

## Chapter 4

# A Game Theory Coopetitive Perspective for Sustainability of Global Feeding: Agreements Among Vegan and Non-Vegan Food Firms

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### **ABSTRACT**

*Throughout this study, the authors propose possible agreements among different food producers, in order to develop a new better conceived diet for the future generations, by using a coopetitive approach and game theory. Specifically, the authors shall consider food producers and sellers of vegan (respectively, vegetarian) and non-vegan (or non-vegetarian) food. The coopetitive approach used by the authors provides a mathematical game theory model, which could help producers of vegan food a simpler entry in the market and free significant publicity. Meanwhile, the model could allow producers of non-vegetarian food a smooth transaction to vegetarian and vegan production. In particular, authors propose an agreement setting among McDonald's and Muscle of Wheat, because they think that Muscle of Wheat cannot enter a global market without the help of a large food producer already in the market. The game theory model represents an asymmetric R&D alliance between McDonald's and Muscle of Wheat.*

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## **INTRODUCTION**

### **General Perspective and Objectives**

In this chapter, the authors study a game theory model for the sustainability of food production. Specifically, we construct a coopetitive model suggesting general possible alliances among vegan and non-vegan food producers. It is now well known that the meat production has begun non-sustainable, from several points of view. Moreover, the meat consumption reveals linked with heart strokes, cancers, diabetes and several other diseases. Indeed, affluent citizens in middle-income and low-income countries are adopting similar high-meat diets and experiencing increased rates of those chronic diseases. The industrial agricultural system (nowadays, the predominant form of agriculture in the USA and increasingly world-wide) - required for the meat and dairy production - determines consequences for public health, owing to:

- Its extensive use of fertilizers and pesticides;
- Strongly unsustainable use of resources (such as water and fertile soil);
- High environmental pollution.

Moreover, in industrial animal production, we emphasize the strong public health concerns for feed formulations, including animal tissues, arsenic and antibiotics. We underline also the strong concerns for the induced laborer health risks - coming from such unsustainable work - and also for the consequent related health hazards regarding the communities living close to the meat production factories.

### **A Game Theory Approach**

We shall consider possible agreements among different food producers, in order to develop a new better conceived diet for the future generations, by using a coopetitive approach and game theory. Our coopetitive approach provides a mathematical game theory model, which could help producers of vegan food a simpler entry in the market and free significant publicity. Meanwhile, our model could allow producers of non-vegetarian food a smooth transaction to vegetarian and vegan production.

### **Economic Perspective**

Everywhere, during the last years, the industry is taking increasingly more note of the evident circumstance that vegetarians and vegans worlds represent a very attractive economic target. Nowadays, indeed, the major brands of the food industry are trying to create more space for themselves in a food market increasingly less niche and continuously widening.

### **Vegan Consumption in Europe**

In Europe, the “average” consumer shows an increasing interest for alternative foods with respect to meat and dairy products: it is evident the gradual growth in sales of products based on soy, almonds, coconuts, legumes, seeds, beans and other noble vegetables - coming from, also, a thorough marketing campaign which in recent years has extolled the virtues of the legumes health benefits (see Seclì, 2007).

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