

Chapter 3

ICT and the Future of Regions

Part 2

Section 1 ICT and Regional Enterprises

In this section, we analyze what roles ICT can play in stimulating regional economies. Specifically, working from the assumptions of the examinations used throughout this chapter, we provide a general overview of the

current state regional economies are in and sort out realistic potentials that ICT can have in stimulating regional economies.

1. Current state of regional economies and the potential of ICT

(1) Outflow of populations from rural areas and concentration in Metro Tokyo

The flow of people from rural areas to the Tokyo metropolitan area has accelerated, and the movement of younger people is particularly notable. Metro Tokyo's population now accounts for about 30 percent of the entire nation's population, which is an extremely high concentration compared to other nations. It has been pointed out that the flow of younger people from rural areas to Metro Tokyo, where the birth rate is lower, is not only draining the vitality of regional areas; it is helping to fuel Japan's overall declining birth rate and population decline.

(2) Background to the population outflow

The population outflow from rural areas to Metro Tokyo is inseparable from fluctuations in the number of employed people in rural areas. This implies that a major contributing factor to the population outflow is regional economies and employment circumstances in particular. In other words, there are not enough attrac-

tive employment opportunities for younger people in rural areas, and this is believed to be drawing younger people from rural areas to Metro Tokyo. In fact, in an MIC survey given to local governments across the country, about 90 percent of the organizations said that they think a lack of quality employment opportunities is a cause of population outflows.

Looking at the situation from employers—i.e., regional enterprises, on the other hand, finds that many enterprises, regardless of the region or industry, feel there is a labor shortage and that the labor shortage has been worsening rapidly in recent years.

The phenomenon behind this apparent contradiction of a job shortage from the younger people's perspective and a labor shortage from the enterprises' perspective is thought to be a problem with employment quality in rural areas. In other words, there is a lack of quality employment—in terms of wages, stability, and job satisfaction—in rural areas, creating a situation where younger people move to Metro Tokyo seeking relatively higher quality employment.

2. State of ICT use and application by regional enterprises

(1) State of ICT use and application by enterprise type

When considering connections with regional economic stimulation, the problem of interest in this chapter, or with revitalizing local economies, two groups sustain regional economies over the mid and long term: the group of enterprises that provide services to the residents in regional areas (i.e., medical care and social security businesses, retailers, service businesses, and transportation businesses) and the group of enterprises that utilize regional resources to develop businesses (i.e., farming, fishing, and forestry businesses and tourism businesses). These groups (local regional enterprises) are, by their nature, unlikely to relocate their operational bases to other regions or overseas. Consequently, they are expected to be ongoing employment providers in their regions over the mid to long term. To revitalize local economies that will stem the population outflow from rural areas, encouraging enterprises with opera-

tions concentrated in Tokyo to decentralize their operations to other regions and calling back manufacturing bases that have shifted overseas to rural areas are indeed important. But at the same time, local regional enterprises have to work to measurably improve employment quality. The application of ICT is seen as key to accomplishing improvements in quality of employment.

It is not easy to draw a distinction between local regional enterprises and other enterprises, but for the purposes of this section, we divided enterprises along two perspectives: the locality of their business region and their dependence on regional resources. Specifically, of the 14 industry types on the survey, we classified 10 types (medical care and social security industry, real estate and rental and leasing industry, retail industry, mining industry, electricity, gas, heating, and water provision industry, construction industry, financial and insurance industry, transportation industry, service in-

dustry, and farming, fishing, and forestry industry) where the percentage of enterprises with business regions contained in one prefecture was above the average as local regional enterprises, along with another two types (farming, fishing, and forestry industry and tourism industry) where the dependence on regional resources is assumed to be high (Figure 3-1-2-1).

