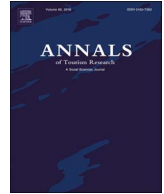


Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Annals of Tourism Research

journal homepage: www.elsevier.com/locate/annals

Demonstration of exponential random graph models in tourism studies: Is tourism a means of global peace or the bottom line?

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ARTICLE INFO

Keywords:

Exponential-family random graph models (ERGMs)
Social network analysis
Prejudice
Racism
Tourism
Peace

ABSTRACT

Most social network analyses conducted in hospitality and tourism studies are merely descriptive. Despite the recent popularity of exponential-family of random graph models (ERGMs) in various scientific investigations, no studies have utilized these inferential methods of network analysis in hospitality and tourism studies. In some contexts, the power of these methods is undeniably superior to those of conventional statistical tests. Accordingly, in the current study, by using the controversial subject of tourism-peace, I demonstrated how ERGMs can be used in hypotheses testing and statistical modeling in hospitality and tourism context. The results of this study suggest that a change of perspective in tourism-peace discourse from tourism as a peacemaker to tourism as a peacekeeper can be a valid approach concerning the long-lasting debates on the relationship between tourism and peace.

Introduction

“No one is born hating another person because of the color of his skin. People learn to hate. They can be taught to love, for love comes more naturally to the human heart.”

Nicholson, W. in ‘Mandela: Long Walk to Freedom’

The origin of network analysis in social science (Social Network Analysis (SNA)) dates back to early 20th century. Although probabilistic models (i.e., inferential network models) were developed in late 1950s, traditional methods of network analysis, which are merely descriptive, were the dominant, widely used approaches until recently (Harris, 2014). Part of the resistance to using inferential statistics in network analysis is due to the nature of data. Relational data, which is the main type of data used in network analysis, violates one of the basic assumptions of statistical techniques, independence of observation (Snijders & Borgatti, 1999). As a result, almost all classic inferential statistics tests including parametric and nonparametric approaches cannot be employed in network analysis studies. Major developments in probabilistic models emerged two decades after the introduction of the initial models, which resulted in emergence of exponential random graph models (ERGMs) (Harris, 2014). Over the course of the past 30 years, ERGMs have substantially developed and have become the main inferential statistical method in network analysis. Specifically, for the past 10 years, ERGMs have been considered as the main statistical modeling and hypothesis testing method in network analysis (Robins, Pattison, Kalish, & Lusher, 2007).

The use of SNA is not limited to sociology or social science in general. There are abundant examples concerning the applications of SNA in physics, biology, neuroscience, chemistry, psychology, information technology, computer science, and management and marketing (e.g., de-Marcos et al., 2016; Qiu, Zhao, Wang, Wang, & Wang, 2016; Sinke, Dijkhuizen, Caimo, Stam, & Otte, 2016; Sung-Hyuk, Soon-Young, Wonseok, & Sang Pil, 2012). Similar to other disciplines and fields of studies, in hospitality and tourism, SNA has

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<https://doi.org/10.1016/j.annals.2017.12.007>

Received 26 March 2017; Received in revised form 19 October 2017; Accepted 19 December 2017

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been employed in various studies (e.g. Benckendorff & Zehrer, 2013; Casanueva, Gallego, & García-Sánchez, 2016; Stienmetz & Fesenmaier, 2015; For more information on SNA in tourism, see Scott, Baggio, & Cooper, 2008). Most of these studies, however, are limited to the applications of traditional descriptive methods except for a few recent ones (e.g., Liu, Huang, & Fu, 2017) To the best of my knowledge, however, no study has used the flexible and powerful ERGM techniques to test the structural hypotheses of hospitality and tourism networks. Utilizing Markov Chain Monte Carlo (MCMC) method, ERGMs can produce different fit indices and accordingly, allow researchers to measure how well the employed theory explains a social network’s structure. The ability to measure and provide model fit along with the capacity to take on variables with various measurement levels make the ERGMs family unique and powerful in analyzing social networks.

