Social Network Analysis in Gastronomy Tourism: A systematic review

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Abstract

Social Networks Analysis (SNA) has been suggested as a tool for identifying roles of multi-stake holder contributions to common development agenda within tourism destinations; and with particular interest to niche tourism products such as gastronomy. A systematic review including a total of seven journals and two books was carried out to: analyse range and methods of SNA methods in research of gastronomy tourism. Methodologically, studies in gastronomy tourism centering on SNA were found to be qualitatively skewed, employing only binary scales of measure. Only one journal from a different discipline employed bipartite scale of analysing SNA units. Most of studies revealed that relations studied tend to focus on the limited topics of interest in tourism research. This indicates gaps in myriad of tourism topics in business management; which often have consequences for niche tourism areas such as gastronomy.

Key words: Social Network Analysis, Gastronomy, Tourism.

Author Biography

My education background is in teaching (B.Ed.-Home Economics), after which I attained an MSc in International Tourism and Hospitality Management from Sheffield Hallam University. I have taught food production in secondary school and at technical institutions, for over two decades. I am currently an assistant lecturer at T.U.K since 2017. I am also pursuing my PhD in Tourism and Hospitality Management. I consider myself a novice researcher, with a passionate interest in food. I therefore intend to develop my research skills in this area.

Table of Contents

List of Abbreviations

GDP	Gross Domestic Produce
GIS	Geographic Information Systems
PLS	Partial Least Squares
SNA	Social network Analysis
UNWTO	United Nations World Tourism Organisation
WEC	World Economic Forum
WFTA	World Food Tourism Association.

List of Tables

List of Figures

Introduction

Social network studies in social sciences have evolved in the last three decades (Zaheer, Gozubuyuk & Milanove, 2010). However, their application in tourism studies is still in inception stages (Cristóbal, Galleg, and García-Sánchez, 2016). Social networks are the ties between elements; and Social Network Analysis (SNA) is the study of those ties and their patterns (op cit). SNA involves understanding those ties and relations by using data generated from their different aspects to do so (Cristóbal, et al., 2016). The tourism industry comprises social networks of both collaborating and competing organisations (Scott et al., 2009); and situations that prompt understanding of ties including but not limited to: tourist flows, inter-business alliances, and stake-holder relations (Cristóbal, et al., 2016). SNA reveals complexity of relations and outcomes for actors and destinations.

The global the travel and tourism is an important industry contributed to US$ 7.6 trillion to the global economy (10.2% of global GDP) and generated 292 million jobs (1 in 10 jobs on the planet) by the year 2017 (World Economic Forum), (WEC, 2017). The growth of the tourism industry has spurred several forms of special interest tourism, including but not limited to: food/gastronomy tourism, sports tourism, beach tourism, dark tourism among others (Levkov, 2013). Alternative forms of tourism have become an important economic base for mature tourism markets that face stiff competition from emerging markets (Sobieralski, 2013); because each destination has its own peculiarities that constitute unique forms of tourism. Food is central to the tourist experience (Henderson, 2009) thus; gastronomy tourism plays a crucial role in providing new products to attract tourists (Richards, n.d).

Gastronomy and Tourism

Gastronomy tourism, culinary tourism and food tourism are often used interchangeably by researchers (Horng & Tsai, 2012); they however have different connotation depending on contextual use within the guest-host relationship in tourism (Ellisa, Parkb, Kimc, Yeoma, 2018). Hall and Sharples (2003) define food tourism as “visitation to primary and secondary food producers, food festivals, restaurants and specific locations for which food tasting and/or experiencing the attributes of specialist food production region are the primary motivating factor for travel”. This paper adopts a more host focused definition which places food within the culture of the host (Ellisa et al., 2018).

The World Food Travel Association (WFTA) as cited in UNWTO (2017) estimates a total of $150 billion as the annual contribution of gastronomy tourism towards the tourism economy. According to UNWTO (2017), gastronomy tourism enhances the visitor economy offerings to tourism by promoting local culture, and subsidising other sectors such as agriculture and food processing. Henriksen and Halkier (2015) opined that gastronomy outlets are localised and place symbolic, thus contribute to authenticity of the touristic experience. Gastronomy producers use locally sourced food, reducing food miles; consequently, the economic and environmental contribution of gastro-foods to sustainability of local tourism is evident (Andersson et al., 2017).

