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Central and Periphery Structures: Using Network Science to Understand How DMOs Organize for Destination Innovation

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ABSTRACT

This study proposes to use theories of networks and innovation to determine how a system of relationships between the DMO and its destination partners impact the development and outcome of innovations within a tourist destination. The study attempts to understand the role of DMOs in respect of assuming positions of power and influence for innovation output. While it is hypothesized that DMO centrality is important to innovation however the type of innovation as well as the type of partner with whom the DMO collaborates has a significant effect on the development and implementation of the innovation, as well as the overall success of the innovation outcome.

Keywords: hub firm, innovation, knowledge mobility, network, partner collaboration

INTRODUCTION

Tourism destinations are increasingly required to become more and more innovative in order to maintain competitive advantages in an increasingly competitive and global environment. Knowledge has been identified is a core component of tourism innovation research, and as such, allows for the representation of a destination’s stakeholders as ‘nodes’ in the destination’s knowledge and innovation network. Recent research in this area indicates that the tourist value-creation process (or ‘value-net’) includes destination management organizations (DMOs), conventions and visitors’ bureaus (CVBs), local businesses, community, and visitor co-creation (Wang and Fesenmaier, 2007). This is symbolic of what von Hippel (1988, 2009) described as ‘democratic innovation’ whereby multiple interests may converge on the development of a product or service innovation. Similar research also indicates that collaboration culture and partner integration are critical drivers of destination innovation (Zach and Racherla, 2011). It is argued however, that the complex heterogeneity which characterizes destination organizations requires a collective conceptualization of the destination in order to better understand the location and transfer of knowledge among stakeholders. As such, it has become increasingly important for tourism research to extend beyond simply describing the position and structure of the DMO and its destination partners, and instead attempt to better understand the nature of the action and process behaviors in which DMOs and their partners engage in order to bring about innovative outcomes at the destination. The goal of this study is to address this gap by investigating the transfer and use of knowledge and information by the DMO and other destination stakeholders within the context of destination innovations.
LITERATURE REVIEW

The confluence of organization, marketing and strategy research has led to substantial development in our understanding of the factors driving innovation. The role of knowledge has been seen as increasingly critical to destination innovation and stakeholder engagement. Dhanaraj and Parke (2006) identify and define hub organizations as key actors which possess prominence and power in the network, and which are able to use these attributes to perform a leadership role in the orchestration of innovation networks. In this regard, the authors refer to knowledge mobility as the ease with which knowledge is shared, acquired and deployed within the network. A corollary of this view is Cohen and Levinthal (1990) and Zahra and George (2003 notion of absorptive capacity when considered at the inter-organizational level of analysis. Figure 1 provides the theoretical framework within which these concepts may be extended to tourism.

![Figure 1 - Theoretical Model](image)

In the context of tourism, destination management organizations (DMOs) are increasingly challenged to adopt new ideas and behaviors (Zach, Xiang and Fesenmaier, 2007) as they collaborate with other partners and stakeholder members in the destination network. More and more, this web of destination partners and collaborators, especially given over to the heterogeneity of size, location, resource and capacity constraints, collectively form a complex and dynamic network upon which the product and service infrastructure for the destination is deemed to exist. Baggio & Cooper (2010) identified the need to focus on network configuration and metrics linked to the competitive performance of destinations, while Mandarano (2012) demonstrates the value of social networks in evaluating the effectiveness of collaborative planning on developing social capital through inter-organizational relationships. Similarly, Sorensen (2007) and Beritelli and Laesser (2010) both found that knowledge is a key component of destination network activities; however neither adequately present an understanding of how knowledge use, transfer and sharing translates to destination innovation. Destination management organizations who are able to enjoy a degree of network centrality deliberately and purposefully act to preserve, exploit, and manage the network through knowledge mobilization. Hence,

Hypothesis 1: Knowledge mobility will be greater the higher the degree of (hub) centrality enjoyed by the DMO in the network structure.
The two best-known concepts in network theory are Granovetter’s (1973, 1983, 1985) strength of weak ties (SWT) and Burt’s (1992) structural holes (SH). In the case of the former, the idea is that two strong ties A and B are likely to exhibit homophilous behaviours, sticking closely together and having overlapping ‘social worlds’. Both A and B will however likely have ties outside of each other with say C, whereby C represents a ‘weak tie’ in respect of C’s connectivity with A and/or B. More importantly, C represents a broker or ‘bridging tie’ through which new ideas and innovations may be transferred, with implications, according to Granovetter, for social capital and mobilization of resources. In the case of Burt (1992), structural holes theory of social capital suggests that to the extent that A’s ego network (the number of nodes/ ‘friends’) has more structural holes (more diverse ties) than B’s ego network, A will enjoy better performance, and access to more novel pools of information. Both views provide complementary support to the study of innovation as a social process in tourism. Sorenson (2007) for example, used social network theory in tourism and found that the presence of a combination of local, weak, dense networks as well as non-local, strong, sparse networks provide the most support for information flow opportunities (Sorenson, 2007). This is not surprising, in that destinations are diverse in nature and character, and comprise various tourism-related individuals and entities which represent a diversity of knowledge and information artifacts and ultimately, innovations. Hence,

