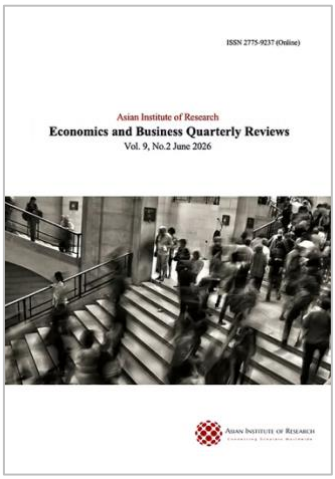

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Generating a Telework Implementation Matrix Model: The Role of Culture in Interdisciplinarity

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Abstract
Aims: This paper argues that even a single business undertaking such as telework implementation demands multifaceted and composite perspectives and analysis through interdisciplinary research. Interdisciplinarity is both necessary and effective. It constructs a matrix that organizes the comprehensive considerations for telework implementation by classifying the multifaceted meanings of telework into eight dimensions, synthesizing prior research that has been fragmented across individual academic disciplines. It advances the thesis that historical and cultural conditions undergird the other analytical dimensions, thereby demonstrating the foundational positioning of the humanities and historical perspective within interdisciplinary research. These eight dimensions exert multilayered and cyclical influences on three actor levels involved in telework adoption: the micro level (individual teleworker), the *meso* level (intermediate organizations such as labor unions and corporations), and the macro level (government/policy). The discussion focusses on comparative analysis of telework adoption patterns across EU member states and Japan, review of prior research in management science, labor economics, sociology, and organizational psychology. The analysis of the divergent national responses to uniform national-level lockdowns during the COVID-19 crisis reveals that cultural factors exert foundational influence across all three actor levels. Examining positive and negative factors affecting telework adoption rates by country, the Netherlands is identified as an exemplary case in which tripartite cooperation among government, labor, and management—rooted in the cultural heritage of Christian Democracy and personalism—has structurally enabled flexible working. Taking this cultural perspective into account, the paper demonstrates that historical and cultural conditions do not merely constitute one dimension among many, but function as the bottom line of foundational stratum undergirding law and policy, corporate systems, job design, and individual psychology. From this perspective, the distinctive feature of telework adoption in Japan is identified in the spontaneous civic behavior of workers within non-institutionalized and non-discretionary domains. The proposed eight-domain matrix model provides a bird's-eye framework that foregrounds the foundational positioning of the humanities and historical perspective within interdisciplinary research on telework.

Keywords: Telework, Transdisciplinary Research, Implementation Matrix, Organizational Culture, Flexicurity, COVID-19, Netherlands, Japan

1. Introduction

The global spread of the COVID-19 pandemic beginning in 2020 generated worldwide interest across the full spectrum of telework: its functions and effects, its technological and institutional preconditions, and the entire process leading to its adoption and implementation (Christopher 2021). Google Trends data for searches of the term ‘telework’ in Japan (September 1, 2016–June 1, 2025) show a marked spike peaking in April 2020, at the height of the pandemic, attesting to the sudden surge in public interest.[1]

Figure 1: Google Trends search volume for ‘telework’ [テレワーク] in Japan (September 2016–June 2025)

Telework demands analysis that encompasses not merely information technology or the institutional dimensions of legal policy, but also historical social concerns, the corporations that adopt it, and the attitudes of workers—embracing a diverse range of actors. The prefix ‘tele-‘ in telework derives from the ancient Greek *τηλέ*-, used by Homer in works such as the Odyssey, meaning ‘far from’ or ‘at a distance.’ Telework enables a mode of working spatially ‘removed’ from the traditional workplace. An international comparison of definitions reveals two universally shared elements: (1) work performed outside the conventional workplace, (2) work conducted with the use of ICT (Kennerly et.al. 2021).

Enabled by the technological conditions of ICT that made it possible to work from a ‘remote’ location, telework has been called by various analogous terms—mobile work, remote work, nomad work—reflecting shifts in societal concern and the perceptions of those who use it. Despite this terminological flux, telework has consistently carried an ideological significance: the ‘liberation’ of human beings from traditional labour conditions that mediate production. For example, the definition found in Japanese policy documents—'a flexible way of working unconstrained by place or time, using Information and Communication Technology (ICT)’[2]—reveals that telework has long embodied an ideological value: enabling liberation from being ‘bound’ by traditional means of production.

This ideal has lent telework the meaning of an ideal labour form across various industries, and its value has been concretized in diverse ways. This paper argues that even a single business undertaking such as telework implementation demands multifaceted and composite perspectives and analysis through interdisciplinary research, and that such an approach is both necessary and effective. In particular, it advances the thesis that historical and cultural conditions undergird the other analytical dimensions, thereby demonstrating the foundational positioning of the humanities and historical perspective within interdisciplinary research on telework. Accordingly, this paper first analyses the historical development of telework to clarify what society has expected of it and what functions it has been called upon to fulfil. It then compares cases from EU member states and Japan, and, by surveying prior

[1] Fig. 1. shows a result of Google Trends search for 'telework' [テレワーク] (accessed June 2, 2025, 15:12 JST). Related keywords included 'subsidy' and 'remote'; by region, searches were concentrated in the Greater Tokyo area (Kanagawa, Tokyo, Chiba), suggesting strong interest from public agencies and corporations related to policy and subsidy administration.

[2] In the U.S. Telework Enhancement Act (December 2010), 'telework' or 'teleworking' is defined as 'a work flexibility arrangement under which an employee performs the duties and responsibilities of such employee's position, and other authorized activities, from an approved worksite other than the location from which the employee would otherwise work.' The Japanese nuance of being 'bound by' traditional constraints—implicit in the phrase *'torawareru'*—reflects the cultural difference discussed in this paper.

research across management science, labour economics, sociology, and organizational psychology, constructs an eight-domain matrix model that makes visible the foundational role of culture relative to the other domains.

2. Historical Development of Ideological Dimensions and Technological Preconditions

In the 1950s and 1960s, Jack Nilles, a NASA engineering consultant engaged in rocket science in Los Angeles, moved in the 1970s to lead interdisciplinary research at the University of Southern California, where he began studying new, computer-assisted ways of working. He initially coined the term 'telecommuting' (Berthiaume & Lanarès 2020) and began advocating for the social implementation of this concept. Telework was from the outset conceived as a transformation of workers' 'commuting'.

'Commuting' attracted particular attention in the context of traffic congestion and air pollution in the Los Angeles metropolitan area, and in connection with growing societal concern about energy 'consumption' in the wake of the oil crises of 1973 and 1979, alongside the need for improved business efficiency in the face of those crises. Telework was thus expected to be a work style that reduced three categories of public cost by eliminating 'commuting' from traditional working conditions: (1) environmental cost, (2) managerial/operational cost, and (3) social and resource cost. It was assigned an ideological value accordingly.

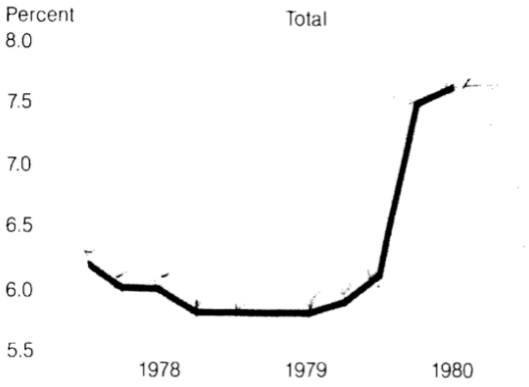

Figure 2: Growth in highly educated white-collar unemployment in the manufacturing sector (1980s)

Following the stagflation of the 1970s, the 1980s witnessed a sharp increase in unemployment among highly educated white-collar workers, particularly in manufacturing (Fig. 2.) (Westcott & Bednarzik 1981). Many began to pursue economic independence, founding enterprises in a form that constituted the prototype of SOHO (Small Office, Home Office)—the self-employed telework model. SOHO, true to its name, involved starting a business by using a room at home as one's own office. It became a catalyst for the growing awareness that telework could reduce entrepreneurial costs. Recognition of this potential spread primarily within the professions—lawyers, consultants, accountants, and bookkeepers, though at this stage the environmental conditions for teleworking to become mainstream had not yet been established.

During the 1980s, the technological conditions for telework began to be put in place, strengthening the linkage with the micro-businesses (SOHOs) of the knowledge-intensive sector noted above. For example, in May 1980, Apple released the Apple III—the world's first computer equipped with a hard disk—and in the same month Oki Electric launched the IF800 series with an integrated printer, while Epson released the dot printer MP-80 in October. In 1981, Japanese manufacturers accelerated computer development: Sharp launched the MZ-80B, Hitachi the Basic Master Level 3, Fujitsu the FM-8 in May, and NEC the 16-bit N5200/05 in July—production lines aimed at practical commercialization came in rapid succession.

The catalyst for the expansion of the PC hardware market was the IBM PC, released in August 1981 (Yamada 2014). By collaborating with Intel for the CPU and Microsoft for MS-DOS, IBM was able to reduce production costs, freeing resources for marketing to expand sales channels. As a result, IBM PC sales overwhelmingly surpassed those of Apple. Through this process, computers became accessible to ordinary citizens throughout the

1980s. With the establishment of technological conditions in hardware, primarily U.S. IT and telecommunications companies began experimental use of telework—IBM, for instance, began installing dedicated terminals (remote terminals) for certain employees.

This development of technological conditions enabled 'tele-communication' to become a reality and brought about the decentralization of tasks previously performed by office workers. This decentralization expanded global recognition of the value of telework as a means of reducing labour-centred costs and improving production efficiency.

Entering the 1990s, broadband diffusion and technological advances in Personal Digital Assistants (PDAs) progressed. Japan's SHARP pioneered the market in 1993 with the 'Zaurus'—a portable device with an 8-bit CPU and monochrome LCD—and BlackBerry[3] unveiled the 'Inter@ctive' in 1996, drawing attention to portable terminals capable of sending email from outside the office. These mobile information terminals made it possible to work 'on the move.' Inspired by Gilles Deleuze and Félix Guattari's Mille Plateaux (Deleuze & Guattari, 1980) and their suggestions regarding nomadology (*nomadologie*) and the social division of labour,[4] the way of working later called the hyper-nomad—as described by Jacques Attali after 2000—began to take shape conceptually in this era.

