TELEWORKING FROM THE PERSPECTIVE OF EMPLOYEES' MENTAL AND PHYSICAL HEALTH

— REQUIRED INNOVATIVE HR POLICIES AND ADOPTION OF ICT —

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SUMMARY

- Companies introduce teleworking as a means to achieve various objectives, such as to improve employees' productivity. Among those aims, to "realize a comfortable and healthy lifestyle for employees" matches up with the Japanese government's position, which promotes work style reform in an aging society with a declining birthrate.
- This report looks into what is needed to realize teleworking arrangements from the viewpoint of workers, by studying two key concepts: "well-being" and one of its constituents, "engagement," which have been attracting increasing attention in recent years.
- In order to "realize a comfortable and healthy lifestyle for employees," it is necessary to combine diverse and flexible human resource policies with teleworking, as well as expand the range and enhance the functions of information and communication technologies (ICT) that companies adopt to support teleworking.

1. THE SIGNIFICANCE OF TELEWORKING AND THE AIM OF THIS REPORT

Japan is facing a decreasing working age population owing to the declining birthrate and aging society,[1] along with a diversification of work style needs, such as to meet demands for balancing childcare/nursing care and work. As such, the country needs to tackle the challenges of improving labor productivity through innovation, while also expanding employment opportunities and creating work environments in which workers can fully demonstrate their motivations and capabilities. With the aim of providing solutions for these issues, the government has been promoting work style reform since 2019, primarily through the step-by-step enforcement of related laws and regulations, including provisions for: (1) an upper limit on overtime hours, with penalties imposed on companies that fail to comply, and (2) an improvement in the treatment of non-regular employees, such as by ensuring equal pay for equal work. And teleworking is considered as the "key"[2] for the realization of this work style reform.

[1] As of October 1, 2019, the population of those aged 15-64, including foreigners, was 75.07 million, a decrease of 370,000 from the previous year. The working age population as a percentage of Japan's total population of 126.16 million was 59.5%, the lowest level since the 1950s, which is the earliest decade for which comparable statistics are available. Source: Population estimate reports published by the Ministry of Internal Affairs and Communications.

[2] Ministry of Internal Affairs and Communications, *Terewāku no suishin* [Promotion of teleworking] website, (https://www.soumu.go.jp/main_sosiki/joho_tsusin/telework/).

Teleworking is "a flexible way of working to make effective use of time and places using information and communications technology (ICT),"[3] and includes not only working from home but also working from satellite offices as well as mobile working (Figure 1). It is expected to contribute to the realization of an economic society in which employees can choose from various work styles to fit with their individual circumstances.

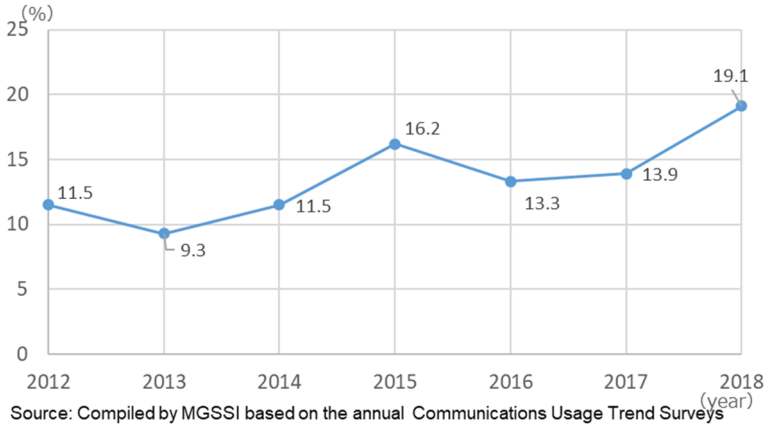
Figure 1: Three forms of teleworking

Working style	Overview
Working from home (using a residence)	Also includes working from home for part of the time, as in the case when an employee is allowed to work from home for a part of the total working hours in a given day, while going in to the office, visiting customers, or participating in meetings, etc. on the same day
Working from a satellite office (using a commercial facility)	A working style in which an office other than the employee's assigned office, such as another office or shared office, coworking space, or a remote work facility, is used as a workplace.
Mobile working (working while away from a workplace)	Working while being away from a regular workplace, such as to conduct sales activities. Includes the style of working by sales personnel and other employees who carry out work tasks, such as compiling daily reports, at transportation facilities, stations, cafes, etc., without returning to the office.

Source: Prepared by MGSSI based on the 2018 Communications Usage Trend Survey conducted by the Ministry of Internal Affairs and Communications (published in 2019).

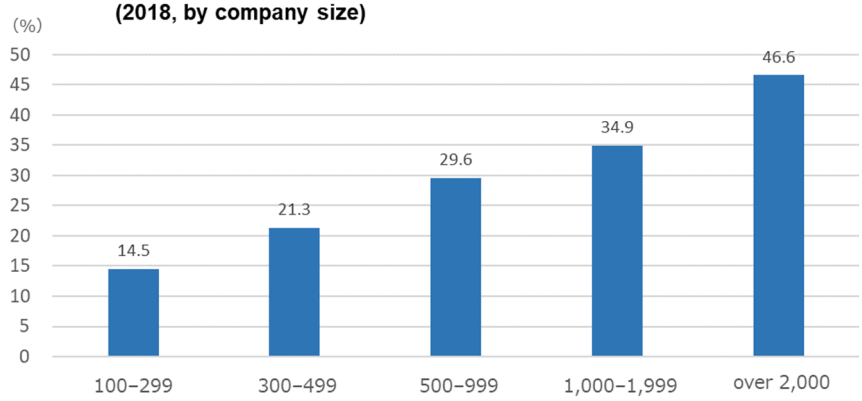
The Japanese government aims to substantially increase the telework adoption rate among companies from 11.5% in 2012, to triple that number by 2020.[4] In fiscal 2015, the government began promoting greater awareness and wider adoption of the concept by recognizing the "Top Hundred Telework Pioneers," but the percentage of companies that had introduced teleworking had reached only 19.1% by 2018 (Figure 2), and the data showed that the adoption rate varies depending on the size of the companies (Figure 3).