In promoting gastronomy tourism, social network prototypes amongst gastronomy entrepreneurs and stakeholders are proposed by the United Nations World Tourism Organisation (UNWTO, 2016). Andersson, Mossberg and Therkelsen (2017) highlight the importance of producer, consumer and destination synergies for food tourism; because promotional events for local food result from joint effort of many actors in a destination. The UNWTO (2016) report cited that social network development of stakeholders elements within tourism destinations is an important feature for knowledge exchange for food producers and suppliers; improving the food value chain, and exchange of knowledge and talent. This study therefore recognises the role of social networks in gastronomy tourism. Therefore, a review of Social Networks, and their related analysis methods (SNA) are reviewed.

Objectives

The objectives of this partial systematic review include:

i. To analyse SNA methods as applied in research.
ii. To examine the range of SNA research in gastronomy tourism.
iii. To establish opportunities for further SNA research in gastronomy tourism.

Social Network Analysis

Social networks

Social networks are interpersonal relations (Dempwolf and Lyles, 2011), in which case invisible connections or 'structures' of actors within social networks (see Figure 1.1) are seen to influence outcomes for members of the said networks. Social interactions such as group memberships, are pegged on social networks (Sobel, 2002), and determine what benefits an individual accrues. Within these social networks arises patterns of relationships referred to as "social capital configurations" (Tata & Prasad, 2014). Granovetter (2005) states that social structure influences economic outcomes in that those individuals, who engage in trade with others they know, benefit from exchange of resources; primarily but not limited to information. According to Mackie and Dilly (2010), social capital constitutes sets of informal norms and values, within social groups that enhance cooperation among them. Thus, social networks of tourism stakeholders have outcomes for the tourist economies at destinations.

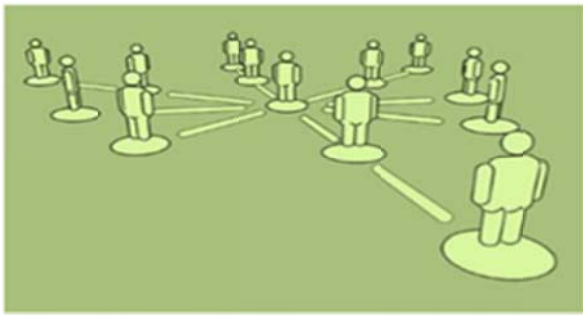


Figure1 1: A social Network

Source: King (2006).

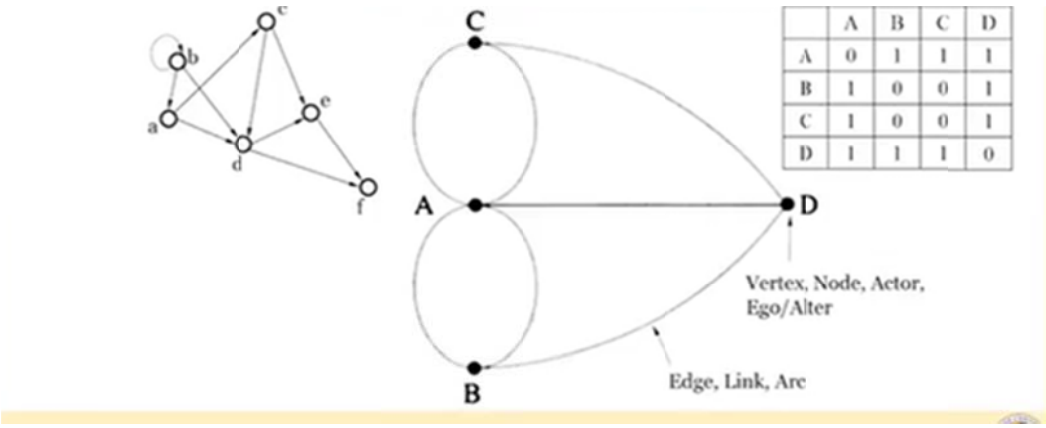
Social Network Analysis

Social network analysis (SNA) has been successfully used to identify structural and interpersonal relations of social networks and how these affect capital gains in tourism contexts (Benckendorff & Zehrer, 2013). As a structural analysis tool, SNA identifies and reveals interpersonal and group connections in given contexts (Hirschi, 2010). Additionally, SNA is used to identify relational perspective of social networks and how resources tend to flow within these networks of players (Serrat, 2011). Stowstoski (1994) states that in order to measure social network

