

Innovation, Technology, and Knowledge Management

Marta Peris-Ortiz  
João J. Ferreira *Editors*

# Cooperative and Networking Strategies in Small Business

 Springer

# **Innovation, Technology, and Knowledge Management**

## **Series Editor**

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Editors

# Cooperative and Networking Strategies in Small Business

 Springer

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# 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*,<sup>1</sup> *sustainable entrepreneurship*,<sup>2</sup> and *democratic capitalism*,<sup>3</sup> 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.

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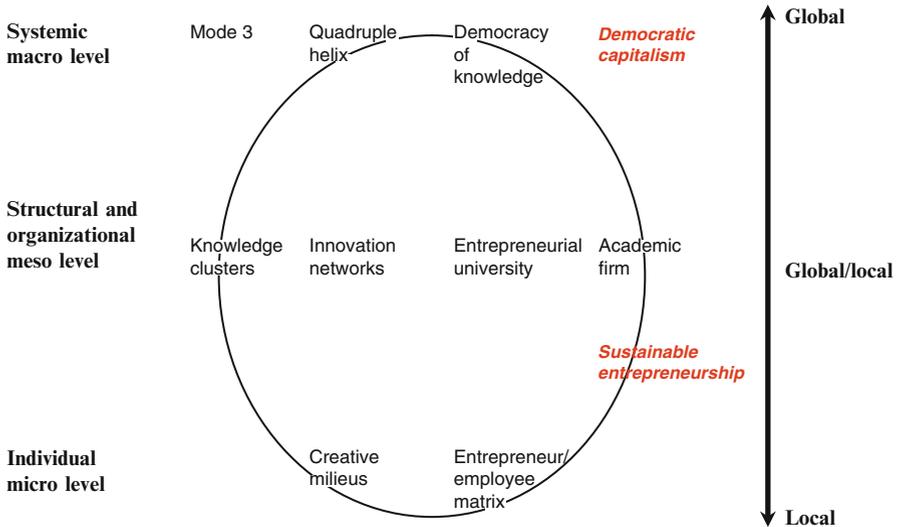
<sup>1</sup>We define *sustainable entrepreneurship* as the creation of viable, profitable, and scalable firms. Such firms engender the formation of self-replicating and mutually enhancing innovation networks and knowledge clusters (innovation ecosystems), leading toward robust competitiveness (E.G.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

<sup>2</sup>We 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).

<sup>3</sup>The 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 derivatives of a collection of topdown 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*, p. 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,” “life styles,” “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,<sup>4</sup> 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 non-governmental 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,

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<sup>4</sup>E.G. Carayannis, *Strategic Management of Technological Learning*, CRC Press, 2000.

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  
Series Editor

# Foreword

Cooperation and networking are two ways for small businesses to compensate for the lack of internal resources that inherently result from being small. Firms think strategically about cooperation and networking because these are of increasing importance for the firm competitiveness and cannot be left to chance. It notably means deciding who to collaborate with and in which contexts.

The small firm's cooperation and networking activities might not only be with other small firms. There is a large variety of agents with which these connections may be developed, including large firms and universities. At times, public incentives may contribute to the establishment of these connections. An example would be an R&D project that is developed in a consortium consisting of one, or more, university research lab, a global firm and SMEs. This example is not fiction: this cooperation exists around the world. It emerges—powerfully—when trust emerges.

Connections can be also between small firms and local schools. Cooperation can mean not just internships for students, but also joint traditional learning and apprenticeship agreements. These arrangements are also a way for firms to compensate for lack of internal training capacity and for the schools to network, sharing information and developing partnerships with the economic sector.

Much has been said about the importance of the small firm regarding R&D, new knowledge flows and innovative activity. Firms need not have an own lab. However, developing cooperation agreements with external R&D and innovation partners or having an internal absorptive capacity appears crucial. Smallness can lead firms to share even this absorptive capacity by jointly creating and funding a technology watch and transfer position. *Mutatis mutandis*, the same may hold for export or international joint ventures developed to seize the new opportunities offered by globalization. What appears important, in a globalized and rapidly changing world, is keeping a dynamic capacity. A way to dynamically feed this capacity is for small firms to identify and join networks that share new emerging knowledge or new ideas.