Figure 2: Percentage of companies using teleworking



Source: Compiled by MGSSI based on the annual Communications Usage Trend Surveys conducted by the Ministry of Internal Affairs and Communications.

Figure 3: Teleworking adoption rate by Japanese companies (2018, by company size)



Source: Prepared by MGSSI based on the 2018 Communications Usage Trend Survey conducted by the Ministry of Internal Affairs and Communications (published in 2019).

[3] Ministry of Health, Labor, and Welfare, *Terewāku sōgō pōtarusaito* [Teleworking portal site] (https://telework.mhlw.go.jp/telework/about/).

[4] Declaration to be the World's Most Advanced IT Nation" (Cabinet decision of June 14, 2013) □ 2. (5). (https://japan.kantei.go.jp/policy/it/2013/0614_declaration.pdf).

Meanwhile, companies have been promoting ICT in ways that will support teleworking, such as by introducing video conferencing systems and tablet computers, in preparation for the Tokyo Olympic and Paralympic Games 2020, which were expected to be a turning point for promoting teleworking (Figure 4).

Figure 4: ICT adoption rates by industry

(unit: %)

	Industry / ICT	Total	Food	Chemicals, Petroleum	Non-ferrous metals, Steel	Pharmaceuticals	Other materials	Electrical, precision machinery	Autos, Transportation equipment	Other manufacturing	Construction	Electricity Gas	Trading company	Transportation	Warehousing, Real estate	Telecom services	Retail, Restaurants	Financial	Other non-manufacturing
	No. of respondents (company)	663	35	56	21	24	20	93	34	38	42	7	32	16	24	88	58	51	24
1	Video conferencing systems	76.2	82.9	89.3	76.2	83.3	75.0	86.0	76.5	81.6	66.7	57.1	71.9	62.5	54.2	72.7	62.1	92.2	54.2
2	Tablet computers	62.0	65.7	67.9	61.9	62.5	55.0	68.8	41.2	63.2	64.3	71.4	62.5	62.5	62.5	52.3	62.1	82.4	33.3
3	Business chat apps	44.6	45.7	50.0	42.9	54.2	25.0	54.8	26.5	44.7	40.5	14.3	46.9	56.3	45.8	55.7	27.6	45.1	29.2
4	Cloud file sharing	48.7	45.7	53.6	42.9	45.8	40.0	59.1	35.3	52.6	45.2	28.6	53.1	50.0	45.8	55.7	37.9	49.0	37.5
5	Thin client/remote desktop services	38.2	40.0	44.6	14.3	16.7	45.0	43.0	38.2	50.0	28.6	57.1	46.9	43.8	29.2	37.5	17.2	60.8	29.2
6	In-house wireless LANs	68.0	82.9	76.8	71.4	83.3	65.0	80.6	64.7	60.5	61.9	57.1	65.6	56.3	58.3	64.8	58.6	62.7	58.3
7	Smartphone tools	44.0	45.7	55.4	33.3	50.0	40.0	46.2	32.4	47.4	40.5	42.9	50.0	62.5	41.7	47.7	36.2	43.1	20.8
8	Promotion of paperless operations	52.3	65.7	60.7	33.3	41.7	40.0	65.6	35.3	50.0	57.1	42.9	43.8	56.3	45.8	47.7	31.0	82.4	41.7
9	In-house social networks	30.9	37.1	28.6	19.0	25.0	10.0	41.9	14.7	31.6	38.1	28.6	31.3	43.8	25.0	33.0	27.6	31.4	25.0
10	AI (centered on deep learning)	9.2	8.6	7.1	14.3	0.0	10.0	7.5	2.9	5.3	4.8	0.0	12.5	6.3	20.8	9.1	3.4	29.4	8.3
11	Robotic process automation (RPA)	37.1	37.1	35.7	33.3	20.8	35.0	46.2	23.5	34.2	23.8	57.1	43.8	31.3	37.5	44.3	20.7	66.7	12.5
12	e-learning	70.3	74.3	82.1	61.9	79.2	55.0	88.2	70.6	71.1	54.8	71.4	50.0	62.5	62.5	70.5	53.4	90.2	41.7
13	Free address systems	32.1	54.3	37.5	14.3	33.3	15.0	39.8	17.6	42.1	31.0	28.6	25.0	43.8	29.2	38.6	20.7	25.5	16.7
14	AI (centered on machine learning)	17.3	22.9	16.1	19.0	12.5	10.0	17.2	2.9	15.8	2.4	14.3	21.9	12.5	16.7	25.0	13.8	35.3	12.5
15	Datafication and visualization of employee behavior	16.0	17.1	23.2	4.8	16.7	5.0	21.5	5.9	15.8	7.1	0.0	18.8	18.8	16.7	20.5	8.6	27.5	0.0
16	Wearable devices	8.4	14.3	8.9	4.8	8.3	10.0	9.7	5.9	0.0	4.8	14.3	6.3	0.0	8.3	11.4	6.9	15.7	4.2
17	Employee awareness survey tools	41.9	51.4	41.1	57.1	41.7	45.0	58.1	44.1	50.0	19.0	28.6	28.1	18.8	33.3	38.6	34.5	56.9	20.8
18	Automated translation	11.5	14.3	19.6	9.5	8.3	10.0	20.4	14.7	13.2	0.0	0.0	15.6	6.3	0.0	13.6	6.9	3.9	4.2
19	Automated transcription of paper and voice data to text	15.4	14.3	12.5	19.0	16.7	20.0	21.5	11.8	23.7	4.8	0.0	18.8	0.0	20.8	13.6	3.4	33.3	4.2
20	Text analysis, mining	10.3	14.3	12.5	4.8	8.3	5.0	12.9	0.0	15.8	2.4	0.0	12.5	6.3	4.2	15.9	3.4	21.6	0.0
21	Visualization of HR data analysis results	22.0	25.7	25.0	14.3	16.7	10.0	30.1	11.8	23.7	16.7	0.0	12.5	6.3	16.7	26.1	15.5	39.2	20.8
22	Talent management systems	28.4	42.9	39.3	19.0	37.5	15.0	43.0	23.5	23.7	9.5	0.0	21.9	12.5	16.7	33.0	27.6	31.4	0.0
23	Automated communications with the use of chatbots, etc.	14.2	22.9	14.3	14.3	8.3	0.0	12.9	8.8	10.5	4.8	14.3	15.6	6.3	20.8	20.5	13.8	25.5	4.2
24	Support/automate creation of manuals, etc.	9.5	20.0	17.9	9.5	0.0	0.0	11.8	2.9	7.9	2.4	0.0	6.3	6.3	8.3	11.4	8.6	13.7	4.2
25	Improve level of HR data analysis	17.9	14.3	17.9	14.3	16.7	10.0	23.7	8.8	21.1	11.9	0.0	12.5	6.3	16.7	21.6	13.8	37.3	8.3
26	Detailed classification, unification of HR data	25.0	25.7	32.1	19.0	20.8	10.0	35.5	17.6	26.3	26.2	14.3	21.9	12.5	25.0	22.7	13.8	41.2	12.5