In the 1990s, among the technological conditions for telework, software advances became as conspicuous as hardware developments. In 1992, the commercial Internet Service Provider IIJ (Internet Initiative Japan) was established, and experiments in email interconnection were conducted between WIDE, NIFTY-Serve, and PC-VAN. The integration of PC-based communications with the Internet proceeded through WWW access from PC communication services and dial-up PPP connections.

Windows 95, released by Microsoft in 1995, shipped with TCP/IP pre-installed, enabling any PC that came with it pre-loaded to connect immediately to the Internet via dial-up and web browser. Hypertext spread worldwide, and in 1994 the world's first banner advertisement was published by U.S. telephone company AT&T. Google Search launched in 1997.

Entering the 2000s, while network infrastructure continued to improve, the Japanese government—concerned about Japan's lag behind other nations in adapting to the digital economy—positioned IT as the cornerstone of national strategy, enacting the Basic Law on the Formation of an Advanced Information and Telecommunications Network Society (IT Basic Law) in 2000 (enforced 2001). Through subsequent strategies—the 'Ubiquitous Network Society' vision (2004 White Paper on Information and Communications), e-Japan (2001), e-Japan Strategy II (2003), New IT Reform Strategy (2006), and i-Japan Strategy 2015 (2009)—telework began to be positioned as the symbol of ICT-enabled work styles, with the expansion of the telework population featured in IT strategies reviewed every few years.

Moreover, as social problems such as declining vitality due to an aging and shrinking population, the deterioration of communities through agricultural land abandonment and vacant houses, industrial hollowing-out, and labour shortages became apparent, telework strengthened its ideological significance as a new technological approach to 'supporting the balance between work and family life and reforming work styles,' capable of enabling 'a work-life balanced way of working.'

In practice, however, as discussed later in this paper, the spread of telework in Japan did not proceed smoothly. Nevertheless, its multidimensional value was comprehensively understood. A 2006 Japanese government policy document promoting telework adoption enumerated seven multi-angle ideological values aimed at realizing work-

[3] The BlackBerry brand name was first used in 1999 for the 'RIM 850 Wireless Handheld' and the 'BlackBerry Wireless Solution/Enterprise Server software for Microsoft Exchange.'

[4] Deleuze, G., & Guattari, F. (1980). Mille plateaux. Minuit. In their discussion of *nomadology*, the authors note that 'the state cannot but experience friction with the intellectual workers (nomads) it has itself produced, for this body brings forth new nomadic political claims'—because nomads practice 'a division of labour opposed to that of the state' (p. 46-4). Nomads destabilize and recreate capitalist society through their constant movement (Derrida, 2002, pp. 185–186). How telework acts on capitalism itself—beyond its ideological purposes—remains a subject for future research.

life balance while improving business efficiency and productivity (Table 1). Despite this awareness, the diffusion of telework in Japan did not advance.

Table 1: Social effects of telework
(Adapted from Ministry of Internal Affairs and Communications, Japan, 2007)

Social Impacts of Telework	
1. Addressing Demographic Challenges	● Expanding employment opportunities for women, the elderly, and individuals with disabilities ● Facilitating the balance between employment and childcare/nursing care responsibilities
2. Promoting Regional Revitalization	● Encouraging permanent settlement (expanding residential choices) ● Increasing employment opportunities in rural areas ● Revitalizing local economies through entrepreneurship ● Invigorating local community activities ● Ensuring children's safety within communities
3. Alleviating Commuting and Traffic Congestion Issues	● Mitigating traffic congestion ● Reducing long commutes and congestion on commuter trains
4. Reducing Environmental Impact	● Contributing to the prevention of global warming by reducing CO2 emissions through transportation substitution
5. Achieving Work-Life Balance	● Enabling the successful harmonization of work and personal life ● Improving the overall quality of personal life
6. Enhancing Productivity and Efficiency	● Improving the capacity for autonomous work execution ● Increasing collaborative work styles (utilizing diverse human resources)
7. Crisis Management for Disasters	● Reducing the number of stranded commuters and individuals unable to report to work during disasters ● Enabling rapid business resumption following a disaster

In the United States, meanwhile, the number of employees working from home during working hours increased by 115% between 2005 and 2015, reaching approximately 4 million people by 2015 (FlexJobs 2017). Even at this stage, workers engaged in telework remained largely confined to the previously mentioned specialist consultants and university researchers,[5] making emerging disparities in the characteristics of the telework labour force apparent. It became clear that telework is realized contingent on the industry and sector in which the internet can be utilized, and on individuals' ICT literacy skills. The correlation between telework participation rates, corporate ICT skills training, and worker IT literacy across various European countries has been re-examined in the post-COVID era (Fig. 3., Joint Research Centre, European Commission 2020).

[5]In Japan, an experimental network linking the University of Tokyo, Tokyo Institute of Technology, and Keio University was launched in October 1984, eventually connecting approximately 700 institutions. The WIDE (Widely Integrated & Distributed Environment) research group, founded in 1985 by university researchers, evolved into the WIDE Project in 1988.

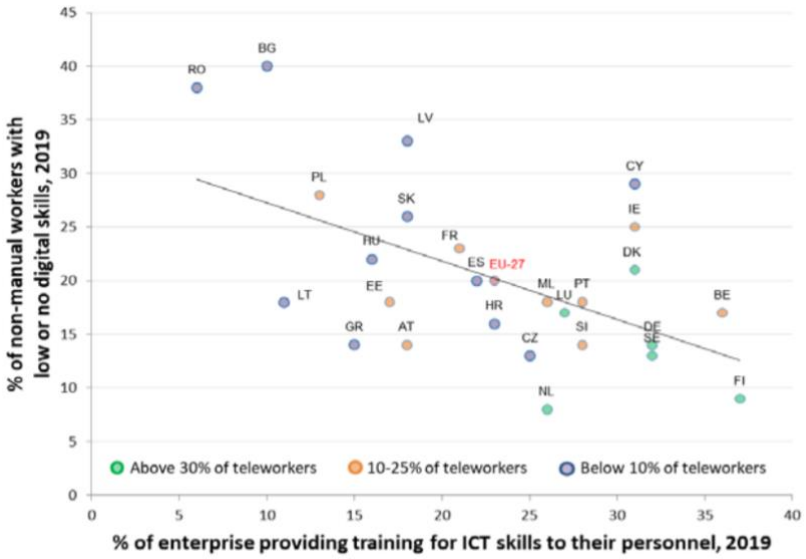

Figure 3: Relationship between ICT Skills Training Provision and the Share of Non-manual Workers with Low or No Digital Skills in Europe (2019)

Similar correlations between labor forms and telework adoption have been documented in the United States. According to the Pew Research Centre (DeSilver 2020), as of 2019 telework was most prevalent (24% and 14% of respective groups) among 'knowledge workers'—corporate executives, IT administrators, financial analysts, accountants, insurance professionals, lawyers, software designers, scientists, engineers, and other professionals whose work is predominantly computer-based. Conversely, the proportion of teleworkers among those engaged in human services—restaurant staff, hairdressers, plumbers, police officers, construction workers—remained at approximately 1%, given the nature of their work. Even if AI and robots were to replace the primary functions of human service provision in the future, the diffusion of telework among care workers, counselling support staff, and manual-technical workers is expected to face significant challenges.

Even as DX and automation progress for knowledge workers, it is not possible to define the technological preconditions for telework solely by hardware and software. Defining and classifying the compound conditions for telework infrastructure requires consideration of three layers: the social environmental conditions of institutional structure, industry, and occupation; and the internal environmental *humanware* of individual ICT skills.

3. The HSH Telework Environment Model

As clarified in the preceding sections, the technological preconditions for telework involve three tiers: hardware, software, and *humanware*. Hardware constitutes the foundational condition as communications infrastructure; above it lies the layer of software technology; and only then does the question of workers' capacity and literacy in ICT use arise. The regulatory role of government–local authority–corporate policy/labour law compliance as the *meso*-level normative condition—institutionally promoting telework—can also be understood as the effect of *humanware*. These three tiers may be modelled as 'individual (worker's internal environment)'–'particularity (policy/institutional framework and corporate policy)'–'generality (hardware and software)' as the technological preconditions for telework, as follows (Fig. 4.).

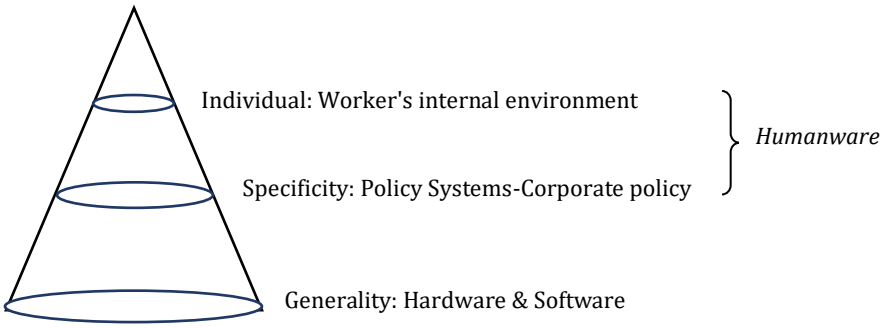

Figure 4: HSH Telework Environment Model: Hardware–Software–*Humanware*

4. Telework and Natural Disasters: The Perspective of Business Continuity Planning (BCP)

Alongside the historical development of technological preconditions that enabled recognition of telework's ideological values as described above, it is important to acknowledge the specific function telework serves in response to unpredictable, sudden disasters that render normal work impossible. The 1994 Northridge earthquake in California was the first event to reveal telework's function as a social labour model capable of realizing sustainable social operation and risk distribution in the face of natural disasters—that is, its capacity for business continuity management (risk management) as a component of crisis management for organizations.

Following the September 11, 2001, terrorist attacks in the United States, the early resumption of business by companies that had introduced telework attracted attention. The U.S. Government's Continuity of Operations Plan (COOP) took note of this and began promoting telework for all government employees as part of crisis management. This culminated in the passage of the Telework Enhancement Act (December 2010), which mandated the designation of telework managers in federal agencies, explicitly positioning the various values of telework within the policy toolkit.[6] Furthermore, initiatives responding to federal telework policies—such as expanded telework adoption in response to extreme seasonal weather patterns in Washington, D.C.—spread to private-sector companies serving government agencies.

In Japan, the 2011 Great East Japan Earthquake caused power outages and traffic congestion, prompting an increase in companies adopting BCP (Business Continuity Plans) and advancing data backup measures through cloud services. Subsequently, the large-scale traffic disruption caused by Typhoon No. 15 in 2019 in the Kanto region highlighted the problem that many workers did not choose to telework, revealing that 'work-style reform' in Japan was proving more difficult than anticipated.

