
Editorial: Digital and emerging technologies, entrepreneurship, and sustainability: enhancing competitiveness in the digital era

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Introduction

The Work Programme 2025–2027 of the Digital Europe Programme (DIGITAL) contributes to the achievement of the goals of digital transformation in the EU. In particular, it aims to “reinforcing the EU’s critical digital capacities by focusing on the areas of AI, cloud and data, cybersecurity, advanced computing, and semiconductors, the deployment of these technologies and their best use for businesses and public administration” (European Commission, 2025a, p. 3). Their applications will be critical in many fields, like healthcare, education, finance and transportation (Ordóñez de Pablos, 2024; Ordóñez de Pablos *et al.*, 2025).

Governments must strategically develop and reinforce critical technologies and infrastructures, accelerating the adoption of advanced technologies in businesses, public administrations and educational institutions (European Commission, 2025a, 2025b; Eulaerts *et al.*, 2024). Many challenges persist and new policies and actions need to be designed. The use of digital and emerging technologies in the nurture of human capital, relational capital and structural capital is critical for companies and governments nowadays. These tools are key for the transition towards a green and sustainable future and more resilient societies (Korayim *et al.*, 2025a,b; Xue and Wang, 2025; Zhang *et al.*, 2012, 2019, 2023; Zhang and Yang, 2025). Furthermore, nations and companies will benefit from the building of intellectual capital reports to measure and report their knowledge-based resources and thus build long-term competitive advantages (Lytras and Ordóñez de Pablos, 2008; Ordóñez de Pablos, 2004; Romano *et al.*, 2025).

Contents of the issue

The fifth issue of *Journal of Science and Technology Policy Management* presents a collection of seven papers addressing some crucial topics for more inclusive and resilient economies and societies: entrepreneurship, global health, information technologies, technological innovation systems (TIS), mobile health applications, supply chains and sustainability.

The issue provides empirical evidence from countries like China, Indonesia and Iran and Jordan, as well as from other countries and regions too.

The first paper titled “A bibliometric analysis and systematic literature review of industry 4.0 implementation in supply chain” (by Jetty and Afshan) presents a study that provides “a bibliometric analysis and systematic literature review of Industry 4.0 (I4.0) research in the supply chain (SC) area and to understand related contemporary research trends. I4.0 has the potential to change the way goods are manufactured, distributed and made available to customers through the digitalisation of SC. Although I4.0 originated in 2011 in Germany, its application in managing the SC has only recently started gaining momentum. Therefore, it is essential to understand the research progress and identify the current trends of I4.0 application in the SC field. A bibliometric analysis was conducted to empirically analyse the



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literature related to I4.0 implementation in the SC. This study retrieved papers from the Scopus database, reviewing 1,155 articles from the period 2016 to 2023 (November) for bibliometric analysis. Bibliometrix, using R software, was used for the bibliometric analysis, and VOSviewer was used for network analysis. The findings provide an overview of the most relevant journals, most productive scholars, top academic institutions and top countries contributing to I4.0 research in the SC context. The results show that the most recent research contributions are related to the topics of SC performance, sustainability, digitalisation and digital transformation. Furthermore, a detailed review of articles published in the three and above-rated journals in the Chartered Association of Business Schools list is presented”.

The second paper titled “Does supply chain analytics adoption impacts sustainable performance? A consideration of technophobia as an influencing factor” (by Lyu, Dastane and He) states that “food SMEs are the backbone of local and world economy. Even while food SMEs are aware of the potential advantages of implementing supply chain analytics (SCA), only a small number of companies use data-based decision-making. This is because of technophobia. In light of this, the purpose of this study is to investigate the factors that have an impact on SCA adoption which in turn influence the sustainable performance of firms. The data were collected from 221 managers working in food-related SMEs in China by using a questionnaire-based survey. The framework of this study was validated using a rigorous statistical procedure using the technique, namely, partial least squares structural equation modelling (SEM). The findings of this study suggest that all modified UTAUT components (i.e. performance expectancy, effort expectancy, social influence, facilitating conditions and technophobia) significantly influence SCA adoption. Moreover, the existing study highlights and confirms the significance of adopting SCA to improve sustainable performance. This research is novel, as it extends and investigates the theoretical framework based on UTAUT theory in SCA context and its impact on sustainable organizational performance. In addition, the factor of technophobia is tested in SCA context. This study has several contributory managerial implications for food SMEs”.

The third paper titled “Analysis and future projections of the electricity demands of the Jordanian household sector using artificial neural networks” (by Gharaibeh and Alkhatatbeh) affirms that “the continuous increase of energy demands is a critical worldwide matter. Jordan’s household sector accounts for 44% of overall electricity usage annually. This study aims to use artificial neural networks (ANNs) to assess and forecast electricity usage and demands in Jordan’s residential sector. Four parameters are evaluated throughout the analysis, namely, population (P), income level (IL), electricity unit price (E\$) and fuel unit price (F\$). Data on electricity usage and independent factors are gathered from government and literature sources from 1985 to 2020. Several networks are analysed and optimized for the ANN in terms of root mean square error, mean absolute percentage error and coefficient of determination (R^2). The predictions of this model are validated and compared with literature-reported models. The results of this investigation showed that the electricity demand of the Jordanian household sector is mainly driven by the population and the fuel price. Finally, time-series analysis approach is incorporated to forecast the electricity demands in Jordan’s residential sector for the next decade. The paper provides useful recommendations and suggestions for the decision-makers in the country for dynamic planning for future resource policies in the household sector”.