It is a great pleasure for me to write the foreword of this edited book by Marta Peris-Ortiz and João Ferreira. They have collected an outstanding set of tremendous contributions to the field. I am fully confident that the reader will benefit from the knowledge that each chapter offers individually and from the synergy that results from having read every chapter. With an incredible wealth of detail, the current state of research regarding small businesses' cooperative and networking is expressed in this exceptional collection.

Namur, Belgium

Marcus Dejardin

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# Chapter 1

## Cooperation and Networks in Small Business Strategy: An Overview

Marta Peris-Ortiz and João J. Ferreira

**Abstract** Cooperation and networks is a fashionable topic. It is receiving increased attention in popular management publications, as well as specialized academic journals. This chapter presents a state-of-the-art view about cooperative and networking strategies in small business. Furthermore, we highlight the main contributions of the chapters included in this book. It provides an opportunity to advance our understanding about cooperative and networking strategies. It also addresses questions particularly critical to business cooperation and network strategies and encourages examining their impact in different contexts. In this chapter, we outline a short description of the author's contributions.

### 1.1 Introduction

The cooperation paradigm, seen as an alternative approach, was first proposed in the late 80s (Contractor & Lorange, 1988). The Business world became comprised by multifaceted and advanced networks of relationships and was encouraged by strategic cooperation (Child, Faulkber, & Tallman, 2005). The management literature provides extensive coverage of the different issues that encourage firms to cooperate and embrace cooperative relationships (Ferreira, Fernandes, & Raposo, 2014; Ferreira, Raposo, & Fernandes, 2014; Franco & Haase, 2015). Cooperation between firms and industries is a means of leveraging and aggregating knowledge and generating direct benefits in terms of innovation, productivity, and competitiveness (Ferreira, Fernandes, et al., 2014; Street & Cameron, 2007).

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Cooperation enables firms to boost firm levels of competitiveness (Li & Zhong, 2003). Cooperative and competitive (co-opetition) networks are apparently located at the extreme ends of the spectrum of strategic relationships and alignments. Various options and decisions made within the framework of strategic alliances may be identified and differentiated (BarNir & Smith, 2002; Bengtsson & Kock, 2000). Belderbos, Carree, Diederer, Lokshin, and Veugelers (2004) argue that R&D cooperation between competing firms also facilitates the search for incremental efficiency gains and consequently a competitive advantage. According to Álvarez, Marin, and Fonfría (2009) the establishment of networks has been an emerging issue over the last decades in order to understand the new challenges in the competitiveness of firms, focusing increased attention by scholars in several knowledge fields as well as in practitioners.

Simultaneously with a theoretical acceptance of the importance of a sustained competitive advantage to formulate strategy, there is a growing understanding that cooperative and networking behavior among small firms is at the root of many success stories in today's small business management. This condition demands an effort to develop a study of both aspects of cooperation and networks as compatible, complementary facets of a unique reality. Definitely, the cooperative and networking relationships of a small business can be the source of its competitive advantage. Enhancement of local resources and capabilities for the generation and dissemination of knowledge is still an issue for defining public policies in many countries.

The book aims to collect the most recent research and best practices in the cooperative and networking small business field, identifying new theoretical models and describing the relationship between cooperation and networks in small business strategy context.

## 1.2 Theoretical Background

Recognizing that organizations fail to contemplate all the resources and skills needed to remain competitive and ensure their survival independently is one of the factors that underscore the need to develop joint actions in networks. In the organizational field, the concept of networks has several approaches, covering a wide variety of relationship formats between firms, such as clusters, strategic alliances, outsourcing relationships, subcontracting, industrial districts, consortia, franchises, cooperation networks among others. Small and medium-sized enterprises (SMEs) use of business networks has grown impressively in recent decades due to increasingly complex innovation process (Nordman & Tolstoy, 2016). Innovation orientation and innovative activities are essential for SME to become or remain competitive, particularly in a global market where information is extensively accessible and new products and services are constantly being introduced (Lema, Madrid-Guijarro, & Martin, 2016). Sustainable, well-conceived, and well-managed innovation networks can give clear benefits to SME (Iturrioz, Aragón, & Narvaiza, 2015). Institutional network support is crucial for the entrepreneurial SME and economic competitiveness.