Note: For each ICT, the three industries with the highest introduction rates are shaded pink, and the three industries with the lowest introduction rates are shaded green.
Source: Compiled by MGSSI based on the Smart Work Project Study Group's final report, published jointly by the Nihon Keizai Shimbun and the Japan Center for Economic Research (JCER) in 2019. (https://www.jcer.or.jp/wp-content/uploads/2019/07/smartwork_finalreport02.pdf, accessed April 15, 2020.)

As part of the response to the COVID-19 pandemic that has occurred under these circumstances, the government is now strongly encouraging working from home,[5] and an increasing number of companies are rushing to shift. The telework adoption rate is expected to continue increasing for the foreseeable future, partly owing to the Tokyo Metropolitan Government's emergency measures to support business continuity, such as the subsidy system established in March for small and medium-sized enterprises with 999 or fewer regular employees.[6]

A survey carried out in 2018 showed that companies have various objectives for initiating teleworking, as listed in Figure 5. Of these, the aim to (4) "realize a comfortable and healthy lifestyle for employees" is in conformity with the idea behind the government's work style reform.

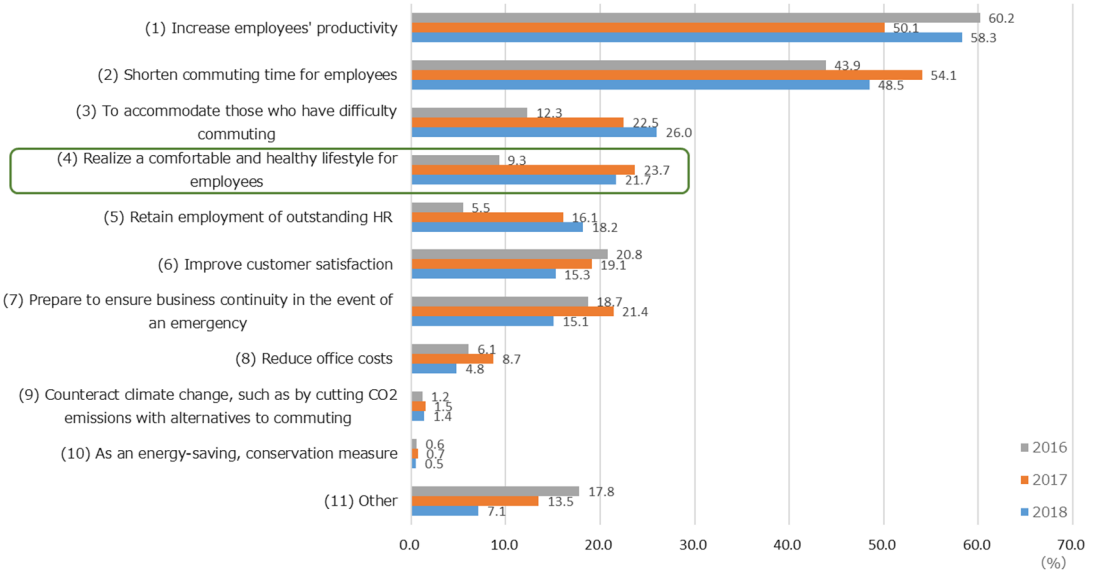
In addition, Figure 6 shows the correlations between the introduction status of specific ICT devices / tools, which are indispensable for companies to provide teleworking opportunities for their employees, and the objectives of introducing those devices / tools. As one of the main objectives for introducing ICT initiatives, such as video conferencing systems, tablet computers, business chat tools, and cloud file sharing, many companies cited

[5]At a press conference to address the COVID-19 situation, Prime Minister Shinzo Abe said, "Until now we have been calling on the public to implement teleworking among other efforts. We ask you to work at home in principle, except for those jobs needed to sustain societal functions" (April 7, 2020).