Hypothesis 2: Knowledge mobility will be greater the higher the degree of peripheral partner-type collaborations in the network structure.

Given that the products and services offered by tourism are experiential in nature, the time taken to transfer tacit knowledge would almost always be ‘interrupted new knowledge’. Even more important, the DMO may not directly be involved with the production of goods and services. Rather, the role of the DMO is to provide and facilitate the flow of knowledge support amongst the various stakeholders in order to bring about the successful creation of the tourist experience through and by these providers. Beritelli and Laesser (2010) found that knowledge occupies a significant role in the perception of influence and reputation relations across tourist-related networks, but there is a dearth of research focusing on innovation in tourism (Hjalager and Nordin, 2012) specifically as it relates to the development of how the type of innovation influences the innovation outcomes of the destination. Therefore,

Hypothesis 3a: Type of innovation will have a moderating effect on the relationship between DMO centrality and knowledge mobility.

Hypothesis 3a: Type of innovation will have a moderating effect on the relationship between peripheral partner-type collaboration and knowledge mobility.

The issue addressed by this study therefore focuses attention on how a destination may become more innovative, arguing that knowledge mobility and transfer behaviors among destination stakeholders are the key to innovation output and ultimately to the success of these innovation outputs:

Hypothesis 4: Higher levels of knowledge mobility in the network will lead to higher levels of network innovation output.
**Hypothesis 5**: Higher levels of network innovation output will lead to higher levels of network innovation success.

**METHODOLOGY**

The overall approach of the study involved an explanatory sequential approach. The first phase of the research involved the use of survey items from previous studies on inter-organizational, collaborative relationships in tourism (Zach and Racherla, 2011) and innovation (de Brentani, 2001). Absorptive capacity (Cohen & Levinthal 1990; Zahra & George 2003) was used as a proxy for knowledge mobility. Innovations were defined as any new or improved product or service which was introduced to the destination in the past three years. The sample frame for this survey comprised 2,000 American DMOs. The survey was pilot tested and after minor revisions distributed. The final survey was distributed with one invitation and three reminders over a 4-week period. A total of 145 usable responses (about 7.25% response rate) were collected. DMO centrality and partner-type was calculated using Freeman’s formula for degree centrality:

\[
C_D = \frac{\sum_{i=1}^{N} c_D(c_D(N_i) - c_D(0))}{(N-1)(N-2)}
\]

The second phase of the research involved the qualitative follow-up aspect of the study in which a case study focused on a single, North-American DMO. The purpose of the single case study approach was to further explain the initial quantitative results in more detail, using the voices and perspectives of the participants in their use of knowledge for destination innovation outcomes. The case study data was collected by way of semi-structured interviews with members of the senior leadership at a single DMO in Summer 2012. Interview questions were based on the survey items used in the first phase of the study. The particular DMO was selected based on their previous participation in the quantitative phase of the study, and their use and transfer of knowledge in partner-type collaborations for an innovation conceptualized, developed and implemented within the past three years. The objective of the interviews was to gather data on the ideas, people, situations and decisions which represent key components of knowledge use and transfer among members of the network during the life of the innovation project. The goal was to successfully triangulate the interview and survey results to provide insight into how DMO centrality, peripheral partner-type collaborations and knowledge result in innovation output. Interviews ranged from between forty-five minutes to seventy minutes and were video recorded and later transcribed. Interviews began with the Executive Director and managers of the Marketing, Public Relations and Destination Development management team. These interviews were followed by another round of interviews with individuals and organizations identified by the DMO as partners (individuals and/or organizations) with whom the DMO collaborated in the initiation, development and production of the innovation. The innovation in question was a $20 million dollar re-design and renovation of an 18th century theatre in the downtown area. The interview questions were coded based on analysis of the various respondents’ phrases which referred to the DMO’s role in the innovation during the life of the project. For example, phrases which depict the role of the DMO as “leader” include ‘lend oversight’ and ‘provide approvals’. Also, phrases such as ‘negotiate outreach’ and ‘communicate with nay-sayers’ depicted the role of the DMO as “collaborator”.
FINDINGS/RESULTS

Quantitative analysis

Not surprisingly, the degree centrality from the first phase of the study depicts the hub and spokes visualization, as shown in Figure 2. The three clusters represent the responses of DMOs to the primary category of partner with whom they collaborated and with whom they shared knowledge. Cluster A represents the number of DMOs who indicate that they partnered with a retail business firm to bring about the particular innovation. Cluster B represents the DMOs who partner with other DMOs and cluster C, DMOs who partner with regional development agencies. The smallest cluster with only three nodes extending from the hub, show DMOs who partner with tourism agencies.

