

Innovation, Technology, and Knowledge Management

Series Editor

Elias G. Carayannis
George Washington University
Washington, DC, USA

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Antonio Leal-Millan • Marta Peris-Ortiz
Antonio L. Leal-Rodríguez
Editors

Sustainability in Innovation and Entrepreneurship

Policies and Practices for a World
with Finite Resources

 Springer

Editors

Antonio Leal-Millan
Organización de Empresas
Universidad de Sevilla
Sevilla, Spain

Marta Peris-Ortiz
Department of Business Administration
Universitat Politècnica de València
Valencia, Spain

Antonio L. Leal-Rodríguez
Universidad Loyola Andalucía
Sevilla, Spain

ISSN 2197-5698 ISSN 2197-5701 (electronic)
Innovation, Technology, and Knowledge Management
ISBN 978-3-319-57317-5 ISBN 978-3-319-57318-2 (eBook)
DOI 10.1007/978-3-319-57318-2

Library of Congress Control Number: 2017943164

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Printed on acid-free paper

This Springer imprint is published by Springer Nature
The registered company is Springer International Publishing AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Series Foreword

The Springer book series *Innovation, Technology, and Knowledge Management* was launched in March 2008 as a forum and intellectual, scholarly “podium” for global/local, transdisciplinary, transsectoral, public–private, and leading/“bleeding”-edge ideas, theories, and perspectives on these topics.

The book series is accompanied by the Springer *Journal of the Knowledge Economy*, which was launched in 2009 with the same editorial leadership.

The series showcases provocative views that diverge from the current “conventional wisdom,” that are properly grounded in theory and practice, and that consider the concepts of *robust competitiveness*,¹ *sustainable entrepreneurship*,² and *democratic capitalism*³ central to its philosophy and objectives. More specifically, the aim of this series is to highlight emerging research and practice at the dynamic intersection of these fields, where individuals, organizations, industries, regions, and nations are harnessing creativity and invention to achieve and sustain growth.

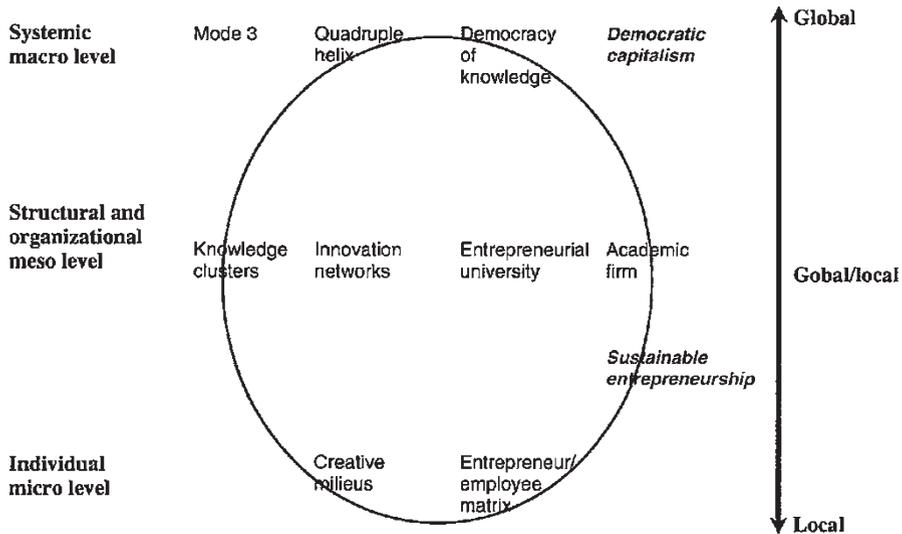
¹We define *sustainable entrepreneurship* as the creation of viable, profitable, and scalable firms. Such firms engender the formation of self-replicating and mutually enhancing innovation networks and knowledge clusters (innovation ecosystems), leading toward robust competitiveness (E.G. Carayannis, *International Journal of Innovation and Regional Development* 1(3), 235–254, 2009).