[6]According to the results of a survey conducted from March 13 to 31, 2020 by the Tokyo Chamber of Commerce and Industry covering its 13,297 member companies, of the 1,333 respondents, 26.0% said they have introduced teleworking arrangements. The percentage of companies that said they are considering implementation of teleworking systems was 19.5%, and companies with 50-300 employees represented a large percentage of those respondents. The survey also found that 56.5% of the respondent companies have introduced staggered working hours for their employees, and 46.3% encouraged their employees to take time off. Source: *Shingata koronauirusu kansenshō e no taiō ni kansuru ankēto chōsa kekka* [Results of a questionnaire survey on the response to COVID-19], Tokyo Chamber of Commerce and Industry (2020).

"realizing work styles with workplace flexibility," which includes teleworking (pink-shaded column in Figure 6). At the same time, the results reveal that not as many companies placed importance on "promoting and maintaining the health of employees" as a reason for incorporating ICT (yellow-shaded column in Figure 6), even though this is an objective that is consistent with the aim of introducing teleworking, i.e., to "realize a comfortable and healthy lifestyle for employees."

Figure 5: Companies' objectives for introducing teleworking



Source: Compiled by MGSSI based on the 2018 Communications Usage Trend Survey conducted by the Ministry of Internal Affairs and Communications (published in 2019).

Figure 6: Objectives of introducing specific ICT measures (unit: %)

Objective / ICT	Total	Improve work efficiency	Realize work styles with workplace flexibility	Facilitate remote communications	Increase added value of work	Facilitate communication among employees	Facilitate information sharing among departments	HR development, skill enhancement	Optimize personnel appointments	Increase employee engagement	Promote & maintain employee health	Optimize & increase efficiency of recruitment activities	Ensure fairness of employee evaluations
No. of respondents (company)	1,326	699	277	224	185	182	158	101	83	64	54	37	33
1 Video conferencing systems	16.4	24.3	36.5	56.7	11.9	35.2	29.1	8.9	0.0	14.1	14.8	21.6	0.0
2 Tablet computers	13.0	21.2	30.3	19.6	18.9	21.4	26.6	15.8	4.8	17.2	18.5	27.0	9.1
3 Business chat tools	9.4	14.0	28.5	21.9	5.4	36.8	18.4	0.0	2.4	17.2	7.4	2.7	0.0
4 Cloud file sharing	9.2	14.2	24.2	17.9	10.8	20.9	29.7	7.9	1.2	12.5	7.4	10.8	0.0
5 Thin client/remote desktop services	5.3	7.9	23.5	5.4	4.9	8.8	2.5	1.0	0.0	14.1	14.8	0.0	0.0
6 In-house wireless LANs	7.7	11.9	20.2	15.2	7.6	18.1	12.0	2.0	1.2	14.1	7.4	0.0	6.1
7 Smartphone tools	6.0	8.4	17.7	13.4	8.6	16.5	14.6	3.0	2.4	4.7	1.9	10.8	9.1
8 Promotion of paperless operations	8.1	14.2	12.6	11.6	10.3	12.6	20.9	5.9	8.4	7.8	9.3	16.2	12.1
9 In-house social networks	3.5	4.3	7.9	5.8	3.8	14.8	11.4	5.0	0.0	6.3	3.7	2.7	0.0
10 AI (centered on deep learning)	4.8	8.0	5.8	9.4	8.6	6.6	10.1	8.9	4.8	7.8	1.9	16.2	6.1
11 Robotic process automation (RPA)	10.4	19.5	4.0	1.8	33.0	2.7	3.2	11.9	38.6	12.5	18.5	10.8	0.0
12 e-learning	3.4	3.4	2.9	2.7	3.8	1.6	1.9	28.7	2.4	9.4	1.9	0.0	6.1
13 Free address systems	0.8	1.4	2.5	0.4	1.1	4.9	1.3	0.0	0.0	0.0	1.9	0.0	0.0
14 AI (centered on machine learning)	5.4	9.6	2.2	0.4	23.8	4.4	2.5	5.9	13.3	7.8	3.7	35.1	3.0
15 Datafication and visualization of employee behavior	2.5	3.0	1.8	1.8	3.2	5.5	7.0	3.0	7.2	7.8	20.4	2.7	12.1
16 Wearable devices	0.7	1.1	1.1	0.4	1.1	1.1	1.9	1.0	0.0	3.1	3.7	0.0	0.0
17 Employee awareness survey tools	1.7	1.1	1.1	0.9	2.2	1.1	1.9	1.0	2.4	25.0	9.3	0.0	6.1
18 Automate communications with the use of chatbots, etc.	2.6	5.0	0.7	1.3	7.6	2.7	3.2	2.0	8.4	6.3	3.7	2.7	3.0
19 Automated transcription of paper and voice data to text	1.7	2.4	0.4	0.0	5.4	1.6	0.6	6.9	3.6	4.7	1.9	5.4	6.1
20 Text analysis, mining	1.4	2.1	0.4	0.0	8.1	0.5	0.0	5.0	3.6	4.7	0.0	10.8	3.0
21 Visualization of HR data analysis results	2.5	2.4	0.4	0.4	4.3	0.5	1.9	12.9	19.3	1.6	18.5	10.8	30.3
22 Talent management systems	2.1	0.7	0.4	0.0	0.5	1.1	3.2	20.8	24.1	3.1	0.0	5.4	48.5
23 Automated translation	0.5	0.6	0.0	0.0	0.5	1.6	0.0	2.0	1.2	0.0	0.0	0.0	0.0
24 Support/automate creation of manuals, etc.	0.8	1.1	0.0	0.4	2.7	0.0	0.6	4.0	0.0	0.0	0.0	0.0	0.0
25 Improve level of HR data analysis	2.3	2.7	0.0	0.0	4.9	0.0	1.9	6.9	14.5	4.7	14.8	24.3	21.2
26 Detailed classification, unification of HR data	2.7	2.7	0.0	0.9	3.2	1.1	3.8	12.9	27.7	1.6	13.0	5.4	36.4

Note: ICT are listed in order of the percentage of respondents who cited the objective "Realize work styles with workplace flexibility," from high to low (total is not necessarily 100% due to multiple answers), and the objectives of introduction are listed in the order of "number of responses."
Source: Compiled by MGSSI based on the Smart Work Project Study Group's final report, published by the Nihon Keizai Shimbun and the Japan Center for Economic Research (JCER).

