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# Editorial: Innovation, knowledge transfer and digital transformation: Boosting the twin transition

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## Introduction

With a budget of €95.5 billions, Horizon Europe (2021–2027) is the EU’s key founding program for research and innovation. Among other goals, it aims to tackle main global challenges, increase competitiveness, strengthen collaboration in the field of research and innovation, promote open science policy and spread excellence. With three main pillars (Pillar I: Excellent Science, Pillar II: Global Challenges and European Industrial Competitiveness and Pillar III: Innovative Europe), 6 clusters (health; culture, creativity and inclusive society; civil security for society; digital, industry and space; climate, energy and mobility; food, bioeconomy, natural resources, agriculture and environment) and 5 five mission areas (adaptation to climate change, including societal transformation; cancer; healthy oceans, seas, coastal and inland waters; climate-neutral and smart cities; and soil health and food), Horizon Europe aims to have positive impact on economy, society and science and technology and create more resilient and inclusive societies. This funding program tackles key priorities like the achievement of UN’s SDGs and the green and digital transition too ([European Commission, 2024a](#), [2024b](#), [2024c](#), [2024d](#)).

To build and strengthen scientific and technological excellence, administrations, companies and universities need to invest in smart research infrastructures and human capital, build and foster strategic scientific networks, nurture synergies and increase dissemination and exploitation of scientific outputs. The components of intellectual capital (human capital, relational capital and structural capital) are crucial for the building of long-term competitiveness advantages for companies, nations and regions in the digital age ([Thi Mai Anh et al., 2019](#); [Duan et al., 2023](#); [Lytras and Ordóñez de Pablos, 2008](#); [Nahapiet and Ghoshal, 1998](#); [Ordóñez de Pablos, 2004a](#), [2004b](#), [2005](#); [Paolone et al., 2024](#)). Intellectual capital and new digital technologies will be the key drivers of the green and digital transition ([Álvarez Rodríguez et al., 2014](#); [Anshari and Hamdan, 2023](#); [Anshari and Almunawar, 2021](#); [Zhang et al., 2012](#), [2014](#), [2015](#); [Zhao et al., 2014](#)).

It is important to explore how we can address some global challenges through research and innovation and grasp the potential of advanced technologies and innovative solutions to boost competitiveness, create new jobs and build more inclusive economies and societies. Fostering active dialogue among relevant stakeholders and strengthening international cooperation can have a strong impact on science, economy and society. It is crucial to support the building of better future for citizens in the green and digital transition.

## Contents of the issue

The fifth issue (2024) of *Journal of Science and Technology Policy Management* presents a collection of 10 papers that address key issues for businesses and governments, like entrepreneurship, educational technology, green economy, innovation policymaking, smart retailing technology, smart urban governance, software governance, etc. The studies cover countries like Australia, Bangladesh, Philippines and Saudi Arabia, among others.

The paper titled “Identifying and prioritizing the factors affecting the knowledge flow in high-tech industries” (by Zahedi, Naghdi Khanachah and Papoli) studies “the factors



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affecting the knowledge flow in high-tech industries. This research is applied in terms of purpose and descriptive-survey in terms of data collection method. This research has been done in a qualitative–quantitative method. In the qualitative part, due to the nature of the data in this study, expert interviews have been used. The sample studied in this research includes 35 managers and expert professors with experience in the field of knowledge management working in universities and high-tech industries who have been selected by the method of snowball. In the quantitative part, the questionnaire tool and DANP multivariate decision-making method have been used. In this study, a multicriteria decision-making technique using a combination of DEMATEL and ANP (DANP) was used to identify and prioritize the factors affecting the knowledge flow in high-tech industries. In this study, the factors affecting the knowledge flow, including 8 main factors and 31 subfactors, were selected. Human resources, organizational structure, organizational culture, knowledge communication, knowledge management tools, knowledge characteristics, laws, policies and regulations and financial resources were effective in improving knowledge flow, respectively”.

The paper titled “Co-working with robotic and automation technologies: technology anxiety of frontline workers in organisations” (by Bhattacharyya) observes that “the advent of robotics and automation technologies was augmenting firm initiatives to attain competitive advantage. From a resource-based view perspective, human-led capabilities were important to operate with technology resource base of an organisation. This was evident for both manufacturing as well as services firms. However, employees as an individual confronted technology anxiety (TA) when they were working with new technologies like robotics and automation technologies. Thus, the purpose of this paper was to examine the factors causing TA. Given the novelty of this research study context a qualitative exploratory method was designed. For this research study, the data collected was through in-depth interviews conducted through open-ended semi-structured questionnaire. The data was collected from 62 frontline employees who were working with robotics and automation-based technologies in manufacturing firms. The authors applied thematic content analysis on collected data for analysis. Technology anxieties ranged from fear of complete inability to learn new technologies, failure to learn new technologies properly, incapability to implement the learned skills and job loss to younger technology savvy employees. Finally, there was anxiety over job loss as automation and robotic technologies over the years was expected to erode the employment of human workforce altogether”.