(a) Overall scores on ICT use and application by enterprise type

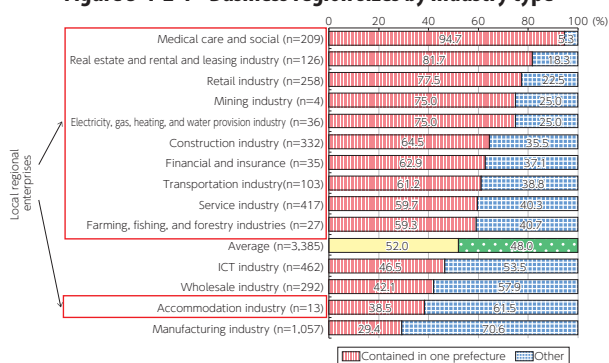
To obtain an overall ranking of the state of ICT use and application, we created a 32-point score (the ICT adoption score) in order to see what differences exist between enterprise types (Figure 3-1-2-2).

We examined the distribution patterns of the ICT adoption scores and found that among non-local-regional enterprises, the distribution was generally symmetri-

cal from the low scores to the high scores centered on the mode value of the distribution. Among local regional enterprises however, the distribution was distinctly slanted toward the low scores. This illustrates that many of these enterprises are comparatively late in efforts to incorporate ICT. Despite this, it is necessary to note that there are a few local regional enterprises with high ICT adoption scores (Figure 3-1-2-3).

Because there is a large discrepancy between local regional enterprises that have aggressively adopted ICT and those that haven't, and because a high percentage of enterprises are behind in adopting ICT, it is felt there is considerable room to raise the baseline of ICT adoption through the sharing of best practices, for example.

Figure 3-1-2-1 Business region sizes by industry type



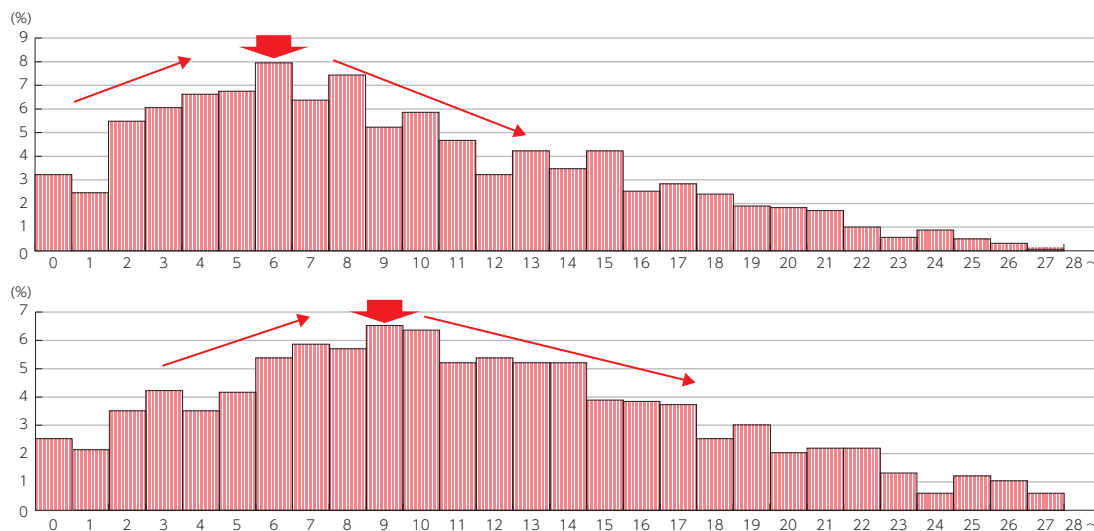
(Source) "Study Report on Revitalizing Local economies and Enterprise ICT Use and Application," MIC (2015)

