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Innovative Digital Technology and Economy Capacity Development

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Innovative digital technology supported by a human-centered society is required to balance economic advancement and environmental regeneration. Furthermore, digitalization creates new ways for companies to create added value in business. Modernizing business enterprises by combining digital technologies, physical resources, and the creativity of individuals is an essential step in innovative business transformation that may become a competitive advantage. Digital technologies create new ways for companies to integrate customers' preferences into product development or service delivery across process chains. Technological innovations create new products, processes, and services that generate more added value for companies. The diffusion of innovations reshapes economic systems and increases business capacity development.

The use of digital technologies to meet societies' needs has been used to optimize existing infrastructure and increase innovative business through collaboration amongst stakeholders. The digital technology is transforming the economic paradigm and mechanisms used to create value and generate benefits, i.e., efficiency, effectiveness, and customization, as well as quality and innovative products. Advances in technology have led to the increased production of environment-friendly projects, products, and services. The well-being of the future depends on the production of technology that can govern the climate, health, social equity and stability. The creativity and innovation of technology development contribute to improving the global environment by producing green, resource-secure, and inclusive economies for all.

In this special edition, 23 papers were selected from the 4th International Scientific Conference on Innovations in Digital Economy SPBPU-IDE 2022, which discussed the theory and application of digital economy and technology development. SPBPU IDE-2022 was organized by the Graduate School of Industrial Economics of Peter the Great Saint Petersburg Polytechnic University and the Center for Sustainable Infrastructure Development of Universitas Indonesia. It brought together experts from the academia and industry to enhance digital transformation of economic systems.

This year's conference themes include best practices in digital modelling and system engineering in complex, technical, and socio-economic systems, economic efficiency, and social consequences of digital innovations implementation, regional innovation systems, and clusters as drivers of economic growth, and industrial, service and agricultural digitalization. Furthermore, the themes cover the response of the educational system and labor market to the digital-driven changes in the economic system, as well as digital

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transformation trends in the government and financial sectors.

Accelerating Technology Development

Technology was invented to improve projects, products, or services performance for the benefit of society. This edition, the following papers dedicated to utilization of digital technology in various sectors development were selected for presentation:

The first paper, written by A. Babkin, E. Shkarupeta, I. Kabasheva, I. Rudaleva, and A. Vicentiy, presents a framework for digital development of industrial systems in the strategic drift to industry 5.0. The authors argue that the strategic drift include digital strategizing, digital transformation, digitalization, digital technologies, and digital strategy.

The second paper, written by S.G. Kamolov, P.V. Lapshina, and D.B. Alexeev, presents the system of governance of scientific and technological development in the Russian Federation. The authors argue that the system contributes to the improvement of the strategic planning system and increase of accountability and connectivity of various elements of the system.

The third paper, written by I. Eremina, A. Yudin, T. Tarabukina, and A. Oblizov, examines the use of digital technologies to improve the informational support of agricultural enterprises. The authors argue that technology optimizes the resources used in production, expands access to markets and prices information, and enhances stakeholder interaction.

The fourth paper, written by N. Yashina, O. Kashina, S. Yashin, N. Pronchatova-Rubtsova, and I. Khorosheva, proposes technical analysis tools of financial assets and improved investment strategies in crises. The authors suggest tools that allow for the monitoring of the financial market situation and reveal critical points of crisis phenomena using the analysis of information transmitted by a trading platform.

The fifth paper, written by S. Grishunin, E. Naumova, I. Pishchalkina, E. Burova, and S. Suloeva, analyzes the performance metrics of buy-and-build strategies compared to the classic private equity backed leveraged buyouts. The authors argue that the buy-and-build leads to lower return of assets and higher sales results.

The sixth paper, written by G. Saroji, M.A. Berawi, M. Sari, N. Madyaningarum, J.F. Socaningrum, B. Susantono, and R.M. Woodhead, presents development planning scenarios of power generating capacity with the optimal use of new and renewable energy (NRE) sources. The authors argue that the proposed scenario produces additional generating capacity of electricity and increased utilization of NRE sources with effective cost.

The seventh paper, written by S. Grishunin, E. Naumova, E. Burova, S. Suloeva, and T. Nekrasova, examines the impact of sustainability disclosures on value of companies following digital transformation strategies. The authors argue that the environmental, social and governance (ESG) disclosure score positively affects the value of telecommunication companies.

The eight paper, written by I. Pishchalkina, D. Pishchalkin, and S. Suloeva, presents the efficiency of enterprises based on the ESG risk rating. The authors argue that there is a significant correlation between ESG ratings of leading rating agencies. Moreover, it assesses the efficiency of mining and metallurgical enterprises in the context of digital transformation.

The ninth paper, written by D.A. Zubkova, V.V. Rakova, Z.V. Burlutskaya, and A.M. Gintciak, presents an automatic calibration of sociotechnical systems simulation models on the example of the infection spread model. The authors argue that the calibration enables obtaining up-to-date predictions on the spread of infectious diseases with minimal time resources.

