Cuadernos de Turismo, nº 36, (2015); pp. 477-480 Universidad de Murcia
ISSN: 1139-7861
eISSN: 1989-4635

RESEARCH AGENDA FOR TOURISM USING QUANTITATIVE SOCIAL NETWORK ANALYSIS (QSNA)

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Interest in incorporating the concept of networks for the analysis of tourism has been a very important element in recent scientific literature. We should highlight, therefore, the fact that tourism has not been isolated from the development of the social network perspective as an analytical instrument in Social Sciences in general.

However, it is important to recall that, for the Social Sciences in general and for the study of tourism in particular, there is no single concept of a network. Many, varied focuses have, in fact been used and we therefore maintain that there is a network perspective which is made up of different theoretical and methodological proposals. It is also true, though, that all of these share the same conceptual approach to explain the phenomena being studied: a given social phenomenon can be conceived as a set of clearly differentiated, yet interrelated, parts.

From this perspective, interest in addressing the comprehension of tourism in terms of networks is more than justified: firstly, tourism as a productive activity, is clearly fragmented into a set of parts which make up the different components of a tourism experience (travel, accommodation, food, security, resources of interest on the visit, etc., which depend on the actions of different bodies and organisations), and secondly, a certain degree of interaction between those component parts is required in order to be consumed or used by the tourist, and this inevitably requires different forms of collective action.

With the aim of being descriptive, rather than exhaustive, we can state that there are four clearly differentiated ways of applying the network perspective to the study of tourism: the network as a metaphor for the interrelationships between the different components of the product or tourist destination; the factors which positively or negatively influence and condition the existence of interactions; the network as content on which the relationships between the different parties of the tourism phenomenon are based; and fourthly, the components of the structure of the network are of interest.

But from the methodological point of view, these four different ways of approaching the study of tourism have been reduced to two fundamental focuses: the qualitative focus and the quantitative focus. In the former, the analysis of the relationships is based on the

properties of the content of the relationships which are expressed through the existence of interrelationships between the different components of tourism activity (which are generally identified as tourism actors), expressed in terms of the factors which condition or allow the relationships, their nature (formal/informal), their form (collaboration/cooperation), their being more or less institutionalised, etc. And the latter case addresses the reticular properties of the networks, with the application of complex mathematical techniques which provide the structural configuration of the relationships.

In this paper, we shall concentrate on the second focus so that, through the adoption of the principles of matrix mathematics, the characteristics of the networks of relationships can be obtained in order to analyse tourism. It is the application of the theoretical-methodological framework known as Social Network Analysis to the study and comprehension of tourism. Social Network Analysis has been developed in recent years in the Social Sciences and is based on the application of mathematical principles to the study of interrelationships in order to provide explanations of complex social phenomena. It has been applied in research in different areas of Social Sciences earning special relevance in the field of analysis over the last two decades. Social Network Analysis has been used in many, varied fields of the different Social Sciences: health, public policy, economic development, business organisation, etc. The fundamental objective of Social Network Analysis is to study the structural properties of networks, which are understood to be a set of nodes -elements- and the links between them -relationships- It is, then, a means of focusing analysis on the reticular properties of the network, rather than on the individual characteristics of the elements which make possible the relationships in the network. Clearly, the unit of analysis is the network and its properties, not the attributive characteristics of the elements which make up the network. This is neither the time nor place to enter into an in-depth debate on the characteristics and theoretical-methodological principles which inspire this focus, since there already exists abundant, significant scientific literature on Social Network Analysis which will offer further explanation of this focus, if required.

But it is useful to note that, from this focus, the network is made up of a set of elements (persons, groups, organisations, countries or events), which are called nodes, and the specific relationships which exist between them, called links. Using different information-gathering techniques, data is obtained about the relationship between the elements which make up the network and an analysis based on matrix algebra and graph operations is made of them to give us the structural properties of the network under study, based on cohesion measurements (centrality and clustering) and structural equivalence.

The purpose of this paper is to review the literature published over recent years in the main Spanish and international scientific journals and in other publications, especially books, which have used Quantitative Social Network Analysis (QSNA) to study tourism. In this regard, the interest of this research is that we present, in a systematic and orderly way, all the scientific contributions that have used QSNA methods and techniques to analyse tourism and that make up the current research agenda. Therefore, this attempt to systematise the research on the topic will provide researchers with useful references to guide their work using QSNA. But at the same time, we present a proposal to improve the future tourism research agenda, based on QSNA, to provide a framework for future research work and analysis.

The application of QSNA to the study of tourism has followed a clear line of work characterised by the predominance of research whose unit of analysis is the destination, the scope of the work is typically the description of the relationships, mainly through a single case study and the use of network density indicators and indicators of the centrality of the actors.

We can, therefore, maintain that there have, to date, been few research papers which use QSNA to analyse the effect of the relationships between the actors on tourism, that is to say, the effect of the networks on the results of the tourism market being analysed. The few papers which we have found in the literature which concentrate on the effect of networks are single case studies and they use indicators of the centrality of actors and relational density.

If we centre on the techniques used, it can be seen that indicators of the cohesion of the networks (centrality of the actors, density of the network, graphic representation of the network, degree of intermediation and clustering index) predominate and that there is no research which studies the clustering indicators of the network. There are also some research papers which apply more advanced techniques and indicators such as, for example, dynamic analysis, modular analysis, algorithms and structural equivalence, but all of these papers offer a descriptive focus and are applied in a single case study.

It can be maintained that the application of QSNA to the study of tourism as it appears in the scientific literature has, in recent years, been sufficiently positive to improve knowledge of tourism from a relational perspective, since it demonstrates that the reticular structure of the networks which support tourism activity is a fundamental component of that activity. However, we believe, on the basis of the characteristics of the research shown in the previous section, that it is necessary to continue researching into tourism with QSNA since single case studies and research based on the description of the characteristics of the network are significantly predominant.

From this perspective, we believe that one of the great opportunities offered by reticular analysis of networks has not been fully exploited: the possibility of ascertaining the effect and impact of networks on performance and the results of tourism activity. Therefore we call for more research which contributes to establishing the interaction between the characteristics of networks of actors in a given tourism destination and the level of development of tourism –results and performance- in support of the widely-held thesis that, as the level of development of tourism in a given territory rises, the networks of that territory also develop greater relational intensity, thereby opening up new prospects for the application of QSNA to improve comprehension of tourism.

On this basis, it is clear that the first proposal for a future research agenda into tourism using QSNA should be studies which include a large number of cases, that is, of destination networks, in order to be able to present clearer evidence of how the characteristics of different networks affect the level of development and the results of tourism in the territory. If multiple locations are studied and if statistical techniques are used, it will be possible to clarify how the differences between networks are (co)related to the development and results of tourism. For this first proposal regarding the research agenda, use can be made of basic indicators and network cohesion measurements which have appeared in the scientific literature in recent years and which have worked well in the case studies made to date.

But, at the same time, as we improve comparative studies of networks using basic cohesion measurements, it is necessary to propose further steps in terms of the use of new network measurements, especially those which use clustering indicators and structural equivalence and analysis (which have been used very little) and are spatially oriented to evaluate the impact of these indicators on the tourism results of those networks. This research in the immediate future could be dominated by a case study to improve the analytical accuracy of those indicators and their links in terms of tourism performance in the territory so that, in a relatively short timeframe, a greater number of case studies can be undertaken in order to make statistical checks which will allow us to improve the analytical visibility of the influence of these structural aspects of networks and the level of development of tourism in different territories.