The introduction of ICT alone is not likely to lead to the "realization of a comfortable and healthy lifestyle for employees." In light of these findings and the current situation, this report focuses on the aim of "realizing a comfortable and healthy lifestyle for employees" among companies' various objectives for introducing teleworking, and considers what is needed to achieve that by attempting to determine the ideal ways of teleworking from the aspect of the physical and mental health of employees. As clues toward this end, this report explores the concepts of employee "engagement" and "well-being," which are attracting the attention of researchers, policymakers, and practitioners, because of their connection to physical and mental health.

2. TELEWORKING AND "ENGAGEMENT" — THE BENEFITS OF DEVISING INNOVATIVE INSTITUTIONAL SYSTEMS

It has been pointed out that one problem associated with teleworking is the high possibility of workers losing sight of the boundaries between their work and personal lives, and as a result, unintentionally ending up working long hours.[7] Working from home, in particular, also presents the problem of those who need to care for elderly family members or children tending to work late at night and/or early in the morning, contrary to "realizing a comfortable and healthy lifestyle for employees". The Ministry of Health, Labor and Welfare recognizes this problem and is asking companies to take concrete measures,[8] such as to promote proper awareness of working hours.

In order for companies to solve these problems, they not only need to introduce ICT, but also need to implement other initiatives, including those for establishing a system for diverse and flexible workplaces, reducing overtime hours, encouraging employees to take paid leave, and preventing overwork and health problems. Furthermore, combining these measures with a system for diverse and flexible working hours, which could include flextime and shorter working hours, is also likely to be effective. Then, what are the incentives for businesses to devise innovative institutional systems by combining HR measures in this way?

2-1 The concept of engagement

As a clue to examining this question, this report looks at the concept of "engagement," which is also cited by companies as one of the reasons for their adoption of ICT (blue-shaded column in Figure 6). "Engagement" in this sense refers to employees' willingness and attitude toward making the voluntary effort to contribute to an organization or apply themselves to their work, as they find the work rewarding because the paths for achieving an organization's goals and an employee's own growth are matched with each other. It is also an element that consists of the concept of "well-being" described later in section 3-1 of this report.

The "employee engagement" concept is defined in relation to the workplace by a US researcher in 1990, and the number of surveys and research studies on it has been increasing since the 2000s. Survey results show that companies for which the levels of engagement are high are 21% more profitable and 17% more productive than those with low levels of engagement.[9] Recently, this topic was taken up in connection with job satisfaction (work considered to be worthwhile) in the 2019 white paper "Analysis of the Labour Economy,"[10] issued by the Ministry of Health, Labor, and Welfare. It is also a central theme in the 2020 report[11] by the special committee on management and lab policies of the Japan Business Federation (Keidanren), which details management's position on wage hikes and comprehensive measures for improving the treatment of workers in the spring labor negotiations and deliberations with labor unions.

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[7]Professor Kotaro Tsuru, Keio University, *Terewāku seikō no jōken wa? — kajūrōdō sake sōzō-sei jūshi* [What are the conditions needed for successful telework? —avoid overwork and focus on creativity] (Nihon Keizai Shimbun, May 15, 2017).

[8]Ministry of Health, Labor, and Welfare, *Jōhō tsūshin gijutsu o riyō shita jigyōjōgai kinmu no tekisetsuna dōnyū oyobi jisshi no tame no gaidorain* [Guidelines for the appropriate introduction and implementation of off-site work using information and communication technologies] (February 22, 2018), *Jōhō kiki sagyō ni okeru rōdō eisei kanri no tame no gaidorain* [Guidelines for occupational health management in the operation of information devices] (July 12, 2019).

[9]Gallup (2017) "State of the Global Workplace." Gallup, Inc. has developed and uses a tool called Q12 for measuring employee engagement. Over the three years from 2014, the company carried out a highly statistically reliable meta-analysis of workers aged 23-65 in 155 countries, including Japan.

[10]Ministry of Health, Labor and Welfare (2019), "Analysis of the Labour Economy" (September 27, 2019 Cabinet Office report) Part II, Chapter 3, Section 1, *Wāku engeijimento ni chakumoku shita "hatarakigai" o meguru genjō ni tsuite* [Regarding the present situation of "work worth doing" focusing on work engagement].