Figure 3-1-2-2 ICT adoption scores

Ownership of ICT devices Maximum 6 points	(1) Computers (max. 2 points)
	(2) Smartphones (max. 2 points)
	(3) Tablets (max. 2 points)
ICT use in business transactions and information disclosures Maximum 6 points	(1) Have a website and publish information (max. 2 points)
	(2) Carry out transactions over the Internet (max. 2 points)
	(3) Make use of social media (max. 2 points)
Use of cloud computing and other ICT services Maximum 6 points	(1) Make use of cloud computing (max. 2 points)
	(2) Analyze customer information and / or usage histories (max. 2 points)
	(3) Analyze automatically collected sensor data (max. 2 points)
Adoption of information systems Maximum 9 points	(1) Product or service planning, development, or design
	(2) Inventory stocking, ordering, procurement
	(3) Production or manufacturing
	(4) Product management or inventory management
	(5) Service provision
	(6) Marketing, sales, or customer management
	(7) Accounting or bookkeeping
	(8) Payroll or human resources
	(9) Information sharing
State of ICT use and application to solve management problems Maximum 5 points	(1) Sales skills
	(2) Product strength
	(3) Productivity
	(4) Management reform
	(5) Human resources development

(Source) "Study Report on Revitalizing Local economies and Enterprise ICT Use and Application," MIC (2015)

Figure 3-1-2-3 ICT adoption scores (left: local regional enterprises (n = 1,586); right: non-local-regional enterprises (n = 1,824))



(Source) "Study Report on Revitalizing Local economies and Enterprise ICT Use and Application," MIC (2015)

Section 2 ICT and Regional Employment

In this section, we explore the ways ICT can contribute

to job creation in rural areas and its potential to do so.

1. Employment impacts of ICT adoption

(1) Job creation benefits of ICT

Differences are seen in the growth of existing businesses and creation of new businesses between the group of enterprises with higher than average ICT adoption and the group with lower than average ICT adoption. Figure 3-2-1-1 shows the percentage of offices with growing existing businesses divided by high or low ICT adoption. The percentage of offices in the group with higher than average ICT adoption that answered they had existing businesses exhibiting growth was 26.3 points higher. Similarly, in Figure 3-2-1-2, the percentage of offices in the group with higher than average ICT

adoption that answered they are creating new businesses was 16.4 points higher.

In addition, offices in the group with higher than average ICT adoption with increasing numbers of regular full-time employees through either the growth of existing businesses or the creation of new businesses, was 14.6 points higher, among offices with growth in existing businesses (Figure 3-2-1-3), and 18.2 points higher, among offices creating new businesses (Figure 3-2-1-4).

These results demonstrate that ICT application fosters company growth and has job creation benefits.

Figure 3-2-1-1 ICT adoption and growth of existing businesses

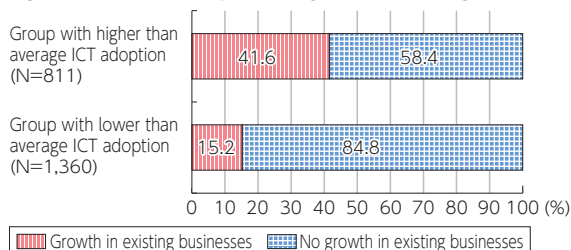
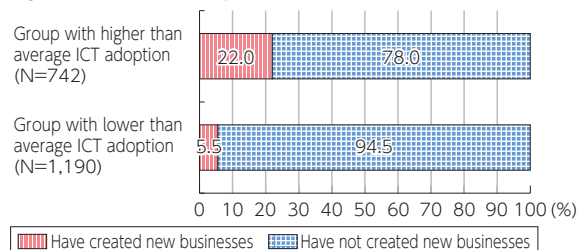


Figure 3-2-1-2 ICT adoption and creation of new businesses



(Source) "Study Report on Regional Job Creation through ICT: Issues and Solutions," MIC (2015)

Figure 3-2-1-3 Change in regular full-time employee numbers through the growth of existing businesses