In psychology and economic literature, cognitive mapping has been employed in various contexts to elucidate and map sophisticated, interrelated mental concepts such as risk (van Winsen et al., 2013). Cognitive mapping is built upon the three fundamental assumptions that 1) ‘meaning’ is created with human making sense of the surrounding world through contrast and similarity, 2) human attempts to explain and justify his world-why is it this way and what underlying factors have made it so, and 3) human organizes the concepts hierarchically to find the significance of the world surrounding him and identify the priority of constructs and outcomes (Eden, 1988). The initial implications of cognitive mapping were mostly in the areas of spatial memory, knowledge of distance, and location (Evans & Pezdek, 1980). The initial implications of cognitive mapping within the above-mentioned areas formed a specific type of cognitive mapping known as mental mapping (Sommer & Aitkens, 1982). Later on, researchers used the technique of cognitive mapping in studies of brand mapping, which unlike previous studies, were mostly focused on associative memory (Henderson, Iacobucci, & Calder, 1998). Brand mapping studies also formed a specific type of cognitive mapping known as concept mapping which are very common in marketing (John, Loken, Kim, & Monga, 2006). Taking the cognitive mapping technique from the realm of spatial memory to associative memory caused Human Associative Memory (HAM) models to be adopted in cognitive mapping studies. Some researchers of cognitive psychology and neuroscience have started using network analysis through the lenses of HAM models (Teichert & Schöntag, 2010). According to HAM models, human memory is a network of interconnected nodes (vertices) which activate each other in relevant situations (Teichert & Schöntag, 2010). Each node (vertex) is a basic unit of a network and contains information and meanings. Accordingly, it is possible to map the interconnections and spot the critical vertices that activate a great part of the network. Recently, several studies in branding and marketing have used the network analysis technique based upon HAM models’ doctrines to map the knowledge structure and associations of brands (e.g., Gensler, Völckner, Egger, Fischbach, & Schoder, 2015; Teichert & Schöntag, 2010). This approach can be used in any types of cognitive mapping studies, specifically in destination image and travel de/motivation contexts. Hence, to study the social capital of non-travelers, the current study uses the network analysis to apply the HAM models’ principles within these contexts. Current study considers destinations as primary nodes that are connected to different attitudinal attributes (secondary nodes); therefore, each time a destination is recalled from memory, related attitudes get activated to form an image of the destination.

Case demystified

Debates concerning the effect of tourism on global peace and mutual understandings started in 1920s (Becken & Carmignani, 2016). The common sense is that tourism is a catalyst for peace, promoting courtesy and cross-cultural understanding (Gunce, 2003; Jafari, 1989). The conceptualization of tourism contribution to global peace is based on democratic peace theory, which was developed according to the principles of Immanuel Kant’s essay entitled “Project for Perpetual Peace” (Edgell, Allen, Smith, & Swanson, 2008). According to democratic peace theory, mutual trust and respect result in peace, which then peace leads to political stability. Consequently, political stability results in safety and security. Safety and security, then, cause tourism to flourish which enhances cultural understanding. Finally, cultural understanding increases mutual trust and respect, and the cycle repeats all over again (Fig. 1). According to the figure below, not all relationships are definite. To be specific, the impact of tourism on cultural understanding and the influence of cultural understanding on democratic peace are indecisive (Edgell et al., 2008). Furthermore, Edgell et al. (2008) proposed system is a causal chain in which a broken link disrupts the entire process. The right-side chain (hereafter,

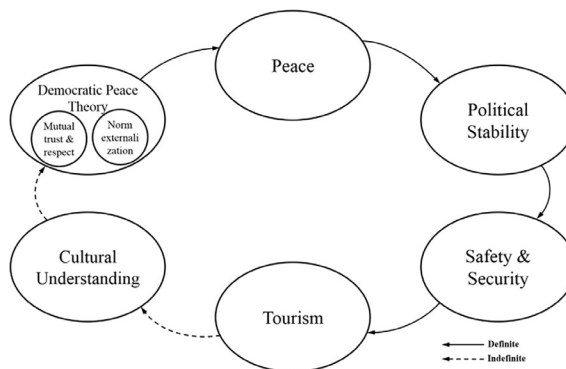


Fig. 1. The relationship between tourism and peace . reproduced from Edgell et al. (2008, p. 164)

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