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The Use of Social Network Analysis to Examine the Interactions between Locals and Tourists in an Online Community

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ABSTRACT

Although previous research has examined the social interactions between online travel community users, they did not adequately show the process and pattern of online interactions between locals and tourists due to methodology limitations. Accordingly, this study examined how friendships between locals and travelers are made through online travel communities, and also investigated the role of an offline meeting in building online friendships. Data were collected from CouchSurfing.com, a hospitality exchange network. Consequently, Social Network Analysis (SNA) revealed that locals and tourists build friendships in an online community through offline events. Thus, it can be argued that the online friendships between locals and tourists in an online community are likely to be formed after a face-to-face meeting, not only by online interactions. Thus, by using the nature of online friendships, an online travel community can design a consumer-centric website.

Key words: *host-guest interactions, online travel community, Social Network Analysis.*

INTRODUCTION

In tourism literature, online community research has become increasingly popular since online communities are a potentially credible information source which can provide consumers with personalized user-generated content, trustworthy reviews and recommendations (Buhalis & Law, 2008). In addition to functional benefits, online community members are able to participate in a community for a wide range of purposes including fun, enjoyment, and amusement (Chung & Buhalis, 2008). They can also build relationships with other members without geographical restrictions. Thus, previous research has examined the social interactions between community users, and found that an online travel community can play a role in bridging the gap between locals and tourists (Chung & Buhalis, 2009). However, although these findings give insight into the future direction of online travel community research, the previous study did not adequately show the process and pattern of online interactions between locals and tourists due to methodology limitations. Chung and Buhalis (2009) used only dyadic data which includes ties

among pairs and does not encompass the nature of the entire network, and therefore, they suggested that further research should analyze online networks using alternative methodologies.

Accordingly, the purpose of this study is two-fold: 1) to examine the role of an online travel community in connecting locals to tourists and analyze how the relationships are being made; and 2) to assess the impact of an offline event (face-to-face meeting) on building online friendships between locals and tourists. In this study, an online friendship refers to voluntarily selected relational ties, and the friendship is mutually agreed upon with a help of 'friendship' function in an online travel community. Particularly, this study will use Social Network Analysis (SNA) for analyzing online interactions between locals and tourists. Garton, Haythornthwaite, and Wellman (1997) recommended that Social Network Analysis would be a useful tool to examine the pattern of computer-mediated communications.

LITERATURE REVIEW

Online travel community

Previous research revealed that online travel community members seek not only functional benefits (e.g. information acquisition), but also social-psychological and hedonic benefits from the virtual space (Bagozzi & Dholakia, 2002; Chung & Buhalis, 2008; Wang & Fesenmaier, 2004; Wang, Yu, & Fesenmaier, 2002). This is consistent with the nature of an online community which has stressed the role of maintaining connections and relationships among individuals (Rheingold, 1993). Therefore, traditionally, research about online travel communities has focused on consumer behavior (e.g. community users' information search behavior or interactions among community users), yet little attention has been paid to the relationship between travelers and locals via an online community (Chung & Buhalis, 2009). More recently, Arsal, Woosnam, Baldwin, and Backman (in press) argued that local residents in an online travel community play important roles in providing destination information to prospective travelers. Specifically, they found that while locals are more influential for community members in accommodations and food recommendations, experienced travelers are more influential in giving destination general information (Arsal, Woosnam, Baldwin, & Backman, In press).

Online friendship

The contributory role of online friendships to social networking sites (e.g. retaining online users) has been recently researched (boyd & Ellison, 2007; Hu, Wood, Smith, & Westbrook, 2004). Brown, Broderick, & Lee (2007) argued that many studies based on the social information processing model have found that individuals make and maintain positive and friendly relationships in online settings (Tidwell & Walther, 2002; Utz, 2000; Walther, 1992). Social networks theory has also been largely applied to understand online users' behaviors and network characteristics (Garton, Haythornthwaite, & Wellman, 1997). In particular, a personal relationship has been found to be a critical element for building online social networks (Parks & Floyd, 1996).

Social Network Analysis

A social network refers to a structure of actors (nodes) and their relationships (links) within a society (Scott, 2000; Wasserman & Faust, 1994). An "actor" refers to a social entity, and a "link" refers to the linkages between pairs of actors (Scott, 2000). These relational ties are

not necessarily limited to physical connections, as intangible relationships such as information sharing, friendships, or affiliations could be involved in social networks. One way to examine Social networks theory is with Social Network Analysis (SNA). In social network analysis, several key concepts are given to explain a social structure (Wellman, 1983). The indicators, representing social networks, have been developed to better understand network properties using different levels of analysis: individuals, dyads, triads, subgroups, and global groups (Monge & Contractor, 2003; Wasserman & Faust, 1994).