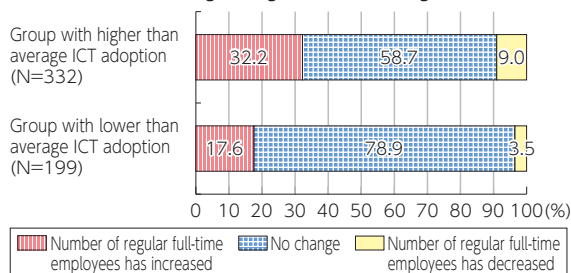
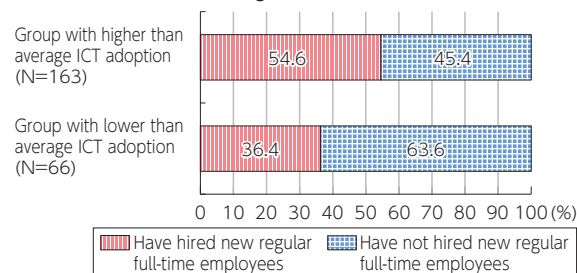


Figure 3-2-1-4 Change in regular full-time employee numbers through the creation of new businesses



(Source) "Study Report on Regional Job Creation through ICT: Issues and Solutions," MIC (2015)

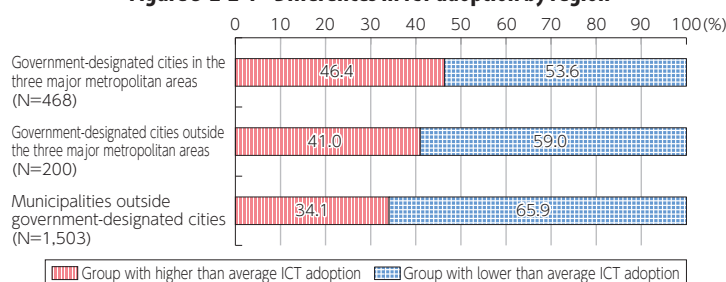
2. ICT's regional job creation potential

Based on the analysis in the previous paragraph, we examine the potential that the use and application of ICT has in creating jobs in rural areas and revitalizing rural areas. The results from the survey given to offices of the business monitors were divided and tabulated by government-designated cities in the three metropolitan areas, government-designated cities outside the three metropolitan areas, and municipalities outside of government-designated cities. The percentage of offices in the group with higher than average ICT adoption was highest in government-designated cities in the three metropolitan areas, at 46.4 percent, followed by 41.0 percent in government-designated cities outside the three metropolitan areas and 34.1 percent in municipalities

outside of government-designated cities. In other words, offices in municipalities outside of government-designated cities scored 12.3 points lower than offices in government-designated cities in the three metropolitan areas and 6.9 points lower than offices in government-designated cities outside the three metropolitan areas. Given the analysis results in the previous paragraph and the low level of ICT adoption in municipalities outside of government-designated cities, this suggests a weak effect on stimulating employment numbers through the growth of existing businesses and the creation of new businesses (Figure 3-2-2-1).

We assumed a case in which the development of the ICT provision industry and the use of crowdsourcing in

Figure 3-2-2-1 Differences in ICT adoption by region



(Source) "Study Report on Regional Job Creation through ICT: Issues and Solutions," MIC (2015)

Figure 3-2-2-2 Job creation benefits in rural areas due to ICT adoption
Increase in employed people attributable to the growth in existing businesses through ICT adoption

	Value	Remarks
Number of business offices in rural areas (2012)	3,769,772	· Number of business offices in rural areas (outside government-designated cities) on the 2012 Economic Census
(1) Number of business offices in rural areas in the group with high ICT adoption	261,426	· The number of business offices in rural areas multiplied by the difference (6.9 percent) in the percentages of business offices in the group with higher than average ICT adoption between urban areas (government-designated cities outside the three metropolitan areas) and rural areas
(2): Number of business offices from (1) with growth in existing businesses	68,841	· (1) multiplied by the percentage (26.3 percent) of business offices with growth in existing businesses
[A]: Number of business offices from (2) that have hired more regular full-time employees	22,187	· (2) multiplied by the percentage (32.2 percent) of business offices that have hired more regular full-time employees through the growth of existing businesses
[B]: Average number of regular full-time employees hired per business office at business offices with growth in existing businesses and that have hired more regular full-time employees	3.88	· An aggregation was used, weighted to fit the distribution of business offices by number of employees on the 2012 Economic Census
Number of jobs created in rural areas under this scenario	86,092	· A×B

