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Accelerating Innovation in The Industrial Revolution 4.0 Era for a Sustainable Future

Isti Surjandari[1*], Teuku Yuri M. Zagloel[1], Ruki Harwahyu[2], Muhamad Asvial[2], Muhammad Suryanegara[2], Eny Kusrini[3], Sutrasno Kartohardjono[3], Muhamad Sahlan[3], Nandy Putra[4], Muhammad Arif Budiyanto[4]

[1]*Department of Industrial Engineering, Faculty of Engineering, Universitas Indonesia, Kampus UI Depok, Depok 16424, Indonesia*
[2]*Department of Electrical Engineering, Faculty of Engineering, Universitas Indonesia, Kampus UI Depok, Depok 16424, Indonesia*
[3]*Department of Chemical Engineering, Faculty of Engineering, Universitas Indonesia, Kampus UI Depok, Depok 16424, Indonesia*
[4]*Department of Mechanical Engineering, Faculty of Engineering, Universitas Indonesia, Kampus UI Depok, Depok 16424, Indonesia*

Today we are facing the era of the industrial revolution 4.0, which brings many changes in all fields. In this era, there are massive changes in various fields through the combination of technology that reduces the barriers between the physical and digital worlds. In addition, various problems in making this earth better is also a task that must be solved. This is marked by the global desire to create sustainable development as stated in the Sustainable Development Goals (SDGs) by 2030. These two momentums are ultimately interrelated conditions.

The industrial revolution 4.0 brings many changes with all the consequences, one of which is the emergence of disruption in this era. However, the industrial revolution 4.0. can also be used to achieve Sustainable Development Goals (SDGs). The development of technology is also able to align with the SDG's goal, namely improving the efficiency of the production process and quality of the products, both in the manufacturing and service industries, including in the field of education. For example, the internet allows distance learning at a low cost. In addition, Artificial Intelligence (AI) technology can determine more accurately the allocation of time and teaching materials that are more effective and efficient.

The SDGs have become a new point in the globalization development in this 4.0 Industrial Revolution Era. This means that industrial revolution 4.0 must not hinder the achievement of the SDGs goals. On the contrary, industrial revolution 4.0 must be able to accelerate the achievement of the SDGs goals. For example, by further encouraging the acceleration of the green industry 4.0 to achieve the Sustainable Development Goals (SDGs), where the acceleration of the green industry is carried out using high technology in accordance with the push for industrial development 4.0.

To address the above issues, the Digital Futures International Congress (DIFCON

*Corresponding author's email: isti@ie.ui.ac.id, Tel.: +62-21-78888805, Fax.: +62-21-78888805
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2022) was held on July 25-27, 2022. DIFCON provides a multidisciplinary platform for gathering scholars from different disciplinary backgrounds to disseminate ongoing research related to the digital futures of our society, following the "2030 Agenda for Sustainable Development". Of the papers presented at DIFCON 2022, the top 20 papers have been selected by the IJTech's editor-in-charge for publication in this special edition of IJTech and are summarized as follows.

The first paper, written by Long, Ooi, Le, Thiet, Ai, An, Hudson, Tan, and Van, determine the best leadership thinking combination that will enable Vietnamese leaders to successfully implement the fourth industrial revolution (4IR) in Vietnam. The study indicates that Blockchain Leadership is the appropriate model to achieve success for organizations in the era of 4IR and beyond. It is, therefore, essential for Government to endorse and support the development of blockchain leadership, which is essential for the effective implementation of 4IR by the business organizations in their respective countries.

The second paper, written by Anh, Binh, Long, Ai, Tan, and Van, identifies key factors that Vietnam should focus on for a comprehensive national strategy to develop within the fourth industrial revolution (4IR). Three factors were identified as the key elements of a strategy for social-economic development in Vietnam, including human resources, policies, and infrastructure. The study also reveals an optimistic attitude, among policymakers, researchers, and enterprise managers, toward the rapid readiness and adoption of 4IR in Vietnam.

