



## The influence of knowledge distance and academic experience on tourism scholars' creativity

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How to cite: Wang, L., Li, Y., & Liu, C. (2019). The influence of knowledge distance and academic experience on tourism scholars' creativity. *Social Behavior and Personality: An international journal*, 47(2), e7384

We examined the influence of a tourism scholar's cooperation network and knowledge distance on his or her creativity. We integrated the 2 critical attributes of tourism scholars' cooperation networks, namely, accessing diverse knowledge and cooperative opportunities, by analyzing hand-collected samples of 988 publications from tourism scholars in a highly competitive academic environment at Hong Kong Polytechnic University. The results showed that, with scholars in tourism and hospitality departments working in cooperative activities to generate ideas, moderate knowledge distance across universities and countries provided the best conditions for, and demonstrated the highest level of, creativity. Further, academic experience strengthened the relationship between knowledge distance and overall creative performance. Theoretical and practical implications are discussed.

### Keywords

cooperation network;  
knowledge distance;  
academic experience;  
individual creativity;  
tourism and hospitality  
scholars

Recently, with increased global competition and an ever-changing environment, tourism organizations have struggled to establish themselves and grow amid turbulent and changing customer needs. Innovation and creativity have become increasingly important in these struggles (Rhee & Choi, 2017). *Creativity* refers to individuals' development of novel and useful ideas (Hsu, 2013). Creativity not only contributes to an organization's innovation and improvement activities, but it is also an important competitive attribute and a valuable asset for individuals (Hsu, 2013). Perry-Smith and Shalley (2003) proposed that internal and external attributes, such as knowledge heterogeneity and network connections, independently and jointly affect individuals' creativity and overall performance. Access to diverse knowledge and cooperative opportunities are critical attributes in tourism scholars' cooperation networks.

*Knowledge distance* refers to connections outside, or various expert interactions within, an organizational network (Ambos & Ambos, 2009). In their creativity-related study, Acar and van den Ende (2016) stated that knowledge distance refers to the distance between an individual's expertise and the knowledge domain. In our study, we proposed that although knowledge distance provides individuals with novel knowledge elements that can potentially be combined to increase their creativity, knowledge distance must be at an optimal level. By extending previous results (Perry-Smith, 2006), we have provided a comprehensive understanding of social network concepts that shows a relationship between knowledge heterogeneity, network structure, and individual creativity. In addition, the results of a recent study brought together diversity and distance knowledge concepts in the search for creative ideas and for the generation of creativity (Li & Liu, 2016). We also addressed unanswered questions from the results reported by Li and Liu regarding the relationship between knowledge distance and academic experience, and how these factors influence creativity, especially in the tourism and hospitality fields. In addition, we set out to obtain results

on the relationship of knowledge heterogeneity and network structure with individual creativity that would provide new insights and extend the findings reported in previous studies of knowledge-based views and social network theory.

## Literature Review and Development of Hypotheses

### Knowledge Distance and Creativity

In a qualitative study, Perry-Smith and Shalley (2003) proposed that high knowledge distance enables individuals to have a wide range of response possibilities to draw on when generating novel ideas, new thinking, and solutions, thereby enhancing creativity-related capabilities.

Although increased knowledge distance may also facilitate individual creativity, too many knowledge sources or information beyond individuals' absorptive capacity and acquisitive and digestive capability may constrain their creativity. Individuals who access too much knowledge beyond a level of expertise in their domain may be pulled in many directions. Stress and confusion may result unless there is time to digest and integrate the divergent data into useful information (Chen & Liu, 2012). However, a lesser amount of stress and conflict, such as the amount that is likely to result from moderate knowledge distance or information flows, may facilitate creativity (Li & Liu, 2016). Therefore, we proposed the following hypothesis:

**Hypothesis 1:** Moderate knowledge distance will activate the highest level of individuals' creativity at work, beyond which a greater distance will constrain the quantity of creativity.

### The Moderating Effects of Academic Experience

"Experience can be measured in terms of the cumulative number of task performances" (Argote & Miron-Spektor, 2011, p. 1124). Researchers have identified several important factors that affect the effectiveness of individuals' knowledge accumulation from their own experience (Reagans, Argote, & Brooks, 2005). Ghosh, Martin, Pennings, and Wezel (2014) suggested that whether experience has a positive or negative effect on knowledge transfer depends on the similarity between successive tasks. Froehlich (2017) found that in knowledge-intensive organizations, younger or less experienced employees focus more on learning. Conversely, those with more experience are likely to think rigidly and to adopt a surface learning rather than a deep learning approach to change their behavior (Froehlich, 2017). Heterogeneous consideration of knowledge integration and knowledge distance indicates that rigid thinking not only inhibits individuals from generating novel ideas, but also improves their absorptive capacity of learning a new method or an alternative approach. Therefore, we proposed the following hypothesis:

**Hypothesis 2:** Academic experience will have a negative moderating effect on the relationship between knowledge distance and individual creativity.