The fourth paper titled “The UTAUT approach to Indonesia’s behavioral intention to use mobile health apps” (by Candra, Frederica, Putri and Loang) studies “the effects of performance expectancy, effort expectancy, social influence and facilitating conditions on the behavioural intention of using mobile health applications, especially during and after the COVID-19 pandemic. A survey was developed using an online survey platform and

distributed to Indonesian consumers for three weeks, and 149 usable responses were obtained. The principal component analysis, linear regression and analysis of variance tests were performed to test the validity and reliability of the measurement model and the hypothesized relationships among constructs. Surprisingly, unlike previous studies on IT adoption, the findings show that social influence has no significant impact on behavioural intention. Facilitating conditions have a very weak to almost no significant impact on behavioural intention to use mobile health applications. This research is conducted during the COVID-19 pandemic where using mobile health apps is a must. In the future this research can be expanded as comparison study after the COVID-19 pandemic stated. The result implies that digital technologies adoption intention is strongly affected by performance expectancy and effort expectancy, with performance expectancy as the most significant predictor. Nonetheless, the interaction of performance expectancy, effort expectancy, social influence and facilitating conditions influences behavioural intention significantly. Therefore, social influence and facilitating conditions are still important even with very insignificant effects”.

The fifth paper titled “An application of the extended UTAUT model to understand the adoption of cashless transactions: Evidence from developing country” (by Sakib, Akter, Sahabuddin and Fahlevi) presents the results of a study that identifies “the factors influencing cashless transactions towards digital payment systems using the extended UTAUT model in developing countries. This model was extended with perceived usefulness, perceived ease of use, facilitating conditions, perceived security/trust and social influence for assessing consumer behaviour towards cashless transactions. Using SEM, this study conducted a cross-sectional survey to collect data, providing a snapshot of the relationship between exogenous and endogenous variables. The results of the study indicate that perceived usefulness, facilitating conditions, perceived trust/security and social influence have a significant influence on consumer intentions towards cashless transactions. Oppositely, leaving the perceived ease of use has no significant influence on consumer intentions towards the usage of cashless transactions. The contribution of this study is to extend the UTAUT model for adopting cashless transactions in developing countries that will help government agencies, service providers and financial institutions design effective strategies in the future”.

The sixth paper titled “Entrepreneurship development in photovoltaic technological innovation system: A case study in Iran” (by Rad, Seifi and Fadai) proposes “a causal feedback structure that explains the dynamics of entrepreneurship development in Iran’s photovoltaic (PV) TIS to design effective policy interventions for fostering PV innovation. This study adopts the system dynamics approach to develop the causal structure model. The methodology follows a systematic method to elicit the causal structure from qualitative data gathered by interviewing several stakeholders with extensive knowledge about different aspects of Iran’s PV TIS. Lack of technological knowledge and financial resources within Iranian PV panel-producing firms are the main barriers to entrepreneurship development in Iran’s PV TIS. This study proposes two policy enforcement mechanisms to tackle these problems. The proposed feedback mechanisms contribute to the domestic PV market size and knowledge transfer from public research organizations to the PV industry. The proposed policy mechanisms aid Iranian policymakers in designing effective policy interventions stimulating innovation in Iran’s PV industry. The main contributions of this study include conceptualizing the causal structure capturing entrepreneurship dynamics in emerging PV TIS and proposing policy mechanisms fostering entrepreneurship and innovation in PV sectors”.

Finally, the last paper of the issue, titled “Globalisation, technology and global health” (by Shobande, Ogbeifun and Asongu), analyses “whether globalization and technology are harmful to health using a global panel data set of 52 countries over the period 1990–2019. The study focused on four continents: Africa, the Americas, Asia/Oceania and Europe. The authors used four advanced econometric methodologies, which include the standard panel fixed effect (FE), Arellano–Bover/Blundell–Bond dynamic panel, Hausman–Taylor specification and two-stage least squares (FE-2SLS)/Lewbel-2SLS approaches. The empirical evidence highlights the significance of globalization and technology in promoting global health. The findings suggest that globalization has various impacts on global health indicators and that technology is useful in tracking, monitoring and promoting global health. In addition, the empirical evidence indicates that a truly health-centred process of globalization and technological innovation can only be realized by ensuring that the interests of countries and vulnerable populations to health risks are adequately considered in international decision-making regarding global economic integration. The authors suggest that achieving the aspiration of global health will entail the use of globalization and information technology to extend human activities and provide equal access to global health”.

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