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Introduction

Sustainability in Agribusiness

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Introduction

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Introduction

Industrial and technological developments have led to significant ecological degradation and the emergence of new world challenges, such as global warming, ozone depletion, deforestation, and desertification, among others. The usage of the earth's resources is central to agriculture and justifies the recent attention on new agribusiness practices in the search for resource optimization and new agribusiness management approaches, such as the circular economy and sustainable development. Many firms have deployed or adopted technological solutions to address the ecological issues they face, with the aim of producing and selling more goods to more people with less energy and fewer resources and waste.

However, to achieve these new goals, firms have to be re-organized, re-designed, and restructured, which will lead to reduced ecological impacts. In fact, the transformations of these firms demand the integration of new moral responsibilities into their strategy creation and implementation processes as technological advancement alone would not be sufficient to stabilize the impact these firms have on the planet. What's more, sustainable-development actions embraced by firms have to include social and economic elements in addition to environmental factors, with the first two elements as secondary goals because everything else is conditional on learning to live sustainably within the Earth's systems and limits. Following the definition given in Starik and Rands (1995: 909)¹, we see ecological sustainability as the ability of firms, either individually or collectively, *“to exist and flourish (either unchanged or in evolved forms) for lengthy time frames, in such a manner that the existence and flourishing of other collectivities of entities is permitted at related levels and in related systems.”* Accordingly, firms that follow the principles of ecological sustainability should not *“alter physical, chemical, and biological factors (or political, economic, social or cultural conditions), such that the carrying capacity for otherwise sustainable entities would be dramatically reduced or eliminated”* (Starik and Rands, 1995).

There are various reasons why so few firms have achieved good ecological sustainability performance despite its desirability as a goal. In some cases, new moral responsibilities have been seen as the solutions to novel cost reduction

and market-differentiation strategies, with organizations going beyond the traditional economic value chain and focusing their strategies on the entire ecological life cycle, including reducing resource use, energy use, pollution, and waste, as well as producing more environmentally sensitive products that pollute less and are more durable, recyclable, reusable, and so on; making economic investments in developing parts of the world; and forming collaborative relationships with other organizations of various types in order to effectively manage common resources.

The idea of sustainable management has recently been the focus of growing attention in the agribusiness sector. This is mainly due to widespread dissatisfaction with the industrialization of agricultural production and food processing and growing public pressure on agribusiness firms to implement more sustainable management practices. The most relevant arguments for implementing sustainable management practices require multiple levels of analysis; ecosystems (macro-level), organizations (meso-level), and individuals (micro-level), all have to make sure that their practices converge toward a more sustainable approach to agribusiness. It is particularly important to understand how and to what extent changes and innovations in agribusiness can contribute to solving urgent societal challenges, accomplishing the largest number of sustainable development goals, and leveraging the most recent technological advancements.

In this book, we will analyze the implementation of new eco-enterprise strategies in the agri-food sector by examining how the technology has helped in the realization of new sustainability goals, offering a look at the different technological solutions used. It also illustrates examples of new social enterprises by explaining the fundamentals of new social business models and also placing an emphasis on new social goals with a presentation of the problem of gender equality in agribusiness.

By so doing, we provide a multilevel perspective on the phenomenon of sustainability: (1) strategical, as we report on how new strategies are identified to achieve either cost reduction or market differentiation; (2) social as we discuss the issue of inequality in agriculture; and (3) ecologic, as we offer an overview of the organizational and technological solutions and practices enacted by firms to address ecological problems

We have maintained the organizational focus across all of these perspectives, which should allow for a fine-grained analysis of the implications of ecological sustainability for firms in the agricultural sector

Presentation of the chapters

Accomplishing sustainability in the agribusiness sector is a timely challenge that many developing and developed countries are facing. Agribusiness is one of the world's largest manufacturing sectors in terms of output value, employment, and international trade, involving pre-production industries, agriculture, food processing, distribution, and trade. The production of enough quality food to keep the population healthy is the main scope of the agribusiness

sector. However, a closer look at the sector shows that it is becoming increasingly complex and multifaceted, and it has broad implications when it comes to achieving more sustainable outcomes. The agribusiness sector is certainly evolving to become more sustainable. The main challenge is in understanding to what extent this is happening and the multiple ways it can help address the sustainable development goals (e.g., SDG 2 = zero hunger, SDG 5 = gender equality, SDG 8 = decent work, SDG 12 = responsible consumption and production, SDG 13 = climate action).

The purpose of this book is to provide an analysis of what makes the agribusiness sector sustainable, advancing knowledge on the drivers, barriers, approaches, nature of the societal challenges, variety of technological advancements, and relevance of the development goals.

The chapters in this book are grouped into three sections, recalling the different interdependent perspectives emphasized earlier:

- **Theories, concepts, and definitions.** In this first section, authors focus on existing contributions to highlight how extant literature has analyzed these issues and set the discourse for future research and for the subsequent chapters.
- **The role of business models and ecosystems.** This section examines how business models can be innovated to achieve sustainability goals. The authors have analyzed this issue theoretically and empirically, with the description of two cases from agribusiness companies.
- **The role of innovative technologies in sustainability.** This section deepens the understanding of the application of innovative technologies in order to implement sustainable practices and increase economic and environmental sustainability.