Increase in employed people attributable to the creation of new businesses through ICT adoption

	Value	Remarks
Number of business offices in rural areas (2012)	3,769,772	· Number of business offices in rural areas (outside government-designated cities) on the 2012 Economic Census
(1) Number of business offices in rural areas in the group with high ICT adoption	261,426	· The number of business offices in rural areas multiplied by the difference (6.9 percent) in the percentages of business offices in the group with higher than average ICT adoption between urban areas and rural areas
(2): Number of business offices from (1) that have created new businesses	42,930	· (1) multiplied by the percentage (16.4 percent) of business offices that have created new businesses
[A]: Number of business offices from (2) that have hired more regular full-time employees	23,440	· (2) multiplied by the percentage (54.6 percent) of business offices that have hired more regular full-time employees through the creation of new businesses
[B]: Average number of regular full-time employees hired per business office at business offices that have created new businesses and that have hired more regular full-time employees	4.84	· An aggregation was used, weighted to fit the distribution of business offices by number of employees on the 2012 Economic Census
Number of jobs created in rural areas under this scenario	113,420	· A×B

(Source) "Study Report on Regional Job Creation through ICT: Issues and Solutions," MIC (2015)

rural areas drives ICT use and application by enterprises in rural areas so that in the future the level of ICT adoption by enterprises in rural areas (municipalities outside of government-designated cities) would approach that of enterprises in regional government-designated cities (government-designated cities outside the three metropolitan areas). We then ran a simulation using the results of the survey given to offices of the business monitors. With the level of ICT adoption at offices in rural areas (municipalities outside of government-designated cities) equal to the level in regional government-designated cities (government-designated cities outside the three metropolitan areas), the simulation calculated that the percentage of offices in rural areas (municipalities outside of government-designated cities) exhibiting growth in existing businesses and creating new businesses would climb, leading to an increase of 199,511

new jobs. Of these new jobs, 86,092 are attributable to growth of existing businesses brought on by ICT adoption and 113,420 are attributable to new businesses created by ICT adoption. In either case, these jobs are for regular full-time employees (Figure 3-2-2-2).

This trial calculation is based on the results of a survey given to offices on the labor-demand side. Therefore, it shows that if offices in rural areas adopt more ICT, the offices may be revitalized and stable jobs may be created as a result. It does not indicate that residents in large metropolitan areas will immediately migrate to rural areas. For people considering relocating from large metropolitan areas to rural areas but who are concerned about finding stable employment in rural areas however, the ability of ICT to create high quality employment in rural areas may be enough to push people into relocating from large metropolitan areas to rural areas.

Section 3 ICT and Regional Issues

1. Current state of ICT use and application in regional areas

MIC has conducted surveys of local governments across the country since 2009 to ascertain the state of ICT use and application in regional areas. In this section, we examine the survey results and verify just how much ICT use and application has progressed in regional areas.

(1) State of ICT use and application by field

The survey began by asking whether local governments or related organizations operated, or participated or collaborated in some form in operating, specific services making use of ICT systems in FY 2014. Questions were asked for each administrative field, such as medical care and nursing, social security, and education. Specific ICT systems were presented in the survey—such as electronic medical record coordination, electronic maternity health records, and electronic blackboards or digital textbooks—and the respondents were asked about the state of each system's implementation in their jurisdiction.

Comparing the implementation rates of ICT-based services over the years, it is possible to confirm that rates are on an upward trajectory on the whole. In particular, the tourism field's implementation rate jumped

by nearly 5 percent in FY 2014, suggesting that local governments are pushing forward with efforts that use ICT to bring in tourists (Figure 3-3-1-1).