The tenth paper, written by A.I. Borovkov, M.V. Bolsunovskaya, A.M. Gintciak, V.V. Rakova, M.O. Efremova, and R.B. Akbarov, presents the Susceptible-Vaccinated-Exposed-Infected-Recovered-Susceptible model from the Susceptible-Exposed-Infected-Recovered class. The authors argue that the model predicts the spread of infectious diseases by acquiring natural immunity and artificial immunity via vaccination.

The eleventh paper, written by A. Zaytsev, N. Dmitriev, D. Bunkovsky, and R. Faizullin, presents a model for auditing the intellectual capital of the industrial enterprise, focusing on digital analysis of data from open sources. The authors argue that the audit activities improve the efficiency of managing knowledge and resources. Moreover, they identify bottlenecks in the field of industrial intellectualization.

The twelfth paper, written by N. Dmitriev, A. Zaytsev, R. Faizullin, and D. Bunkovsky, presents the instrumental apparatus of the innovative potential audit of the enterprise in the implementation of project activities. The authors argue that the audit activities should contribute to a prompt assessment of the impact exerted by management decisions about investments on the innovative potential.

The thirteenth paper, written by V. Arteeva, I. Sokol, E. Asanova, and D. Ushakov, examines the impact of digitalization factors and infrastructure development on domestic tourism. The authors argue that the adoption of digital technologies and infrastructure development significantly increases the efficiency of business processes and attracts tourists to the regions.

The fourteenth paper, written by S. Gutman, E. Rytova, V. Brazovskaia, and A. Skhvediani, examines the relationship between the goals and indicators of sustainable development at various levels of regional socio-economic systems. The authors argue that the life expectancy and sustainable parameters (economic, social and environmental) affect the sustainable development level of the region.

The fifteenth, written by M.A. Berawi, M. Sari, A.A. Salsabila, B. Susantono, and R. Woodhead, utilizes the building information modelling in the tax assessment process of apartment buildings. The authors argue that the final value of the building, used as the basis in the tax assessment, can be generated more accurately by producing a detailed calculation of dimensions and variations of building materials.

The sixteenth paper, written by V. Brazovskaia and S. Gutman, investigates the readiness level of the electric power industry for the implementation of digital innovations. The authors argue that the use of renewable energy sources and digital technologies that will be able to manage and regulate independently the processes of consumption, distribution, generation, and pricing of electricity are amongst the path to increase the readiness level.

The seventeenth, written by T. Anna, I. Marina, K. Grigory, and T. Evgenii, presents the model of state support for the digital transformation of the manufacturing industry. The authors argue that the model establishes the necessary strategic guidelines for the digital transformation of federal support and regional authorities to support the industry.

The eighteenth paper, written by D. Rodionov, A. Gracheva, E. Konnikov, O. Konnikova, and D. Kryzhko, examines the systemic impact of information technology development dynamics on labor market transformation. The authors argue that the proposed vector formulation sets the main directions of transformation of the labor market under the influence of the information technologies development.

The nineteenth paper, written by A. Skhvediani, D. Maksimenko, A. Maykova, and T. Kudryavtseva, examines the indicators of effectiveness of IT companies measured by the return on assets depending on changes in intellectual capital. The authors argue that

profitability for IT companies can be stimulated by increasing business efficiency through elements of intellectual capital.

The twentieth paper, written by A. Babkin, L. Tashenova, D. Mamrayeva, Y. Shkarupeta, V. Pulyaeva, and C. Leifei, presents the digital transformation of industrial enterprises in selected countries. The authors argue that the industrial sector is focused on the active implementation of ICT tools, while overall modernization of the industry is linked to key objectives of state and departmental programs for the development of digital economies.

The twenty-first paper, written by I. Shevchenko and Y. Razvadovskaya, examines the integration of structural and evolutionary approaches in assessing structural changes in the industrial sector. The authors argue that one of the key factors of the inertia of structural changes is the evolutionary parameters of the system.

The twenty-second paper, written by N. Lomakin, M. Maramygin, A. Kataev, S. Kraschenko, O. Yurova, and I. Lomakin, presents the cognitive model of financial stability of the domestic economy based on artificial intelligence (AI) in conditions of uncertainty and risk. The authors argue that the AI system and the VaR model provide a forecast of the volume of GDP and sustainability assessment of the economy.

The last paper, written by A. Babkin, L. Tashenova, D. Mamrayeva, Y. Shkarupeta, and D. Karimov, determines the characteristics of digital platforms for network innovation-intensive industrial clusters. The authors argue that the network innovation-intensive industrial clusters are akin to a connecting link in the evolutionary chain of cluster structures through the use of digital platform.

I hope that this edition of IJTech conveys some new insights in the way we conduct our research. I am pleased to accept and respond to any comment or inquiry you may have on the direction and content of IJTech, and I invite you to join us in this venture by sending your work for consideration.

With warmest regards from Jakarta,

Professor Dr. Mohammed Ali Berawi
Editor in Chief