## Method

### Participants and Data Collection

We took several steps to collect and verify information about cooperative research publications over the 25-year period from 1989 to 2014 by tourism and hospitality scholars from Hong Kong Polytechnic University, a top university in the tourism and hospitality fields. First, from the files held by the School of Hotel and Tourism Management, we obtained the scholars' individual background information, namely, gender, academic position, academic experience, country where their doctorate was completed, and publication list. Second, we downloaded each publication to access co-authors' information related to their field of expertise, country, department, and university. Third, we compared the journal information and each scholar's original website to correct or delete any incorrect information. After we had conducted a further survey and selected quality published papers, the final sample comprised 988 publications in which observations have been made on tourism and hospitality network analysis.

### **Dependent Variable**

**Creativity.** To measure the level of individual creativity accurately, Lane and Lubatkin (1998) recommend noting the total number of publications across different genres that are listed in International Statistical Institute publications. We thus measured the level of creativity as represented by the number of journal articles published by each scholar.

### **Independent Variable**

**Knowledge distance.** Knowledge distance is measured by how individuals' knowledge heterogeneity is revealed by interaction with their contacts (Rodan & Galunic, 2004). This measure reflects co-authorship across different countries over an observation period of the dependent variables. The equation can be calculated as knowledge distance (KD) =  $[1 - \sum(p_i)^2]$ , where  $p$  is the proportion of co-authors' nationality in the  $i^{\text{th}}$  paper. This calculation is similar to the use of the entropy measure (Chen & Liu, 2012), and as the equation has been widely used previously, this gives higher value to how this measure represents greater diversity and distance of knowledge.

### **Moderating Variable**

**Academic experience.** We measured academic experience from the first paper published during the observation period (Chen & Liu, 2012). Because we examined co-authorships over a 25-year period, if a scholar published his or her first paper in the year 2000, the value for that scholar on the variable for academic experience would be 15 (i.e., academic experience = 2014–2000).

### **Control Variables**

As we included a number of constructs to control for the potential influence of individual background differences, we controlled for three variables. Because Baer and Kaufman (2008) suggested that, as a critical attribute, individuals would be different but relatively equal in creative ability according to gender, we included gender as a control variable and treated it as a dummy variable, coded 0 for female and 1 for male. There may be an implication according to academic position that different resources control academic achievement (Li & Liu, 2016). As shown in the Table 1, we originally coded academic achievement as Lecturer = 0, Assistant professor = 1, Associate professor = 2, and Professor = 3. The final control variable is the country where participants obtained their doctorate. Chen and Liu (2012) suggested that this would affect participants' creativity because it is easier for native English speakers to get their papers published in Western journals.

## **Results**

Descriptive statistics are shown in Table 1. As we observed high correlations among variables, we conducted the variance inflation factor test to assess multicollinearity. As the values for all variables were below 10, multicollinearity was not a problem in this study (Aiken & West, 1991).

Table 1. Descriptive Statistics and Correlation Matrix for Study Variables

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Creativity	24.098	27.917	1							
2. Knowledge distance	0.947	0.520	.528***	1						
3. Academic experience	10.350	6.419	.538***	.349*	1					
4. Gender	0.585	0.499	.231	.177	.238	1				
5. Assistant professor	0.634	0.488	-.624***	-.418**	-.495**	-.125	1			
6. Associate professor	0.171	0.381	.139	.125	.141	-.013	-.597***	1		
7. Lecturer	0.024	0.156	-.121	-.155	-.186	.133	-.208	-.072	1	
8. Professor	0.171	0.381	.708***	.471**	.566***	.119	-.597***	-.206	-.072	1

Note. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

The results are reported in Table 2. Model 1 is a base model that includes only control variables and academic experience. The results displayed in Model 2 show that both single and quadratic terms are positively related to creativity (e.g., single term:  $b = .576$ ,  $p < .01$  and  $b = -.629$ ,  $p < .01$ , respectively). Thus, Hypothesis 1 was supported.

Table 2. Results of Negative Binomial Regression Analysis of Creativity and Knowledge Distance According to Country

Dependent variables	Model 1	Model 2	Model 3	Model 4
Constant	1.217 (.812)	3.114*** (.500)	2.748*** (.482)	.461 (.705)
<b>Control variables</b>				
Gender	.103 (.145)	.019 (.137)	.120 (.127)	.053 (.100)
Academic position				
Assistant professor	1.337 (.704)	-1.169*** (.215)	-1.191*** (.188)	.604 (.642)
Associate professor	2.504** (.739)	-.117 (.192)	-.200 (.169)	1.474* (.669)
Professor	2.774*** (.759)	-2.444** (.744)	-2.516*** (.706)	1.911** (.666)
Country of doctorate				
Yes		Yes	Yes	Yes
Academic experience	.041* (.017)	.037* (.016)	.038** (.014)	.159*** (.032)
<b>Independent variable</b>				
Knowledge distance (country) (KDC)				
		.576** (.179)	1.742*** (.454)	2.127*** (.418)
(KDC) <sup>2</sup>				
			-.629** (.219)	-.011 (.218)
Academic experience × KDC				
				-.117*** (.026)
<b>Model statistics</b>				
Log likelihood	-132.880	-127.589	-123.817	-115.696
Wald $\chi^2$	72.05	82.63	90.18	106.42

Note. Results for coefficients, standard errors in parentheses.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Further, as shown in Model 4, the results provide support for a significant negative interaction effect ( $b = -.117$ ;  $p < .01$ ). Therefore, Hypothesis 2 was supported.