5. Socio-cultural environmental conditions: The EU experience

As mentioned in Section 2, telework was originally conceived as a technology to eliminate workers' 'commuting,' thereby realizing economic efficiency, the mitigation of traffic congestion and environmental problems, and the efficient use of resources. That the elimination of 'commuting' as material cause also generated expectations for telework's function in BCP during natural disasters was an 'unanticipated consequence' (Merton, 1936, Boudon 1982). The conditions enabling telework came about through an inevitable trajectory driven by information technology developments that were not aimed at telework per se. Although the development of each technical condition (H–S–H) constrained the emergence of new means of production, the resolution of each condition and the progression of technological evolution were not aimed at telework itself.

[6]According to 2018 data, 43% of federal employees were eligible for telework. U.S. Office of Personnel Management. (2018). Status of Telework in the Federal Government: Report to Congress, Fiscal Year 2018.

The same applies to the relationship between telework adoption in European countries and its effects during the pandemic (Fig.5.). Countries where the employment and unemployment situation was more severely affected by the pandemic crisis were precisely those with lower pre-crisis telework prevalence rates. Switzerland, Finland, and the Netherlands, by contrast, had proactively pursued 'labour flexibility' as the explicit goal of telework policy, building environments in which 30% of workers could work via telework. 'Labour flexibility' itself was not designed with the pandemic's use of telework in mind.

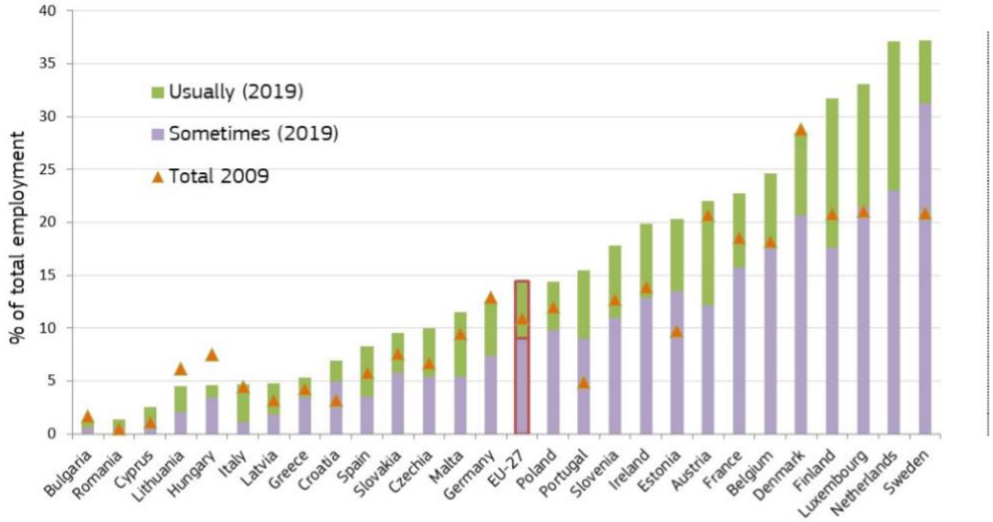

Figure 5: Prevalence of telework across EU Member States in 2019

Viewed through this lens of purpose–means relationships, the telework situation in European countries following the COVID-19 crisis served to clarify the policy significance of diversity and flexibility in working environments, even as the crisis served as a litmus test. For example, the Nordic nations—Sweden, Finland, and Luxembourg—where large proportions of workers could engage in telework already had more knowledge-worker industries than other European countries (Fig. 5.).

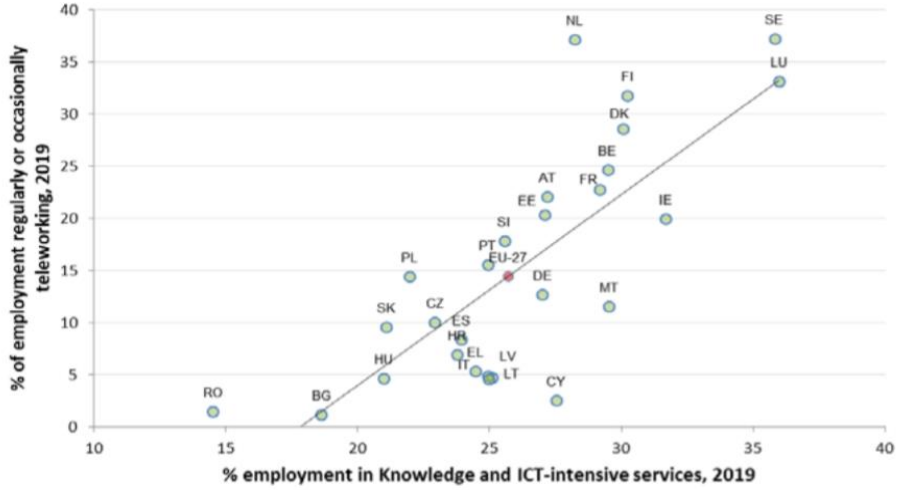

Figure 6: Industrial structure of employment and telework, EU-27

Behind this lies the historical fact that these nations had sustained labour policies since the 2010s promoting and fostering professional and knowledge-intensive industries. These divergences in the labour policies of various nations clarify the necessity for interdisciplinary research on telework (Fig. 6.).

As an international comparative study from a policy perspective, Huws et al. (1999) attempt to explain divergences in telework prevalence rates across the United States, Australia, and EU nations by classifying national policy tendencies into three broad types. In the 'liberal model,' the laissez-faire approach to the labour market tends to

externalize labor flexibility to market competition and telework tends to expand in the form of precarious non-regular employment contracts and freelance sub-contracting. In contrast, in countries fitting the 'corporatist' model—where intermediate organizations such as labor unions maintain policy dialogue—labor contracts tend to be strictly regulated, and labor flexibility tends to be internalized (internal flexibility). At the same time, employers who become conservative due to the high cost of regular employment, including social insurance, tend to be skeptical of introducing new working methods such as telework. For these reasons, telework prevalence in Germany, France, and Italy lagged North America, Australia, and the United Kingdom as of 1999. Sweden's high telework prevalence rate, on the other hand, stemmed from the fact that its policy formation regime—premised on the ideal of 'regulated flexibility by mutual consent'—facilitated compliance and adoption on the employer side, and was noted as distinct from the 'unregulated flexibility' typical of liberal policy nations. Furthermore, in the social democratic model of Sweden, Norway, Denmark, and Finland, there is less inequality between genders, occupational types, and employment forms, while retaining characteristics of the corporatist model.

Building on this research, for example, liberal economic models—characterized by deregulation of labor markets, protection of intellectual property, and innovation by a small number of entrepreneurs (e.g., the United States, Ireland, Australia)—tend toward the privatization of knowledge centered on corporations. Social democratic models—as in Denmark, Finland, and Sweden—characterized by high educational attainment, vocational training, and employment protection in the public domain outside corporations, tend toward the broad socialization of knowledge (Boyer, 2002). The high economic performance of social democratic models showing high telework prevalence rates in the COVID-19 crisis should be understood not as the result of information and communications technology development per se, but as something more generally ideational—concerning the shared societal understanding of the meaning of labour flexibility held by government and society. It is appropriate to conclude that policy and institutional mechanisms for the social utilization of telework functioned first, subsequently driving the technological development of telework. From this perspective, even in Luxembourg—distant from software and IT innovation—knowledge workers who constituted a mere 13% of the workforce in 2003/2005 were able to double that figure by 2016/2018 (Fig. 7.). During the Lehman Shock, the Netherlands actively commissioned private-sector research studies, harnessing economic policy to prioritize the protection of professional and knowledge-intensive industries. The country's work-sharing and other labour flexibility policies subsidized knowledge-worker industries and employment.

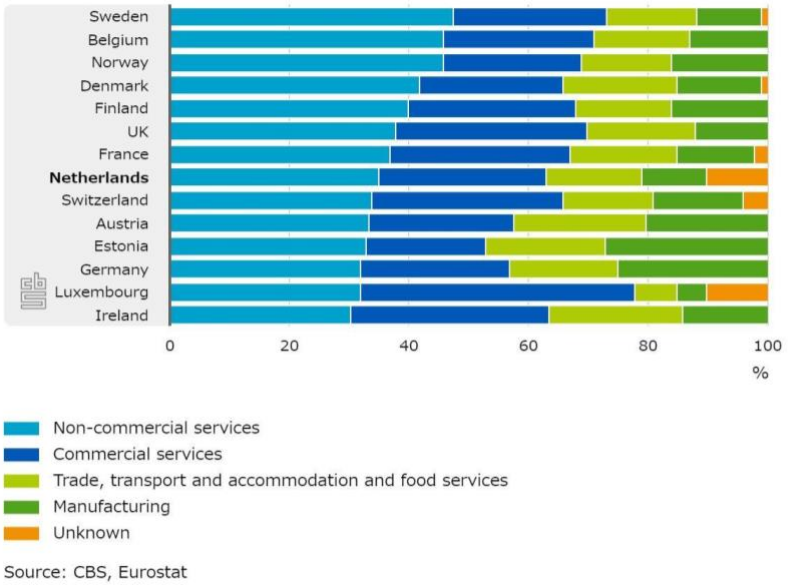

Figure 7: International Knowledge Workers by sector, 2016/ 2018

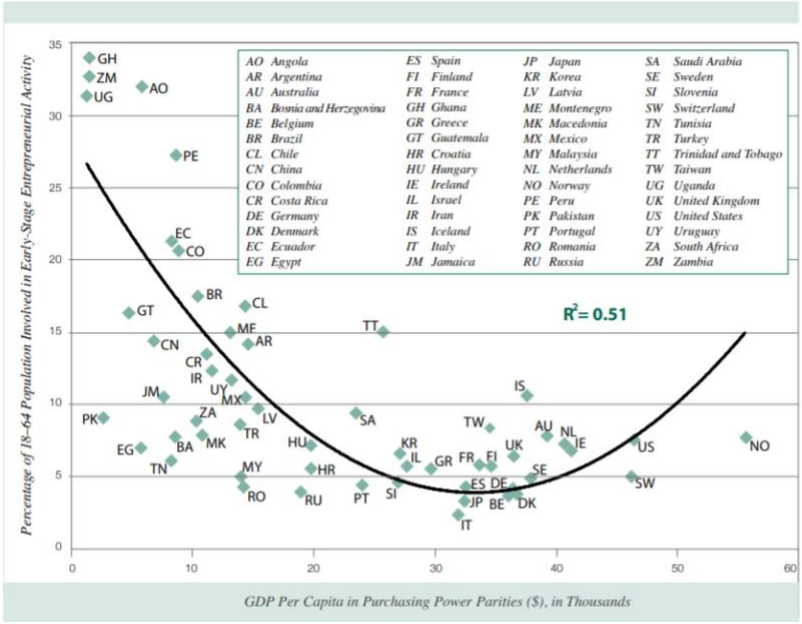

Figure 8: International comparison of entrepreneurial activity relative to GDP, 2010 (GEM 2010)