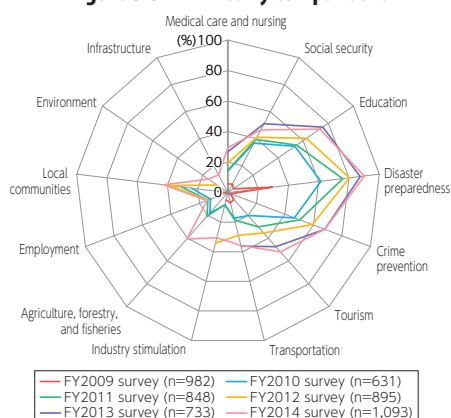
(2) Application of the My Number system

With the introduction of the My Number system, we asked the respondents about what services they were interested in using the My Number system with. The most common response for services they were interested in and currently studying was "reduction in cross-checking operations and site surveys, etc. done by administration" (14.7 percent), but even this response did not reach the 20-percent mark. When adding responses for "interested but have not studied," the response rate was over 80 percent for all services. This suggests that many local governments are interested in applying the My Number system but have yet to reach the study stage (Figure 3-3-1-2).

(3) Fields for future big data use

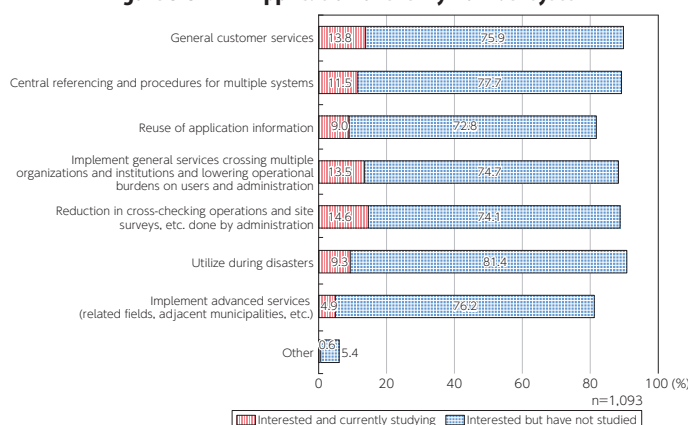
The survey asked respondents in which fields they would like to make use of big data. Interest was highest in the "disaster-preparedness field" (63.9 percent) and the "tourism field" (62.9 percent) (Figure 3-3-1-3).

Figure 3-3-1-1 Yearly comparisons



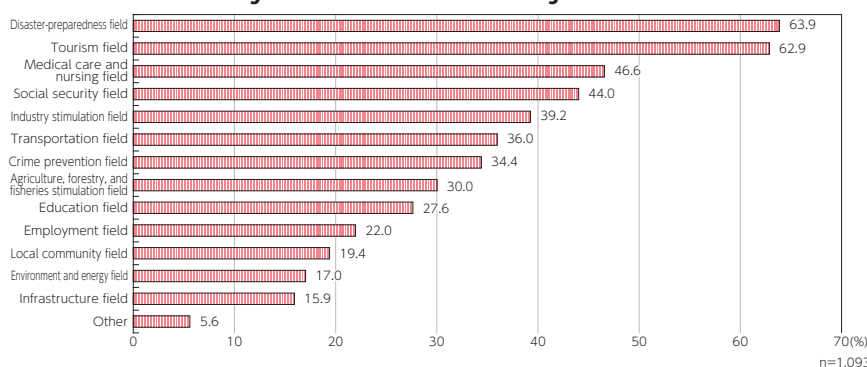
(Source) "Study Report on the Current State of ICT Use and Application in Regional Areas," MIC (2015)

Figure 3-3-1-2 Application of the My Number system



(Source) "Study Report on the Current State of ICT Use and Application in Regional Areas," MIC (2015)

Figure 3-3-1-3 Fields for future big data use



(Source) "Study Report on the Current State of ICT Use and Application in Regional Areas," MIC (2015)