implications, specific network ties and measures need to be identified. Table (1) indicates the SNA ties and measures used in SNA research.

Relational data

In using SNA analysis for social research, data sets are represented in rectangular matrices, whereby columns represent units of analysis (people, organisations, cities, things, processes etc.) and rows represent cases (Benckendorff & Zehrer, 2013); ties between elements constitute a network. Jalayer (https://anahei.org/webinars/previous-webinars/introduction-to-network-science-and-complex-systems/) opined that relational data is observed in squared adjacency matrices; whereby rows and columns represent actors in networks (also nodes/ego). Thus, as shown in Figure 1, observations represented by matrix squares constitute ties/edges (communications, financial relationships, friendships), against with other members of a network (op cit). The role of SNA therefore is to establish both structure and dyadic relations between elements in a network (Benckendorff & Zehrer, 2013); in which case relational ties between the elements become more important than the individual characteristics of those elements (op cit).These nodes, according to Jalayer, are connected by Links/Arcs/Edges; which represent the exchanges between actors.



	A	B	C	D
A	0	1	1	1
B	1	0	0	1
C	1	0	0	1
D	1	1	1	0

Figure2 1 Relational Data

Source: Jalayer (https://anahei.org/webinars/previous-webinars/introduction-to-network-science-and-complex-systems/)

In measuring relational and structural/attributive ties in social networks, basic scales are binary or those that measure single ties (Benckendorff & Zehrer, 2013). Social network ties may also be bipartite/two mode matrix in which case there exist two types of nodes/actors in a social network; often unrelated to each other (Jalayer). Jalayer distinguishes between the nature of regular and complex systems (such as societies, communities, destinations) whereby classic statistical techniques cannot be used to model, predict or explain multiple components that are simultaneously connected.

Further, sampling is not possible with SNA because there lacks independence of cases; because each node in a network is influenced by the global structure of the network (Benckendorff & Zehrer, 2013). Thus, SNA considers the total population in a given network (op cit); whereby snowball sampling methods are utilised to generate names of actors not known to the researcher from the existing known nodes/actors. In addition to statistical measures of social networks, qualitative analysis methods are useful in SNA for triangulation purposes.

Network properties

Social networks constitute serial inter-related elements, actors or nodes (Benckendorff & Zehrer, 2013) that are often pathways in the network; thus nodes need to be clearly outlined in studies for the network structure to be well understood. Table 1 presents some network elements central to SNA.

Table1: Network Elements for Social Network Analysis

Type	Definition
Interactional / Relational criteria	
1. Frequency of communication	Number and continuity of interactions over time
2. Content of ties	Purpose and functions of relation; types of relational tie (exchange, obligation, sentiment, power)
3. Multiplexity	Redundancy of relationships: number of contents combined in a relationship
4. Reciprocity	Degree of symmetry in relation (if A chooses B, does B choose A?)
5. Strength of ties	Relative measure of time, affect, intensity, mutuality.
Structural Criteria	
1. Size	Number of People or relations in network
2. Density	Connectedness of network; actual links computed as proportion of total links
3. Distance/ Proximity	Number of links between any two nodes in network
4. Centrality	Adjacency and influence of nodes and subgroups in network
5. Clustering	Partition of ties into network sub-groups/cliques
6. Network roles	
a) Isolate	Peripheral node in network
b) Bridge	Group Member who provides a link to another network subgroup
c) Liason/Bridger	Node that links several groups without being a member of any group
d) Star	Node with largest number of communication links

Source: adopted from (Stowstoski, 1994).