The third paper, written by Mudzar and Chew, identifies new skills required by the workforce in the Fourth Industrial Revolution. Based on the review of relevant literature, the authors identify that creative thinking, decision-making, critical thinking, negotiation, and persuasion will be required, as machines lack these abilities. While this literature review covers a broad range of skills needed for the Fourth Industrial Revolution, it may not apply to all organizations. An external variable, such as education standards, may influence skills that different firms might require.

The fourth paper, written by Rathidevi, Aravindan, and Choong, develops a conceptual model to examine the entrepreneurial orientation (EO) of undergraduates, which leads to entrepreneurial career intention (ECI) in Malaysia. This model expected to foster understanding on phenomena of ECI among female undergraduates, laying the foundation for boosting women's participation in entrepreneurship.

The fifth paper, written by Chan, Shen, Rashid, Abdullah, Xin, and Tung, develops an innovative mobile application, Your 2 Home, designed to help foreign workers in Malaysia understand their human rights. With the various features in the app, it is hoped that foreign workers in Malaysia will have a better understanding of their rights and have an excellent platform to give advice or even assistance. Hence, this study recommends a concept of a digital solution that can be used to solve human rights issues among foreign workers in Malaysia.

The sixth paper, written by Moganadas and Goh, analyze the effect of digital employee experience (DEX) on organisational outcomes and measurement mechanism. Based on content analysis on a comprehensive literature review of DEX constructs (i.e., digital technologies and environment, digital culture and work practices, and individual characteristics and demographics), the results showed that DEX has positive implications in the establishment of the total employee experience (EX) management in workplaces.

The seventh paper, written by Teoh, Mohamed, Mohd, Rosid, and Yusof, investigates how teachers and parents in a rural mathematics community in Malaysia create opportunities for students to participate in mathematics education. Based on a case study

to obtain qualitative data via interview, the results revealed that the teachers and parents were equally concerned about their children's education and focused on mentoring them. This study provides input on strategies used to engage students in mathematics education.

The eighth paper, written by Neo, Lee, Tan, Neo, Tan, Mahendru, and Ismat, investigates the impact of multimedia-based AI chatbots, named MERLIN, as a scaffolding agent to assist student learning during their independent online learning times. The results showed that students were motivated to learn more using MERLIN, improved their learning, and wanted more chatbots in their other courses. These findings have important implications for using AI chatbots as a scaffolding and instructional tool in 21st-century learning environments.

The ninth paper, written by Tan, Lim and Diong, develops a model to predict the users' quality of experience (QoE) based on the network monitoring data of a 5G network during an online gaming session. The proposed ANN model achieves prediction accuracy of close to 80% using the 30 most relevant features derived from the radio access network monitoring data.

The tenth paper, written by Kho, Fauzi, and Lim, proposes a technique to perform image processing without requiring the use of external DDR or HBM RAM memory. A chunk processor has been developed to read and process kernels without the need to store the entire image frame. This reduces the memory requirements significantly without losing the quality of the processed images.

The eleventh paper, written by Haw, Amin, Naveen, and Ng, evaluates the performance of the three labelling schemes (i.e., ORD-GAP, ORDPath, ME Labeling) in terms of robustness and efficiency to support storage and query retrieval. The results showed that ORD-GAP does not have the minimum storage size compared to ORDPath, because it reserved a gap between nodes to maintain later insertion. While ME Labeling took a long time on path and twig queries, especially for queries with A-D and mixed relationships.

The twelfth paper, written by Harun, Dorasamy, and Ahmad, examines the interactions among people, processes, technology, and STP (Science and Technology Park) organization on the successful implementation and use of ERP (Enterprise Resource Planning). The results showed that implementing ERP enhances an organization's capacity and performance. In addition, this study found that STP organizations focus on the benefits of implementing ERP rather than the associated costs.