Theories, concepts, and definitions

The first contribution in the book is presented by Annosi, Murcia, and Zagame. The objective of this introductory chapter is to provide an overview of theories and set the tone for subsequent conversations in the book.

Through a systematic literature review of managerial and organizational studies, the authors have examined extant research contributions on agribusiness sustainability and emergent themes in agribusiness, organizing them into a comprehensive, multilevel framework comprising the analysis of antecedents, processes, and outcomes of sustainability in agri-food.

More specifically, their work starts by presenting, as part of collected and systematically revised contributions, an analysis of those focused on changing paradigms that define agribusiness legitimacy, linking institutional changes (e.g., certifications) and new social norms as antecedents of sustainability-related activities. Second, they focus on organizational change and how the development of emerging institutional demands influences organizational responses and practices, and on how sustainable value chains are emerging in

response to the need for extending sustainable activities beyond organizational boundaries; taken together, these studies represent evolving conversations on processes related to sustainability. Finally, they look at studies that contribute to the understanding of the outcomes and performance implications of engaging with sustainability.

As the authors point out, these topics have been developed in literature but still require additional investigation. For this reason, they've outlined a future research agenda, for both academia and policymakers. This is done through a sound analysis of the avenues identified by the authors of the analyzed contributions, and by focusing on the opportunities and limitations of existing studies.

The second chapter, authored by Filippi and D'Angelo, puts the focus on core theories, concepts, and definitions related to the impact of agribusiness on the sustainable development goals (SDGs). The impact concerns more than 50% of the SDGs: SDG 1 – no poverty, SDG 2 – zero hunger, SDG 3 – good health and well-being, SDG 5 – gender equality, SDG 8 – decent work, SDG 10 – reduced inequalities, SDG 12 – responsible consumption and production, SDG 13 – climate action, and SDG 15 – life on land. Agribusiness is the major cause of the lower economic status of the majority of the world's poor; it also provides food, feed, consumption goods, and industrial inputs. It occupies over 40% of the planet's land surface and is responsible for about 25% of annual greenhouse gas emissions. Authors specifically focus *on the ways agribusiness can transition toward more sustainable approaches*, by reviewing and exploring how agribusiness is contributing to the achievement of the SDGs. Filippi and D'Angelo provide a comprehensive view of the technologies, ecosystems, and strategies serving this purpose in relation to the challenges, obstacles, and opportunities found on the path toward sustainability. It is particularly interesting how they argue for a holistic, rather than atomistic, view of farming systems to enable the uptake of biotechnologies, ICT, GIS, and good agronomic practices, with the aim of increasing sustainability. They also provide paths for future research and policy directions in the framework of the SDGs, with the latter being recognized as key to reorganizing food systems. The main takeaway from this chapter is that agriculture undoubtedly plays a fundamental role in the development of human prosperity, and as such, it is pivotal to the pursuit of the SDGs.

While the SDGs take a balanced view of the three dimensions of sustainable development – economic, social, and ecological – the last chapter included in this section, Chapter 3, focuses specifically on SDG 5, which targets the achievement of equal opportunities for women and men in economic development, the elimination of all forms of violence against women and girls, and equal rights at all levels of participation. The authors of Chapter 3, Buonocore, de Gennaro, Metallo, and Pisano, discuss the issue of gender equality in the agribusiness industry, a field in which gender sustainability is at risk. There is a need for deep reflection and urgent action. Buonocore et al. start by providing core theories and definitions emphasizing through their analysis the

importance of gender equality and the role of sustainability disclosures, which are expected to promote additional accountability and transparency but appear to still be partially neglected in this industry. They then present the result of the analysis of case studies of Italian listed companies working in the commodities sector – food, beverages, and tobacco – suggesting a still limited level of disclosure in terms of gender equality, despite the increasing requirement for gender equity in agri-food.

The role of business models and ecosystems

In this section, the authors examine whether and how business models can be innovated to achieve sustainability goals. In order to do so, the presented evidence also highlights the role of business ecosystems, and how they enact SBMs by integrating diverse entities coherently, through collaboration and coordination.

In order to provide empirical grounding for business models and business ecosystems in the agri-food sector, this section presents different perspectives along with contributions that were all developed by looking at real-case scenarios. Specifically, two cases are presented. The first one is an overview of Inclusive value creation in the coffee industry through the use of blockchain solutions. The second one, which can also be used as a teaching case, takes a look at Socicana, a Brazilian association for the sugarcane industry. Finally, the opportunities and challenges of sustainable business models are discussed in the vibrant and engaging interview with Sara Rajabli, founder of Buta Art & Sweets, a social enterprise based in Azerbaijan.