²We understand *robust competitiveness* to be a state of economic being and becoming that avails systematic and defensible “unfair advantages” to the entities that are part of the economy. Such competitiveness is built on mutually complementary and reinforcing low-, medium-, and high-technology and public and private sector entities (government agencies, private firms, universities, and nongovernmental organizations) (E.G. Carayannis, *International Journal of Innovation and Regional Development* 1(3), 235–254, 2009).

³The concepts of *robust competitiveness* and *sustainable entrepreneurship* are pillars of a regime that we call *democratic capitalism* (as opposed to “popular or casino capitalism”), in which real opportunities for education and economic prosperity are available to all, especially—but not only—younger people. These are the direct derivative of a collection of top-down policies as well as bottom-up initiatives (including strong research and development policies and funding, but going beyond these to include the development of innovation networks and knowledge clusters across regions and sectors) (E.G. Carayannis and A. Kaloudis, *Japan Economic Currents*, pp. 6–10, January 2009).

Books that are part of the series explore the impact of innovation at the “macro” (economies, markets), “meso” (industries, firms), and “micro” levels (teams, individuals), drawing from such related disciplines as finance, organizational psychology, research and development, science policy, information systems, and strategy, with the underlying theme that for innovation to be useful, it must involve the sharing and application of knowledge.

Some of the key anchoring concepts of the series are outlined in the figure below and the definitions that follow (all definitions are from E.G. Carayannis and D.F.J. Campbell, *International Journal of Technology Management*, 46, 3–4, 2009).



Conceptual profile of the series *Innovation, Technology, and Knowledge Management*:

- The “Mode 3” Systems Approach for Knowledge Creation, Diffusion, and Use: “Mode 3” is a multilateral, multinodal, multimodal, and multilevel systems approach to the conceptualization, design, and management of real and virtual, “knowledge-stock” and “knowledge-flow,” modalities that catalyze, accelerate, and support the creation, diffusion, sharing, absorption, and use of cospecialized knowledge assets. “Mode 3” is based on a system-theoretic perspective of socio-economic, political, technological, and cultural trends and conditions that shape the coevolution of knowledge with the “knowledge-based and knowledge-driven, global/local economy and society.”
- Quadruple Helix: Quadruple helix, in this context, means to add to the triple helix of government, university, and industry a “fourth helix” that we identify as the “media-based and culture-based public.” This fourth helix associates with “media,” “creative industries,” “culture,” “values,” “lifestyles,” “art,” and perhaps also the notion of the “creative class.”

- **Innovation Networks:** Innovation networks are real and virtual infrastructures and infratechnologies that serve to nurture creativity, trigger invention, and catalyze innovation in a public and/or private domain context (for instance, government–university–industry public–private research and technology development cooperative partnerships).
- **Knowledge Clusters:** Knowledge clusters are agglomerations of cospecialized, mutually complementary, and reinforcing knowledge assets in the form of “knowledge stocks” and “knowledge flows” that exhibit self-organizing, learning-driven, dynamically adaptive competences and trends in the context of an open systems perspective.
- **Twenty-First-Century Innovation Ecosystem:** A twenty-first-century innovation ecosystem is a multilevel, multimodal, multinodal, and multiagent system of systems. The constituent systems consist of innovation metanetworks (networks of innovation networks and knowledge clusters) and knowledge metaclusters (clusters of innovation networks and knowledge clusters) as building blocks and organized in a self-referential or chaotic fractal knowledge and innovation architecture (Carayannis 2001), which in turn constitute agglomerations of human, social, intellectual, and financial capital stocks and flows as well as cultural and technological artifacts and modalities, continually coevolving, cospecializing, and cooperating. These innovation networks and knowledge clusters also form, reform, and dissolve within diverse institutional, political, technological, and socioeconomic domains, including government, university, industry, and nongovernmental organizations and involving information and communication technologies, biotechnologies, advanced materials, nanotechnologies, and next-generation energy technologies.