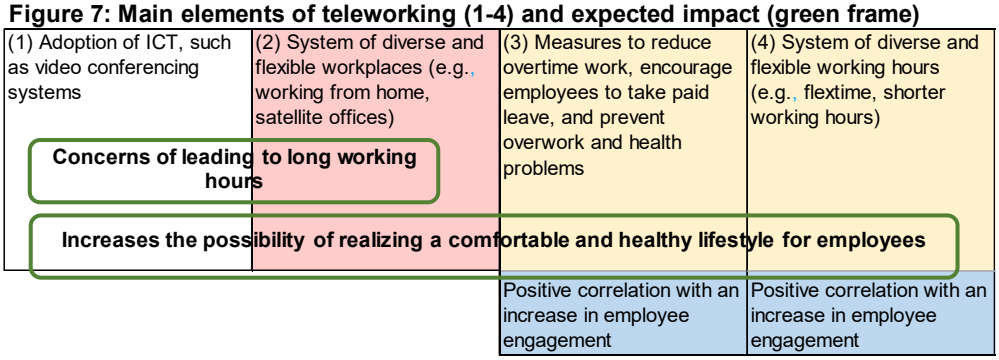
[11]Japan Business Federation (Keidanren) (2020), *2020-Nenban keiei rōdō seisaku tokubetsu iinkai hōkoku — Society 5.0 Jidai o kiri hiraku engējimento to kachi sōzō-ryoku no kōjō* [2020 Report by Keidanren's special committee on management and labor policies — Enhancing engagement and value creation capabilities to open the way for Ｓｏｃｉｅｔｙ 5.0].

2-2 Combining HR measures to "realize a comfortable and healthy lifetsyle for employees" plus more

The Smart Work Management Study Group, organized by the Nihon Keizai Shimbun and the Japan Center for Economic Research (JCER), which conducted the surveys shown in Figures 4 and 6, also carried out a regression analysis (sample size of 8,895 company employees) by using "diversity," "diverse and flexible work styles," and "corporate measures to achieve work-life balance" as the explanatory variables, and "engagement" as the explained variable.[12] The results revealed that the teleworking initiative itself, in other words, the adoption of a "diverse and flexible workplace system" (working from home, satellite offices, etc.), did not show a statistically significant correlation with an improvement in engagement. In contrast, positive correlations were noted between measures for "reducing overtime hours," "encouraging employees to take paid leave," "preventing overwork and health problems," and "a system of diverse and flexible working hours (flextime, shorter working hours, etc.)" and an improvement in engagement.

Teleworking can be implemented by introducing: (1) ICT initiatives, such as video conferencing systems and (2) a system of diverse and flexible workplaces (working from home, satellite offices, etc.), but the concern exists that these alone may lead to long working hours. Therefore, in addition to (1) and (2), measures for (3) "reducing overtime hours," "encouraging employees to take paid leave," and "preventing overwork and health problems" should also be implemented. The additional inclusion of (4) "a system of diverse and flexible working hours (flextime, shorter working hours, etc.)" would help to increase the likelihood of achieving the purpose of introducing teleworking, that is, the "realization of a comfortable and healthy lifestyle for employees." Furthermore, (3) and (4) are positively correlated with increasing employee engagement. This benefit should serve as an incentive for companies to devise innovative institutional systems by combining various HR measures (Figure 7).

Figure 7: Main elements of teleworking (1-4) and expected impact (green frame)



Source: Compiled by MGSSI

3. TELEWORKING AND "WELL-BEING" — FURTHER USE OF ICT

The use of ICT is indispensable for introducing teleworking, and related technological innovations are advancing rapidly. Then, is it possible to make further use of this evolving technology to "realize a comfortable and healthy lifestyle for employees"? What kinds of technologies need to be introduced?

3-1 The concept of well-being

A clue to studying these questions is the concept of "well-being," which refers to a state of being "full of vitality" that is characterized by an individual being able to fulfill their physical and mental potential and having a sense of meaning or purpose. One of the chief theories in this area is the PERMA model, which was proposed by a

[12] Nihon Keizai Shimbun, Japan Center for Economic Research (JCER) (2019), *Hataraki-kata kaikaku, shinka no michisuji — seisanseikōjō ni shisuru tekunorojī, uerubīingu* [Work style reform, evolutionary path — well-being, technology that contribute to productivity improvement], final report of the Smart Work Management Study Group, pg. 42, in which the researchers used the three-item version (UWES-3) of the Utrecht Work Engagement Scale (UWES) as a measurement tool. The UWES-3 is made up of questions about three factors: vigor, dedication, and absorption, and was developed as an index to discern the state of positive mental health.

US researcher in 2011. The model is an approach that supports the pursuit to increase happiness continuously, and also encompasses the concept of engagement described in section 2-1 above.[13] Since 2011, the Organisation for Economic Co-operation and Development (OECD) has also been conducting assessments of the current state of well-being in 37 member countries, including Japan, through the measurement of a wide range of indicators, e.g., the quality of employment and work and social connections, and has been publishing the results on a regular basis.[14] In addition, since around the time the American Academy of Management (AOM) addressed the topic of well-being at its 2018 Annual Meeting,[15] the subject has been drawing the increasing interest of attention in various fields.[16]

3-2 Expected effects of using well-being design approaches in ICT development

One of the design methods that may lead to the "realization of a comfortable and healthy lifestyle for workers," which companies cite as a main reason for introducing teleworking, is called "positive computing," which incorporates ICT for the purpose of enhancing not only productivity but also well-being. This method, advocated by a team of Australian researchers, proposes three types of approaches: preventative, active, and dedicated[17] (Figure 8).