Chapter 4, authored by Jell-Ojobor and Kramer, gets into specifics, describing how the elements at the basis of sustainable business models in the coffee industry (i.e., fair prices, conducive working conditions, sustainable production, and ecological protection) may hinder the financial performance of coffee manufactures, unless the emerging sustainable business model is more competitive than the traditional one. To this end, they argue that strategic choices related to technology adoption, and, in particular, investment in blockchain technology, support the development of dynamic capabilities and the subsequent reconfiguration of the available portfolio of resources and capabilities. Looking at the evidence collected by the authors, the business models resulting from the adoption of such technologies create intangible assets, such as reputation, trust, and bonding, that are sources of long-term financial and competitive benefits for international coffee supply chains, with blockchain technologies supporting the balance and distribution of value among coffee supply chain partners in industrialized and developing countries.

The following chapter illustrates the case of Socicana, authored by Kalaki, and Fava Neves; this case study describes how Socicana, an association of sugarcane growers, has sought to promote the sustainable development of its members. Presented at the IFAMA conference in 2021, this case is particularly interesting as it showcases the dynamics of an industry and an association that

has fostered continuous improvement and developed a sustainable protocol for the inclusion of producers in international certifications, highlighting the relevance of not only the business model but also the entire ecosystem of business and institutional actors. It is an example of how associativism can be a driver for collective action and sustainable practices, and the author has developed this case as a teaching tool, serving as a perfect basis for class discussion.

The final chapter of this section is an interview conducted and discussed by Baghirova, Casprini, Fiorini, and Annosi with Sara Rajabli, founder of Buta Art & Sweets, a vibrant example of how social entrepreneurship is delivering additional value through the establishment of business models designed to pursue sustainable goals. Thus, the conversation in this chapter moves from a sustainable business model to a social business model, which – by defining social profit objectives and shareholders and emphasizing the context where the social business emerges – serves as a solution to local problems. This is particularly important in developing countries. Buta Art & Sweets has been funded by Ms. Rajabli with the objective of promoting the inclusion of disabled women in Azerbaijan. This young female social entrepreneur has developed a social business model integrating both economic and social values, thus successfully combining tradition, culture, and inclusion. What is particularly interesting is the contribution of these authors to our understanding of the processes related to “how” a social entrepreneur develops a social business model.

Using research into business-model innovation and sustainability innovations, the authors of these chapters all underpin the concept of sustainable value flows, describing the complexity of Sustainable and Social Business Models, as well as the role of sustainability and the tremendous opportunities offered by such designs.

The role of innovative technologies in sustainability

Echoing the need for further analysis of the role of technologies for sustainability presented in Chapter 2 by Filippi and D’Angelo, this section, which comprises Chapter 7, aims to present the state of the art on sustainability and digitalization in agribusiness.

Smart Agriculture and 4.0 Technologies have brought several benefits to agri-food. Digital technologies have been introduced into the design, production, and sales processes, from robots to big-data analytics and artificial intelligence. Technology enables faster innovation and leads to seeking out new products, processes, modes of communication as well as business growth.

This chapter will leverage contributions focusing on the application of innovative technologies to implement sustainable practices and increase economic and environmental sustainability. To do so, Checchinato, Colapinto, Finotto, and Myshko have used a framework of analysis that relies on the three pillars of sustainability (economic, environmental, and social) in a holistic and not individual view, and adding the perspective of institutional analysis. In so doing, they have analyzed how innovative technologies enhance agricultural

and agri-food sustainability, meant as a complex system of intertwined actors and stakeholders, with the three pillars acting as driving forces in innovation strategy choices. Thus, the authors highlight the importance of examining the factors and conditions behind the choice and application of particular innovations and digital strategies, recognizing the role of institutional actors for technological advancement and in order to enable the achievement of sustainable goals. The authors identify future research avenues, figuratively bringing everything full circle in relation to the previous chapters. Some of these future research avenues include the need to better understand the role of the supply chain and ecosystems, the need to uncover the dynamics within institutional environments, and technology diffusion and adoption choices.

Conclusion

The time had come to provide a comprehensive analysis of what makes the agribusiness sector sustainable, advancing the most recent state-of-the-art knowledge on the drivers, barriers, approaches, strategic choices, business models, the nature of societal challenges, the variety of technological advancements, and the relevance of development goals.

The contributions collected in this book aim to advance this understanding, and, by offering a variety of theoretical and empirical approaches and evidence from diverse businesses in agri-food, we aim to start new conversations by providing suggestions for further avenues of research.

Let us conclude this introduction by thanking the colleagues that have supported our work with their precious contributions, and, in particular, Maria Jose Murcia, Maria Cristina Zagame, Viviane Filippi, Viviana D'Angelo, Filomena Buonocore, Davide de Gennaro, Concetta Metallo, Sabrina Pisano, Maria Jell-Ojobor, Michael Paul Kramer, Rafael Bordonal Kalaki, Marcos Fava Neves, Laman Baghirova, Elena Casprini, Niccolò Fiorini, Francesca Checchinato, Cinzia Colapinto, Vladi Finotto, and Alena Myshko.

Note

- 1 Starik, M., & Rands, G. P. (1995). Weaving an integrated web: Multilevel and multisystem perspectives of ecologically sustainable organizations. *Academy of management Review*, 20(4), 908–935.