
Editorial: Digital innovation and green economy for more resilient and inclusive societies: understanding challenges ahead for the green growth

Editorial

461

Introduction

The European Commission is adopting different initiatives to promote the transition towards a greener and more circular economy in Europe. These initiatives aim to use resources more efficiently, reduce waste, enable green innovation, informing customers about green products and services and supporting green companies. The European Commission developed several instruments and tools to facilitate this transition like Level(s), EU Eco-label, EU Environmental Technology Verification (ETV), Product Environmental Footprint and Organisation Environmental Footprint (PEF-OEF) and Eco-Management and Audit Scheme (EMAS) (European Commission, 2023a, 2023b).

Administrations, businesses and citizens can benefit from the digital age. Government must design educational policies to create the digital skills and training required for the new labour market and foster entrepreneurship. Now more than ever cooperation between governments, academia and businesses is crucial to reap the benefits of the new digital technologies, helping to achieve the climate change challenge and the digital transition (European Commission, 2023c).

Digital technologies are key enablers to create a more inclusive society in the digital age (Abdullah *et al.*, 2021; Anshari *et al.*, 2017; Ordóñez de Pablos *et al.*, 2022; Zhang *et al.*, 2018). Education institutions can support the transition towards a more sustainable society and economy, fostering the knowledge, skills and competences needed for the circular and green transition. They need to integrate these challenges into learning and teaching. Students, lecturers, deans, policymakers and other relevant stakeholders must be involved in the continuous dialogue on climate change and sustainability. In the digital age it is critical to create human capital that can face these global challenges (Aboramadan, 2022; European Commission, 2023d; Hou *et al.*, 2023; Ordóñez de Pablos, 2004a, 2004b, 2022; Mohammed and Fisal, 2022; Zhang *et al.*, 2018; Zhao and Zou, 2015).

Policy makers and education institutions need to increase cooperation to develop the workforce of the future, creating a strong digital ecosystem. The European Union has a new policy initiative called Digital Education Action Plan (2021–2027), which builds on Digital Education Action Plan (2018–2020), to support the transition of education institutions to the digital age and promote more inclusive education (European Commission, 2023e).

Therefore, it is essential that businesses, governments and citizens tackle the huge challenges and opportunities of the digital and green transition, reap the benefits of digitalization and more circular economy, boost sustainable growth and create jobs in a more inclusive society. For this reason, it is important to promote active dialogue on these topics and collaboration among all relevant stakeholders.



Contents of the issue

The third issue (2023) of *Journal of Science and Technology Policy Management* presents a collection of eight papers that address key issues for companies and governments, like green entrepreneurship, Industry 4.0, innovation, research universities, smart cities and sustainable energy, among others. The discussion covers countries like China, India, Indonesia and Ireland.

The paper titled “Presenting a Framework for the Successful Entry of Women Entrepreneurs into Green Entrepreneurship” (by Fallah and Soori) affirms that “the concentration of women entrepreneurs on influential events such as the development of green entrepreneurship, which lead to the coordination and dynamic balance between economic and environmental goals, can create a bright future for businesses with sustainable and environmentally friendly architecture”. The main purpose of this study is to provide a framework for the successful entry of women entrepreneurs into green entrepreneurship. The present qualitative applied descriptive-analytical study was conducted on a population of women entrepreneurs working in green businesses. This population was obtained by the non-probability chain sampling method and an exploratory interview with the saturation of 12 individuals. Thematic analysis was used to analyse the findings. The results revealed that creating shared value, inclusive social acceptance, multifaceted interactions and green dynamic bedding are effective in the entry of women entrepreneurs into green entrepreneurship in the form of “competitive empowerment” and “multiplied green synergy”. Thus, managers and planners should consider some factors, including shared value, social acceptance, inclusive acceptance, building green culture, knowledge flows, multiple participation, networking dimension, green marketing, competitiveness, creating platforms, green technologies and risk management.