However, examining the statistical facts, the Netherlands—whose knowledge-worker and professional-intellectual sector was comparatively smaller in employment population—had the third highest telework prevalence rate in 2019, after Luxembourg and Sweden, a situation that warrants consideration. In the Netherlands, self-employed teleworkers constituted 20% of all workers as of 2018, on par with the United Kingdom. The correlation between the growth in the proportion of professional-intellectual industries and the knowledge-worker population from the 2000s onward, and the expansion of freelance micro-business and self-employed telework ventures, had been noted early on (Audretsch & Thurik, 2001), and in the Netherlands, single-employee firms accounted for 78% of all companies as of 2017. The empirically established 'U-curve theory' (Fig. 8.)—whereby entrepreneurial activity first declines and then revives beyond a certain threshold as the level of economic

development (e.g., GDP) rises—generally holds. Integrating these facts, it may be inferred that knowledge-based economic activity and telework employment rates are driven by freelancers, entrepreneurs, and digital nomads. 41% of Netherlands self-employed teleworkers were employed in the commercial services sector, followed by 33% in the non-commercial sector (Fig. 9.). These Netherlands trends demonstrate that the substantive effects of telework in BCP—addressing crises brought about by sudden external factors (Lehman Shock/COVID-19) in economic-labour policy, welfare policy—operated through a circular and cumulative causal relationship. This 'unintended' linkage provides a crucial key to understanding the underlying causes of Japan's low telework employment rate after the COVID-19 crisis. The following section continues to focus on the Netherlands case to clarify the significance of 'culture' in shaping *humanware*, which lies at the root of Japan's stagnating telework employment rate in the post-COVID era.

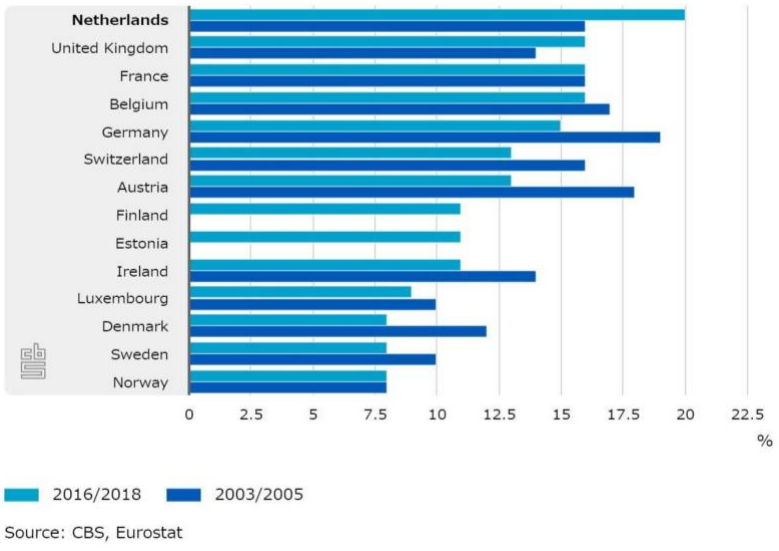

Figure 9: Self-employed among international knowledge workers in work 2016/ 2018 vs 2003/ 2005

6. The development of socio-cultural environmental conditions in the Netherlands

From the 1870s onward, the Netherlands—unlike resource-rich countries such as Belgium with large-scale factory and mining labour industries—entered the Industrial Revolution and the development of capitalism centred on small and medium-sized enterprises in the service sector. Consequently, when it became possible to exploit natural gas from North Sea oil and gas fields discovered in the 1960s, enabling resource exports, the windfall profits could be redirected to enhance social welfare. The flip side of this was that the 1970s brought economic stagnation, fiscal deficits due to the high welfare burden, and high unemployment rates (9% in 1982; 11.7% in 1983) known as 'Netherlands disease.'[7]

At the time, the Netherlands sought to overcome these difficulties by establishing a long-term tripartite dialogue between government, business, and labour. In 1982, the tripartite policy agreement known as the 'Wassenaar Accord' (Akkoord van Wassenaar)[8] was concluded. This accord involved employers implementing wage cuts and employment protection through reduced working hours, while the government implemented tax cuts to compensate workers for their income losses and reduced social security burdens on employers maintaining employment—cultivating a public-private partnership. As a result, the government implemented fiscal consolidation and business investment promotion policies; the proportion of part-time workers rose from 18.5% in 1983 to 33.0% in 2001; and the unemployment rate fell from 14% in 1983 to 2.4% in 2001. Moreover, while the EU-15 average annual employment growth rate over the fifteen years from 1984 to 1996 was only 0.4%, the Netherlands was able to recover this figure to 1.8%.

In 1992, a fresh tripartite agreement was concluded (Cornelis & Tillema 1992), and a fundamental policy reorientation was demanded as major revisions to the Civil Code (which had been in place since 1942), corresponding changes to the tax system and government investment policy, and legal reforms accompanying accession to the EC all converged. During this period, the Netherlands adopted a 'New Course (*nieuwe koers*)' that sought to introduce American-style liberal economic policies while maintaining the social-democratic model (Nordic welfare state) characterized by high levels of income redistribution. Given the deep-rooted civic demand to preserve the Christian-family values and traditional gender division of labour alongside this policy orientation, the Netherlands independently pursued a hybrid welfare state with three aspects of a conservative continental welfare state model.

[7] A condition in which welfare costs driven by economic growth strain public finances, leading to economic stagnation when the economy deteriorates. The Economist. (1977, November 26). The Netherlands disease (pp. 82–83).
[8] The agreement is named 'Wassenaar' after the location of the Van Veen home near The Hague, where the chairman of the employers' federation (Van Veen) and the chairman of FNV (Kok) conducted the negotiations that led to the accord.

Adopting this course, when the EU began promoting women's independence through gender equality policies, the conservative tendency was initially marked, and women's autonomy and workforce participation consciousness remained low at first. However, in response to the new situation of increasing lone-parent households and poverty resulting from rising divorce rates, when child-rearing support policies, employment and childcare service legislation, life-course systems, and the Social Support Act were enacted premised on dual-income households, the civic movement of Dolle Mina (Crazy Women), which championed \"Baas in eigen buik\" (women as masters of their own bodies/lives)[9] against conservative culture, began. The civic impulse resisting conservative culture combined with citizens' consciousness of responding to new social problems. As a result, in the process of policies and citizens approaching each other on women's social participation, the Working Time Adjustment Act (Wet Aanpassing Arbeidsduur) enacted in 2000—following the Flexibility and Security Act (Wet Flexibiliteit en Zekerheid) of 1999[10]—became a groundbreaking institution enabling workers with more than one year of continuous service to apply for an extension or reduction of working hours. It thus enabled fluidity between full-time and part-time labor forms, and new positive-image terminology such as 'combination work' and the '1.5 model' was added to supplant the negative image of part-time work—associated in Japan, notably, with non-regular and precarious status. As a result, the proportion of part-time workers subject to discriminatory treatment was reduced to a mere 2% by 2004, while institutionalizing dispute resolution for discriminatory treatment and making it operationally effective, thereby sustainably growing women's employment rate (Fig. 10.).

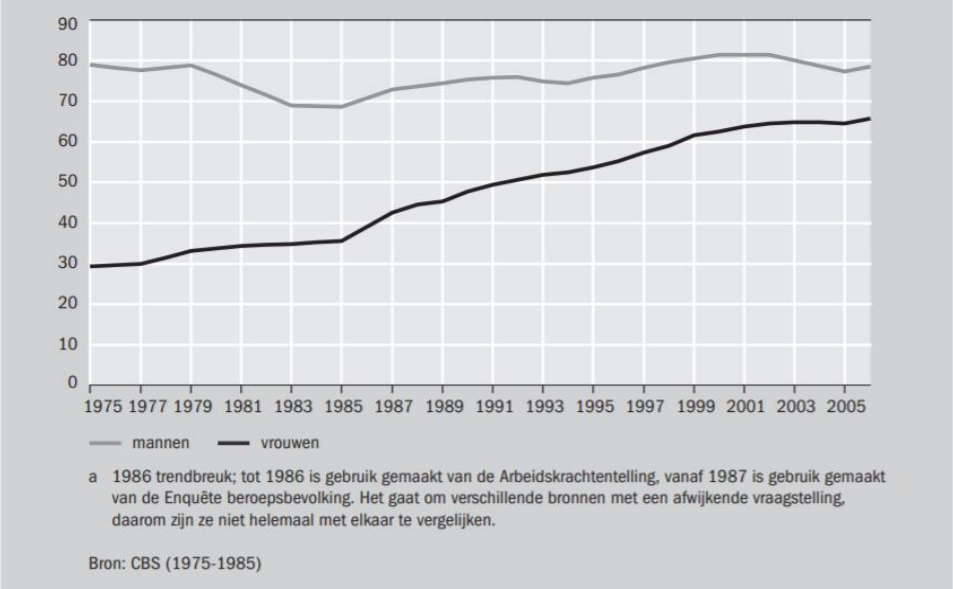

Figure 10: Labor participation rate of the population aged 15–64 (Nederland Deeltijdland, 2008)

The bold Netherlands policy allowing workers themselves to determine their weekly working hours created, through work-sharing, job expansion, economic growth, and fiscal balance, a 'polder model' as a unique socio-cultural environment. Building on this foundation, the Flexible Work Act (Wet Flexibel Werken) was enacted in January 2016, making it possible for employees to apply not only for changes in the number of working hours, but also for changes in working hours and place of work.