Who is this book series published for? The book series addresses a diversity of audiences in different settings:

1. *Academic communities:* Academic communities worldwide represent a core group of readers. This follows from the theoretical/conceptual interest of the book series to influence academic discourses in the fields of knowledge, also carried by the claim of a certain saturation of academia with the current concepts and the postulate of a window of opportunity for new or at least additional concepts. Thus, it represents a key challenge for the series to exercise a certain impact on discourses in academia. In principle, all academic communities that are interested in knowledge (knowledge and innovation) could be tackled by the book series. The interdisciplinary (transdisciplinary) nature of the book series underscores that the scope of the book series is not limited a priori to a specific basket of disciplines. From a radical viewpoint, one could create the hypothesis that there is no discipline where knowledge is of no importance.
2. *Decision-makers—private/academic entrepreneurs and public (governmental, subgovernmental) actors:* Two different groups of decision-makers are being addressed simultaneously: (1) private entrepreneurs (firms, commercial firms, academic firms) and academic entrepreneurs (universities), interested in optimizing knowledge management and in developing heterogeneously composed

knowledge-based research networks, and (2) public (governmental, subgovernmental) actors that are interested in optimizing and further developing their policies and policy strategies that target knowledge and innovation. One purpose of public *knowledge and innovation policy* is to enhance the performance and competitiveness of advanced economies.

3. *Decision-makers in general*: Decision-makers are systematically being supplied with crucial information, for how to optimize knowledge-referring and knowledge-enhancing decision-making. The nature of this “crucial information” is conceptual as well as empirical (case study-based). Empirical information highlights practical examples and points toward practical solutions (perhaps remedies); conceptual information offers the advantage of further-driving and further-carrying tools of understanding. Different groups of addressed decision-makers could be decision-makers in private firms and multinational corporations, responsible for the knowledge portfolio of companies; knowledge and knowledge management consultants; globalization experts, focusing on the internationalization of research and development, science and technology, and innovation; experts in university/business research networks; and political scientists, economists, and business professionals.
4. *Interested global readership*: Finally, the Springer book series addresses a whole global readership, composed of members who are generally interested in knowledge and innovation. The global readership could partially coincide with the communities as described above (“academic communities,” “decision-makers”), but could also refer to other constituencies and groups.

Washington, DC, USA

Elias G. Carayannis

Foreword

It is with great pleasure that I write this foreword for the book which you now have in your hands, *Policies and Practices for Sustainability Innovation and Entrepreneurship*, edited by three Spanish scholars: Antonio Leal-Millan, Marta Peris-Ortiz, and Antonio Leal-Rodriguez. This important work tackles a very relevant issue in today's business environment: the role that innovation plays in achieving sustainability in a world with finite resources.

Environmental sustainability innovations hold the promise to grant future generations the possibility of enjoying planet Earth in the same way as those who have lived before them. These types of innovations have the potential to transform business processes and products by making them more eco-efficient, less resource intensive, and less wasteful. In a world with finite resources and increasing population, such innovations are crucial. Both established companies and new ventures need to assume responsibility in the transition toward a more sustainable business environment. If we keep the sustainable development paradigm in mind, new business opportunities are more likely to flourish with opportunities to innovate in a more sustainable way. Earth is in urgent need of these so-called sustainable entrepreneurs—the business leaders of the twenty-first century.

This published book has the merit of having compiled excellent research papers that cover a series of relevant topics about sustainability and entrepreneurship. You will find discussions on topics such as the role of cities and local governments on innovation toward sustainability, the motivations of responsible green consumers, the role of cooperatives in innovating to reduce carbon dioxide emissions and fight climate change, the role of sustainability standards and reputation in hospitality management, as well as a case study on sustainable entrepreneurship in an Indian fashion venture. These are all very relevant research topics that will advance our knowledge about sustainability and entrepreneurship synergies.

I congratulate the editors for having compiled an outstanding collection of research articles dealing with very key topics focused on sustainability, innovation, and entrepreneurship. Innovation is certainly just one of the key pieces of the sustainability puzzle, and research studies like these have the opportunity to motivate

business leaders and students—our future leaders—to work toward a more sustainable business world.

It fills me with pride to recommend this book to you, and I am heartened to see how much work on sustainable entrepreneurship and innovation has been achieved in my home country, Spain. Enjoy!

Baruch College, City University of New York,
New York, NY, USA

Ivan Montiel

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