The paper titled “Entrepreneurial fear of failure and well-being of incubated and non-incubated startups during crises” (by Games, Sari, Khairiyah and Shaikh) states that “the phenomenon of fear and anxiety can cause a decline in entrepreneurship. However, the validity of this assertion remains debatable, as opportunity-driven entrepreneurs may benefit from elevated uncertainty during a crisis. This study aims to examine entrepreneurial fear of failure and the well-being of opportunity-driven entrepreneurs in their startup stage during the COVID-19 outbreak. Opportunity-driven startups are oriented toward business growth but may need assistance from incubators. The study used a qualitative method, where ten participants from incubated and non-incubated startups in Indonesia were interviewed. Thematic analysis was conducted using NVivo 12 software to analyze the data. This study shows that the interviewees subjected to incubation tended to derive motivation from fear of failure. In contrast, nonincubated interviewees showed a propensity to experience fear of failure as repression and inhibition. Furthermore, the study highlights the correlation between entrepreneurial fear of failure and eudaimonic well-being. This study contributes to the literature with empirical results on fear of failure capturing the essence of entrepreneurial behavior during crises/pandemic in the context of business startups. It provides valuable

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insights into the policy implications for promoting innovation among startups in specific contexts”.

The paper titled “Agility adaptability and alignment in start-ups” (by Sreenivasan and Suresh) proposes that “when coping with uncertainties, three characteristics distinguish firms: agility, adaptability and alignment (triple-A). Based on significant field research, the triple-A highlights the significance of coordinating agility, adaptability and alignment. Start-ups are facing a lot of challenges in this turbulent environment. However, this sector is undergoing a major transformation. Agility, adaptability and alignment concepts have had a major influence on the supply chain, but their implementation in start-ups has been less visible. This paper aims to identify, analyze and categorize the enablers for agility, adaptability and alignment in start-ups using the total interpretive structural modeling (TISM) approach. In addition to the scheduled interview, a closed-ended questionnaire was used to collect data. To identify how the factors interact, the TISM technique is used, and the Matriced’Impacts Croises-Multiplication Applique’ and Classment method is used to rank and categorize the agility, adaptability and alignment enablers. This study identified ten agility, adaptability and alignment factors for start-ups. It has been found that the key importance should be given to management involvement, conflict management, collaboration and information integration”.

The paper titled “Research trends on smart urban governance in Asia: a bibliometric analysis” (Sulistyaningsih, Loilatu and Roziqin) affirms that “smart urban governance research has progressed over the past few decades following changes and increasingly complicated city management difficulties. Therefore, the purpose of this paper is to use a scoping review and bibliometric analysis to examine all the publications on smart urban governance, especially in Asia. A total of 1,900 smart urban governance articles indexed in the Scopus database was analyzed through scoping review and bibliometric analysis. The articles were analyzed by the number of publications per year, contributing countries, subject areas, authors, cited documents, related issues and cited papers. Furthermore, VOSviewer was used to provide a visual analysis of the co-occurrence of keywords. This study indicated that urban smart governance publications continue to increase yearly. Even though the area of analysis is Asia, the USA and China seriously contributed to the analysis. Therefore, the topic of smart urban governance has become a discussion for scholars in the international. From the Scopus database analysis, the top three subject areas are social sciences (28%), environmental science (20%) and medicine (16%). The synthesis using bibliometric analysis by VOSviewer obtained 13 clusters”.

The paper titled “Agile software development and software practitioners’ productivity amidst the COVID-19 pandemic: a narrative review” (by Anthony Jnr) observes that “as the novel coronavirus 2019 (COVID-19) impacts the world, software practitioners are collaboratively working remotely from home. The pandemic has disrupted software practitioners’ productivity forcing changes to agile methodology adopted by software practitioners in software organizations. Therefore, this study aims to provide implication on the issues and recommendations for improving software practitioners’ productivity and also examine the impact of the COVID-19 pandemic on agile software development. This paper adopts a narrative literature review to provide early assessment based on secondary data from the literature and available document reports from studies published from 2019 to 2022 to explore software practitioners’ productivity and agile software development during the working from home directive amidst the COVID-19 pandemic. A total of 60 sources which met the inclusion criteria were used to provide preliminary evidence grounded on secondary data from the literature. Descriptive analysis was used to provide qualitative findings from the literature. Findings from this study present the significance of working from home

directive on agile software development and software practitioners' productivity. More importantly, findings from the secondary data shed light on software practitioners' productivity adopting agile software development amidst the COVID-19 pandemic. Additionally, the findings present virtual collaborative platforms used by software practitioners, technical and social barriers of agile software development during the pandemic and recommendations for remote agile software development".

