Abstracts

Management and Innovation for Organizations Achieving Digital Transformation
Hirofumi Tatsumoto（University of Tsukuba）
In this article, the author describes the current state of digital transformation（DX）initiatives in Japanese enterprises, elucidating the challenges faced in organizational DX promotion and corresponding solutions. The disparity in DX adoption among companies stems from the complexity of DX projects and the organizational capabilities underpinning DX execution. Organizational DX capabilities include digital innovation（DI）capabilities, transformative capabilities, and leadership. Enterprises engage in both defensive DX（aimed at productivity expansion）and offensive DX（focused on business growth）, with the latter being more challenging to achieve. DI and transformative capabilities are bolstered by leadership, which in turn supports both defensive and offensive DX initiatives. Following this theoretical framework, the author conducted a survey-based assessment（DX Diagnostic Sheet）. Despite its small sample size, the statistical analysis yielded empirical results consistent with the theoretical hypotheses. The results reveal the robustness of the positive effects of leadership on offensive DX through transformative capabilities. Finally, the article outlines six factors impeding DX promotion, and introduces their remedies. These prescriptions encompass managerial measures to break organizational inertia, such as exploratory activities, supportive leadership, and performance-based reward systems. The challenges associated with DX are predominantly organizational, rather than technical, underscoring the desire for approaches rooted in organizational management to advance DX promotion.

The Challenges and Prospects of a Corporate Society in Which Online has Become Daily Life: Rethinking Collaboration Facilitated by Information Technology
Sachiko Yanagihara（University of Toyama）
In the process of reviewing operations at Corona Disaster, we focused specifically on collaboration in a telework environment and examined the ideal relationship with the DX promotion that is now vital. First, the current status of telework after COVID-19 was reviewed. Next, we examined the current telework environment based on studies on the awareness of teleworkers and problems in their organizations regarding satisfaction and related behaviors. Finally, we examined the impact of the digitization of the teleworking environment by COVID-19, which has unintentionally prepared the groundwork for DX, in terms of collaboration within the organization and the DX that will proceed from there. Workplaces where digitization occurs have people communicating and collaborating through IT, but their issues differ from that of workplaces where people share physical space. However, DX is promoted by autonomous activities conducted in small groups, such as agile development in information systems development, through the values of the organization and people transformed by telework. Teleworkers contribute to the organization, and the practice of DX is a collaborative effort by each of them. This is discussed with the help of the concept of sociomateriality. It is shown that even in a digital society, it is necessary to conduct business reforms based on the premise that human beings and information systems are inseparable.

A Study on Skills Formation of Workers in the Information Revolution: Focusing on Software Engineers
Shinsuke Furuya（Osaka Sangyo University）
This paper considers skills formation of software engineers in the late 1990s and early 2020s. According to previous studies on skills formation, it was claimed that skills are formed by undergoing experience from easy tasks in lower processes such as programming to difficult tasks in upper processes such as requirements definition; furthermore, it was supposed that the core skills are those for carrying out the tasks of upper processes in software development. However, these previous studies are based on research in the 1980s. Due to the rapid evolution of the IT industry, skills formation could be rather different from that illustrated by previous studies. Therefore, we took up

the case of a system maintenance project in the late 1990s and an IoT system project in the early 2020s as we were examining the discussions of previous studies. This paper concludes that engineer skills are those to carry out lower process tasks and upper process tasks, both of which are formed through on-the-job training（OJT）. Moreover, we point out that skills formation in lower processes was found to be standardized at every point of research: the 1980s, the late 1990s, and the early 2020s. However, it should be also pointed out that, compared to lower processes, upper processes are not as linear as previous studies have assumed, and are not standardized in the way that lower processes are. Regarding skills formation for upper processes, this paper clarifies that different patterns can exist depending on the scale, software complexity, and composition of the project.

Current Status and Challenges of Mental Health of Workers and Prospects for Digital Technology-based Support

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This paper provides an overview of the current status and challenges of mental health in the workplace, where the advancement of digitalization has led to diversity in work styles, such as teleworking, and possibilities for support with digital technology. First, we focus on the social context surrounding the mental health of Japanese workers and explain the importance of mental health care in the workplace. Furthermore, we summarize the challenges that may occur in conventional mental health activities in the digitalized workplace, based on previous studies and surveys. The possibility of using digital technology to support two points, assessment by digital biomarkers and online interventions with digital technology, is then discussed concerning previous research. Regarding assessment by digital biomarkers, although the possibility of it being applied to support returning to work is suggested, there are still issues to be considered in its practical application, such as protecting personal information. As for online interventions, while they are expected to improve the service gap by increasing accessibility and spreading self-care based on accurate knowledge, adherence issues such as low persistence and implementation rates have also been pointed out. It is necessary to continue to conduct academic research and accumulate evidence that meets social needs for digital technology to be put to practical use in supporting workers.

The Features and Problems of Japanese Digital Skills Training Policy in Comparison with Overseas Policies

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This paper compares Japan and Western countries in terms of policies for digital skills training, and discusses the characteristics and challenges of Japanese policies. The following points can be noted as characteristics of recent Japanese policies. First, Japan's policies are positioned as measures that should contribute to promoting digitalization and digital transformation（DX）in companies and society, which is seen as a social issue. The objective of preventing disparities caused by the digital divide, which is emphasized in the policies of Western countries, is not so strongly emphasized. Second, as in Western countries, there is a linkage between digital-related cross-firm professional qualifications and competence standards and policies. Third, on the other hand, measures have been established to link the progress of digitalization and DX in each company to the development of digital skills. These measures are compatible with the strong commitment of Japanese companies to securing human resources in the internal labor market. Given the characteristics of Japan's policies, it will be necessary for the effectiveness of current policies to pay attention to companies' awareness of and interest in issues related to digitalization and DX, and how companies secure human resources with digital skills. In addition, it is also essential to be careful not to create problems associated with the digital divide among non-permanent employees, freelancers, and other workers who have few opportunities to be involved in the digitalization and DX of

companies.

What Drives Inequality in Telework Availability by Firm Size and Employment Status?
A Comparison of Before and After the COVID-19 Outbreak

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Previous studies have revealed the increased gaps in telework availability by firm size and employment status after the COVID-19 outbreak. However, little is known about why these gaps have expanded. This paper examines the extent to which occupational-level work characteristics, individual-level work characteristics, and organizational characteristics explain the gaps in telework availability by firm size and employment status before and after the COVID-19 pandemic. Matching data from the Japanese Panel Study of Employment Dynamics 2020－2021 and the Occupational Information Network of Japan, the following results were observed. First, employees in large companies and those with regular contracts have higher telework availability than employees in smaller-size firms and those with non-regular contracts（part-time, dispatched, and contract）, respectively. Second, the gaps are due to differences in work characteristics, such as smaller-size firms and non-regular employees being engaged in work that is not suitable for telework, as well as organizational characteristics such as employees' weak bargaining power and having a personnel system incompatible with telework. Third, even taking the above into account, there remain unexplained differences in telework availability by company size and employment status.