[9] Activities included founding the feminist magazine Opzij and actively lobbying government officials. However, the content—asserting the dignity of women who manage work, housework, and childcare simultaneously—largely retained traditional gender-role frameworks. See Schippers, J. (2003). Child care and female labour supply in the Netherlands.

[10] A law balancing labour market flexibility (flexibiliteit) with security (zekerheid) for workers facing precarious employment. Its stated purpose is 'to harmonize employers' ability to manage their businesses flexibly with workers' right to employment and income security.' SZW. (2000, March). Flexibiliteit en Zekerheid Voor werkgevers en (tijdelijke) werknemers (p. 2).

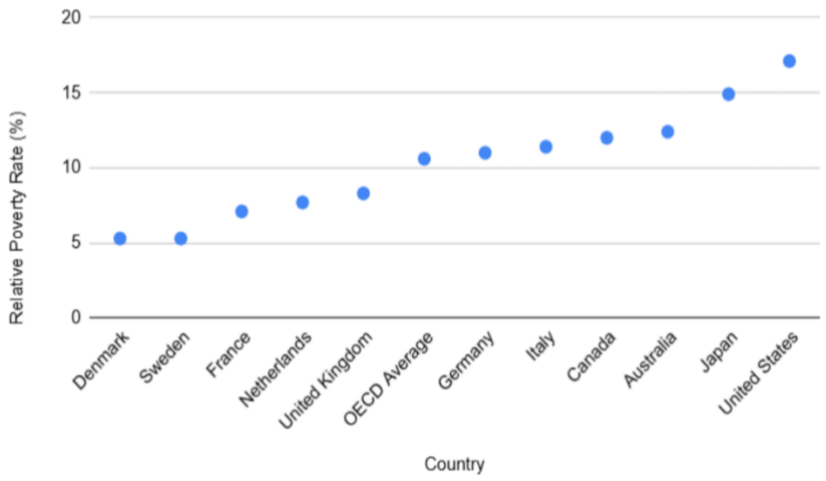

Figure 11: OECD "Growing Unequal? Income Distribution and Poverty in OECD Countries" (2008).

The core concept underlying this polder model is 'flexicurity'—an idea embodied in policy since the Flexibility and Security Act of 1999. This concept seeks to harmonize the need of employers for a flexible workforce and fluid labour market (e.g., adjusting employee numbers) with the needs of workers for income stability, welfare security (security), and continued employment[11]. By means of this, the Netherlands was able to achieve a comparatively equitable society—reducing relative poverty after income redistribution to a level second only to Denmark[12] (Fig. 11.).

Furthermore, in 2001 the Work and Care Act (Wet Arbeid en Zorg) was enacted, introducing a diverse range of paid leave schemes (including paternity leave, adoption leave, foster-child leave, short-term care leave, long-term care leave, special leave, emergency leave, and others) for combining paid work with childcare and caregiving responsibilities.[13]

It is only on the basis of this historical trajectory of the general ideal of flexible labor and its institutionalization that the structural spread of telework became possible. This was achieved through a historical process of seeking a unique institutional environment distinct from both the liberal competitive model and the social democratic model. That is, premised on the institutional momentum respecting worker self-determination, the 2015 Flexible Work Act explicitly codified the right of workers in companies with ten or more employees to apply for changes in their place of work. As a result, by 2017 the proportion of companies that had introduced telework was 78%, and the proportion of teleworkers among employees had already reached 33%. The rate of telework adoption was 74% for companies with 10–49 employees, 91% for 50–250 employees, and 98% for companies with over 250 employees (Kenjō 2018).

As a concrete case, Schiphol Group, operating under the banner of a 'New Approach to Working,' allows employees to freely combine telework while choosing weekly working hours of 36, 38, or 40 hours. Schiphol Group's telework utilizes its own hybrid platform based on VDI (Virtual Desktop Infrastructure) and SBC (Server-Based Computing), with 24-hour back-office and front-desk support (Fujitsu 2013). The company has strongly integrated 'Quality of Life' and environmental protection—including decarbonization—into its operational

[11] Heerma van Voss, G. J. J. (2000, March 17). Flexibility in Netherlands labour law [Lecture for the Japan International Labor Law Forum] (pp. 8–9, 12).
[12] A survey of 502 companies ('Effectiviteit van de Wet Aanpassing Arbeidsduur') found that approximately 90% of employers accommodated employee requests for adjusted working hours, with only one-quarter of requests rejected.
[13] The high implementation rate of these policies is largely attributable to the Netherlands' systematic approach to policy evaluation. Following the Finance Ministry's 1999 report to parliament (*'Van beleidsverantwoording tot beleidsbegroting'*), policy evaluation was systematized. In 2002, the Ministry of Finance issued the 'Regulation of Periodic Evaluation,' and in 2003 a manual for ex-post evaluation procedures was adopted, requiring standardized, multi-perspective policy analysis—including analysis of policy alternatives—across all ministries.

guidelines, and since 2009 has been able to continuously pursue telework adoption as part of these efforts under the banner of 'New Ways of Working (Het Nieuwe Werken).'

7. The foundational character of cultural environmental conditions

As demonstrated above, the Netherlands has overcome economic crises and policy innovations through tripartite cooperation, gradually establishing a cultural environment in general terms. What, then, was the social structure that made such a cultural environment possible?

After the Second World War, Christian Democracy in Western Europe was enthusiastically engaged in European integration, mediated by supranational political cooperation and informal solidarity through intermediate organizations—employers' associations, self-employed associations, agricultural cooperatives, labour unions, senior citizen organizations, leisure organizations, and the like (Burgess 1990:142, Portelli 1986: 85, Kaiser 2004:221). As a result, after the Works Constitution Act (*Gesetz über die Betriebsräte*) on employee representation was enacted in 1950 and underwent numerous revisions, cross-enterprise labour union formation advanced. Subsequently, as in other states of the German continental legal tradition, the Netherlands also gradually formed a policy-legal custom in which legislation incorporating the views of labour organizations directly defined the framework of corporate employment rules and labour contract relations. In this custom, since the effect of the law extends to individual labour contracts beyond company-specific employment rules, the result is that the costs that corporations and labour-management would otherwise spend on institutional conflict and adjustment can instead be directed toward the design of performance-based evaluation systems—enabling top-down realization of the agreed ideals at the implementation stage.

Such Christian Democracy, operating across government, business, and unions, derives from the intellectual culture of personalism (*personalisme*) rooted in Catholic social teaching. (Papini 1997, Hanley 1994). From this standpoint, the person is not an isolated individual standing alone, but a social being who engages with other persons and realizes themselves subjectively through community. This personalism shapes the educational culture of society in general, which in turn gives economic, labor, and welfare policies a unified direction from the policy level to the citizen level, consistently and comprehensively.

The most prominent expression of this culture was the principle of subsidiarity (*subsidiariteitsbeginsel*) in the *papal encyclical Quadragesimo Anno* (1931). This principle maximally respects the autonomous problem-solving capacity and self-governance of communities—families, associations, bodies. The role of the state, on the other hand, is to 'assist' only when problems arise that communities cannot solve on their own. In the Netherlands case, not only Catholic Christian Democracy but also Calvinist social teaching in the twentieth century produced proponents—exemplified by the theologian Abraham Kuyper (1837–1920)—of 'sphere sovereignty' (*soevereiniteit in eigen kring*), which recognized sovereignty parallel to the state for each social group and community and emphasized their self-governance and autonomy (Van Wissen, 1980). This principle of subsidiarity also influenced the provision on education in the Netherlands constitution, enabling both 'freedom of education' and 'equal government funding for public and private schools.'

In the Christian Democratic parties, where not only social-democratic labor unions but also multiple denominational labour unions were heavily intermingled, labour union membership rates stagnated. As a substitute, the Netherlands formed 'pillars' (*zuilen*) based on Calvinist and Catholic denominational forces that transcended companies, enabling Christian Democratic parties to hold power continuously for approximately 76 years from 1918 to 1994. Since 1950, the Social and Economic Council (Sociaal-Economische Raad: SER)—the highest advisory body on social and economic policy—has participated in policy-making through deliberations among eleven independent commissioners and eleven each from labour and management[14]. The SER is complemented by the Labor Foundation (Stichting van de Arbeid: SvdA)—a corporatist body serving as the

[14] Criticism of the SER's insularity has been noted. Akkerman, A. (2005). Verhoudingen tussen de sociale partners in Nederland anno 2005: Corporatisme of lobbyisme. B en M, 32(4), 1871–1898.

highest-level bipartite deliberative body between labor and management—which holds binding resolutions (Andeweg & Irwin, 2009: 173).[15]

As described above, religious solidarity and social pillars not based on companies formed the meso (intermediate) domain between politics and citizens, enabling the 1982 Wassenaar Accord[16] to realize tripartite coordination in Netherlands labor and economic policy thereafter (Bruggeman & Van der Houwen, 2005: 273-1). For example, one distinctive social actor is the sectoral collective labour agreement (CAO: Collectieve Arbeidsovereenkomst) concluded between labor and management at each industrial level. Through a general binding declaration, the CAO applies uniformly to the relevant industry even where organizational rates of labour and management are low. As a result, in tandem with the cultural tendency to allow high autonomy to intermediate organizations, once decisions are reached through dialogue among government, labour, and management, they penetrate top-down to the labor-management shop floor of each company.

As demonstrated above, it can be stated that the flexibility of labor forms in the Netherlands and the institutional permeation power of policy ideals have enabled the spread of telework, underpinned historically by the culture of Christian Democracy and personalism exerting foundational influence on education, labor, and policy formation.

8. The relationship between cultural conditions and telework prevalence in Japan during the COVID-19 crisis

In the preceding section, it was confirmed that culture's foundational effects exert fundamental influence on the various dimensions of telework. This section shifts the focus of inquiry to Japan to clarify the relationship between its cultural conditions and telework prevalence rates.

In Japan, even at the 2017 pre-COVID stage, awareness of telework was only 62.2%, with 37.4% of workers not even knowing the term (Fig. 12.).

