

Preface

In this rapidly evolving era marked by globalization and unprecedented technological advancements, the intersection of artificial intelligence (AI) and sustainable accounting emerges as a critical focal point for addressing the pressing challenges facing our planet and society. As editors of *Artificial Intelligence Approaches to Sustainable Accounting*, we are honored to present this comprehensive reference book, which reflects the collective efforts of esteemed scholars and practitioners dedicated to advancing sustainability through innovative AI-driven approaches.

Our aim in compiling this volume is to catalyze international discourse and collaboration surrounding the transition to a New Era characterized by sustainable development. We recognize the imperative for a transdisciplinary approach that transcends traditional boundaries, uniting diverse fields in pursuit of shared objectives outlined in the Sustainable Development Goals (SDGs). At the heart of this endeavor lies the pivotal role of accounting and accountability in navigating the complexities of sustainability challenges.

In the context of Era 5.0, where the synergies between AI, industry, education, and society are reshaping the landscape, it becomes increasingly evident that conventional paradigms must adapt to meet the demands of a rapidly changing world. By harnessing the power of AI technologies, organizations can enhance their capacity to promote sustainability across all facets of operation, from governance and decision-making to reporting and risk management.

The chapters contained within this volume offer a nuanced exploration of key themes, ranging from the integration of AI in sustainable accounting practices to the implications for organizational governance and the broader socio-economic landscape. Through rigorous analysis and empirical evidence, contributors shed light on the effectiveness and efficiency of sustainability initiatives, while also critically examining the theoretical underpinnings that inform our understanding of this complex domain.

In Chapter 1, the authors conduct a comprehensive bibliometric analysis to explore the dynamic intersection of accounting, sustainability, and Artificial Intelligence (AI). By tracing the temporal evolution of publications in the field of Business, Management & Accounting, trends, emerging themes, and knowledge gaps are identified, offering a panoramic view of the current research landscape. The findings reveal a growing convergence between accounting, sustainability, and AI, underscoring the increasing interest in these domains as a cohesive entity. This chapter provides valuable insights for academics, guiding future research directions, while also offering practical implications for decision-makers and policy formulation.

Chapter 2 delves into the complex terrain of criminal law and the utilization of AI, particularly in criminal investigation. By examining the potential of AI in analyzing and detecting profiles in organized crime, as well as its role in preventing and investigating terrorist events, the chapter navigates through the intricacies of AI application within the criminal justice system. While acknowledging the challenges and ethical considerations, the authors offer critical insights into the opportunities and possibilities presented by AI in enhancing law enforcement efforts.

Preface

In Chapter 3, the focus shifts to the imperative of developing legal frameworks commensurate with the rapid advancements in artificial intelligence. The authors highlight the pressing need for establishing robust regulations governing the use of AI technologies, particularly within the realm of criminal law. Through a meticulous examination of AI applications, proposed rules, and appropriate penalties, the chapter advocates for international collaboration in crafting a cohesive global framework. By addressing the gaps in current legislation, this chapter lays the groundwork for fostering responsible AI deployment while mitigating potential risks.

Chapter 4 explores the transformative potential of artificial intelligence in agriculture, particularly in disease detection and management. By harnessing AI technologies, farmers can effectively identify and address plant diseases, thereby enhancing agricultural productivity and quality. The chapter provides a comprehensive overview of AI applications in agriculture, highlighting various detection methods and technological advancements. By leveraging AI's capacity for problem-solving and decision-making, this chapter underscores its pivotal role in promoting sustainable agricultural practices.

In Chapter 5, the authors delve into the symbiotic relationship between artificial intelligence and accounting. By examining AI's capabilities in information management, process optimization, and fraud detection, the chapter illuminates the transformative impact of AI on accounting practices. Through a systematic review of bibliometric literature, the authors elucidate AI's role in enhancing accounting efficiency and decision-making processes, while also emphasizing the continued importance of human expertise in interpreting AI-generated insights.