The paper titled "Factors affecting consumer attitude and loyalty: evidence from a Philippine chain of fast-food restaurants' smart retailing technology" (by Lacap, Plaza, Caballero and dela Cruz) analyses "the influence of perceived value, enjoyment and novelty of fast-food chains' smart retailing technology (SRT) on Filipino consumers' attitude and loyalty. Purposive sampling was used in identifying the respondents ( $n = 343$ ). The participants were composed of consumers of the leading fast-food chains in the Philippines, where SRT using self-service ordering kiosks is being implemented. The hypotheses were explored using partial least squares path modeling, and predictive-causal was the study's research design. The results reveal that, among the factors, perceived enjoyment substantially contributes to the formation of favorable consumers' attitude toward SRT. Moreover, perceived value was found to have a moderate effect on attitude while perceived novelty showed small impact. In terms of consumers' attitude and loyalty, the two variables were found to have large positive and significant relationship. The moderation analysis shows that consumers' attitude toward SRT has medium indirect effect on the relationship between perceived enjoyment and loyalty, while there is small indirect influence on the links between perceived value and loyalty, and between perceived novelty and loyalty. As more and more fast-food establishments are adopting the use of SRT via self-ordering kiosks, the present study is the only study in the Philippine context that explores how perceived value, enjoyment and novelty affect consumers' attitude and loyalty".

The paper titled "Factors influencing customers' green purchasing intention: evidence from developing country" (by Chanda, Isa and Ahmed) explores "the contribution of environmental knowledge and environmental sensitivity on the green purchasing intention of Bangladeshi consumers by using an extended theory of planned behavior. Quantitative research method was used to collect 369 data by using a convenient sampling method. Data was analyzed using partial least square while a structural equation model was applied to measure causal relations among the variables. The findings of this study demonstrate that subjective norms, attitude toward green products and perceived behavioral control have a positive and significant relationship with green purchasing intention. Moreover, environmental knowledge has also a positive and significant relationship with environmental sensitivity. There is a positive and significant association between environmental sensitivity and attitude toward green products, while the relationship between environmental knowledge and attitude toward green products was found insignificant. Quality of green products does not moderate the relationship between attitude toward green products and green purchasing intention. The results further indicate that environmental sensitivity mediates the relationship between environmental knowledge and attitude toward green products. Attitude toward green products also mediates the relationship between environmental sensitivity and green purchasing intention. At the same time, environmental sensitivity and attitude toward green products jointly mediate the relationship between environmental knowledge and green purchasing intention. However, attitude toward green products does not mediate the relationship between environmental knowledge and green purchasing intention".

The paper titled "A case study in innovation policymaking: standard contracts as a tool to improve university–industry collaboration" (by George and Tarr) discusses how to "increase university–industry collaboration and research commercialisation, the Australian

government recently introduced the Intellectual Property (IP) Framework, a set of online standard contracts. This follows a predecessor standard contract initiative, the IP Toolkit, which has not previously been evaluated. This paper aims to examine standard contracting in the innovation sector, tracing the policymaking behind the IP Toolkit using the lens of Macneil's relational contract theory, to assess prospects of success for the new IP Framework, and similar initiatives in other jurisdictions. This is a disciplined-figurative case study, drawing on qualitative secondary data analysis and applying Macneil's relational contracting theory to guide case construction and generate hypotheses around likely success of standard contracting initiatives (stakeholder sentiment, stakeholder adoption). Within-case analysis process-traces development of the IP Toolkit, to discover what the policymakers wanted, knew and computed – and to detail observable implications Macneil's theory predicts. Its themes are triangulated with multiple sources. The case study, via Macneil's theory, confirms the first hypothesis (resistant stakeholder sentiment) and partly validates the second hypothesis (low levels of adoption), demonstrating limited suitability of standard contracting in the dynamic and highly uncertain space of university–industry collaboration”.

Finally, the paper titled “Factors impacting Saudi students' intention to adopt learning management systems using the TPB and UTAUT integrated model” (by Al-Mamary, Siddiqui, Abdalraheem, Jazim, Abdulrab, Rashed, Alquhaif and Aliyu Alhaji) studies “the factors that influence the willingness of Saudi Arabian students from four universities in Saudi Arabia, to adopt learning management systems (LMSs). This will be accomplished by using two popular technology acceptance models unified theory of acceptance and use of technology (UTAUT) and theory of planned behavior (TPB). In total, 445 undergraduates from four Saudi educational institutions participate in filling out the study questionnaire. To investigate the correlations between the variables, the study used structural equation modeling for data analysis. The results of the study show that effort expectancy (EE), subjective norm (SN), attitude toward behavior (ATB) and perceived behavioral control (PBC) are found to be substantially connected with their intentions to use (ITU) LMSs. The findings also show that there is a strong relationship between students' intentions and their actual use of LMSs. Like many studies, this research has some limitations. The primary limitation is that the findings of the study cannot be extrapolated to other settings since the report's analysis and investigation were limited to four Saudi universities. Therefore, to generalize the study's findings, similar research needs to be conducted in other Gulf and similar cultural universities”.

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