The paper titled “A Bibliometric Evaluation and Critical Review of the Smart City Concept – Making a Case for Social Equity” (by Okafo, Aigbavboa and Thwala) emphasizes “the idea that social equity is a significant objective that needs to be achieved to attain a smart city and further reveal the current research focus of smart city in relation to social equity. Also, it will propose determinants of social equity for smart city development. The first part of this study was conducted by reviewing ten existing smart city models and assessing their elements, in a bid to find a relationship between the existing smart city models and social equity. These models were sorts from scholarly publications such as books, journals and other related articles sourced from Google Scholar and Scopus database. To give more credence to this study, a second aspect of this study was necessary; this was conducted using a bibliometric approach, and the data was gathered from the Scopus database. Keywords such as ‘smart-city’ OR ‘Digital-city’ OR ‘Intelligent-city’ OR ‘Computer-city’ OR ‘Technology-city’ AND ‘Social-equity’ were used for article extraction. VOSview was used to analyse the bibliographic data obtained. This research revealed that studies that relate, link or discuss the idea that social equity is a significant objective that needs to be achieved to attain a smart city are low considering that only 48 articles were extracted, and most of the studies did not specifically focus on social equity in smart city development. Further findings revealed that the ten reviewed smart city models never linked or discussed the idea of social equity in smart city development. In addition, this study revealed that emerging countries aiming to develop smart cities, particularly in Africa, are not paying much attention to the importance of creating social equity policies to attain smart cities”.

The paper titled “Deficiencies in China’s Innovation Systems for Coal-Bed Methane Development: Comparison with the United States” (by Andrews-Speed, Xu, Jie, Chen and Zia) explores and “identify the factors that are constraining technological innovation to

support the development of coalbed methane in China. The analysis applies ideas relating to national and sector systems of innovation to explain why China's strategies to support research and technological innovation have failed to stimulate the desired progress in coalbed methane production. It also provides a counter-example of the USA that implemented a number of measures in the 1970s that proved very effective. The deficiencies of China's research and development strategies in support of coalbed methane development reflect the national and sectoral systems of innovation. They are exacerbated by the structure of the national oil and gas industry. Key constraints include the excessively top-down management of the national R&D agenda, insufficient support for basic research, limited collaboration networks between companies, research institutes and universities and weak mechanisms for diffusion of knowledge. The success of the USA was based on entirely different systems for innovation and in quite a different industrial setting".

The paper titled "Grassroots Innovations and Sustainable Energy Use in Urban Contexts: Case Studies from India" (by Kumar and Sharma) observes that "grassroots innovations, developed by local people using locally available resources, have shown the potential to provide low-cost technological solutions to the problems faced by underserved consumers in the global south. This paper aims to link the concept of grassroots innovations to energy use in the context of India. The paper takes three case studies from the list of technologies scouted and nurtured by the National Innovation Foundation to critically discuss the potential of grassroots innovations for the dissemination and diffusion of urban sustainable energy uses. The data for this study has been collected from various secondary sources. It discusses the opportunities and challenges in promoting grassroots innovations for sustainable energy uses in urban settings. The paper discusses the opportunities and challenges in promoting grassroots innovations for sustainable energy uses in urban settings".

The paper titled "Research Strength Index to Identify the Performance of Research Universities: The Case of Indonesia" (by Dimiyati, Putera, Laksani, Zulhamdani, Handoyo, Rianto and Handoko) focuses on the identification of "the strengths of the universities based on the research area which are prioritized by the Government of Indonesia in the National Medium Term Development Plan 2015-2019, in the research areas of food and agriculture; energy, new and renewable energy; health and medicine; transportation; telecommunication, information and communication; defense and security technologies and advanced materials. The mapping of the research strength in Indonesian universities is performed by using data of the university research output in the Information System for Research and Community Service, Ministry of Research, Technology and Higher Education and categorized into seven categories, i.e. accredited national journals, international journals indexed by Scopus or others, Intellectual Property ownership, textbooks, prototypes and an appropriate technology. Based on the data obtained from Information System for Research and Community Service, there are 904 universities in Indonesia conducting research activities and generating 14,188 research outputs. This paper analyses three of the nine National Research Priorities, namely, food, energy and health and medicine. The data show that there are 904 universities in Indonesia conducting research activities and producing 14,188 research results. The research strength index based on National Research Priorities shows that three universities have the highest cluster strength index. Gadjah Mada with an index value of 4.95 is the highest index in the food cluster. The energy cluster of the Institut Teknologi Bandung has the highest index value of 0.63. Meanwhile, the Universitas Indonesia reached 2.06 as the highest index value in the health and medicine cluster".