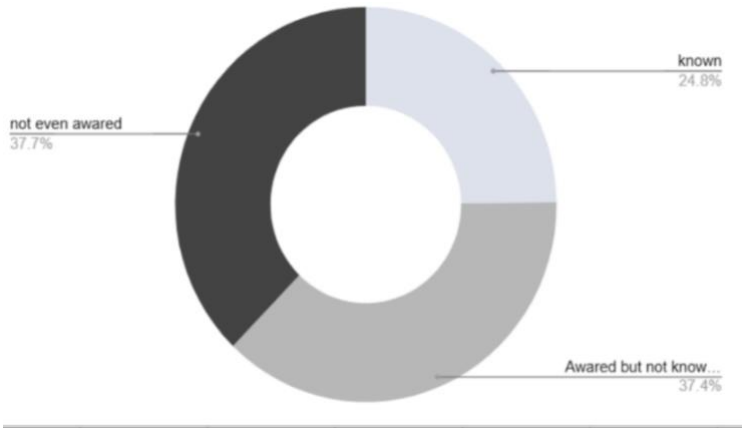

Figure 12: Telework awareness in Japan (2017)

Focusing particularly on inhibiting factors on the institutional and regulatory side of companies (Fig. 13.), the contrast between the inhibiting problems that arose in France and the successful Netherlands model introduced earlier remains instructive. In France, successive amendments to the general Labour Code necessitated the interpretation of complex regulations and the creation of employment rules for telework introduction.[17] In the

[15] The biannual tripartite consultations are described as 'one of the highlights of the Netherlands consultative economy' (Delsen, 2002, p. 15).
[16] Named after the location of Van Veen's residence in Wassenaar, near The Hague, where the Chairman of the employers' federation (Van Veen) and the Chairman of FNV (Kok) held successive rounds of dialogue.
[17] In France, where 76% of the workforce is employed in the tertiary sector and public employment is high, the privatisation of state enterprises (e.g., France Télécom, now Orange) between 1990–2000 increased employee stress and suicides. Work-sharing was introduced in 1998 to reduce stress. Telework was legally codified only in 2012; the revised Labour Law of 2017 recognised telework as an employee right and obliged employers to provide justification for refusal. The 2013 national inter-sector agreement on 'Quality of Working Life (QWL)' guaranteed teleworkers the right to disconnect from the internet. Centre for Economics and Business Research. (2014). Economic impact of telework.

Netherlands, by contrast, telework-related provisions are specifically incorporated at the legal-policy stage, meaning companies can concentrate their efforts on hardware and software development rather than regulatory compliance (Mori Hamada & Matsumoto Law Office 2021). Viewing this from a Japanese perspective, France-type inhibiting factors are conspicuously apparent: the complexity of regulatory and institutional formation within companies tends to act as a constraint on employer adoption of telework. As the figure below shows, for employed teleworkers, the proportion of companies with institutionalized telework policies was proportional to company size and telework participation rates also tended to be higher (Fig. 14. 15).[18]

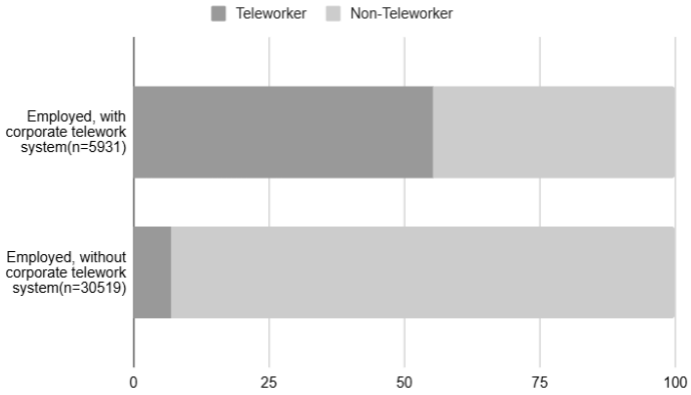

Figure 13: Proportion of teleworkers with corporate telework systems (2017 survey)

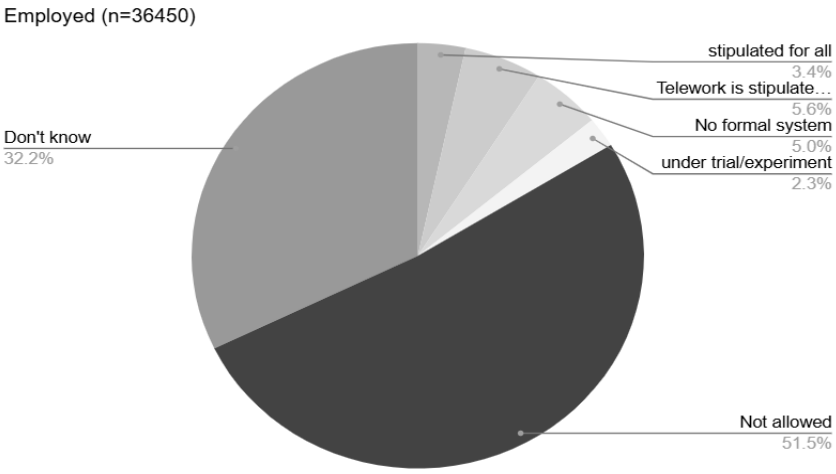

Figure 14: Proportion of telework-related systems at their workplace (2017 survey)

[18] Ministry of Land, Infrastructure, Transport and Tourism Japan, Urban Policy Division. (2018, March). FY2017 survey on the telework population [平成 29 年度テレワーク人口実態調査].

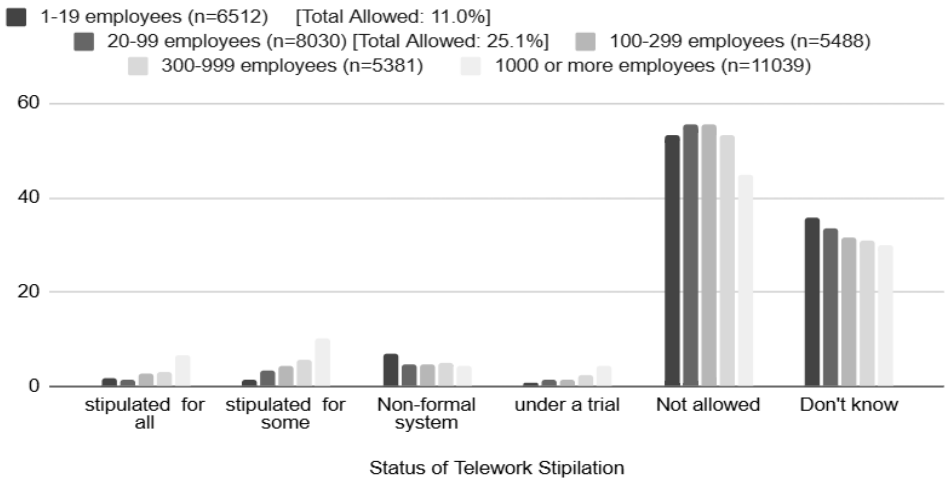

Figure 15: Telework system adoption rate by company size (2017 survey)

Particularly in micro-enterprises of 1–19 employees, cases where telework was informally permitted by supervisors without any institutional framework represented 6.9%—a higher proportion compared to larger companies. As already noted, however, the spread of telework under the liberal model tends to destabilize workers' status, increasing the risk of anxiety and stress within workers' internal environments. This point requires discussion alongside the psychological dimension addressed later.

In any case, Japan failed to achieve its own policy targets by the time of the COVID-19 crisis in 2020. Against this backdrop, the inhibiting factors of telework adoption in Japan have remained a major point of contention in prior research from before and after COVID-19 (Fig. 16.).

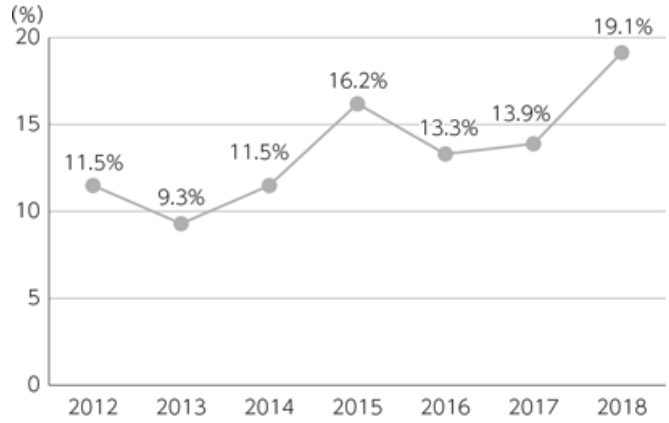

Figure 16: Trend in corporate telework adoption rates in Japan
(compiled from MIC 'Survey on Telecommunications Usage Trends,' various years)

Looking at post-COVID research, Mori (2020) identified the gap in telework rates across eight countries as related to the severity of each country's lockdown policy (Fig. 17.), noting a high correlation (0.87). However, the ratio of people who began teleworking after the lockdown was 2.4 times in Japan—which had the most lenient lockdown—while in China, which implemented the most stringent urban lockdown, it was only 1.2 times. Despite this, a survey conducted in February 2020, just before COVID-19 spread, found that over 50% of Chinese enterprises had already adopted telework or remote work business platforms for office employees (Fig. 18.).[19]

[19]Cushman & Wakefield. (2020). Looking beyond COVID-19: Home/remote working in China and its potential impact on office workplace strategy. https://www.cushmanwakefield.com/en/insights/covid-19/lessons-from-china/looking-beyondcovid-19-home-or-remote-working-in-china

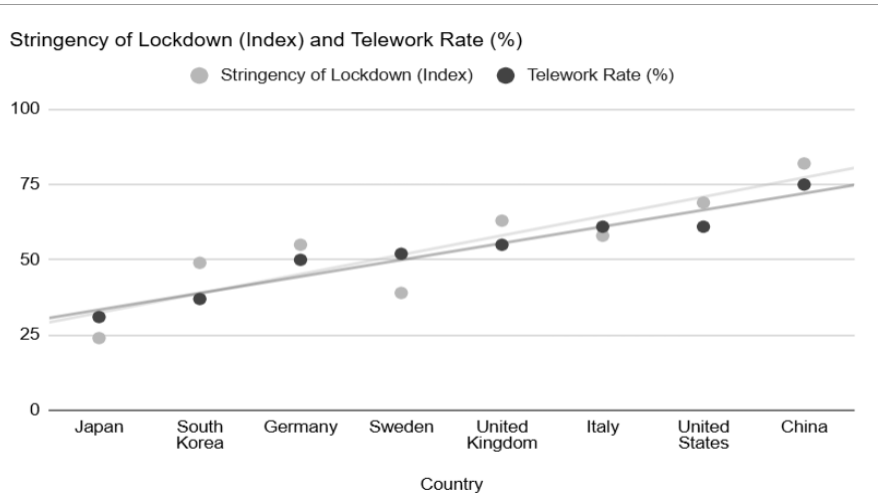

Figure 17: Telework utilization rates and lockdown stringency in eight countries

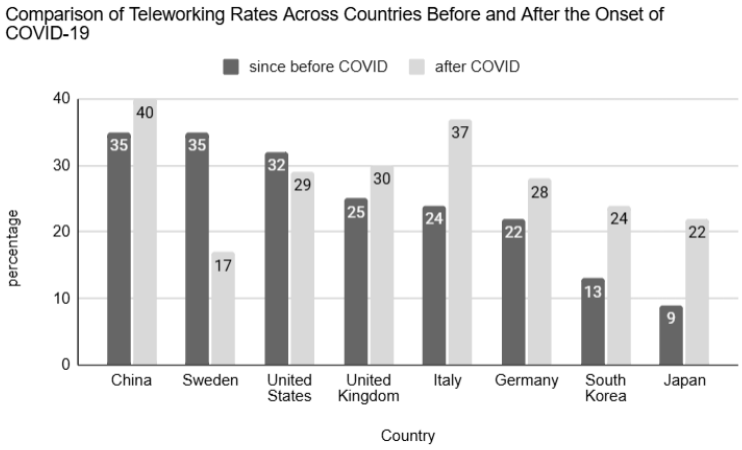

Figure 18: Telework utilization rates in eight countries worldwide (July 2020, Nomura Research Institute, 2020)