Oparaocha (2015) examines the influence of the use of institutional networks by SMEs in the context of international entrepreneurship and suggests that institutional network relationships have a positive effect on the internationalization process of SMEs. Innovative processes of SME in cross-border business relationships are very contextualized by several network dimensions as well as the relational dimension (Nordman & Tolstoy, 2016).

SMEs develop many types of relationships with a diversity of players in the business environment (Zain & Ng, 2006). Some studies have emphasized different aspects of networks that can be found, depending on the interfaces and connections that exist within each particular network collaboration (Oparaocha, 2015). Lin and Jin (2016) examine the effect of network relationship on the performance of SMEs. They conclude that SME strongly depend on external entities and cooperate with partners to improve their performance. According to Nordman and Tolstoy (2016), SMEs need a moderately higher level of innovative collaboration in their partnerships with foreign market customers to adapt opportunities considered in home and international market networks into innovative outcomes in comparison to opportunities considered in host market networks.

The literature shows a difference of the factors essential for the motivation of creating a network into knowledge sharing, accelerating innovation, reducing transaction costs, improved reputation, and new market opportunities conception (Lin & Jin, 2016). Managers of firms working in a network of business relationships may apply an interfirm perspective toward change expectations. Learning and knowledge sharing is a constant process between network players. Knowledge sharing is vital to be or remain competitive (Bhatti, Larimo, & Carrasco, 2016).

Partnership with external agents has become a strategic domain for enterprises in the networking world of business, and SME need to collaborate to complement internal resources due to the lack of economies of scale in R&D (Iturrioz et al., 2015). According to Bougrain and Haudeville (2002), networks strengthen SMEs' competitiveness by providing them with an opportunity window on technological change, market necessities, and strategic choices made by other enterprises. Networks are vital providers of several varieties of knowledge (Pittaway, Robertson, Munir, Denyer, & Neely, 2004).

The cooperation networks seem particularly designed to reduce uncertainties by increasing flexibility and adapt to changes and which do not seem to contradict with the operation of market rules in a cooperation–competition (co-opetition) game. Co-opetition is a phenomenon where competitors collaborate with each other in order to create value and a bigger market for the enterprises involved, to further compete for the created or expanded market (Brandenburger & Nalebuff, 1996). There are various approaches in the literature to explain the role of networks and co-opetition in the business context. Game theory, Resource-based View (RBV), and theory of transaction costs have shown a major role in this context demonstrating that co-opetition can be an advantageous alternative for SMEs.

In the light of game theory, co-opetition is not an altruistic strategic process; it is a rational posture. Collaboration with a competitor becomes advantageous when it generates an increase in the market to be held forward by the organizations involved

(Bengtsson & Kock, 2000; Cousins, 2002). This explanation applies to interorganizational relationships where involved actors seek to differentiate themselves through innovation, increasing global demand for their product or services. In this case, the competition occurs with other substitute products or services (Walley, 2007). The expected result in a successful co-opetition relationship is an expanded market or newly created markets to be played by the organizations which cooperated to create them, which would not happen if the co-opetition had not occurred.

RBV also helps to theoretically illuminate the phenomenon of co-opetition (Rusko, Merenheimo, & Haanpää, 2013). When enterprises compete, they choose to share resources to promote the increased market size in which they operate. Such sharing can involve tangible resources such as equipment, physical space or means of transport, or intangible resources, in information sharing cases and joint activities of Research & Development (Ritala & Hurmelinna-Laukkanen, 2013). By sharing these resources, enterprises in co-opetition increase their value generation capacity through a combination of resources which they individually possess, once combined, these features act synergistically and produce results greater than the sum of the results that could be obtained by each enterprise separately (Gnyawali & Park, 2009; Schiavone & Simoni, 2011).