Methodology

Studies were identified in relevant tourism and hospitality journal to get an objective view of SNA methodology as used in gastronomy tourism research. A partial systematic literature review method was adopted to classify and evaluate the literature along salient conceptual and methodological dimensions (Grant & Osanloo, 2014); whereby SNA studies in gastronomy research were identified. The Google scholar and Research Gate data base were selected to search for relevant peer reviewed and published articles or books. Google Scholar data base was selected because it offered current and most relevant literature on the subject at hand; and its ease of accessibility of information sources and provision of an overview of published articles. Further, the two data base allowed for a more extensive search for articles in the topic at hand without restricting data to tourism journals. Furthermore, because of the multi-disciplinary nature of use of SNA (Benckendorff & Zehrer, 2013) SNA may be found in other disciplines such as food science.

Data used for this study were retrieved from the 10th May 2018 to 23rd September 2018. Key word strategy was used to search for relevant terms, thus words such as “gastronomy tourism”, “local food tourism”, “and local food tourism” were used to search relevant information. Additionally, other keywords such as Social Network Analysis, SNA, Structural hole, and social capital were used in a Boolean logic search; in which case the operator “AND” was used in conjunction with the gastronomy key words aforementioned. The key word search strategy has been used in tourism research (Ying and Xiao, 2012). Thus, some examples of combinations of the search words that were used included:

- SNA AND Gastronomy.
- Structural holes AND food tourism.
- Social capital AND gastronomy tourism.

Journal articles were carefully selected based on inclusion of empirical and reviewed published articles. There after selected articles were carefully read, based on the aforementioned criteria for analysis to ensure SNA methods were indeed used in the studies. Also, journals that looked at social networks in tourism destinations were included with the assumption that gastronomy

tourism actors comprise the population of actors in any given tourism destination. Articles in gastronomy tourism that did not mention social networks or SNA methodology to any extent were excluded. The final data analysed included a total of nine books and journals.

Results

SNA in Gastronomy tourism research

Data from recently published research papers were collected ranging from 2011-2017. As indicated in the methodology, no specifications were made for the journals from which the data were collected; in part due to the scarcity of research articles in gastronomy tourism studies with an SNA research approach. Table 2 indicates the data set for each article, year of publication, journal, the topic, and SNA or social networks indicators analysed.

Table2 SNA in gastronomy tourism research

Author(s) and year of publication	**Topic**	**Journal/Book**	**SNA indicators used**
Ahn, Ahnert, Bagrow and Baraba´si (2011).	Flavor network and the principles of food pairing.	Scientific Reports	Used bipartite networks to show relationships between ingredients/ flavours (nodes) and regional cuisines.
Kular, Menezes, and Ribeir (2011).	Using Network Analysis to Understand the Relation Between Cuisine and Culture.	Book.	Nodes (recipes) and edges (ingredients) to link cuisine to cultures.
Halkier (2012).	Networking and food knowledge dynamics	In M. Mair (Ed.), culinary tourism (pp. 67–80).	Used Partial Least Squares (PLS) path modelling technique to show relationship between gastronomy and customer loyalty to destinations.

Console et al., (2013).	Interacting with social networks of intelligent things and people in the world of gastronomy.	ACM Trans. Interact. Intell. Syst	Proposed a bridger (social app-WantEat) to create a social web of intelligent things and people.
Eriksen and Sundbo (2015).	Drivers and barriers to the development of local food networks in rural Denmark.	European Urban and Regional Studies	No explicit of SNA but qualitative analysis of local food social networks in Denmark; their drivers and barriers.
Boesen, Sundbo and Sundbo (2016)	Local food and tourism: an entrepreneurial network.	Scandinavian Journal of Hospitality and Tourism.	Used a multiple case study (qualitative) to analyse six networks of producers. No SNA elements were used.
GE du Ran, Booysen and Atkinson (2016).	GE du Rand, Booysen Ingrid & Atkinson Doreen (2016). Culinary mapping and tourism development in South Africa's Karoo region.	African Journal of Hospitality, Tourism and Leisure	Used Geographic Information Systems (GIS) supported by tools to link food tourism actors (drawn from culinary database), to create culinary routes (edges).
Tasci, Jalayer, Pizam and Youcheng (2017).	Network analysis of the sensory capital of a destination brand.	Journal of Destination Marketing & Management.	Used SNA qualitatively to reveal latent brand elements for different stakeholders
Jalayer and Youcheng (2017)	The Economics of Attitudes: A different approach to Utility functions of players in Tourism Marketing Coalitional Networks	Tourism Management.	Used Social Network theory to define the utility function of four major players in marketing coalitions.