When considering telework prevalence rates in the post-COVID era, as examined in preceding sections, it is necessary to consider 'culture' as the foundational element—permeating the comprehensive preconditions for telework adoption—while policy institutions and *humanware* accumulate cultural capital.

An Asana survey of 10,223 knowledge workers[20] in six countries (Japan, the United States, the United Kingdom, Germany, Australia, and New Zealand) found that Japan has the lowest global managerial understanding of labour flexibility, retains a 'paper culture,' and has the highest rate of burnout due to long overtime both in offices and at home (Asana 2021). For example, 82% of Japanese respondents reported 'working overtime every day at the office or at home'—the highest among the six countries. On 'what percentage of a workday do you find productive,' Japan's score of 54% was the lowest among the six countries, against a global average of 70%. Only 19% of respondents reported being 'able to recognize that their work contributes to their organization's goals'—less than half the survey average of 46%. The proportion reporting that 'their company is operating efficiently' was also the lowest. Only 39% of organizations reported having 'a method for managing work procedures and processes (tracking progress or organizing),' and even among managers, only 24% reported 'understanding how much work

[20] Defined as professionals who spend most of their working hours in an office, or who use computers or devices for 50% or more of their tasks. See, Asana. (2021). Anatomy of work index 2021: Overcoming disruption in a distributed world. https://asana.com/resources/anatomy-of-work-index

is progressing within their division.' Japanese knowledge workers spent 59% of their working time on 'work about work'—excessive reliance on email, meetings about how to do work, and communication for managing work. The use of IT tools for work was also the lowest in Japan, with the least stress reduction being achieved through tools. Japan's poor productive efficiency is evident throughout its working practices.

Among the earliest prior research on Japan's working practices, Spinks (1999) identifies three impediments to telework adoption in Japan: 'ambiguous job definitions,' 'on-the-job skill formation,' and 'multidimensional personnel evaluation.' 'Ambiguous job definitions' refers to the labour contract custom in which individual job scopes are unclear, and decision-making and task execution tend to be performed collectively within small groups. This work organization constrains individual autonomy and results in unclear individual-level job definitions, discretion, responsibility, and outcomes—acting in the diametrically opposite direction to telework, which requires working independently of the group. 'On-the-job skill formation' refers to the Japanese corporate tendency for job skill development through OJT, premised on long-term employment relations within the context of Japanese-style management and the continuous sharing of a common 'place' (shared workplace) among supervisors, subordinates, and colleagues. Since telework disperses individuals away from the workplace and involves working without sharing that place, it acts contrary to this traditional labour practice. 'Multidimensional personnel evaluation' means that evaluation encompasses attitude, motivation, and cooperation with colleagues—not focused primarily on performance—making it difficult to engage in telework away from the conventional workplace (Shinada 2002).

Research building on the above, by Shimozaki (2001), deepened the analysis from the general perspective of the Japanese self. In traditional Japanese-style management, workers' high sense of organizational belonging and loyalty to the company have been matched by the company's welfare provision, lifetime employment, and seniority systems—and the economic rationality of the personnel system is underpinned by relational capital that can only be described as family-like, namely trust between supervisors and subordinates. This relational capital derives from the cultural trait of the Japanese—unique to Japan compared to the West—of emotionally identifying with a particular group and organization, creating, from a distinctly Japanese sense of ego uncertainty, a collectivist characteristic that causes corporate norms to supplement each worker's ego. Regarding this sense of ego, Shimozaki develops the argument that the depth of maternal involvement in child-rearing in Japanese family relations, and the sense of mother-child unity, is reflected in the relationships of trust with others in the corporate context.

However, the employment and wage system that Japanese-style management—premised on this sense of unity—guarantees requires devices to elevate workers' morale. Consequently, there is competition for status within the seniority-based promotion system (Iwata 1977). The assigned work at the pre-employment labour contract stage is unclear; the tasks that affect personnel evaluation and wage calculation are assigned by supervisors on each occasion (Spinks 2000). Performance is judged subjectively from the supervisor's perspective, taking into account the subordinate's ability, personality, and character, along with performance, capability, and attitudinal appraisal. In such subjective judgment, the subordinate who undertakes the supervisor's work is evaluated as excellent. The empirical material for such subjective judgment requires face-to-face interpersonal relations. In Japanese personnel evaluation, proximity within the supervisor's line of sight is essential. This culture of personnel evaluation is reflected in OJT-centred education and training, and in after-hours collective socializing '*tsukiai*'[21]—the norm of building interpersonal bonds through shared informal time.

Compared to the above Japanese culture, in the United States—where telework is comparatively widespread—job descriptions clearly define individual work scope and responsibilities. Performance-based evaluation, whereby rewards are determined by goal achievement, is established. In Europe, long working-hour habits are weak in the United Kingdom, and France and Germany strictly manage working hours while having institutionalized work systems such as job-sharing. Furthermore, as described above, in the Netherlands, since law and policy strongly influence labour contracts, it can be said that Japanese labour culture, as a foundational element, makes the realization of various forms of labour flexibility—including telework—difficult.

[21] Derived from the practice of *'tsuke-ai'* (付合) in renga linked verse of the Muromachi period—the cultural norm of building interpersonal bonds through shared time and informal social exchange.

Post-COVID research also identifies the challenges of telework as: (1) digitalization of information, (2) personnel evaluation systems, and (3) 'three gaps' among employees (Yasui 2020). Culture is considered to exert comprehensive influence on all of these.[22] A particularly important question—if telework working environments cannot be established because workers' job content is ambiguous, and if COVID-19 caused forced work-from-home to generate unexpected work tasks—is: which workers assumed those tasks? This is likely to form a research domain uniquely pertinent to Japan.

9. Psychological dimensions of individual workers

Finally, this section reviews prior research focusing on the psychological dimensions of individual workers engaged in telework. After the COVID-19 crisis of 2020, telework satisfaction regarding improved work efficiency rose to around 80%; however, there is a strong awareness of problems regarding the difficulty of grasping organizational and interpersonal dynamics, and communication including casual conversation and mutual understanding.

Among the 'anxieties' felt by teleworkers, 'difficulty understanding what the other person is feeling' was cited by 37.4%, and 'concern about being seen as slacking off' by 28.4%. On 'changes before and after telework implementation,' 'interactions with supervisors decreased' (45.2%) and 'interactions with colleagues decreased' (50.0%)—communication-related challenges ranked at the top (Okada 2020, Persol 2020). These concerns reflect the validity of the research by Shimozaki et al. discussed in the preceding section. In telework, compared to face-to-face interaction, the quantity and quality of non-verbal communication decreases, and it becomes difficult to grasp workplace interpersonal relations and psychological states—but the very orientational awareness demanding such comprehension is shaped by Japanese culture. The imperative to devise ways to enhance psychological safety (Psychological Security) in online communication(Arai 2020) is particularly evident in Japan (Table. 2.).[23]

[22] From the employer perspective, the main reasons cited for not introducing telework were: 'No suitable work' (73.1%), 'Difficulty managing work progress' (22.8%), 'Concern about information leakage' (20.5%), and 'Unclear benefit of introduction' (13.4%). Ministry of Internal Affairs and Communications. (2018). Survey on telecommunications usage trends [通信利用動向調査].

[23] This trend was present even before COVID-19. Ministry of Internal Affairs and Communications. (2017). Work-style reform and ICT utilization [働き方改革と ICT 利活用]. *White Paper on Information and Communications*.

Table 2: Measures to enhance psychological safety in online communication (Arai, 2020)

Category	Strategies to Supplement the "Quantity" of Non-Verbal Communication	Strategies to Supplement the "Quality" of Non-Verbal Communication
Daily Communication	• Intentionally create an environment for casual small talk using chat tools, etc. • Encourage ICT-proficient members to actively communicate and lead the team (resolving communication gaps by supporting those less familiar with PCs and networks). • For young employees or newly transferred subordinates, break down tasks into smaller units and increase the frequency of meetings and 1-on-1 sessions.	• Strive for softer and more nuanced expressions in written text such as chats. • Verbally indicate understanding of the conversation content (e.g., "I see. I understand perfectly."). • Verbally express feelings of gratitude or discrepancies. • (Assuming rapid environmental changes) carefully listen to their difficulties and anxieties, not limited to work tasks. • Verbalize and confirm the counterpart's feelings and thoughts. • Encourage opinions and counterarguments. • Prevent isolation among young employees or newly transferred subordinates by providing multiple layers of support, such as assigning OJT supervisors or mentors.
Internal Meetings	• For large groups, assign a support role to monitor the chat in addition to the facilitator. • Utilize the chat function in online meetings to promote real-time communication. • Supervisors and leaders should take the initiative in asking questions and encouraging opinions and feedback.	• Avoid jumping straight into the main topic; use a 1-2 minute icebreaker to direct participants' mindset toward the online meeting. • Considerations are needed to avoid unnecessary fatigue regarding camera usage (e.g., allowing audio-only participation). • Speak concisely and select easily understandable terminology. • Promptly intervene if someone attempts to interrupt another speaker. • Be more conscious of the proportion of speaking and listening compared to face-to-face interactions.
External Meetings	• Even if the counterpart is not accustomed to teleworking, do not give up; respond courteously to prevent work stoppages. • Carefully confirm that no information has been missed or misheard.	• Pay attention to attire and grooming. • Avoid jumping straight into the main topic; courteously inquire about the counterpart's situation and context.