Several measurements have been employed to evaluate various properties at different level of analysis. At the individual level, degree, centrality, closeness, and betweenness have been used to represent the roles and positions of actors in the network (Monge & Contractor, 2003). Degree is defined as '*the number of direct links with other actors*' (Brass, 1995), whereas betweenness is used to measure indirect connections and closeness to measure the extent to which actors are directly or indirectly connected to all other actors in a network. Additionally, centrality indicates the prominence of certain actors in a network (Hwang, Gretzel, & Fesenmaier, 2006; Wasserman & Faust, 1994).

Additionally, other measures such as density, centralization, and size have been employed to describe entire networks (Monge & Contractor, 2003). Density refers to the level of linkage among nodes in a network (Scott, 2000), and is measured by the ratio of the number of lines to the number of possible lines (Brass, 1995). Thus, the more points that are connected, the higher the density the graph presents. Centralization is '*the ratio of the actual sum of differences to the maximum possible sum of differences*' (Scott, 2000, p. 90). Thus, while density describes the general level of cohesion in a network, centralization shows how the cohesion is organized around the central points.

METHODOLOGY

CouchSurfing.com

Data were collected from CouchSurfing.com, an online travel community or hospitality exchange network. Since 2004, a number of members (called CouchSurfers) have used this community. CouchSurfing.com currently has over 1,500,000 registered members from 238 different countries (CouchSurfing, 2010). This online community aims to connect potential travelers to locals who are willing to provide them with free accommodations, and research has shown that the opportunity to build relationships between potential tourists and locals has gradually increased (boyd & Ellison, 2007; Chung & Buhalis, 2009). Moreover, many members also use this community for sharing their personal interests and collecting information on destinations where they plan to visit (CouchSurfing, 2010). The statistics report of CouchSurfing.com shows that about 76% of CouchSurfers have experienced hosting or couch surfing of other members (CouchSurfing, 2008). Surfing refers to staying at the other member's place, and hosting indicates the provision of one's own place for accommodation. In particular, almost 99.8% of all hosting or surfing experiences are positive (CouchSurfing, 2008). Beyond the initial purpose, many members also use this website for communicating their personal interests and collecting information on destinations which they plan to visit. In addition, numerous offline meetings and events at destinations have been voluntarily organized by community members, and the face-to-face interactions are expected to enhance the online social networks.

Data collection

In this study, one of the subgroups in CouchSurfing online networks, “*Dallas CouchSurfing Meeting*”, was purposively selected, considering their feasibility (number of group members) and the accessibility of their network data. This offline event was held at Dallas, Texas on April 12th, 2008. The purpose of the event was to gather together and discuss any issues from local tourism to personal travel experiences. It was open to public (locals and tourists). The meeting offered the opportunities to have face-to-face relationships among CouchSurfing.com users and to share some information on Dallas travel and furthermore find free accommodations. The total attending members were 47 (locals 32 and tourists 15). Friendship-related information (e.g. the degree of friendship from 1, haven't met yet, to 7, best friend) were obtained by examining both comments and profiles of the actors. To assess the impact of the offline meeting on online networks, friendship network patterns in the group were also recorded prior to and after the event, separately.

RESULTS

Results revealed that the subgroup had 47 members and among them, 31 members were linked together online, and 16 actors were isolated (which means that they have no friendships with any other actors at any level) even if they attended the offline event. Approximately one half of respondents were female (51%), the average age was 30.1 and the average number of friends in an online travel community was 24.9 per actor.

Visualization is one of the most effective ways to observe the pattern of networks. This study used the NetDraw 2.089 visualization program (Borgatti, 2002). Consequently, the preliminary analysis showed the online networks of Dallas event participants: locals and tourists friendships (Figure 1a), locals’ friendship (Figure 1b), and tourists’ friendship (Figure 1c).

