

Editorial: Digital and emerging technologies for competitiveness and a more resilient future

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Introduction

The COVID-19 pandemic highlighted the vulnerabilities of governments and businesses in dealing with disruptive situations. They are now more aware of the importance of shaping digital policies and investing in advanced digital technologies that help build more resilient economies and societies, enabling them to successfully navigate the digital and green transformation to remain competitive (Balakrishnan and Das, 2020; He and Chen, 2024; Konopik *et al.*, 2022; Paul *et al.*, 2024; Zhang *et al.*, 2016, 2019, 2023).

In Europe, the European Commission develops a funding program called Horizon Europe (2021–2027). In particular, the goal of the Horizon Europe Cluster 4 – Digital is to “deliver on a green and digital transformation, increasing digital capacities and developing human-centered and ethical digital technologies” (European Commission, 2024a, 2024b). Destination 4 of this Cluster focuses on “Digital and emerging technologies for competitiveness and fit for the green deal, supporting the calls on Digital and emerging topics” (European Commission, 2024b). On the other hand, an EU funding program called the Digital Europe Programme (DIGITAL) aims to bring “digital technology to businesses, citizens and public administrations” and provides funding in critical capacity areas such as artificial intelligence and advanced digital skills, promoting the use of digital technologies (European Commission, 2024c).

A more critical dialogue needs to be encouraged among academia, researchers, business developers, industry professionals and policymakers to shape the future of key enabling technologies for main stakeholders (companies, governments and citizens).

Contents of the special issue

The second issue of *Journal of Science and Technology Policy Management* presents a collection of seven papers addressing key topics for competitiveness of companies and nations such as artificial intelligence, cloud-based information systems, disruption, healthcare, national digital transformation, e-pharmacy, Industry 4.0, mobile payment and workforce, among others. They present studies focused on India, Korea and Qatar as well as on the Dutch East Indies in the 18th and 19th centuries.

The paper titled “Factors affecting the adoption of mobile payment services during the COVID-19 pandemic: an application of extended UTAUT2 model” (by Nandru, Chendragiri and Senthilkumar) explores “the antecedents of behavioral intention and actual usage of mobile payment (m-payment) services during the COVID-19 pandemic among Indian consumers. The proposed research model of this study is based on the extended framework of the unified theory of acceptance and use of technology (UTAUT2) by using two additional variables, namely, perceived security (PS) and perceived trust (PT). In total, 436 sample respondents are chosen from Indian consumers with experience using m-payment services through the online survey method. The data analysis and proposed hypothetical relationships were tested using confirmatory factor analysis and structural equation modeling techniques. The results confirm that performance expectancy, effort expectancy, facilitating conditions, PS, PT, habit and price value are antecedents of consumer intention toward adopting



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m-payment services. Furthermore, behavioral intention significantly influences the actual usage of m-payment services during the COVID-19 pandemic”.

The paper titled “An empirical study on the intention to switch to cloud-based hospital information systems in Korea: a push–pull–mooring model perspective” (by Choi and Yoon) studies “factors that affect the switching of information systems in existing on-premise environments into cloud-based HISs. A research model was developed using the push–pull–mooring model based on migration theory. The research model was analyzed using confirmatory factor analysis and path analysis using partial least squares structural equation modeling. The results of this study showed that low compatibility, perceived value, low cost and inertia influenced the intention to switch to cloud-based HISs; low flexibility and low compatibility influenced dissatisfaction; and low cost, ease of maintenance and ease of managing indicators influenced perceived value. This study is expected to be used as the basis for developing a research model in subsequent studies to analyze the transition to new innovative technologies. Also, in practice, it is expected to contribute to the activation of cloud computing environments in hospitals.”

The paper “Developing and validating a cashless transaction adoption model (CTAM)” (by Raj, Amilan and Aparna) proposes a “cashless transaction adoption model (CTAM) that integrates all essential elements to investigate the adoption of ‘cashless transactions (CLT)’.” The researchers surveyed 375 respondents from each of Bengaluru’s eight zones in India. In addition, using the respondents’ replies, a “partial least squares-based structural equation modeling (PLS-SEM)” technique was used to analyze the relationship between the components. The results of CTAM reveal that 12 independent variables explain 84.7% of the variation in behavioral intention to adopt CLT. In addition, performance expectancy is the strongest predictor of users’ intentions to embrace CLT, followed by perceptions of the economy’s security and economic offence reduction, social influence, perceived trustworthiness, the expected level of effort and innovativeness. Furthermore, in terms of impediments, perceived risk and cost are the negative influence factors that affect behavioral intention to adopt CLT.”