To confirm the original results, we examined similar procedures and used a different measure of knowledge distance. The previous index we used was a measure of the proportion of the coauthors' nationality, but in this alternative index we used university affiliation as a proxy. When coauthors were affiliated to different universities, the knowledge distance values became larger. The formula for the alternative index is  $KD = [1 - \sum(\pi_i)^2]$ , where  $p$  is the proportion of the coauthors' university affiliation in the  $i^{\text{th}}$  paper. As Table 3 shows, all variables of interest (knowledge distance, academic experience, and their interaction) remained the same as in our previous results, thus confirming our additional test findings.

Table 3. *Robustness Test of Creativity and Knowledge Distance According to University Affiliation*

Dependent variables	Model 1	Model 2	Model 3	Model 4
Constant	1.217 (.812)	3.048*** (.565)	2.724*** (.505)	2.346*** (.414)
<b>Control variables</b>				
Gender	.103 (.145)	-.043 (.144)	.109 (.145)	-.005 (.109)
Academic position				
Assistant professor	1.337 (.704)	-.978*** (.250)	-1.107*** (.230)	-1.162*** (.148)
Associate professor	2.504** (.739)	-.007 (.208)	-.104 (.190)	-.425** (.128)
Professor	2.774*** (.759)	-1.958* (.791)	-2.063** (.756)	-1.210 (.691)
Country of doctorate	Yes	Yes	Yes	Yes
Academic experience	.041* (.017)	.049** (.017)	.044** (.015)	.175*** (.027)
<b>Independent variable</b>				
Knowledge distance (university) (KDU)		.370** (.118)	1.168** (.340)	1.339*** (.278)
(KDU) <sup>2</sup>			-.250* (.098)	.007 (.084)
Academic experience *KDU				-.078*** (.013)
<b>Model statistics</b>				
Log likelihood	-132.880	-127.681	-124.653	-111.296
Wald $\chi^2$	72.05	82.45	88.50	115.22

Note. Results for coefficients, standard errors in parentheses.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

## Discussion

We designed this study to address two main questions: (a) How does knowledge distance within a cooperation network affect tourism scholars' creativity performance? and (b) How does academic experience affect knowledge distance and individual creativity? Our findings indicate that knowledge distance and academic experience affect individual creativity and influence antecedents to enable the tourism and hospitality scholars in our participant group to generate new ideas. Highly experienced scholars may provide new insights into the two critical attributes of tourism scholars' cooperation networks, namely, accessing diverse knowledge and cooperative opportunities. These attributes may be accessed to control knowledge flow and network resources. Individuals may also search for international opportunities or opportunities in across-university cooperation with others who are attracted by knowledge distance. As the cooperative opportunities and accessing the diverse knowledge of these networks are interdependent, it is

essential to test the knowledge distance–academic experience relationship, not only concurrently, but also because one construct interactively influences the other’s relationship with creativity.

Our findings provide practical implications for knowledge workers. First, the interaction effect we found suggests that moderate knowledge distance provides the best condition for creativity. This finding indicates that academic experience is less valuable when the tourism scholar is located at a high knowledge distance. Second, although young scholars have less experience than their older colleagues have, they have stronger intrinsic motivation to identify cooperation partners. They are also willing to discover new ideas to facilitate problem solving and the enhancement of creativity (Li & Liu, 2016). Although high knowledge distance provides various perspectives on new ideas, time and ability are required for the integration of the large amount of diverse information made available by cooperative networks. Third, it is in the broader interests of tourism scholars to separate their network partners as well as to balance the appropriate knowledge distance to acquire diverse information and knowledge (Chen & Liu, 2012). Therefore, greater knowledge distance benefits from mutual gains only when the level of knowledge heterogeneity and distance is appropriate.

There is a limitation in this study. We included only two main variables in our examination of tourism scholars’ cooperation network—knowledge distance and academic experience. Researchers have suggested that different network positions, such as centrality, provide different opportunities to access diverse information and creative ideas (Baer & Kaufman, 2008). Assessment of centrality is a measure of indegree and outdegree connections, and betweenness, as indicators to measure access to resources and benefits within a network, and structural holes are identified to measure the effective access to a critical network position. However, we did not measure the different network positions of the tourism scholars in the cooperation networks. Thus, although our findings suggested that the creative process leads to novel ideas, such ideas may be best derived from knowledge distance. Future researchers could further examine the different effects of both knowledge distance and academic experience on the creativity of individual scholars.

### Acknowledgements

The authors wish to thank Sun Jin-jin, Ruan Wen-qi, Zhang Wen, and Li Rui for their help with the data analysis and literature review.

This work was supported by a grant from the Key Program of the Ministry of Education of the National Office for Education Sciences Planning of China (No. DIA150310).

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