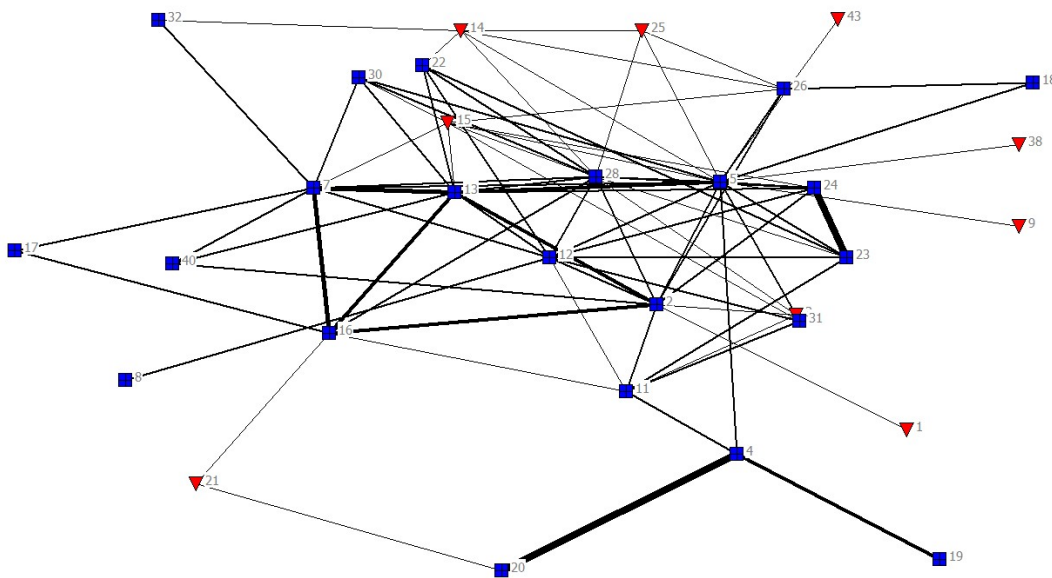


Figure 1a Locals and Tourists Networks among Dallas Event Participants

* Actors: box (locals), down triangle (tourists)

* Only linked actors are shown

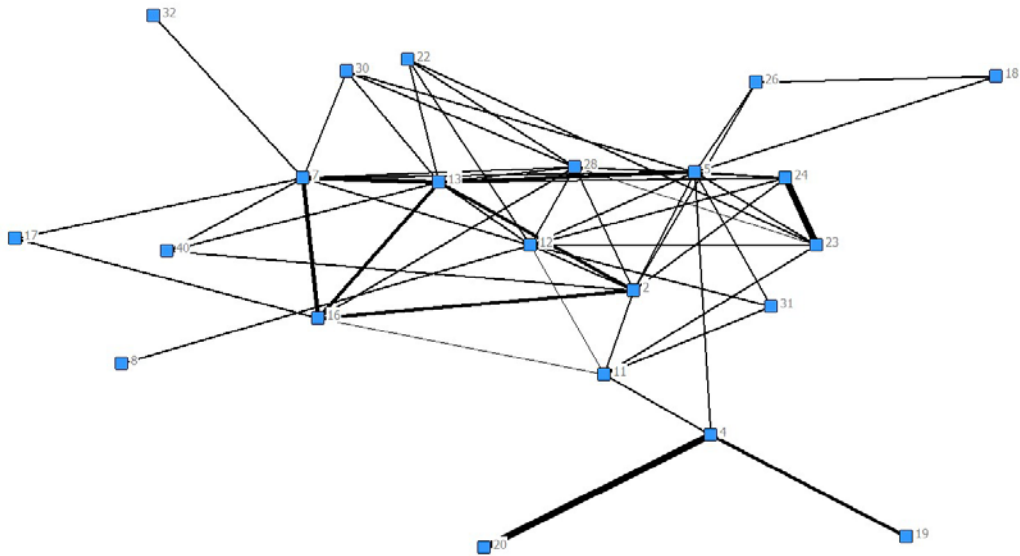


Figure 1b Locals' Networks among Dallas Event Participants

Figure 1a shows that locals have more central roles in the networks than tourists. Also, the degrees of friendships among locals were relatively much stronger than those of tourists. The thickness of each line indicates the tie strength (i.e., the thicker, the stronger the friendship). Conversely to the locals' network, the tourists' network (Figure 1c) involves only one friendship between tourists (actor 14 and actor 25).