As regards the individual psychological dimension in countries other than Japan, prior research was lacking until at least the 2000s (Bailey & Kurland 2002, Johanson 2007). The prior research that had not been sufficiently organized is analysed here by raising key issues.

Research focused on individual teleworkers has distinguished three types of factors according to the scope of telework's effects: individual factors, social factors, and conditional factors (Neufeld & Fang, 2005). Individual factors include the reduction of psychological stress through shorter commuting times (Baruch, 2000; Frolick et al., 1993), it has been pointed out that self-management of working hours is required for telework efficiency (Bailyn 1988, Bélanger 1999). Social factors include customer–colleague–supervisor relationships, with the premise that enriched communication positively influences work quality (Neufeld & Fang, 2005). Work communication is considered effective for improving work through receiving support from surrounding others and exchanging information, forming an organizational culture and norms that build cooperative relationships. Since such communication in telework is limited to electronic media, the 'trade-off' relationship between this limitation and traditional labour has been debated (Kraut 1989, Shamir & Salomon 1985). In particular, off-task conversation and communication in office settings expand social relationships and build friendly relations (Salomon & Salomon 1984, Sias & Cahill 1998). This point may be understood as having been affirmatively clarified in the context of the significance of communication that has been considered uniquely Japanese. Telework is said to psychologically promote isolation on the other hand. Research has thus been conducted from the perspective of how to prevent this isolation through the utilization of internet-based communication media and software (Hartman et al. 1991, Katz 1987, Poissonnet 2002).

As conditional factors, research has examined how the SOHO workspace environment affects teleworkers' psychology—including peripheral equipment such as software and printers; family environment issues related to the home life-stage such as childcare and caregiving; and problems related to the place of telework. Hill et al. (1998) and previously introduced works by Hartman et al. (1991) and Shamir and Salomon (1985) note that the effects of factors that inhibit work performance (interruption) and distract concentration (distraction) differ depending on the complexity of the intellectual work performed and the level of creativity required. Notably, for tasks requiring creativity and innovative thinking, even factors that would ordinarily inhibit or distract from work can instead produce positive effects in a telework context.

As such, focusing on individuals engaged in telework, the internal psychological environment—anxiety, stress—may be classified as *humanware*, while the objective (external) environment relating to hardware and software may be broadly distinguished as two types. Productivity in these Western prior studies has been defined as the efficiency of individual teleworkers in utilizing resources over a given period and demonstrating their talents and abilities. On the other hand, attending to the qualitative differences in telework as a labor form, Furukawa (2003) argues that while telework is not well suited to the process of combining individual-source knowledge (tacit knowledge) to create organizational knowledge (making it explicit), it is effective when integrating easily documentable information (explicit knowledge) to create new explicit knowledge.

Prior research has analyzed the processual elements of telework adoption from the individual's perspective through the lenses of opportunity, preference, choice, and frequency (Haddad et al., 2009):

Table 3: Individual-level adoption factors for telework and key issues in prior research

Adoption Factor	Key Issues in Prior Research
Opportunity	Whether the employer provides the opportunity to telework
Preference	Whether the worker wishes to work via telework
Choice	Whether the worker chooses to telework
Frequency	How frequently the worker engages in telework

Regarding 'opportunity,' as Singh et al. (2013) note, highly educated workers tend to be more likely to propose telework to their employers—indicating that policy–labour-management–employer relationships are considered

as external factors. Additionally, Sasaki (2016) proposes a 'Telework Maturity CCken Model'[24] representing the level of telework development and maturity as Levels I–V, using five evaluation indicators: 'awareness,' 'systems,' 'tools,' 'structure,' and 'other.'

These studies demonstrate that telework has built an independent research domain centred on the individual perspective. On the other hand, prior research on the relationships among workers, colleagues, intra-corporate systems, and employers—as discussed in the preceding section—must be acknowledged as lacking a comparative cultural approach.

10. Conclusion

Having historically analyzed telework's ideological dimensions and technological preconditions and having examined the foundational character of cultural environmental conditions through to the individual psychological dimensions of telework, this paper now summarizes. Surveying the research on telework examined here from a bird's-eye perspective and presenting it as a matrix (Fig. 19.), it becomes clear that comprehensive analysis from the following domains is required for telework implementation:

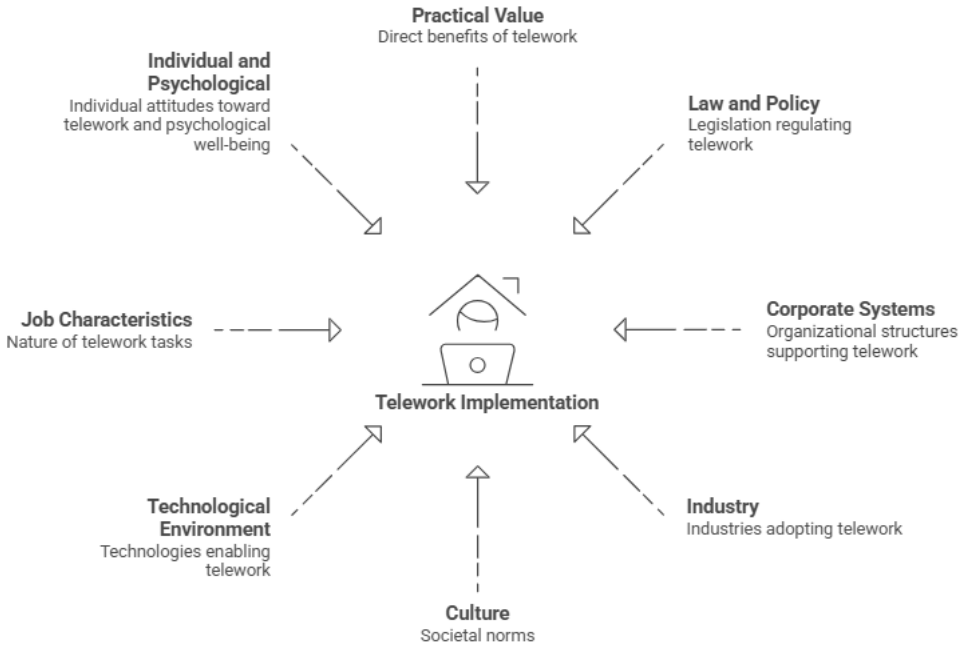

Figure 19: Telework Implementation Matrix: Domains of Influence

'Practical values' refers to the values that telework's decentralizing effect—liberating workers from traditional labour forms represented by 'commuting'—produces concretely, the realization of work-life balance, reduction of environmental impact, improvement of business operational efficiency, regional revitalization, and reduction of natural disaster risk (BCP). These social value dimensions are promoted by national governments into policy, forming legal systems. Moreover, as already seen through the Netherlands-centred European 'flexicurity' policies that facilitated the spread of telework, law and policy themselves have the effect of establishing the basic preconditions enabling corporate telework adoption. Corporations then proceed to build their institutional frameworks, beginning with employment rules, in response to these legal policies.

[24] The 'CCken Model' (CC 研モデル) takes its name from the 'CC Kenkyūkai' (CC 研究会; CC Research Group), a cross-company study group composed of IT departments within the Mitsubishi corporate group. 'CC' stands for 'Critical Capability,' a concept drawn from the IT Capability Maturity Framework (IT-CMF) developed by the Innovation Value Institute (IVI). In 2015, this research group examined 'work-style transformation' (*wākusutairu henkaku*).

Telework exhibits great disparities in adoption across industries; it has been pointed out that adoption is inherently difficult in direct production labor such as manufacturing and in person-to-person services. However, the outcome that uniform COVID-19 work restrictions operated across all industries—forcing telework adoption in sectors where it had not previously been introduced—and what creative changes, innovations, and internal role redistribution occurred within those sectors, has not yet been sufficiently clarified. For example, in countries with heavy Japanese manufacturing investment such as Thailand, it has been reported that reviews and strengthening of supervisory functions, capital and group restructuring, and portfolio reviews were carried out, along with supply chain transformation and automation advancement, and the creation of new contactless businesses (in agriculture, medical, education, and financial fields).

Furthermore, within the same industry, administratively and indirectly intensive intellectual work is suitable for telework adoption, but the objective external conditions of 'law and policy' and 'technological environment' associated with urban-rural disparities and developed-developing country differences must be fully considered. 'Culture' in each country's labor and workplace context is the most foundational element, exerting sustained influence across the broad domains of 'law and policy,' 'corporate systems,' 'job design,' and 'individual psychology.' Particularly regarding employer (supervisor)–worker (subordinate) and worker (colleague)-to-worker relationships, it has been pointed out that these constitute important elements to be considered from the 'individual psychology' domain. Employing this bird's-eye matrix, the research by Nguyen (2021) conducted in Hanoi, Vietnam during the COVID pandemic can be cited as a comparatively high-quality study realizing the comprehensive consideration this paper advocates: it identifies negative factors such as difficulty concentrating on work, technical limitations impeding data access, and the presence or absence of children as impediments; while noting that Hanoi's traffic congestion and environmental pollution constituted a telework adoption rationale that could garner broad civic—not merely employer-employee—support.

As demonstrated above, this paper has clarified that at least eight domains of influence must be considered for telework implementation. The matrix model constructed here demonstrates that even a single business undertaking such as telework implementation requires multifaceted and composite perspectives and analysis through interdisciplinary research, and that such an approach proves both necessary and effective. Among these eight domains, culture' does not merely stand alongside the other dimensions; rather, it undergirds them as a foundational stratum. The historical and cultural conditions of each country—shaped by long processes of religious, social, and political development—exert sustained influence across 'law and policy,' 'corporate systems, 'job design,' and 'individual psychology.' This finding points to a broader methodological implication for transdisciplinary research: the positioning of the humanities and historical perspective is not merely one viewpoint among many but occupies a foundational role relative to the other analytical dimensions. A particularly important task for future post-COVID telework research is to further elucidate how differences in historically rooted culture generate differences in telework adoption, and what creative innovations and culturally grounded civic organizational behaviors emerged in countries, industries, corporations, and job categories where telework had not previously been smoothly adopted.

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