Chapter 16
Cooperative Optimization of Tourism Networks: An Application of a Game Theory Model

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ABSTRACT
A tourism network is determined by close collaboration among various stakeholders working interactively on common problems or issues through formal and informal approaches. As many cases highlight, informal relationships contribute to the formation of formal partnerships. In this study a game theoretical model is applied to explain the decisional process of entrepreneurs about forming partnerships in formal tourism networks. The model shows that, in terms of Nash equilibrium, the cooperative optimization of a tourism network should be achieved when entrepreneurs have the same business goals and a common tourism vision. The chapter presents an empirical solution that arises from the case of Business Networks in Italy, which represents an innovation in Italian Law.

INTRODUCTION
A destination comprises different interacting elements: tourists, enterprises, institutions and the host community (McIntosh, Goeldner, & Ritchie, 1995). According to Wang (2011), a destination includes both physical features and management and services. Pavlovich (2003) stated that the relationship among these various components is a critical factor in achieving competitive advantages in the tourism market. Merinero-Rodríguez and Pulido-Fernández (2016) emphasized that relationships are the core element for understanding a tourism phenomenon, proving useful in the planning and management of destinations, although different relational approaches have been developed in tourism research.

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Closely associated with tourism is the concept of network, which describes the various relationships and transactions that characterise a tourism system. As Bickerdyke (1996) observed, tourism is the economic sector with the highest number of inter-organizational networks. A tourism network is therefore based on the cooperative behaviour of organisations, enterprises and individuals, which would otherwise be in competition with each other. Following Wood and Gray (1991), cooperation in tourism can be defined as a form of voluntary joint action in which autonomous stakeholders interact, sharing rules, norms and structures. In this regard, Edwards et al. (2000) stated that collaborations and partnerships are not a homogeneous form of governance, but consist of a set of different institutions, with diverse focuses, operational scales, history and duration, and funding.

Dollinger (1990) highlighted the role of collective strategies for the creation of a network, while Crouch and Ritchie (1999) affirmed that collective actions have a great impact on tourism development. Similarly, Jamal and Jamrozy (2006) claimed that a destination can be considered as a system in which different stakeholders take part in tourism development and planning, although no one individual stakeholder can entirely control the decisional processes. Consequently, understanding the network characteristics of destinations has practical implications for the competitiveness, management and planning of tourism (Hall, 2008).

The growing interest in tourism networks is largely due to the effects of globalization, which demand the creation of partnerships, alliances and joint projects to improve efficiency and competitiveness. This requires the active involvement of different actors, from both public and private sectors. In this regard, many scholars emphasize that collaborative networks have increased in importance, becoming indispensable to the promotion of coordination between tourism policies and related actions. This has provided a rich vein for theoretical approaches, and empirical studies, that aim to understand and investigate the collaborative forms of governance in tourism.

On the basis of these arguments, in this study a game theory approach is applied as a model to explain the decisional process of entrepreneurs about forming partnerships in formal tourism networks. The game theory model shows that, in terms of Nash equilibrium, a cooperative optimization can be achieved when participants of a network act in the same sector cooperate to reach common goals (Bruwer, 2003; Hall, Sharplees, Cambourne, & Macionis, 2000; Meyer-Cech, 2005; Novelli, Schmitz, & Spencer, 2006). As many cases highlight, that needs of collaborative strategies among organizations involved in a network (Vernon, Essex, Pinder, & Curry, 2005). In dealing with this issue, the chapter presents an empirical solution that arises from the case of Business Networks in Italy.

BACKGROUND

Tourism Network Relationships

The network paradigm is certainly not a recent concept in economics. It refers to forms of collective actions linking firms or complementary industries, as preconditions for innovation and market competitiveness (Porter, 1998). Collaborative networks stem from agreements among enterprises that intend to share economic benefits (Bucklin & Sengupta, 1989; Goldhar & Lei, 1991; Ohmae, 1989; Thorelli, 1986). Tremblay (1998) stated that networks play a role in exploiting external economies of scale and scope, and in lowering transaction costs. Furthermore, some literature distinguishes between vertical
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