Discussion

Based on the books and journals analysed, it is clear that research in gastronomy tourism using SNA is limited. In tourism, SNA has mainly been used to study food tourism human actors in specific destinations (6 journal articles); most of these with a bias towards tourism development, marketing or branding regions food tourism destinations (e.g. Eriksen & Sundbo, 2015; GE du Ran et al., 2016; Jalayer & Youcheng, 2017; Tasci et al., 2017). This may be as a result of network characteristics being dependent on its global links/edges. One book and two journals focus on relations between objects as the nodes in the study (see Ahn et al., 2011; Console et al., 2013; Kular et al., 2011); Console et al., (2011) opined that things and people can have relations based on technology. Thus, in agreement with Benckendorff and Zehrer (2013), SNA research in gastronomy tourism has hardly delved into specific operational and business managerial issues in gastronomy tourism.

Two researches that do not necessarily fall into the category of tourism research (Ahn et al., 2011; Console et al., 2013), analyse networks of food ingredients and flavours. Additionally, journals represented in this review are not indicative of major tourism and hospitality research journals except two (Tasci, Jalayer, Pizam and Youcheng, 2017; Jalayer and Youcheng, 2017). Further, in terms of methodological approaches, qualitative SNA is mostly used in tourism research; with the exception of Jalayer and Youcheng (2017). The authors use quantitative SNA to trace flavours to regions and cultures respectively.

In terms of units of analysis used in SNA, thematic areas and disciplines; there appear to be no analyzable patterns based on findings. Analysis of network ties reveals aspects such as, but not limited to: knowledge, logics, attitudes, GIS mapping, flavours, ingredients, and intelligent things. In addition to this, only one study (Ahn et. al 2011) uses a bipartite model as a unit of SNA analysis; furthermore, the journal in question is not in tourism or hospitality research.

Conclusion and recommendations

A systematic review of a total of nine journals and books reviewed SNA research in gastronomy tourism with a view to describing SNA methodology; to analyse use of SNA in gastronomy tourism, and to reveal study gaps within this area. A scrutiny of research journals and book chapters revealed that SNA in gastronomy is still limited in hospitality and tourism research.

Further, in terms of SNA there seems no relationship with ties that connect units; various issues such as knowledge, logics, attitudes, GIS mapping, were realised. Thus, a more in-depth and broader systematic review may be required.

Methodologically, studies in gastronomy tourism centering on SNA are qualitatively skewed, employing only binary scales of measure. Only one journal from a different discipline employed bipartite scale of analysisng SNA units. This is despite the fact that tourism destinations often include multitude of levels of actors, connected by multiplicity of issues, events and links that can form various relational and structural criteria. Further, most of studies revealed that relations studied tend to focus on the limited topics of interest in tourism research. This indicates gaps in myriad of tourism topics in business management; which often have consequences for niche tourism areas such as gastronomy. Therefore, this study makes the following recommendations in future study:

- Adoption of a wider multi-disciplinary approach in research, including systematic reviews to capture and highlight broader conceptual and methodological; approaches in terms of SNA in gastronomy tourism research.
- Research in tourism and hospitality based on gastronomy and SNA be explored further and methods varied to include quantitative data analysis, and more complex analysis of bipartite network structures that can reveal more expansive issues that affect the different levels of gastronomy actors, their relations and consequences of those ties that often exist between them. Thus a move towards cause effect explanatory relations.
- Researchers in SNA and gastronomy tourism base their inquiry on relational data that affects pertinent issues in the business and management perspective of the actors/food businesses.

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