China, and Germany in terms of utilizing digital technologies to transform business operations and formulating policies for using AI. Furthermore, compared with these foreign

companies, the range of business fields in which generative AI is utilized is not as extensive<sup>1</sup>. It remains important for companies not only to achieve labor savings and efficiency by transforming entire business processes through DX, AI, robotics, etc. and utilizing them in a variety of operations, but also to work on innovations that bring new added value through digital technologies while leveraging their strengths<sup>2</sup>.

## 2. Efforts to strengthen competitiveness in the digital field

Promoting efforts to strengthen competitiveness in the digital field is also an important challenge. In the digital field, technological innovation has often brought about major game-changing reforms, dramatically altering mainstream services and providers. It has been pointed out that accurately capturing this game-changing wave will be a major key to business development in the digital field. Considering that ensuring Japan's autonomy in key services and infrastructure in the digital field is an important issue, <sup>3</sup>it is desirable to approach the issue in a way that makes use of Japan's strengths and ensure Japan's international competitiveness in key areas of the next digital infrastructure and services.

For example, AI is a field where major technological innovations are often occurring. While there is a technological background in the form of "Scaling Law" that favors those who can make large-scale investments, the development of small-scale LLMs, which have relatively limited training data and computational volume, is point-

ed out as an area in which Japanese companies and organizations can demonstrate their strengths, as it requires model diversity, such as customization for individual companies. <sup>4</sup>It is also anticipated that small-scale models will have an advantage in dealing with power constraints and handling highly confidential information. Furthermore, there is potential for new players to bring about technological innovation, and it is a field with a wide range of potential applications. Considering the potential for game-changing technological innovation, it is important to continue developing domestic LLMs, while promoting business development and social implementation of AI, and to capture the game-changing wave that comes with technological innovation<sup>5</sup>. Various Japanese companies are already working on developing such LLMs, and the government's policies are also supporting this<sup>6</sup>.

Robots, combined with advances in AI, are also a field that could see a game-changing impact, and various re-

<sup>1</sup> Refer to "Trends in digital usage" in Section 11, Chapter 1, Part II for international comparison of digital usage in companies Refer to "Current status of AI usage in companies" in Section 2 (2), Chapter 1, Part I for the status of formulating AI usage policies in companies and AI usage for business operations

<sup>2</sup> As a specific example, in the content field, digital technologies make it easy to deliver content around the world, transcending national and language barriers; the global content market has grown rapidly since recovering from the COVID-19 pandemic; and there is a growing labor shortage in the content industry, making digitalization increasingly important in content production. In light of this situation, in October 2024, the Japan Business Federation published a proposal for promoting Japan's content field ("Entertainment Contents ∞ 2024"). Here, in particular, promoting digital transformation in content production, developing and utilizing generative AI, and supporting the creation, challenges, and growth of Japanese content platformers will be discussed as digital-related efforts.

<sup>3</sup> From the perspective of business development that leverages the trust in Japan as a strength, given today's unstable global situation and geopolitical risks, there is a growing need for data storage, business infrastructure development, and collaboration in countries and regions that are as trustworthy as one's own, and it has been pointed out that Japan is in a fairly good position in this regard (based on an interview with Professor Kokuryo Jiro of the Faculty of Policy Management, Keio University). In addition, it has been pointed out that the stability of Japan's politics and administration is highly regarded worldwide, making it an attractive investment destination, and that increasing the predictability of business could also help Japan to demonstrate its presence (based on an interview with Professor Suzuki Kazuto of the Graduate School of Public Policy, The University of Tokyo). One of the possibilities Japan could aim for is to take advantage of Japan's such trust and stability to attract investment and collaboration from foreign business operators.

<sup>4</sup> Based on an interview with Okanohara Daisuke, CEO of Preferred Networks, and Kinoshita Masafumi, Executive Officer of ABEJA, Inc.).

<sup>5</sup> In the field of AI, which requires large-scale investments and advanced technologies, it may be difficult in the short term for Japan to immediately develop a model comparable to the cutting-edge LLMs led by foreign business operators. However, with various technological innovations likely to occur, from a medium- to long-term perspective, it has been pointed out that Japan needs to simultaneously work on developing and using general-purpose domestic LLMs (or next-generation AI resulting from future technological innovations) in light of the need for Japan's economic security and the protection of important data, as well as ensuring transparency of training data and training methods, cultural perspectives, and the improvement of Japan's AI technological capabilities (based on an interview with Okanohara Daisuke, CEO of Preferred Networks). Furthermore, in addition to the need to use domestically produced general-purpose LLMs in situations where important data protection is required, it is expected that countries that find it difficult to develop AI domestically will choose to introduce inexpensive foreign-made AI, while keeping security risks in mind. It has also been pointed out that Japan should also improve its technological capabilities in developing general-purpose LLMs that can be reused in other countries, and use the high level of quality and security as a competitive edge to deploy AI models overseas (based on an interview with Professor Suzuki Kazuto of the Graduate School of Public Policy, The University of Tokyo).

<sup>6</sup> Refer to "LLM research and development trends" in Section 2, 1 (3) (i), Chapter 1, Part I

search and development activities and efforts for social implementation are underway in Japan<sup>7</sup>.

Moreover, an example of an initiative being undertaken in the field of next-generation communications is the IOWN concept proposed by NTT. Various initiatives are steadily progressing, including the formation of a global ecosystem, such as the formation and expansion of the IOWN Global Forum and the start of training engineers overseas.

Government efforts to strengthen competitiveness in

the digital field are being undertaken at various levels by relevant ministries and agencies. For example, the MIC established a permanent fund at NICT in March 2023 and newly launched the Innovative ICT Fund Projects for Beyond 5G/6G, within which it has established three programs, including the “Strategic Program for Social Implementation and Global Deployment,” which will carry out research and development projects aimed at social implementation and overseas deployment.

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<sup>7</sup> Refer to “Trends in AI robotics research and development and social implementation” in Section 2, 1 (3) (i), Chapter 1, Part I