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## Editorial

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Technological innovation has been seen as a fundamental driver for economic development (Nelson and Rosenberg, 1993) and has provided approaches to tackle the social grand challenge (e.g., global poverty alleviation, climate change, and biodiversity loss) (Schwab and Davis, 2018). Particularly, regarding the past global COVID-19 pandemic, technological innovations helped alleviate the negative impact of the pandemic and facilitate the recovery at all layers, so individual, company and policy levels (e.g., Vermicelli et al., 2021; Brem et al., 2021). We can even see that our lives changed through technological innovations that started in the pandemic, and last until today and beyond (Viardot et al., 2023).

This special issue addresses the role of technological innovation and how technological innovation matters in dealing with pandemic issues, linking with the multiple contexts among micro-level R&D team and enterprises studies, macro-level cities and countries systems, and the function-oriented technological contexts. Different to earlier special issues on this topic, which, e.g., focus on the interdisciplinary nature (e.g., Woodward et al., 2021), this special issue has a sole technological focus. All included articles have a strong technological embedding, through the evaluated subject, its context, or its outcome.

The first paper by Wu and Wang targets the R&D collaboration team as the unit of analysis, exploring the relationship between technological proximity among partners on innovation speed. It argues that technological proximity has an inverted U-shaped effect on innovation speed, and this effect is positively moderated by the teams' absorptive capacity (Wu and Wang). The second paper developed by Xiao et al. concentrates their focus on enterprise level, addressing enterprise innovation's preventive value toward the impact of COVID-19. It verifies a significant positive correlation between enterprise innovation and cumulative excess return, and further indicates the positive moderating

effect of enterprise's internal control and corporate social responsibility on the correlation relationship.

Further extending to the higher-level analysis units, Fisher et al. look at the smart city context as health institutions and hospitals play a central role in human health, particularly in the pandemic era as the global COVID-19 pandemic exacerbates the squeeze on medical resources. By proposing a systematic literature review about the smart cities' approaches to addressing the pandemic landscape, Fisher et al. summarise sub-streams involving players and their interactions, processing techniques for the population value, smart city architectures for the pandemic, and data standards and technologies applied in pandemic context. In addition, Peerally et al. emphasise the role of national technological capability in COVID-19 vaccine development. By integrating the micro-level firm and non-firm collaborations and the macro-level national technology capability determinants, Peerally et al. construct a state-level index to reflect a country's readiness, progress, and success in developing the COVID-19 vaccine. In addition, Ghofrani's article and Hall et al.'s work mainly focus on the specific technological contexts regarding the pandemic era. In Ghofrani, the author emphasises the role of new digital technologies and social platforms for persuasive communication matter in the new health protocols adopted by the government and health organisations. And Hall et al. regard the COVID-19 pandemic itself as a context, which influences new technology (i.e., smart wearables especially smartwatches) adoption and popularisation.

Together, the papers in this special issue indicate some general implications. First, technological innovations, involving the adoption of emerging technologies like digital technologies and social platforms (Ghofrani, 2024), and the smart city architecture system do contribute to humans tackling the grand challenge of the COVID-19 Pandemic. These pieces of evidence from empirical analysis and literature review fit the emerging attention in the policy arena highlighting positive promoting emerging technologies for social sustainability. Take AI as an example, the European Commission has launched an ambitious initiative 'AI-Robotics vs. COVID-19: sharing solutions – initiatives – ideas' to address the global development goals, particularly the COVID-19 reduction (Chen et al., 2021). Second, the COVID-19 pandemic as a sudden shock or challenge, has given rise to impact human beings in the areas of team cooperation (Wu and Wang), organisational management (Xiao et al.), city and urban governance (Fisher et al.), development of national technological capability (Peerally et al.), and the new technology applications (Ghofrani). These implications from the technological innovation perspective to tackle the pandemic provide forward-looking insights for management and public governance in the future. Crisis can and will happen. But we need a reflective approach to learn from it and think more holistic innovation approaches to tackle the grand challenge (Chen et al., 2018), in order to be better prepared in future especially in the contexts of innovation ecosystem (e.g., Nylund et al., 2023), open innovation (e.g., Chesbrough et al., 2021), and digitalisation (e.g., Liu et al., 2022).

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