The paper titled “Strategies for Risk Management in Adopting Industry 4.0 Concept in Manufacturing Industries” (by Pasi, Mahajan and Rane) aims to classify and analyse “the risks associated with the Industry 4.0 (I4.0) concept in manufacturing industries and developing strategies for managing risks. In this research paper, risks categories and their sub-components associated with the I4.0 concept are identified by performing a systematic literature survey of peer-reviewed journal articles and taking inputs from industry experts and academicians. Then, the importance of the identified risks and causal relations among risks are analysed by using decision-making trial and evaluation laboratory (DEMATEL) method. Finally, the strategies are developed to mitigate the identified risks. From the literature survey, six risk categories and their 19 sub-components associated with the I4.0 concept are identified. The DEMATEL method resulted in economic risks and technical risks as the top two risk categories in the I4.0 concept. Ecological risks and legal and political risks are relatively low-ranked risk categories. Causal relations and ranking among risk categories and their sub-components are obtained by analysing responses received through questionnaires. There are also other methods available for risk analysis, which are beyond the scope of this study”.

The paper titled “Entrepreneurship in Smart Cities: Elements of Start-Up Ecosystem” (by Mitra, Kumar, Gupta and Bhattacharya) affirms that “the cities are distinctly engine of economic growth, which depends upon speed at which innovations are brought out and trigger entrepreneurship. Smart city initiatives are one of the opportunities to unleash innovation and entrepreneurship in developing countries like India. Entrepreneurial ecosystem research in smart cities is still in its nascent phase. Therefore, the study aims to bring out elements for a start-up ecosystem to promote entrepreneurship in smart cities. Focus group discussion has been applied to gain a variety of insights and opinion from selected participants with diverse expertise. The study proposes a framework for developing a start-up ecosystem in smart city. The findings suggest the technology infrastructure along with the elements of start-up framework as knowledge hub, public policy, entrepreneurship and city economy. The study does not show the impact of smart city strategies over an extended period. A robust entrepreneurial framework usually has an impact on utilization of technologies for economic activities and regional development. The innovators, policymakers, city administrators, entrepreneurs, venture capitalists and various stakeholders in society will get benefit from the outcomes of this study”.

Finally, the last paper of the issue, titled “The Changing Activities of Business Incubation Clients: An Irish Case Study” (by Stephens and Lyons) proposes “a conceptual framework based on a literature review and the findings from an empirical study using data collected from entrepreneurs (business incubatees) over a 15-year period (2004–2019). This paper’s aim is to discuss and propose areas to consider when (re)designing business incubation. The data set is based on the experiences of five different cohorts ($n = 100$), each of which spent 18–24 months participating in a start-up programme sponsored by a business incubation centre (BIC) located in Ireland. To add further depth and nuance to this paper’s findings, an expert focus group was undertaken. The findings highlight the importance of different activities and skills in a BIC over time and recommend the inclusion of a number of activities in a BIC framework. The activities include continued professional development, action research, participation in a simulation, development of emotional intelligence, leadership skills and mind-set and critical reflection. This paper presents an appropriate conceptual framework for the (re) design of business incubation. The framework facilitates an improved understanding of

the evolution of entrepreneurial activities and outcomes associated with engagement with a BIC”.

I hope you have a productive time reading this collection of papers. Thanks for your interest!

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Further reading

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