Figure 2 - DMO Centrality and Partner-types
In Figure 3, the three clusters represent the responses of DMOs to the primary category of partner with whom they collaborated and with whom they shared knowledge for a particular innovation in the past three years. Of 1,340 innovations within the past three years, identified by the 145 DMOs, 652 innovations were initiated by a partner and developed with the DMO (“partner-led”) and 688 innovations were initiated by the DMO and developed with a partner (“DMO-led”). In nearly all cases, as can be seen in the clusters in Figure 3, the partners with whom the DMO regularly engages in knowledge and innovation idea exchanges are the same partners with whom the DMO collaborates for innovation output. The edges which appear heavier in weight are indicative of the almost even split between the DMO-led and partner-led innovations.

Figure 3 - Peripheral partner-type structures
Qualitative analysis

The destination management organization (DMO) is responsible for the overall planning, development and marketing of a destination. As a central member of the network of destination stakeholders (Ford & Peper 2008; Zach, Gretzel & Fesenmaier, 2008), the DMO is charged with the tri-partite responsibility of convener, agent of socialization and collaborator of tourism knowledge. As a convener, the DMO is responsible for managing the flow of communications amongst destination stakeholders. The DMO provides information on destination calendar events such as will benefit local state, business, residential and community interests. The results of the qualitative interviews lend support to the notion that destination innovation is a dynamic phenomenon shared across various tourism organizations, but where the DMO is central to the network of players. Terminologies describing the DMO as knowledge ‘leader’, ‘broker’ and ‘collaborator’ in the tourism literature as well as by the following quote are indicative of this:

“It’s about building relationships, and ensuring you [DMO] have a seat at the table; understanding the complexity involved with working with not-for-profits and government - they trust us to get it done.” (Destination Development Manager, DMO)

The role of the DMO therefore is that of agent of socialization, given that in the creation of the new product (multimillion dollar renovation of a performance theater), was placed within the charge of the DMO. According to the Destination Development Manager (DDM), ‘having a place at the table’ is critical to the success of the ECCVB’s destination development goals. A corollary of this is placing a value on things which contribute to a ‘higher quality of life’ on the development agenda which according to the ED, involves not only tourism development, but also community development. According to a public relations consultant at the DMO, a primary role involves ‘working between the media and community members’ in order to both preserve historic sentiment of the destination whilst promoting, attracting and entertaining visitors. Critical to this collaborative process is the role of ‘trust’ between the DMO and destination partners such as the members of the local community, for example.

“...it took a couple of years of socializing. We deciding that instead of simply ‘making it happen’ we would work on socializing the concept, taking it step by step and getting key influencers and key community leaders, and some people who just complained...we wanted to get everyone around the table.” (Managing Director, DMO)

In its role as collaborator, the DMO is responsible for implementing and managing change at the destination level. Examples of change include community development, development of public spaces, preservation of historical sites and landmarks as well as the development of visitor attractions and community development projects. Whilst DMOs traditionally evolved out of the role of selling and marketing the destination to visitors, recent shifts in what defines the successful performance of a DMO have focused more squarely on the development of the ‘community’ as a whole, and on the ability of the DMO to engage business, government and private residents in the change and development at the community level. As the head of one CVB indicates in respect of managing change:

“...we had to start thinking about community, and about development and about sustainable change, not just activity and in order for us to define success, in order for us to have maximum impact on our community, we had to be different...it was about building a better community” (Managing Director, DMO)
Structural equation modeling was deemed appropriate for evaluating the final model, given the causal, hypothesized relationships between the central versus peripheral network structures, knowledge mobility and network innovation output and success. Partner-type collaboration, as before, was determined as “DMO-led” if the innovation was initiated by the DMO and developed with a partner and “partner-led” if the innovation was initiated by the partner and developed with the DMO. Innovation type was measured by whether the innovation was belonged to one of three categories of innovations namely, if the innovation was a new to the destination service/product output; improved if the innovation was the renovation or redesign of an existing service/product, as in the single case study. These results of the final model are presented in Figure 4 below.