In turn, the theory of transaction costs enables observation of the risks of co-opetition. According to this approach, enterprises seek to minimize the costs involved in providing their goods or services. These costs do not involve only those directly associated with the production or offer the service, but also the transaction costs, which are those that are present in negotiations, drafting contracts, performance monitoring, or social intellectual efforts for the development of innovations (Luo, 2007).

Thus, co-opetition is a way in which enterprises seek alliances that enable them to reduce the total cost of operations for the enterprise to create or expand markets and increase the profit potential of the organizations involved (Chin, Chan, & Lam, 2008). However, as individuals have limited rationality and are prone to opportunism, there may be breached agreements and appropriations of untraded resources by one of the enterprises. This argument makes co-opetition a highly risky strategy from the point of view of the theory of transaction costs (Barge-Gil, 2010) and for this reason, some authors point out serious reservations to its adoption (Bouncken & Kraus, 2013). However, protection mechanisms, such as patents and contracts help manage risk and enable the joint operation in some cases (Zhou & Xu, 2012).

Some studies have facilitated better understanding of the factors affecting the outcome of a co-opetition, especially in order to seek to create conditions that inhibit the opportunistic behavior described earlier. The success of the strategic relationship depends on the ability of organizations to establish an interaction that balances the sharing and protection of knowledge, in order to promote the creation of value by minimizing the room for opportunism. To interact in a context of co-opetition, enterprises often experience structural dilemmas that reveal different logics regarding the dynamics between collaboration and competition.

The integration of enterprises in central locations enables cost reduction and sharing of resources, which enhances the creation and acquisition of knowledge and the preservation and diffusion of knowledge. Through industrial networks, the creation

and acquisition of knowledge and the preservation and dissemination of knowledge can influence performance in terms of innovation and enhance the management of the internal knowledge of the enterprises. Enterprises can thus acquire resources and reduce costs, and thereby reinforce the effects of the relationships established within the clusters and influence the performance in terms of innovation in enterprises.

Cooperation between agents of value chain and industry–academia can be a solution to update the knowledge and technical management skills. Enterprises and government should establish points of cooperation, as the knowledge management is one of the factors that leverage competitiveness (Lai, Hsub, Lin, Chen, & Lin, 2014). Trust presents itself not only as a requirement for knowledge sharing with competitors, but also for activities involving the sharing of tangible resources, essential especially for co-production processes (Bonel & Rocco, 2007). Therefore, it is argued that trust, when present, eliminates transaction costs that could negatively impact the potential of the joint allocation of resources to generate value for competitors (Zineldin, 2004). Co-opetition can offer financial gain advantages for enterprises involved in this form of strategic performance, but also poses a risk to those involved, as regards the actual possibilities of converting the partnership into financial gains (Gnyawali & Park, 2009). This is due to the idea that the possibility of expropriation of resources by one of competitors is often perceived by competitors, which can lead, for example, to asymmetric knowledge sharing (Ritala & Hurmelinna-Laukkanen, 2013).

### 1.3 Overview of Book Contents

This book includes 11 chapters related to cooperative and networking Strategies in Small Business in different contexts. Jointly, the chapters in this book reflect varied approaches. They examine the theme using different theoretical backgrounds and different methodologies. Individually, each chapter offers rich insights regarding the phenomenon they examine.

Chapter 2 undertaken by C. Fernandes and J. Ferreira, *Cooperation and Co-opetition in SME Networks: A bibliometric Study* analyzes, through a bibliometric study, the scientific field of cooperation and competition in order to better grasp how this triad has evolved over time. They classified this systematic literature review into three periods of analysis: 1963–2000 as the big bang approach to competition and cooperation, 2001–2009 as the period with competition camouflaged by cooperation, and 2010–2015 as the psychology of cooperation and competition period.

Chapter 3, *Determinants of university cooperation networks as a mechanism for regional development: The case of Beira Interior (Portugal)* by M. Franco, H. Haase and A. Reis studies the influence of university cooperation networks on their regional economy. They try to respond to the question: What are the determinants of university cooperation networks? And they found that an entrepreneurial university has a crucial role in attracting firms to its region. Furthermore, they suggest that

strong regional partnerships with globally acting firms may represent a solution to slow down the migratory flow of young graduates.