The thirteenth paper, written by Salim, Yatim, Said, Masuod, Mustafa, and Ismail, examines performance predictors from the perspective of mosque co-operators through the lens of Intellectual Capital Theory. The study found that the top three predictors of performance for mosque co-operatives are board members' competencies, spirituality, managers' competencies, and stakeholders' support, indicating the essentials of human capital, relational capital, and spiritual capital. This study provides initial insights to regulators, policymakers, and co-operators in enhancing the performance of religious-based co-operatives.

The fourteenth paper, written by Ong, Rahim, Lim, and Nizat, develops the technology adoption journey map (TAJM) to plan and study the farmers' technology adoption based on the Diffusion of Innovation (DOI) theory and the Customer Journey Map (CJM). To facilitate the mass adoption of technology, this study suggests documenting the experiences of innovators and early adopters of the technology as a guide in building the technology adoption journey map of the early majority.

The fifteenth paper, written by Bai and Wong, develops a conceptual framework based on a literature review to address the insufficiency of visual and verbal elements of the existing herbal tea (i.e., Ningxia's Eight Treasures Tea) packaging design to articulate its 'values' as a cultural object to the public. The proposed conceptual framework also serves as an example for the future creative practice of packaging design of other cultural objects to convey its cultural values through the visual and verbal elements and make the younger generation aware of the unique culture of the objects.

The sixteenth paper, written by Hossain, Heng, Lee, Ong, and Islam, examines the impact of green human resource management (GHRM), top management commitment (TMC), and green culture (GC) on green performance (GP) of Palm oil companies (POCs) in Malaysia. The study found significant positive impacts of GHRM, TMC, and GC on GP. Moreover, the observed results highlight the importance of GC and TMC in implementing green procedures to create positive GP.

The seventeenth paper, written by Valan, De Cruz, Jacob, and Djearamane, evaluates the potential of using A. Malaccensis leave extract as a biogenic medium to generate CuO NPs with antimicrobial potential. The results demonstrated that the boiled leaf extract reacted with 5 mM $CuSO_4.5H_2O$ at pH 6 and incubated under non-shaking conditions at 70 °C, resulting in a high rate of CuO NPs formation, depicting a UV absorbance peak of 430 nm.

The eighteenth paper, written by Jayabalan, Dorasamy, and Raman, examines the effect of pretest and pilot tests on the methodological reliability of research instruments and suggests that it should be a common step in research instrument development. A well-planned and administered pilot study could improve the quality of the research since the findings may be used to influence subsequent stages of the research.

The nineteenth paper, written by Seek, Kok, Lim, and Liew, evaluates the energy absorption capacity of a few common lattice structures printed out of PLA using fused deposition modelling and proposes an improved lattice structure. Simple cubic (SC), honeycomb (HC), body-centered cubic (BCC), and novel PeckGy80 (PG80) lattice structures were subjected to compressive tests. The results showed that energy absorption of the lattice structure was closely related to the deformation modes, where progressive folding of printed layers from the bottom up, such as that in PG80, is much preferred for energy absorption.

The twentieth paper, written by Lau, Kok, Chen, and Tso, proposes improving existing spring-mass-damper models by accounting for the human-structure dynamic interaction during sideways fall to better predict peak impact force on the hip. The predicted peak hip impact forces were compared to measured or simulated results in the literature and found to agree reasonably. Simulation results show that interactions with impact surfaces with lower stiffness can reduce the value of peak impact force applied on the hip by at least 16%.

With warmest regards from Jakarta,

Prof. Isti Surjandari
Editorial Board Member

Prof. Teuku Yuri M. Zagloel
Editorial Board Member

Dr. Ruki Harwahyu
Editorial Board Member

Dr. Muhamad Asvial
Editorial Board Member

Dr. Muhammad Suryanegara
Editorial Board Member

Dr. Eny Kusrini
Editorial Board Member

Prof. Sutrasno Kartohardjono
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