Editorial: Artificial Intelligence and Innovation Management

Stoyan Tanev, Chief Editor and Gregory Sandstrom, Managing Editor

Welcome to the December issue of the *Technology Innovation Management Review*. This is the second edition, after the one published in October 2019, which includes articles that were initially presented at a conference of the *International Society for Professional Innovation Management* (ISPIM), which took place June 16-19, 2019, in Florence, Italy. The ISPIM conference in Florence was dedicated to Leonardo da Vinci: "Celebrating Innovation: 500 Years since Da Vinci". The focus of the present edition is on the relationship between Artificial Intelligence (AI) and Innovation Management (IM). The edition was inspired by Helena Blackbright and Stoyan Tanev, who managed the activities of the ISPIM special interest group (SIG) on AI & IM at the Florence conference, and chaired the conference session for scholars and practitioners presenting articles focusing on the same theme. It is published with the support and cooperation of the ISPIM Board.

The conference provided a forum for the presentation of articles focused on diverse themes. The articles included in this special issue were presented at the conference session focusing on AI & IM. The authors were invited to submit revised versions of their articles to be considered for publication following a rigorous double-blind peer review process. The relevance and timeliness of the topic are undisputable. In many cases, the adoption of AI by companies changes the ways they do business, the ways they innovate, and the ways they create value. This fact implies a responsibility for innovation scholars and professional innovation managers to examine these changes and generate insights that could help in dealing with the challenges of emerging new practices.

The first article by **Erich Prem**, "Artificial Intelligence for Innovation in Austria," provides empirical evidence for specific innovation management needs faced by companies using AI. The long-term objective of the study is to help in designing a national AI strategy, along with specific support measures for AI-based innovation. The data collected from expert interviews regarding AI-based innovation identifies key challenges for innovation management. Some of these challenges are specific to AI-based solutions. The interviews suggest that significant emphasis needs to be put on human factors, including training and communication involving AI techniques. The author points out that successful AI innovation management needs to address the availability of high volumes of good-quality data, especially in SMEs. The study aims to inform the development of an Austrian national AI strategy, but the data would be also useful for innovation managers seeking to understand both the opportunities and challenges of companies aiming to deploy innovative AI solutions. The results suggest potential new focus topics of further research such as, for example, AI-related business model development, proper management of expectations in AI-related innovation processes, and further insights into the constraints emerging from the historic aspects of data, along with required metadata expertise.

The next paper is by **Sergey Yablonsky**: "Multidimensional Data-Driven Artificial Intelligence Innovation." Yablonsky points out that it is a critical time for the adoption of AI, since the field has already become viable for commercial markets. The research study emphasizes opportunities for cross-fertilization between AI, big data, and advanced analytics with other related disciplines. The article suggests a multidimensional big data-driven AI innovation taxonomy framework that focuses on data-driven human-machine relationships and applying AI at different levels of data-driven automation maturity. It discusses emerging issues that are becoming important and will require action in the nearest future. The evaluation logic results in the development of a tool that managers, company owners, and investors can use in managing their AI enterprise innovation process. It will allow them to interact with all relevant stakeholders to discuss new ideas, receive feedback, and try new solutions; it will help in evaluating the effectiveness of AI innovation and decision-making regarding the design of big data-driven AI products and services.

The third article by **Wolfgang Groher, Friedrich-Wilhelm Rademacher & André Csillaghy**, "Leveraging AI-based Decision Support for Opportunity Analysis," proposes a front-end innovation risk management model. The research is methodologically grounded in design science and applies a novel AI-based approach, which draws on natural language processing and information retrieval. It provides decision support that includes market-, technology-, and firm-related criteria. The model allows for the replacement of some intuitive decision-making with more fact-based considerations. The early testing results of the conceptual model have

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demonstrated increased quality and speed of decision-making. Applied in business environments, the approach can contribute to remediate fuzziness in early front-end activities, thus helping managers to enhance the viability of their innovation outcomes.

Navneet Bhalla's article "The 3S Process: A Framework for Teaching AI Strategy in Business" presents a new framework called the 3S Process. It is a method for academic educators and leaders involving how to adopt AI as part of their organizational change strategies. The 3S Process consists of three stages (Story, Strategy, and Solution), which are described in detail in the article. The Story stage was inspired by the Harvard Case Method to provide context for a problem. The strategy stage uses the Design Thinking approach to produce candidate solutions. The solution stage is where learners advocate for their conceptual AI solution in the context of a case study. The author emphasizes that the complexity of AI systems requires students to consider feedback loops and the potential for unintended biases to enter a deployed solution. The suggested 3S Process suggests further empirical studies, including assessment and evaluation in classroom settings.

The article by **Laura Kemppainen, Minna Pikkarainen, Pia Hurmelinna-Laukkanen & Jarmo Reponen**, "Connected Health Innovation: Data Access Challenges in the Interface of AI Companies and Hospitals," explores data access innovation challenges and potential solutions in the realm of connected health environments. The study builds on insights from data management and innovation network orchestration studies and adopts a new approach to some issues that have emerged in these research streams. The empirical context refers to the development of an AI-driven surgery journey solution in collaboration with hospitals and companies. The authors point out that data access challenges and solutions can be categorised according to specific emergence levels: individual, organisational, or institutional. According to them, organisational level solutions seem to hold wide-ranging potential for addressing many of the current data access challenges. The greatest challenges among healthcare providers and health technology companies relate to the multiple uncertainties and various interpretations concerning regulation, data strategy, and guidelines. The authors indicate that creating guidelines for data use and access in a hospital can be a first step to building further connected health innovations in collaboration with AI companies. Companies, on the other hand, need to engage in gaining in-depth knowledge and understanding of the processes and standards in the healthcare sector.

The TIM Review currently has a **Call for Papers** on the website for a May special edition on "The sharing economy as a path to government innovation." For future issues, we invite general submissions of articles on technology entrepreneurship, innovation management, and other topics relevant to launching and scaling technology companies, and solving practical problems in emerging domains. Please contact us with potential article ideas and submissions, or proposals for future special issues.

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