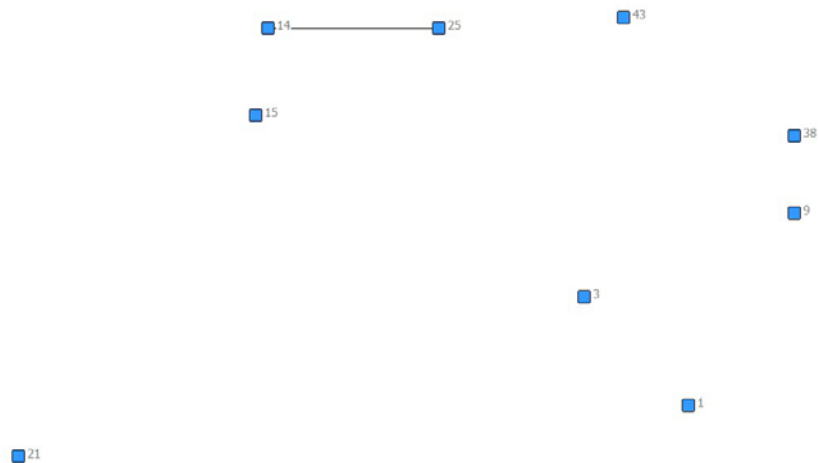


Figure 1c. Tourists' Networks among Dallas Event Participants

Accordingly, it can be concluded that tourists tended to make their friendships only via local people. In addition, the impact of an offline event on online community members' friendships were investigated by comparing several measurements of social network analysis - UCINET 6.235 (Borgatti, Everett, & Freeman, 2002). As shown at Table 1, the averages of

degree for each actor increased (3.36 to 11.49), and also the total number of friendships in the entire social network substantially increased (158 to 540).

Table 1 Degree/Closeness Centrality and Density

	Before Dallas event	After Dallas event
<u>Degree Centrality</u>		
Mean	3.36	11.49
Standard Deviation	5.07	13.86
Sum	158.00	540.00
Minimum	0.00	0.00
Maximum	24.00	61.00
<u>Density</u>		
Mean	3.95	3.21
Standard Deviation	1.32	0.82
<u>Centralization</u>		
	6.7%	16.1%

Centralization also increased (6.7% to 16.1%), yet the level of density dropped a little bit (3.95 to 3.21) after the Dallas event.

DISCUSSIONS AND CONCLUSION

This study examined how friendships between locals and travelers are made through an online travel community, and also investigated the role of an offline meeting in building online friendships. Consequently, Social Network Analysis (SNA) revealed that locals and tourists build friendships in an online community through offline events. The current study found that a number of new friendships were substantially made after the Dallas event. It was also found that tourists tend to extend their friendships network only via local people. In sum, it can be argued that locals and tourists make their friendships in an online travel community, but the online friendships are likely to be formed after a face-to-face meeting, not only by online interactions.

This study revealed that friendships in an online travel community are mainly influenced by offline interactions. Thus, the nature of online interactions can be explained by the notion of latent ties. Latent tie theory argues that individuals have latent ties – “technically possible but not yet activated socially” (p.137) in online settings (Haythornthwaite, 2005). Latent ties can be converted to weak or strong ties by reinforcing relationships with others. In other words, members of CouchSurfing.com have only latent ties via viewing others’ profiles or chatting with them, which can develop the ties into strong friendships after attending an offline meeting or being couched. This result support the argument that the main function of this social networking site was not to allow individuals to meet strangers, but to enable them to articulate their personal networks and make them visible (boyd and Ellison, 2007).

A friendship network can be a trustworthy information channel or electronic word-of-mouth (eWOM), which can have a greater impact on product judgments, attitude formation, and decision making than conventional marketing communications (Brown, Broderick, & Lee, 2007).

Thus, by using the nature of online friendships, an online travel community can design a consumer-centric website. Additionally, the fact that online users generally build friendships after face-to-face meeting provides destination marketing organizations with significant practical implications. That is, a tourism organization can consider sponsorship for an online travel community's event in online and/or at a destination. This strategy could facilitate the interactions among online users, which could later contribute to spreading positive images across potential tourists resulting in the promoting of a destination. Also, the identification of a broker or gatekeeper in a social network could help a destination in marketing effectively because the brokers or gatekeepers might have some control over the interactions between other actors (Wasserman & Faust, 1994). In other words, as a gatekeeper plays an important role in a network, if tourism marketing successfully persuades the gatekeepers, it could be more likely that the central actors spread favorable eWOM to other actors in the network. However, despite these anticipated practical implications, destination marketing intervention needs to be carefully made because the CouchSuring.com community is a non-profit organization (CouchSurfing, 2010).

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