Figure 8: Positive computing approach

Approach	Integration of ICT and well-being	Comments
None	Well-being is not systematically taken into account in the design of a technology.	Most conventional technologies are based on this approach.
Preventative	Factors that hinder or reduce well-being are treated as errors and addressed as clues for redesign.	Includes the mechanism of trust building (eliminate anonymity, evaluate contributors, incorporate chat patrol with the use of AI) for preventing the "online disinhibition effect," which leads to negative behaviors, such as slander
Active	Designed to promote factors that support the user's well-being and enhance human potential	Such as operating software with automatic screensavers of landscapes and art when in locked screen mode and voting function, and application software with focus view and distraction-free writing modes that encourage users to concentrate on their work
Dedicated	Designed specifically with the aim of ensuring well-being and/or increasing human potential	Includes wearable devices with built-in sensors that are used to maintain physical and mental health, application software related to goal setting and motivation that promote behavioral changes, and interventions by mental health professionals

Source: Compiled by MGSSI based on "Positive Computing: Technology for Wellbeing and Human Potential," Japanese translation supervised by Junji Watanabe and Dominick Chen (published by BNN, Inc., 2017)

For example, regarding the wearable devices mentioned in the comments column for the "dedicated" approach in Figure 8, smartwatches are already becoming popular, and some models are even equipped with electrocardiogram (ECG) functions that make it possible to monitor and manage the wearer's health.[18] Currently, not many companies have incorporated wearables as part of their teleworking measures (pink-shaded part of row 16 in Figure 6), but it is expected that wearables will be one of the ICT initiatives likely to see greater

[13]The five components of the model are: (1) positive emotions, (2) immersive experiences (engagement), (3) good personal relationships, (4) contribution to society (meaning), and (5) sense of accomplishment (achievement). The above-mentioned engagement corresponds with (2) immersive experiences, and it is sometimes differentiated as "work engagement" or "employee engagement" in the context of labor.

[14]Organisation for Economic Co-operation and Development (2020), "How's Life? 2020 — Measuring Well-being." This statistical report is released roughly every two years.

[15]The meeting was held in Chicago with over 10,000 participants from 95 countries, under the conference theme of "Improving Lives" and the subtheme, "Improving Health and Well-being in Society: How Can Organizations Help?"

[16]Thomas Donaldson, James P. Walsh (2015) "Toward a theory of business." As business purposes, the concept of "collective value," which refers to the accumulated benefits (excluding undesired results) for project participants, is proposed, and a concept close to this is defined as well-being.

[17]Rafael A. Calvo, Dorian Peters (2014), "POSITIVE COMPUTING: Technology for Wellbeing and Human Potential." The Japanese translation of this book is the source for Figure 8.

[18]Cases have been reported in which such a device has provided the user with alerts of possible arrhythmia or atrial fibrillation, calling attention to the person's health condition and ultimately leading to a trip to the emergency room and saving his/her life. For use in Japan, manufacturers must obtain approval for their products for use as a medical device under the *Act on Securing Quality, Efficacy and Safety of Products Including Pharmaceuticals and Medical Devices (PMD Act)*.

adoption as part of efforts toward "realizing a comfortable and healthy lifestyle for workers."[19] Similarly, among application software in the same comments column of Figure 8, there is an example that introduces the "nudge"[20] approach to help people voluntarily make good choices. It has also been pointed out that, while making good use of such ICT tools in teleworking, ultimately, a society where workers themselves can manage their own working hours should be developed.[21]

Specific initiatives being pursued in Japan regarding positive computing include the project for the Development and Dissemination of Information Technology Guidelines for Promoting Japanese-style Wellbeing, organized by the Japan Science and Technology Agency. For four years since 2016, participants have been conducting research in line with the following project statement: "It is pointed out that while information technology makes human intellectual tasks more efficient, it also has negative effects on the psychological state of users. Thus, guidelines for designing mind-enriching information technology are being sought from a different standpoint than that of mere efficiency." Already, a part of the research results has been made public.[22]

On a related note, there is an existent view that, if tele-immersion technology[23] is implemented in a teleconferencing system, even teleworkers are expected to be able to develop good "rapport" with one another, which is a specialized terminology in the field of psychology, to form harmonious relationships characterized by close communication and understanding.[24] In February 2020, the Telecommunication Technology Committee (TCC) established a domestic standard conforming to the international standard for Immersive Live Experience (ILE). Then in March, mobile phone companies started providing 5th generation mobile communication (5G) services. As such, further advancements are expected going forward.

If these efforts continue, it will encourage workers themselves to independently manage their working hours and health, and will also support their spiritual wellness. In the implementation of teleworking from hereon, it will be necessary to expand the range and enhance the functions of ICT initiatives in order to "realize a comfortable and healthy lifestyle for workers."

4. FOR REALIZING TELEWORKING FROM EMPLOYEE PERSPECTIVES

This report has looked into the requirements for realizing teleworking from workers' perspectives. What is needed, to begin with, are not only ICT initiatives, such as video conferencing systems, and "systems for diverse and flexible workplaces (e.g., working from home and satellite offices)," but also additional measures to "reduce overtime hours," "encourage employees to take paid leave," and "prevent overwork and health problems." This

[19]Megumi Shibuya, Kan Arai, Makiko Yoshida (2019), *Terewāku dōnyū ni yoru uerubīingu no kōjō — kojin to soshiki no uerubīingu* [Increasing well-being with the adoption of teleworking — well-being of individuals and organizations]. Five employees of the NEC Group were instructed to work from home or from satellite offices for a total of 17 days, and during the period, the subjects' heart rate (pulse) measurements were obtained with the use of a wristband biometric sensor (Silmee W20) made by TDK. An analysis of the data using NEC's sentiment analysis engine suggested the implementation of teleworking improves motivation and helps stabilize emotions, thereby making it easier for the employees to concentrate on their work.

[20]Richard H. Thaler, Cass R. Sunstein (2008), "Nudge: Improving Decisions About Health, Wealth and Happiness." Recognized as one of the findings in the field of behavioral science. The authors assert that the idea of nudges changes people's behavior in a predictable way, without prohibiting choices or significantly changing economic incentives. The concept has been accepted in a wide range of fields, such as policy making, because it leaves freedom of choice (not compulsory).

[21]Professor Sachiko Kuroda, Waseda University, *Zaitaku kinmu, seikatsu to no kyōkai kadai chōjikan rōdō zesei no jōken* [Working from home and the problem of boundaries with personal lives, conditions for rectifying the issue of long work hours] (March 19, 2020, Nihon Keizai Shimbun).