Chapter 4, *Cooperation and networks in small wineries: A case study of Rutherglen, Australia*, by V. Ratten focuses on the cooperation and networks of wine producers in the Rutherglen area of Australia by taking a case study approach. She discusses small business strategies of the wineries in this area in terms of family businesses, newcomers, and investment partners.

Chapter 5 by A. Braga, C. Marques, Z. Serrasqueiro, V. Braga and A. Correia, *The KIBS Contribution for Innovation and Competitiveness within Business Networks* aims to identify the extent in which knowledge-intensive business services (KIBS) contribute to the acceleration of knowledge both internally and within business networks. Based on a quantitative study, they show that KIBS play a role in transmitting knowledge and contributing, in different forms, for the process of firm innovation of the firms.

Chapter 6, *Relationship learning strategy as a mechanism of network and the effectiveness of green innovation* by A. Leal-Millán, G. Albort-Morant, A. Leal-Rodríguez, and A. Ariza-Montes proposes a conceptual model to test the effect of relationship learning and knowledge base on the green innovation performance. They found that firms which invest and involve themselves in relationship learning mechanisms are more likely to foster green innovations.

Chapter 7 by S. Zohrabyan, P. Fernandes, R. Lopes and J. García, *Connecting funding to entrepreneurs: a profile of the main crowdfunding platform* aims to analyze the financing phenomenon of crowdfunding and to investigate the relations between crowdfunders, project creators, and crowdfunding websites. They show that there is a direct and positive relationship between the money needed for the projects and the money collected from the investors for the projects, per platform.

Chapter 8, *Geographies of Growth: comparing Oxfordshire a core high-tech region in the UK with an emerging high-tech region—the Centro of Portugal* by H. Smith, S. Romeo, L. Farinha and J. Ferreira, compares the evolution of the Oxfordshire high-tech economy with a newer and much smaller high-tech region, Region Centro of Portugal. Using allowed quantitative data provides evidence of what makes regions distinctive, how the performance of regions with some similar and some different attributes compare, and what might contribute to or inhibit their potential growth trajectories. The nature of entrepreneurship and innovation in these two regions were explored as well as responses to the growth of that activity by the local triple helix actors

Chapter 9 by A. Ramos and A. Lora *Hedonic and utilitarian effects on the adoption and use of social commerce* aims to explore the consumer behavior model in social commerce, introducing the social commerce concept as a new commercial formula. They confirm satisfactory results on the relationships proposed, highlighting the influence of hedonic and utilitarian values on attitude and perceived usefulness.

Chapter 10, *Knowledge creation in temporary organizations* by Rutten, studies knowledge creation in temporary organizations (TOs) to address the relationship between TOs and their permanent environment. Based on a case study of twelve interorganizational TOs, he observed that knowledge creation is a process of interaction in an organizational context that must combine hierarchy/control and flexibility/autonomy elements.

The last chapter (Chap. 11), *Collaborative networks between Corporate Universities, customers and SMEs: integrating strategy towards value creation*, by A. Alonso-Gonzalez, M. Peris-Ortiz and J. Mauri-Castello analyzes the possibility of establishing collaborative networks between corporate universities of large companies and their SME partners as a way to establish and empower a common and integrated strategy to improve the processes of these small business partners.

## 1.4 Conclusions

Cooperation and networks are concepts intricately linked to each other, and analyzing issues at their interface is crucial to understanding the best practices in the cooperative and networking small business field. This book provides a comprehensive, well organized, and richly illustrated study of cooperation and networks in small business strategy. While pertinent for managers and business students, it broadly draws on the most up-to-date research, making it also a valued source for academics studying cooperation and networks and the wide array of small business strategy issues they raise.

We expect this book links academic research and draws on practitioner experience to offer a comprehensive understanding of how and why cooperation and network strategies in small business denote not only indispensable fields of study but also the very foundations for small business management and economics area.

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