Book Review

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Artificial Intelligence for Sustainable Value Creation
   by: Margherita Pagani and Renaud Champion, The Lypiatts,
   15 Lansdown Rd., Cheltenham
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The applications of Artificial Intelligence (AI) lie all around us and affect all aspects of our lives. The results of AI have been irreplaceable to too many disciplines in helping decision makers to recognise the processes of learning from a fresh perspective. AI has driven the philosophical debates concerning the nature of the mind, intelligence, and the uniqueness of human beings (Boden, 2018). The applications of AI lie all around us.AI is rapidly opening up a new way in the fields of industry, health, business, education, environment, and space industry (Hassanien et al., 2021).

Pagani and Champion (2021) develop a hybrid approach mixing the rigor of academic research with the pragmatic reality of businesses. Having looked at the impact of AI not only from the economic point of view but also analysing how it would change the way companies work and reshape their ecosystem, the authors decided to consider *value creation* from a holistic point of view. Their multidisciplinary initiative through collaborative research can help business leaders navigate "AI transformation".

This book is divided into seven chapters organised around three main parts:

Part I: Human-Centric AI

In Part I, the authors lay the ground works describing human-centric AI as a widespread economic, societal, and organisational phenomenon.

Pagani and Champion (2021) focusing on "Creating business value through human-centric AI" in Chapter 1. First, they lay the foundations, open the black box of AI, and identify human-centric AI. Second, they identify the implications for business capabilities based on a study on 867 AI systems applied to business processes. A brand new "three-dimensional concurrent engineering" framework has been created, in which an added value chain engineering would augment the traditional two-dimensional concurrent engineering of product and processes. Finally, they identify four main human-machine collaborative modes. Each presents its own set of challenges and required skill sets to enable effective collaboration between humans and machines. These different AI systems may bring value in different ways and may require different shared responsibilities with humans. They emphasise that "The future success of business endeavours does not depend on AI system, but on managers capable of leveraging digital

technologies to enhance human potential, putting the human at the center of the loop" (p.29).

In Chapter 2, Lim presents a "Value-driven design of AI enabled experiences", which demonstrates how AI is reshaping the way we experience the tangible world. MIT Design Lab has adopted the 'design mindset' and human-centered design approached in all their projects through the following three steps:

i   unpack and frame the question in the right way

ii   understand human experiential values

iii   prototype ideas.

Real case examples from work done at MTI Design Lab have been illustrated.

Part II: Business value

In Part II, the authors focus more on the business value creation and the extraordinary opportunities provided by AI for designing intelligent products, devising novel service offerings, and inventing new business models and organisational forms.

Sawy, Miric and Pagani bring together "Digital platform ecosystems: the coming context for AI" in Chapter 3. They first introduce platform business models and list the characteristics that often define platform business models, as well as distinguish them from other types of organisational structures. Then, they examines the role of AI in these platform ecosystems, highlighting both how AI might be used to increase the value created by these platforms, but also to the challenges that arises as AI becomes central to the governance of these AI ecosystems. Furthermore, they spot theoretical and methodological considerations for conducting research in such a complicated context.

In Chapter 4, Lanzolla, Santoni and Tucci work on "Unlocking value from AI in financial services: strategic and organisational tradeoffs vs. media narratives". They develop a general conceptual model of AI value creation through the lens of the business model construct, which concentrates on the interdependencies among firm activities that lead to vale creation. AI is expected to create value by replacing and/or supporting many activities that are performed by current organisations. Also, the authors undertake a study of how AI has been associated with transformation in the financial services sector over the 2013–2019 time period with a topic modelling approach. Suggestions have been provided.

Part III: Ethical and societal value

In Part III authors explore emerging and complex challenges around privacy, security and ethics, which are associated the horizon of possibilities.

Balague highlights "The challenges of responsible AI" in Chapter 5. The author noticed that most people have observed digital transformation with a widespread technical vision in the past. However, the digital transformation of the world relies on the predominance of biface (or sometimes triface) economic mole digital platforms, like Google and Facebook. The potential negative risks of big data analysis and AI have become a hot topic for governments, media and civil society recently. The author presents the concepts of ethics and corporate social responsibility, as well as their application to AI systems and describes different initiatives to tackle the issue of negative consequences of AI.

In Chapter 6, Ding proposes "A model of fair and explainable artificial intelligence", which is a novel theory-based individual-level dynamic learning method to avoid decision discrimination and incorporated a causal mechanism to enable explanation simultaneously. The method only uses information from an individual subject without employing other's information. It addresses fairness in the algorithm presenting on data sample selection, data composition, leaning mechanism, and interpretability.

Dudder, Moslein, Sturtz, Westerlund and Zicari explore "Ethical maintenance of artificial intelligence systems" in Chapter 7. Having considered the ethical principles associated with culture in the Western world, the authors make a case for the need for a framework for AI ethical maintenance in order to help in monitoring and auditing of deployed AI systems, preserving ethical principles, ensuring robustness, both from a technical and social perspective. They introduce Z-Inspection, a reference and process model for AI ethical maintenance.

Finally, the afterword opens up new research avenues discussing the value of AI putting the human at the center.

Compared with other AI books, such as Russell and Norvig (2021), this book aims to provide in-depth analyses and studies of application of AI to real-world problems. Each chapter provides an original and critical account of the current state of the debate in its domain. The uniqueness of this edited book is the focus on value creation, a subject of great importance but still not addressed by existing publications. Moreover, the book, using a multidisciplinary perspective, aims to address the interests of a wide spectrum of readers.

This book is current and to the point. It makes a cutting-edge contribution to the field and is an extremely valuable asset for practitioners, students, and researcher alike who are interested in identifying value generated by AI systems in management and discover opportunities and challenges. The eBook version is priced from £20/$26 from eBook vendors while in print the book can be ordered from the Edward Elgar Publishing website.

References

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