Chapter 6 delves into the implications of cryptocurrencies and blockchain technology on financial accounting and auditing practices. Through interviews and analysis, the authors explore the classification of cryptocurrencies, their impact on auditing processes, and the potential for real-time auditing. By shedding light on these emerging technologies' influence on financial reporting and audit risk, the chapter offers valuable insights into navigating the evolving landscape of digital assets.

In Chapter 7, the focus shifts to machine learning's transformative effects on financial and management accounting domains. Through a comprehensive analysis, the authors delineate machine learning's historical evolution, its applications in automating processes, and its ethical considerations. By synthesizing existing literature, the chapter underscores machine learning's potential to revolutionize accounting practices while advocating for ethical management to harness its benefits responsibly.

Chapter 8 explores the integration of big data technologies and financial risk control, particularly in the context of cloud computing and the Internet of Things. The authors introduce the MSHDS-RS model as a novel solution for feature data design in big data risk control technology, highlighting its potential to optimize financial risk management. Through a detailed exposition of the model's architecture and functionality, the chapter offers insights into leveraging big data technologies for effective risk mitigation.

Chapter 9 delves into the perceptions of auditing professionals regarding the influence of artificial intelligence on auditing practices. Through interviews, the authors uncover insights into AI's perceived impact on audit process efficiency and its inevitability in shaping the future of auditing. By elucidating these perspectives, the chapter contributes to academia and professional auditing bodies, informing strategic approaches to incorporating AI into audit methodologies.

In Chapter 10, the authors examine the evolving landscape of the accounting sector in Lebanon amidst the rise of artificial intelligence. By analyzing the transformative effects of ICT-based technologies and automation on accounting practices, the chapter underscores the need for proactive cooperation between accountants and AI-powered solutions. Through a critical examination of potential risks and opportunities, the chapter offers strategic recommendations for navigating the evolving accounting landscape.

Chapter 11 tackles the challenges and opportunities presented by globalization, digital technology, and artificial intelligence in the accounting sector. By prioritizing social sustainability, the authors advocate for integrating sustainability principles within accounting operations and governance frameworks. Through a holistic examination of non-financial reporting, data quality, and management ideals, the chapter offers a roadmap for fostering sustainable development within the accounting profession.

In Chapter 12, the authors conduct a literature review on the harmonization of accounting and artificial intelligence to sustain the accounting profession in Indonesia. Through bibliometric analysis and theoretical synthesis, the chapter elucidates the transformative potential of technology in augmenting accounting practices. By identifying emerging expertise areas and skill sets, the chapter offers insights into future-proofing the accounting profession amidst technological advancements.

Chapter 13 offers a parallel literature review on the relationship between accounting and artificial intelligence, focusing on sustaining the accounting profession in Indonesia. By embedding various assumptions from literature opinions, the chapter outlines the evolving role of technology in facilitating accounting processes. By highlighting emerging expertise areas and opportunities, the chapter underscores the need for embracing technological advancements while ensuring professional sustainability.

In Chapter 14, the authors explore the nexus between taxation, innovation, and sustainable development goals (SDGs). Through a comprehensive literature review, the chapter examines the effects of taxation on innovation and its implications for achieving SDGs. By identifying both positive and negative impacts, the chapter underscores the pivotal role of taxation in driving technological advancements and fostering sustainable solutions to global challenges.

As editors, we extend our gratitude to the authors whose insights and expertise have enriched this compilation. We are confident that their contributions will resonate with a diverse audience, including regulators, researchers, public and private organizations, managers, educators, and students alike. Moreover, we envision this book as a catalyst for future research endeavors, inspiring a new generation of scholars to explore the dynamic intersection of AI, sustainability, and accounting.

In closing, we invite readers to embark on a journey through the pages of “Artificial Intelligence Approaches to Sustainable Accounting,” recognizing the transformative potential of collaborative efforts in shaping a more equitable, resilient, and sustainable future for generations to come.

Maria C. Tavares
ISCA, University of Aveiro, Portugal

Graça Azevedo
University of Aveiro, Portugal

José Vale
ISCAP, Polytechnic Institute of Porto, Portugal

Rui Marques
University of Aveiro, Portugal

Maria Anunciação Bastos
ISCA, University of Aveiro, Portugal