DISCUSSIONS AND IMPLICATIONS

As collaborator, the DMO is responsible, in most cases for spearheading the development of destination projects, ensuring as much as possible that tensions associated with new innovations when imposed on existing infrastructure would have to be managed. In this regard, a position of power and influence is critical to the successful support of knowledge and information flow, therefore support was shown for Hypothesis 1. The single case study concerned the renovation of the historic building, and a project for which widespread views anticipated that the risks far outweighed the benefits. Such a case in which the renovation involved the use of tax dollars and required a high degree of transparency, could lend support to the non-significance of Hypothesis 2 in respect of partner-led collaboration. Moreover, innovations for which the collaborative efforts rested with DMO in respect of oversight, but in which final approval came from a state office (in this case, the Office of the Mayor), could explain the negative moderating effect found for Hypothesis 3a and the positive, significant moderating relationship for 3b. The fact that the sample shows an almost equal number of innovations led by partners as well as by DMOs provides support for Hypothesis 4 in respect of knowledge mobility and network innovation output. Also, it could be explained that at various points in a project life cycle, knowledge boundaries become ‘blurred’ across heterogeneous interests attempting to transfer and use new knowledge in response to the innovation process, similar to Huber’s (1999) learning exploitation versus exploration. The issue for some stakeholders however was far less about the renovation, and more a question of whether the benefits of creating a rich historic building would be beneficial to the community. No support
was found for Hypothesis 5, perhaps based on the fact that subjective measures for innovation success were used in both phases of the study, an inherent weakness being the inability of DMO managers to articulate the overall success of an innovation for which the true determinant of success (tourist consumption) are outside of their immediate purview, hence their need to rely on secondary information sources.

Table 1 summarizes the role of the DMO in the development of the new theater, the partners with whom the DMO collaborated as well as the frequency with which the collaborations occurred:

<table>
<thead>
<tr>
<th>DMO Centrality Role</th>
<th>Partner-type Collaboration</th>
<th>Collaboration Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agent of socialization</td>
<td>Local businesses, residents, not-for-profits, downtown and civic leaders, public-at-large</td>
<td>Community buy-in</td>
</tr>
<tr>
<td>Project leader</td>
<td>Local contractors; engineers</td>
<td>Compliance, oversight</td>
</tr>
<tr>
<td>Collaborator</td>
<td>Committee appointees</td>
<td>Committee formation, sub-groups</td>
</tr>
<tr>
<td>Communicator</td>
<td>Local businesses, residents, not-for-profits, downtown and civic leaders, public-at-large</td>
<td>Management of negative messages</td>
</tr>
<tr>
<td>Executor</td>
<td>Local contractors, engineers</td>
<td>Development and implementation of plans programs</td>
</tr>
</tbody>
</table>

CONCLUSIONS AND FUTURE STUDIES

This study found that innovativeness within the destination is based not only on the DMOs’ position within the destination network, but also on the underlying knowledge relationships between the DMO and their destination partners. Through these relationships, destinations are better able to develop and introduce innovations. These innovations help to create new visitor experiences and also assist destination stakeholders in developing new services. The role of trust is critical to the knowledge network in its support of external collaboration. This suggests that DMOs must engender and employ strategies which involve key destination players by adopting organizational settings which ‘reach out’ to destination businesses, individuals, public and private sector groups, in order to develop successful innovations. Future research should involve the network analysis of the destination players in order to identify the relationships among the DMO and its partners. Within a diverse stakeholder
environment such as a tourist destination which comprises government, business, community and visitor interests, management of diverse and special interest is critical to engendering success within the local community in order to avoid what would likely term a communication-based problem of social policy implementation.

A key contribution of this study is the first step made towards understanding the role of the DMO as a hub organization. In this regard, the DMO is able to weave its influence through the network of heterogeneous network actors, in spite of its lack of hierarchical authority. The notion of reputation is another primary platform upon which future studies may be launched, as the reputation derived from a position of influence is seen as important to the development of innovations. Notwithstanding that DMOs are important to innovation process, the non-significance of partner-led collaborations may in fact suggest that depending on the nature of the innovation (e.g. radical, incremental, new to the organization or destination), then DMO-led innovation structure is better, whereas for others the partner-led may prove more advantageous. The type of innovation will also determine whether or not the DMO or partner should lead the innovation in the initial stages and subsequently hand over the reins to the partner, or vice-versa. To better understand this phenomenon of initial versus late stages of the innovation process, future studies should look at the way in which the network evolve thereby allowing for a better understanding of the innovation process and what the role of the DMO should be at various stages of the innovation.

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REFERENCES