The paper titled “Understanding consumers’ adoption of e-pharmacy in Qatar: applying the unified theory of acceptance and use of technology the consequences of artificial intelligence: an investigation into the impact of AI on job displacement in accounting” (by Al Halbusi, Al-Sulaiti, Abdelfattah, Ahmad, and Hassan) studies “the factors influencing the adoption of online pharmacies in Qatar using the unified theory of acceptance and use of technology-2 (UTAUT-2) framework. Specifically, this study examines the impact of performance expectancy, effort expectancy, social influence, hedonic motivation, habit, technology trust, perceived risk and users’ level of awareness of behavioral intention, which in turn affects the adoption of online pharmacies. Furthermore, this study explores the moderating role of word-of-mouth (WOM) recommendations on the relationship between behavioral intention and online pharmacy adaptation. This study adopted a descriptive, quantitative approach to investigate the UTAUT-2 model in the context of consumers’ adoption of e-pharmacy in Qatar. Through convenience sampling, 455 responses were collected from regular customers accessing online pharmacy services. The data were analyzed using Smart-PLS 3.2 software to examine the hypothesized relationships. The results showed that WOM recommendations significantly enhanced the relationship between behavioral intention and adopting online pharmacies in Qatar. This study identified the factors that may hinder or enable the adoption of online pharmacies, including performance expectancy, effort expectancy, social influence, hedonic motivation, habit, technology trust, perceived risk and users’ level of awareness.”

The paper titled “The consequences of artificial intelligence: an investigation into the impact of AI on job displacement in accounting” (by Rawashdeh) states that “the advent of artificial intelligence (AI) in the accounting landscape marks a significant shift, promising

gains in efficiency and accuracy but also eliciting concerns about job displacement (JD) and broader socio-economic implications. This study aims to provide an in-depth understanding of how AI's integration in accounting contributes to JD, reshapes decision-making processes and reverberates across economic and social dimensions. It also offers evidence-based policy recommendations to mitigate adverse outcomes. Leveraging a cross-sectional survey disseminated through Facebook, this research used snowball sampling to target a diverse cohort of accounting professionals. The collected data was subjected to meticulous analysis through descriptive and regression models, facilitated by SmartPLS 4 software. The analysis revealed a significant correlation between AI's increasing role in accounting and a heightened rate of JD. This study found that this displacement is not isolated; it has tangible repercussions on decision-making paradigms, economic well-being, professional work dynamics and social structures. These insights corroborate existing frameworks, including, but not limited to, theories of technological unemployment and behavioral adjustments."

The paper titled "STI historiography and the institutionalization in Dutch East Indies colonial period (1778–1941)" (by Putera, Widianingsih, Suryanto, Ningrum and Rianto) analyzes "the emergence of science, technology and innovation (STI) institutions in Indonesia during the Dutch East Indies colonial period in 1778–1941. The emergence of these institutions reflected the dynamics of science and technology development and innovation in that era. This paper navigates a historiographical approach. Data collection techniques use "secondary data research," with archival investigation published by official sources in the Dutch East Indies in the 18th and 19th centuries as well as other reference sources, and data analysis techniques use "supplementary analysis." This research indicates that the STI institution during the Dutch East Indies colonial period was formed to maximize the natural resources of the Dutch East Indies. The STI institution at that time was constructed as part of *Buitenzorg's* *Plantentuin* the lands, plantations, solutions for health, astronomy, geology, forestry and culture."

Finally, the last paper of this issue, titled "Exploring national digital transformation and Industry 4.0 policies through text mining: a comparative analysis including the Turkish case" (by Yildirim, Gultekin, Hürses and Akman), uses "text mining methods to explore the similarities and differences between countries' national digital transformation (DT) and Industry 4.0 (I4.0) policies. The study examines the applicability of text mining as an alternative for comprehensive clustering of national I4.0 and DT strategies, encouraging policy researchers toward data science that can offer rapid policy analysis and benchmarking. With an exploratory research approach, topic modeling, principal component analysis and unsupervised machine learning algorithms (k-means and hierarchical clustering) are used for clustering national I4.0 and DT strategies. This paper uses a corpus of policy documents and related scientific publications from several countries and integrate their science and technology performance. The paper also presents the positioning of Türkiye's I4.0 and DT national policy as a case from a developing country context. Text mining provides meaningful clustering results on similarities and differences between countries regarding their national I4.0 and DT policies, aligned with their geographic, economic and political circumstances. Findings also shed light on the DT strategic landscape and the key themes spanning various policy dimensions. Drawing from the Turkish case, political options are discussed in the context of developing (follower) countries' I4.0 and DT."

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