[22]Project for the Development and Dissemination of Information Technology Guidelines for Promoting Japanese-style Wellbeing, "Workshop Manual for a Life of Wellbeing" (http://wellbeing-technology.jp/files/RISTEX_eng.pdf).

[23]Tele-immersion combines virtual reality (VR) image projection (display) and interaction technologies with image processing (vision) technology. Instead of viewing a person or surrounding environment from one specific point, the data is transmitted and processed as "moving 3D images" that are not constrained to a specific perspective. Even if users are in distant locations, they can share a life-size space with each other with the sense of being in the same space. Source: July 2001 issue of Nikkei Science.

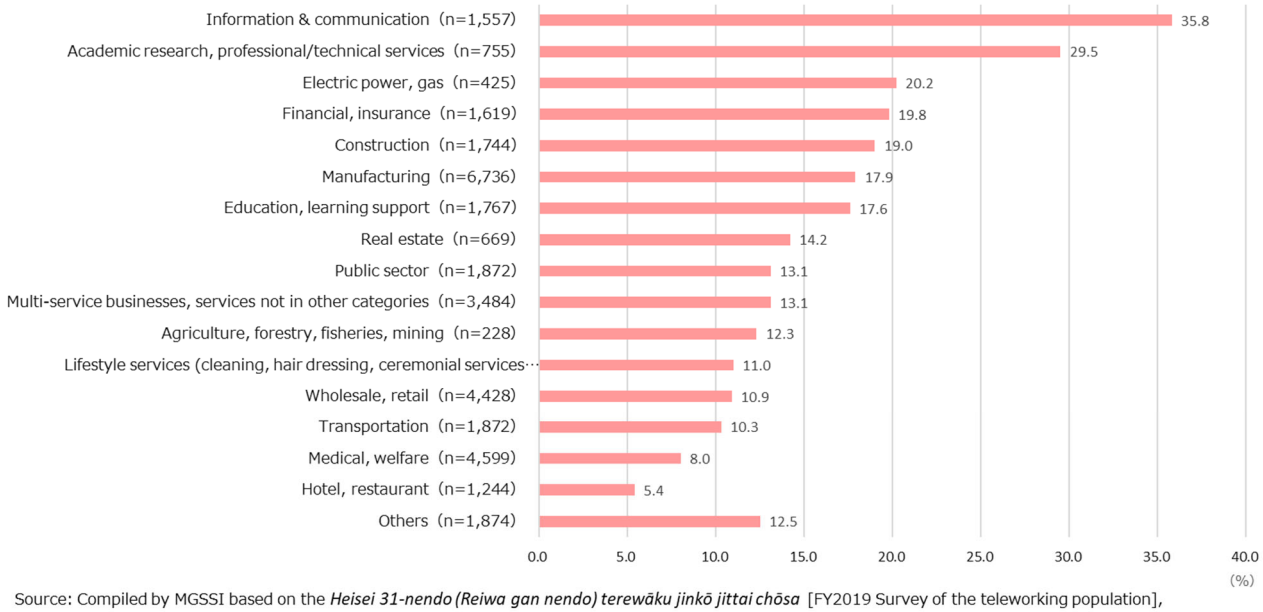
[24]Professor Minoru Etoh, Osaka University, *Terewāku no kadai to mirai*, [The challenges and future of teleworking] (March 25, 2020, Nikkei Sangyo Shimbun).

means to devise innovative institutional systems by combining the above with “systems for diverse and flexible working hours (e.g., flextime and shorter working hours)” is needed.

If the adoption of teleworking in this way helps to align the trajectories for the achievement of an organization’s goals and an employee’s own growth, that should lead to an enhancement in an employee’s “engagement,” which shows an individual’s willingness and proactive attitude toward contributing to the organization and applying themselves to their work. In the future, if a design method such as “positive computing” is applied to ICT that are used to support teleworking, it will encourage workers themselves to manage their own working hours and health, resulting in the support for spiritual wellness.

Research has shown that teleworking is more suitable for jobs that require creativity than for monotonous work.[25] In addition, there is an uneven spread in the proportion of teleworkers by industry (Figure 9). However, the extent of the adoption is expected to change in the future, due to the COVID-19 pandemic. For example, in the medical and welfare industry, patients have come to be able to receive medical consultations and instructions regarding medications online even from the initial consultation.[26]

Figure 9: Percentage of employee teleworkers by industry (n=35,807)



Source: Compiled by MGSSI based on the *Heisei 31-nendo (Reiwa gan nendo) terewāku jinkō jittai chōsa* [FY2019 Survey of the teleworking population], Ministry of Land, Infrastructure, Transport, and Tourism (released in 2020)

If evidence can be accumulated by conducting various social surveys in response to the rapidly developing situation, that should help foster new knowledge, even with regard to the other reasons that companies cited for introducing teleworking that were not covered in detail in this report, such as “improvement of employees’ productivity” and “improvement of customer satisfaction.” For companies, it is now more important than ever to connect teleworking to an improvement in business performance by referring to such knowledge, while ensuring the sound physical and mental health of their employees.

[25]E. Glenn Dutcher (2012) “The effects of telecommuting on productivity: An experimental examination. The role of dull and creative tasks.”

[26]Ministry of Health, Labor, and Welfare, *Shingata koronauirusu kansenshō no kakudai ni saishite no denwa ya jōhō tsūshin kiki o mochiita shinryō-tō no jigen-teki tokurei-tekina toriatsukai ni tsuite* [Regarding timely and exceptional medical treatment using telephone and information communication equipment amid the spread of novel coronavirus infections], (Administrative circular dated April 10, 2020).